



# Katherm HK

## ► Assembly, installation and operating instructions

Keep these instructions in a safe place for future use!



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## 1 General

### 1.1 About these instructions

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

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

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

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

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

### 1.2 Explanation of Symbols



#### **DANGER!**

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



#### **WARNING!**

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



#### **IMPORTANT NOTE!**

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



#### **IMPORTANT NOTE!**

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

## 2 Safety

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

### 2.1 Correct use

The units are used for heating and/or cooling all areas of buildings that need to be heated in winter and cooled in summer due to the high incidence of sunlight through the glass façades. Within the room, the unit needs to be connected to the building's heating/cooling/ventilation system and to the building's waste water and power network. The operating limits and limits of use described in Chapter 2.2 [▶ 6] must be observed.

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

#### Information in accordance with EN60335-1

- ▶ This unit can be used by children aged 8 years or more and also by people with reduced physical, sensory or mental capabilities or a lack of experience and knowledge, if they are supervised or have been instructed in the safe use of the unit and the resulting dangers. Do not allow children to play with the unit. Do not allow children to clean and maintain the unit without supervision.
- ▶ The unit is not intended for operation above 2,000 m.a. s.l.
- ▶ This unit is not intended for permanent connection to the drinking water supply system.
- ▶ This unit is intended for being accessible to the general public.

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

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

## 2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C	5-120
Min./max. air intake temperature	°C	15-40
Min./max. air humidity	%	15-75
Min. operating pressure	bar/kPa	-
Max. operating pressure	bar/kPa	10/1000
Min./max. glycol percentage	%	25-50

Tab. 1: Limits of operation

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

Tab. 2: Operating voltage

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

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

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

Tab. 3: Water quality



## IMPORTANT NOTE!

### **Danger of frost in cooling mode!**

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

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



## IMPORTANT NOTE!

### **Warning of misuse!**

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

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



## IMPORTANT NOTE!

### **Energy losses due to misuse!**

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

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

## 2.3 Risk from electrocution!



## DANGER!

### **Risk of fatal injury from electrocution!**

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

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



## **2.4 Personnel requirements - Qualifications**

### **Expertise**

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

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

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

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

## **2.5 Personal Protective Equipment**

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

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

## 3 Transport, storage and packaging

### 3.1 General transport instructions

Check on delivery for completeness and transport damage.

Proceed as follows in the event of visible damage:

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



#### **IMPORTANT NOTE!**

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



#### **IMPORTANT NOTE!**

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



#### **IMPORTANT NOTE!**

##### **Material damage caused by incorrect transport!**

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

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

### 3.2 Scope of delivery



#### **IMPORTANT NOTE!**

##### **Check the scope of delivery!**

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

## 3.3 Storage

Store packaging under the following conditions:

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



### IMPORTANT NOTE!

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

## 3.4 Packaging

Handling packaging materials



### IMPORTANT NOTE!

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



### IMPORTANT NOTE!

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

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## 4 Technical data

Device	Katherm HK (Performance values for rolling grate)					
Size	HK 245	HK 320	HK 320 E	HK 290	HK 290 E	HK 360
Duct width [mm]	245	320	320	290	290	360
Duct height [mm]	160	130	130	160	160	210
Duct length [mm]	915 - 3000	915 - 3000	915 - 3000	950 - 3000	950 - 3000	950 - 2250
Air volume flow [m³/h]	26 - 622	38 - 822	38 - 822	52 - 1398	52 - 1398	47 - 1583
Heat output 2-pipe <sup>1</sup>	637 - 8710	697 - 10465	767 - 9716	1040 - 15730	993 - 14599	1223 - 16884
Heat output 4-pipe <sup>1</sup>	462 - 6316	436 - 6512	./.	514 - 9448	-	643 - 12243
Heating output electric [W]	-	-	100 - 1500	-	100 - 1500	-
Cooling output 2-pipe <sup>2</sup>	66 - 1507	125 - 1925	153 - 1854	114 - 2783	108 - 2589	120 - 3348
Cooling output 4-pipe <sup>2</sup>	62 - 1420	121 - 1851	./.	112 - 2728	-	114 - 3153
Sound pressure level [dB(A)] <sup>3, 4</sup>	<20 - 45	<20 - 41	<20 - 41	<20 - 45	<20 - 45	<20 - 53
Sound power level [dB(A)] <sup>4</sup>	<28 - 53	<28 - 49	<28 - 49	<28 - 53	<28 - 53	<28 - 61
Power consumption [W]	4.7 - 33.3	4.7 - 33.3	4.7 - 33.3	4.2 - 52.9	4.2 - 52.9	2.3 - 54.0
Current consumption [mA]	49 - 345	49 - 345	49 - 345	56 - 409	65 - 409	22 - 521
Water capacity [l]	0.31 - 2.01	0.50 - 3.10	0.44 - 2.76	0.53 - 2.84	0.47 - 2.50	0.50 - 3.10
Weight [kg]	16.57 - 56.76	17.63 - 60.39	17.63 - 60.39	21.21 - 74.38	21.21 - 74.38	25.08 - 59.39

<sup>1</sup> at LPHW 75 / 65 °C,  $t_{L1}$  = 20°C, with fan-assisted convection

<sup>2</sup> at CHW 16/18 °C,  $t_{L1}$  = 27 °C, 48% relative humidity with fan coils

<sup>3</sup> The sound pressure level was 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).

<sup>4</sup> Sound pressure level < 20 dB (A) and sound power level < 28 dB (A) outside the usual measuring and audible range.

## 5 Construction and function

### 5.1 Overview

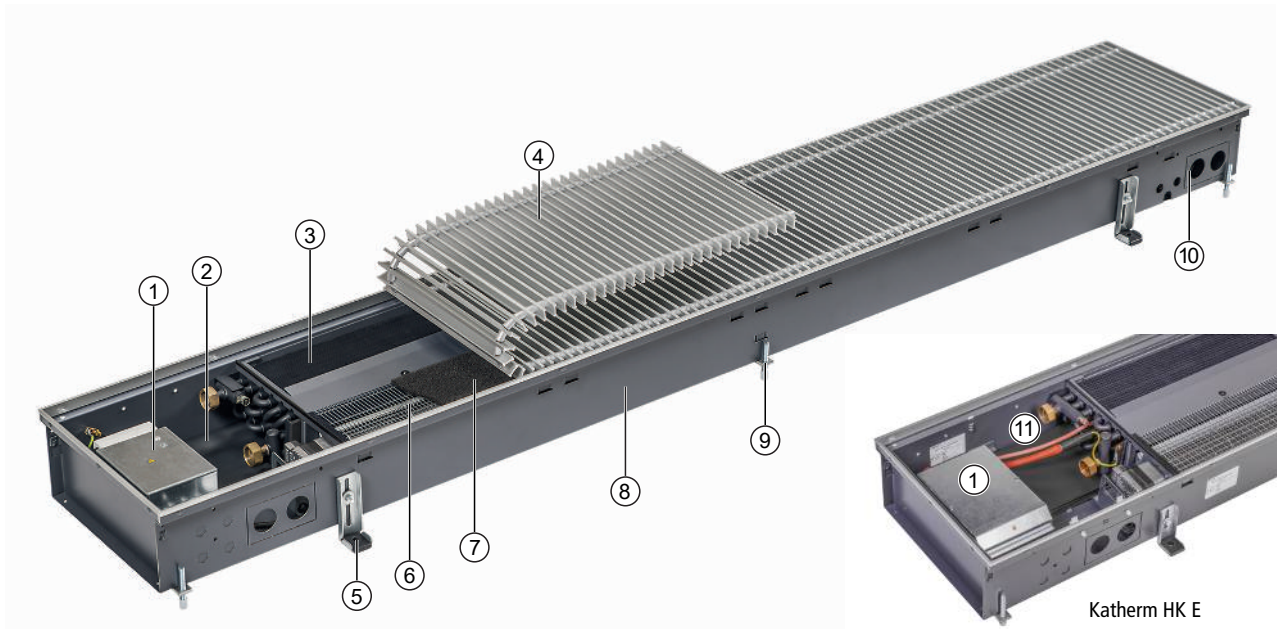


Fig. 1: Katherm HK at a glance

1	Junction and control box	2	Condensate tray
3	Convactor	4	Roll-up grille
5	Height adjustment feet	6	EC tangential fan
7	Filter (optional accessory)	8	Floor trench
9	Load-bearing height adjustment feet	10	Condensate pump mounting kit
11	Convactor with integral electric coil and safety chain		

### 5.2 Brief description

Katherm HK are decentralised units for the heating and cooling of room air, for use in hotels, offices and business premises, among others. Secondary air is drawn in by the fan and passed through the copper/aluminium heat exchanger. The temperature-controlled air rises up the façade of the building to create a pleasant indoor climate.

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## 5.3 Wear parts list

Figure	Article	For use with	Art. no.
	Filter for air intake	HK 320, height 130 mm, HK 245, height 160 mm Length 915 mm	143014313013
		HK 320, height 130 mm, HK 245, height 160 mm Length 1200 mm	143014313019
		HK 320, height 130 mm, HK 245, height 160 mm Length 1700 mm	143014313029
		HK 320, height 130 mm, HK 245, height 160 mm Length 2000 mm	143014313035
		HK 320, height 130 mm, HK 245, height 160 mm Length 2500 mm	143014313045
		HK 320, height 130 mm, HK 245, height 160 mm Length 3000 mm	143014313055
		for HK 290, height 160 mm, Length 950 mm	143014316014
		HK 290, height 160 mm, Length 1200 mm	143014316019
		HK 290, height 160 mm, Length 1700 mm	143014316029
		HK 290, height 160 mm, Length 2000 mm	143014316035
		HK 290, height 160 mm, Length 2500 mm	143014316045
		HK 290, height 160 mm, Length 3000 mm	143014316055
		HK 360, height 210 mm, Length 950 mm	143014321014
		HK 360, height 210 mm, Length 1200 mm	143014321019
		HK 360, height 210 mm, Length 1350 mm	143014321022
		HK 360, height 210 mm, Length 1850 mm	143014321032
		HK 360, height 210 mm, Length 2250 mm	143014321040

## 6 Installation and wiring

### 6.1 Requirements governing the installation site

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

- ▶ Make sure that the unit is securely suspended/standing.
- ▶ Ensure that the airflow can circulate freely.
- ▶ Provide adequate space for appropriately sized flow and return water connections on site (Connection to the pipe network [► 20]).
- ▶ There is a power supply on site (Maximum electrical rating values [► 39]).
- ▶ If need be, provide a condensation connection with a sufficient gradient on site.

### 6.2 Installation

2 people are needed to install the unit.



#### **CAUTION!**

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

The inner metal of the casing can have sharp edges.

- ▶ Wear suitable protective gloves.



#### **IMPORTANT NOTE!**

##### **Horizontal installation of units!**

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

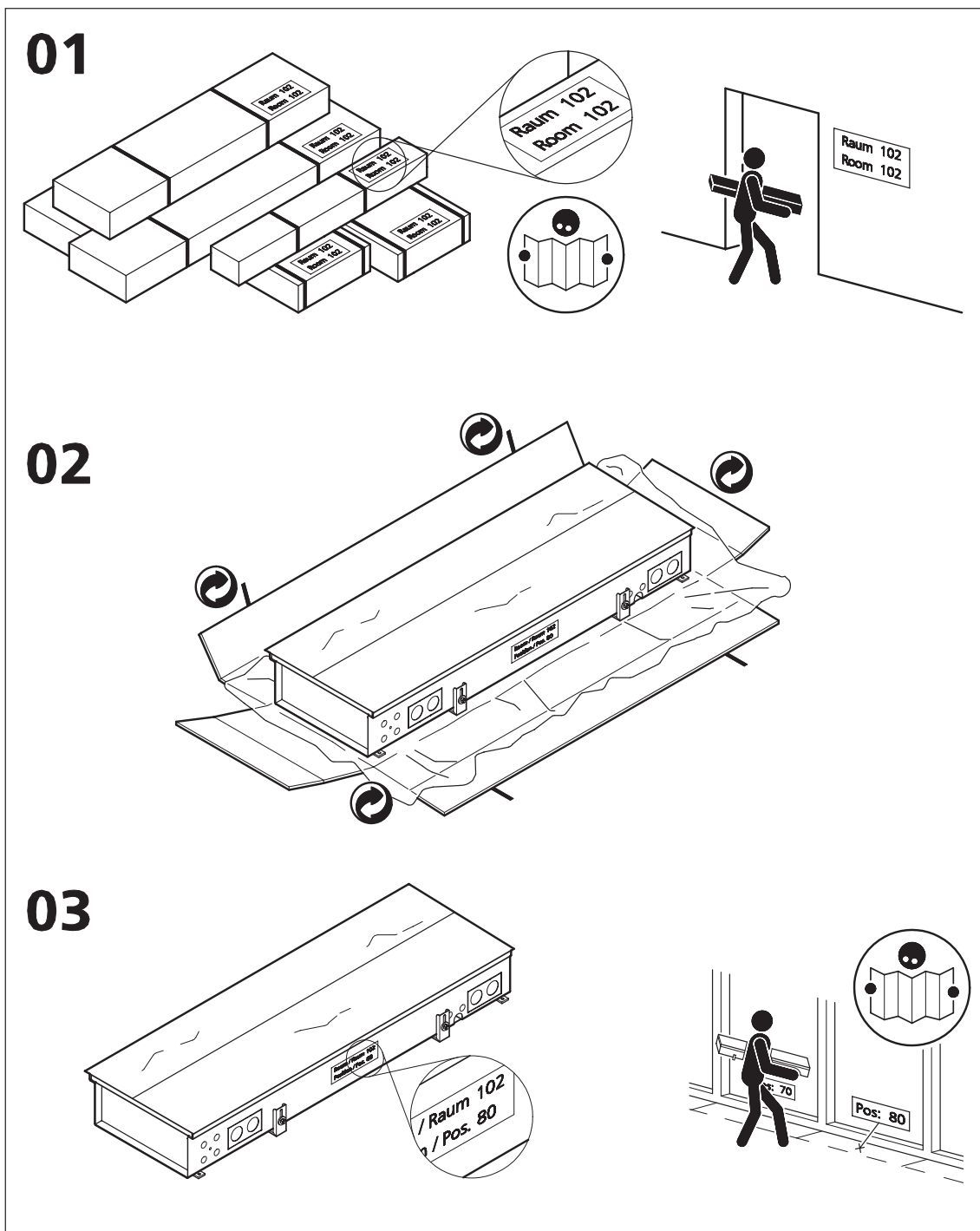


#### **IMPORTANT NOTE!**

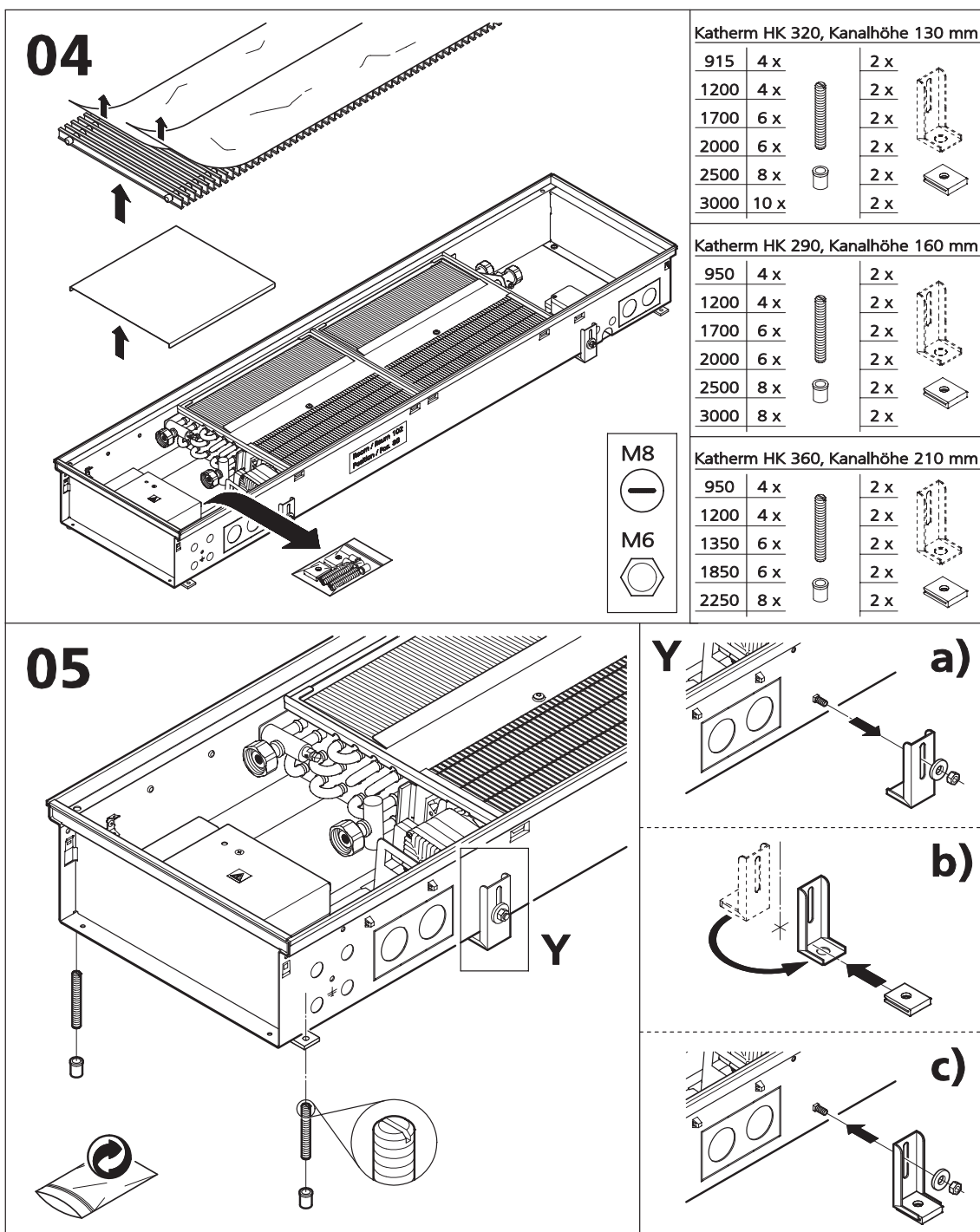
##### **Avoid draughts!**

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

## 6.2.1 Installation steps







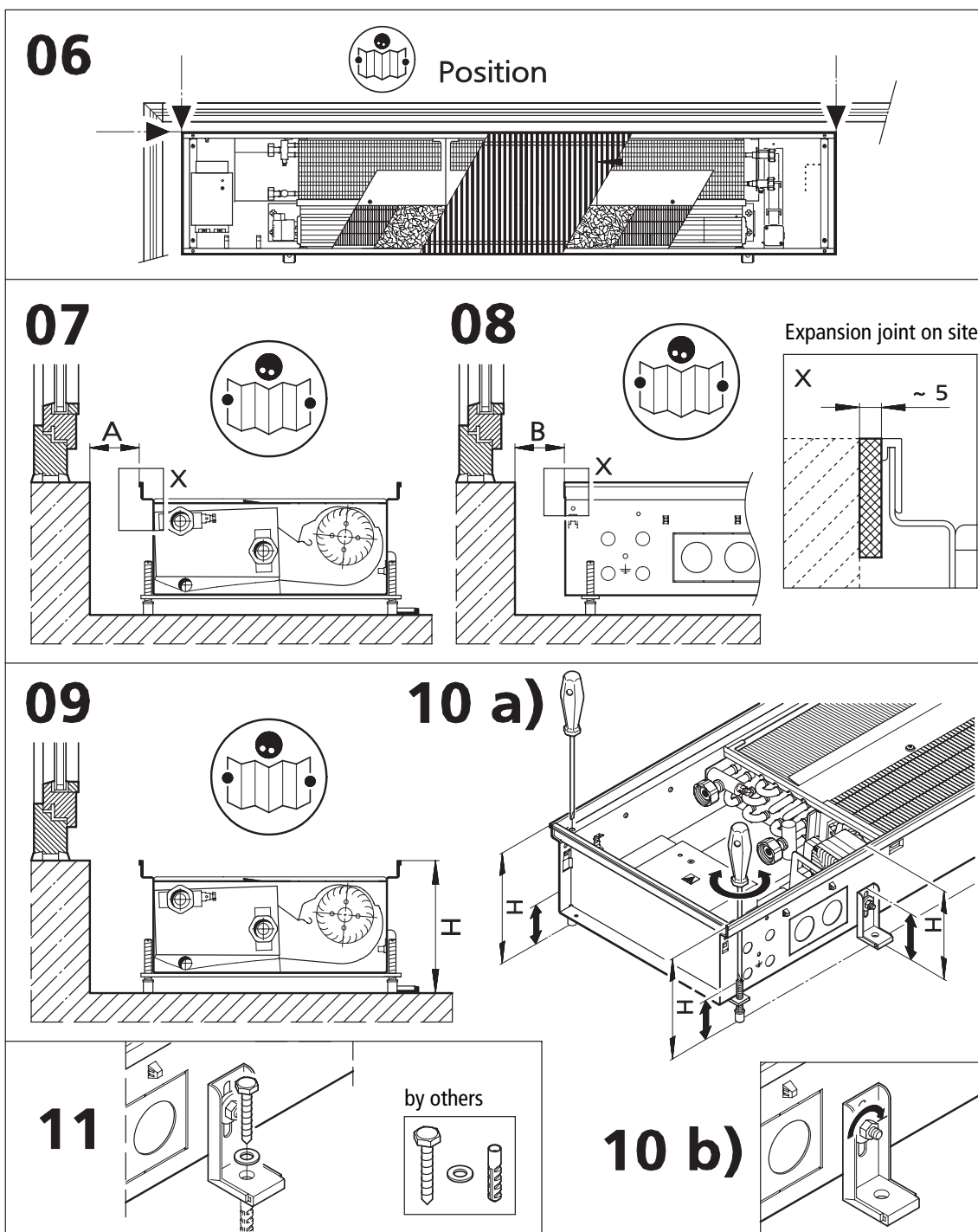
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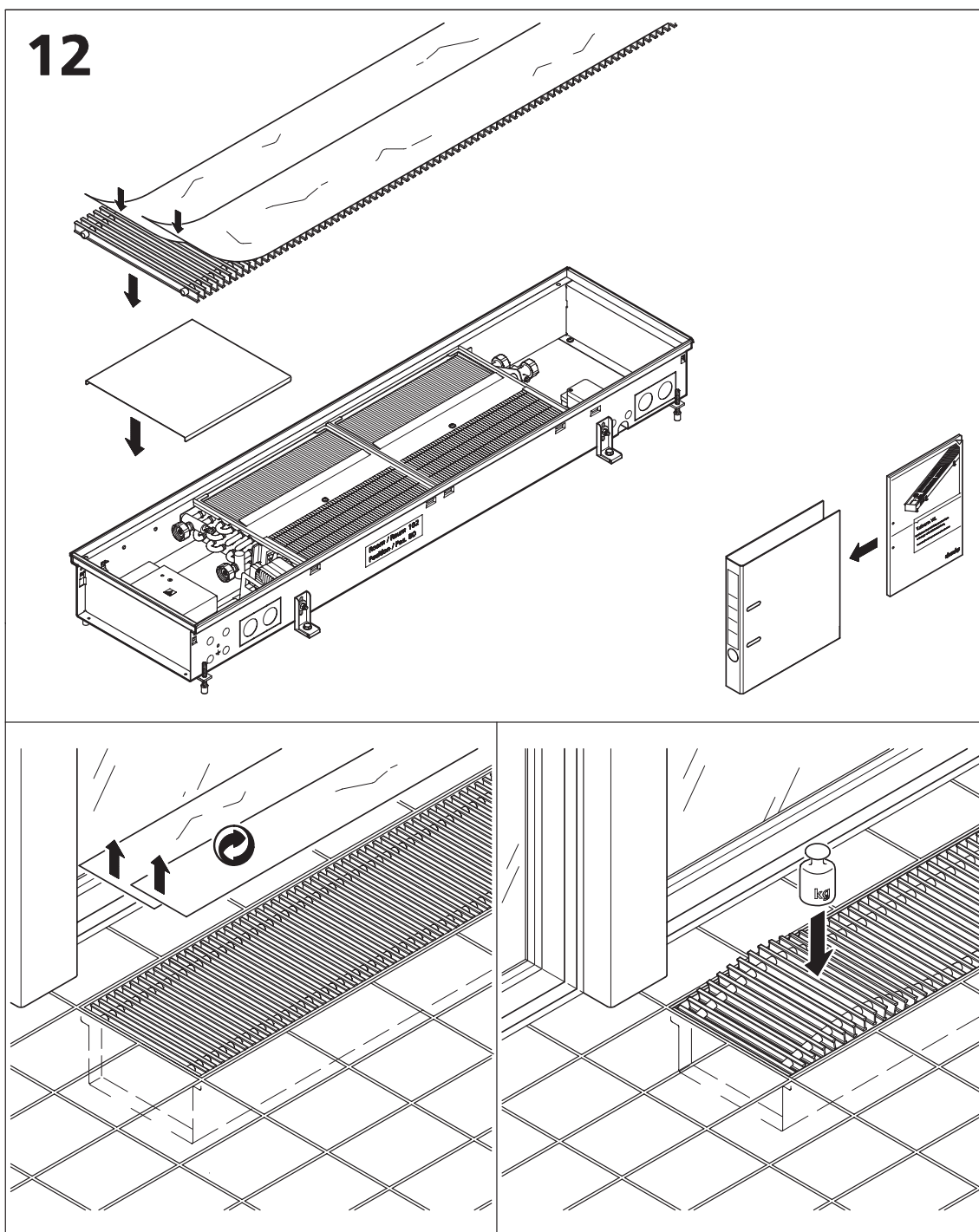
## Y

### a)

### b)

### c)





## 6.2.2 Screed work

The following work needs to have been completed before screeding can begin:

- ▶ Water has been correctly connected.
- ▶ The electrical connections have been correctly wired.
- ▶ The unit is correctly positioned and levelled.
- ▶ There are no sound bridges to the concrete slab, especially in the area of the height adjustment feet.
- ▶ Expansion joints have been provided on site to prevent the unit from being compressed by the floor or screed.
- ▶ All the appropriate cable conduits have been laid.
- ▶ Appropriate material has been used to seal all the openings and punched openings in the unit. They also need to be additionally sealed when using floating screed or other low-viscosity floor coverings!
- ▶ Cover the grille and floor trench with the transparent installation cover to protect the trench from dirt or cement.

## 6.3 Installation

### Actuator with 'First Open' function

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

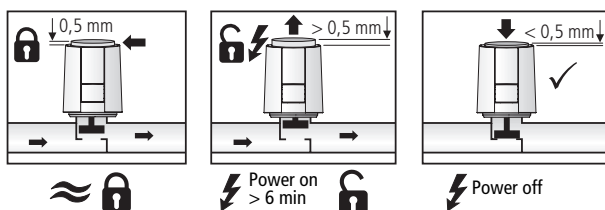


Fig. 2: "First Open" function

### Valve and return shut-off valve connection

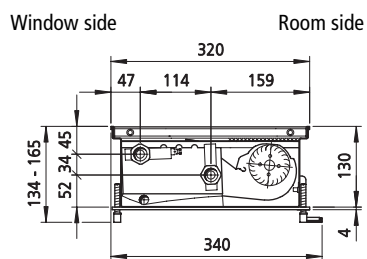
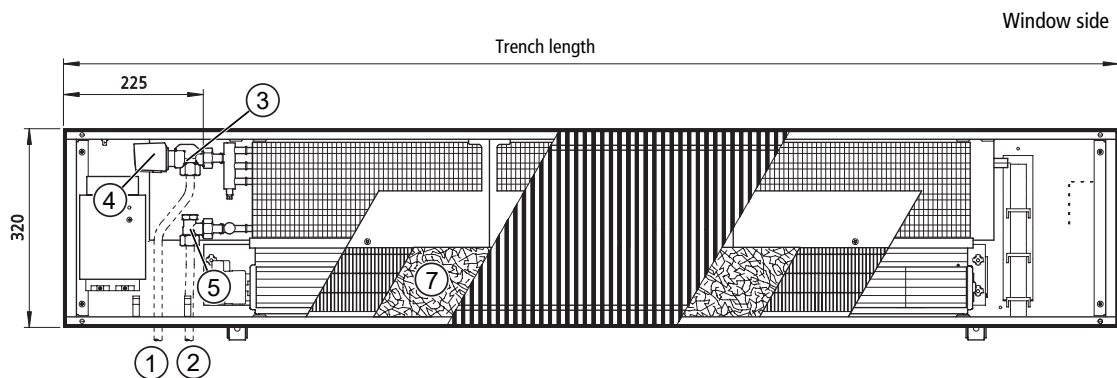
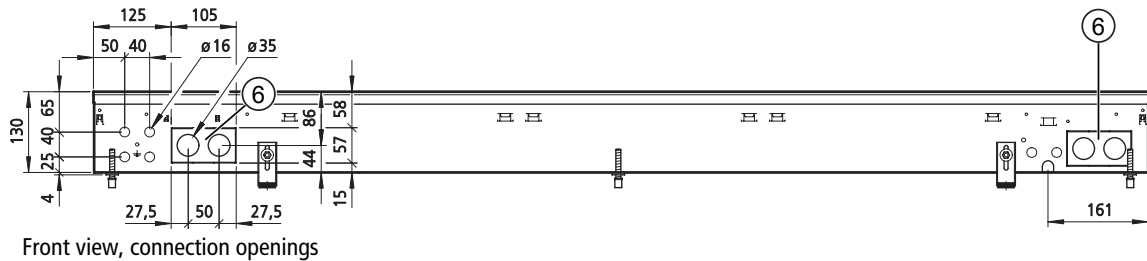
- ▶ Using a suitable sealant (e.g. NEO Fermit), screw the thermostatic valve and the return shut-off valve to the convactor's Eurocone valve connections.
- ▶ Fit the flow and return pipes. Use the punched pipe openings on the room side for the water-side connection.
- ▶ Perform a pressure test.

### Flushing the system

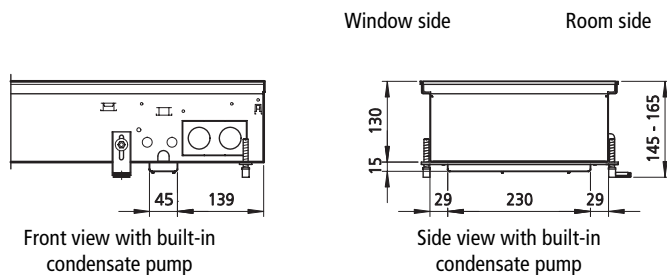
The system needs to be flushed during commissioning in accordance with DIN EN 14336. System components, such as units and valves, which could disrupt the flushing process or become blocked or damaged during flushing, need to be clearly identified and replaced or bypassed by a temporary connection before the process can be continued.

## 6.3.1 Connection to the pipe network

### Katherm HK 320, 2-pipe, trench height 130 mm



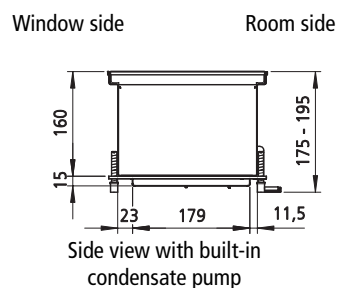
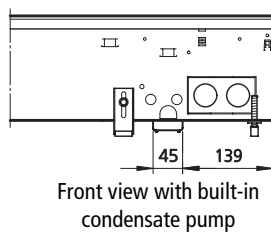
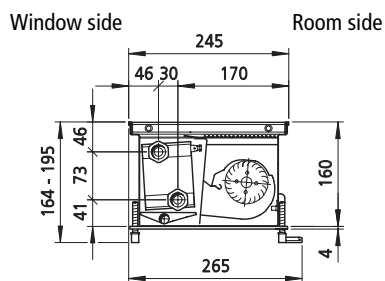
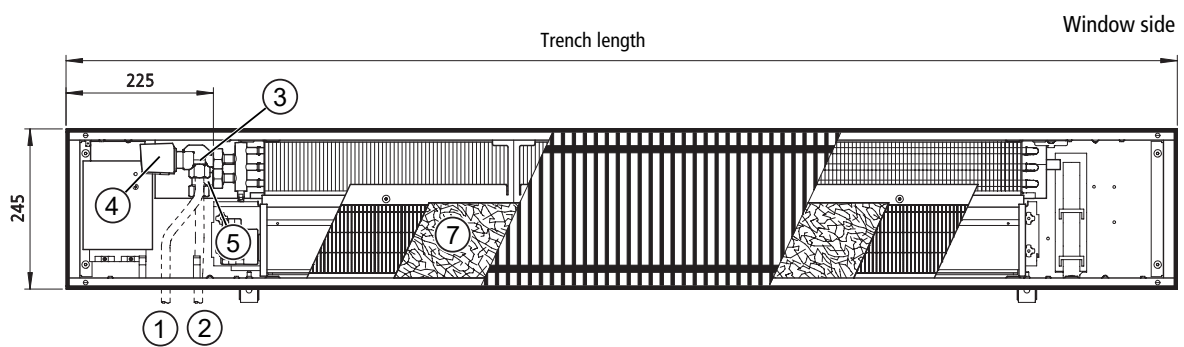
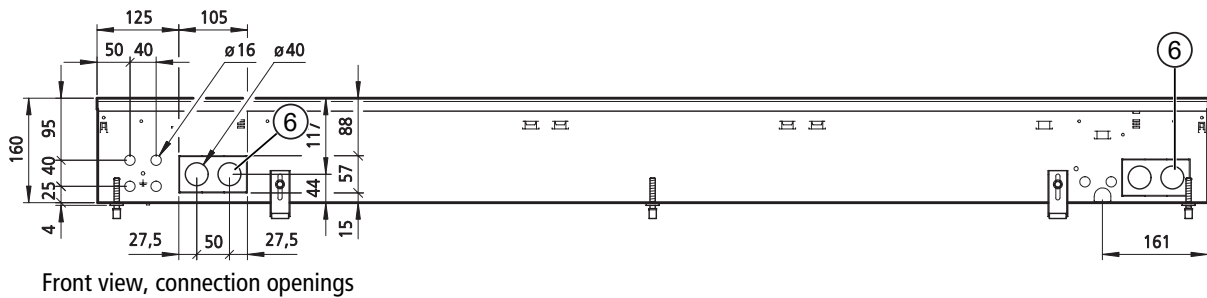
Cross-section (cooling or heating)  
Example: Roll-up grille



1	Heating/ cooling supply	2	Heating/ cooling return
3	½" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	4	Thermoelectric actuator, type 146906
5	½" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	6	Pipe openings, punched
7	Filter (optional)		



## Katherm HK 245, 2-pipe, trench height 160 mm

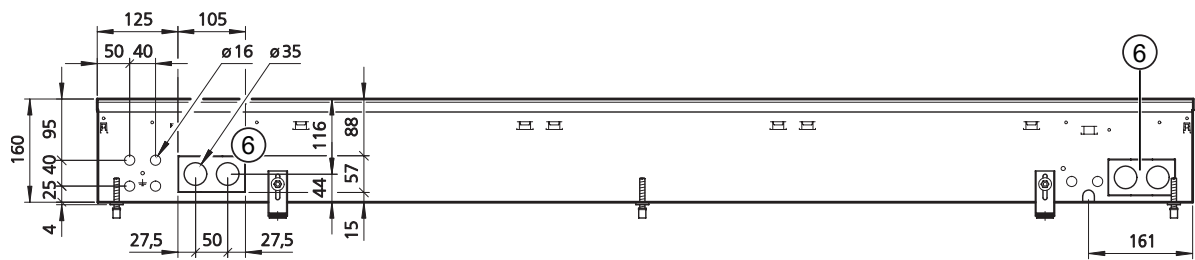


1	Heating/ cooling supply	2	Heating/ cooling return
3	½" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	4	Thermoelectric actuator, type 146906
5	½" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	6	Pipe openings, punched
7	Filter (optional)		

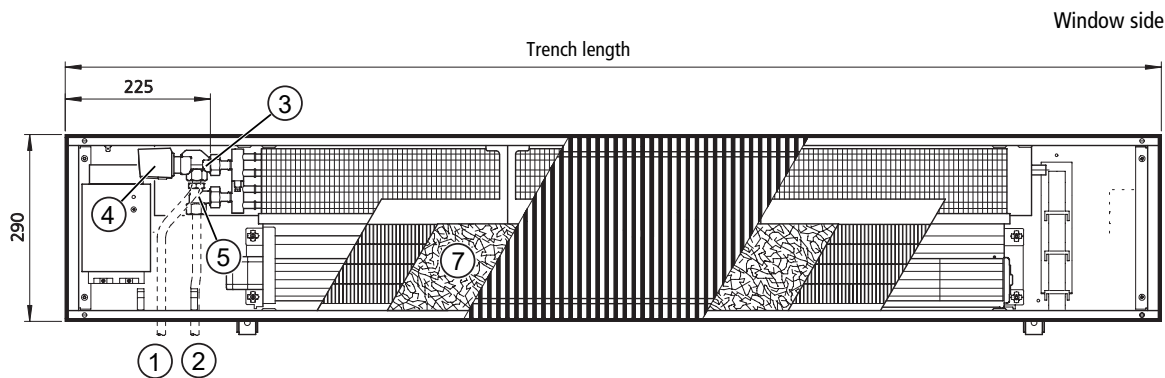
# Katherm HK

Assembly, installation and operating instructions

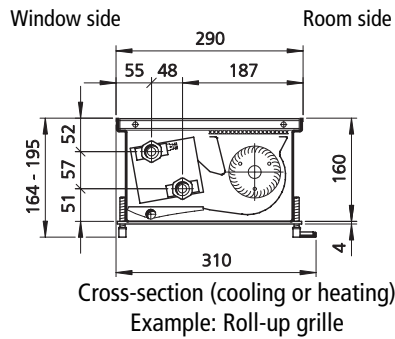
## Katherm HK 290, 2-pipe, trench height 160 mm



Front view, connection openings

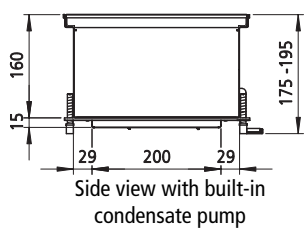
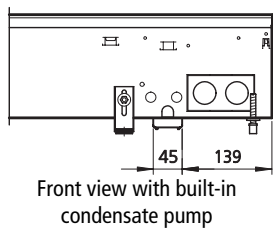


Top view, water connection on room side



Cross-section (cooling or heating)  
Example: Roll-up grille

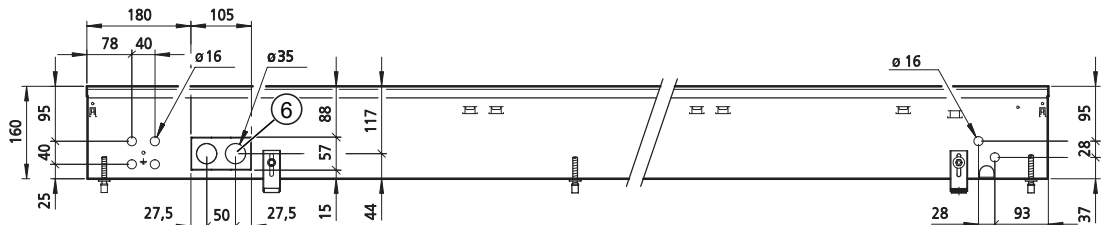
Window side Room side



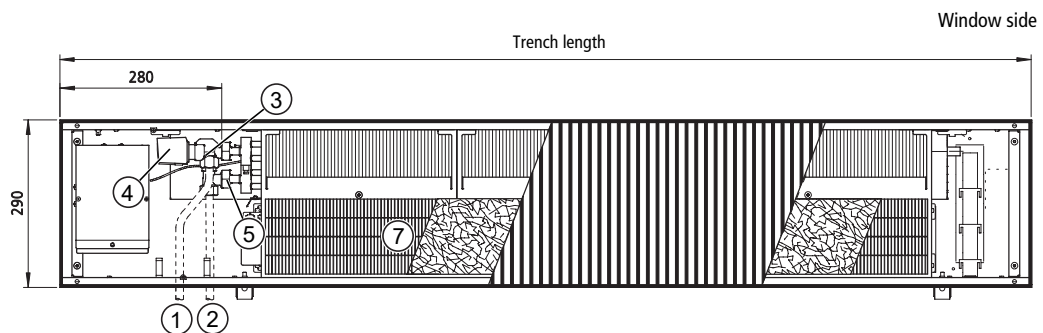
1	Heating/ cooling supply	2	Heating/ cooling return
3	½" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	4	Thermoelectric actuator, type 146906
5	½" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	6	Pipe openings, punched
7	Filter (optional)		



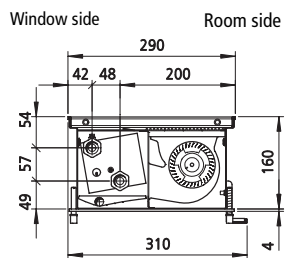
## Katherm HK 290 E, 2-pipe, trench height 160 mm



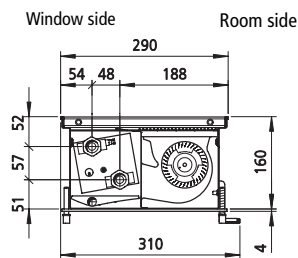
Front view, connection openings



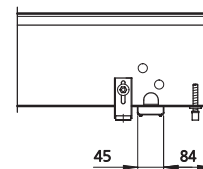
Top view (without cover plate, room-side water connection)



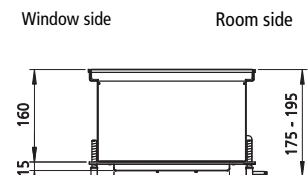
Cross-section (cooling or heating)  
Example: Roll-up grille  
(duct lengths 950 mm and 1200 mm)



Cross-section (cooling or heating)  
Example: Roll-up grille  
(duct lengths of greater than 1200 mm)



Front view with built-in  
condensate pump



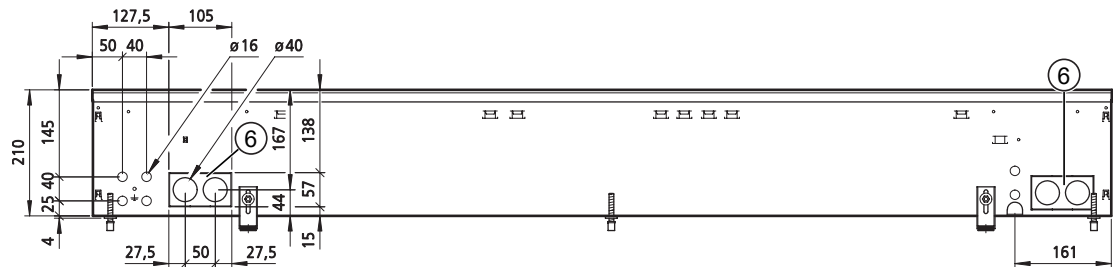
Side view with built-in  
condensate pump

1	Heating/ cooling supply	2	Heating/ cooling return
3	1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	4	Thermoelectric actuator, type 146906
5	1/2" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	6	Pipe openings, punched
7	Filter (optional)		

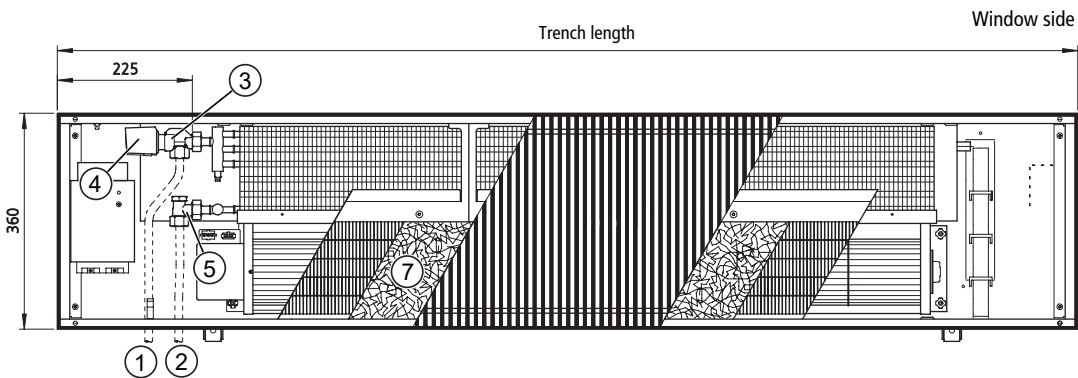
# Katherm HK

Assembly, installation and operating instructions

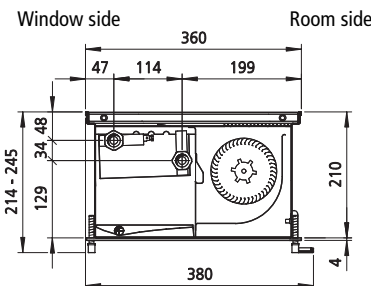
## Katherm HK 360, 2-pipe, trench height 210 mm



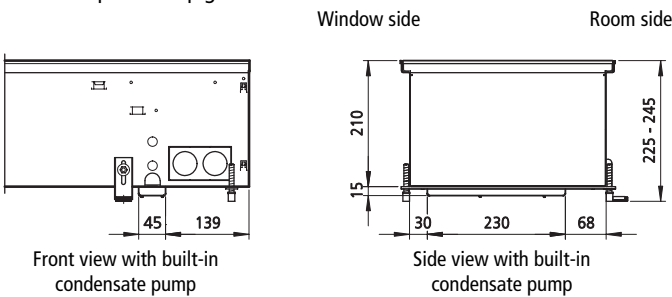
Front view, connection openings



Top view, water connection on room side

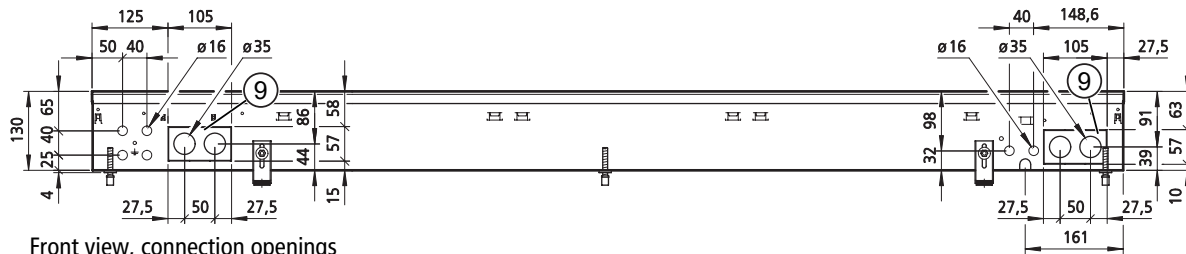


Cross-section (cooling or heating)  
Example: Roll-up grille

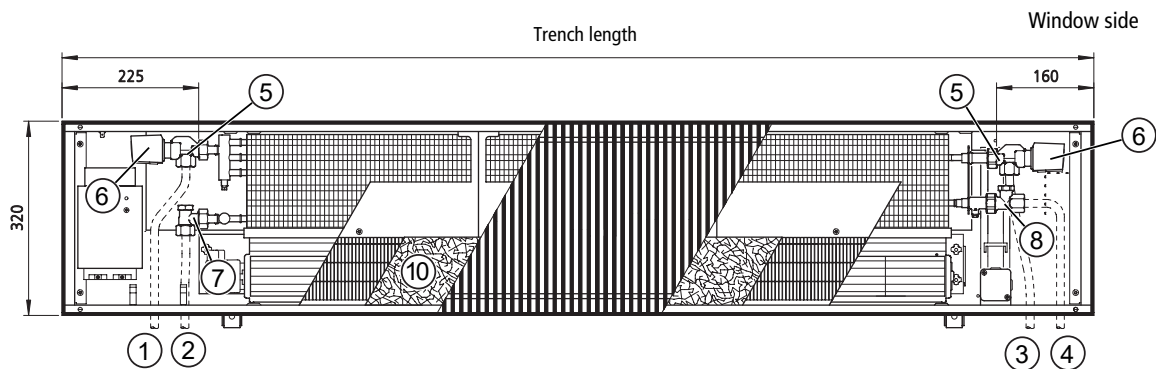


1	Heating/ cooling supply	2	Heating/ cooling return
3	½" valve body, axial, for higher flow, type 346914	4	Thermoelectric actuator, type 146906
5	½" return shut-off valve, angled, type 145955	6	Pipe openings, punched
7	Filter (optional)		

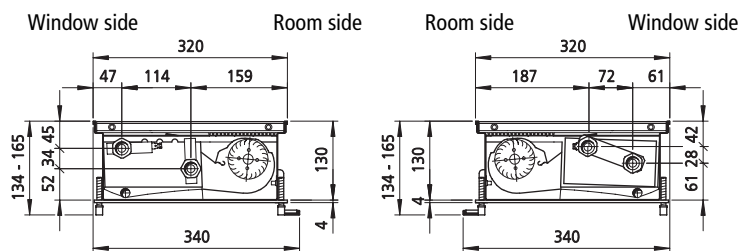
## Katherm HK 320, 4-pipe, trench height 130 mm



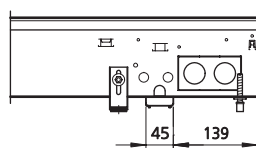
Front view, connection openings



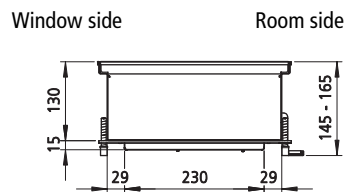
Top view, water connection on room side



Cross-section (cooling or heating)  
Example: Roll-up grille



Front view with built-in  
condensate pump



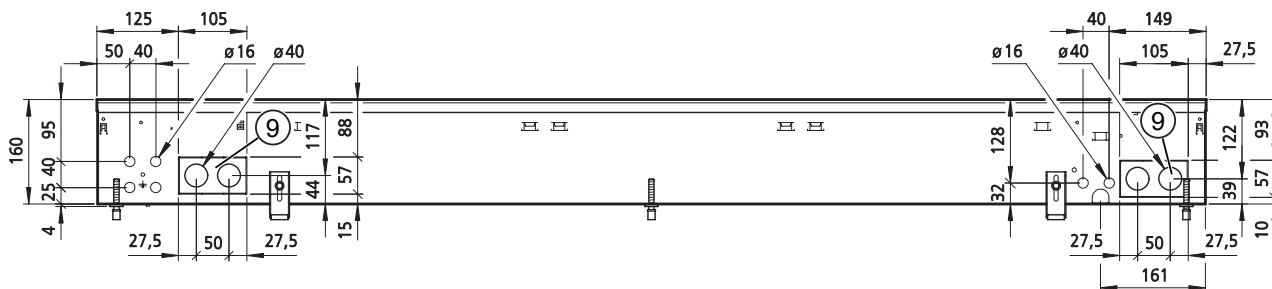
Side view with built-in  
condensate pump

1	Cooling supply	2	Cooling return
3	Heating supply	4	Heating return
5	1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	6	Thermoelectric actuator, type 146906
7	1/2" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	8	1/2" return shut-off valve, straight, type 145952 and/or type 145954 (flow-dependent)
9	Pipe openings, punched	10	Filter (optional)

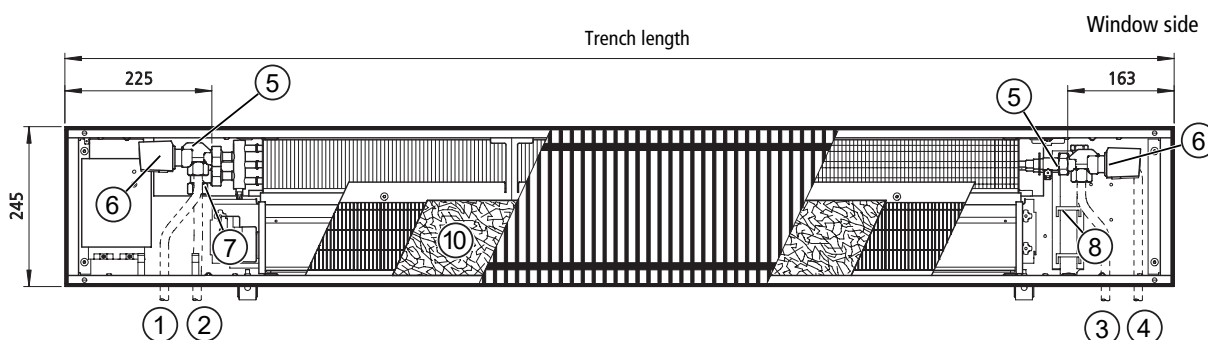
# Katherm HK

Assembly, installation and operating instructions

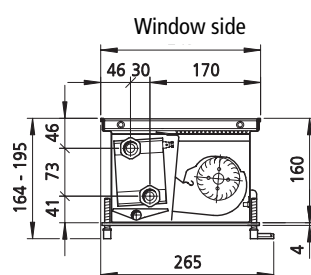
## Katherm HK 245, 4-pipe, trench height 160 mm



Front view, connection openings

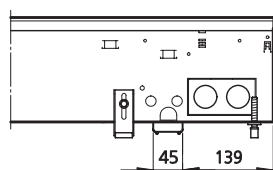


Top view, water connection on room side



Cross-section (cooling or heating)

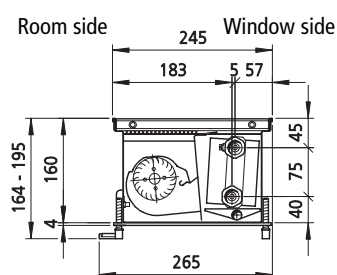
Example: Roll-up grille



Front view with built-in condensate pump

Room side

Room side



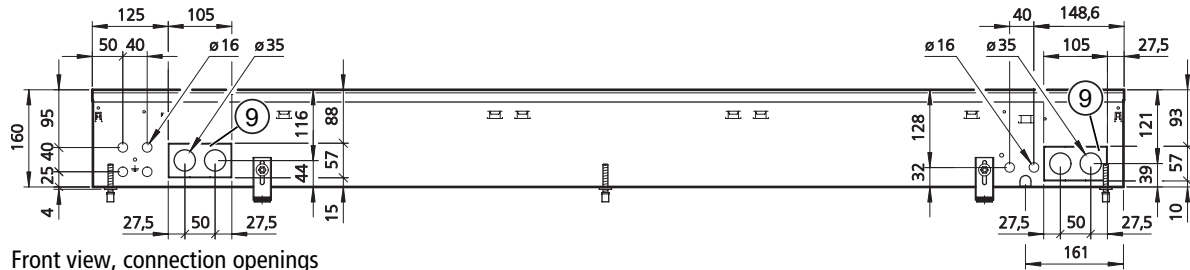
Side view with built-in condensate pump

Window side

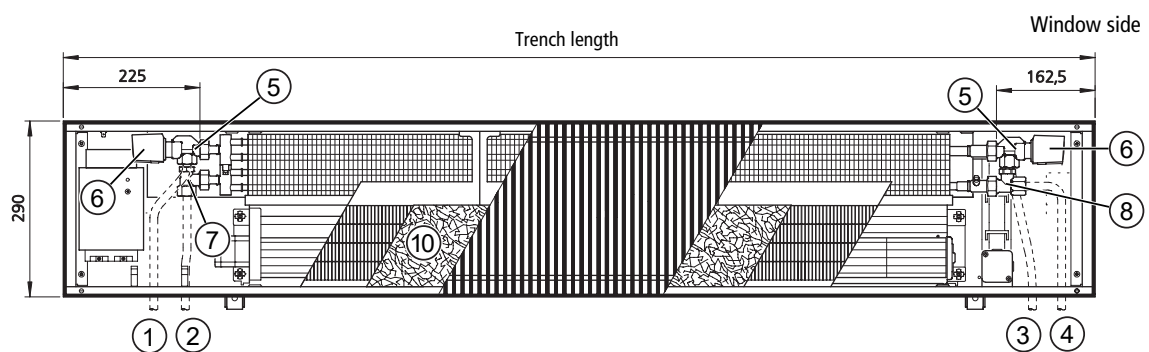
Room side

1	Cooling supply	2	Cooling return
3	Heating supply	4	Heating return
5	1/2" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	6	Thermoelectric actuator, type 146906
7	1/2" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	8	1/2" return shut-off valve, straight, type 145952 and/or type 145954 (flow-dependent)
9	Pipe openings, punched	10	Filter (optional)

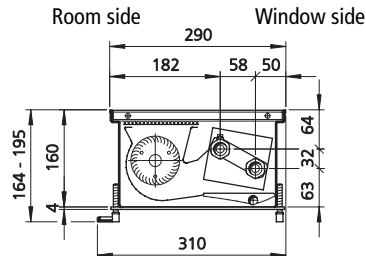
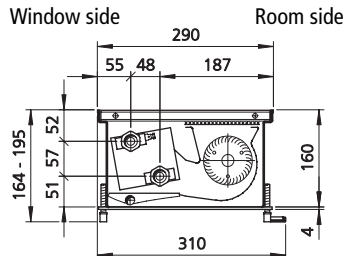
### Katherm HK 290, 4-pipe, trench height 160 mm



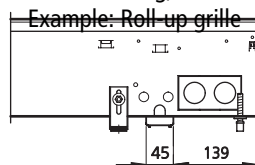
### Front view, connection openings



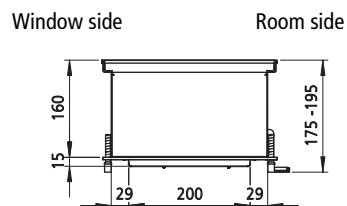
Top view, water connection on room side



Cross-section (cooling or heating)



Front view with built-in  
condensate pump



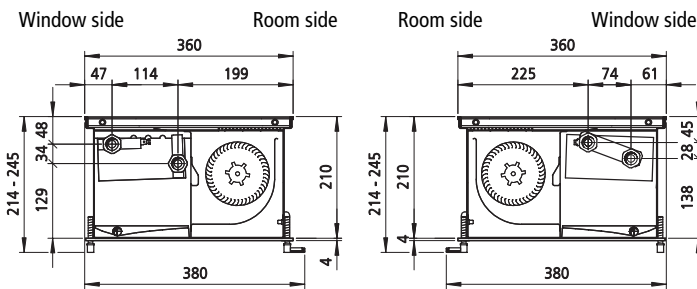
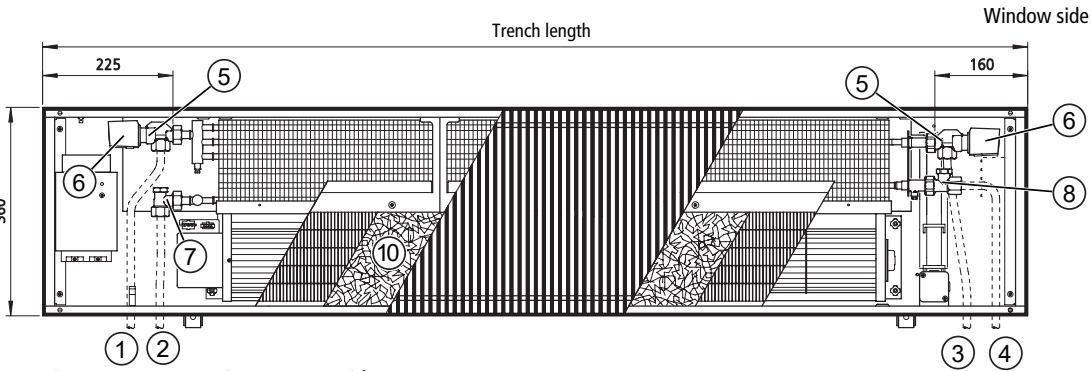
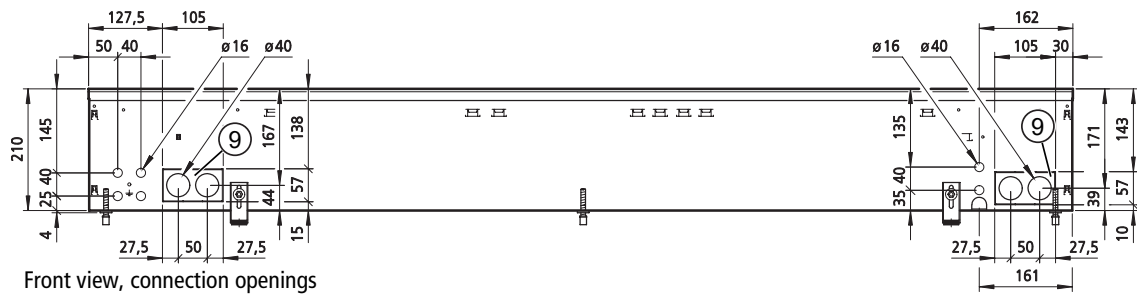
Side view with built-in  
condensate pump

1	Cooling supply	2	Cooling return
3	Heating supply	4	Heating return
5	½" valve body, axial, type 346914 and/or type 346911 (flow-dependent)	6	Thermoelectric actuator, type 146906
7	½" return shut-off valve, angled, type 145953 and/or type 145955 (flow-dependent)	8	½" return shut-off valve, straight, type 145952 and/or type 145954 (flow-dependent)
9	Pipe openings, punched	10	Filter (optional)

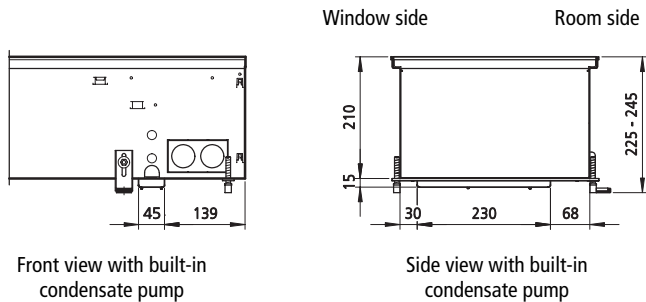
# Katherm HK

Assembly, installation and operating instructions

## Katherm HK 360, 4-pipe, trench height 210 mm



Cross-section (cooling or heating)  
Example: Roll-up grille

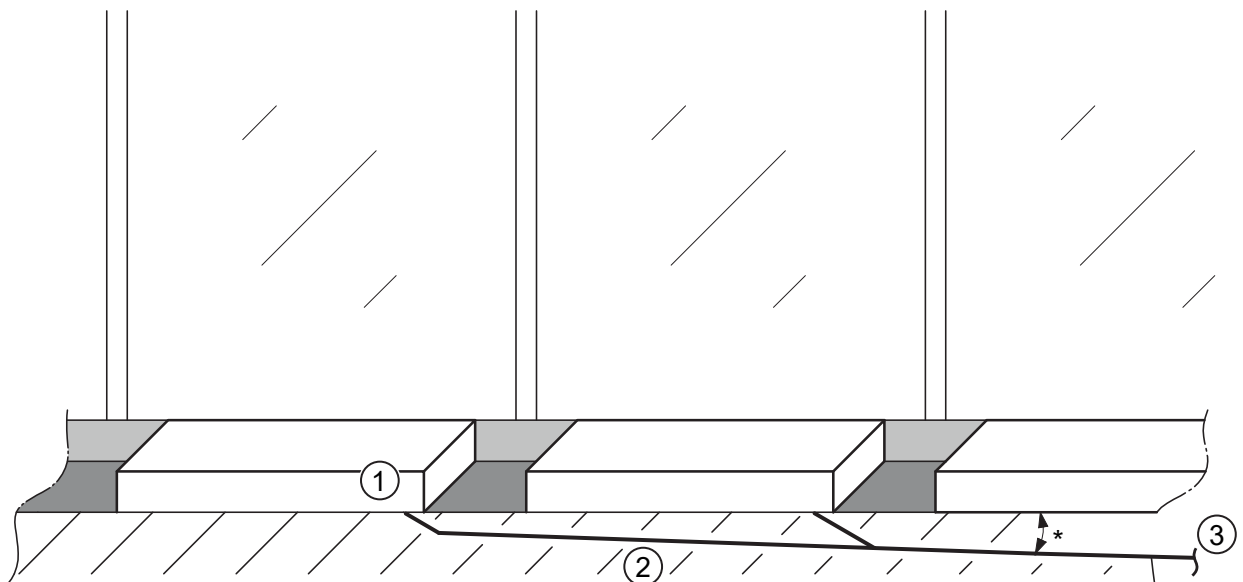


1	Cooling supply	2	Cooling return
3	Heating supply	4	Heating return
5	½" valve body, axial, for higher flow, type 346914	6	Thermoelectric actuator, type 146906
7	½" return shut-off valve, angled, type 145955	8	½" return shut-off valve, straight, type 145954
9	Pipe openings, punched	10	Filter (optional)

## 6.3.2 Condensation connection

### 6.3.2.1 Condensation drain with natural gradient

A condensate drain needs to be connected and appropriately fixed to a condensate drain connection on the unit (15 mm drain). Ensure that the gradient is at least 2%, without restrictions and without rising sections of pipe, to ensure the drainage of condensate from the unit providing no adequately sized condensate pump has been fitted (in accordance with DIN EN 12056; formerly: DIN 1986-100). Take into account all applicable regulations, such as the use of a ball trap, when connecting the condensate line to the sewer system. Protect the trap from drying out. The suction effect of the fan on the condensate drain connection could otherwise produce troublesome odours. Consider using water vapour-impermeable insulation depending on the pipe material used for the condensate drain. You will need a condensate pump (supplied separately or factory-fitted) should a natural gradient be impossible on site. This is used to pump the condensate into higher collection or discharge equipment. When ordered, the condensate pump with float switch is supplied separately or factory-fitted to the unit.



Condensate drainage on site with a natural gradient

① Katherm HK condensate connection – collecting pipe

② Condensate collecting pipe

③ **Important:** Connect the condensate collecting pipe to the waste water network in accordance with all applicable technical standards and regulations; note in particular any necessary vents, traps etc.

\* min. 2% gradient

## Condensate drain kit with a natural gradient

The following mounting kit can be ordered as an accessory to drain the condensate.

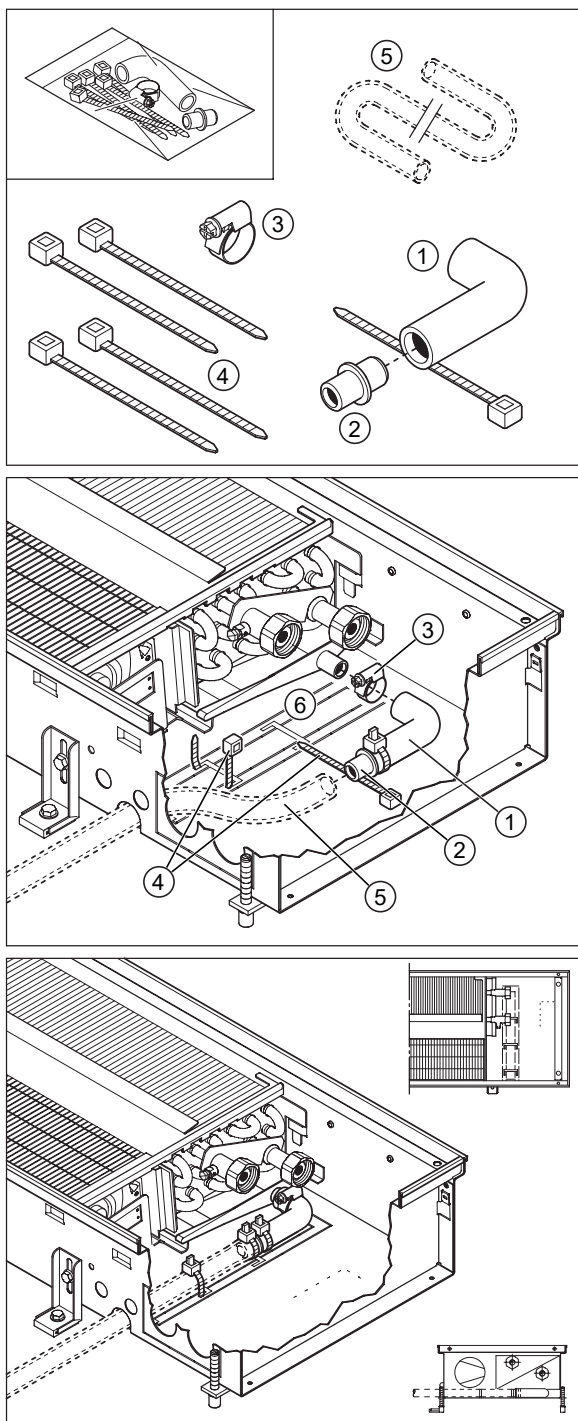


Fig. 3: Condensate drain mounting kit

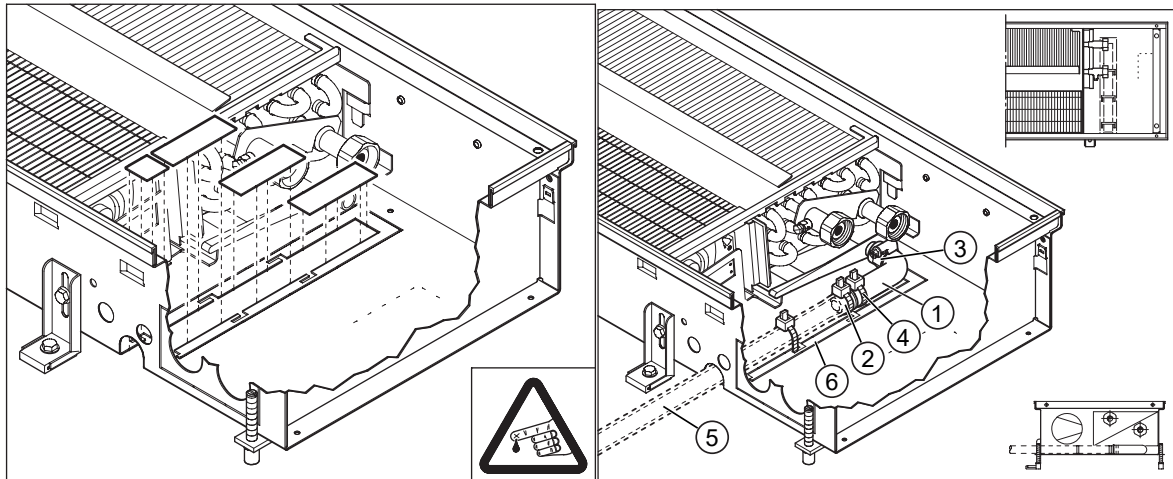
1	Condensate elbow	2	Coupling section
3	Hose clamp	4	Cable tie
5	On-site condensate pipe	6	Cut-outs in the base panel (pre-punched)

- ▶ Connect the coupling <sup>②</sup> and condensate elbow <sup>①</sup> with a cable tie <sup>④</sup>.
- ▶ Fix the condensate elbow <sup>①</sup> to the drain connector of the condensate tray using a hose clamp <sup>③</sup>.



## 6.3.2.2 Additional on-site condensate drain pipe

The on-site condensate drain pipe can be fixed by cable ties to the openings provided by the pre-punched openings in the base to maintain the necessary gradient. If a steeper gradient is needed on site for the on-site condensate drain pipe, the pre-punched openings on the base can be removed as required.



Required openings in the base panel

Additional on-site condensate drain pipe

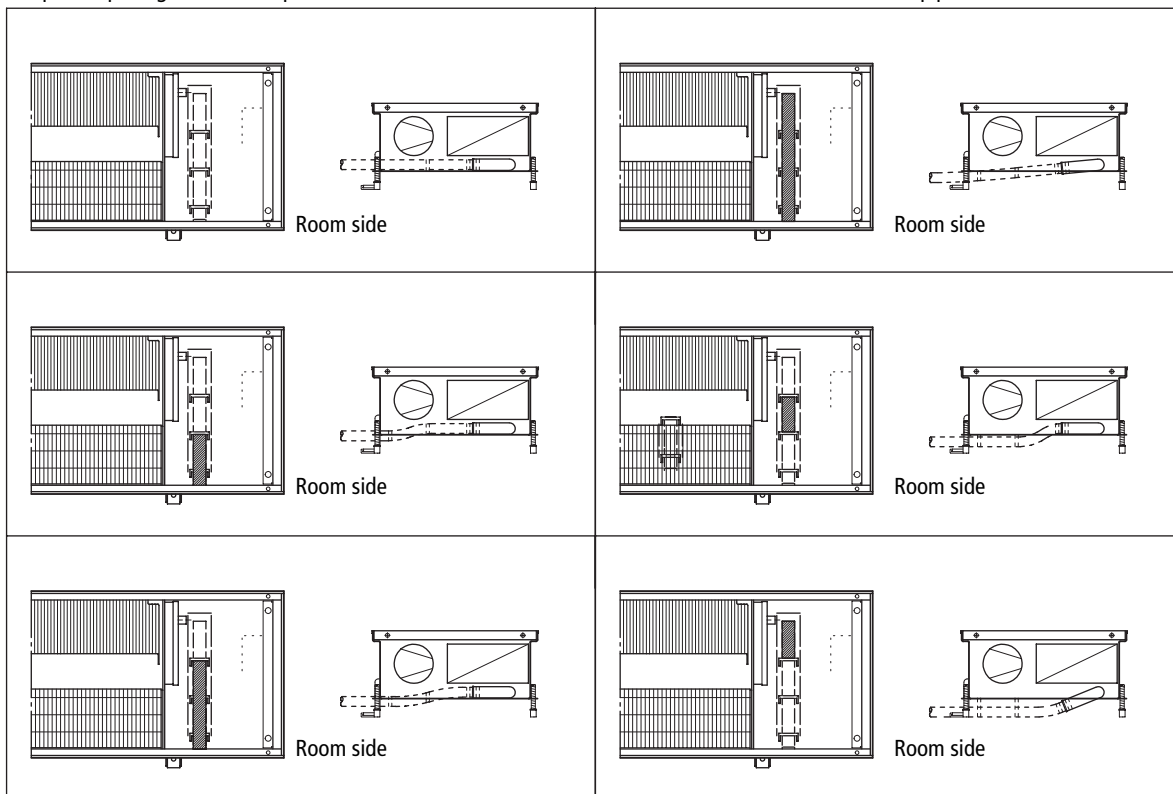


Fig. 4: Options for removal of the openings in the base and routing the on-site condensate drain pipe

1	Condensate elbow	2	Coupling section
3	Hose clamp	4	Cable tie
5	On-site condensate pipe	6	Cut-outs in the base panel (pre-punched)

### 6.3.2.3 Condensate drainage using a condensate pump (accessory)

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

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

We would recommend automatically terminating cooling operation, possibly with a shut-off valve, if the alarm contact is triggered to prevent the condensate tray from overflowing.

#### Condensation drain

- ▶ Drainage of condensation from the condensation pump has to be provided along a natural gradient with an adequate cross-section (minimum 1/2"). Increase the cross-section of the line with longer condensate lines.
- ▶ Check whether the condensation line needs to be insulated to prevent the build-up of condensation along the line.
- ▶ Do not use a rigid transition to the on-site condensation drain, as this lengthens the pump's pressure hose. We would recommend free overflow into a trap.

#### Installation, cabling of the condensation pump (accessory)

The condensate pump needs a separate power supply 230 V/50 Hz. We would generally advise against connecting it via the room thermostat, as residual condensate could be produced after it has been switched off. Additional wires are needed to analyse the alarm contact.

Use the following types of cable:

- ▶ Mains supply: NYM-J, 1.5 mm<sup>2</sup>
- ▶ Alarm contact: The cable for the alarm contact depends on the kind of alarm analysis used (e.g. shielded cable).

## Connecting the condensate pump

Push the suction hose as far as it will go and fix in place with a cable tie to prevent the pump from running dry.

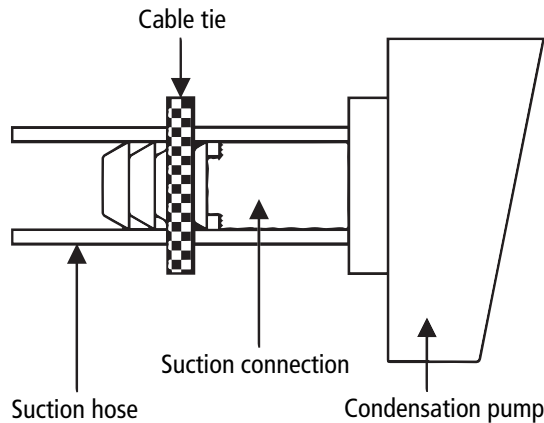


Fig. 5: Fixing the suction hose

- ▶ Supply power and wire alarm contact (separate cable with plug) as per the wiring diagram.
- ▶ Connect the hose to the condensate drain (separate). Direction of flow: refer to the arrow on the side of the housing

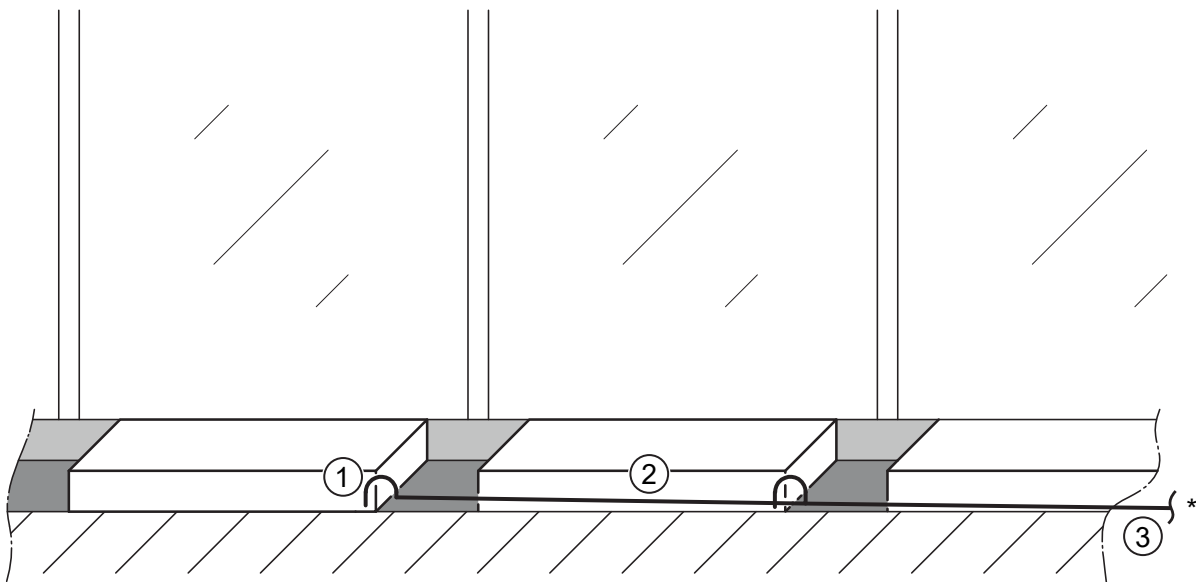
Operating voltage [V]	120	230
Mains frequency [Hz]	60	50/60
Electrical supply [A / W]	0.29 / 15	0.17 / 16
Max. delivery volume 0 m / ft per hour [l / US gal]	12 / 3.2	12 / 3.2
Max. delivery height [m / ft]	10 / 33	10 / 33
Noise level at a distance of 1 m / 3.3 ft	25	21
Operating mode	S1: Continuous operation	S1: Continuous operation
Protection class	II	II
Maximum output [kW / Btu/h]	9 / 30000	9 / 30000
Max. water temperature [°C / °F]	40 / 104	40 / 104
Inner diameter of drain hose [mm / " ]	6 / 1/4	6 / 1/4
Suction height [m / ft]	1 / 3.3	1 / 3.3

Tab. 4: Technical data for condensate pump

- ▶ Potential-free alarm contacts, 3 A, normally closing, sound power for inductive loads 5 A at 230 V
- ▶ Hall effect semiconductor-based level sensors, excellent safety
- ▶ Integrated thermal cut-out
- ▶ Fully sealed
- ▶ Fuse 1 A (by others)

\* Maximum recommended operating delivery height

6.3.2.4 On-site condensate drainage with a condensate pump



Condensate drainage on site with condensate drainage

\* min. 2% gradient

- ① Katherm HK condensate connection – collecting pipe
- ② Condensate collecting pipe
- ③ **Important:** Connect the condensate collecting pipe to the waste water network in accordance with all applicable technical standards and regulations; note in particular any necessary vents, traps etc.

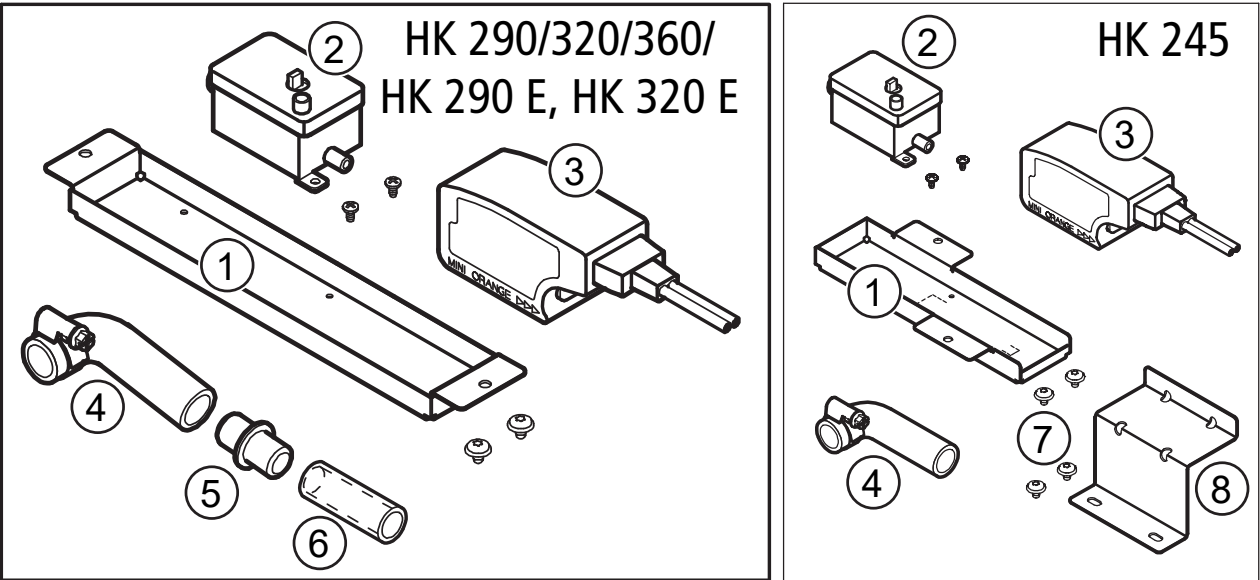


Fig. 6: Mounting kits

1	Mounting panel for the float module	2	Float module
3	Pump unit	4	Condensate elbow
5	Coupling section	6	Condensate hose
7	Metal screws	8	Condensate pump mounting plate

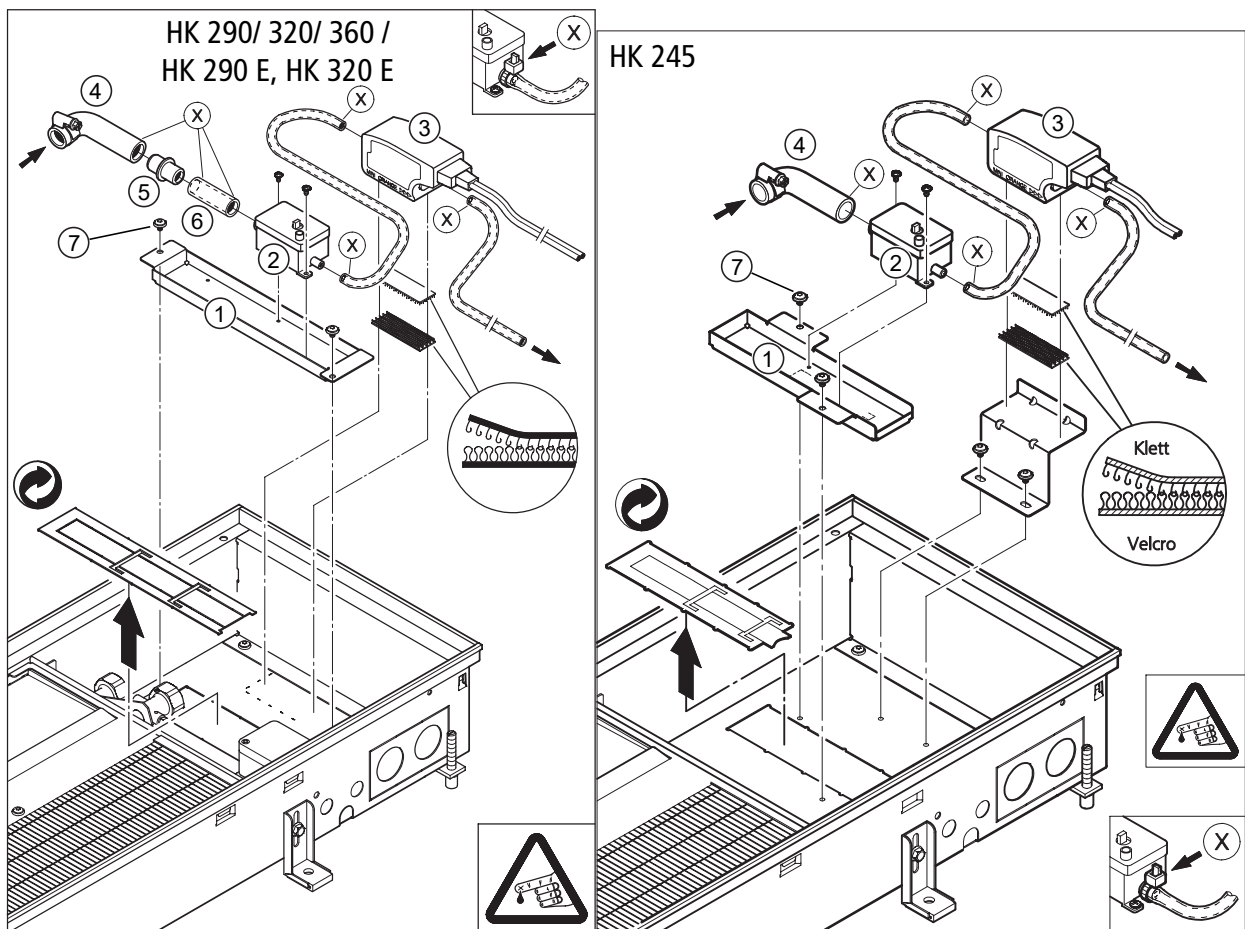


Fig. 7: Installation of the condensate pump mounting kit

- |   |                                     |
|---|-------------------------------------|
| x | Fixing with the cable ties provided |
|---|-------------------------------------|
- ▶ Remove the punched base panel on the right connection site and insert the mounting panel for the float module ① at this point and fix it in place with the metal screws ⑦ supplied.
  - ▶ Use the double-sided Velcro strips provided to fix the pump unit ③ to the floor trench.
  - ▶ Insert the float module ② into the mounting panel and fix it to the mounting panel with the screws provided.
  - ▶ Fix a length of condensate hose ⑥ to the float module with the cable tie provided.
  - ▶ Connect the condensate elbow ④ and the length of condensate hose ⑥ to the coupling section ⑤ using the cable ties provided.
  - ▶ Fix the condensate elbow ④ to the drain connector using the hose clamp.

# Katherm HK

## Assembly, installation and operating instructions

Important! Note the increased trench height when the mounting kit is fitted! First fit the condensate pump mounting kit before fitting the valves for the water connection (with 4-pipe systems).

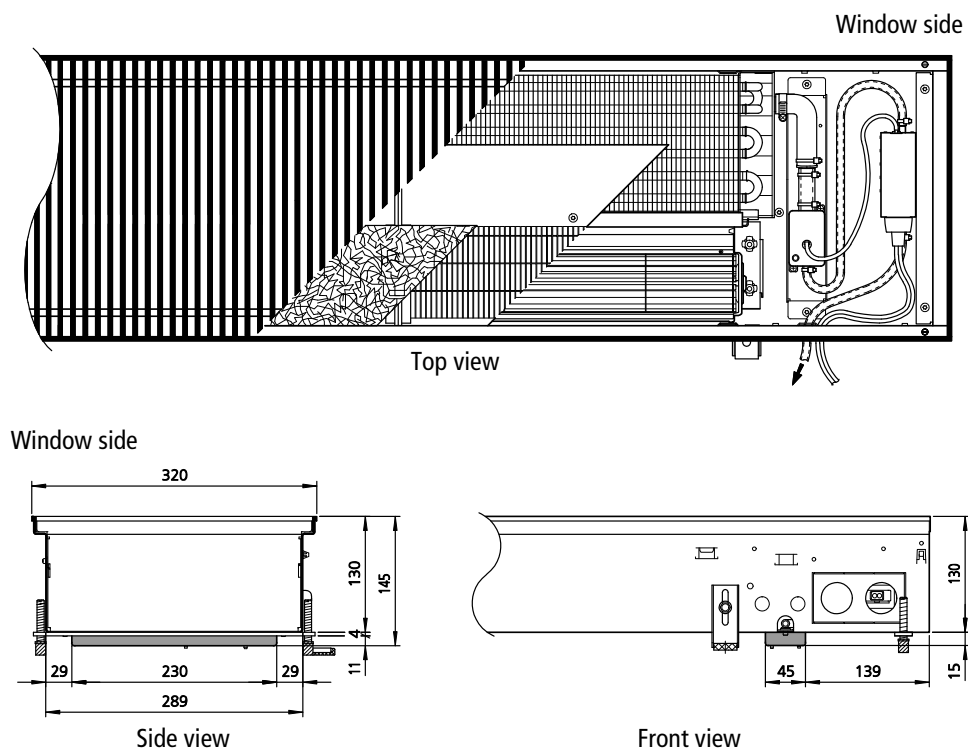
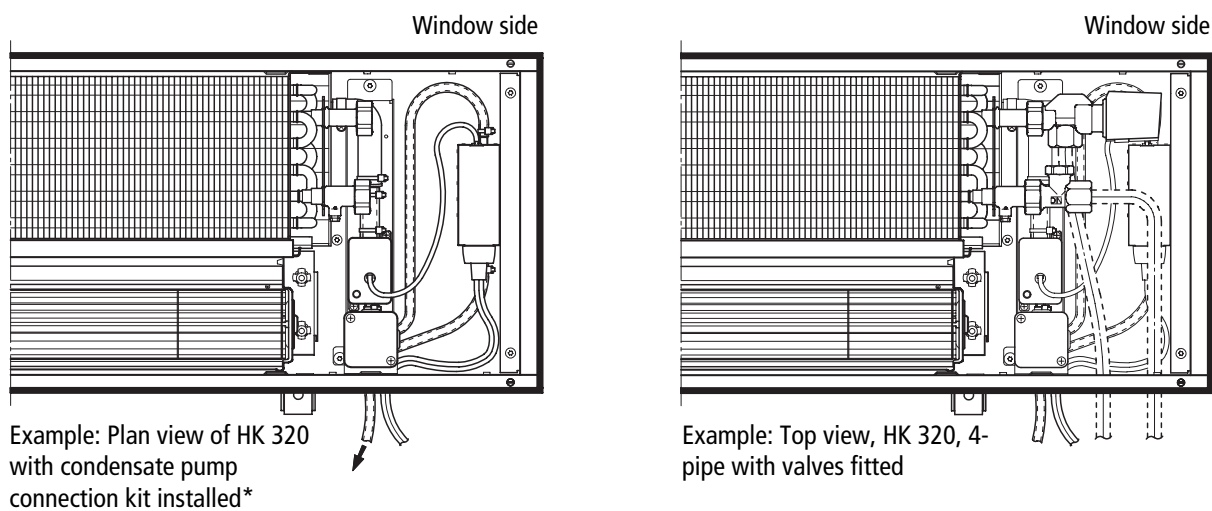


Fig. 8: Example: HK 320, HK 320 E, H = 130 mm, 2-pipe, increased trench height with condensate pump\*



\*With Katherm HK 290, HK 290 E, H = 160 mm or HK 360, H = 210 mm, the installation position of the condensate tray and thus also the corresponding dimensions are identical to those of the Katherm HK 320, H = 130 mm. Only the dimensions of the trench height differ.

## 7 Electrical connection



### IMPORTANT NOTE!

#### Condensation formation in the cooling unit!

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

### 7.1 Maximum electrical rating values

#### Katherm HK, 24 V electromechanical version (\*24)

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	24	-	6	0.25	200	IP00	III
1200	1 (3600)	24	-	11	0.46	200	IP00	III
1700	1 (10800)	24	-	18	0.75	200	IP00	III
2000	2 (6000. 6000)	24	-	22	0.92	100	IP00	III
2500	2 (10800. 6000)	24	-	29	1.21	100	IP00	III
3000	2 (10800. 10800)	24	-	35	1.46	100	IP00	III

Tab. 5: Maximum electrical connection values Katherm HK 320/130, 245/160

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	24	-	9	0.38	100	IP00	III
1200	1 (360)	24	-	14	0.60	100	IP00	III
1700	2 (630. 380)	24	-	24	1.00	50	IP00	III
2000	2 (630. 680)	24	-	29	1.20	50	IP00	III
2500	3 (630. 680. 380)	24	-	38	1.60	33	IP00	III
3000	3 (730. 730. 730)	24	-	44	1.90	33	IP00	III

Tab. 6: Maximum electrical connection values Katherm HK 290/160

# Katherm HK

Assembly, installation and operating instructions

## Katherm HK, 230 V electromechanical version (\*00)

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	230	50	7	0.08	200	IP00	I
1200	1 (6000)	230	50	12	0.12	200	IP00	I
1700	1 (10800)	230	50	19	0.17	200	IP00	I
2000	2 (6000. 6000)	230	50	23	0.24	100	IP00	I
2500	2 (10800. 6000)	2 (10800. 6000)	50	30	0.29	100	IP00	I
3000	2 (10800. 10800)	2 (10800. 10800)	50	36	0.34	100	IP00	I

Tab. 7: Maximum electrical connection values Katherm HK 320/130, 245/160

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	230	50	530	2.30	200	IP00	I
1200	1 (6000)	230	50	1030	4.60	200	IP00	I
1700	1 (10800)	230	50	1030	4.60	200	IP00	I
2000	2 (6000. 6000)	230	50	1030	4.60	100	IP00	I
2500	2 (10800. 6000)	230	50	1540	6.90	100	IP00	I
3000	2 (10800. 10800)	230	50	1540	6.90	100	IP00	I

Tab. 8: Maximum electrical rating values HK 320 E /130

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	13	0.12	100	IP00	I
1200	1 (630)	230	50	19	0.16	100	IP00	I
1700	2 (630. 380)	230	50	29	0.22	50	IP00	I
2000	2 (630. 680)	230	50	35	0.26	50	IP00	I
2500	3 (630. 680. 380)	230	50	47	0.34	33	IP00	I
3000	3 (730. 730. 730)	230	50	53	0.38	33	IP00	I

Tab. 9: Maximum electrical connection values Katherm HK 290/160

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	530	2.4	100	IP00	I
1200	1 (630)	230	50	1040	4.6	100	IP00	I
1700	2 (630. 380)	230	50	1540	6.9	50	IP00	I
2000	2 (630. 680)	230	50	1540	6.9	50	IP00	I
2500	3 (630. 680. 380)	230	50	1560	6.9	33	IP00	I
3000	3 (730. 730. 730)	230	50	1560	6.9	33	IP00	I

Tab. 10: Maximum electrical rating values of Katherm HK /290

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	12	0.11	100	IP00	I
1200	1 (630)	230	50	22	0.21	100	IP00	I
1350	1 (780)	230	50	27	0.26	100	IP00	I
1850	2 (780. 730)	230	50	39	0.37	50	IP00	I
2250	2 (780. 780)	230	50	54	0.52	50	IP00	I

Tab. 11: Maximum electrical connection values Katherm HK 360/210



### Katherm HK, KaControl version (\*C1)

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	230	50	7	0.08	20	IP00	I
1200	1 (6000)	230	50	12	0.12	20	IP00	I
1700	1 (10800)	230	50	19	0.17	20	IP00	I
2000	2 (6000. 6000)	230	50	23	0.24	20	IP00	I
2500	2 (10800. 6000)	230	50	30	0.29	20	IP00	I
3000	2 (10800. 10800)	230	50	36	0.34	20	IP00	I

Tab. 12: Maximum electrical connection values Katherm HK 320/130, 245/160

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	230	50	530	2.30	20	IP00	I
1200	1 (6000)	230	50	1030	4.60	20	IP00	I
1700	1 (10800)	230	50	1030	4.60	20	IP00	I
2000	2 (6000. 6000)	230	50	1030	4.60	20	IP00	I
2500	2 (10800. 6000)	230	50	1540	6.90	20	IP00	I
3000	2 (10800. 10800)	230	50	1540	6.90	20	IP00	I

Tab. 13: Maximum electrical connection values Katherm HK 320 E/130

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	13	0.12	20	IP00	I
1200	1 (630)	230	50	19	0.16	20	IP00	I
1700	2 (630. 380)	230	50	29	0.22	20	IP00	I
2000	2 (630. 680)	230	50	35	0.26	20	IP00	I
2500	3 (630. 680. 380)	230	50	47	0.34	20	IP00	I
3000	3 (730. 730. 730)	230	50	53	0.38	20	IP00	I

Tab. 14: Maximum electrical connection values Katherm HK 290/160

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	530	2.4	20	IP00	I
1200	1 (630)	230	50	1040	4.6	20	IP00	I
1700	2 (630. 380)	230	50	1540	6.9	20	IP00	I
2000	2 (630. 680)	230	50	1540	6.9	20	IP00	I
2500	3 (630. 680. 380)	230	50	1560	6.9	20	IP00	I
3000	3 (730. 730. 730)	230	50	1560	6.9	20	IP00	I

Tab. 15: Maximum electrical connection values Katherm HK 290 E/160

Trench length	Number of fans	Nominal voltage [V DC]	Mains frequency [Hz]	Nominal power [W]	Nominal current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	12	0.11	20	IP00	I
1200	1 (630)	230	50	22	0.21	20	IP00	I
1350	1 (780)	230	50	27	0.26	20	IP00	I
1850	2 (780. 730)	230	50	39	0.37	20	IP00	I
2250	2 (780. 780)	230	50	54	0.52	20	IP00	I

Tab. 16: Maximum electrical connection values Katherm HK 360/210

## 7.2 Electromechanical connection, 24 V (\*24)

### Circuit description

- ▶ All trench heaters need a 24 V DC power supply.
- ▶ Factory-fitted actuators are wired to the terminals. The appropriate terminals are available for valve actuators.
- ▶ The fan speed of the EC fans used can be continuously variably controlled by a 0-10 V DC signal. The internal motor electronics detects any possible motor malfunction and automatically switches off the fan.

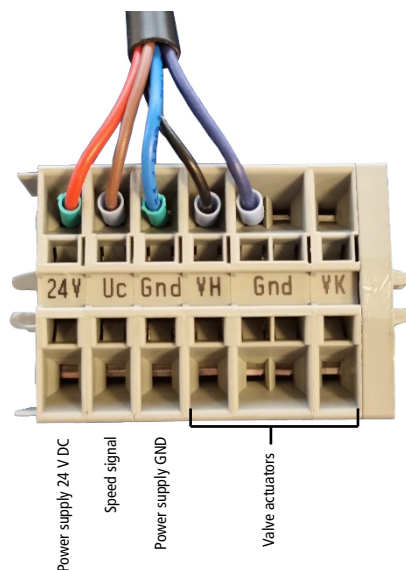


Fig. 9: Electromechanical connection (\*24), Katherm 320/130, 245/160, 290/160

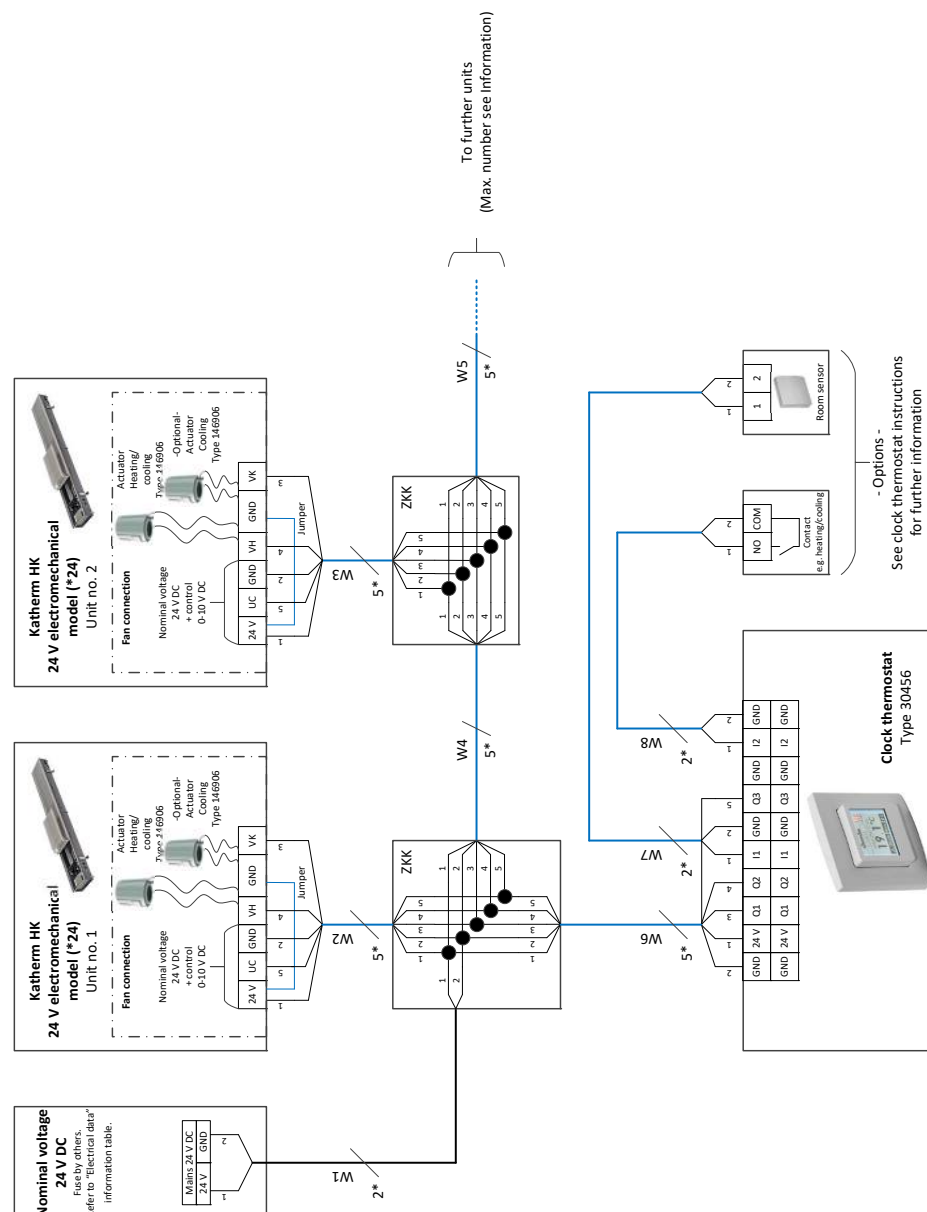
### Control via 0 – 10 V DC

control signal	Function
0 V	Off
1.5 V – 10 V	0 – 100%

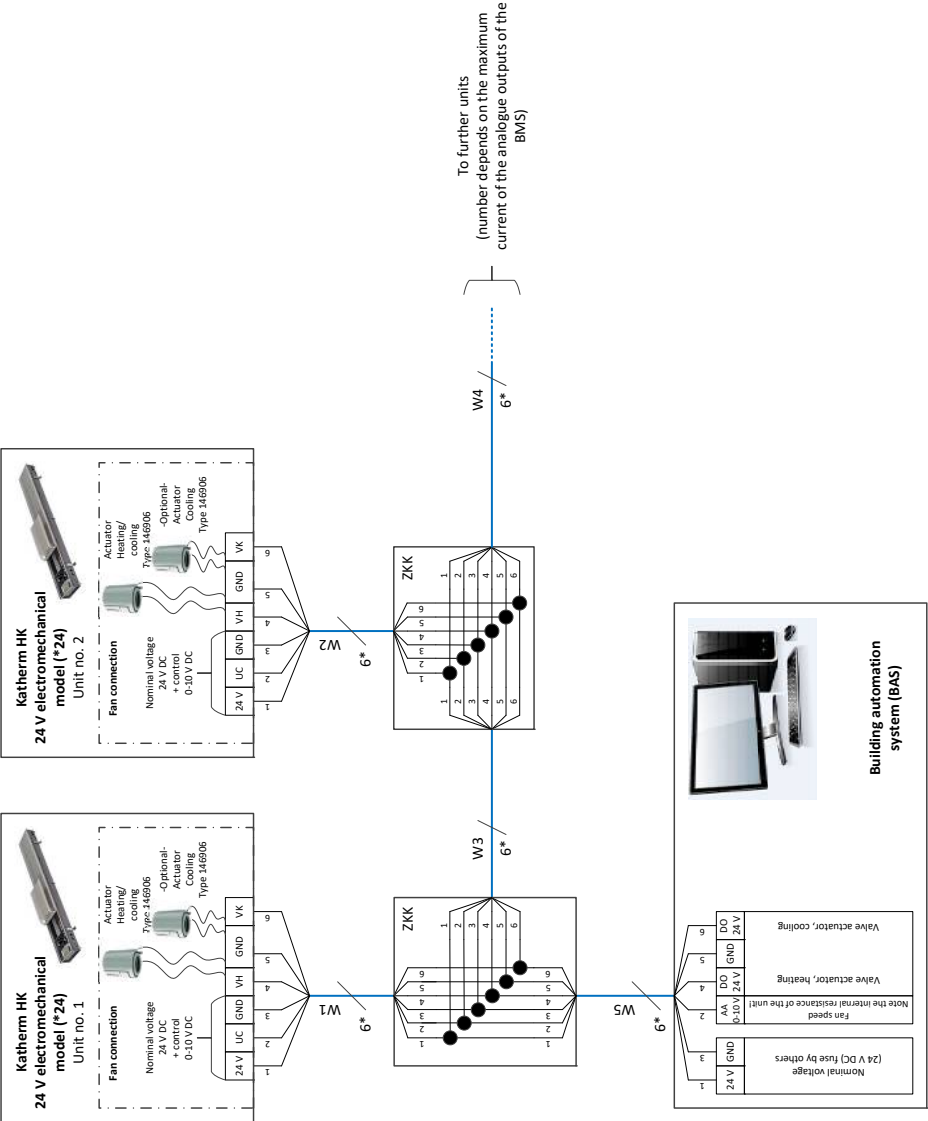
#### Note these points in the following wiring diagrams with electromechanical control:

- ▶ Comply with the details on cable types and cabling with due consideration for VDE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including protective earth, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- ▶ With \*: J-Y(ST)Y 0.8mm. Lay separately from power lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm<sup>2</sup>.
- ▶ The Electrical data for PowerKon nano, 230 V need to be respected when rating the in situ mains power supply and fusing.

Katherm HK , electromechanical 24 V, 2- or 4-pipe , valve actuator(s) 24 V AC/DC Open/Closed, Control by clock thermostat type 30456



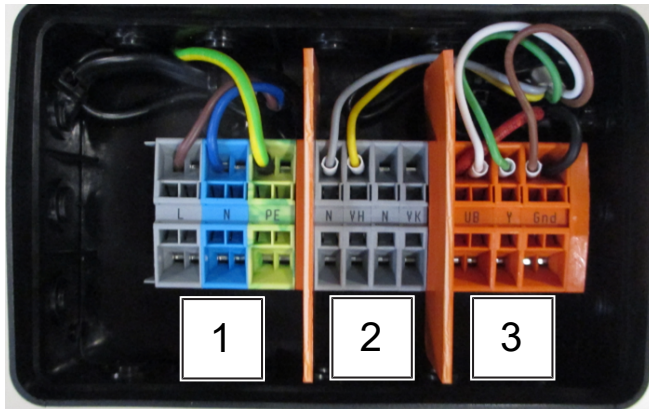
Katherm HK , electromechanical 24 V, 2- or 4-pipe , valve actuator(s) 24 V AC/DC Open/Closed, BMS control



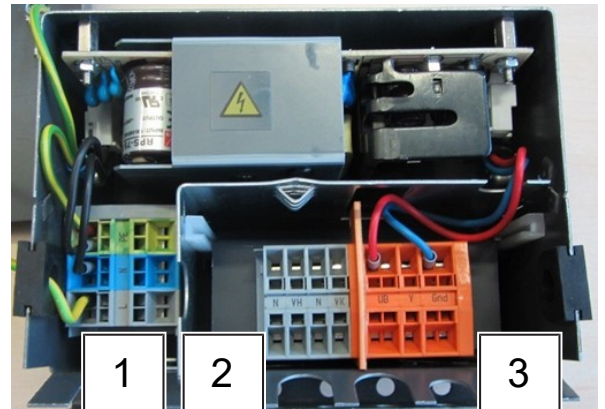
## 7.3 Electromechanical connection, 230 V (\*00)

### 230 V circuit description (\*00)

- ▶ All trench heaters need a 230 V / 50 Hz power supply.
- ▶ Factory-fitted actuators are wired to the terminals. The appropriate terminals are available for valve actuators.
- ▶ The fan speed of the EC fans used can be continuously variably controlled by a 0-10 V DC signal. The internal motor electronics detects any possible motor malfunction and automatically switches off the fan.



Junction box for HK 320/130, 245/160, 360/210



Junction box for HK 290/160

Fig. 10: Electromechanical junction box (\*00)

1	Power supply	2	Valve actuators
3	Speed signal		

### Control via 0 – 10 V DC

control signal	Function
0 V	Off
1.5 V – 10 V	0 – 100%

# Katherm HK

Assembly, installation and operating instructions

## Katherm HK E circuit description

- ▶ All trench heaters need a 230 V / 50 Hz power supply.
- ▶ Factory-fitted actuators are wired to the terminals.
- ▶ The fan speed/power of the EC fans and electric coil used can be continuously variably controlled by a 0-10 V DC signal.
- ▶ Switch-over between operating modes is via an external potential-free contact.
- ▶ Internal safety shut-down: In the event of improper use, the heat output is reduced or switched off.
- ▶ Faults (motor malfunction, condensate alarm, electric heater fault etc.) are issued by a potential-free collective alarm contact (max. 30 V / 1 A).

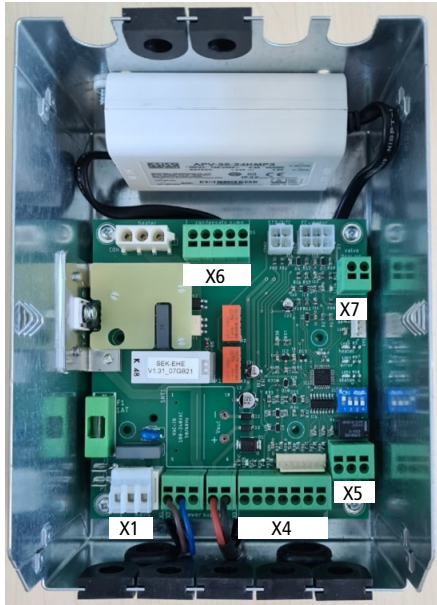


Fig. 11: Electromechanical junction box (\*00), Katherm HK-E

X1: Mains connection (PE, L, N)

X4: Control signals:

- ▶ DI1: Digital input 24 V, operating mode switch-over
- ▶ AI2: Analogue input 0-10 V, fan speed
- ▶ MI3: Heating multifunctional input
- ▶ MI4: Cooling multifunctional input

X5: Alarm output (1x potential-free changeover contact)

X6: Condensate pump connection (1AT fuse)

X7: Valve actuator connection (24 V DC Open/Closed)

## DIP switch settings

DIP 1	DIP 2	Factory setting	DIP switch function
0	0	OFF	00/KaControl AI2: Fan speed; MI3: Heating (24 V); MI4: Cooling (24 V)
1	0	OFF	Room thermostat 30456 AI2: Fan speed; MI3: Heating (GND); MI4: Cooling (GND)
0	1	OFF	Room thermostat 146928 AI2: --; MI3: Heating (0-10 V); MI4: Cooling (0-10 V)
DIP 3		OFF	Signal switch-over (DI1) off: 0 V = LPHW (winter), 24 V = CHW (summer) on: 0 V = CHW (summer), 24 V = LPHW (winter)
DIP 4		OFF	Max. heat output off: Uc 1.5 - 6 V = 40-100% heat output on: Uc 1.5 - 10 V = 40-100% heat output

Tab. 17: DIP switch settings

## LED status messages

LED	Function	Colour	Code	Description
1	Electric heater	Yellow	Duration	Electric heater 100%
			Flashing	Electric heater PWM signal
			Fast flashing	Electric heater locked after cooling mode
2	Fault message	Red	1x	EC motor fault
			2x	Condensate pump fault
			3x	DIP1 + DIP2 simultaneously to ON
			4x	Heating + cooling simultaneously activated
			5x	Winter mode + cooling input activated
			6x	NTC error (overtemperature)
			7x	DIP switch settings faulty
3	Control status	Green	Duration	Standby
			Flashing	Control active
			Fast flashing	Fan run-on active

## Control via 0 – 10 V DC

control signal	Function
0 V	Off
1.5 V – 10 V	Fan 0 – 100%
1.5 V – 6 V	Electric heater 40 – 100%

# Katherm HK

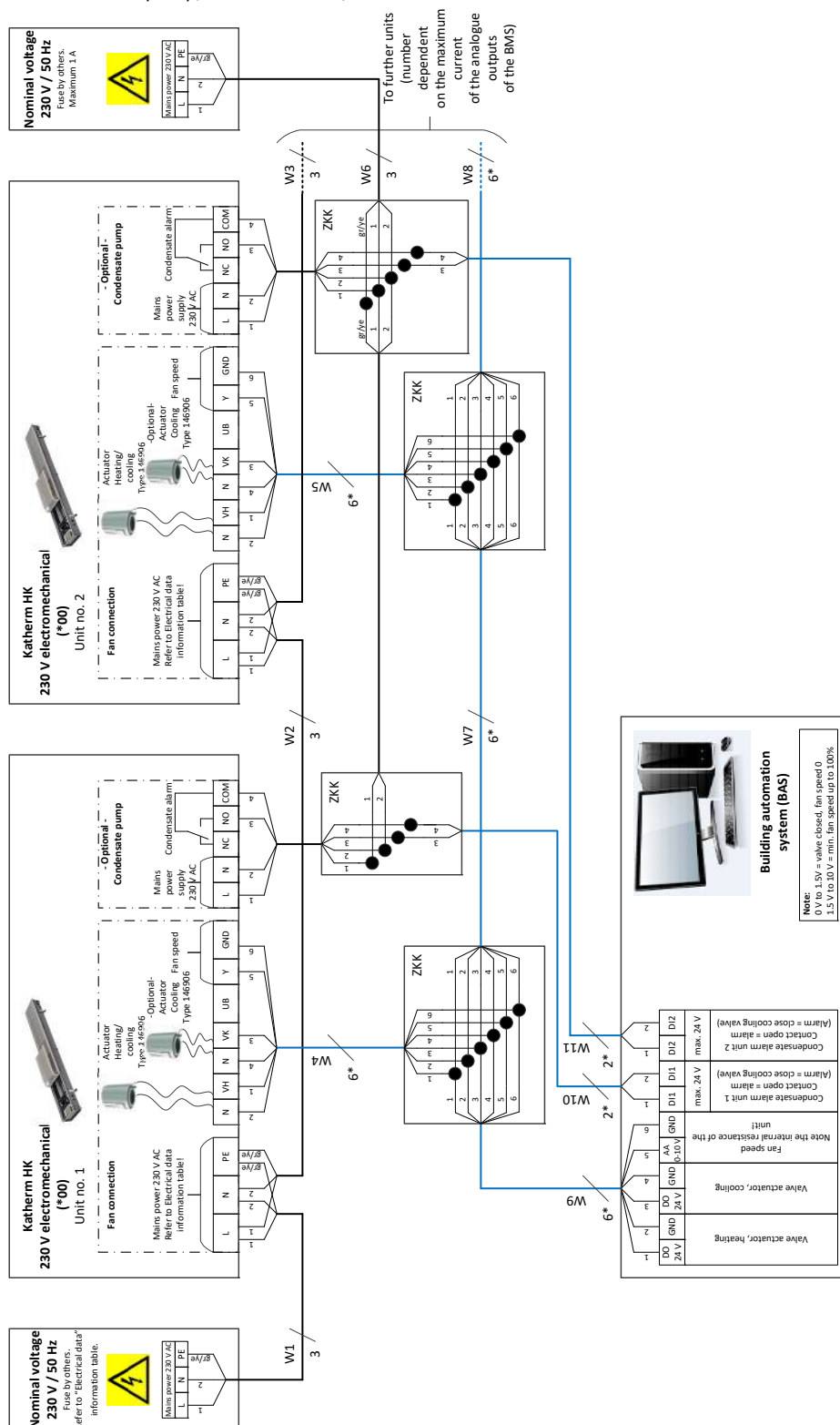
Assembly, installation and operating instructions

**Observe these points in the following wiring diagrams for the Katherm HK and HK E with electromechanical control 230 V (\*00):**

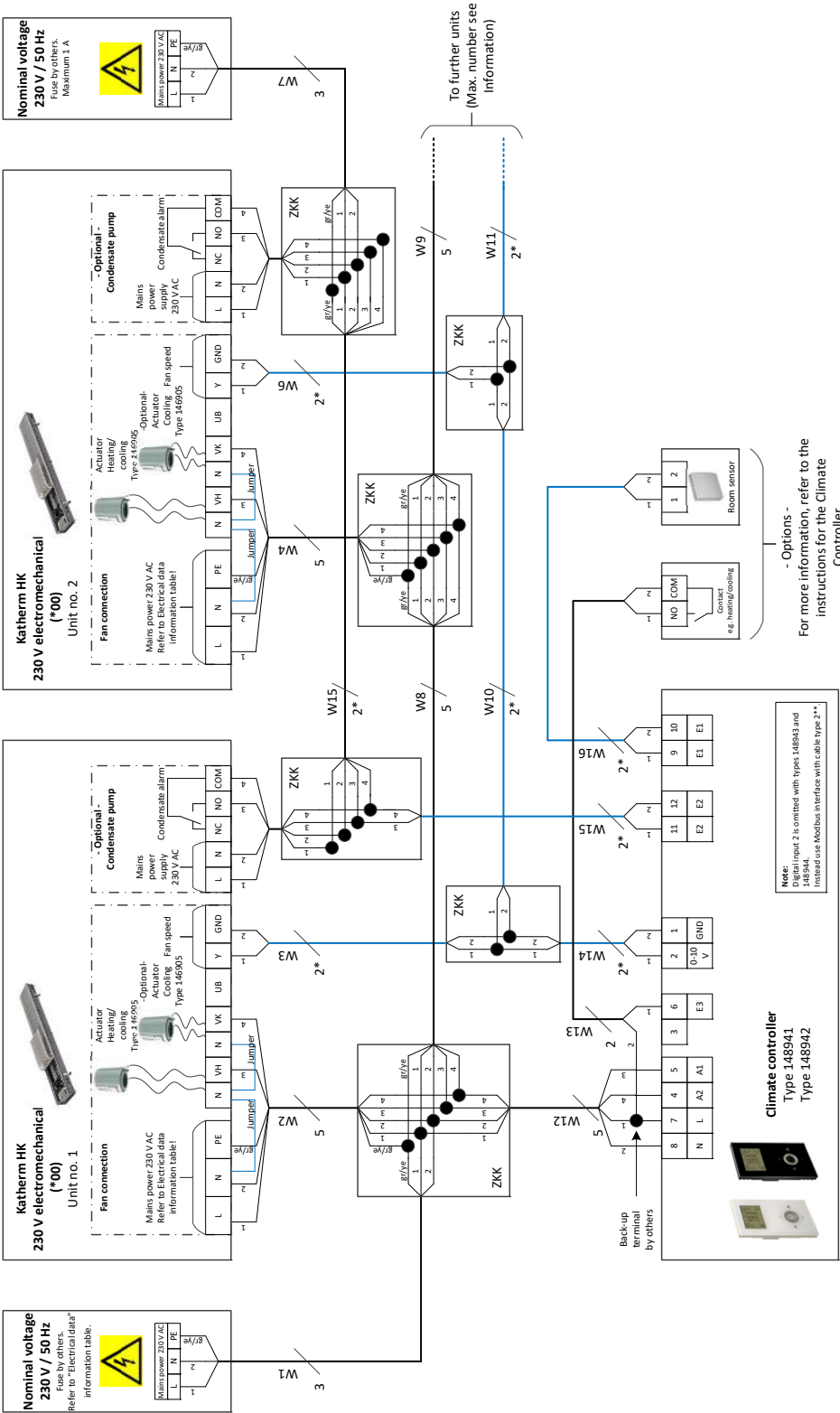
- ▶ Comply with the details on cable types and cabling with due consideration of VDE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- ▶ With \*: J-Y(ST)Y 0.8mm. Lay separately from high voltage lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ The terminals on the unit are suitable for a maximum wire cross-section of 2.5 mm<sup>2</sup>.
- ▶ We recommend type F when using RCCBs. Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when configuring the rated fault current.
- ▶ Note the electrical data when rating the in-situ mains power supply and fuse (C16A, max. 10 units, with the exception of HK E) .



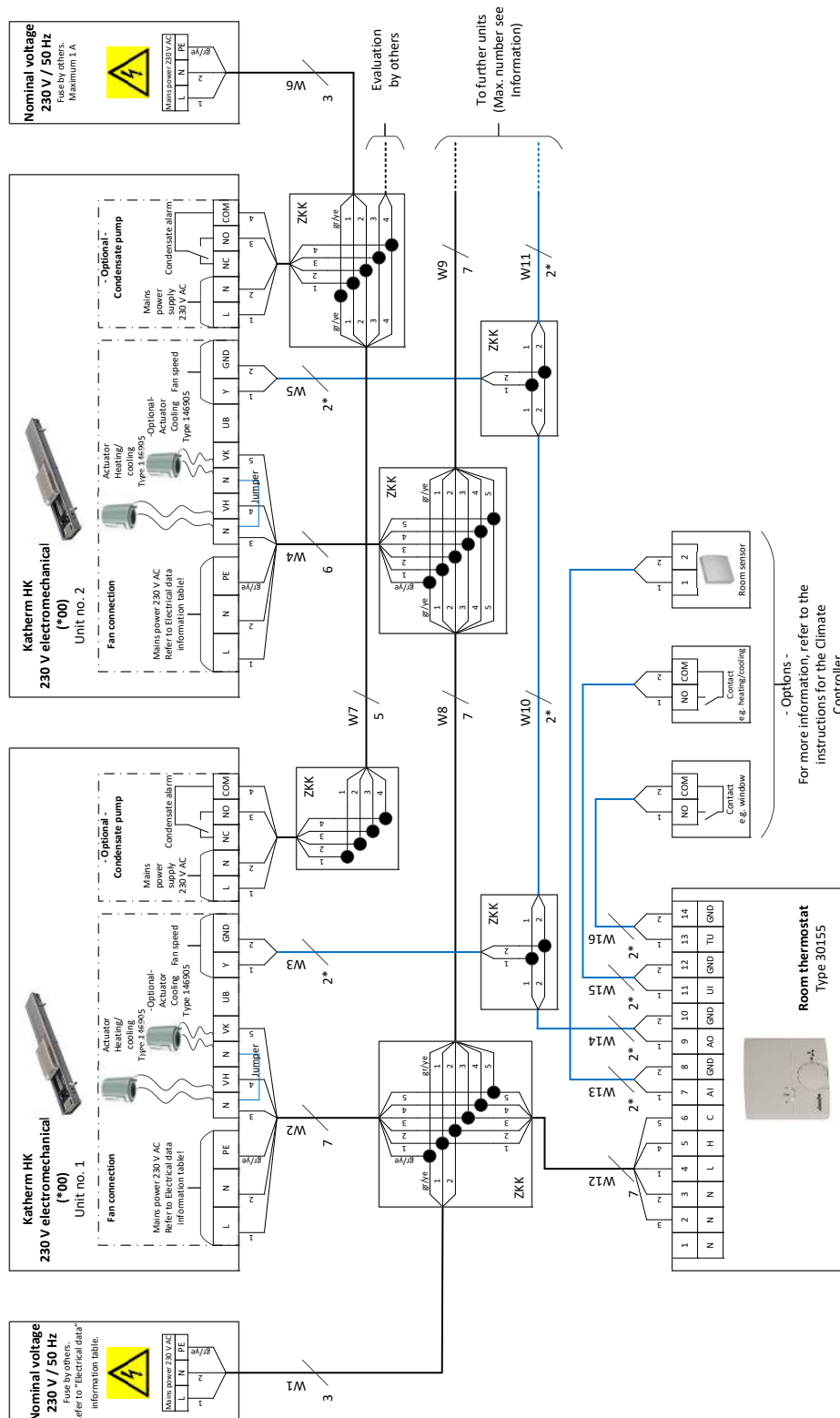
Katherm HK , electromechanical 230 V, 2- or 4-pipe, valve actuator(s) 24 V AC/DC Open/Closed, optional condensation condensate pump, control via DDC/BMS



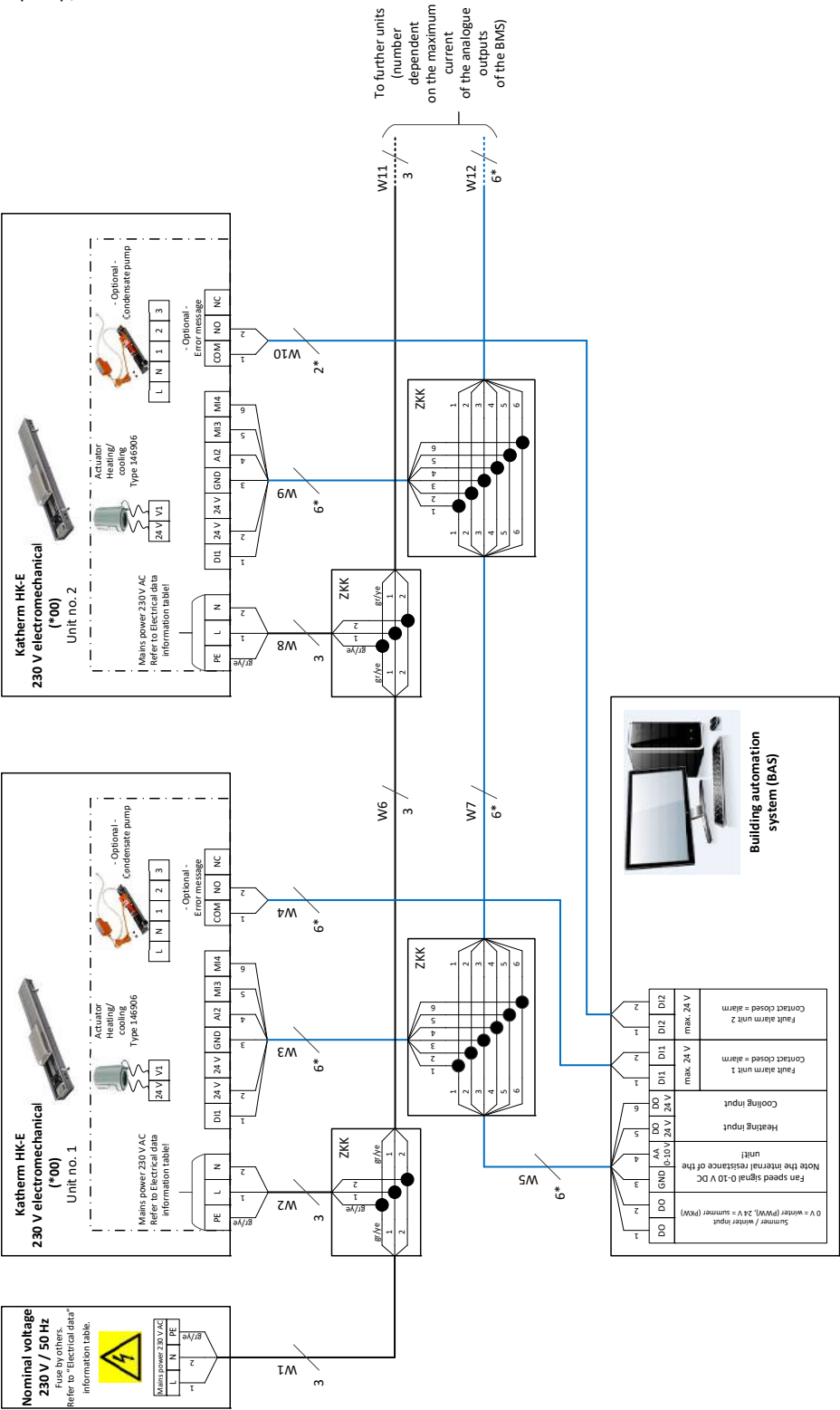
Katherm HK , electromechanical 230 V, 2- or 4-pipe, valve actuator(s) 230 V AC Open/Closed, optional condensate pump, with Climate controller type 14894x



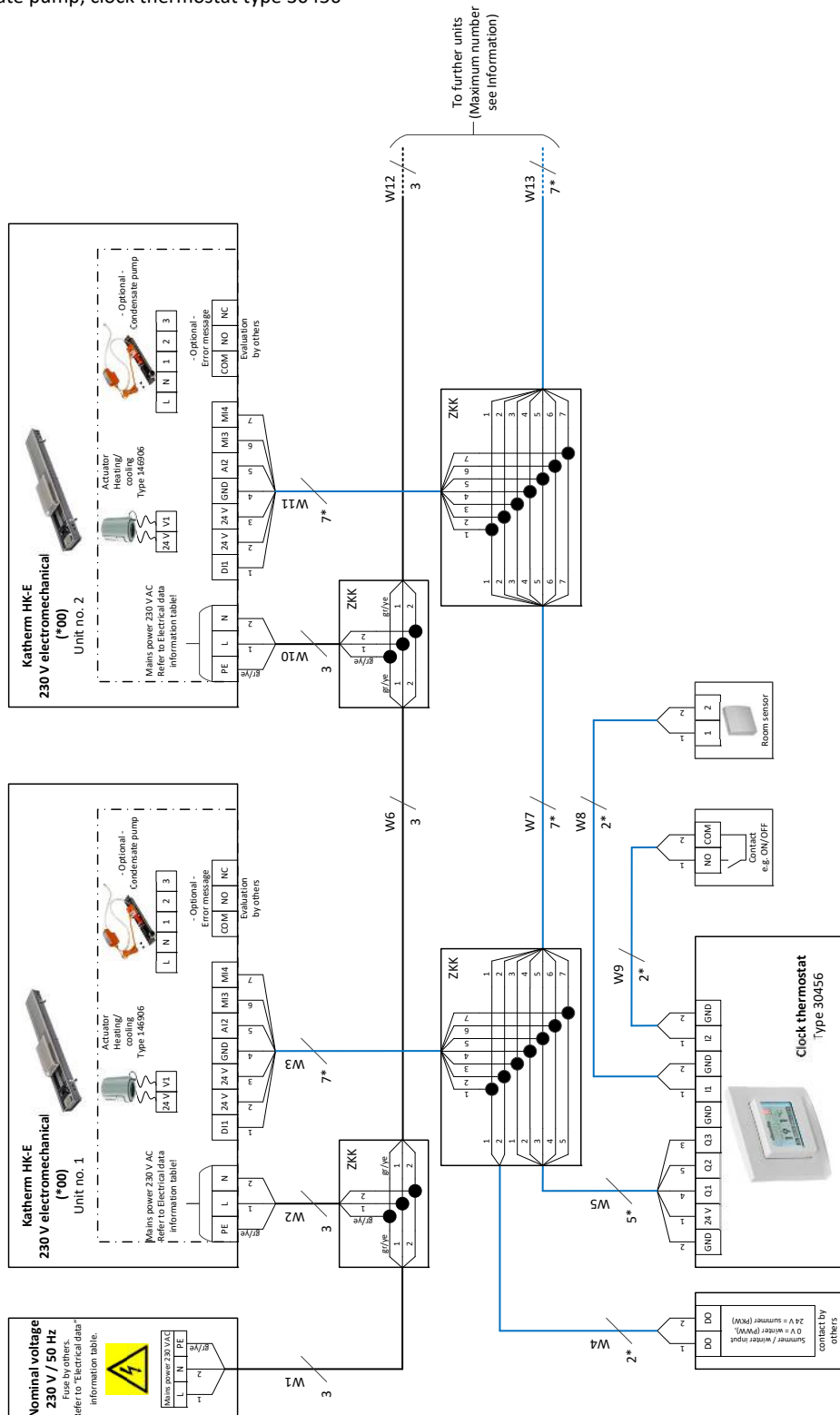
Katherm HK , electromechanical 230 V, 2- or 4-pipe valve actuator(s) 230 V AC Open/Closed, optional condensate pump, with room thermostat type 30155



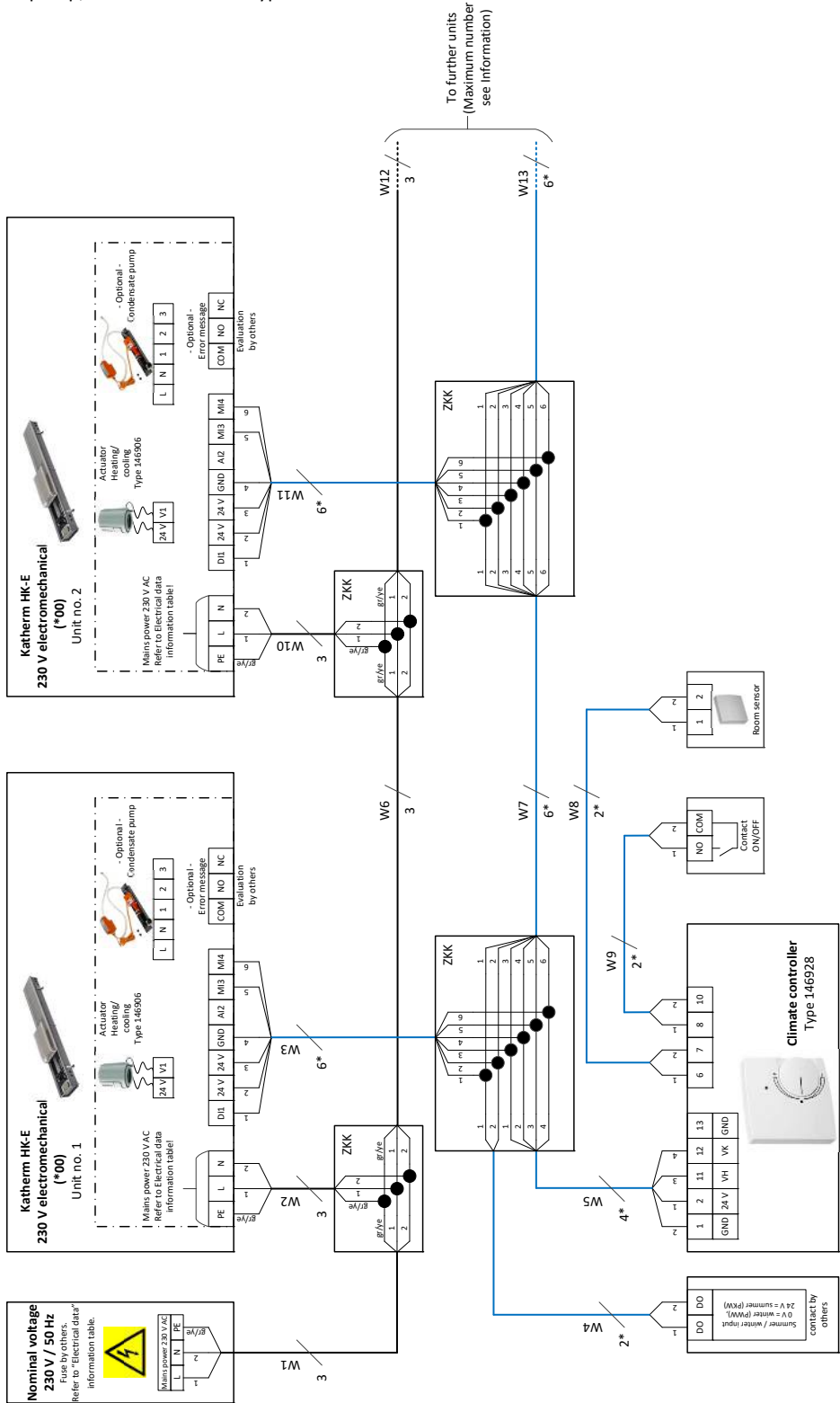
Katherm HK-E , electromechanical 230 V, 2-pipe, electric coil, valve actuator 24 V AC/DC Open/Closed, optional condensate pump, control via BMS



Katherm HK-E , electromechanical 230 V, 2-pipe, electric coil, valve actuator 24 V AC/DC Open/Closed, optional condensate pump, clock thermostat type 30456



Katherm HK-E , electromechanical 230 V, 2-pipe, electric coil, valve actuator 24 V AC/DC Open/Closed, optional condensate pump, Climate controller type 146928



## 7.4 KaControl (\*C1)

### 7.4.1 KaController installation

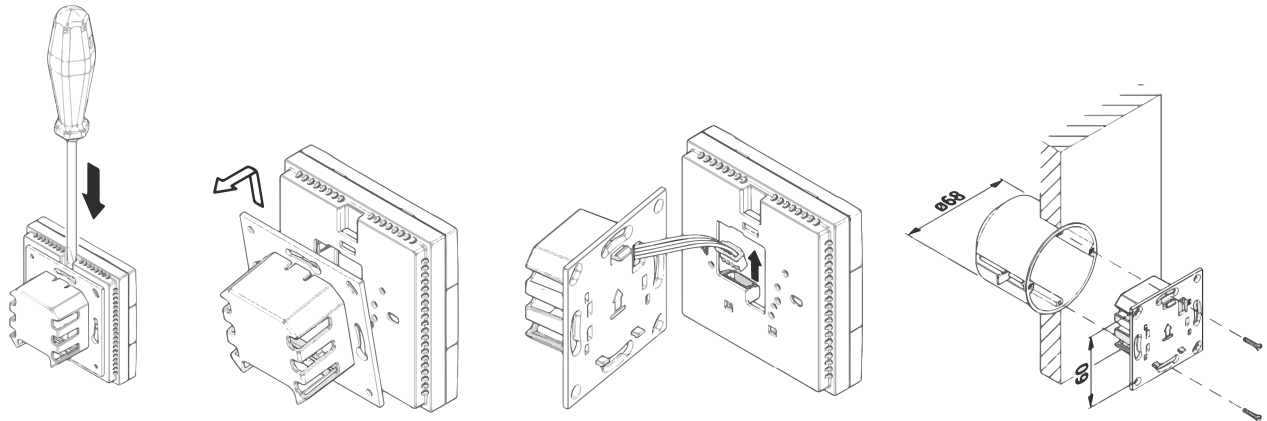


Fig. 12: Installation of flush-mounted back box

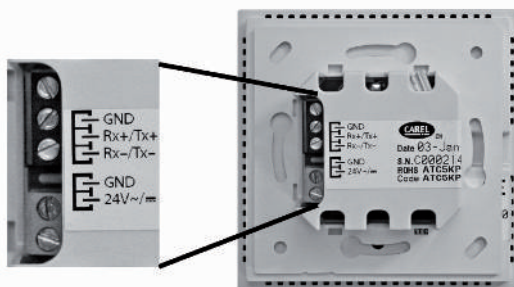


Fig. 13: KaController terminals

#### Electrical connection

- Connect the KaController to the nearest KaControl unit in line with the wiring diagram. The maximum bus length between the KaController and the KaControl master unit is 30 m.
- The respective KaControl automatically becomes the master unit in the control circuit when a KaController is connected to it.

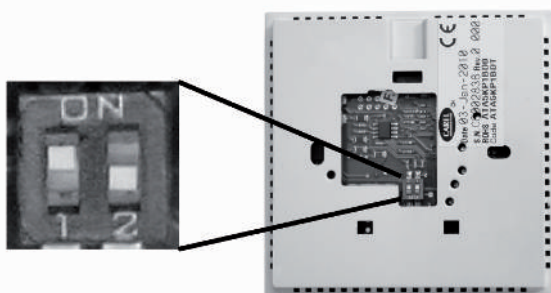


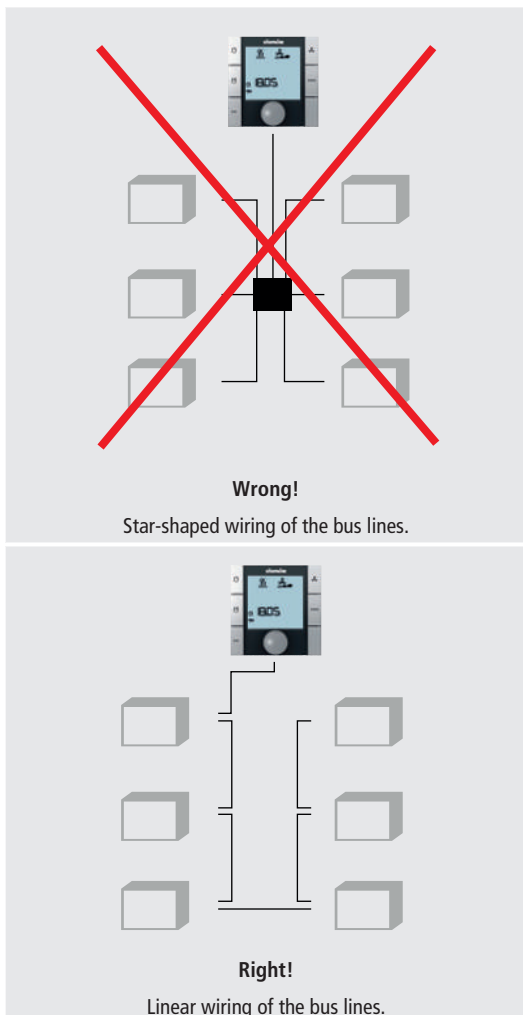
Fig. 14: DIP switch setting on KaController

#### DIP switch setting

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

- DIP switch 1: ON
- DIP switch 2: OFF

## 7.4.2 Connection (\*C1)



### General information

- ▶ 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.
- ▶ The KaController is connected via a bus connection to the respective control PCB on the unit.

Tab. 18: Wiring of bus lines



### IMPORTANT NOTE!

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



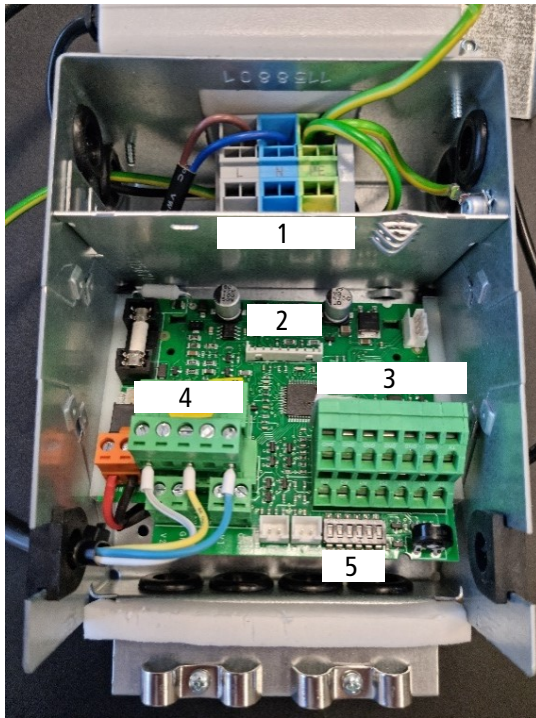
### IMPORTANT NOTE!

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

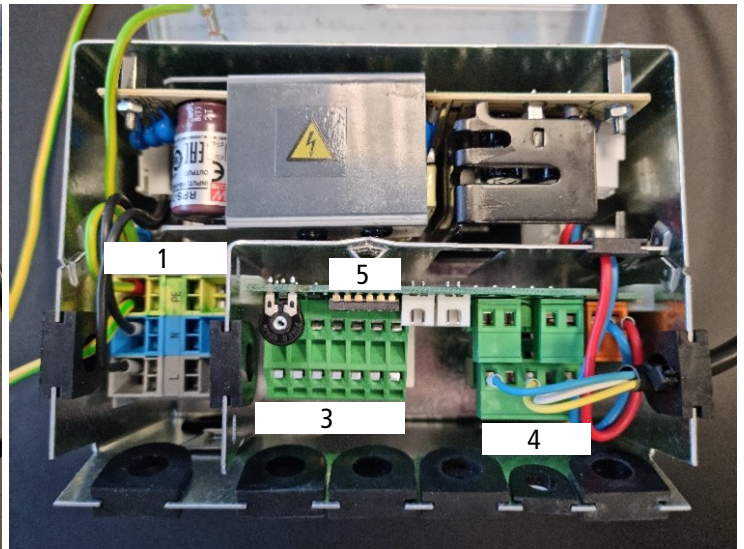


## Circuit description

- ▶ All trench heaters need a 230 V / 50 Hz power supply.
- ▶ Factory-fitted actuators are wired to the terminals.
- ▶ The speed of the EC fans used is controlled by a 0-10 V DC signal from the KaControl. The internal motor electronics detects any possible motor malfunction and automatically switches off the fan.
- ▶ The KaControl allows the fan and the valve actuator(s) either to be controlled by one and/or two (2- / 4-pipe) 0 – 10 V DC signals or by the KaController.



Junction box for HK 320/130, 245/160, 360/210



Junction box for HK 290/160

Fig. 15: KaControl junction box (\*C1)

1	Power supply	2	Slot for interface card
3	KaController connection and control contacts	4	Fan and valve actuators
5	DIP switch		

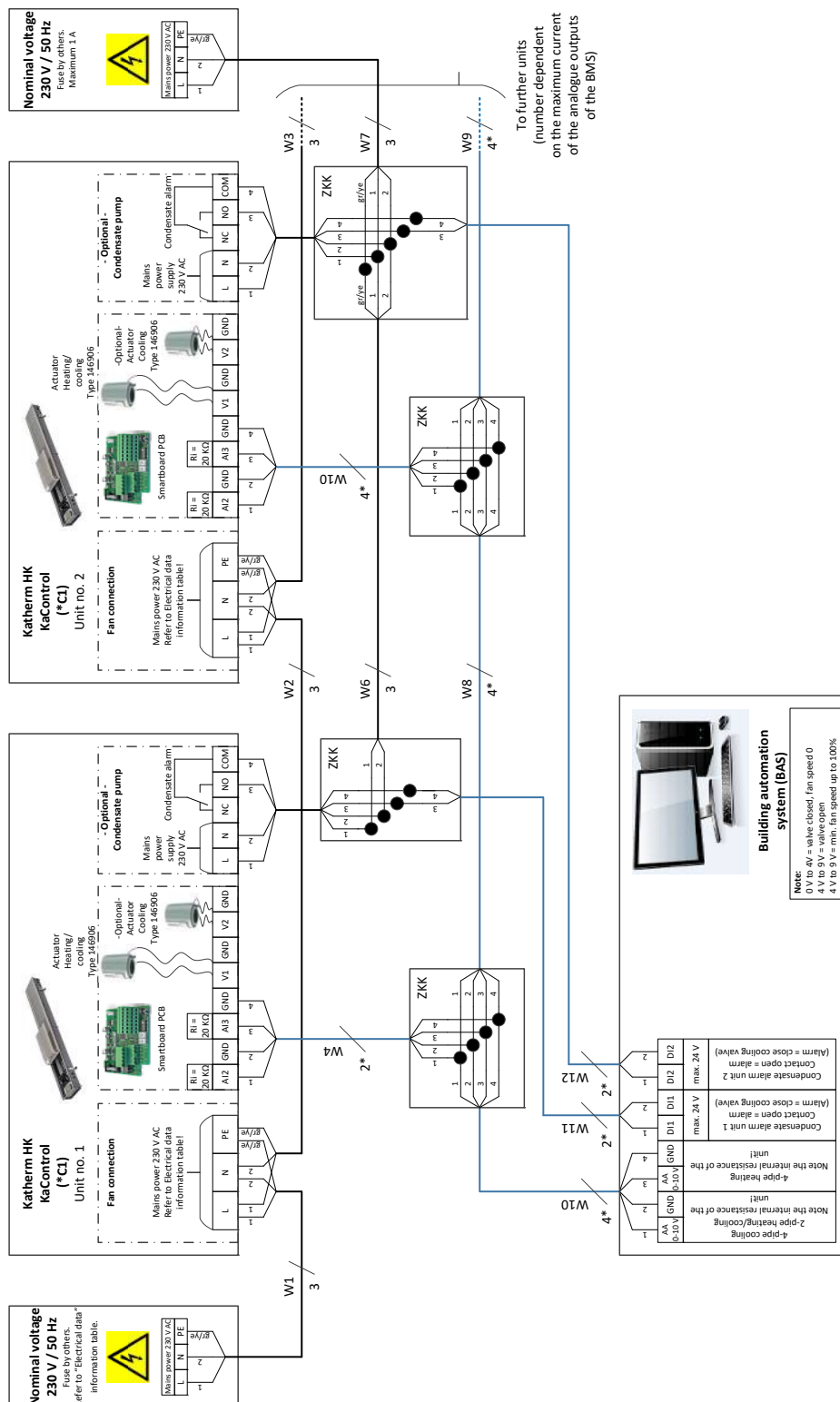
# Katherm HK

Assembly, installation and operating instructions

## Observe these points in the following installation diagrams for Katherm HK with KaControl:

- ▶ Comply with the details on cable types and cabling with due consideration of VDE 0100.
- ▶ Without \*: NYM-J. The requisite number of wires, including PE conductor, is stated on the cable. Cross-sections are not stated, as the cable length is involved in the calculation of the cross-section.
- ▶ With \*: J-Y(ST)Y 0.8mm. Lay separately from high voltage lines.
- ▶ With \*\*: Lay UNITRONIC BUS LD 0.22 mm<sup>2</sup> or similar separately from high voltage lines.
- ▶ If other types of cables are used, they must be at least equivalent.
- ▶ Length of the BUS line from the KaController to unit 1: max. 30 m.
- ▶ Maximum number of parallel units: 6 units. CANbus cards type 3260301 needed for each unit (see accessories) maximum 30 no.
- ▶ Length of bus line from unit 1 to the last unit max. 30 m. The cable length can be increased to 300 m using CANbus cards type 3260301 (see accessories).
- ▶ The terminals on the unit for the mains power supply are suitable for a maximum wire cross-section of 2.5 mm<sup>2</sup>.
- ▶ We recommend type F when using RCCBs. Refer to the provisions of DIN VDE 0100 Parts 400 and 500 when configuring the rated fault current.
- ▶ Note the electrical data when rating the in-situ mains power supply and fuse (C16A, max.10 units, with the exception of Katherm HK 320 E).

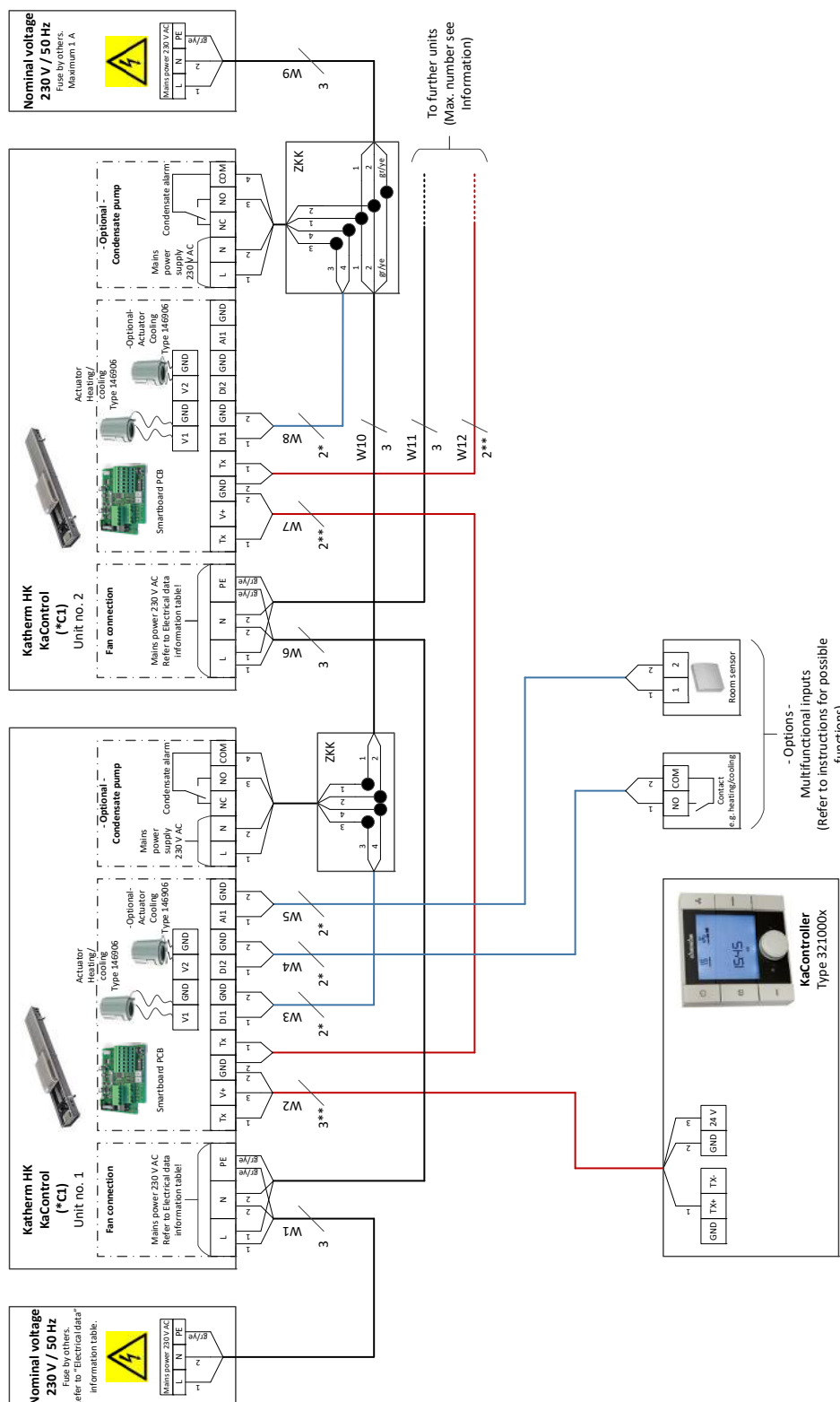
Katherm HK, KaControl C1, 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, optional condensate pump, 0-10 V DC control via BMS



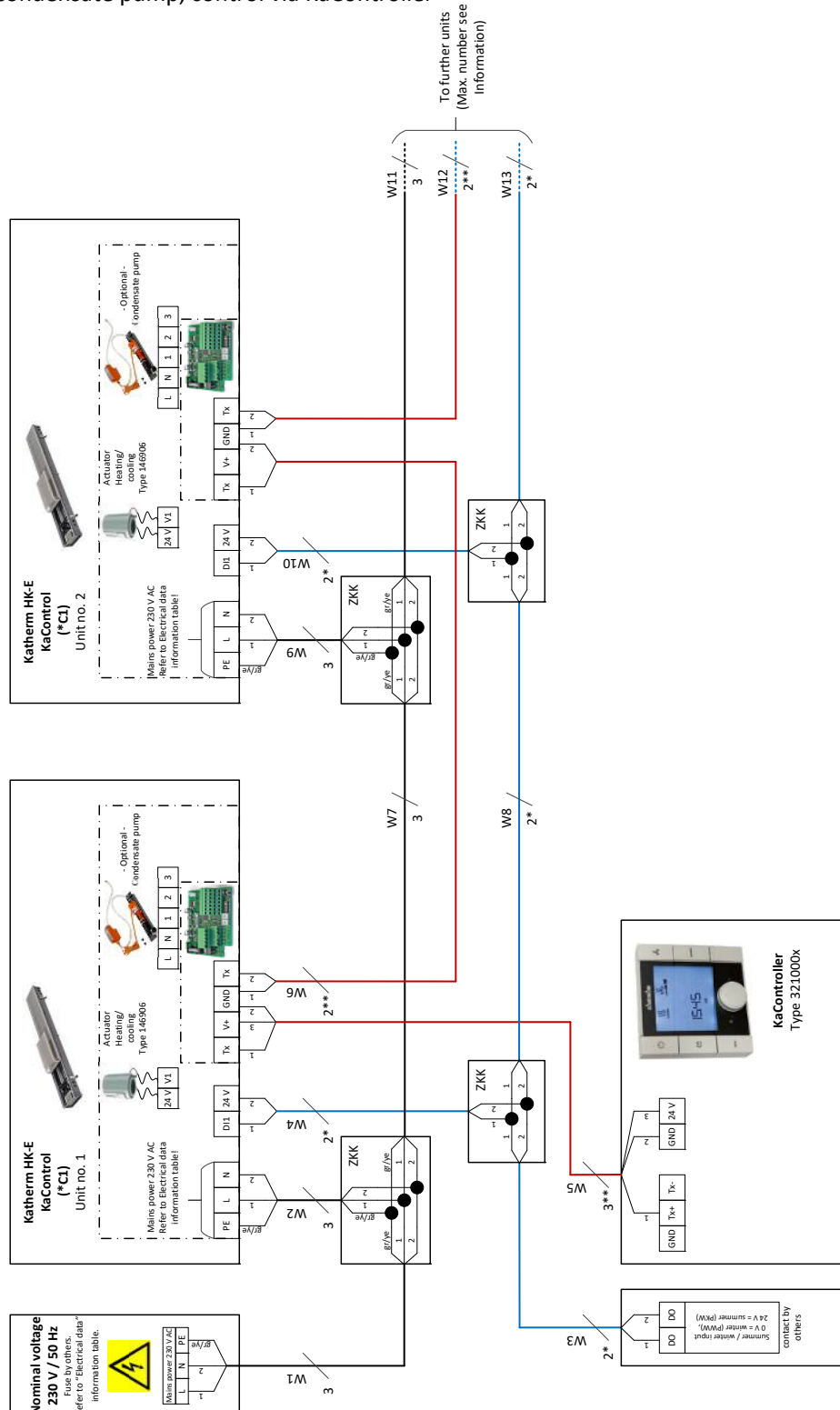
## Katherm HK

## Assembly, installation and operating instructions

Katherm HK, KaControl C1, 2- or 4-pipe, valve actuator(s) 24 V DC Open/Closed, optional condensate pump, with KaController type 321000x



Katherm HK-E with KaControl, 2-pipe, electric heating coil, valve actuator 24 V/DC Open/Closed, optional condensate pump, control via KaController



## 8 Pre-commissioning checks

When commissioning the device for the first time, ensure that all the necessary requirements are met so that the device can function safely and in accordance with its intended use.

### Structural tests

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

### Electrical tests

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

### Water-side checks

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

### Air-side checks

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

### Condensation water connection

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

Once all checks have been completed, initial commissioning can be carried out in line with Chapter 9 "Operation" [▶ 63].

## 9 Operation

### 9.1 Operation of electromechanical control



 <p>A white, rectangular room thermostat with a large rotary dial on the front. The dial has numbers from 15 to 30. Above the dial are three small switches labeled 'MAN', 'AUTO', and 'OFF'. The KAMPMANN logo is visible at the bottom left.</p>	<p><b>Room thermostat, type 30155</b></p> <ul style="list-style-type: none"> <li>▶ Electronic room thermostat with 3-stage automatic function for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design</li> <li>▶ simple operation using a large rotary dial for temperature setting with mechanical range limitation of the temperature setpoint, operating mode selector switch, Standby, Manual fan, Automatic fan, 3-stage switch for pre-selecting the fan speed when the operating mode selector switch is in the "Manual fan" position</li> <li>▶ option for external room sensor connection</li> <li>▶ control input for heating/cooling changeover with 2-pipe applications</li> <li>▶ digital input can be set to Comfort/ECO or ON/OFF switchover</li> <li>▶ For use with Katherm HK, max. 4 units.</li> </ul>
 <p>A white, square clock thermostat with a digital display. The display shows 'KAMPMANN', 'Komfort', '28.0°C', and '19.1°C'. Below the display are four buttons labeled 'Mode', 'Menu', 'On/Off', and 'Fan'. The KAMPMANN logo is visible at the top left of the display area.</p>	<p><b>Clock thermostat 24 V, type 30456</b></p> <ul style="list-style-type: none"> <li>▶ Electronic clock thermostat for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design</li> <li>▶ operation using 4 sensor keys</li> <li>▶ timer with automatic summer/winter switch-over</li> <li>▶ option for external room sensor connection</li> <li>▶ control input for heating/cooling changeover with 2-pipe applications</li> <li>▶ digital input can be set to Comfort/ECO or ON/OFF switchover</li> <li>▶ for use with Katherm HK and HK E, max. 5 units</li> </ul>

Fig. 16: Room thermostat, type 30155

Fig. 17: Clock thermostat, type 30456



Fig. 18: Climate controller type 196000148941

## Climate controller, white, type 196000148941

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



Fig. 19: Climate controller type 196000148942

## Climate controller, black, type 196000148942

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





Fig. 20: Climate controller type 196000148943

## Climate controller, white, type 196000148943

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



Fig. 21: Climate controller type 196000148944

## Climate controller, black, type 196000148944

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



## Room temperature controller type 146928

- ▶ room temperature controller for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box
- ▶ setpoint display by threshold arrows
- ▶ heating or cooling via active 0-10 V signals
- ▶ option for external room sensor connection
- ▶ digital input for ECO operation
- ▶ For use with Katherm HK E, max. 5 units

## 9.2 Operation of the KaController

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

### 9.2.1 Function keys, display elements

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

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

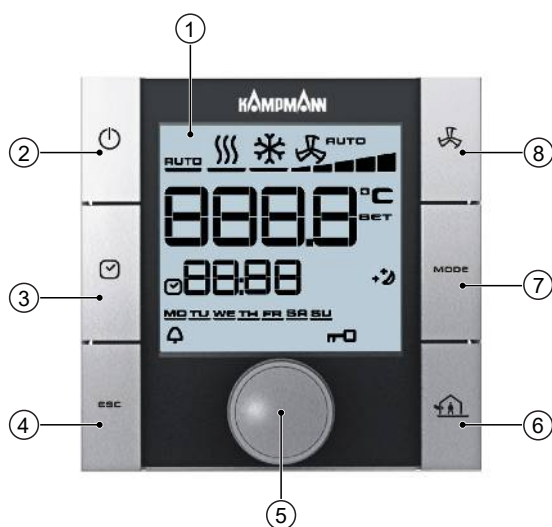




Fig. 22: KaController with function keys, type 3210002

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

 <p>Fig. 23: KaController type 3210001</p>	<p>KaController without operating keys (one-button operation) type 3210001</p> <ol style="list-style-type: none"> <li>1. Display with LED background lighting</li> <li>2. Navigator dial <ul style="list-style-type: none"> <li>► Change settings</li> <li>► Call up menus</li> </ul> </li> </ol>
 <p>Fig. 24: KaController black, type 3210006</p>	<p>KaController, black without function keys (one-button operation) type 3210006</p> <ol style="list-style-type: none"> <li>1. Display with LED background lighting</li> <li>2. Navigator dial <ul style="list-style-type: none"> <li>► Change settings</li> <li>► Call up menus</li> </ul> </li> </ol>

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

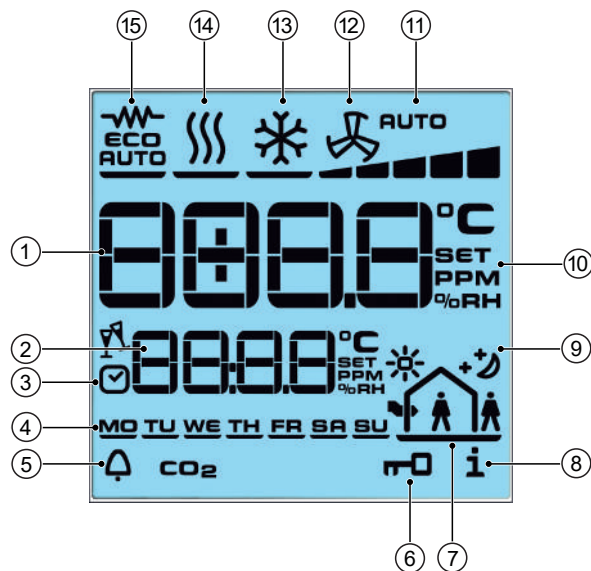










Fig. 25: Display

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

9.2.2 KaController type 3210001, type 3210002, type 3210006

Press and hold down the navigator dial for 3 seconds to move from one menu to the next.

		<p><b>Switching on the unit</b></p> <p>Option 1: Turn the navigator dial.</p> <p>Option 2: Press the ON/OFF button.</p> <p><b>Switching off the unit</b></p> <p>Option 1: Press the navigator dial for 3 seconds.</p> <p>Option 2: Press the ON/OFF button.</p> <p>Option 3: Turn the navigator dial anti-clockwise until OFF appears.</p> <p><b>Setting the temperature setpoint</b></p> <p>Option 1: Turn the navigator dial.</p>
		<p><b>Fan setting</b></p> <p>Option 1: Turn the navigator dial.</p> <p>Option 2: Press the FAN button several times.</p> <p><b>Fan stages</b></p> <p>Setting values: 0, 1, 2, 3, 4, 5, AUTO</p>
		<p><b>Time setting</b></p> <p>Adjust the current time by turning and pressing the navigator dial.</p>
		<p><b>Timer programs</b></p> <p>Adjust the switching times by turning and pressing the navigator dial.</p> <p><b>Sequence for entering a timer program:</b></p> <pre>graph LR     A[Timer start screen] --&gt; B[Day of the week entry]     B --&gt; C[Timer program no. entry]     C --&gt; D[Switching-on time entry]     C --&gt; E[Switching-off time entry]     D --&gt; F[Switching-on time entry]     E --&gt; G[Switching-off time entry]</pre>
		<p><b>Setting the operating modes</b></p> <p>Option 1: Turn the navigator dial.</p> <p>Option 2: Press the MODE button several times.</p> <p>The "Operating mode" menu item is locked in 2-pipe applications and cannot be accessed!</p>
		<p><b>External ventilation</b></p> <p>Enable and disable external ventilation by turning and pressing the navigator dial. A house symbol with an arrow appears on the display when external ventilation is activated.</p>

Tab. 19: KaController user interfaces

## 10 Maintenance

### 10.1 Securing against reconnection

**DANGER!****Risk of death by unauthorised or uncontrolled restart!**

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

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

Always follow the procedure described below to prevent accidental restart:

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

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

The fan impeller can cause severe injuries.

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

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## 10.2 Maintenance Schedule:

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

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

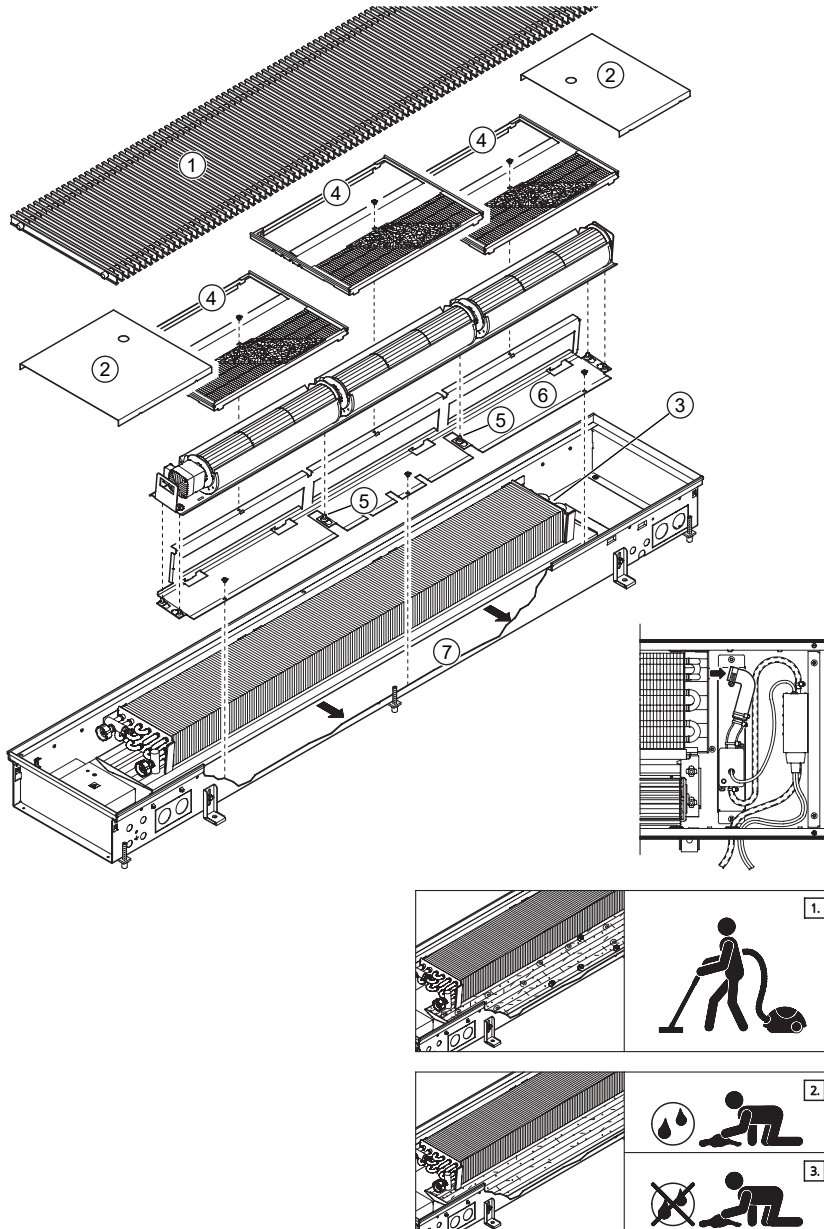
Interval	Maintenance task	Personnel
As required	Regular visual checks and acoustic checks for damage, dirt and function.	User
quarterly	Check filter for dirt, clean and change filter when needed.	User
every six months	Clean unit components (heat exchanger, condensate tray, condensate pump, float switch).	User
every six months	Check water-side connections, valves and fittings for dirt, leak-tightness and function.	User
every six months	Check the electrical wiring.	Qualified personnel
every six months	Clean components/surfaces that come into contact with air.	Qualified personnel
quarterly	Check the heat exchanger for dirt, damage, corrosion and leak-tightness. Carefully vacuum the heat exchanger if dirty.	User
quarterly	Check the condensation tray, float switch and drain connection for dirt, damage and leak-tightness. Remove any condensation deposits that have accumulated.	User

## 10.3 Maintenance work

### 10.3.1 Clean the inside of the unit

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









## 10.3.2 Cleaning the condensate tray



- ▶ Remove the grille ①.
- ▶ Remove the cover plates ②.
- ▶ Loosen the clip from the condensate elbow and remove the condensate elbow from the drain connection of the condensate tray ③.
- ▶ Loosen the segment panel screws and the segment panels ④ from the brackets on the walls of the floor trench.
- ▶ Remove the motor connection plug from the tangential fan.
- ▶ Remove the tangential fan from the fixing bolts ⑤ of the central wall ⑥.
- ▶ Loosen the screws of the central wall ⑥ and remove the central wall from the trench.
- ▶ Pull the condensate tray arranged below the condensate tray ⑦ to the room side of the trench. Note: The condensate tray cannot be removed!
- ▶ Use a damp cloth to clean the condensate tray ⑦ and then wipe away any damp patches with a dry cloth.
- ▶ After cleaning the condensate tray, refit the parts in reverse order to dismantling them.

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   	<p><b>Note the following when inserting the condensate tray once it has been cleaned:</b></p> <ul style="list-style-type: none"><li>▶ When inserting the side retainer for the condensate tray, make sure that the retainer prevents the condensate tray from pushing up and moving sideways.</li></ul>
   	<p>When reinserting the central wall, make sure that the upper edge is mounted above the condensate tray.</p>



## 11 Faults

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

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

### **Behaviour in the event of faults**

The following applies:

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

The Fault table [► 73] provides information on who is authorised to rectify and remedy faults.

### 11.1 Fault table

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

## 11.2 KaControl faults

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

Tab. 20: KaControl unit alarms

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

Tab. 21: KaController alarms



### IMPORTANT NOTE!

#### Important note!

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

## 11.3 Start-up after rectification of fault

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

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

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## 12 List of KaControl parameters

### 12.1 Katherm HK/ HK E parameter list

Parameter	Function	Standard	Min.	Max.	Unit	Katherm HK <sup>11</sup>	Katherm HK E <sup>12</sup>
P000	Software version	24	0	255	-	24	24
P001	Base setpoint for setpoint input $\pm 3K$	22	8	32	°C	22	22
P002	Switch-on and switch-off hysteresis for valves	3	0	255	K/10	1	1
P003	Neutral zone in a 4-pipe system (only in automatic mode)	3	0	255	K/10	20	20
P004	Cooling without fan assistance (natural convection)	0	0	255	K/10	0	0
P005	Heating without fan assistance (natural convection)	5	0	255	K/10	0	0
P006	Fan On/Off hysteresis (only in ventilation mode)	5	0	255	K/10	5	5
P007	P-band, heating	20	0	100	K/10	25	25
P008	P-band, cooling	20	0	100	K/10	25	25
P009	Offset to the base setpoint for setpoint input $\pm 3K$	3	0	10	C	3	3
P010	Contact sensor: limit value temperature to activate fan stages 1 and 2 in heating mode	26	0	255	°C	26	26
P011	Contact sensor: limit value temperature to activate fan stages 3 and 4 in heating mode	28	0	255	°C	28	28
P012	Contact sensor: limit value temperature to activate fan stage 5 in heating mode	30	0	255	°C	30	30
P013	Contact sensor: hysteresis for limit temperatures P010, P011, P012, P014	10	0	255	K/10	10	10
P014	Contact sensor: limit value temperature to activate fan stages in cooling mode	18	0	255	°C	18	18
P015	Function of input AI1	0	0	19	-	0	0
P016	Function of input AI2	0	0	19	-	0	13
P017	Function of input AI3	0	0	9	-	0	0
P018	Temperature increase of cooling setpoint in Eco mode	30	0	255	K/10	30	30
P019	Temperature decrease of heating setpoint in Eco mode	30	0	255	K/10	30	30
P020	ADC limit coefficient	6	0	15	-	6	6
P021	ADC average coefficient	6	0	15	-	6	6
P022	Activation / deactivation of sun symbol in Comfort mode	0	0	1	-	0	0
P023	Difference for compensation in cooling	0	-99	127	K/10	0	0
P024	Coefficient for compensation in cooling	0	-20	20	1/10	0	0
P025	Difference for compensation in heating	0	-99	127	K/10	0	0
P026	Coefficient for compensation in heating	0	-20	20	1/10	0	0
P027	Fan setting: maximum run-time for manual fan mode	0	0	255	min	0	0
P028	Rinsing function: fan stage during the purging function	2	1	5	-	2	2
P029	Activation of continuous fan mode	0	0	1	-	0	0

<sup>11</sup> Parameter key Katherm HK, SAP no. 9001380, date 10.07.2020

<sup>12</sup> Parameter key Katherm HK E, SAP no. 9001631, date 29.10.2021

Parameter	Function	Standard	Min.	Max.	Unit	Katherm HK <sup>11</sup>	Katherm HK E <sup>12</sup>
P030	Ventilation temperature activation	12	0	255	°C	12	12
P031	Ventilation interval	27	0	255	°C	27	27
P032	Rinsing function: maximum idle time of fan	15	0	255	min	15	15
P033	Rinsing function: duration of the rinsing function	120	0	255	s	120	120
P034	Rinsing function: activation in operating modes	0	0	3	-	0	0
P035	Fan run-on time after an operating mode is switched to stage 1	0	0	255	s	0	0
P036	Type of setpoint setting	0	0	1	-	0	0
P037	Display	1	0	7	-	1	1
P038	Lock/disable function on the control unit	72	0	255	-	72	74
P039	Function of digital output V2 (in a 2-pipe system)	0	0	3	-	0	0
P040	Valve actuation by pulse width modulation	0	0	1	-	0	0
P041	Reset time of PI controller to activate the fan in automatic fan mode	0	0	20	min	0	0
P042	Fan setting: lock and activate fan stages	0	0	127	-	0	
P043	Function of digital input DI1	0	0	22	-	5	
P044	Function of digital input DI2	0	0	22	-	0	
P045	Threshold voltage for potentiometer to switch on the unit	10	0	100	kOhm	10	10
P046	Temperature setting corresponds to the minimum resistance value = 10 kOhm in the potentiometer	18	12	34	°C	18	18
P047	Temperature setting corresponds to the maximum resistance value = 100 kOhm in the potentiometer	24	13	35	°C	24	24
P048	Threshold voltage for potentiometer for starting up the fans	10	0	100	kOhm	10	10
P049	Threshold voltage for potentiometer for maximum fan speed	90	0	100	kOhm	90	90
P050	Fan setting: max. fan speed	100	0	100	%	100	100
P051	Fan setting: min. fan speed	0	0	90	%	15	15
P052	Fan setting: activation of fan speed limit	0	0	1	-	1	1
P053	Valve activation by pulse width modulation of valve switching cycle	15	10	30	min	15	12
P054	Configuration of bus system	0	0	2	-	0	0
P055	Display of heating/cooling symbols in automatic mode	0	0	1	-	1	0
P056	DI2 setting (polarity) when DIP 4 = ON	1	0	1	-	1	1
P057	Reset setpoint to the value of P01 (after changing an operating program)	0	0	1	-	0	0
P058	Sensor calibration: sensor AI1	0	-99	127	K/10	0	0
P059	Supply air temperature setpoint in heating mode	35	0	50	°C	35	35
P060	Supply air temperature setpoint in cooling mode	18	0	50	°C	18	18
P061	Sensor calibration: sensor in the KaController	0	-99	127	K/10	0	0
P062	Sensor calibration: sensor AI2	0	-99	127	K/10	0	0
P063	Outside temperature <P63 fan increase by P122	0	-99	127	°C	0	0
P064	Sensor calibration: sensor AI3	0	-99	127	K/10	0	0
P065	reserved	-	-	-	-	-	-
P066	Master/Slave assignment in CANbus	0	0	1	-	0	0
P067	Serial CAN bus address	1	1	125	-	1	1
P068	Logic of the hydronic algorithms	0	0	7	-	0	0

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Parameter	Function	Standard	Min.	Max.	Unit	Katherm HK <sup>11</sup>	Katherm HK E <sup>12</sup>
P069	Network address	1	0	207	-	1	1
P070	Dependence of the hydronic algorithms (on slaves)	0	0	7	-	0	0
P071	Serial address of slave 1	0	0	207	-	0	0
P072	Serial address of slave 2	0	0	207	-	0	0
P073	Serial address of slave 3	0	0	207	-	0	0
P074	Serial address of slave 4	0	0	207	-	0	0
P075	Serial address of slave 5	0	0	207	-	0	0
P076	Serial address of slave 6	0	0	207	-	0	0
P077	Serial address of slave 7	0	0	207	-	0	0
P078	Serial address of slave 8	0	0	207	-	0	0
P079	Serial address of slave 9	0	0	207	-	0	0
P080	Serial address of slave 10	0	0	207	-	0	0
P081	Dependence of the hydronic algorithms, slave 1	0	0	7	-	0	10
P082	Dependence of the hydronic algorithms, slave 2	0	0	7	-	0	18
P083	Dependence of the hydronic algorithms, slave 3	0	0	7	-	0	0
P084	Dependence of the hydronic algorithms, slave 4	0	0	7	-	0	0
P085	Dependence of the hydronic algorithms, slave 5	0	0	7	-	0	0
P086	Dependence of the hydronic algorithms, slave 6	0	0	7	-	0	0
P087	Dependence of the hydronic algorithms, slave 7	0	0	7	-	0	0
P088	Dependence of the hydronic algorithms, slave 8	0	0	7	-	0	0
P089	Dependence of the hydronic algorithms, slave 9	0	0	7	-	0	0
P090	Dependence of the hydronic algorithms, slave 10	0	0	7	-	0	0
P091	Load default values	0	0	255	-	0	0
P092	Password management	0	0	255	-	0	0
P093	Type of pre-comfort (room occupancy)	0	0	3	-	0	0
P094	Pre-comfort timer	60	1	255	min	60	60
P095	Disable DIP switch settings	0	0	1	-	0	0
P096	Digital outputs continuously activated	0	0	1	-	0	0
P097	Read off DIP switch	-	0	63	-	-	-
P098	Activation 0..10 V: valve switch on limit	30	0	100	V/10	40	40
P099	Activation 0..10 V: min. switch on limit for fan speed	40	0	100	V/10	40	40
P100	Activation 0..10 V: max. switch on limit for fan speed	90	0	100	V/10	90	90
P101	Valve activation by pulse width modulation of P-band in heating mode	15	0	100	K/10	15	15
P102	Valve activation by pulse width modulation of P-band in cooling mode	15	0	100	K/10	15	15
P103	Valve activation by pulse width modulation of reset time of PI controller	0	0	20	min	0	0
P104	Minimum ON time with PWM valve activation	3	0	20	min	3	3
P105	Compensation: max. negative delta setpoint	50	0	150	K/10	50	50
P106	Compensation: max. positive delta setpoint	50	0	150	K/10	50	50
P107	Duration of valve open to check water temperature	5	0	255	min	5	5
P108	Duration of valve closed	240	35	255	min	240	240
P109	Dead zone PI control for 3-way valve	10	0	100	K/10	10	10
P110	Hysteresis to switch between heating / fan mode	0	0	20	°C	0	0
P111	Threshold to switch between heating / fan mode	0	0	50	°C	0	0

Parameter	Function	Standard	Min.	Max.	Unit	Katherm HK <sup>11</sup>	Katherm HK E <sup>12</sup>
P112	reserved	-	-	-	-	-	-
P113	reserved	-	-	-	-	-	-
P114	reserved	-	-	-	-	-	-
P115	reserved	-	-	-	-	-	-
P116	reserved	-	-	-	-	-	-
P117	Lock function buttons on the KaController	0	0	7	-	0	0
P118	On delay time	0	0	255	sec	0	0
P119	Off delay time	0	0	255	sec	0	0
P120	reserved	-	-	-	-	-	-
P121	reserved	-	-	-	-	-	-
P122	Relative fan speed increase via contact	2	0	5	-	2	2
P123	Maximum valve running time	150	0	255	sec	150	150
P124	Minimum P + I output variation for valve movement (0 to 10)	5	0	100	%	5	5
P125	reserved	-	-	-	-	-	-
P126	Operating weeks	0	0	255	week	0	0
P127	Information on operating weeks reached (filter message)	0	52	255	week	0	0
P128	Reset operating week counter	0	0	1	-	0	0
P129	Fan speed limiter activation in certain operating modes	0	0	1	-	0	0
P130	Absolute fan speed increase via contact	2	0	5	-	2	2
P131	External ventilation, delay time	0	0	255	min	0	0
P132	Operating level, master password	22	0	255	-	22	22
P133	Hysteresis for outside temperature to switch between heating / fan mode	0	0	255	K/10	0	0
P134	Threshold for outside temperature to switch between heating / fan mode	0	0	50	°C	0	0
P135	Activate virtual sensor	0	0	1	-	0	0
P136	Activate external ventilation	0	0	2	-	0	0

Tab. 22: Parameter key, standard revision 1.024 from 01.05.2018

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## 12.2 KaController parameter list

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



## 13 Certificates



## EU-Konformitätserklärung

EU Declaration of Conformity  
Déclaration de Conformité CE  
Deklaracja zgodności CE  
EU prohlášení o konformite

**Wir (Name des Anbieters, Anschrift):**

We (Supplier's Name, Address):  
Nous (Nom du Fournisseur, Adresse):  
My (Nazwa Dostawcy, adres):  
My (Jméno dodavatele, adresa):

**KAMPMANN** GMBH & Co. KG  
Friedrich-Ebert-Str. 128-130  
49811 Lingen (Ems)

**erklären in alleiniger Verantwortung, dass das Produkt:**

declare under sole responsibility, that the product:  
déclarons sous notre seule responsabilité, que le produit:  
deklarujemy z pełną odpowiedzialnością, że produkt:  
deklarujeme, vědomi si své odpovědnosti, že produkt:

<b>Type, Modell, Artikel-Nr.:</b>	<b>Katherm QK</b>	<b>142***</b>
Type, Model, Articles No.:	<b>Katherm HK</b>	<b>143***</b>
Type, Modèle, N° d'article:	<b>Katherm QK nano</b>	<b>442***</b>
Type, 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):  
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na který se tato deklarace vztahuje, souhlasí s následující(mi) normou/normami nebo s normativními dokumenty:

<b>DIN EN 16430-1 ; -2 ; -3</b>	<b>Gebläseunterstützte Heizkörper, Konvektoren und Unterflurkonvektoren</b>
<b>DIN EN 442-1 ; -2</b>	<b>Radiatoren und Konvektoren</b>
<b>DIN EN 55014-1 ; -2</b>	<b>Elektromagnetische Verträglichkeit</b>
<b>DIN EN 61000-3-2 ; -3-3</b>	<b>Elektromagnetische Verträglichkeit</b>
<b>DIN EN 61000-6-1 ; -6-2 ; -6-3</b>	<b>Elektromagnetische Verträglichkeit</b>
<b>DIN EN 60335-1 ; -2-40</b>	<b>Sicherheit elektr. Geräte für den Hausgebrauch und ähnliche Zwecke</b>

# Katherm HK

Assembly, installation and operating instructions



## 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

Kampmann GmbH & Co. KG  
Friedrich-Ebert-Straße 128 – 130  
49811 Lingen (Ems)

Registergericht: Osnabrück, HRA 205688  
USt-IdNr: DE313505294  
Kampmann.de

Persönlich haftende Gesellschafterin:  
Kampmann Beteiligungsgesellschaft mbH  
Sitz: Lingen (Ems)

Registergericht: Osnabrück, HRB 211684  
Geschäftsführer: Hendrik Kampmann

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<https://www.kampmanngroup.com/hvac/products/trench-technology/katherm-hk>

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