



# 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.

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## 2 Safety

This section provides an overview of all important safety aspects to ensure optimum protection of personnel as well as safe and trouble-free operation. 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 network.
- ▶ This unit is designed to be accessible to the general public.

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

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

## 2.2 Limits of operation and use

Limits of operation		
Min./max. water temperature	°C	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

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## IMPORTANT NOTE!

### Danger of frost in cooling mode!

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

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



## IMPORTANT NOTE!

### Warning of misuse!

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

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



## IMPORTANT NOTE!

### Energy losses due to misuse!

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

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

## 2.3 Risk from electrocution!



## DANGER!

### Risk of fatal injury from electrocution!

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

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

## 2.4 Personnel requirements - Qualifications

### Expertise

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

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

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

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

## 2.5 Personal Protective Equipment

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

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

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## 3 Transport, storage and packaging

### 3.1 General transport instructions

Check on delivery for completeness and transport damage.

Proceed as follows in the event of visible damage:

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



#### IMPORTANT NOTE!

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



#### IMPORTANT NOTE!

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



#### IMPORTANT NOTE!

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

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

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

### 3.2 Scope of delivery



#### IMPORTANT NOTE!

##### Check the scope of delivery!

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

## 3.3 Storage

Store packaging under the following conditions:

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



### **IMPORTANT NOTE!**

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

## 3.4 Packaging

Handling packaging materials



### **IMPORTANT NOTE!**

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



### **IMPORTANT NOTE!**

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

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## 4 Technical data

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>8</sup>	637 - 8710	697 - 10465	767 - 9716	1040 - 15730	993 - 14599	1223 - 16884
Heat output 4-pipe <sup>8</sup>	462 - 6316	436 - 6512	./.	514 - 9448	-	643 - 12243
Heating output electric [W]	-	-	100 - 1500	-	100 - 1500	-
Cooling output 2-pipe <sup>7</sup>	66 - 1507	125 - 1925	153 - 1854	114 - 2783	108 - 2589	120 - 3348
Cooling output 4-pipe <sup>7</sup>	62 - 1420	121 - 1851	./.	112 - 2728	-	114 - 3153
Sound pressure level [dB(A)] <sup>4, 6</sup>	<20 - 45	<20 - 41	<20 - 41	<20 - 45	<20 - 45	<20 - 53
Sound power level [dB(A)] <sup>6</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>8</sup> at LPHW 75 / 65 °C,  $t_{l1}$  = 20°C, with fan-assisted convection

<sup>7</sup> at CHW 16/18 °C,  $t_{l1}$  = 27 °C, 48% relative humidity with fan coils

<sup>4</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>6</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

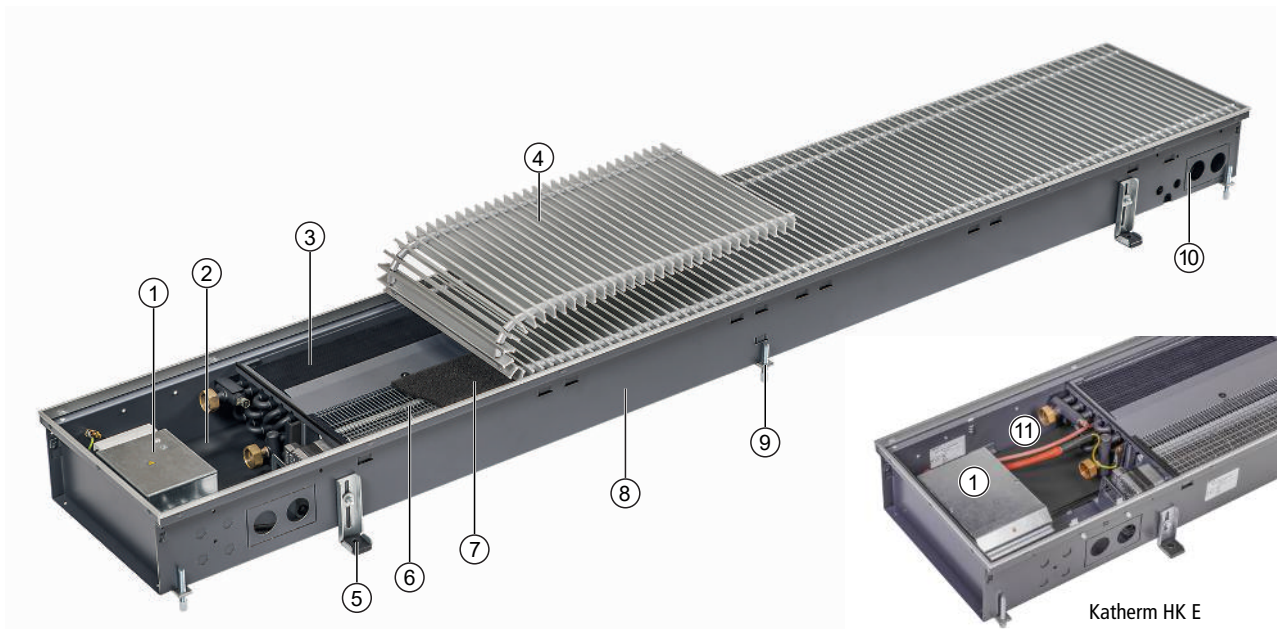


Fig. 1: Katherm HK at a glance

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 decentralized devices for heating and chilling room air, e.g. in hotels, offices and commercial premises. Secondary air is drawn in by the fan and passed through the copper/aluminum heat exchanger. The tempered air rises up the building facade and ensures 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 [▶ 22]).
- ▶ There is a power supply on site (Maximum electrical rating values [▶ 53]).
- ▶ 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!

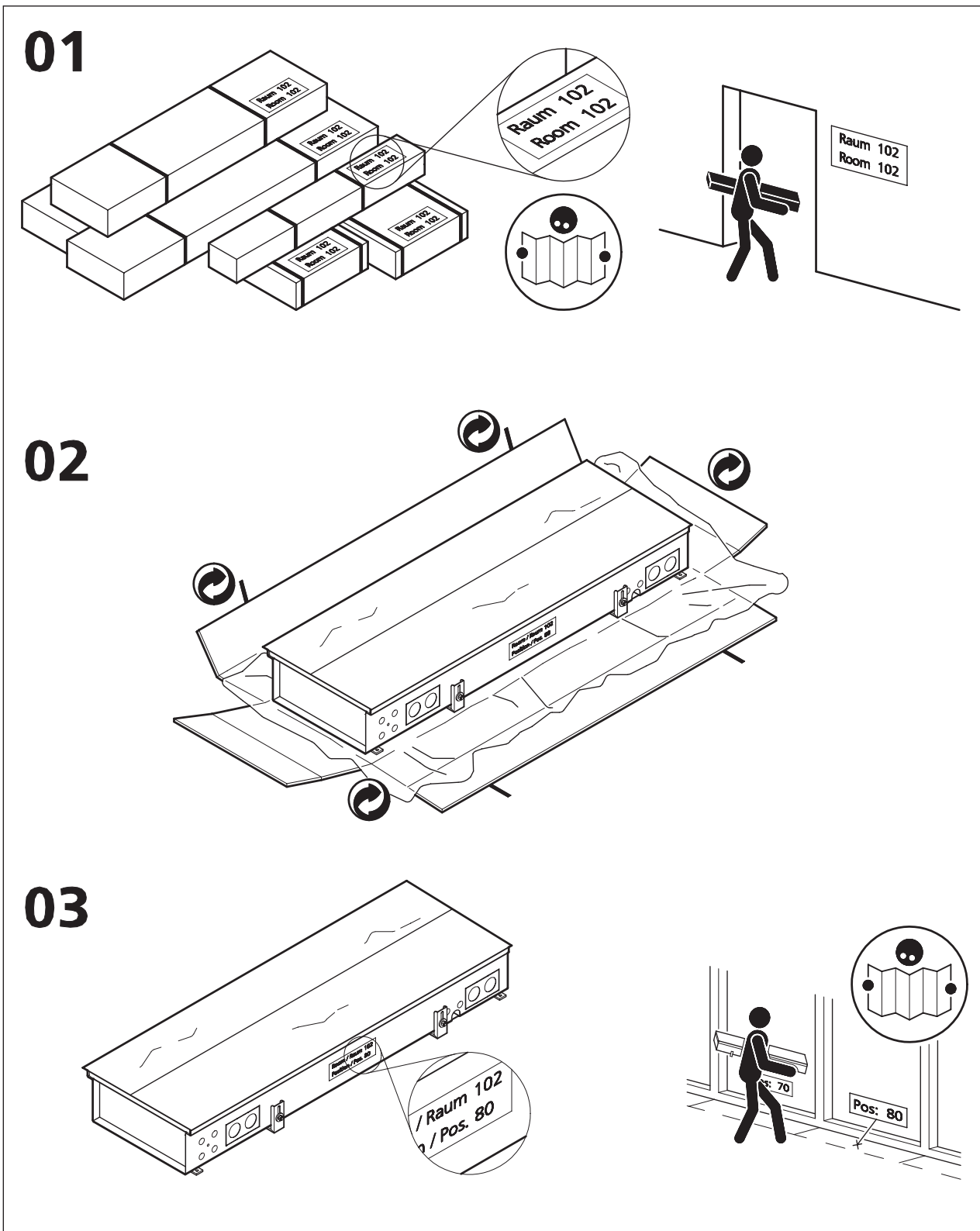
##### Avoid draughts!

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.

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## 6.2.1 Installation steps



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**04**

Katherm HK 320, Kanalhöhe 130 mm				
915	4 x		2 x	
1200	4 x		2 x	
1700	6 x		2 x	
2000	6 x		2 x	
2500	8 x		2 x	
3000	10 x		2 x	

Katherm HK 290, Kanalhöhe 160 mm				
950	4 x		2 x	
1200	4 x		2 x	
1700	6 x		2 x	
2000	6 x		2 x	
2500	8 x		2 x	
3000	8 x		2 x	

Katherm HK 360, Kanalhöhe 210 mm				
950	4 x		2 x	
1200	4 x		2 x	
1350	6 x		2 x	
1850	6 x		2 x	
2250	8 x		2 x	

M8

M6

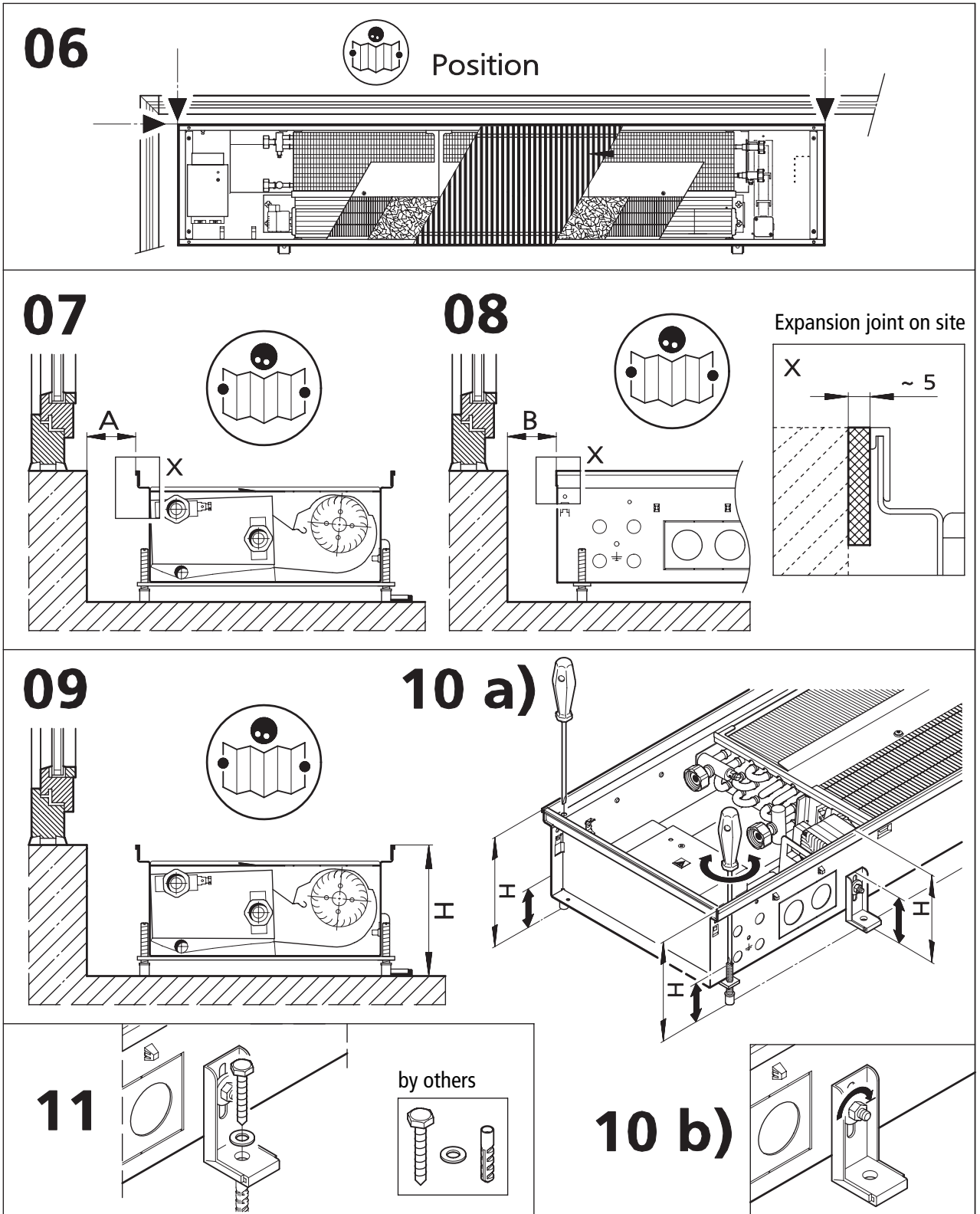
**05**

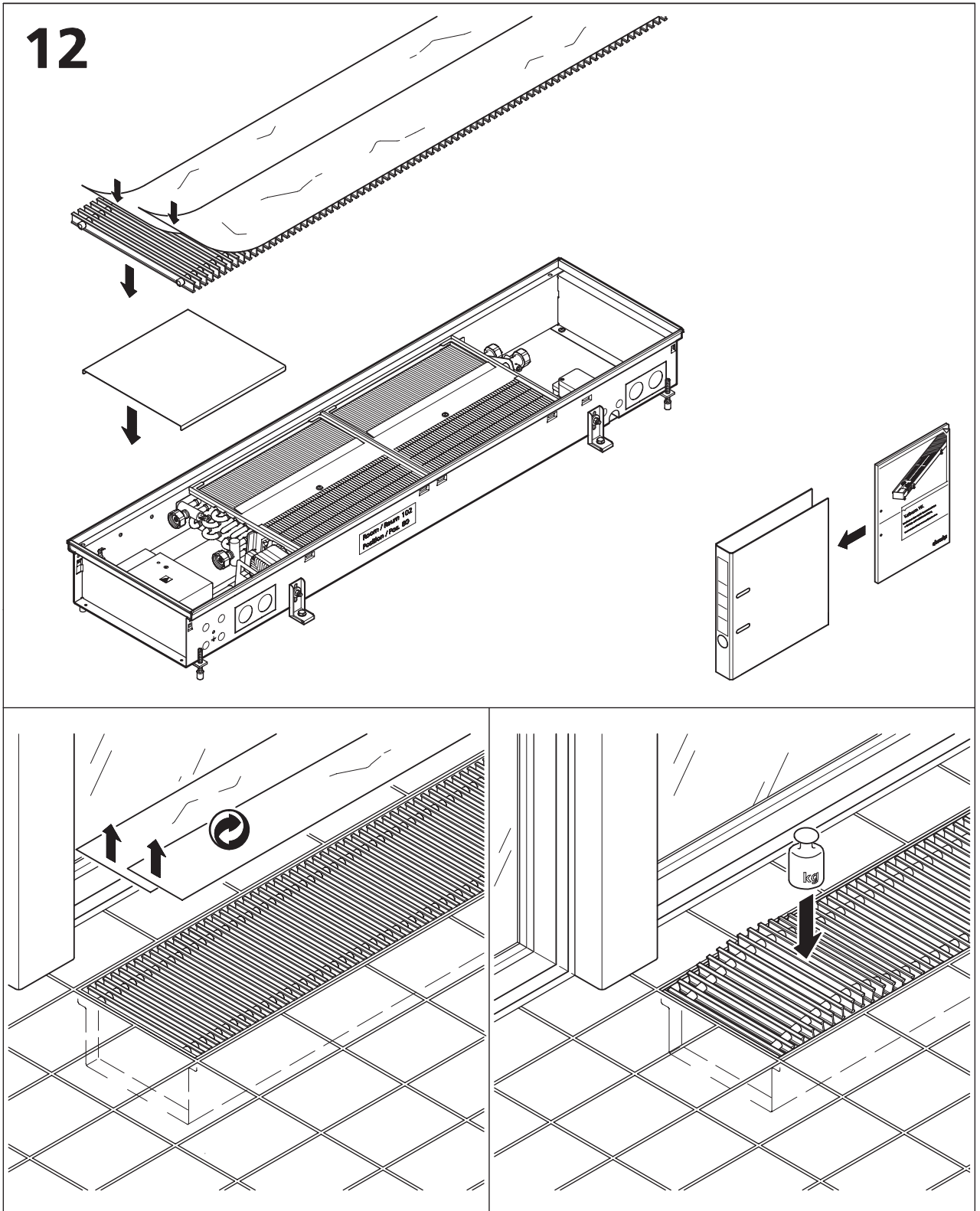
**Y**

**a)**

**b)**

**c)**

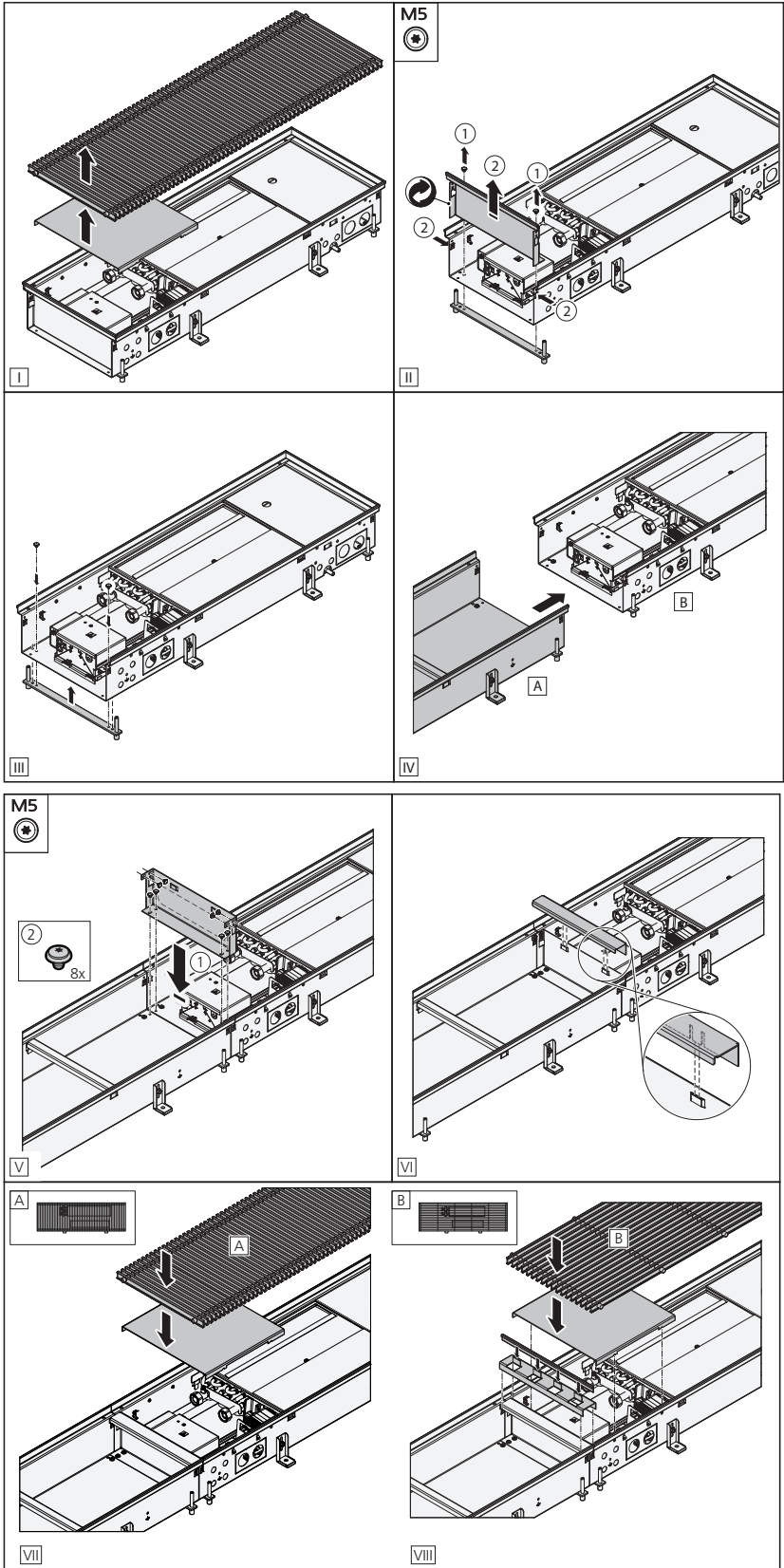




# Katherm HK

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## 6.2.2 Dummy-Section installation



### 6.2.3 Screed work

**The following work steps must be completed before screed work:**

- ▶ Water has been correctly connected.
- ▶ The electrical connection has been made correctly.
- ▶ The appliance is correctly positioned and aligned.
- ▶ There are no sound bridges to the bare concrete, especially in the area of the mounting aids.
- ▶ Expansion joints have been provided on site to prevent the appliance from being compressed by the screed or floor.
- ▶ All necessary empty conduits have been laid.
- ▶ All punched holes and openings in the appliance are sealed against screed with suitable material. If flowing screed or other low-viscosity floor coverings are used, these must also be sealed!
- ▶ Cover the grate and trench heater with the construction protection cover to protect against 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

The range of valve adapters warrants perfect adaptation of the drive to almost all valve bodies and heating circuit manifolds on the market. Once the cable has been plugged in, the drive is simply fixed to the valve adapter, which is pre-installed by hand, using plug-in installation.

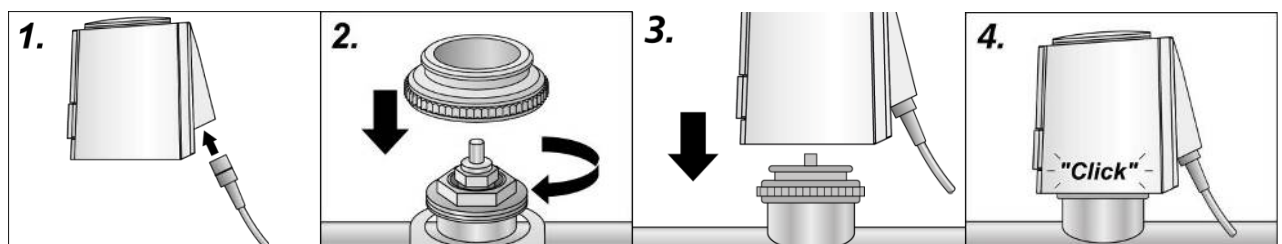


Fig. 3: Installation with valve adapter

1	Connect the cable to the actuator.
2	Screw the adapter onto the valve by hand.
3	Position the actuator vertically on the valve adapter by hand.
4	Apply vertical pressure by hand to audibly engage the actuator on the valve adapter.

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Preferably install the drive in a vertical or horizontal mounting position.

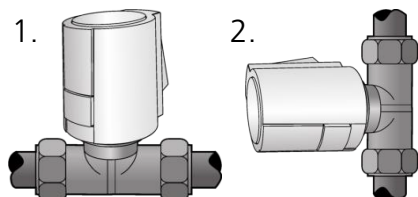


Fig. 4: Mounting position

1	Vertical installation position
2	Horizontal installation position

## 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

The flow and return connections are located as standard on the left or right side of the unit as seen from the front panel.

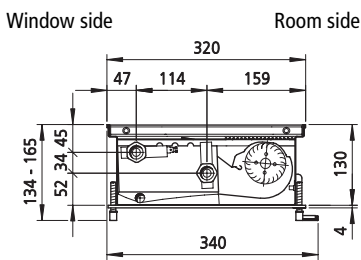
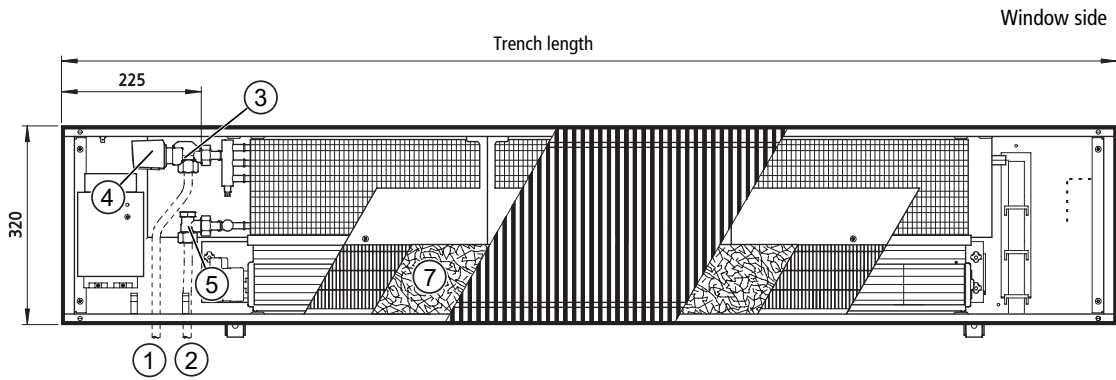
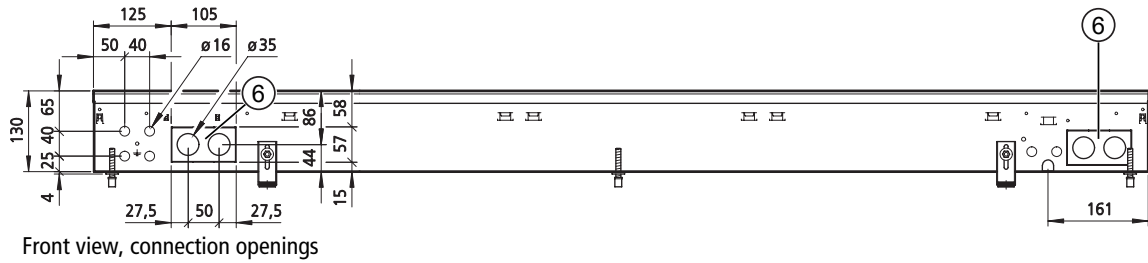
The pipework must be laid in such a way that no mechanical stresses are transferred to the heat exchanger and the accessibility of the appliance is not restricted during maintenance and repair work. Proceed as follows for the hydraulics connection of the appliance:

- ▶ Before creating the on-site piping and the hydraulic connection of the basic unit, shut off the heating/cooling medium and secure it against unintentional opening, otherwise there is a risk of scalding due to escaping heating medium!
- ▶ With cooling appliances, there is a danger to the user from the cold and a danger to the environment when glycol is used. Take appropriate safety measures.
- ▶ Remove protective caps from the flow and return.
- ▶ In cooling mode, lay pipes and, if necessary, valves directly above the side condensate tray (accessory) in order to drain the condensate that accumulates on the pipework into the tray during cooling mode.
- ▶ Use the punched pipe ducts on the room side for the water-side connection. Seal and screw the thermostatic valve and return fitting to the internal thread connection of the heat exchanger using suitable sealants.
- ▶ When connecting the appliance to the on-site pipework, be sure to hold the water connections with a suitable tool!
- ▶ Ensure that the pipework is vented on site.
- ▶ Use suitable insulation material; use diffusion-tight insulation material for cooling appliances.
- ▶ After conclusion of all connection work, all screw connections must be retightened and checked for voltage-free installation.
- ▶ Carry out a pressure test.

# Katherm HK

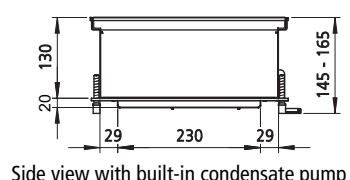
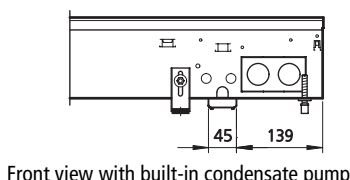
Assembly, installation and operating instructions

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



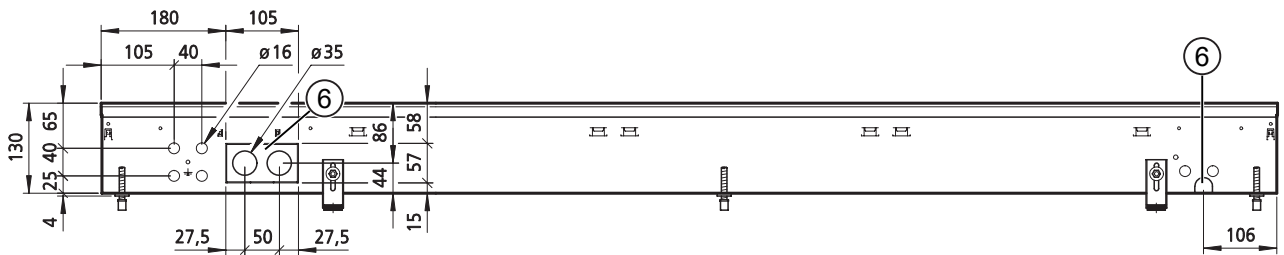
Section (chiller or heating) Example: roll-up grille

Window side      Room side

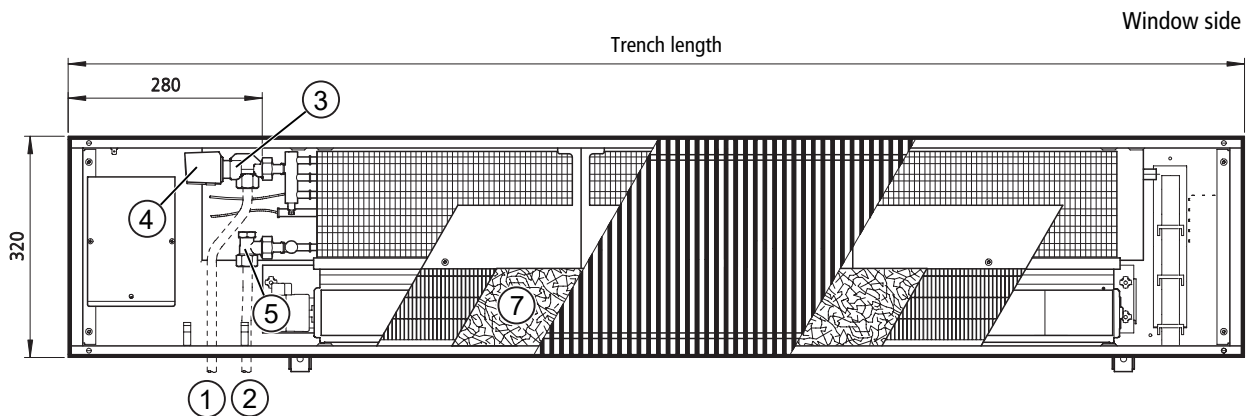


1	Heating/chiller supply	2	Return heating/chiller
3	Valve body 1/2", axial form (flow-dependent)	4	Thermoelectric actuator
5	Shut-off return fitting 1/2", angled (flow-dependent)	6	Pipe feedthroughs, punched
7	Filter (optional)		

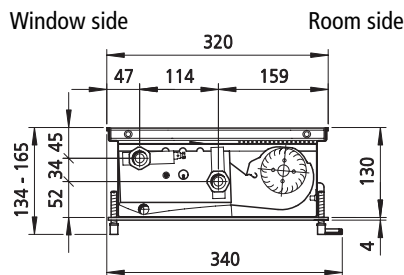
## Katherm HK 320 E, 2-pipe, trench height 130 mm



Front view, connection openings



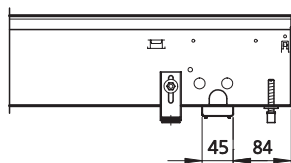
Top view, water connection on room side



Section (chiller or heating) Example: roll-up grille

Window side

Room side



Front view with built-in condensate pump



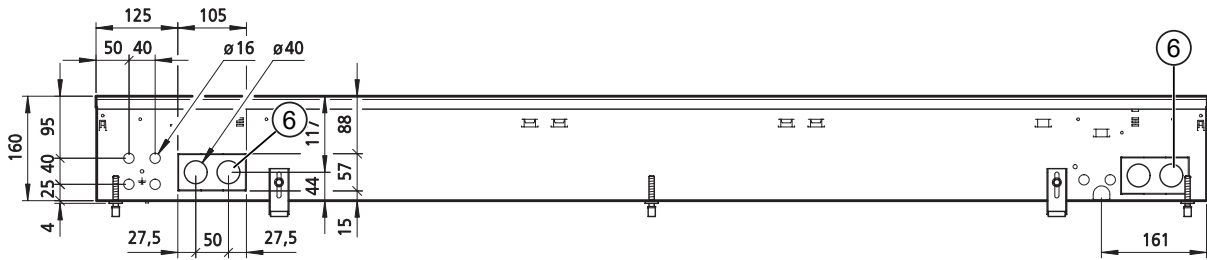
Side view with built-in condensate pump

1	Heating/chiller supply	2	Return heating/chiller
3	Valve body $\frac{1}{2}$ ", axial form (flow-dependent)	4	Thermoelectric actuator
5	Shut-off return fitting $\frac{1}{2}$ ", angled (flow-dependent)	6	Pipe feedthroughs, punched
7	Filter (optional)		

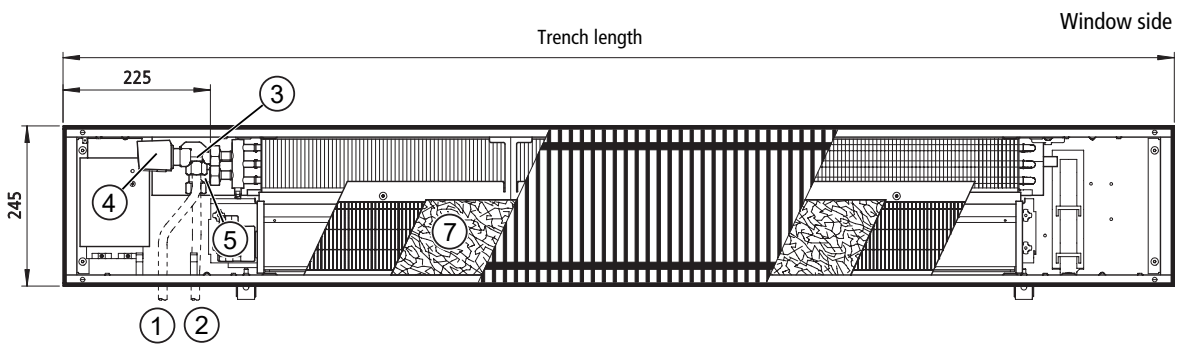
# Katherm HK

Assembly, installation and operating instructions

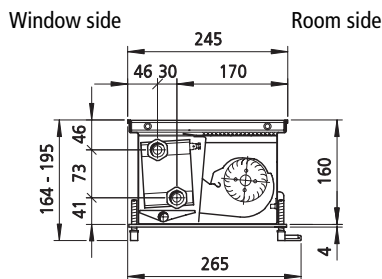
## Katherm HK 245, 2-pipe, trench height 160 mm



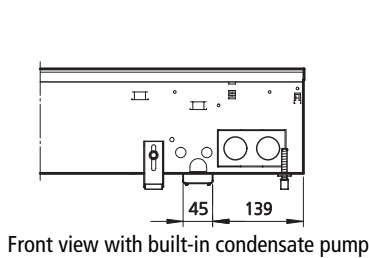
Front view, connection openings



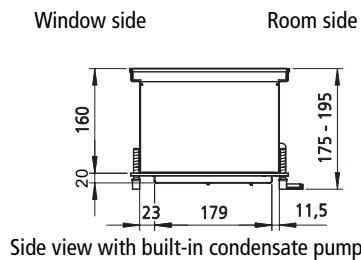
Top view, water connection on room side



Section (chiller or heating) Example: roll-up grille



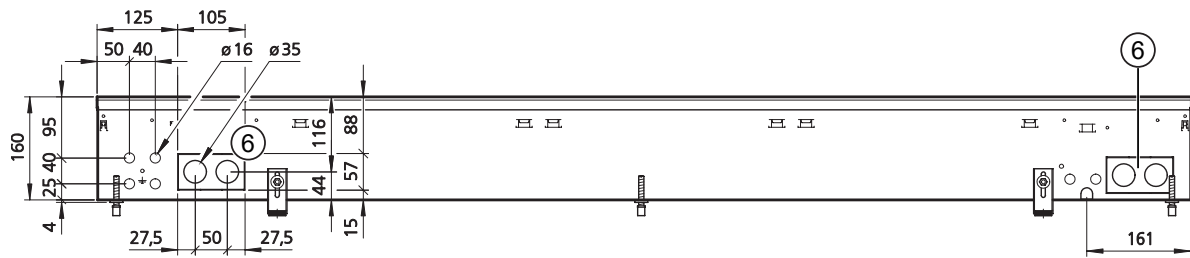
Front view with built-in condensate pump



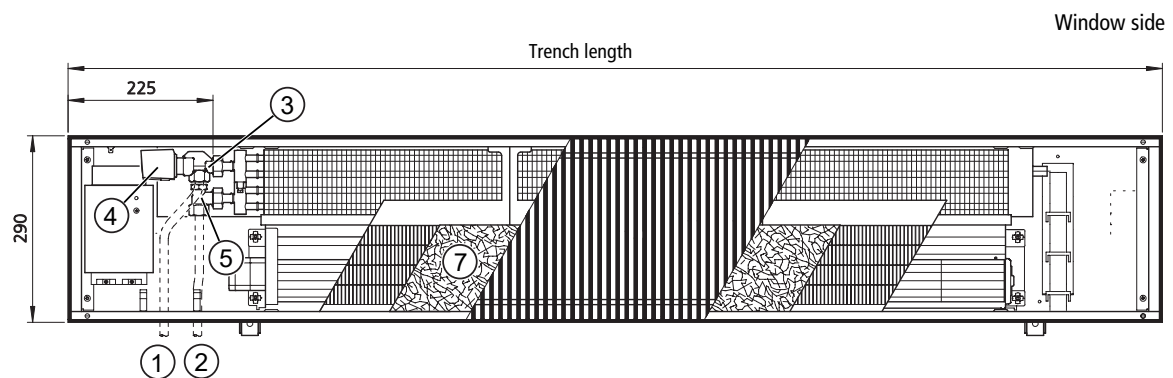
Side view with built-in condensate pump

1	Heating/chiller supply	2	Return heating/chiller
3	Valve body 1/2", axial form (flow-dependent)	4	Thermoelectric actuator
5	Shut-off return fitting 1/2", angled (flow-dependent)	6	Pipe feedthroughs, punched
7	Filter (optional)		

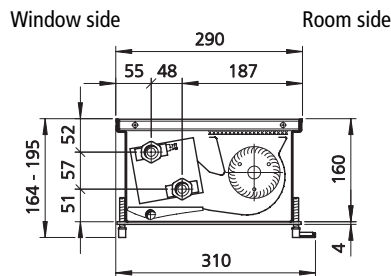
## Katherm HK 290, 2-pipe, trench height 160 mm



Front view, connection openings



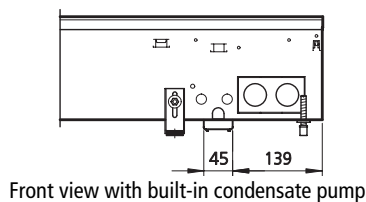
Top view, water connection on room side



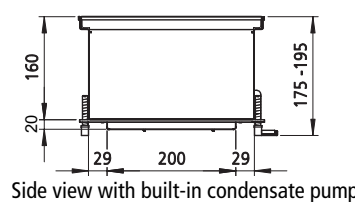
Section (chiller or heating) Example: roll-up grille

Window side

Room side



Front view with built-in condensate pump



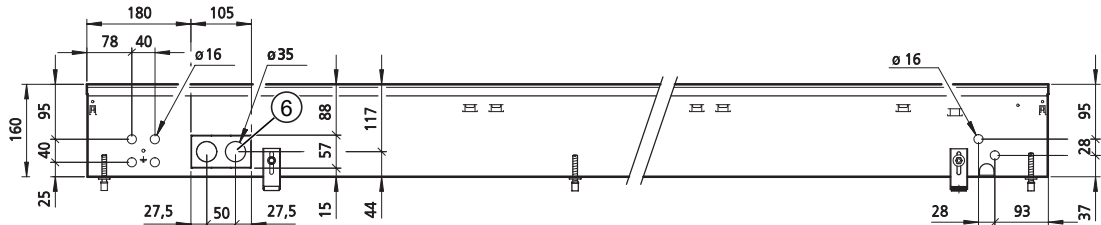
Side view with built-in condensate pump

1	Heating/chiller supply	2	Return heating/chiller
3	Valve body 1/2", axial form (flow-dependent)	4	Thermoelectric actuator
5	Shut-off return fitting 1/2", angled (flow-dependent)	6	Pipe feedthroughs, punched
7	Filter (optional)		

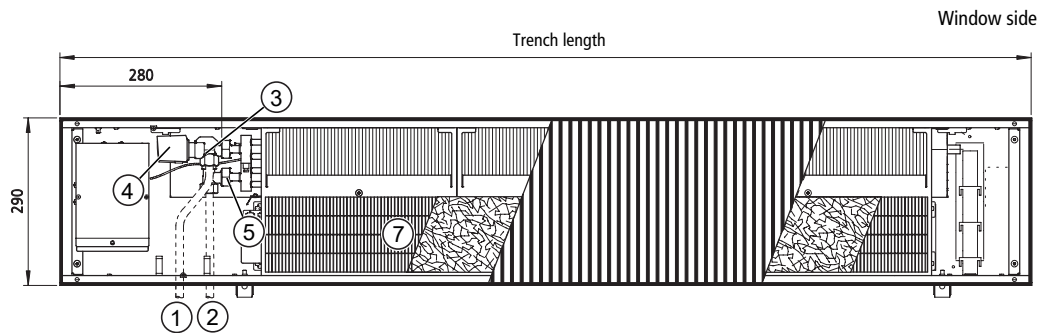
# Katherm HK

Assembly, installation and operating instructions

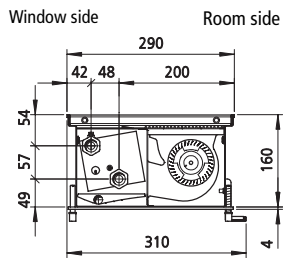
## Katherm HK 290 E, 2-pipe, trench height 160 mm



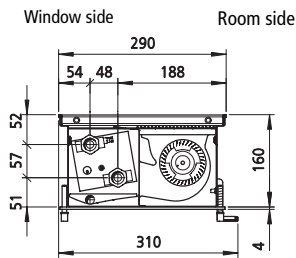
Front view, connection openings



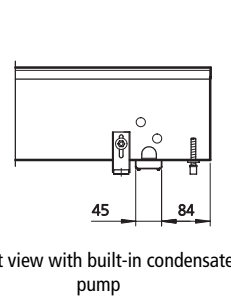
Top view (without cover plate, water connection on room side)



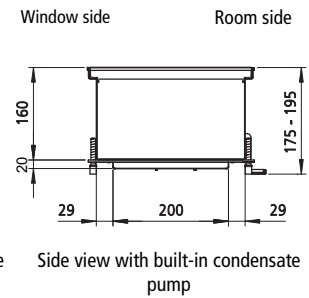
Section (chiller or heating)  
Example: roll-up grille (trench lengths 950 mm and 1200 mm)



Section (chiller or heating)  
Example: roll-up grille (trench lengths greater than 1200 mm)



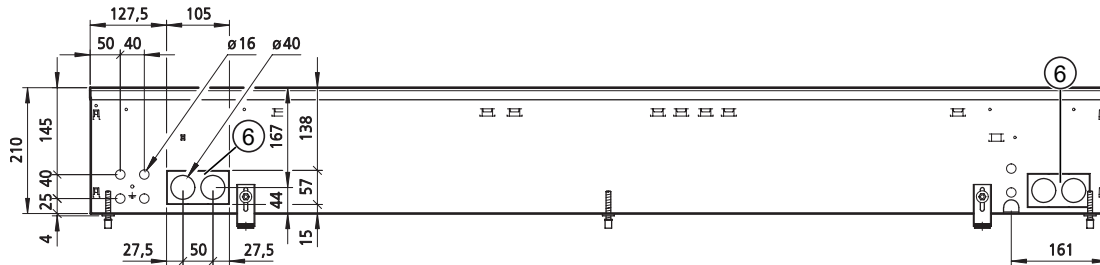
Front view with built-in condensate pump



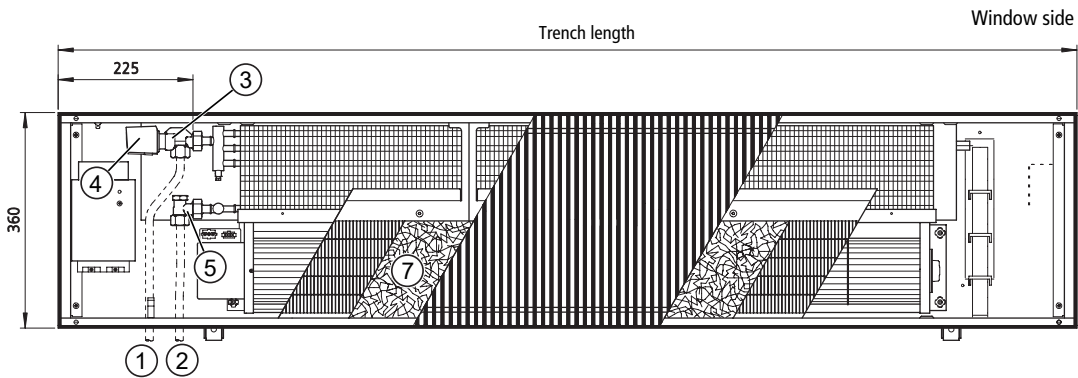
Side view with built-in condensate pump

1	Heating/chiller supply	2	Return heating/chiller
3	Valve body 1/2", axial form (flow-dependent)	4	Thermoelectric actuator
5	Shut-off return fitting 1/2", angled (flow-dependent)	6	Pipe feedthroughs, punched
7	Filter (optional)		

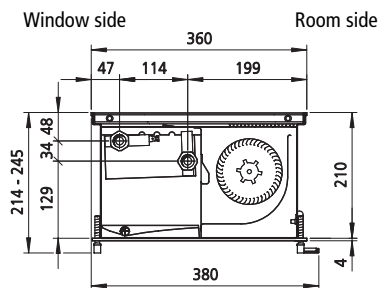
## Katherm HK 360, 2-pipe, trench height 210 mm



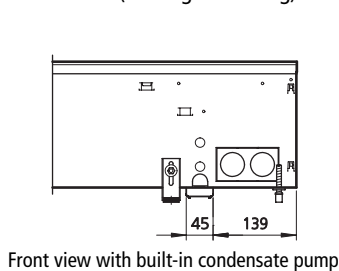
Front view, connection openings



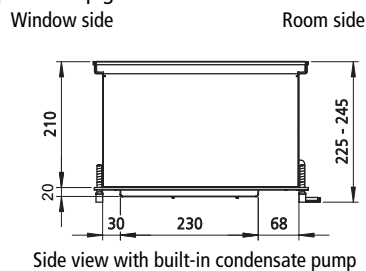
Top view, water connection on room side



Section (Cooling or Heating) Example: Roll-up grille



Front view with built-in condensate pump



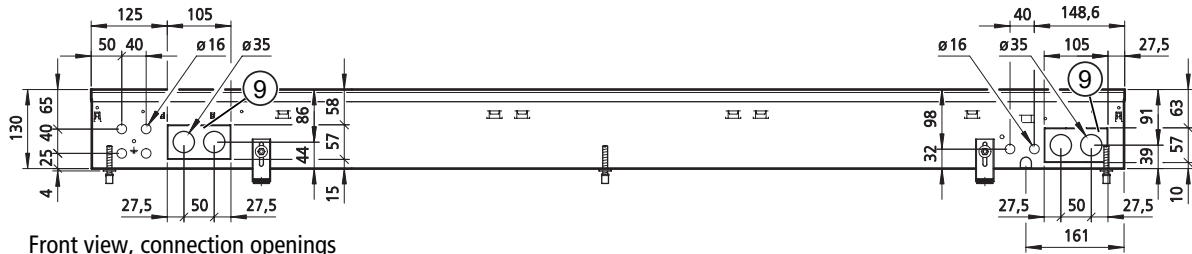
Side view with built-in condensate pump

1	Heating/chiller supply	2	Return heating/chiller
3	Valve body 1/2", axial form, for higher flow rate	4	Thermoelectric actuator
5	Shut-off return fitting 1/2", angled	6	Pipe feedthroughs, punched
7	Filter (optional)		

# Katherm HK

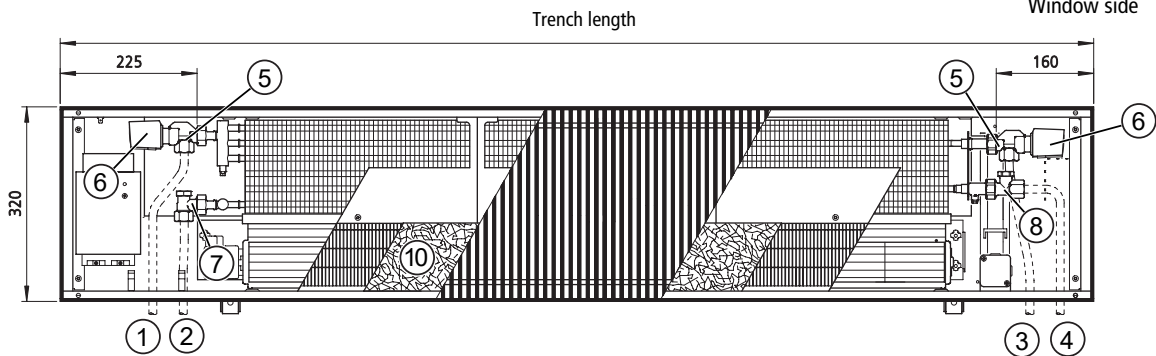
Assembly, installation and operating instructions

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



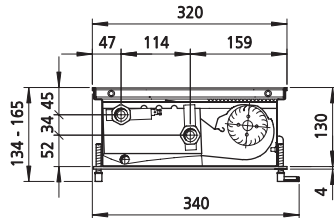
Front view, connection openings

Window side

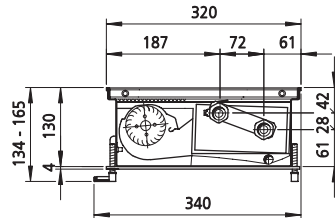


Top view, water connection on room side

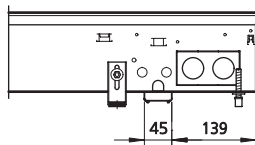
Window side Room side Room side Window side



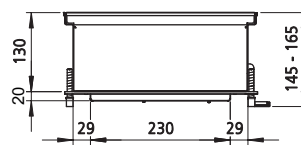
Section (chiller or heating)  
Example: roll-up grille



Window side Room side



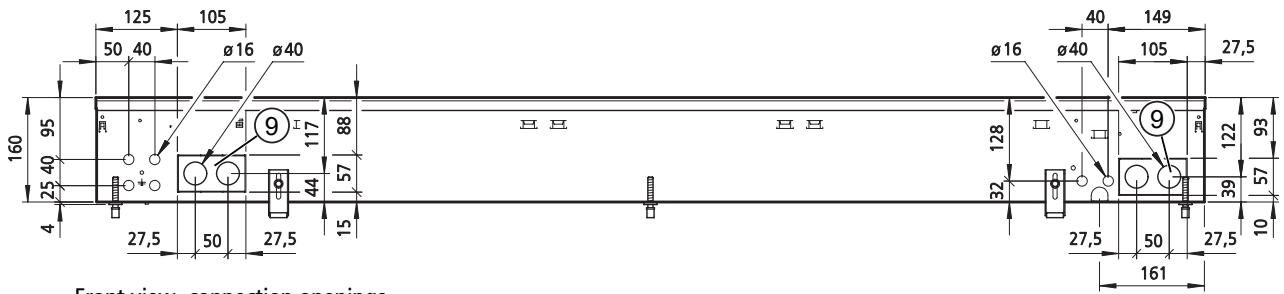
Front view with built-in condensate pump



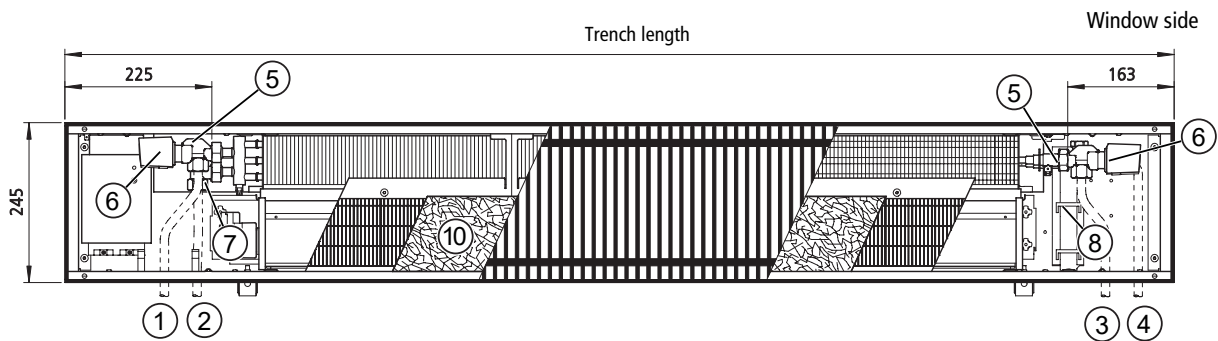
Side view with built-in condensate pump

1	Supply chiller	2	Return chiller
3	Heating supply	4	Return heating
5	Valve body 1/2", axial form (flow-dependent)	6	Thermoelectric actuator
7	Shut-off return fitting 1/2", angled (flow-dependent)	8	Shut-off return fitting 1/2", straight (flow-dependent)
9	Pipe feedthroughs, punched	10	Filter (optional)

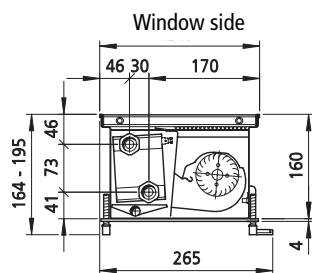
## Katherm HK 245, 4-pipe, trench height 160 mm



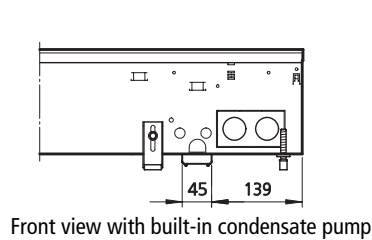
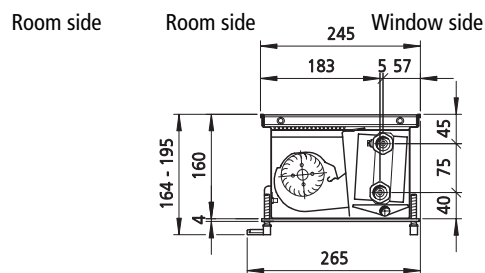
Front view, connection openings



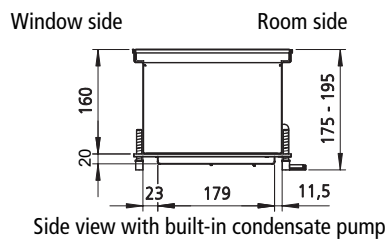
Top view, water connection on room side



Section (chiller or heating)  
Example: roll-up grille



Front view with built-in condensate pump



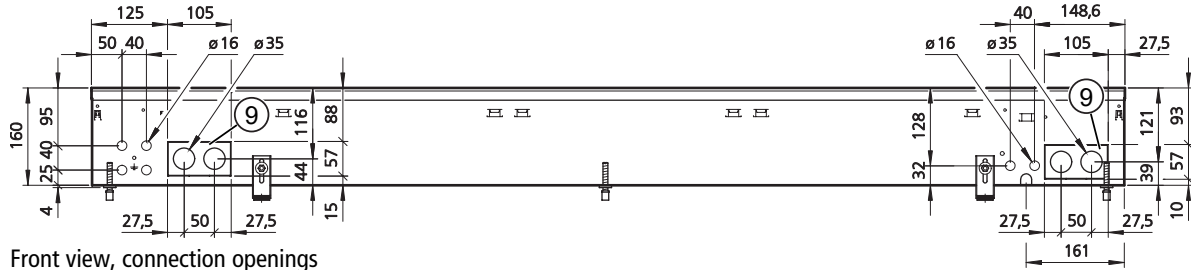
Side view with built-in condensate pump

1	Supply chiller	2	Return chiller
3	Heating supply	4	Return heating
5	Valve body 1/2", axial form (flow-dependent)	6	Thermoelectric actuator, type 146906
7	Shut-off return fitting 1/2", angled (flow-dependent)	8	Shut-off return fitting 1/2", straight (flow-dependent)
9	Pipe feedthroughs, punched	10	Filter (optional)

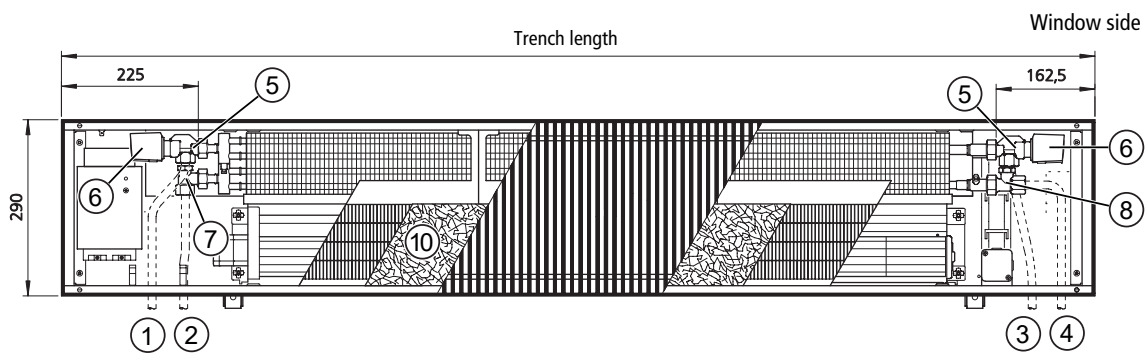
# Katherm HK

Assembly, installation and operating instructions

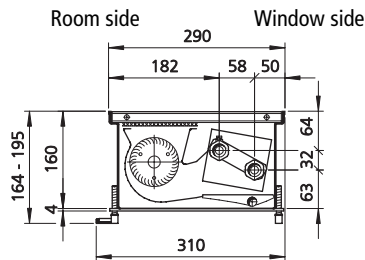
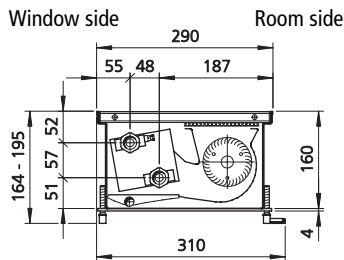
## Katherm HK 290, 4-pipe, trench height 160 mm



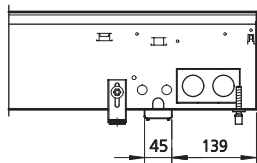
Front view, connection openings



Top view, water connection on room side

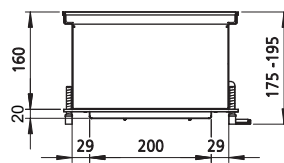


Section (chiller or heating)  
Example: roll-up grille



Front view with built-in condensate pump

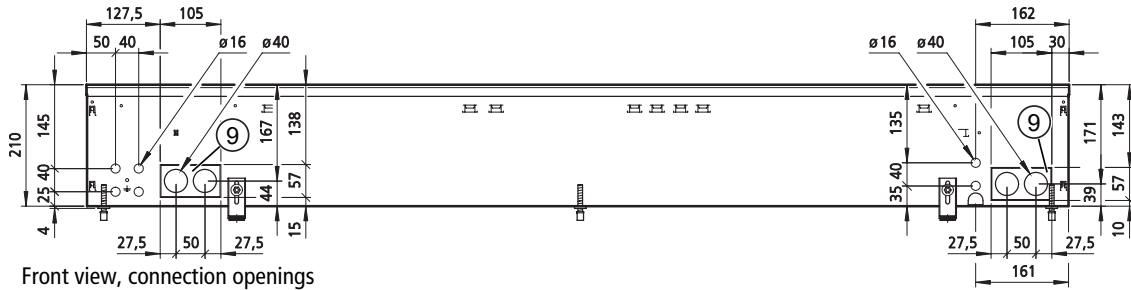
Window side Room side



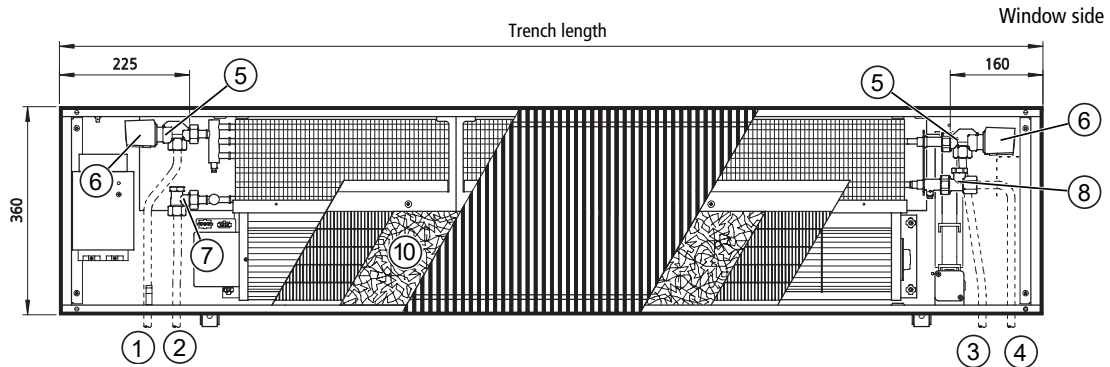
Side view with built-in condensate pump

1	Supply chiller	2	Return chiller
3	Heating supply	4	Return heating
5	Valve body 1/2", axial form (flow-dependent)	6	Thermoelectric actuator
7	Shut-off return fitting 1/2", angled (flow-dependent)	8	Shut-off return fitting 1/2", straight (flow-dependent)
9	Pipe feedthroughs, punched	10	Filter (optional)

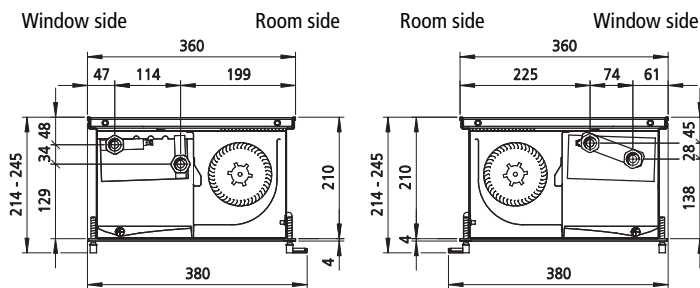
## Katherm HK 360, 4-pipe, trench height 210 mm



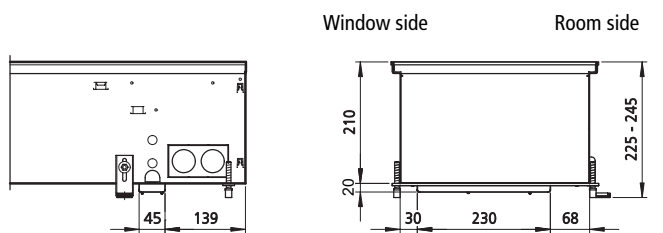
Front view, connection openings



Top view, water connection on room side



Section (chiller or heating)  
Example: roll-up grille



Front view with built-in condensate pump

Side view with built-in condensate pump

1	Supply chiller	2	Return chiller
3	Heating supply	4	Return heating
5	Valve body 1/2", axial form, for higher flow rate	6	Thermoelectric actuator
7	Shut-off return fitting 1/2", angled	8	Shut-off return fitting 1/2", straight form
9	Pipe feedthroughs, punched	10	Filter (optional)

## 6.3.2 Condensation connection

### General information on condensate drainage

If the appliance is operated at system temperatures below the dew point, condensate may form. This must be discharged in accordance with standards and the state of the art.

The basic requirements for the drainage of condensate from the outlet of the appliance are regulated in the following standards and guidelines:

- ▶ DIN 1986-100 - Drainage systems for buildings and properties
- ▶ DIN EN 12056 - Gravity drainage systems inside buildings
- ▶ VDI 6022 - Indoor air technology, indoor air quality - Hygiene requirements for HVAC systems and appliances.

Schematic structure of the condensate drain (units with pump)		Schematic structure of the condensate drain (units without pump)	
A	Device with condensate accumulation	B	Maximum condensate drainage height
C	Ventilation or venting	D	Main line (dimensioned according to the condensate produced)
E	Gradient (1%)	F	Connection diameter

When laying condensate lines, observe the following points in addition to the standardized requirements:

- ▶ The maximum delivery height [] of the condensate pump must not be exceeded.
- ▶ Condensate lines must be ventilated.
- ▶ Lines must be provided with a permanent and continuous gradient. Avoid gradients or so-called "water pockets". Only use fixed pipes (no flexible hoses) for horizontal sections.
- ▶ Connections and transitions (e.g. from hose to fixed pipe) must be tight and mechanically secured, e.g. by using hose clamps.
- ▶ If there is a siphon stop device at the transition point from the appliance to the on-site drain, this must be installed at the highest point of the drainage route.
- ▶ Protect lines carrying condensate from falling below the dew point, e.g. by using vapor diffusion-tight insulation.
- ▶ The alarm contact of the pump must cause the cooling valve to close.

**IMPORTANT NOTE!****Damage caused by condensate leakage**

Condensate will form if the dew point is undershot and, if discharged uncontrollably, could damage the unit and building.

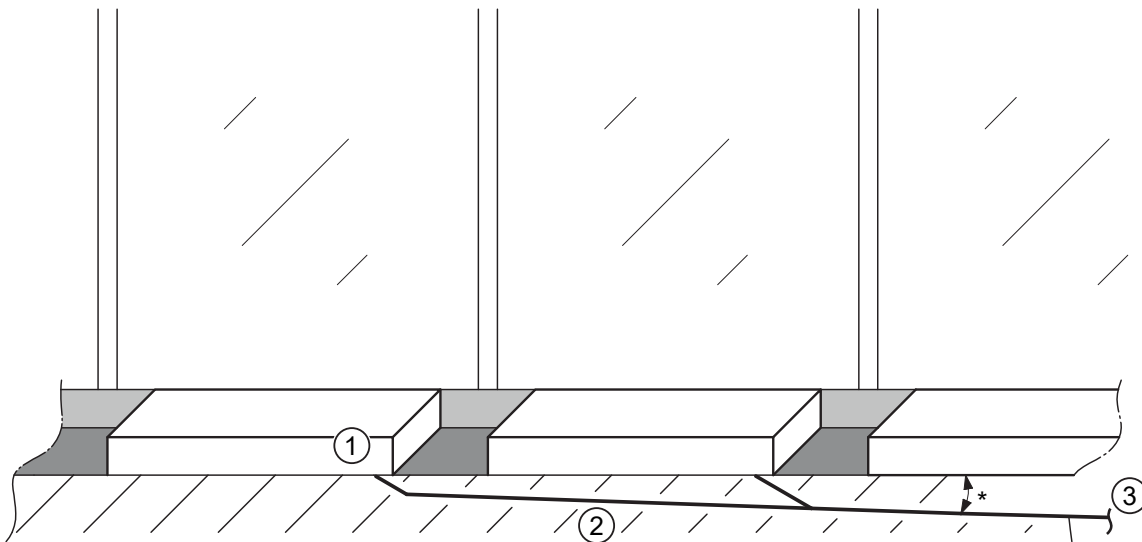
With units with dry cooling: Avoid the dew point being undershot.

With units with wet cooling:

- ▶ Fit a condensate drain as described in the instructions.
- ▶ Carry out maintenance as described in the Maintenance section.
- ▶ After carrying out the installation and any maintenance, check that condensate is able to drain off properly, check the operation of the condensate pump, operation of the alarm signal, and interruption of the dew point being undershot.

### 6.3.2.1 Condensation drain with natural gradient

An on-site condensate drain must be connected to a condensate drain connection on the device (drain size 15 mm) and fixed accordingly. In order to ensure condensate drainage from the device, the slope must be at least 1 % (in accordance with DIN EN 12056; old: DIN 1986-100), unless a sufficiently dimensioned condensate pump is installed, without restriction and without rising pipe sections. When connecting the condensate drain to the sewer system, the applicable regulations must be observed, e.g. the use of a ball siphon. The siphon must be protected from drying out. The suction effect of the fan on the condensate drain connection could otherwise lead to unpleasant odors. Depending on the on-site pipe material used for the condensate drainage, vapor diffusion-tight insulation may be required. If a natural gradient cannot be realized on site, a condensate pump (provided or factory-fitted) is required. This is used to transport the condensate to higher collection or drainage facilities. When ordered, the condensate pump with integrated optical sensor is provided or factory-fitted to the appliance.



Condensate drainage on site with a natural gradient

- ① Katherm HK condensate connection - collection line
- ② Condensate collection line
- ③ Attention: Connect the condensate collection line to the waste water network in accordance with the applicable technical standards and regulations; observe the necessary ventilation, odor traps (siphon), etc.

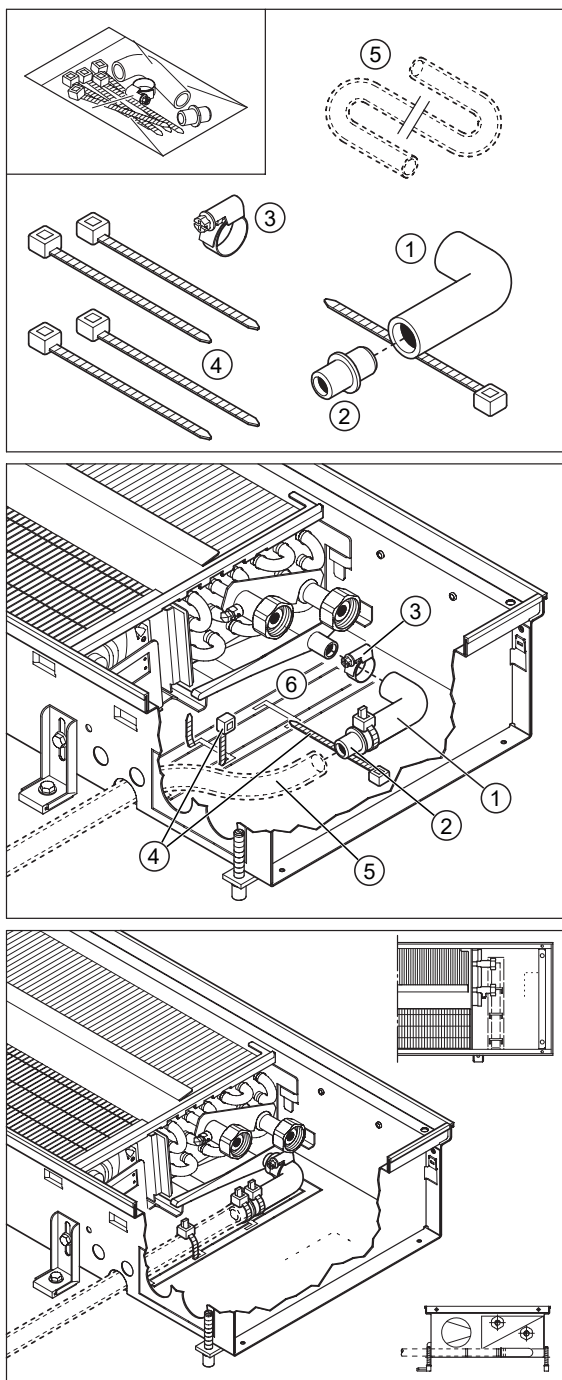
\*min. 1% gradient

# Katherm HK

Assembly, installation and operating instructions

## Condensate drain mounting kit for natural gradient

The following mounting kit can be ordered as an accessory for draining condensate.

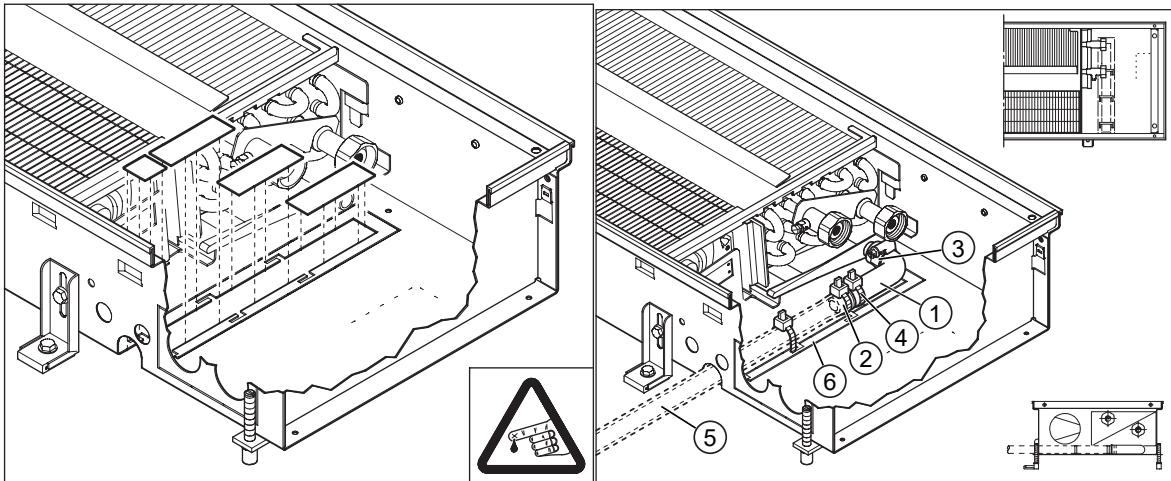


1	Condensate elbow piece	2	Coupling piece, outer diameter 16 mm
3	Hose clamp	4	Cable tie
5	On-site condensate line	6	Floor plate cut-outs (pre-punched)

- ▶ Connect coupling piece ② and condensate elbow piece ① with cable tie ④.
- ▶ Fix condensate elbow piece ① to the drain connection of the condensate tray using hose clamp ③.

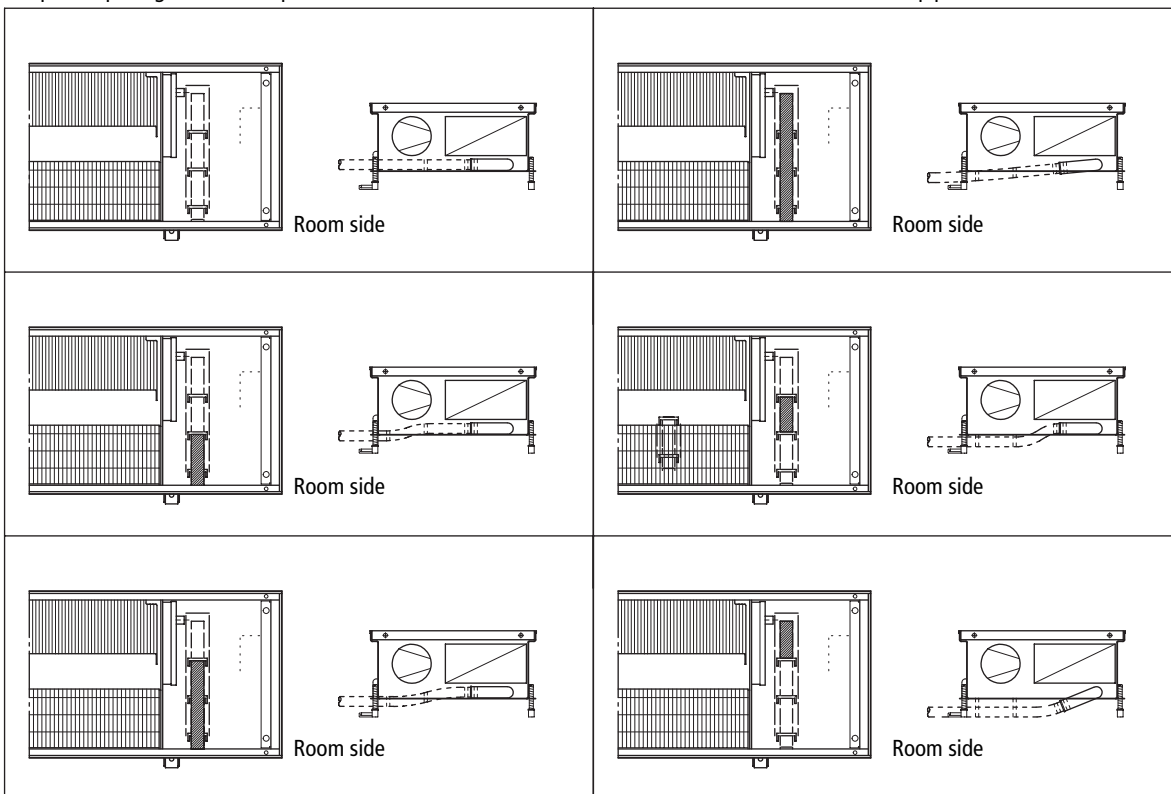
## 6.3.2.2 Additional on-site condensate drain pipe

The on-site condensate drainage can be fixed to the pre-punched base plate cut-outs using cable ties to maintain the necessary gradient. If a greater gradient is required on site for the on-site condensate drainage line, the pre-punched cut-outs on the base plate can be broken out accordingly.



Required openings in the base panel

Additional on-site condensate drain pipe



1	Condensate elbow piece	2	Coupling piece
3	Hose clamp	4	Cable tie
5	On-site condensate line	6	Floor panel cut-outs (pre-punched)

# Katherm HK

Assembly, installation and operating instructions

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

The water is extracted by the condensate pump and discharged via a hose to be connected on the pressure side (supplied loose). Depending on the structural conditions, the water can be discharged into drainage pipes, e.g. with a siphon connection.

In the event of a fault in the condensate drainage system, the water level continues to rise until the float switch activates an alarm contact. The contact can be evaluated by external signaling devices.

When the alarm contact is triggered, it is recommended that cooling mode is ended automatically, e.g. by an on-site switch-off device, to prevent the condensate tray from overflowing.

### Condensate drain

- ▶ The condensate drainage of the condensate pump must be designed with a natural gradient and a sufficient cross-section. In the case of long condensate lines, the cross-section should be increased accordingly.
- ▶ Check whether the condensate line needs to be insulated to prevent condensate from forming along the line.
- ▶ Do not use a rigid transition to the on-site condensate line, as this will lengthen the pump's pressure hose. A free overflow into a siphon is recommended.

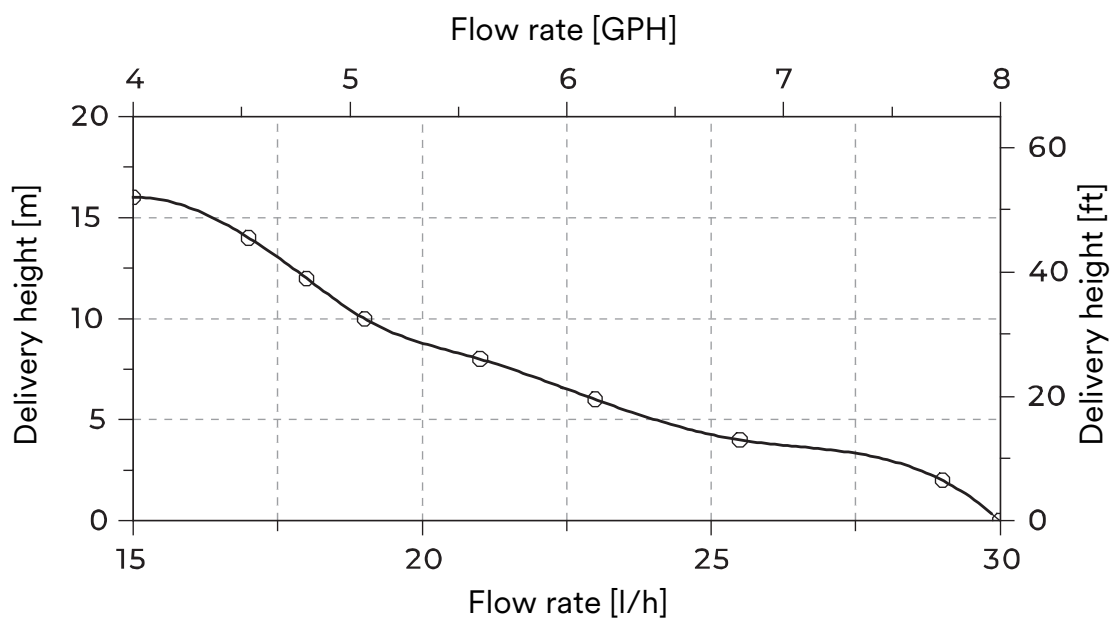
### Installation, cabling of the condensate pump (accessory)

Connect the connection cable of the condensate pump to the internal PCB according to the 230 V circuit description. The power supply is established via the internal PCB. The condensate alarm can be evaluated electromechanically on site for the control version. With the KaControl MC control version, the condensate alarm is processed internally. A connection via the room thermostat, for example, is generally not recommended, as residual condensate may still be present after shut-down. Additional wires are required to evaluate the alarm contact.

## Katherm HK 290, HK 320, HK 360, HK 290 E, HK 320 E (condensate pump Vamp F)

Technical data condensate pump Vamp F	
Maximum flow rate	22 l / h (6 GPH)
Maximum cooling output	18.5 kW (63,000 BTU/h)
Maximum suction height	2 m (6.6 ft)*
Maximum delivery height	15 m (50 ft)
Maximum horizontal delivery distance	75 m (250 ft) at 0 m delivery height and 0 m suction height
Electrical values	100 - 240 VAC, 50 - 60 Hz, 6 W
Power consumption idle	0.6 W
Alarm relay	Potential-free normally closed contact (NC), fail-safe 5 A 250 VAC, 5 A 30 VDC
Temperature protection	Software-controlled sensor
Protection class	CLASS II
IP class	Completeness IP67 Cable connector IP44
Operating temperature range	3 °C - 40 °C (37 °F - 104 °F)
Water temperature range	5 °C - 40 °C (37 °F - 104 °F)
Storage temperature range	-20 °C - 70 °C (-4 °F - 158 °F)
Noise level	<20 dB(A) at 1 m (3 ft) distance
Weight	140 g (4.9 oz)
Dimensions	30 x 26 x 128 mm
Color	Black (RAL 9001)
Approval	CE, motor-driven water pumps UL 778 and liquid pumps CSA C22.2 #108 and UL 2043 housing type 2

\*No suction head applicable for VAMP-F











# Katherm HK

Assembly, installation and operating instructions

## Alarm messages condensate pump

Pump status	Condensate level	Standard operation
No power	N/A	NC ○ — ○ COM
Powered	Below alarm level	NC ○ — ○ COM
Powered	Alarm activated	NC ○ — ○ COM

status	LED sequence	Indication
Unpowered		Incorrectly connected, unplugged, voltage-free
LED start sequence		Pump starts
Standby mode Waiting for water		No water for pumping
Pumping water		Pump runs at low power
High water mode		Increased pump output
Alarm mode Alarm relay activated		Highest water level and alarm activated
Over temperature		Temperature in pump too high
Invalid status		Sensor needs cleaning

As soon as the installation is complete, restore the power supply to the device. The LED flashes regularly to indicate that the pump is operating normally.

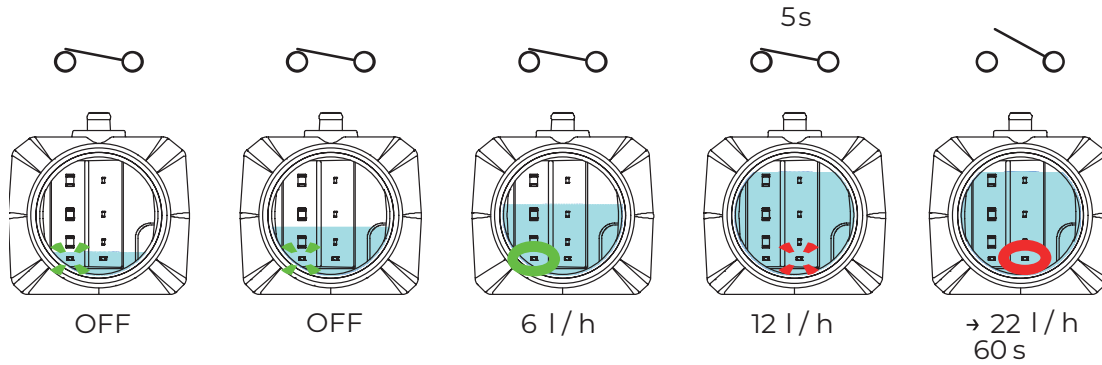
Fill the condensate tray with water using a dosing bottle. Water flows out through the condensate elbow. When the pump sump is filled with sufficient water, the pump is activated and the water is pumped out.

When the alarm relay is installed, enough water is filled in to check the function so that the water level remains above the top edge of the pump for at least five seconds. After five seconds of pumping, the alarm relay is activated. The power supply to the pump is not interrupted; it continues to run until the water has been drained.

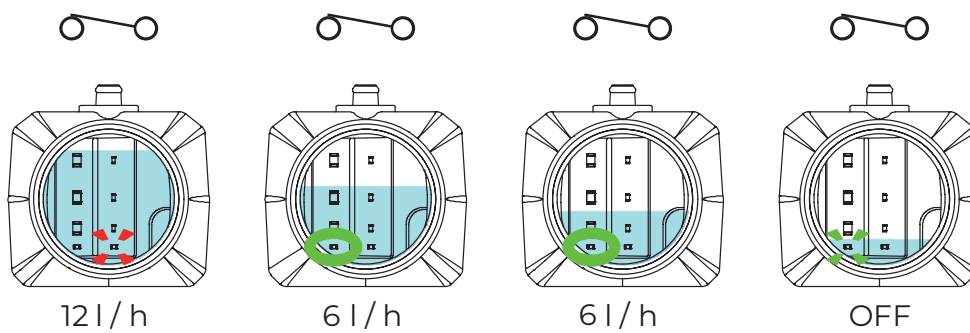
Final check:

- ▶ LED flashes green.
- ▶ Fill with water: LED changes to steady green and then changes to red.
- ▶ The pump is installed horizontally.
- ▶ Siphon stop device is installed.
- ▶ Ventilation pipe is installed.
- ▶ Cable tie for fixing the hose, pump and drain hose is installed.

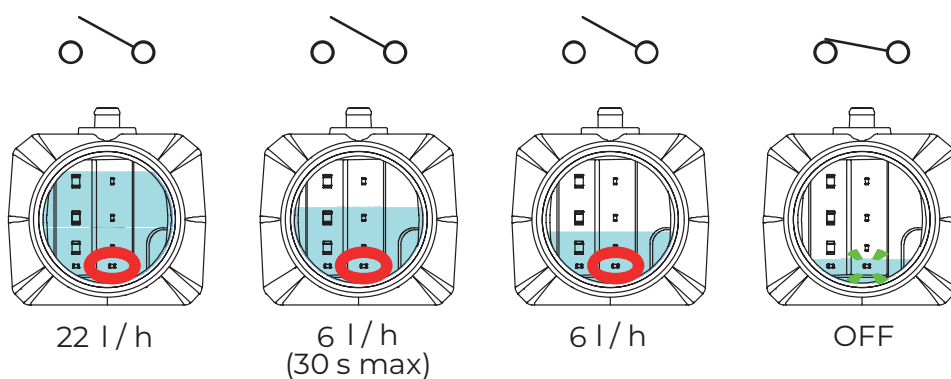
### Pump behavior depending on the water level.



### The pump behavior when the water level rises.



### The pump behavior when the water level drops (normal).



### The pump behavior when the water level drops (from alarm).

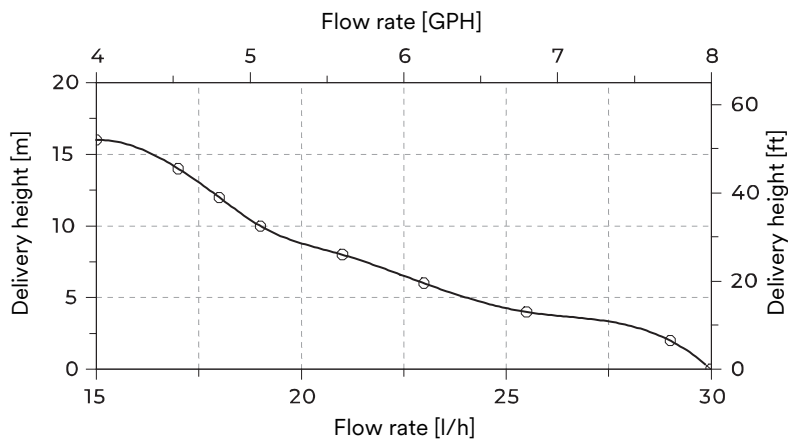
# Katherm HK

Assembly, installation and operating instructions

## Katherm HK 245 and HK 320 connection on the right (Vamp X condensate pump)

Technical data condensate pump Vamp X	
Maximum flow rate	22 l / h (6 GPH)
Maximum cooling output	18.5 kW (63,000 BTU/h)
Maximum suction height	2 m (6.6 ft)*
Maximum delivery height	15 m (50 ft)
Maximum horizontal delivery distance	75 m (250 ft) at 0 m delivery height and 0 m suction height
Electrical values	100 - 240 VAC, 50 - 60 Hz, 6 W
Power consumption idle	0.6 W
Alarm relay	Potential-free normally closed contact (NC), fail-safe 5 A 250 VAC, 5 A 30 VDC
Temperature protection	Software-controlled sensor
Protection class	CLASS II
IP class	Completeness IP67 Cable connector IP44
Operating temperature range	3 °C - 40 °C (37 °F - 104 °F)
Water temperature range	5 °C - 40 °C (37 °F - 104 °F)
Storage temperature range	-20 °C - 70 °C (-4 °F - 158 °F)
Noise level	<20 dB(A) at 1 m (3 ft) distance
Drain hose (not included)	¼" or 6 mm
Dimensions	
Pump housing	30 x 26 x 122 mm (1.2 x 1.0 x 4.8")
Sensor Reservoir	38 x 26 x 54 mm (1.5 x 1.0 x 1.7")
Net weight	
Pump housing	130 g (4.6 oz)
Sensor Reservoir	80 g (2.8 oz)
color	Black (RAL 9001)
Approval	CE, motor-driven water pumps UL 778 and liquid pumps CSA C22.2 #108 and UL 2043 housing type 2

\*No suction head applicable for VAMP X



## Alarm messages condensate pump

Pump status	Condensate level	Standard operation
No power	N/A	NC ○ — ○ COM
Powered	Below alarm level	NC ○ — ○ COM
Powered	Alarm activated	NC ○ — ○ COM

status	LED sequence	Indication
Unpowered		Incorrectly connected, unplugged, voltage-free
LED start sequence		Pump starts
Standby mode Waiting for water		No water for pumping
Pumping water		Pump runs at low power
High water mode		Increased pump output
Alarm mode Alarm relay activated		Highest water level and alarm activated
Over temperature		Temperature in pump too high
Invalid status		Sensor needs cleaning
Sensor unplugged		Sensor unplugged or defective

As soon as the installation is complete, restore the power supply to the appliance. The LED flashes regularly to indicate that the pump is operating normally.

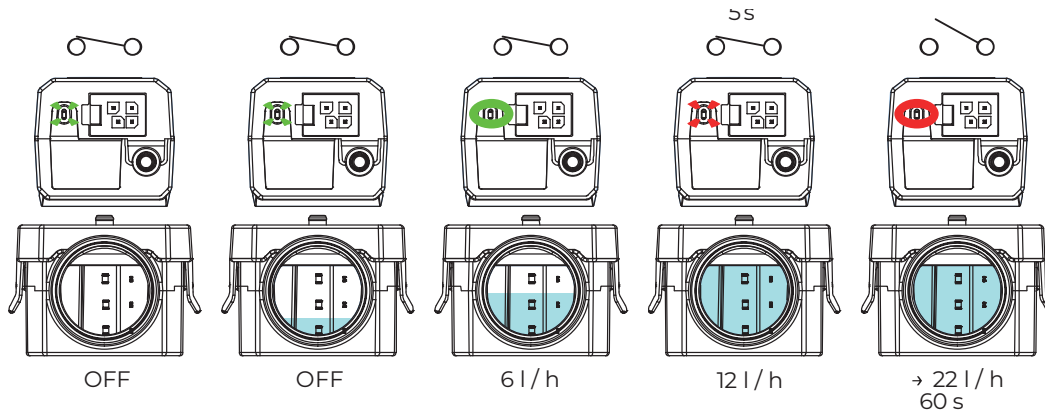
Fill the condensate tray with water using a dosing bottle. Water flows out through the condensate elbow. When the reservoir is filled with sufficient water, the pump is activated and the water is pumped out.

When the alarm relay is installed, enough water is filled in to check the function so that the water level remains above the top edge of the pump for at least five seconds. After five seconds of pumping, the alarm relay is activated. The power supply to the pump is not interrupted; it continues to run until the water is emptied from the reservoir.

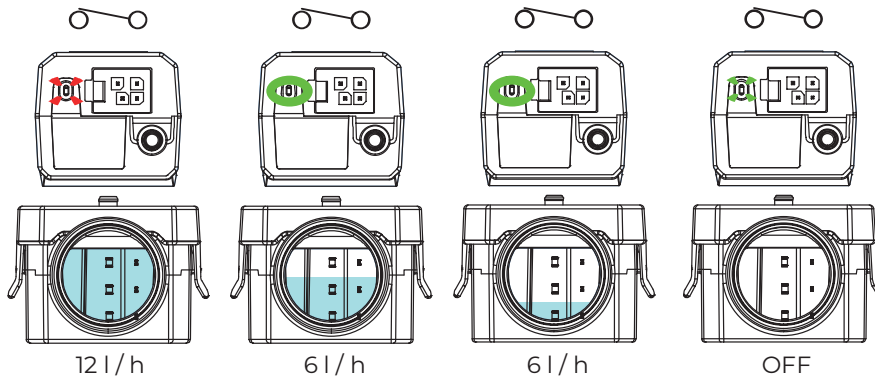
Final check:

- ▶ LED flashes green.
- ▶ Fill with water: LED changes to steady green and then changes to red.
- ▶ The pump is installed horizontally.
- ▶ Siphon stop device is installed.
- ▶ Ventilation pipe is installed.
- ▶ Cable tie for fixing the hose, pump and drain hose is installed.

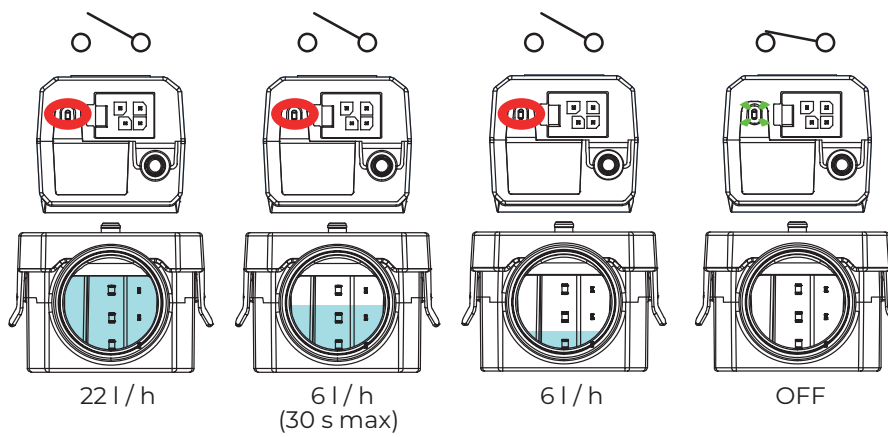
### Pump behavior depending on the water level.



### The pump behavior when the water level rises.

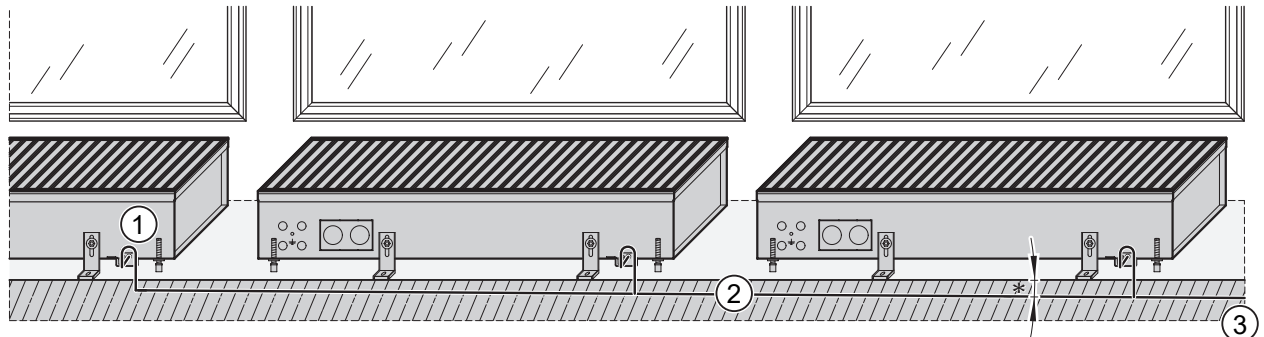


### The pump behavior when the water level drops (normal).



### The pump behavior when the water level drops (from alarm).

## 6.3.2.4 On-site condensate drainage with a condensate pump



On-site condensate drainage with condensate pump

\*min. 1% gradient

- ① Condensate connection Katherm HK, collecting line
- ② Condensate collection line
- ③ Attention: Connection of the condensate collection line to the waste water network in accordance with the applicable technical standards and regulations; observe the necessary ventilation, odor traps (siphon), etc.

### Individual components Condensate pump Vamp F

(for Katherm HK 290, HK 320, HK 360, HK 290 E, HK 320 E)

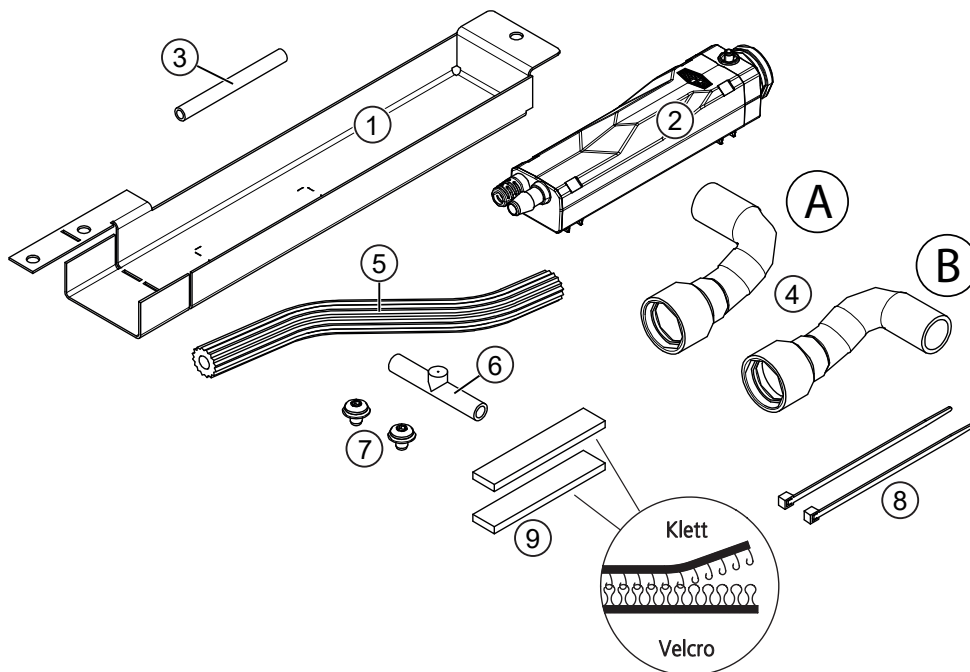


Fig. 5: Individual components Mounting kit Vamp F

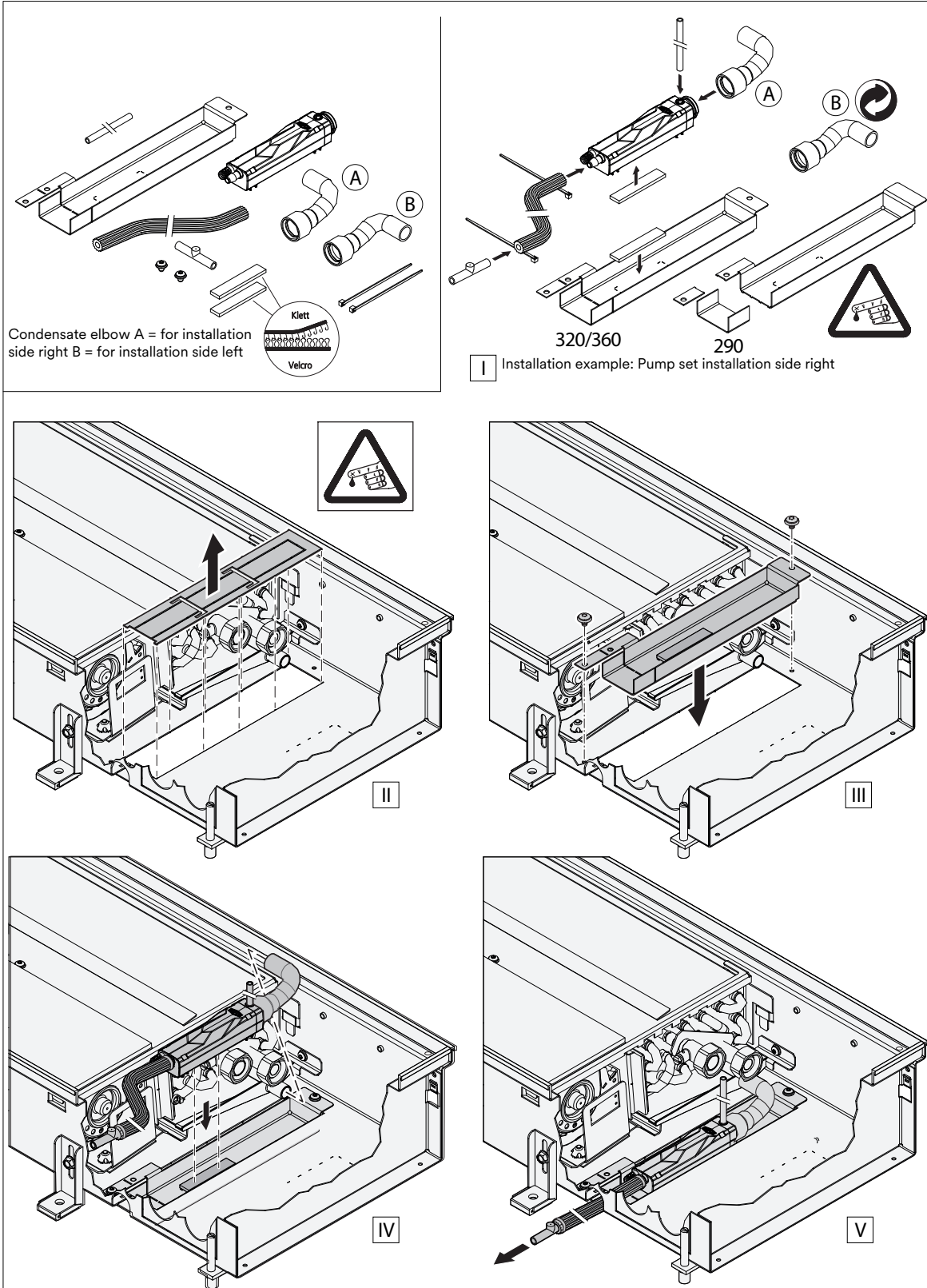
1	Mounting plate	2	Condensate pump
3	Ventilation hose	4	Condensate elbow pieces (installation side right or left)
5	Condensate hose	6	Anti-siphon
7	Fastening screws	8	Cable tie
9	Double-sided Velcro strips		

# Katherm HK

Assembly, installation and operating instructions

## Mounting

Pump set: installation side right for Katherm HC 290, 360 and 320, 2-pipe, water connection left and 4-pipe installation side left for Katherm HC 290 and 360, 2-pipe, water connection



## Individual components Condensate pump Vamp X

(for Katherm HK 320 connection on the right)

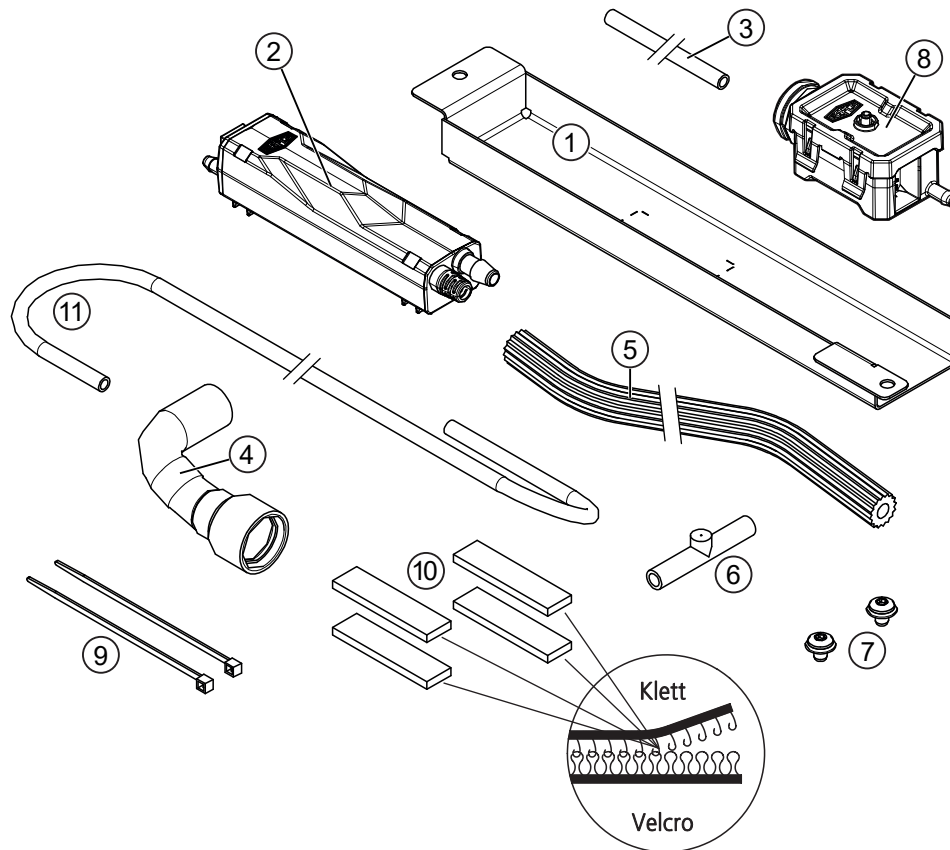


Fig. 6: Individual components Vamp X

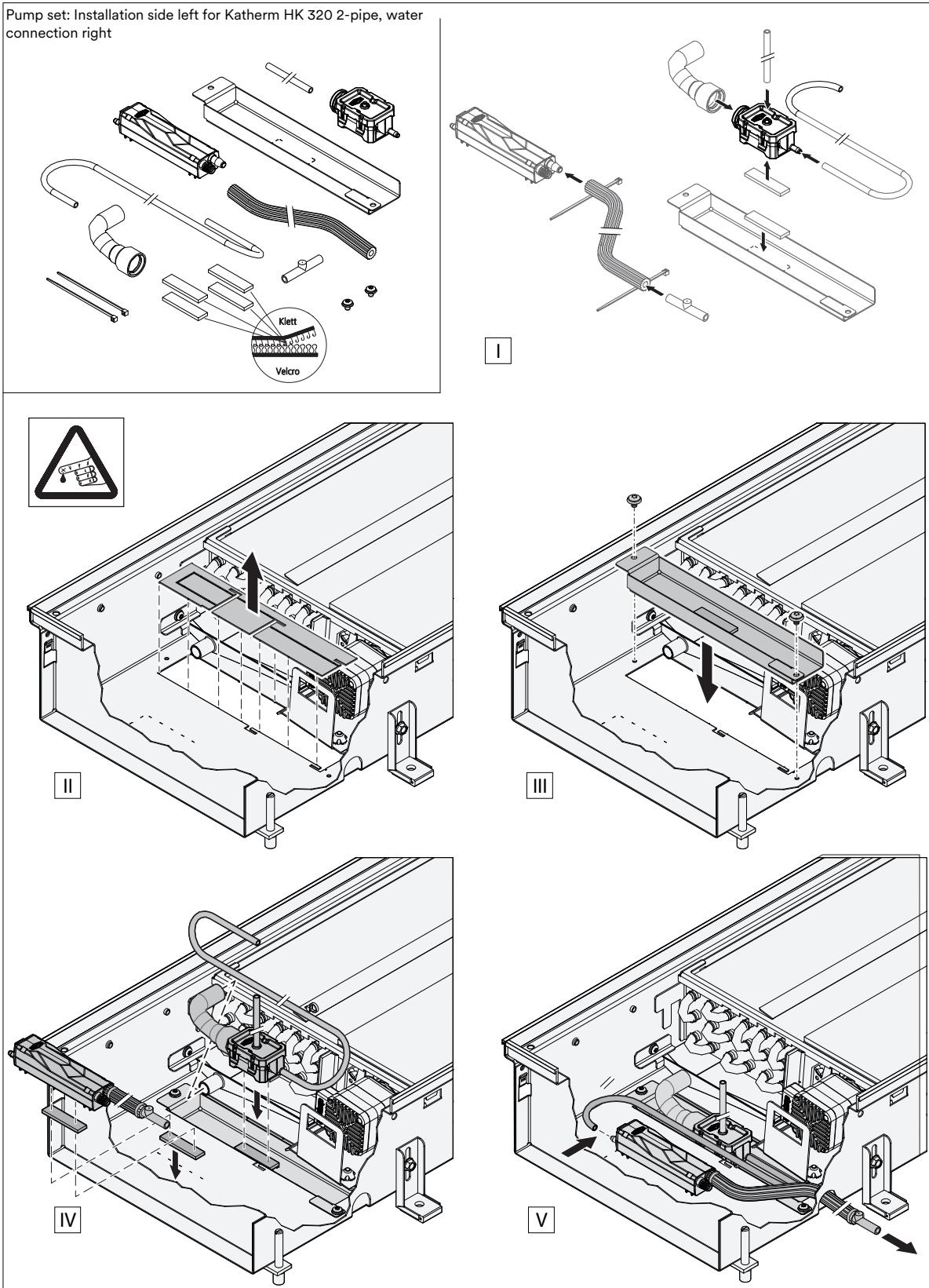
1	Mounting plate	2	Condensate pump
3	Ventilation hose	4	Condensate elbow piece
5	Condensate hose	6	Anti-siphon
7	Fastening screws	8	Sensor reservoir
9	Cable tie	10	Double-sided Velcro straps
11	Suction hose		

# Katherm HK

Assembly, installation and operating instructions

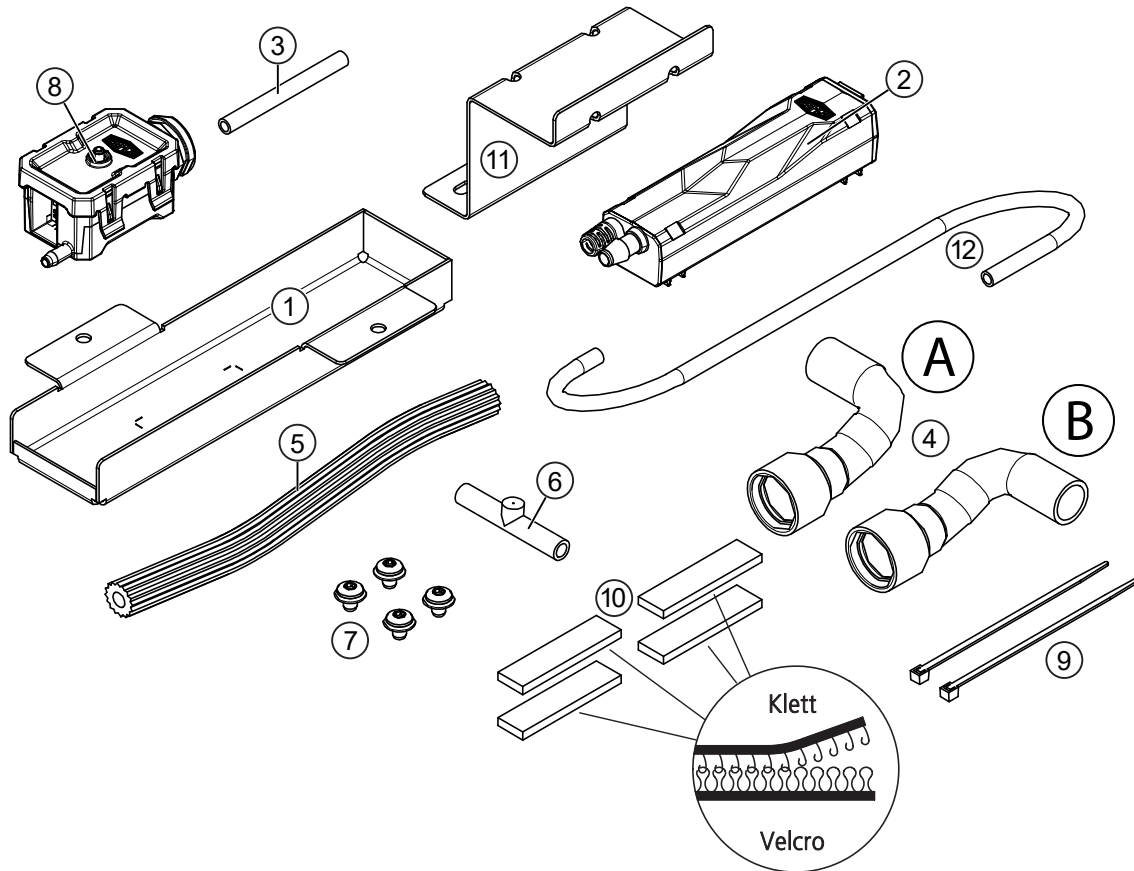
## Mounting

Pump set: Installation side left for Katherm HK 320 2-pipe, water connection right



## Individual components Condensate pump Vamp X

(for Katherm HK 245)



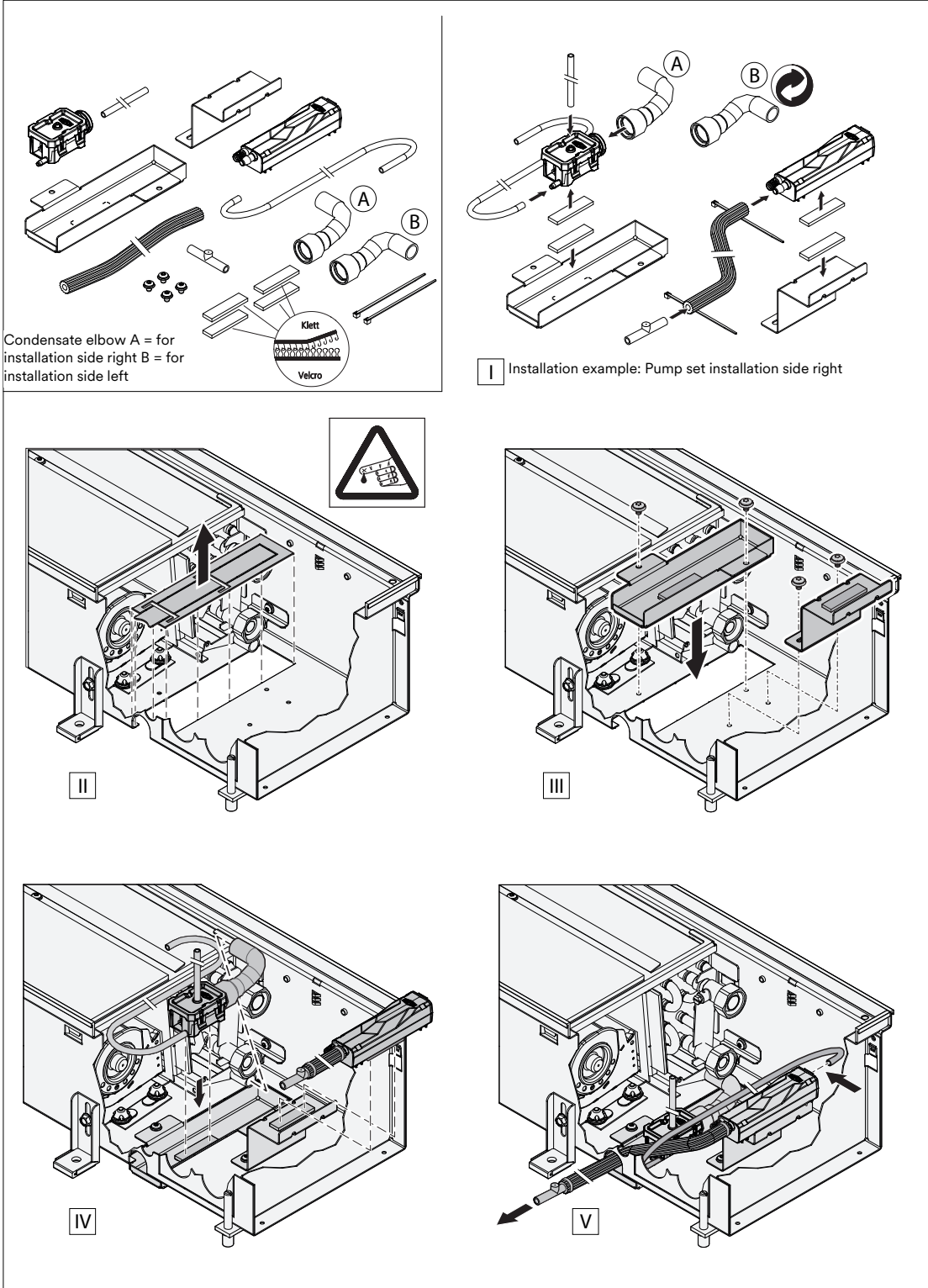
1	Mounting plate	2	Condensate pump
3	Ventilation hose	4	Condensate elbow piece Installation side left or right
5	Condensate hose	6	Anti-siphon
7	Fastening screws	8	Sensor reservoir
9	Cable tie	10	Double-sided Velcro straps
11	Mounting plate for pump	12	Suction hose

# Katherm HK

Assembly, installation and operating instructions

## Installation

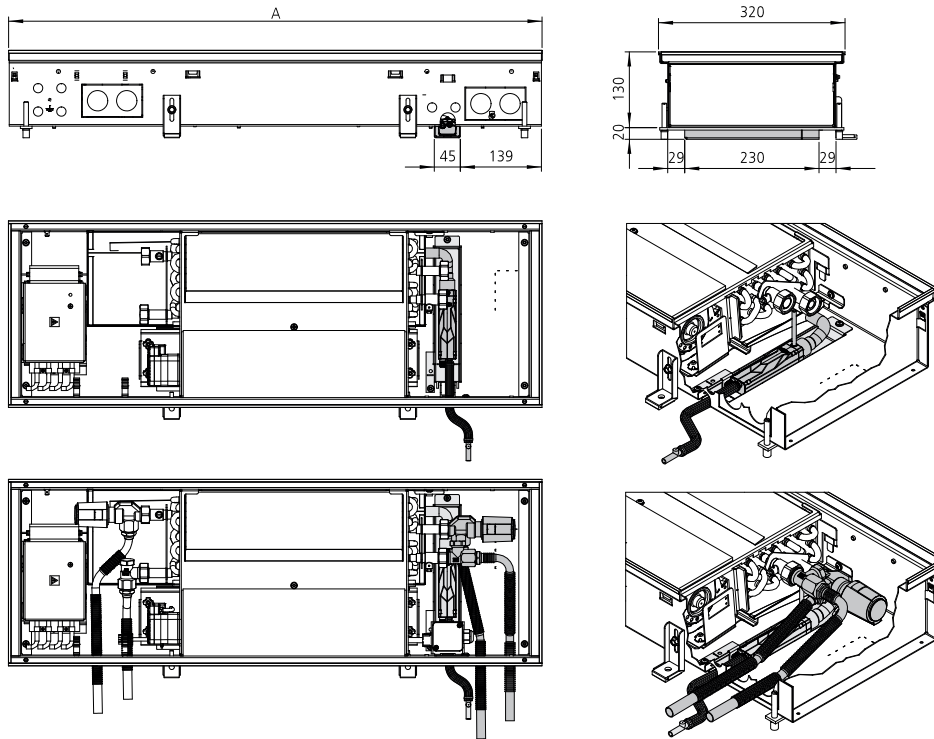
Pump set: Installation side right for Katherm HC 245, 2-pipe, water connection left and 4-pipe Installation side left for Katherm 245, 2-pipe water connection right



Attention! Note the increased trench height due to the mounting kit! First fit the condensate pump mounting kit, then the valves for the water connection (for 4-pipe system).

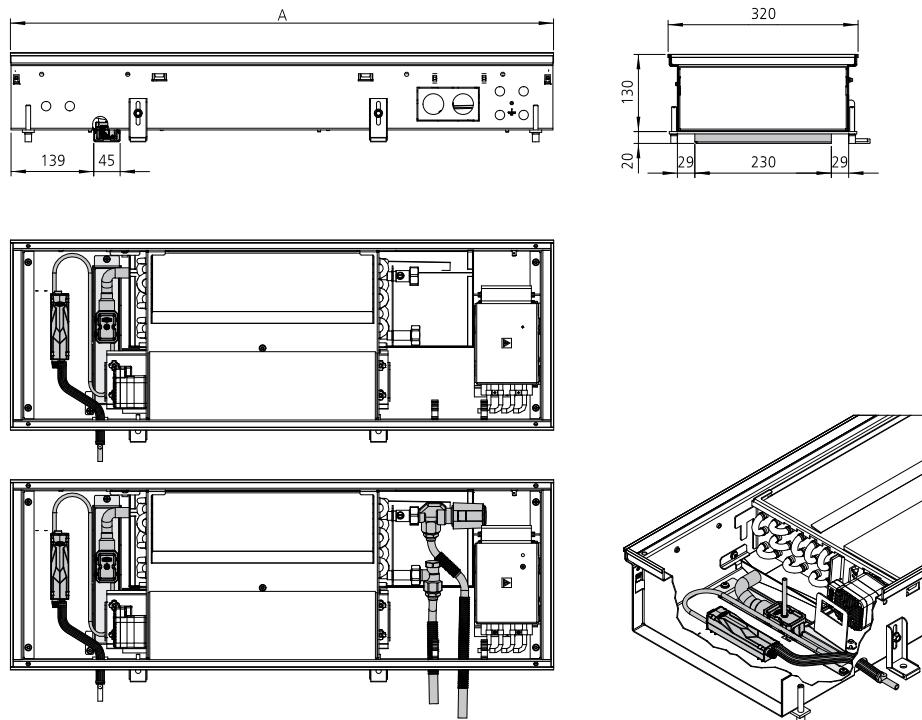
**Installation example: Katherm HC 320, pump set installation side right**

(for HC 320 pump set installation side right only, HC 290, HC 360 and pump set installation side left and right)



**Installation example: Katherm HC 320, pump set installation side left**

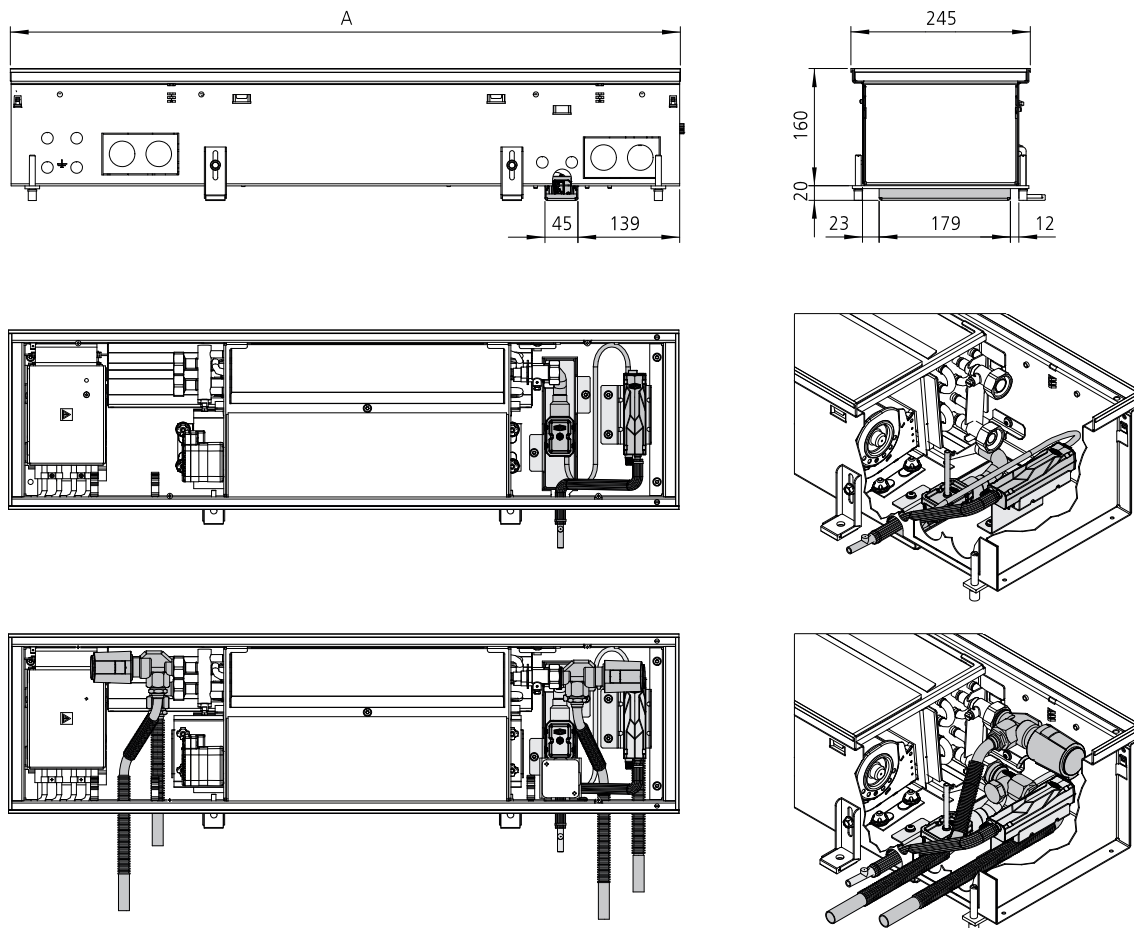
(only for HC 320 pump set installation side left)



# Katherm HK

Assembly, installation and operating instructions

**Installation example: Katherm HK 245, pump set, installation side right**  
(for HK 245, pump set installation side left and right)



\*For Katherm HK 290, HK 290 E, H = 160 mm or HK 360, H = 210 mm, the mounting position of the condensate tray and thus the corresponding dimensions are identical to 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. 4: 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. 5: 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. 6: 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. 7: 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. 8: 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. 9: 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. 10: Maximum electrical connection values Katherm HK 360/210

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

Trench length	Number of fans	Rated voltage [VDC]	Mains frequency [Hz]	Rated power [W]	Rated current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	230	50	7	0.08	10	IP00	I
1200	1 (6000)	230	50	12	0.12	10	IP00	I
1700	1 (10800)	230	50	19	0.17	10	IP00	I
2000	2 (6000. 6000)	230	50	23	0.24	10	IP00	I
2500	2 (10800. 6000)	230	50	30	0.29	10	IP00	I
3000	2 (10800. 10800)	230	50	36	0.34	10	IP00	I

Tab. 11: Maximum electrical connection values Katherm HK 320/130, 245/160

Trench length	Number of fans	Rated voltage [VDC]	Mains frequency [Hz]	Rated power [W]	Rated current [A]	Ri analogue input [kΩ]	IP class	Protection class
915	1 (3600)	230	50	530	2.30	10	IP00	I
1200	1 (6000)	230	50	1030	4.60	10	IP00	I
1700	1 (10800)	230	50	1030	4.60	10	IP00	I
2000	2 (6000. 6000)	230	50	1030	4.60	10	IP00	I
2500	2 (10800. 6000)	230	50	1540	6.90	10	IP00	I
3000	2 (10800. 10800)	230	50	1540	6.90	10	IP00	I

Tab. 12: Maximum electrical connection values Katherm HK 320 E/130

Trench length	Number of fans	Rated voltage [VDC]	Mains frequency [Hz]	Rated power [W]	Rated current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	13	0.12	10	IP00	I
1200	1 (630)	230	50	19	0.16	10	IP00	I
1700	2 (630. 380)	230	50	29	0.22	10	IP00	I
2000	2 (630. 680)	230	50	35	0.26	10	IP00	I
2500	3 (630. 680. 380)	230	50	47	0.34	10	IP00	I
3000	3 (730. 730. 730)	230	50	53	0.38	10	IP00	I

Tab. 13: Maximum electrical connection values Katherm HK 290/160

# Katherm HK

Assembly, installation and operating instructions

Trench length	Number of fans	Rated voltage [VDC]	Mains frequency [Hz]	Rated power [W]	Rated current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	530	2.4	10	IP00	I
1200	1 (630)	230	50	1040	4.6	10	IP00	I
1700	2 (630. 380)	230	50	1540	6.9	10	IP00	I
2000	2 (630. 680)	230	50	1540	6.9	10	IP00	I
2500	3 (630. 680. 380)	230	50	1560	6.9	10	IP00	I
3000	3 (730. 730. 730)	230	50	1560	6.9	10	IP00	I

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

Trench length	Number of fans	Rated voltage [VDC]	Mains frequency [Hz]	Rated power [W]	Rated current [A]	Ri analogue input [kΩ]	IP class	Protection class
950	1 (380)	230	50	12	0.11	10	IP00	I
1200	1 (630)	230	50	22	0.21	10	IP00	I
1350	1 (780)	230	50	27	0.26	10	IP00	I
1850	2 (780. 730)	230	50	39	0.37	10	IP00	I
2250	2 (780. 780)	230	50	54	0.52	10	IP00	I

Tab. 15: 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.

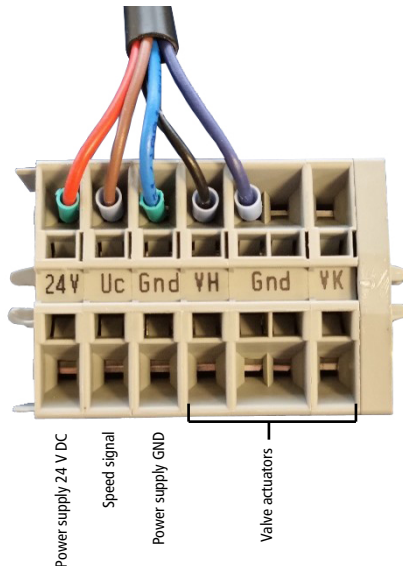


Fig. 7: Electromechanical connection (\*24), Katherm 320/130, 245/160, 290/160

### 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.

The following information on cable types and cable routing must be observed in compliance with VDE 0100/IEC 60364. Otherwise, correct functioning cannot be guaranteed and warranty claims may become invalid as a result.

The installation, operation and maintenance of this equipment must comply with the laws, standards, regulations and directives applicable in each country.

After completion of the installation, a functional test can be carried out by Kampmann customer service for a fee. This can be requested from the service center in Lingen by phone 059177-108-670 or by email [service@kampmann.de](mailto:service@kampmann.de).

\*) Shilded cable, IV(ST)Y 0.8mm or at least equivalent. Lay separately from power lines.

\*\*) Shilded cable stranded in pairs, e.g. UNITRONIC® BUS LD 2x2x0.22 or equivalent. Lay separately from power lines.

All other connections can be made in NYM-J (or equivalent).

Cable cross-sections of unshielded cables are not specified, as the cable length is included in the cross-section calculation.

Indication of the number of cores incl. protective conductor.

Protect cables installed outdoors against the weather or use equivalent weather-resistant cables.

Maximum cable length for analog input signals: 30m

Modbus network cable length: max. 500 m, extension possible with repeaters.


All installation locations or positions of the switching devices must be coordinated with the construction management.

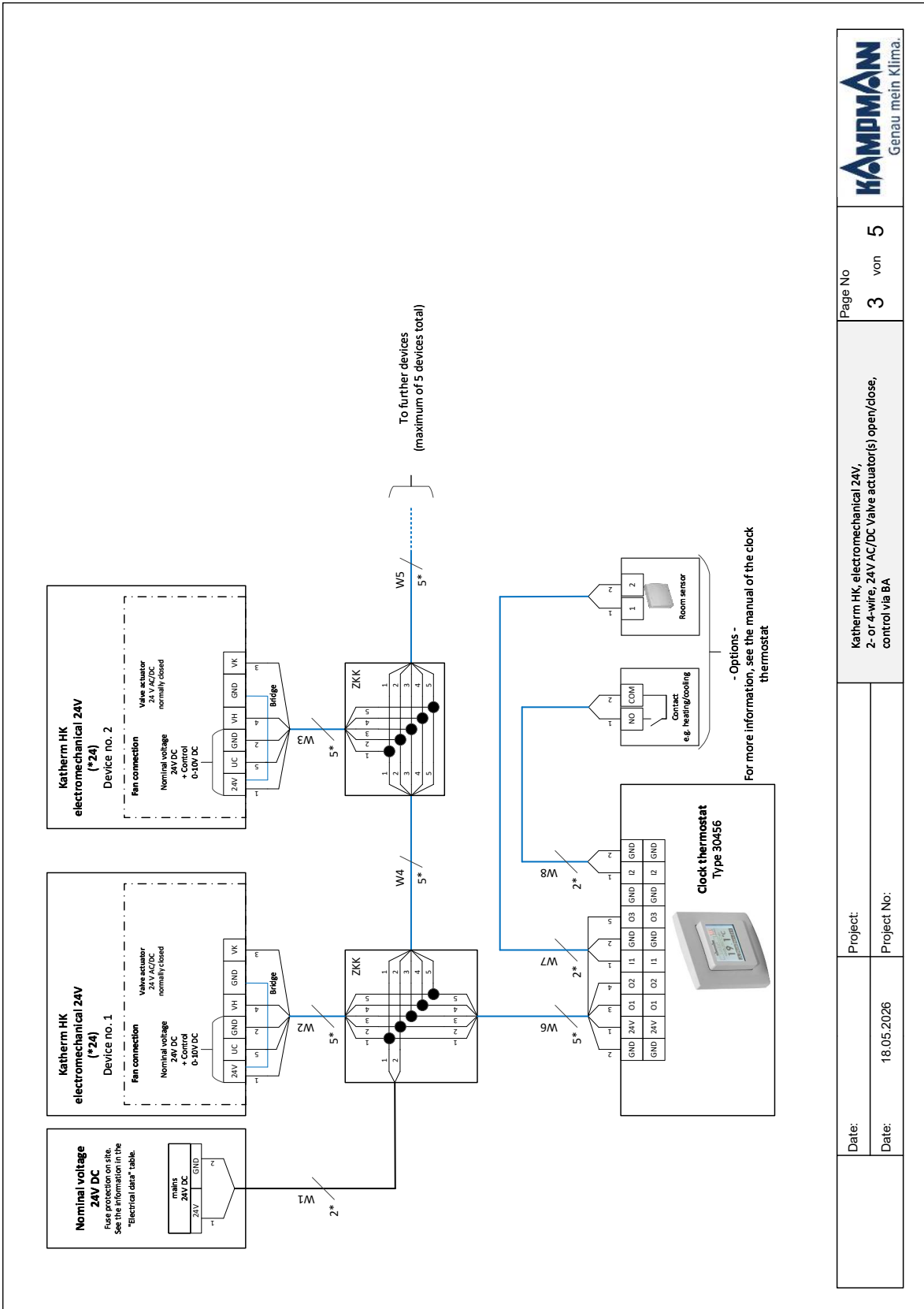
Install the room temperature sensors in the appropriate temperature zone and not in the vicinity of radiators, heat-radiating lights, opening windows or doors.

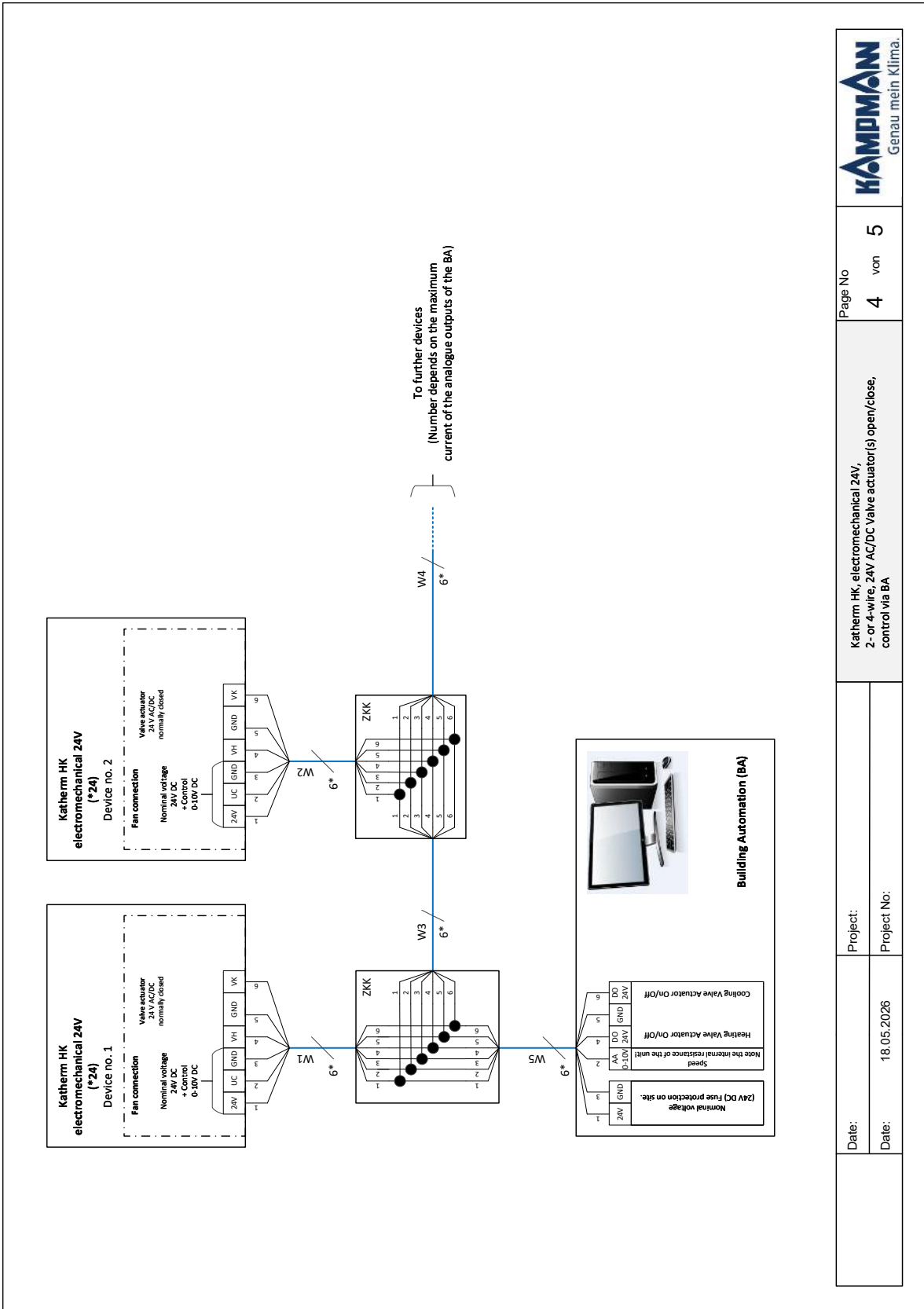
Residual current devices must comply with at least Type F as specified in IEC/EN 62423. The rated residual current must be selected in accordance with IEC 60364-4-41 and -5-53 or the relevant national standards (e.g., DIN VDE 0100-410 and -530).

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

Pictures exemplary. Actual appearance may vary.

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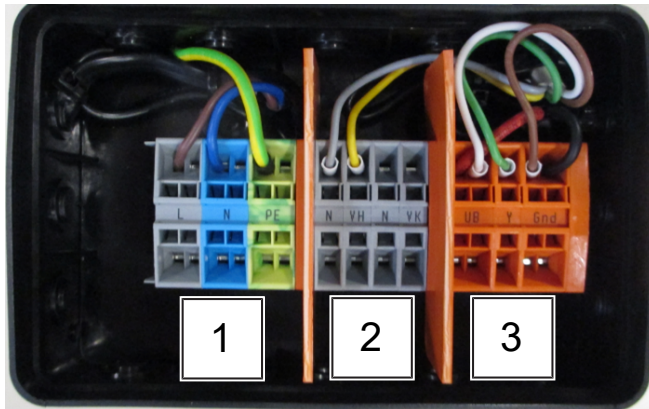




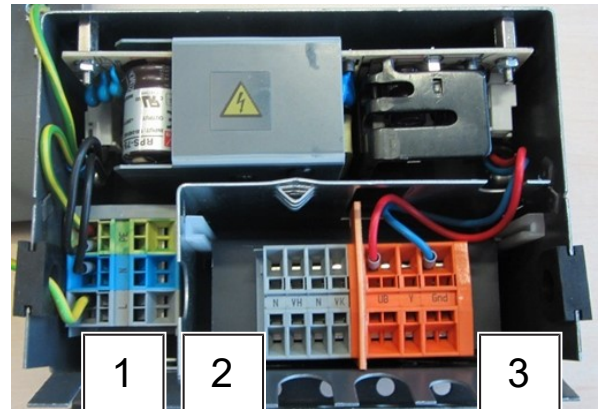
## 7.3 Electromechanical connection, 230 V (\*00)

### 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. 8: 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).

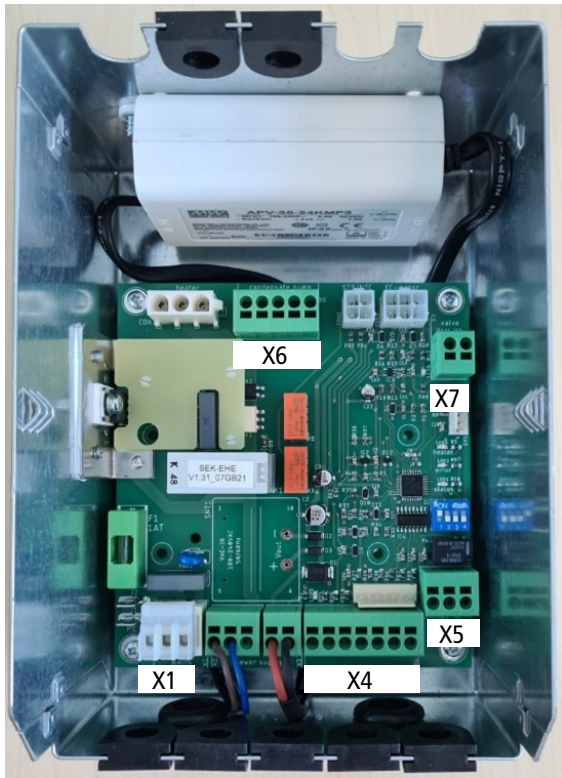


Fig. 9: Electromechanical junction box (\*00), Katherm HK-E

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. 16: 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%

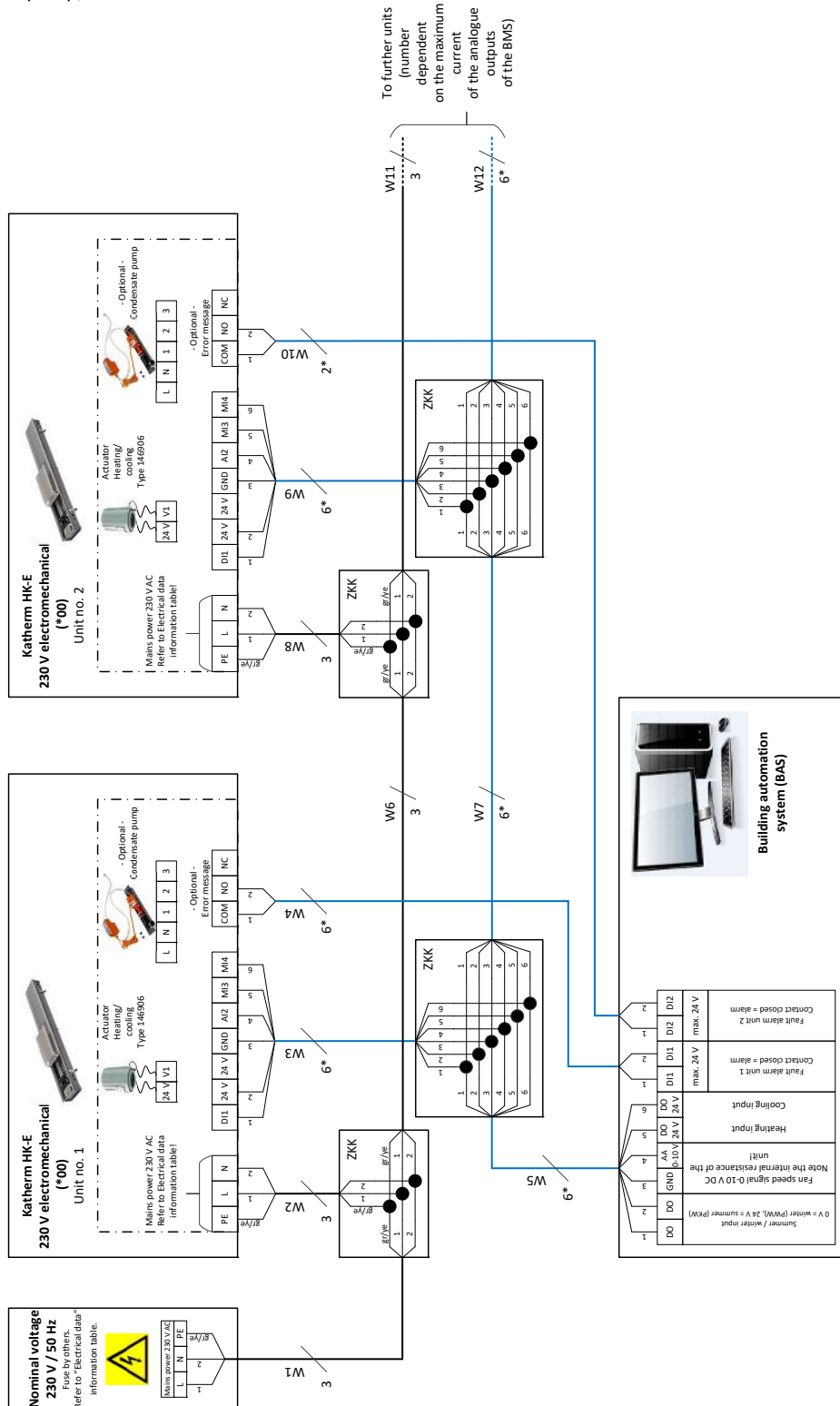
# Katherm HK

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) .

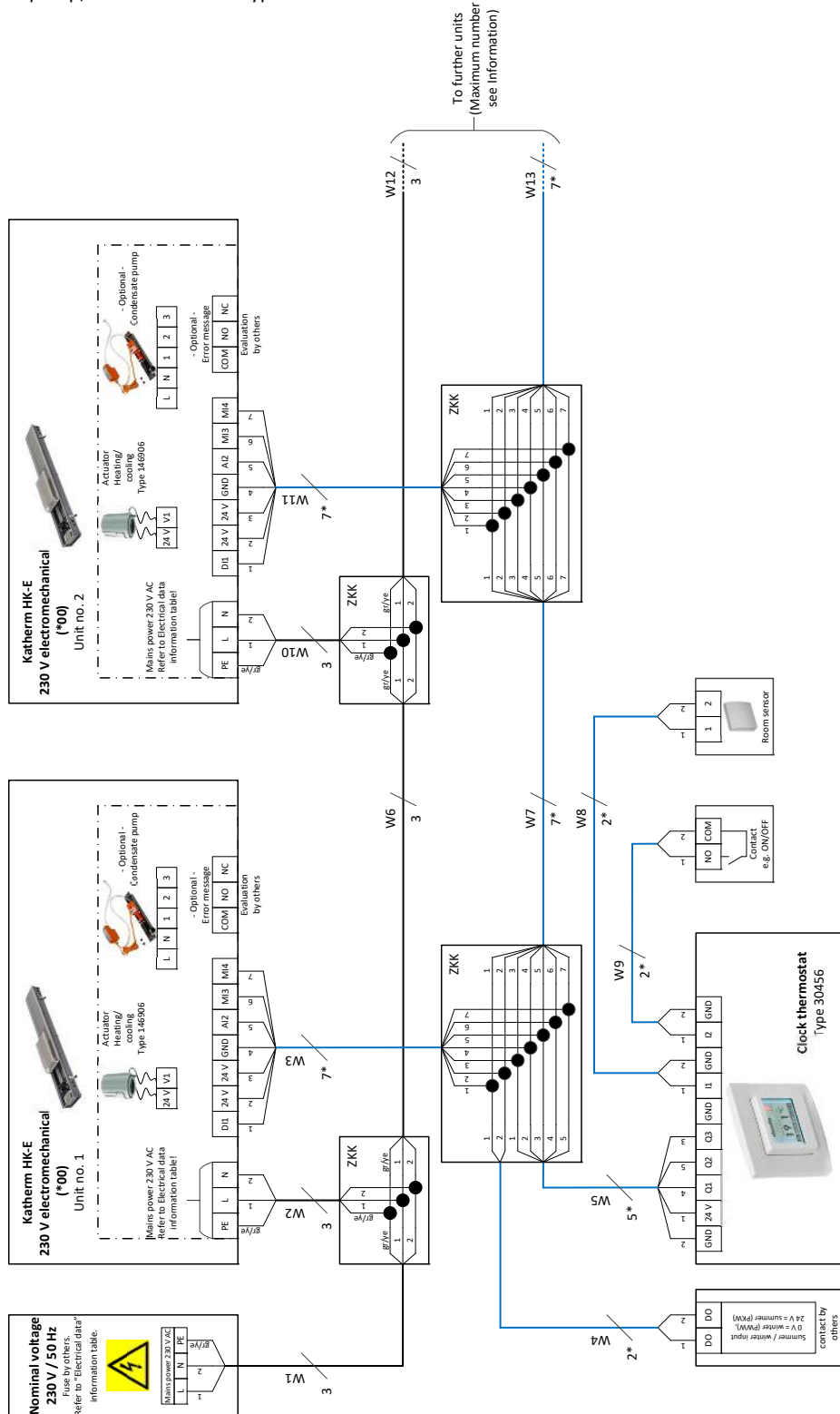
Katherm HK-E , electromechanical 230 V, 2-pipe, electric coil, valve actuator 24 V AC/DC Open/Closed, optional condensate pump, control via BMS



# Katherm HK

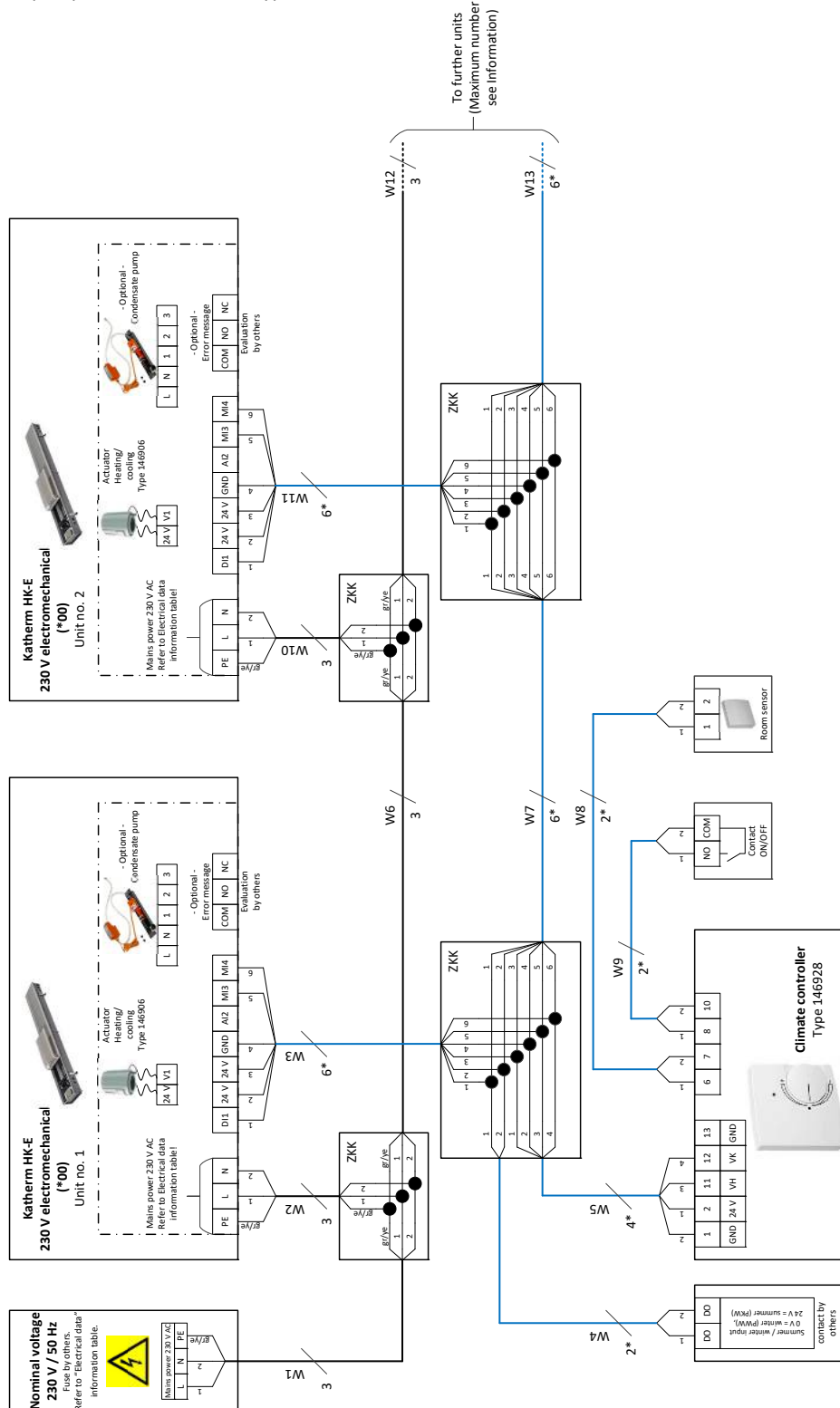
## Assembly, installation and operating instructions

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



To further units  
(Maximum number  
see information)

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



The following information on cable types and cable routing must be observed in compliance with VDE 0100/IEC 60364. Otherwise, correct functioning cannot be guaranteed and warranty claims may become invalid as a result.

The installation, operation and maintenance of this equipment must comply with the laws, standards, regulations and directives applicable in each country.

After completion of the installation, a functional test can be carried out by Kampmann customer service for a fee. This can be requested from the service center in Lingen by phone 059177-108-670 or by email [service@kampmann.de](mailto:service@kampmann.de).

\*) Shilded cable, IY(ST)Y 0.8mm or at least equivalent. Lay separately from power lines.

\*\*) Shilded cable stranded in pairs, e.g. UNITRONIC® BUS LD 2x2x0.22 or equivalent. Lay separately from power lines.

All other connections can be made in NYM-J (or equivalent).

Cable cross-sections of unshielded cables are not specified, as the cable length is included in the cross-section calculation.

Indication of the number of cores incl. protective conductor.

Protect cables installed outdoors against the weather or use equivalent weather-resistant cables.

Maximum cable length for analog input signals: 30m

Modbus network cable length: max. 500 m, extension possible with repeaters.


All installation locations or positions of the switching devices must be coordinated with the construction management.

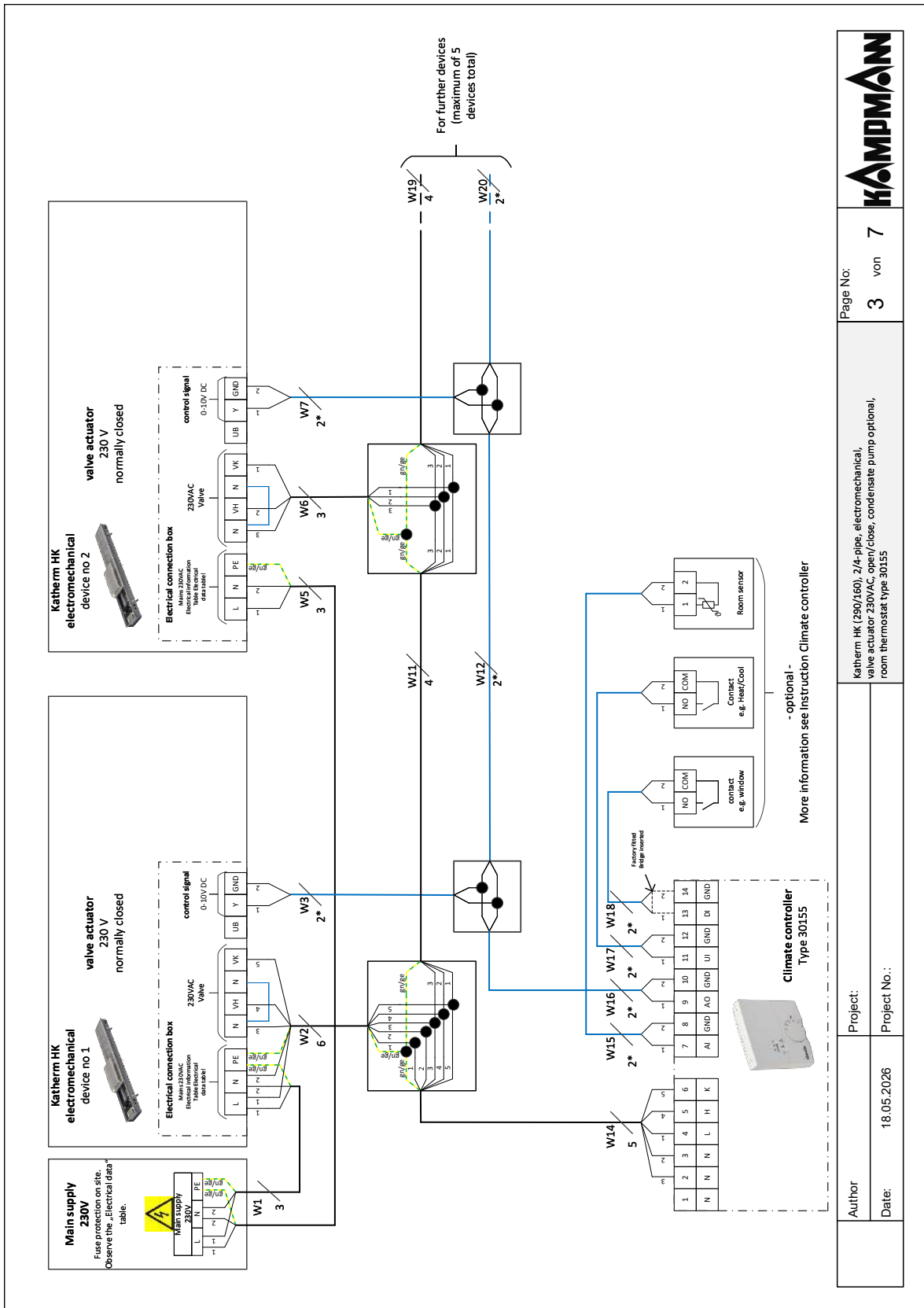
Install the room temperature sensors in the appropriate temperature zone and not in the vicinity of radiators, heat-radiating lights, opening windows or doors.

Residual current devices must comply with at least Type F as specified in IEC/EN 62423. The rated residual current must be selected in accordance with IEC 60364-4-41 and -5-53 or the relevant national standards (e.g., DIN VDE 0100-410 and -530).

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

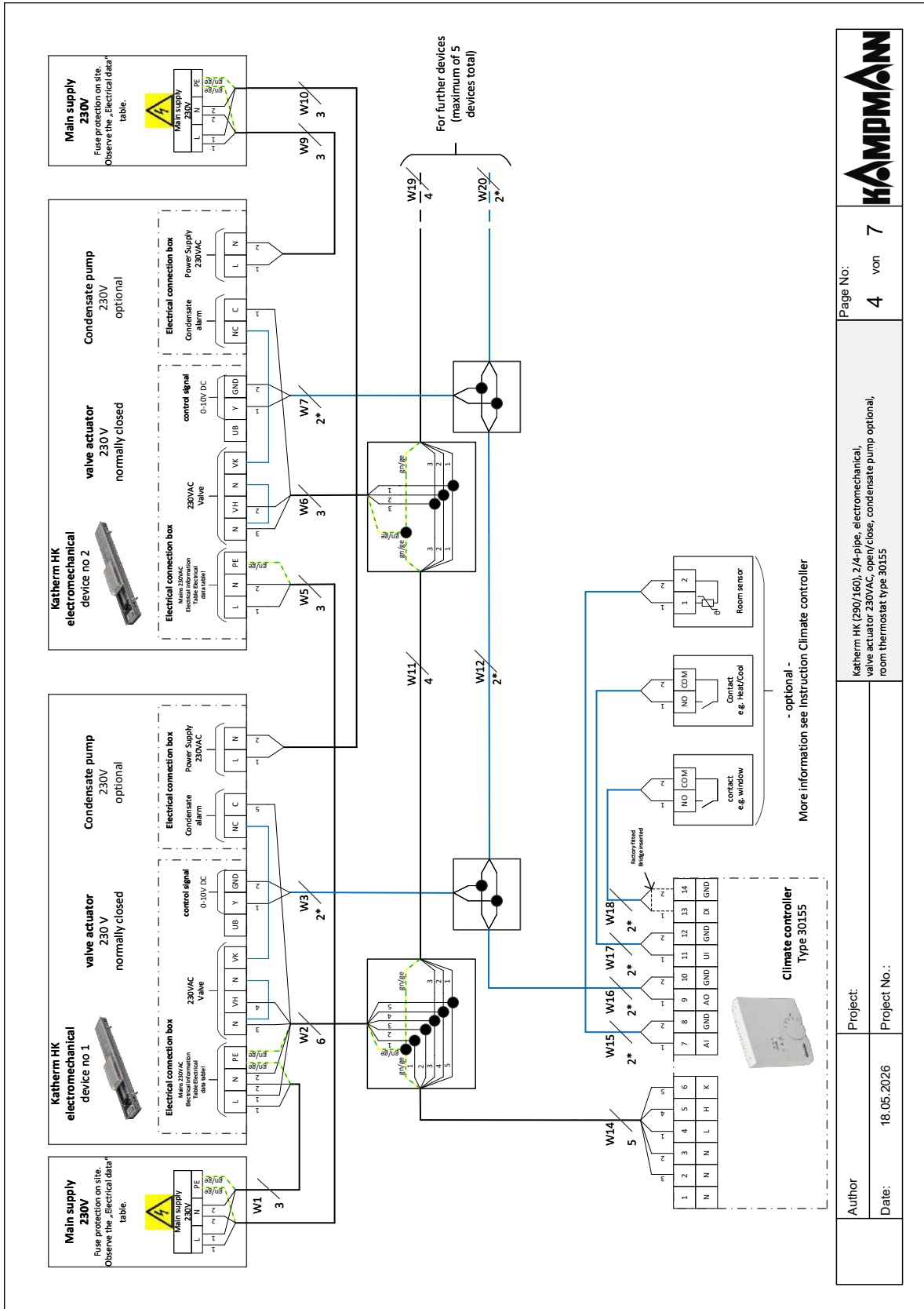
Pictures exemplary. Actual appearance may vary.

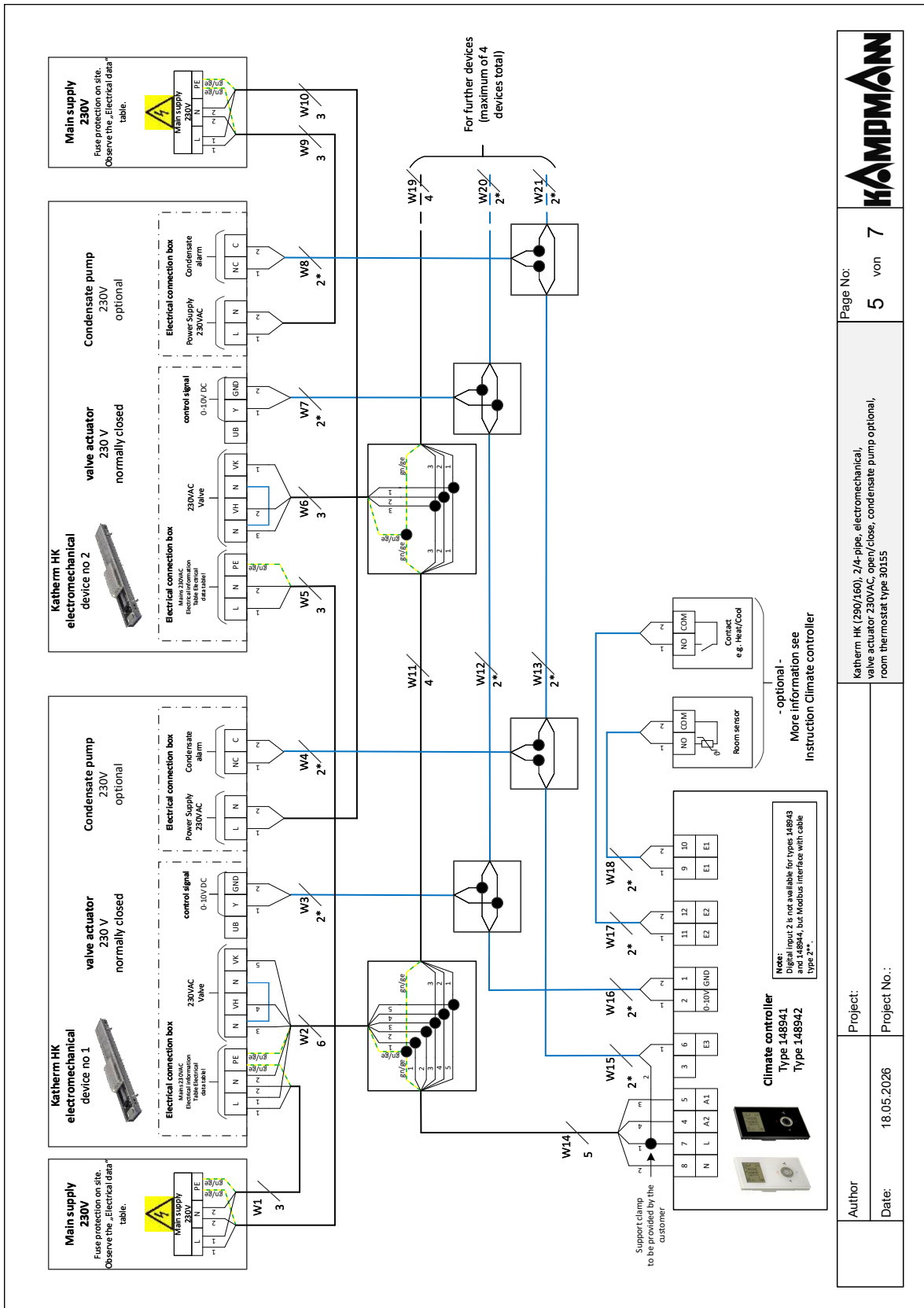
Author	Project:	Page No: 2 von 7	
Date: 18.05.2026	Project No.:		
General Information			



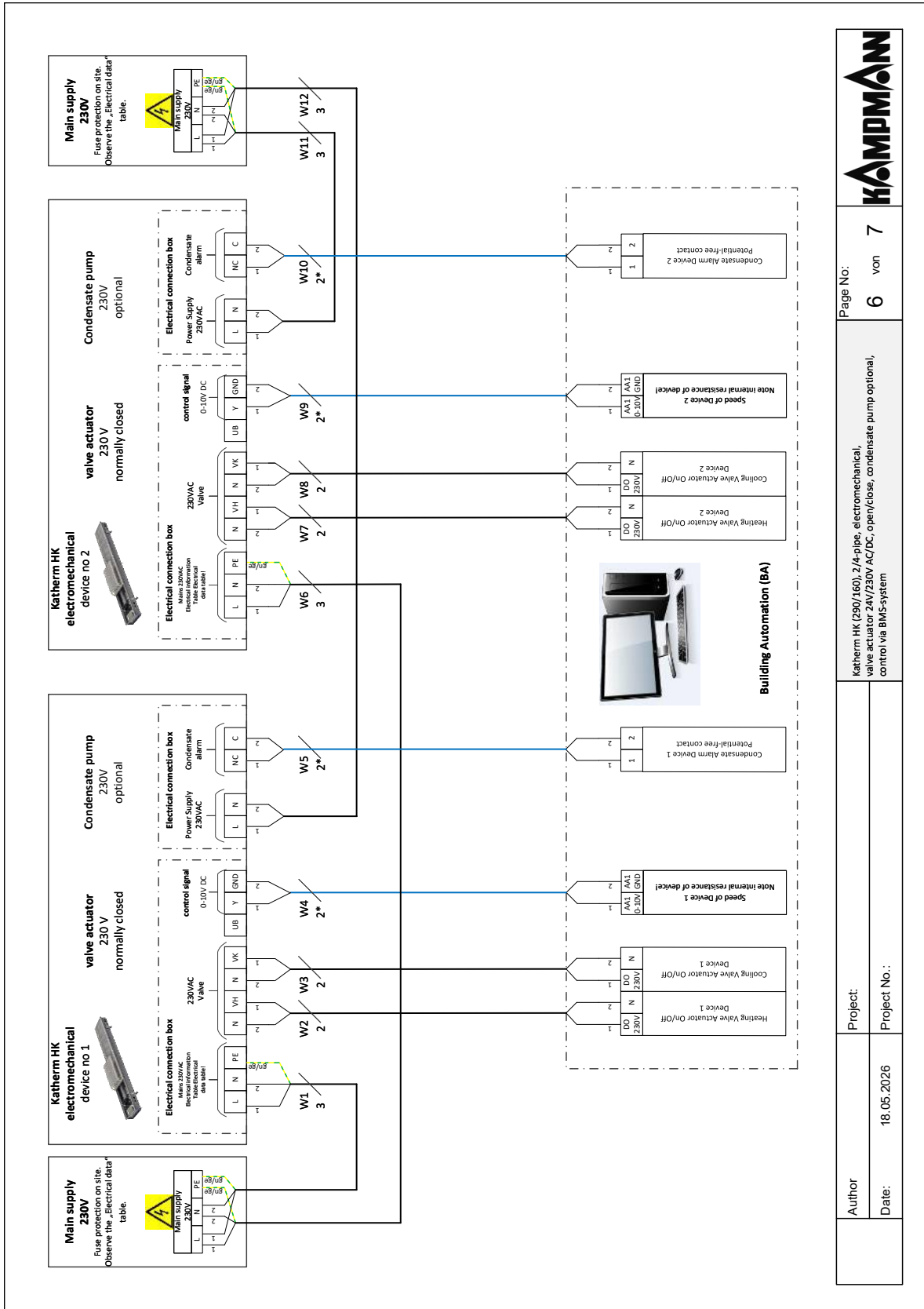
Author	Project:	Katherm HK (290/160), 2/4-pipe, electromechanical, valve actuator 230VAC, open/close, condensate pump optional, room thermostat type 30155	Page No:	<b>3</b> von <b>7</b>
Date:	18.05.2026	Project No.:		







Author	Project:	Page No:
Date: 18.05.2026	Project No.:	5 von 7
Katherm HK (290/160) 2/4-pipe, electromechanical, valve actuator 230VAC, open/close, condensate pump optional, room thermostat type 30155		7



Katherm HK (250/160), 2 1/4-pipe, electromechanical, valve actuator 24V/230V AC/DC, open/close, condensate pump optional, control via BMS-system

7.4 KaControl MC

Assembly Touch Panel TP 2

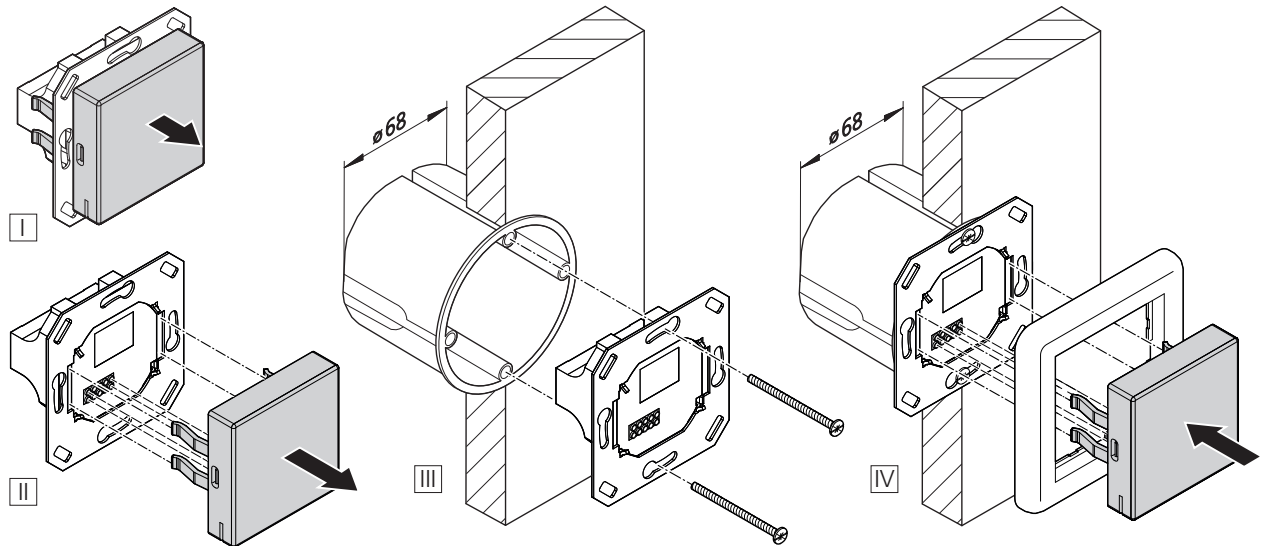


Fig. 10: Installation Touch Panel TP 2

- ▶ Remove the touchscreen from the flush-mounted unit.
- ▶ Screw the flush-mounted unit to the flush box.
- ▶ Insert the frame and touchscreen into the flush-mounted unit.

# Katherm HK

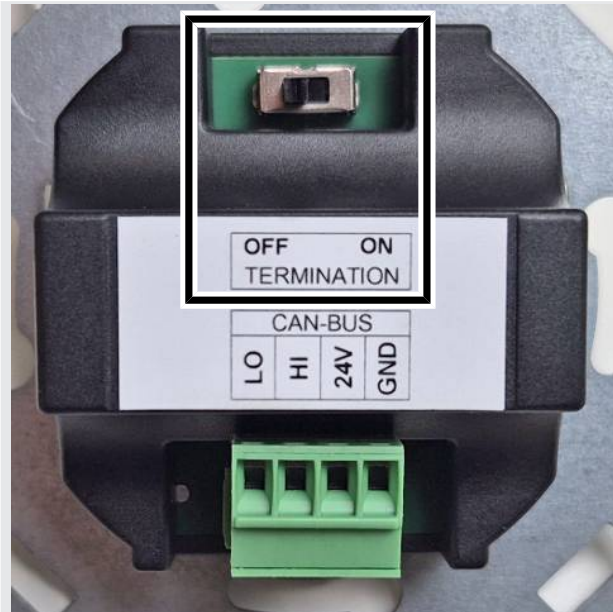
Assembly, installation and operating instructions

## Connection Touch Panel TP 2



### Electrical connection

- ▶ Connect the Touch Panel TP 2 as a CAN bus line according to the layout plan.
- ▶ The 4-pole terminal on the SmartBoard M controller (installed in the device) supplies the Touch Panel TP 2 control unit with a voltage of 24 V.
- ▶ The maximum cable length of the CAN bus is 100 m (total length of the CAN bus line).

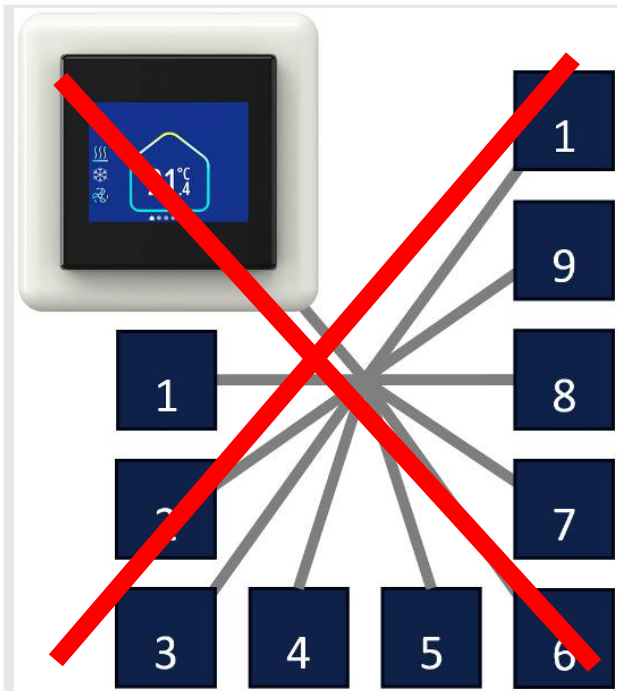


### Switch position terminating resistor

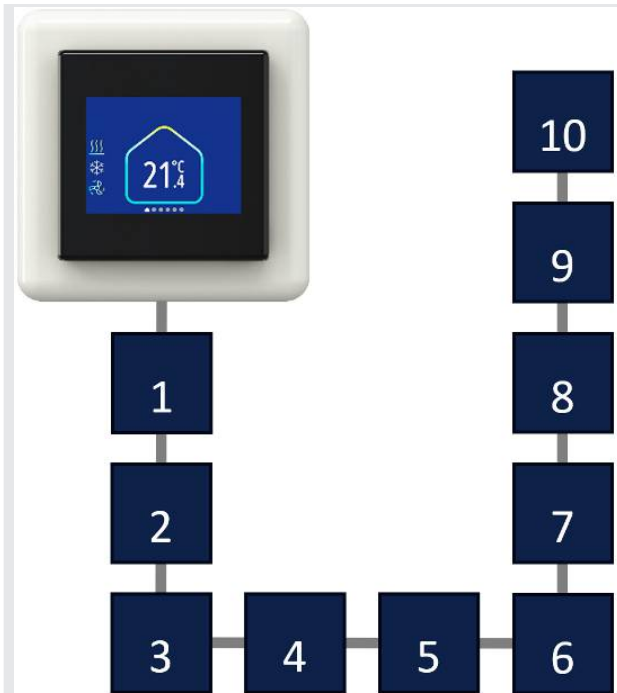
There is a switch on the connection area of the Touch Panel TP 2 for activation of the terminating resistor. When installing the Touch Panel TP 2 at the beginning or end of a CAN bus line, set the switch to the ON position. Incorrect switch positions lead to communication problems.

- ▶ Switch position ON: Terminating resistor activated
- ▶ Switch position OFF: Terminating resistor deactivated

Connection



No star-shaped wiring from the CAN bus



Run the CAN bus wiring in one line. Set the terminating resistors at the beginning (e.g. Touch Panel TP 2 ) and end of the CAN bus line (e.g. device 10) to switch position ON.

General notes

- ▶ Lay all low voltage lines along the shortest possible route.
- ▶ Warrant spatial separation of low voltage and high voltage lines, e.g. by using metal crossbars on cable harnesses.
- ▶ Only use shielded cables for low-voltage and Bus lines.
- ▶ Lay all Bus lines in a linear fashion. Star-shaped wiring is not permitted!
- ▶ The 4-pole terminal on the SmartBoard M control board (installed in the device) supplies the control unit Touch Panel TP 2 with a voltage of 24 V.

# Katherm HK

Assembly, installation and operating instructions



## 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!

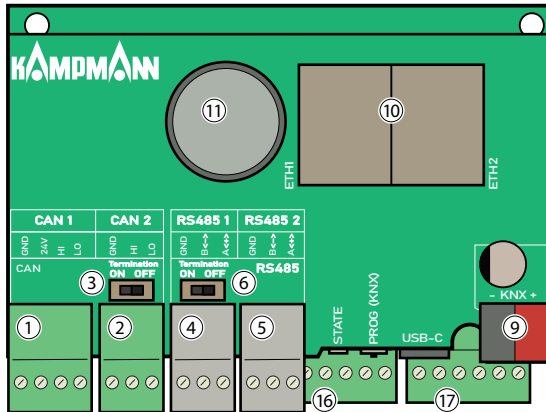
When laying the Bus lines, the formation of star points, e.g. in junction boxes, is not permitted. The cables must be looped through at the devices!

## Circuit description

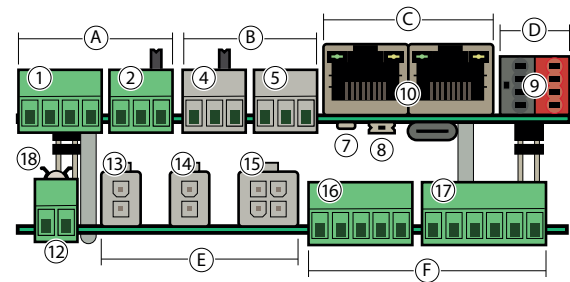
- ▶ All devices require a power supply of 230 V/ 50 Hz.
- ▶ The fan speed of the EC fans used is controlled by the KaControl control via a 0 - 10 V DC signal so that the room reaches the desired temperature.
- ▶ The KaControl MC control is used to control the fan and the actuator(s) so that the room reaches the desired temperature.
- ▶ The current status of the room temperature control is displayed on the control unit Touch Panel TP 2. Parameterization can also be carried out via the control unit.
- ▶ The following interfaces are available in each device for the integration of building management systems. (With the exception of the 0 - 10 V control, these must be activated via a license subject to a charge).
  - KNX TP
  - Modbus RTU (RS485 with switchable terminating resistor)
  - Modbus TCP (Ethernet)
  - BACnet/IP (Ethernet)

## Description PCB KaControl MC

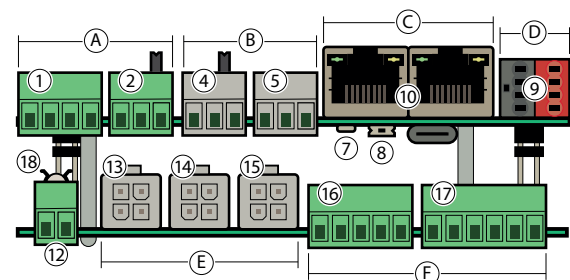
Top view of mainboard



- (A) CAN bus
- (B) Modbus RTU
- (C) Modbus (TCP) & BACnet/IP
- (D) KNX TP
- (E) Outputs
- (F) Multi-function inputs



Front view of smart board M FCU 2P (xxxM1)



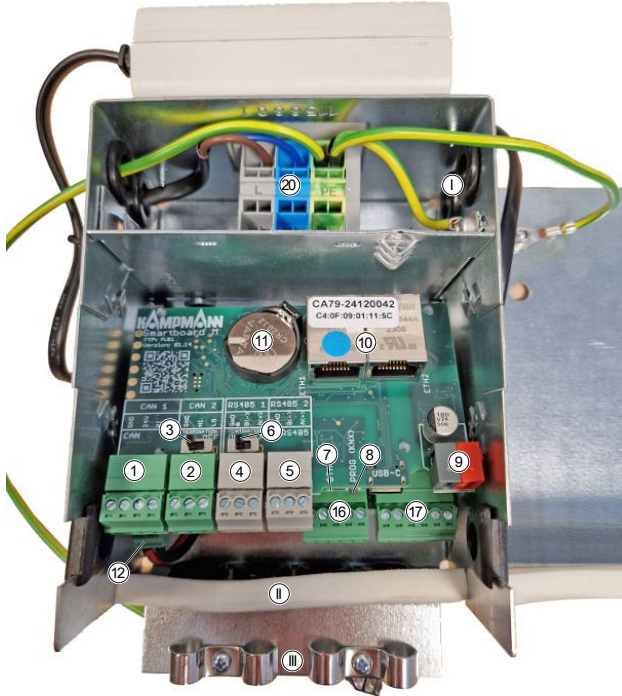
Front view of smart board M DCU cont (xxxM2)

1	Connection CAN bus 4-pole (Katherm HK ) or 3-pole previous device	2	3-pin CAN bus connection to the following device
3	Connectable terminating resistor CAN bus	4	Connection Modbus RTU previous device
5	Connection Modbus RTU following device	6	Switchable terminating resistor Modbus RTU
7	Status LED	8	Button for WLAN (WiFi) and KNX TP
9	KNX TP connection terminals	10	Ethernet connection for the web server, Modbus TCP & BACnet/IP with integrated switch
11	Battery (type CR2032)	12	24 V power supply Smart board M
13	Heating valve actuator connection (for xxxM1 version -> 2-pin, for xxxM2 version -> 4-pin)	14	Connection valve actuator chiller (for version xxxM1 -> 2-pole, for version xxxM2 -> 4-pole)
15	Fan connection	16	Multifunction inputs 1 & 2 for internal & external sensors/signals
17	Multifunctional inputs 3, 4 & 5 for internal & external sensors/signals	18	Fuse (4 A slow-blow)

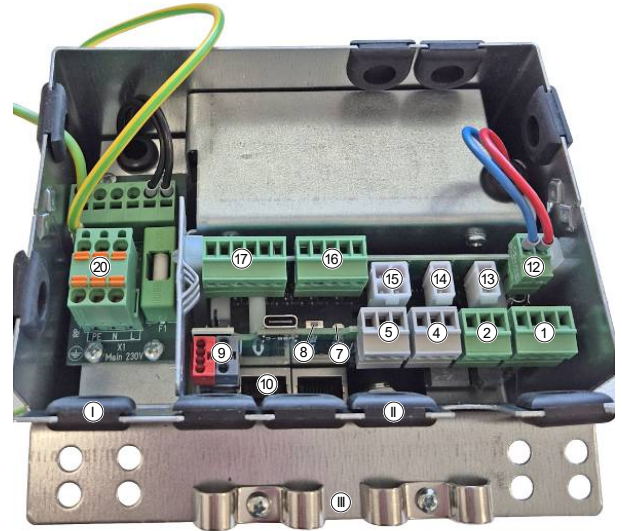
# Katherm HK

Assembly, installation and operating instructions

## Description of circuit board



HK 320/130, HK 245/160 (bis Länge 2500 mm)



HK 320/130, HK 245/160 (Länge 3000 mm)

I	Cable entries 230 V	II	Cable entry for data cable
III	Cable strain relief	1	Connection CAN bus 4-pin ("Touch 2") or 3-pin previous unit
2	3-pin CAN bus connection to the following unit	3	Switchable CAN bus terminating resistor
4	Connection Modbus RTU previous unit	5	Connection Modbus RTU following unit
6	Switchable Modbus RTU terminating resistor	7	Status LED
8	Button for WLAN (WIFI) and KNX TP	9	KNX TP connection terminals
10	Ethernet connection for the web server, Modbus TCP & BACnet/IP with integrated switch	11	Battery (type CR20032)
12	24 V power supply Smartboard M	13	Heating valve drive connection (for xxxM1 version -> 2-pole, for xxxM2 version -> 4-pole)
14	Cooling valve drive connection (for xxxM1 version -> 2-pole, for xxxM2 version -> 4-pole)	15	Fan connection
16	Multifunctional inputs 1 & 2 for internal & external sensors/signals	17	Multifunctional inputs 3, 4 & 5 for internal & external sensors/signals
20	Power supply 230V		

The following information on cable types and cable routing must be observed in compliance with VDE 0100/ IEC 60364. Otherwise, correct functioning cannot be guaranteed and warranty claims may become invalid as a result.

The installation, operation and maintenance of this equipment must comply with the laws, standards, regulations and directives applicable in each country.

After completion of the installation, a functional test can be carried out by Kampmann customer service for a fee. This can be requested from the service center in Lingen by phone 0591/7108-670 or by email [service@kampmann.de](mailto:service@kampmann.de).

\*) : Shielded cable, IY(STY) 0.8mm or at least equivalent. Lay separately from power lines.

\*\*) : Shielded cable stranded in pairs, e.g. UNITRONIC® BUS LD 2x2x0.22 or equivalent. Lay separately from power lines.

All other connections can be made in NYM-J (or equivalent).

Cable cross-sections of unshielded cables are not specified, as the cable length is included in the cross-section calculation.

Indication of the number of cores incl. protective conductor.

Protect cables installed outdoors against the weather or use equivalent weather-resistant cables.

All installation locations or positions of the switching devices must be coordinated with the construction management.

Install the room temperature sensors in the appropriate temperature zone and not in the vicinity of radiators, heat-radiating lights, opening windows or doors.

Residual current devices must comply with at least Type F as specified in IEC/EN 62423. The rated residual current must be selected in accordance with IEC 60364-4-41 and -5-53 or the relevant national standards (e.g.: DIN VDE 0100-410 and -530).

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

Maximum cable length for analog input signals: 30m

Total CAN bus network cable length within a secondary air group: max. 100m.  
Connect a 120Ω terminating resistor at both ends of the bus.



Ethernet cable length: max. 100m from device to device and/or to switch.

Each device with KaControl MC control can be integrated into the building automation system via one of the following interfaces.



An interface license can be activated at the factory or after delivery via manual entry. Further information on the interfaces can be found on our website [www.kampmanngroup.com](http://www.kampmanngroup.com) under the respective license items.

Pictures exemplary. Actual appearance may vary.

	Author:	Project:	Page No.: 2 von 5	
	Date: 11.05.2026	Project No.:		
General Information				





# Katherm HK

Assembly, installation and operating instructions

## 7.5 Setting up the KaControl MC control system

Products with KaControl MC control are set up via an integrated web server. In the settings, products are guided step by step through a quick configuration and adapted to the local conditions.

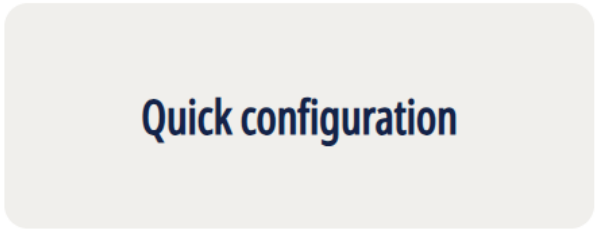
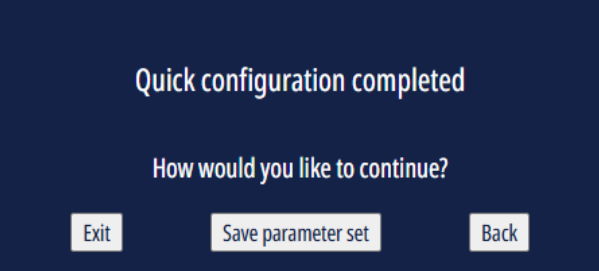
There are two options for accessing the web server:

Ethernet	WLAN (Wi-Fi)
This requires an Ethernet cable (network cable) and a notebook with a network connection (RJ-45).	A WLAN-capable end device with an installed browser is required.
<ul style="list-style-type: none"> <li>▶ Connect the network cable from one of the two Ethernet sockets to the notebook.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Activate the WLAN hotspot by pressing and holding (approx. 3 s) the PROG (KNX) button;</li> </ul> <p>LED lights up 2x alternately red and green WLAN is active for 2 hours</p>
Set the IP address 192.168.1.250 with the subnet mask 255.255.255.0 in the notebook settings for the Ethernet socket used.	<ul style="list-style-type: none"> <li>▶ Select WLAN signal with selected end device;</li> </ul> <p>Hotspot name is SmartBoard Mxxxxxxx The x"s are placeholders for the serial number of the SmartBoard M (sticker on the network socket), which is also on the PCB. Attention: An incorrect serial number can lead to a connection with an incorrect device! A password is not necessary. Recommendation: Deactivate mobile data and disconnect active WLAN to prevent end devices from switching to a mobile wireless network or another recognized WLAN.</p>
<ul style="list-style-type: none"> <li>▶ Open the browser and enter the IP address of the SmartBoard M (ex works) in the address line as follows: 192.168.1.100</li> </ul> <p>The user interface of the Touch Panel TP 2 is synchronized in the browser.</p>	

Ethernet	WLAN (Wi-Fi)
	
	<ul style="list-style-type: none"> <li>▶ Use the arrow buttons next to the displayed room control unit to navigate to the settings and open the user menu. (On a terminal device with a touch screen, you can also swipe to the left).</li> </ul>
<p>▶ Enter the following sequence of digits when entering the password: 7108</p>	
	<ul style="list-style-type: none"> <li>▶ Navigate to the right to Configuration and open it.</li> </ul>

# Katherm HK

Assembly, installation and operating instructions

Ethernet	WLAN (Wi-Fi)
	<ul style="list-style-type: none"><li>▶ Select the Quick configuration button.</li></ul>
<ul style="list-style-type: none"><li>▶ All relevant information is requested step by step in the quick configuration. Enter or answer the information according to the intended use.</li><li>▶ Note: It is essential to answer all the steps, otherwise the device will not function optimally for its intended purpose.</li></ul>	
	<ul style="list-style-type: none"><li>▶ \"Exit\": Quick configuration is completed.</li><li>▶ \"Save parameter set\": Quick configuration is completed and the parameter set is saved locally (optional).</li></ul>

## 8 Pre-commissioning checks

During first-time commissioning, it must be ensured that all necessary requirements are met so that the device can function safely and as intended.

### Structural tests

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

### Electrical tests

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

### Water-side checks

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

### Air-side checks

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

### Condensation water connection

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

Once all checks have been completed, initial commissioning can be carried out in line with Chapter 9 "Operation" [▶ 86].

# Katherm HK

Assembly, installation and operating instructions

## 9 Operation

### 9.1 Operation of electromechanical control



Fig. 11: Room thermostat, type 30155

#### Room thermostat, type 30155

- ▶ Electronic room thermostat with 3-stage automatic function for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design
- ▶ simple operation using a large rotary dial for temperature setting with mechanical range limitation of the temperature setpoint, operating mode selector switch, Standby, Manual fan, Automatic fan, 3-stage switch for pre-selecting the fan speed when the operating mode selector switch is in the "Manual fan" position
- ▶ option for external room sensor connection
- ▶ control input for heating/cooling changeover with 2-pipe applications
- ▶ digital input can be set to Comfort/ECO or ON/OFF switchover
- ▶ For use with Katherm HK, max. 4 units.



Fig. 12: Clock thermostat, type 30456

#### Clock thermostat 24 V, type 30456

- ▶ Electronic clock thermostat for 2- and 4-pipe applications, surface-mounted wall installation on a flush-mounted box in visually unobtrusive design
- ▶ operation using 4 sensor keys
- ▶ timer with automatic summer/winter switch-over
- ▶ option for external room sensor connection
- ▶ control input for heating/cooling changeover with 2-pipe applications
- ▶ digital input can be set to Comfort/ECO or ON/OFF switchover
- ▶ for use with Katherm HK and HK E, max. 5 units

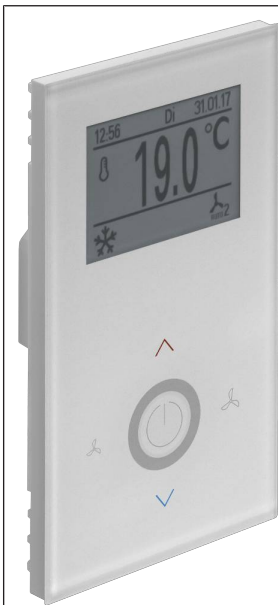


Fig. 13: Climate controller type 196000148941

### Climate controller, white, type 196000148941

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



Fig. 14: Climate controller type 196000148942

### Climate controller, black, type 196000148942

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

# Katherm HK

Assembly, installation and operating instructions



Fig. 15: Climate controller type 196000148943

### Climate controller, white, type 196000148943

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



Fig. 16: Climate controller type 196000148944

### Climate controller, black, type 196000148944

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


### 9.2.1 Touch surface

The Touch Panel TP 2 enables convenient and intuitive operation of secondary air units with the KaControl MC control system. The input is based on commercially available touch systems. The main displays can be changed or displayed by swiping horizontally on the touch surface. The lists of settings can be scrolled vertically. Individual operating elements can be selected directly.

### 9.2.2 Display areas


	<p><b>Display areas</b></p> <ul style="list-style-type: none"> <li>① Display area, operating status, date, time</li> <li>② Display area and setting range for room status, unit functions and fault alarms</li> <li>③ Display area of the navigation guide</li> </ul> <p>Note: Views can vary and be customised depending on the quick configuration.</p>
--	---

### 9.2.3 Changing values

	<p><b>Temperature setpoint</b></p> <p>Change the temperature setpoint by holding and shifting the temperature symbol on the semicircle. The set temperature is displayed. There is the option of an absolute temperature setting or a relative deviation from the comfort temperature (e.g. +/- 3°C). This can be changed in the quick configuration.</p>
---	---

# Katherm HK





Assembly, installation and operating instructions

	<p><b>Fan control</b></p> <p>Change the fan stage by holding and shifting the fan symbol on the semicircle. The set fan stage is displayed.</p> <p>The number of fan stages and the automatic mode option can be selected in the quick configuration.</p>
---	---

## Settings



Four buttons can be selected in the settings.

	<p>The colour mode can be changed by pressing the icon. Three colour modes can be selected:</p> <ul style="list-style-type: none"> <li>▶ Blue background, white font</li> <li>▶ White background, black font</li> <li>▶ Black background, white font</li> </ul>		<p>The icon displays information on the manufacturer and the group of units.</p>
	<p>Select the Help icon to retrieve detailed information using the QR code.</p>		<p>The Settings icon can be used to adjust the behaviour of the control group. Please refer to the detailed instructions.</p>

## 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.

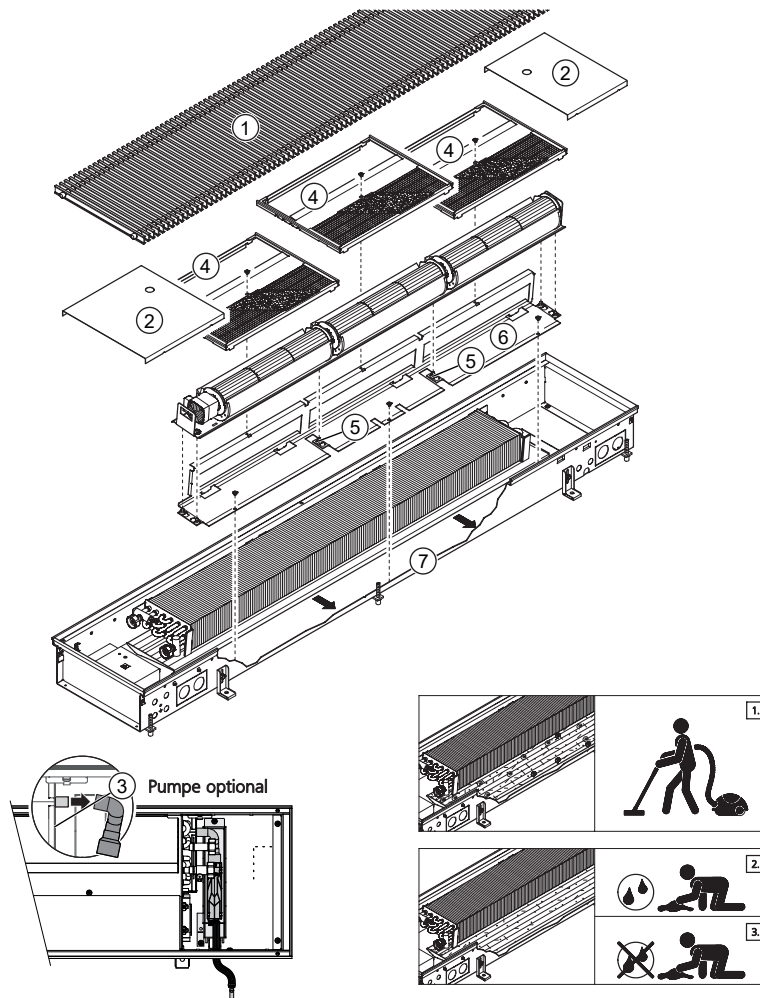
Interval	Maintenance work
If necessary	Regular visual inspections and acoustic tests for damage, soiling and function.
External filter (with cooling): quarterly External air filter (heating only): every six months Secondary air filter: annually	Check filter for dirt, clean and change filter if necessary.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

## 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.

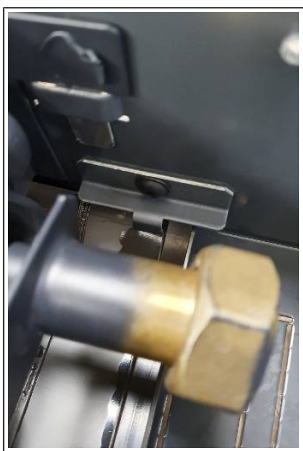

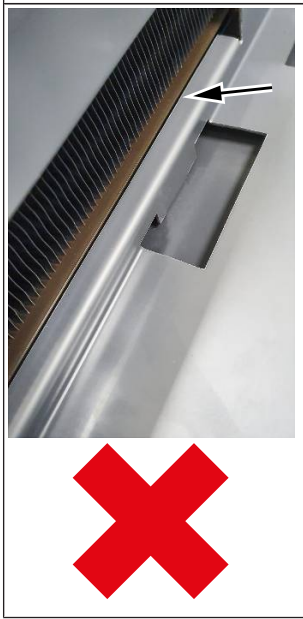

## 10.3.2 Cleaning the condensate tray



- ▶ Remove rust ①.
- ▶ Remove the cover plates ②.
- ▶ Loosen the condensate elbow and pull it off the condensate tray drain connection ③. For mounting kits with natural condensate drain, first loosen the hose clamp from the condensate tray drain connection.
- ▶ Undo the screws of the segment plates and remove the segment plates ④ from the brackets of the floor duct walls.
- ▶ Disconnect the motor connector plug from the tangential fan.
- ▶ Pull the tangential fan out of the fixing bolts ⑤ of the center wall ⑥.
- ▶ Loosen the screws of the center wall ⑥ and remove the center wall from the duct.
- ▶ Pull out the condensate tray ⑦ located below the heat exchanger to the room side of the duct. Note: The condensate tray cannot be removed!
- ▶ Clean the condensate tray ⑦ with a damp cloth and then remove any damp spots with a dry cloth.
- ▶ After cleaning the condensate tray, reassemble the components in reverse order for disassembly.

# Katherm HK

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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>

## 10.3.3 Cleaning the condensate pump



- ▶ The mounted condensate pump is fixed to the retaining plate with Velcro and can be removed and reinstalled manually for maintenance.



- ▶ Pull the condensate pump (without tools) off the Velcro connection.



- ▶ Pull off the condensate elbow.



- ▶ Remove the dirt filter from the condensate elbow.
- ▶ Clean the dirt filter under running water.
- ▶ Reinsert the dirt filter.



- ▶ Check the sensor in the condensate pump for soiling (e.g. algae formation) and clean carefully with a damp cloth. Do not use any solvents.
- ▶ Once maintenance has been completed, slide the condensate elbow onto the spigot of the condensate pump sensor and reconnect the condensate pump using the Velcro connection on the retaining plate.

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## 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 [► 96] 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	Fan speed too high.
Air intake / air discharge opening is obstructed.		Free air routes.
Filter dirty.		Replace filter.
Rotating parts unbalanced		Clean and/or replace impeller. Make sure that no balancing brackets are removed during cleaning.
Fan dirty.		Clean dirt from fan.
dirty.		Clean dirt from the .

## 11.2 Start-up after rectification of fault

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

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

## 12 Disposal

### Electrical and electronic appliances

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

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

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

## 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>
Typ, Model, Nr artykułu:		
Typ, Model, Číslo výrobku:		

**auf das sich diese Erklärung bezieht, mit der / den folgenden Norm(en) oder normativen Dokumenten übereinstimmt:**

to which this declaration relates is in conformity with the following standard(s) or other normative document(s):  
 auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou autre(s) document(s) normatif(s):  
 do którego odnosi się niniejsza deklaracja, jest zgodny z następującymi normami lub innymi dokumentami normatywnymi:  
 na který se tato deklarace vztahuje, souhlasí s následující(mi) normou/normami nebo s normativními dokumenty:

<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

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

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