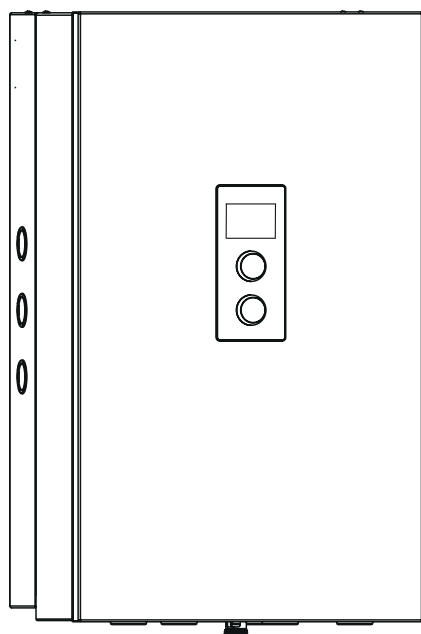
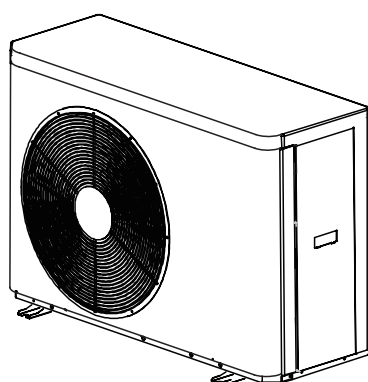




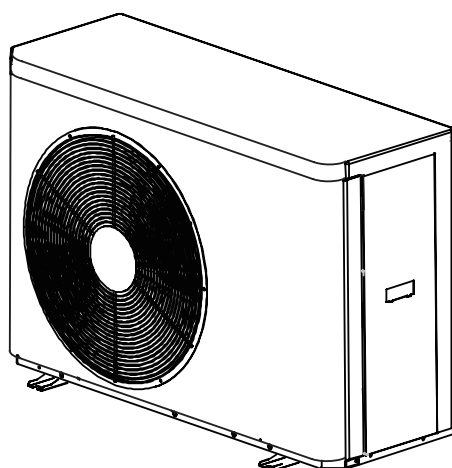
## HPM2.Z Heat Pump



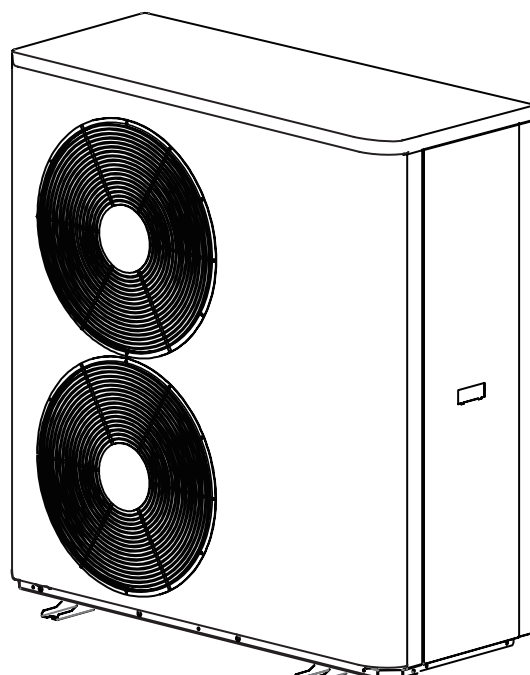
HPMI2 - 8  
HPMI2 - 12  
HPMI2 - 16



HPM02 - 8



HPM02 - 12



HPM02 - 16/23

## Installation and Operating Instructions

Start-up card



***The HPM2.Z heat pump is a hermetically sealed unit and it contains fluorinated greenhouse gases.***



**WARNING**

***Do not use any agents to speed up the defrosting or cleaning process other than those recommended by the Manufacturer. Store the device in a room without any constantly operating sources of ignition (for example: an open flame, an operating gas device or an operating electric heater). Do not puncture or burn the device. Note that refrigerants may be odourless. The device is to be installed, operated and stored in a room with adequate space and cubic area (see the table).***

**NOTE:** The Manufacturer may provide relevant examples or additional information on refrigerant's odour.



***This equipment is intended for use by qualified or trained users in shops, light industry and on farms, or for use at home by those who have no specialist knowledge.***



***This device may be used by children aged 8 years and over and by persons with reduced physical, sensory or mental abilities or lack of experience and knowledge, if they are supervised or have been instructed concerning the safe use of the device and have understood the resulting hazards. Children must not play with the device. Cleaning and maintenance of the device may not be carried out by children without supervision.***

## Conditions for safe and reliable operation

---

1. Familiarisation with the contents of this manual will enable the device to be installed and operated correctly, ensuring its long-lasting and reliable operation.
  2. The device must be installed in compliance with national installation regulations.
  3. An electrical installation that is operational and carried out in accordance with PN-IEC 60364.
  4. Considering its intended use, the device may only be installed and operated in closed heating systems in accordance with EN 12828, taking into account the relevant installation, service and operating instructions.
    - Work on the refrigeration circuit must only be carried out by authorised specialists.
    - Initial commissioning is to be carried out by an Authorised Installer or a designated authorised person.
  5. Unsuitable ambient conditions may cause damage to the installation and jeopardise operational safety (avoid air pollution by halogenated alkanes contained e.g. in paints, solvents and cleaning agents, avoid constant high air humidity e.g. due to frequent drying of laundry).
  6. The installation of the device and the electrical and plumbing work must be carried out by a specialised service company and the instructions for the assembly and use of the product must be strictly observed.
  7. All installation work must be carried out with the electricity and water supply being cut off.
  8. Sparks may occur due to an electrostatic discharge, which can ignite the leaking refrigerant (R32). Touch earthed objects, e.g. heating or water pipes, to dissipate static charges before carrying out work.
  9. Hot surfaces may cause burns.
  10. Direct contact with the liquid and gaseous refrigerant may cause serious damage to health.
  11. The electrical installation must be fitted with residual current protective devices and means to ensure that the equipment is disconnected from the power source, where the distance between the contacts of all the poles is not less than 3mm.
  12. The heat pump is a surge-sensitive device and the electrical installation must therefore include surge protection devices.
  13. There is a hazard of scalding in the event of an open flame.
  14. R32 is the refrigerant used; this is an air displacing, colourless, odourless gas that forms a flammable mixture with air.
  15. The HPM2.Z heat pump heating system consists of a set of optimally selected elements:
    - a) HPM2.P package:
      - HPMI2 indoor unit
      - HPMO2 outdoor unit
      - DHW cylinder SWPC / SWP
      - SVK buffer tank
    - b) HPM2.V package:
      - HPMI2 indoor unit
      - HPMO2 outdoor unit
      - SWVPC combi heat pump tank combining the functions of CH buffer and DHW cylinder
- which guarantee the efficient and reliable operation of the HPM2.Z heat pump.
16. The manufacturer guarantees the correct operation and effective parameters of the HPM2 heat pump only in cooperation with devices of the HPM2.P or HPM2.V.
  17. The manufacturer is not responsible for the installation of the HPM2.Z heat pump with other devices which may result in incorrect operation, lack of effective operating parameters and increased operating costs of the heating system or a breakdown of the HPM2.Z heat pump.
  18. The manufacturer is not responsible for an incorrectly selected device to the heating needs of the installation.

## Description of the device

---

The HPM2.Z heat pump is an device designed for heating/cooling a building and heating tap water.

The unit consists of two modules:

- The outdoor HPMO2 module: a compressor heat pump.

The working principle of the unit is to capture heat from the environment and to transfer it to the heating circuit in the building. The low-temperature heat of the air is transferred through an evaporator to the heat pump system filled with a refrigerant, which turns into a gas as it evaporates. From the evaporator, the gas is drawn in by the compressor, which raises its temperature during its compression and directs it to the condenser. In the condenser, heat is transferred to the refrigerant, which fills the central heating system, and the cooled liquid flows through the expansion valve and returns to the evaporator, after which the whole process starts again. In the case of cooling, this cycle is reversed and the heat is extracted from the building and discharged outside.

- The indoor HPMI2 module: a hydraulic module equipped with a controller for the entire system.

The working principle of the unit is based on the demand-dependent capacity control of the heat pump compressor with an activation of the electrical auxiliary heater via the controller of the indoor module. The indoor module controller regulates the heating output according to a pre-set heating curve. If the heat pump is not able to cover the building's heating demand on its own, the controller automatically activates the electrical auxiliary heater which, together with the heat pump produces the desired heating medium temperature.

## Outdoor temperature ranges for air-to-water heat pumps

Air-to-water heat pumps use the outdoor air as the heat source. Operation is only efficient within certain outdoor temperature ranges, e.g. between -25°C and +43°C. If the upper temperature limit is exceeded or the lower temperature limit has been reached, heat pumps switch off periodically. A corresponding notification appears on the heat pump controller. To cover the heat demand for space heating and tap water heating beyond the temperature limits, the heat pump controller automatically switches on the available auxiliary heating equipment, e.g. electric auxiliary heating, if necessary.

## Required equipment

A communication bus cable between the outdoor module and the indoor module. Recommended: LiYY 2 x 0.34mm<sup>2</sup> max: 2 x 1.5mm<sup>2</sup>

## Refrigeration circuit

All the components of the refrigeration circuit are located in the outdoor module, including the refrigeration circuit controller with an electronic expansion valve. Depending on the operating conditions, the compressor power is adjusted by means of an inverter. When the space cooling function is activated, the refrigeration circuit is reversed.

## Plumbing system

The indoor and outdoor modules are connected to each other via heating medium hydraulic lines. A high-efficiency circulation pump (secondary pump) built into the indoor module supplies the heating medium to the secondary circuit. A central 3-way diverter valve: "heating/ heating up tap water" is responsible for switching between space heating and hot tap water heating.

## Installation with heating/cooling water buffer storage tank

- Space heating  
The heat pump may heat up to 2 heating/cooling circuits: 1 heating/cooling circuit without a mixer and 1 heating/cooling circuit with a mixer.
- Space cooling  
The heat pump may cool via up to 2 heating/cooling circuits.

## Heat pump controller

The entire heating system is monitored and controlled by the heat pump controller.

The heat pump controller is integrated into the indoor module. Communication between the indoor and outdoor modules takes place via a communication bus.



## ***The installer's responsibilities include:***

---

1. Installation of the outdoor and indoor units in accordance with the warranty conditions and the operating instructions.
2. Making leak-proof plumbing connections of the equipment included in the HPM kit, fixing leaks and any lacks of tightness in the heating system.
3. Electrical connection of the indoor and outdoor units, connection of outdoor and indoor temperature sensors, the storage tank, THC, the heating circuit pumps, the circulation pump, the mixing valve and other auxiliary equipment included in the installation.
4. Proper bleeding of the heating system, the indoor unit, the outdoor unit and the hot tap water exchanger coil. Checking that the required flow rate in the heating and hot tap water systems and the required pressure in the hydraulic system have been reached.
5. Adjustment of hydraulic fittings included in the heating system and that are not part of the HPM kit.
6. Carry out an electrical measurements of the voltage supply to the indoor unit.

## ***Necessary steps involving initial commissioning:***

---

1. Commissioning of the heat pump heating system and checking its correct operation (correct setting of operating parameters and their adjustment to the thermal properties of the building and the installation).
2. Configuration and setting of basic operating parameters (programming of the room temperature and hot tap water).
3. Evaluation of the installation for leaks, disturbing noises (e.g. noise with poor ventilation)
4. Initial instruction of the user on the use of the heat pump system
5. Noting the relevant parameters on the HPM2.Z heat pump commissioning sheet in the operating manual.
6. **Registration of the device by the Commissioning Company after the Initial Commissioning in the electronic system of Kospel sp. z o.o.: "Registration of the HPM2.Z Heat Pump", not later than 30 days after the device was commissioned.**

## ***Activities to be carried out during precommissioning:***

---

### **Checking the condition of the electrical installation**

- Measurement of the supply voltage of the HPMI2 indoor unit: \_ \_ \_ V.
- Checking that the electrical cables in the HPMI2 indoor unit are fitted correctly (tighten the electrical cables).

### **Leakage assessment of the hydraulic system**

- Heating medium pressure reading on the control panel of the HPMI2 indoor unit: \_ \_ \_ bar.

### **Cleaning the dirt separator**

- Checking the pressure in the diaphragm vessel in the HPMI2 indoor unit: \_ \_ \_ bar.
- Reading of the heating circuit flow rate during operation: \_ \_ \_ \_ l/min, inlet temperature: \_ \_ \_ °C, outlet temperature: \_ \_ \_ °C.

### **Checking zone valves.**

### **Filter cleaning.**

### **Checking the operation of the three-way valve.**

### **Checking the refrigerant pressure of the HPM02 outdoor unit.**

### **Assessment of the condition and cleaning of the evaporator.**

### **Checking the patency of the condensate drain.**

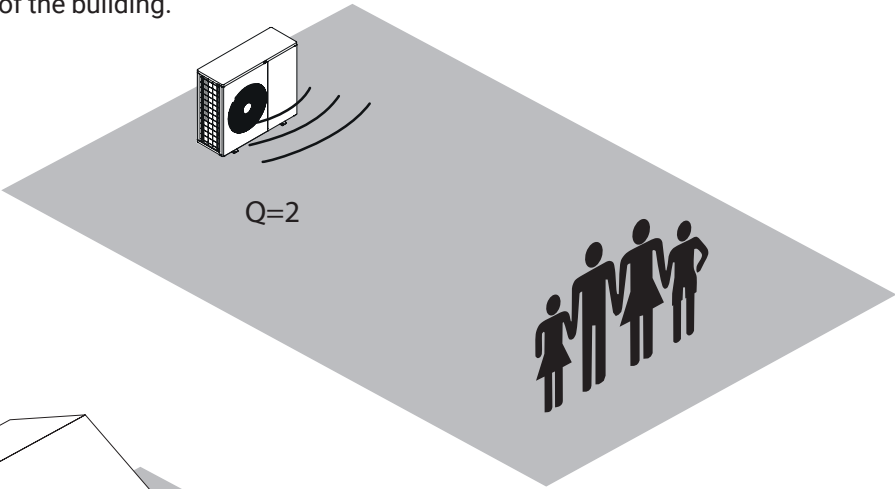
### **Checking the correctness of the electrical cables fitted in the HPM02 outdoor unit (tightening the electrical cables).**

### **Technical condition assessment of the outdoor unit.**

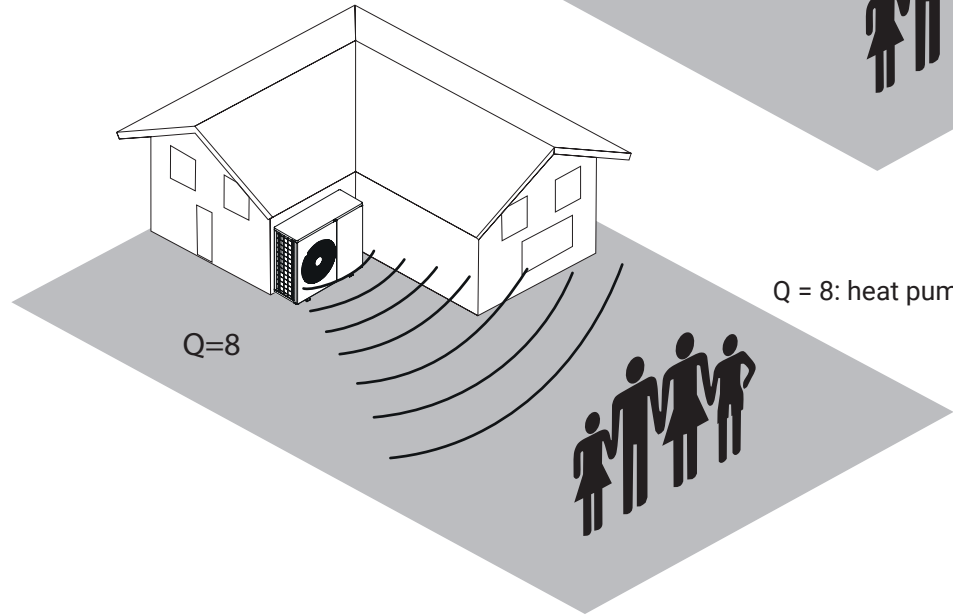
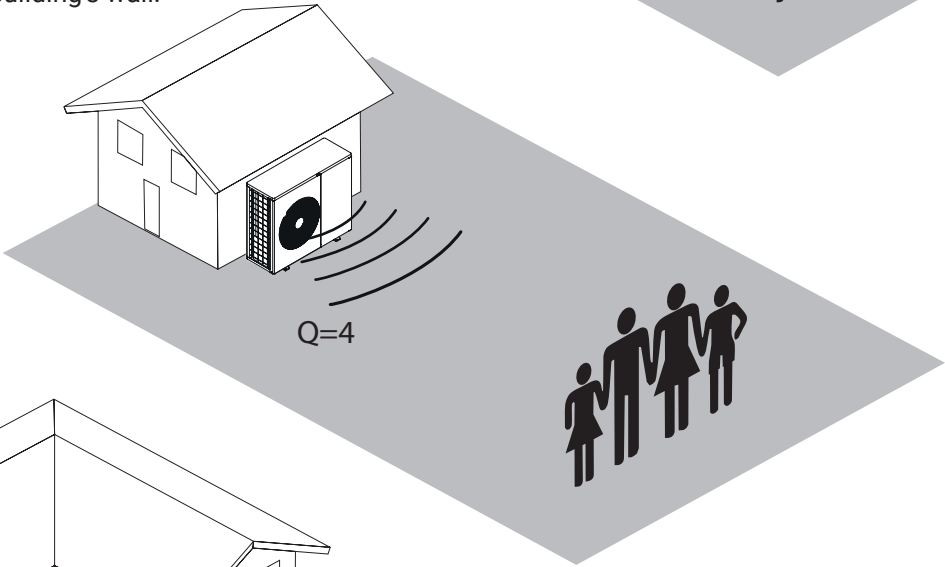
Sound pressure level for different distances from the device.

	Power level acoustic Lw [dB (A)]	Directivity factor Q	Distance from the noise source r [m]									
			1	2	3	4	5	6	8	10	12	15
			Sound pressure level Lp [dB (A)]									
HPM02-8	60	2	52	46	42	40	38	36	34	32	30	28
		4	55	49	45	43	41	39	37	35	33	32
		8	58	52	48	46	44	42	40	38	36	35
HPM02-12	63	2	55	49	45	43	41	39	37	35	33	31
		4	58	52	48	46	44	42	40	38	36	35
		8	61	55	51	49	47	45	43	41	39	38
HPM02-16/23	64	2	56	50	46	44	42	40	38	36	34	32
		4	59	53	49	47	45	43	41	39	37	36
		8	62	56	52	50	48	46	44	42	40	39

Q = 2: freestanding heat pump on the outside of the building.

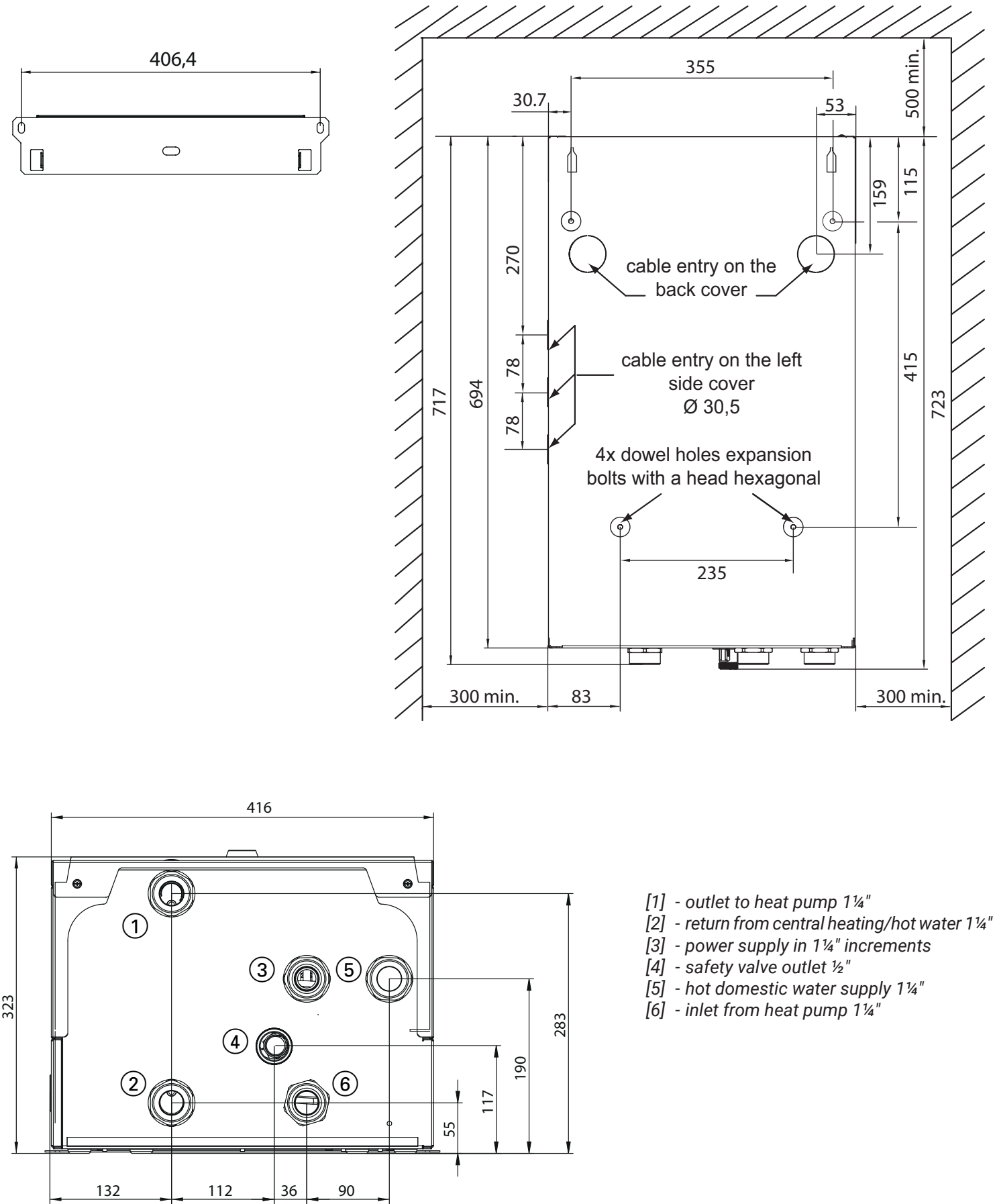


Q = 4: heat pump on the building's wall.



Q = 8: heat pump on the building's wall situated in the corner

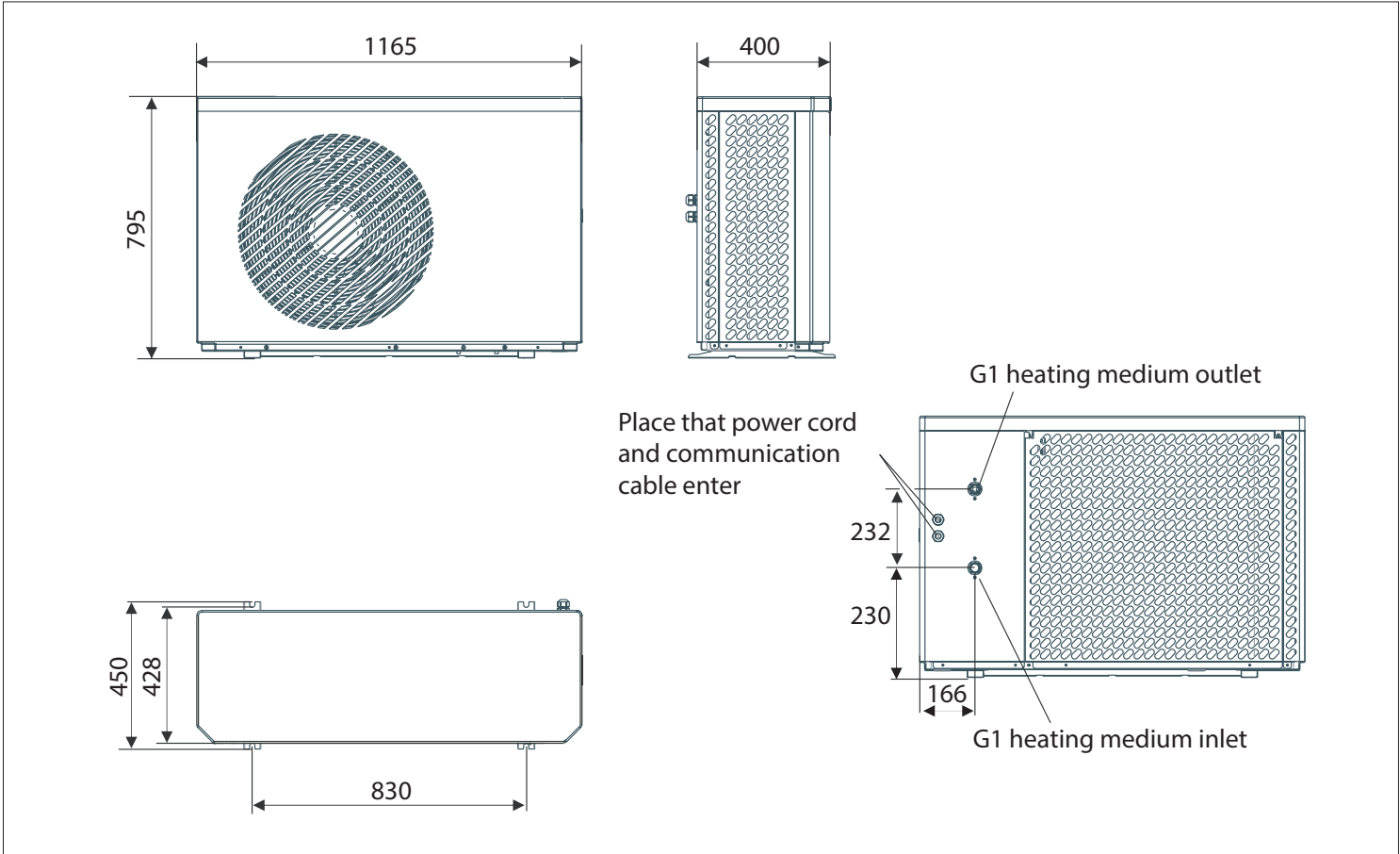
HPMI2 indoor module



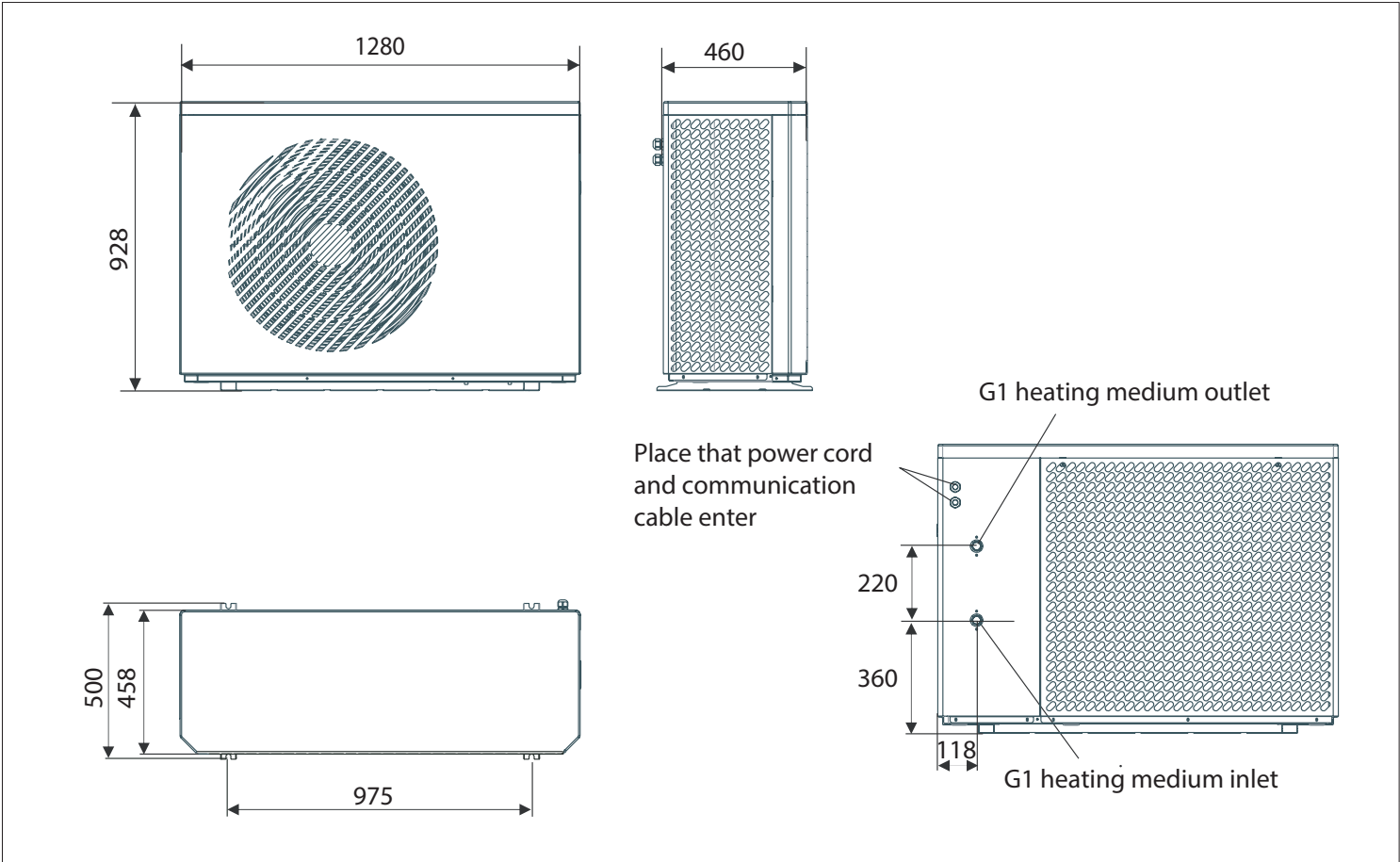
- [1] - outlet to heat pump 1 1/4"
- [2] - return from central heating/hot water 1 1/4"
- [3] - power supply in 1 1/4" increments
- [4] - safety valve outlet 1/2"
- [5] - hot domestic water supply 1 1/4"
- [6] - inlet from heat pump 1 1/4"

HPM02 outdoor module

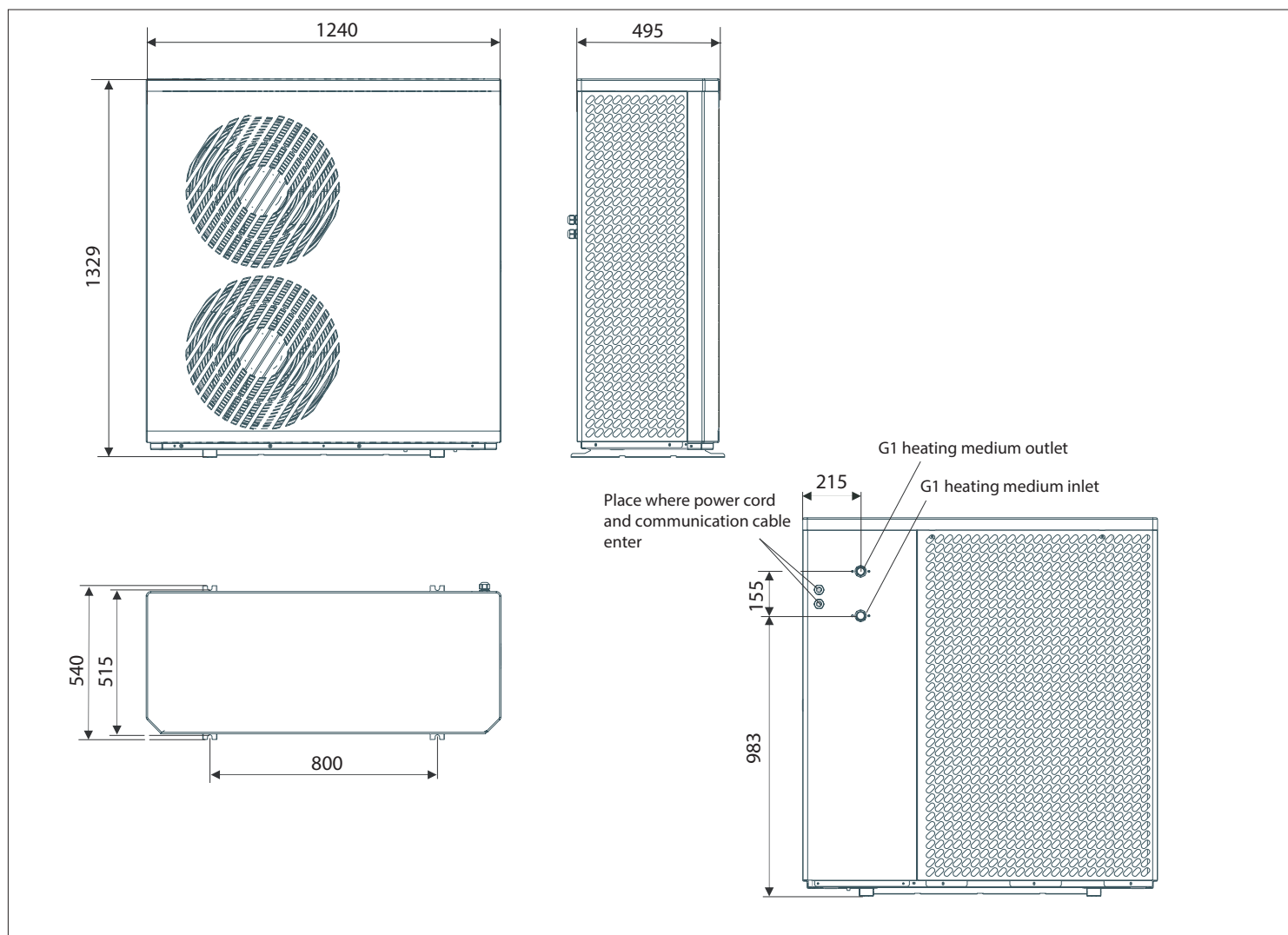
Outdoor module with one HPM02-8 fan



Outdoor module with one HPM02-12 fan



## Outdoor module with two HPM02-16/23 fans



## Installation of outdoor module

### Transport

#### Attention!

**Hitting, strong pressure and high stress may lead to a damage to the outer walls of the unit. Do not apply loads the top and front wall or the side walls.**

#### Attention!

**Tilting the outdoor module sharply may lead to the oil from the compressor entering the refrigeration circuit and to a consequent failure during the start-up. Maximum tilt angle: 45° for approx. 4min, otherwise 30°**

#### Assembly methods:

- Bed mounting with a duct above ground level
- Bed mounting with a duct below ground level

#### Bed mounting:

- Mount the outdoor module in a free-standing position on a fixed supporting structure with a height of at least 100 mm.
- In the case of harsh weather conditions (sub-zero temperatures, snow, dampness), it is recommended to place the module on a 300 mm high plinth.
- The weight of the outdoor module must be taken into account: see "Technical Data".

**Setting:**

- Do not install the exhaust side upwind.
- Carry out wall ducts and protective conduits for plumbing and electrical connection lines without using bent pipes and without changing the direction of the lines.

**Impact of weather conditions:**

- When installing in areas exposed to wind, pay attention to wind loads.  
When the outdoor module is mounted on a flat roof, significant wind loads may arise depending on the wind load zone and the height of the building. In this case, we recommend that a designer is commissioned to design a supporting structure taking into account the requirements of DIN 1991-1-4.
- Include the outdoor module in the lightning protection system.
- When designing rain protection or canopy, pay attention to the heat input (heating mode) and heat output (cooling mode) of the unit.

**Condensate:**

- Ensure free drainage of the condensate.  
To allow soaking in, prepare a permanent gravel bedding for the outdoor module.

**Damping of structure-borne sound and vibration between the building and the outdoor module:**

- Make the hydraulic connection to the outdoor module using flexible connections.
- Lay the electrical connection cables of the indoor/outdoor module without tension.

**Place of installation**

- Select a location with good air circulation so that cooled air can flow out and warm air can flow in.
- Do not install in room corners, recesses or between walls. This may lead to a re-intake of exhaust air.

**Attention!**

***Restricting the free flow of air may lead to cooled air (heated in the cooling mode) being drawn back in and lead to disruptions in the operation of the unit, a deterioration in its efficiency and a consequent increase in electricity consumption.***

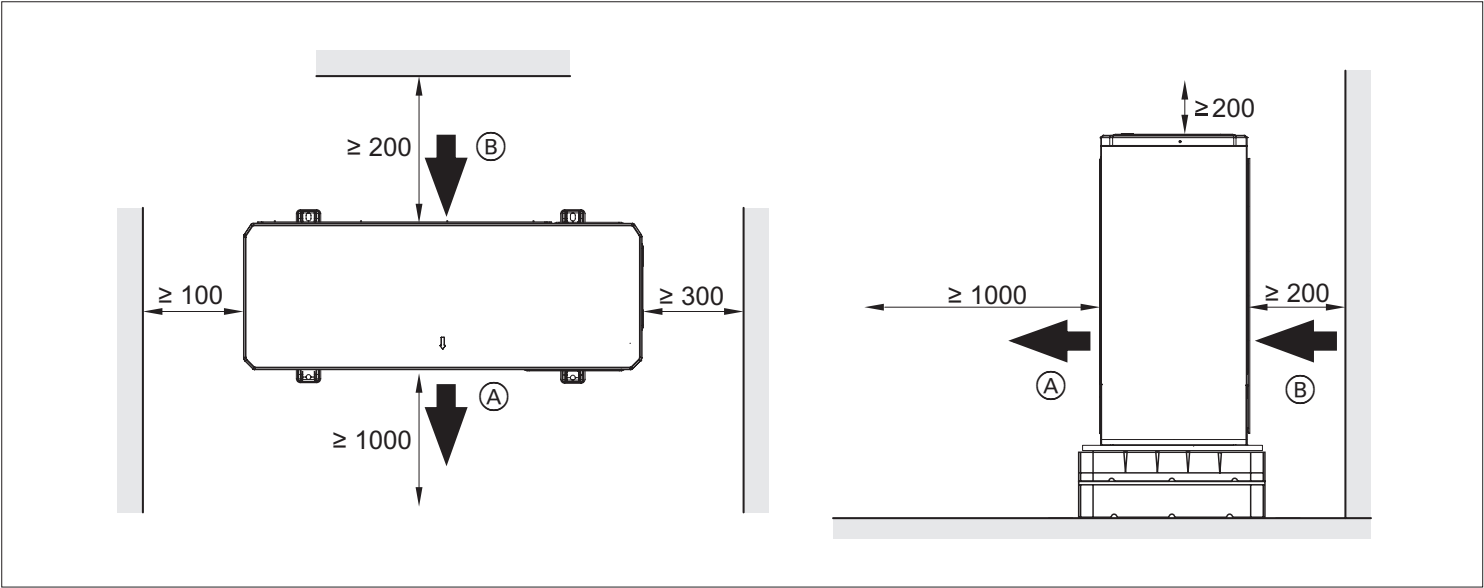
- If set up in an area exposed to strong winds, prevent the wind from affecting the fan area. Strong winds may disrupt the air flow through the evaporator.
- Select the installation location so that the evaporator is not clogged by leaves, snow, etc.
- Consider the laws of physics regarding sound propagation and reflection when selecting the mounting location.

**Design guidelines**

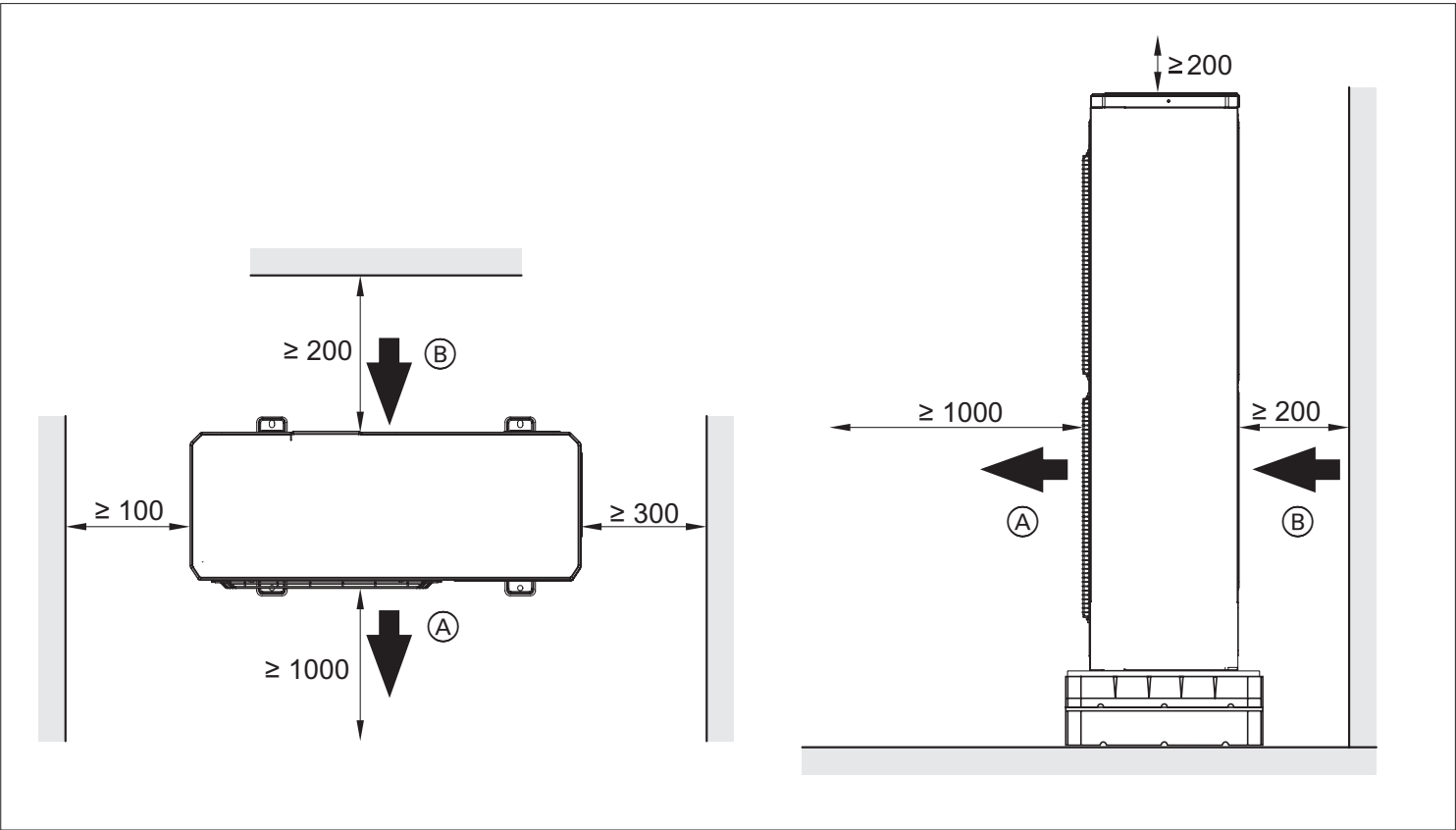
- Do not mount the device under windows or next to sleeping room windows.
- Do not install the device in basement sumps or depressions in the ground.
- Maintain a min. 3 m distance from basement sumps and windows.
- Maintain a distance from pavements, terraces, gutters or surfaces with a protective coating of min. 3 m. At outdoor temperatures below 10°C, cooled air blown out causes a risk of icing.
- Avoid "short circuiting" of air streams with ventilation equipment. Maintain a min. 3 m distance from the intake area of ventilation units.
- The installation location must be easily accessible, e.g. for maintenance work (see "Minimum distances at the outdoor module").

Minimum distances at the outdoor module

Outdoor module with one fan



Outdoor module with two fans

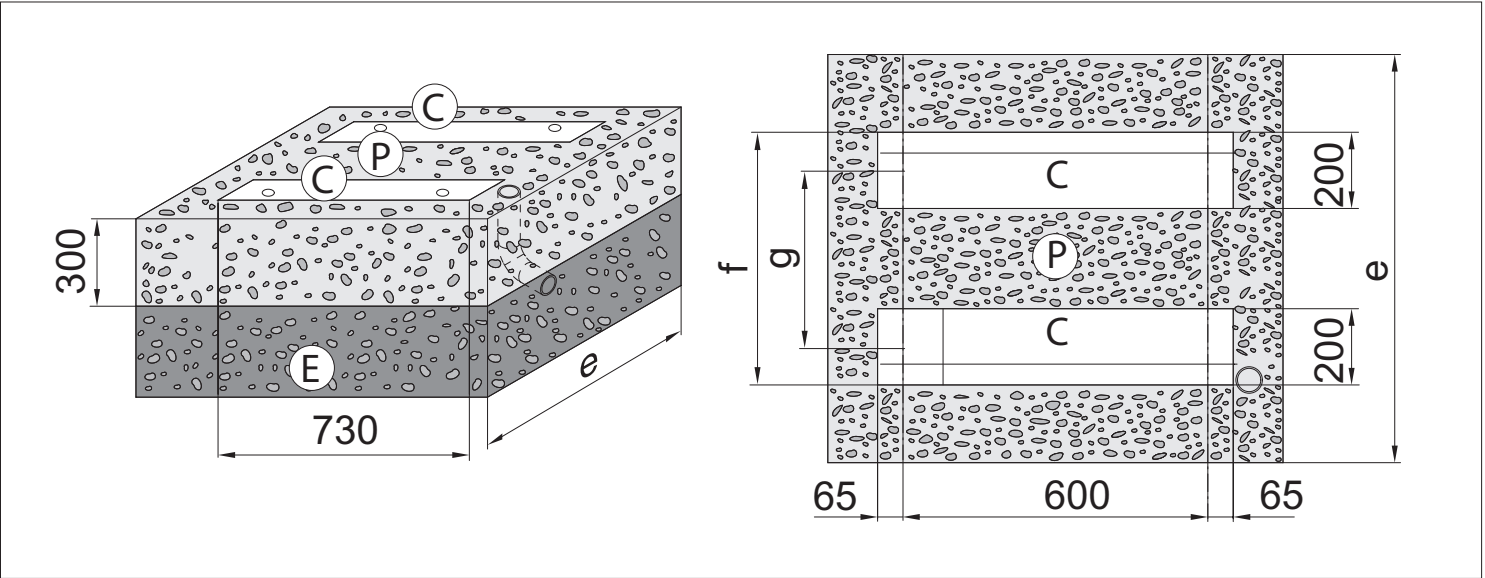


- (A) - Air outlet
- (B) - Air intake

Bed mounting

Foundations

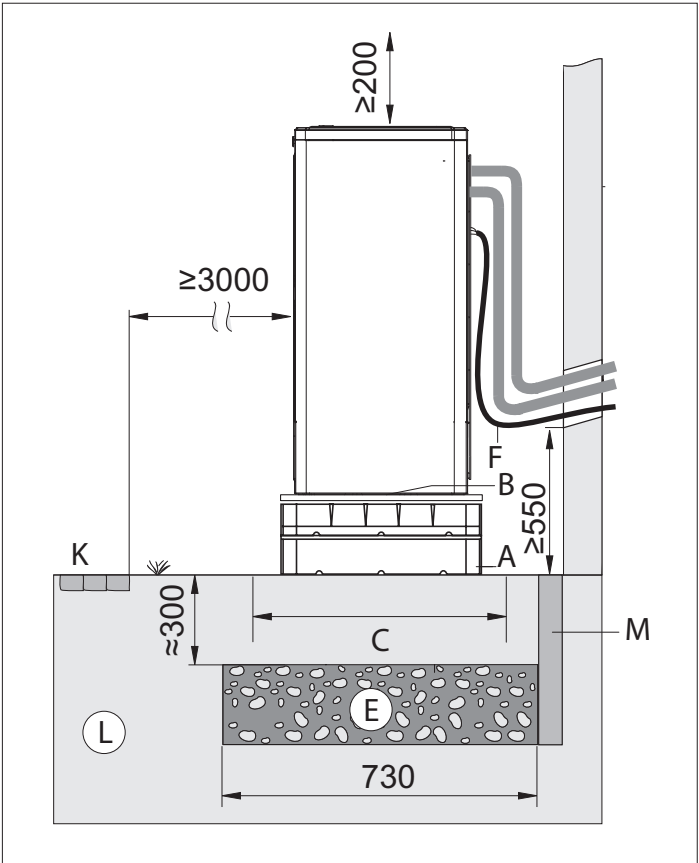
Mount the brackets for overground installation on 2 horizontal strip foundations. A concrete foundation as shown in the drawing is recommended. The layer thicknesses given are guide values. They must be adapted to local conditions. Observe the rules of construction engineering.



- Ⓒ - Strip foundations
- Ⓔ - Frost protection of the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness in accordance with local requirements and building regulations
- Ⓖ - Gravel bed to facilitate condensate absorption

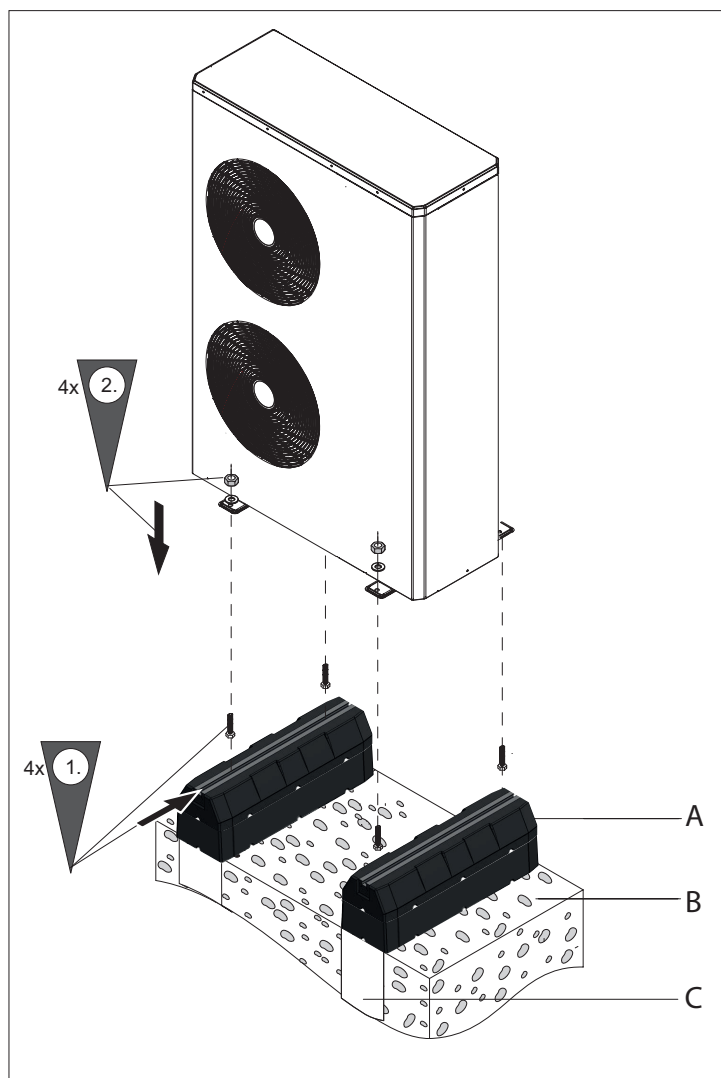
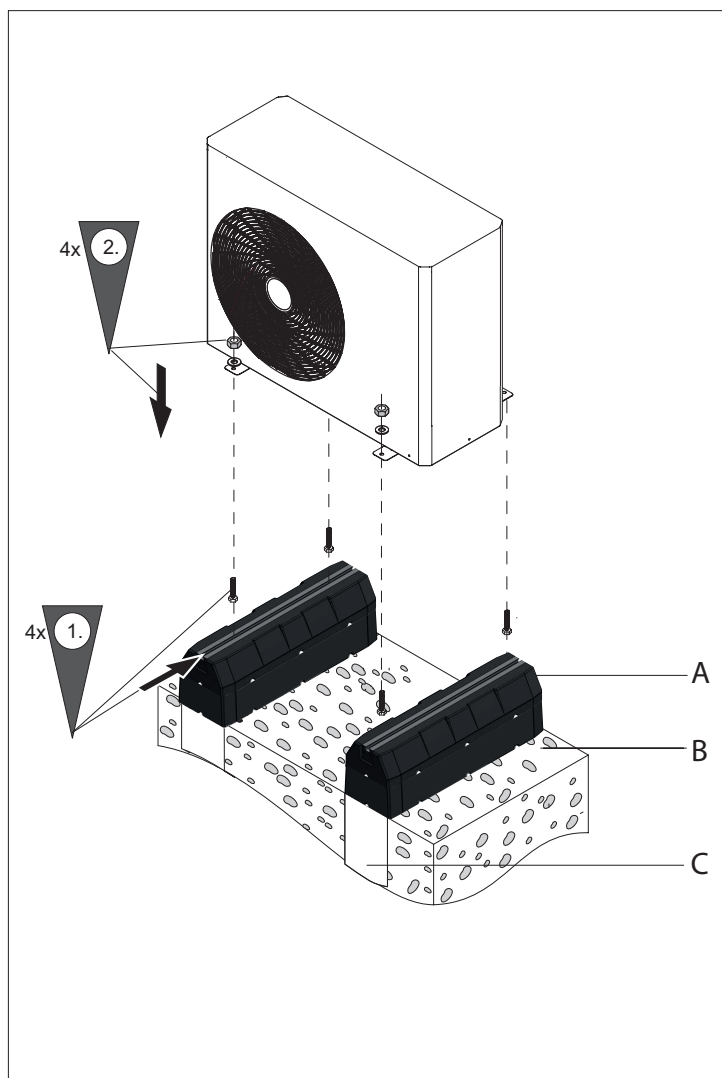
Dimensions [mm]	e	f	g
HPMO2-8	1200	1030	830
HPMO2-12	1300	1175	975
HPMO2-16/23	1250	1000	800

Bed mounting with strut



- Ⓐ - Ground mounting struts
- Ⓑ - Openings in base sheet to ensure free drainage of the condensate  
Do not close the openings
- Ⓒ - Foundation straps
- Ⓔ - Frost protection for the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness in accordance with local requirements and building regulations
- Ⓖ - Electrical cables connecting the indoor module to the outdoor module and the power supply cable of the outdoor module: Lay the wires without tension
- Ⓚ - Footpath, terrace
- Ⓛ - Earth
- Ⓜ - Flexible separation layer between the foundation and the building





- Ⓐ - Bed mounting bracket
- Ⓑ - Gravel bed to facilitate condensate absorption
- Ⓒ - Concrete foundation: see chapter "Foundations".

### Tip

It is recommended that the condensate drains freely, with no condensate duct.

## Assembly of the indoor module

### Transport

Hitting, strong pressure and high stress may lead to damage on the outer walls of the unit. Do not apply stress to the top and front walls or the side walls.

### Tip

If several heat pumps are to be set up in the same room, the minimum cubic area of the room for the unit with the highest amount of the refrigerant must be calculated.

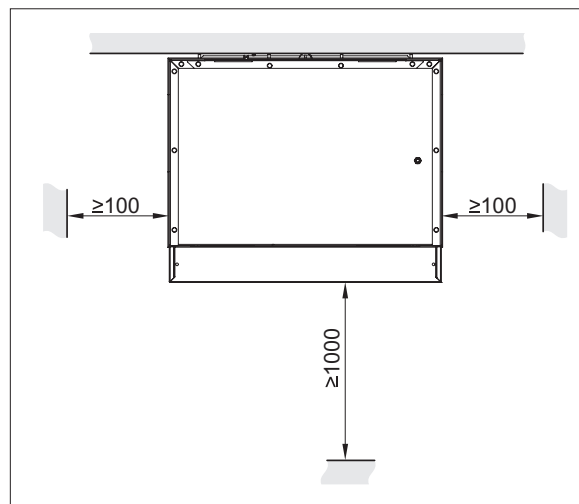
### Attention!

Escaping flammable refrigerant (R32) may cause a fire in rooms with insufficient air supply.

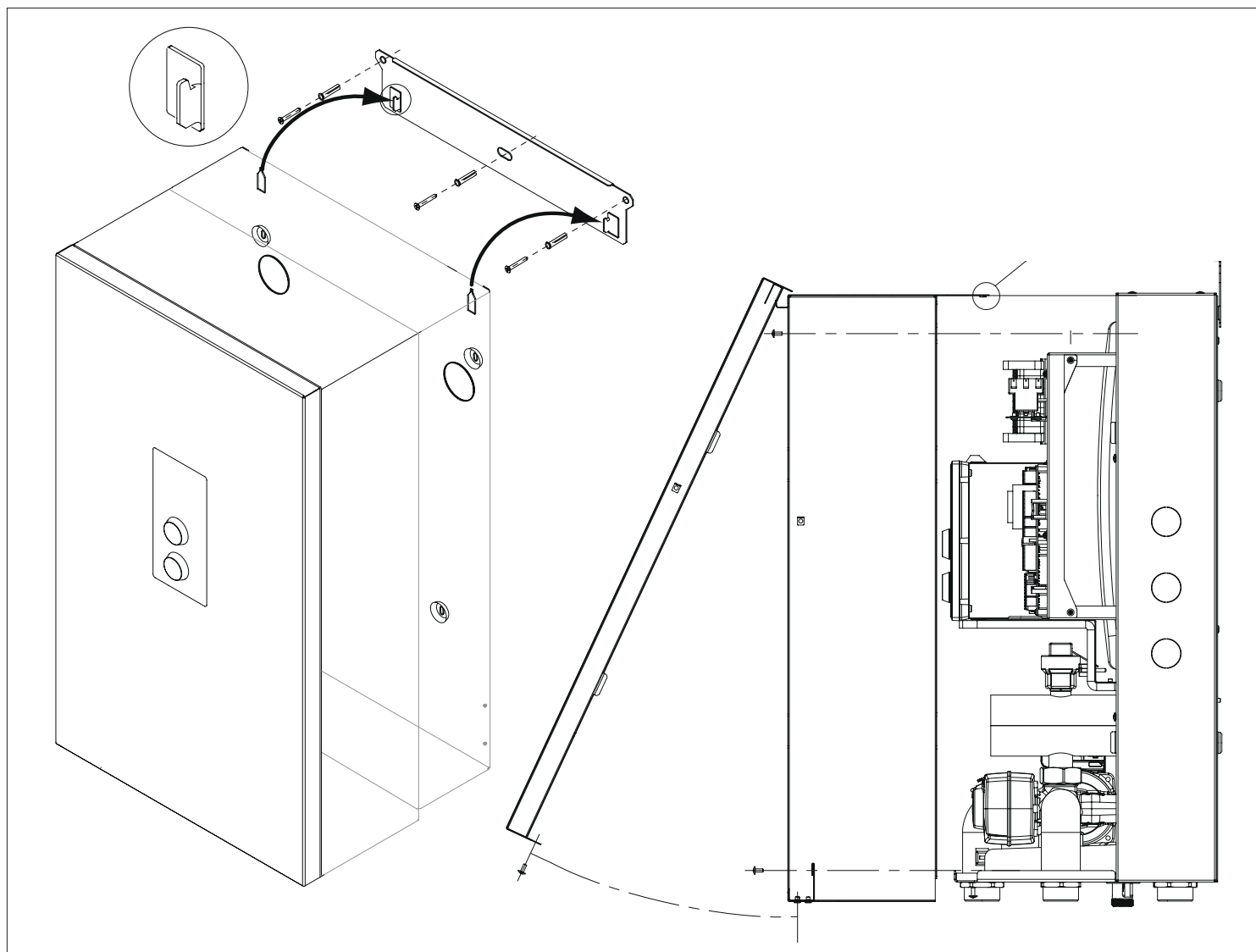
- Maintain the minimum room size.
- Provide adequate supply and exhaust ventilation systems.
- Do not use any sources of ignition in the technical room, e.g. sources of open flame, a gas device being turned on, an electric heater with exposed heating elements, etc.  
Do not smoke in the technical room.
- Electrical components installed at a distance of 1 m from those elements that conduct the refrigerant in the system must comply with the requirements specified in relation to potentially explosive zones, Zone 2.

## Minimum clearances for the indoor module

In combination with the R32 refrigerant: Absolutely observe the minimum room area in addition to the minimum distances.



## Mounting the indoor module on a wall



## Connection to the electrical system

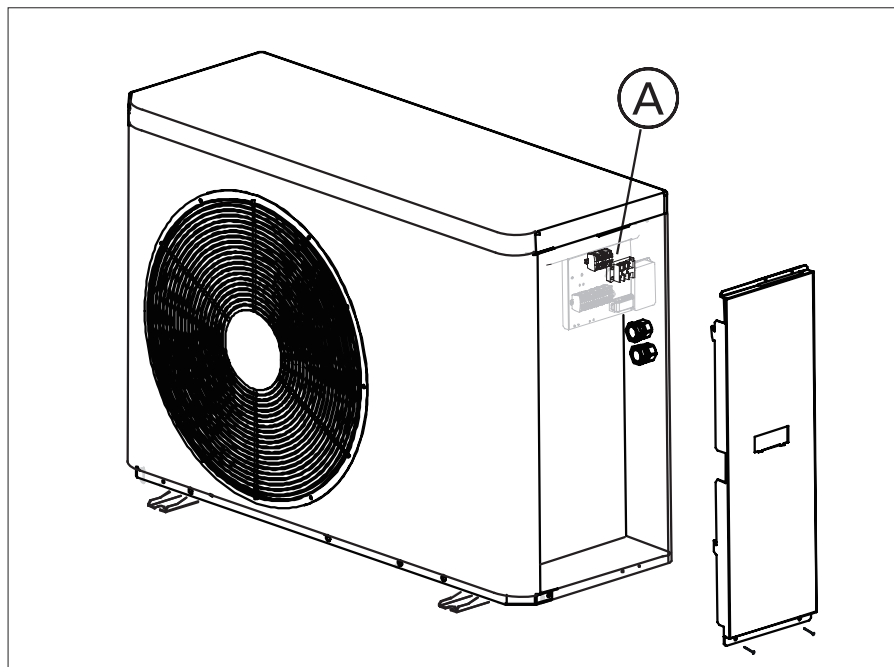
### Outdoor module: terminals

#### Outdoor module with 1 fan: opening the connection area

HPM02-8

HPM02-12

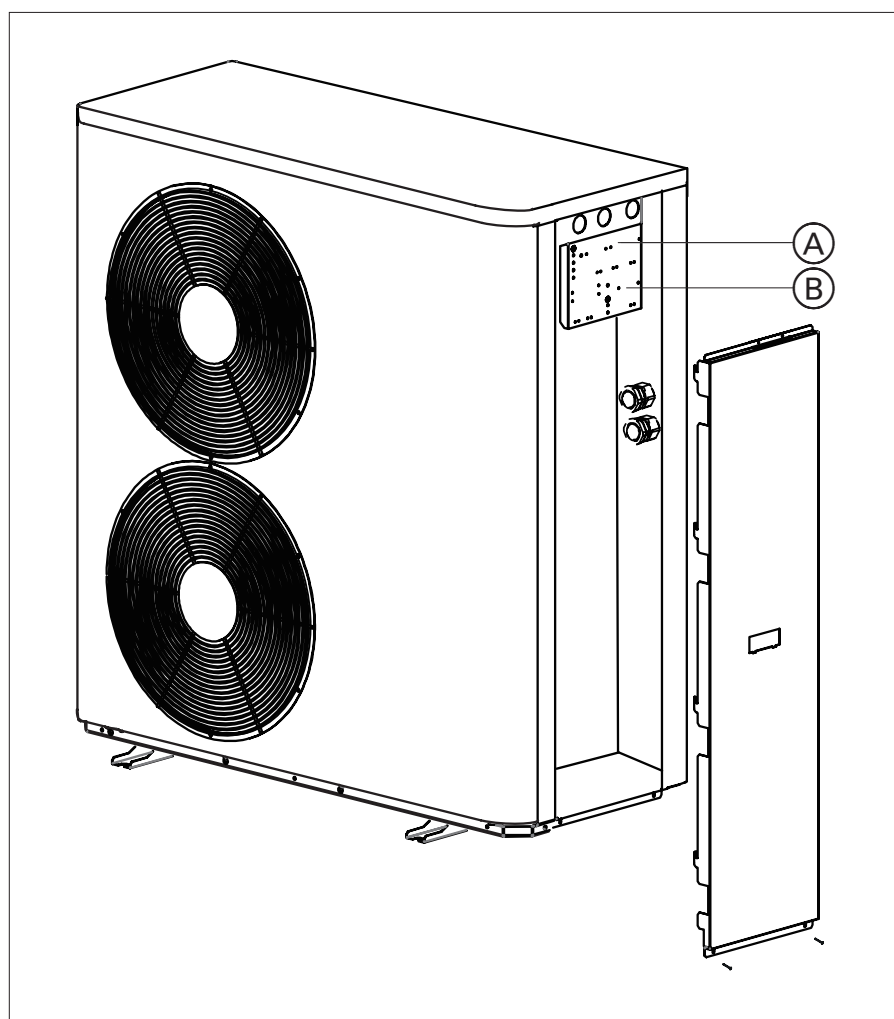
- Ⓐ - Connection area:
- Communication bus cable for indoor module
  - Electrical terminal of compressor



#### Outdoor module with 2 fans: opening the connection area

HPM02-16/23

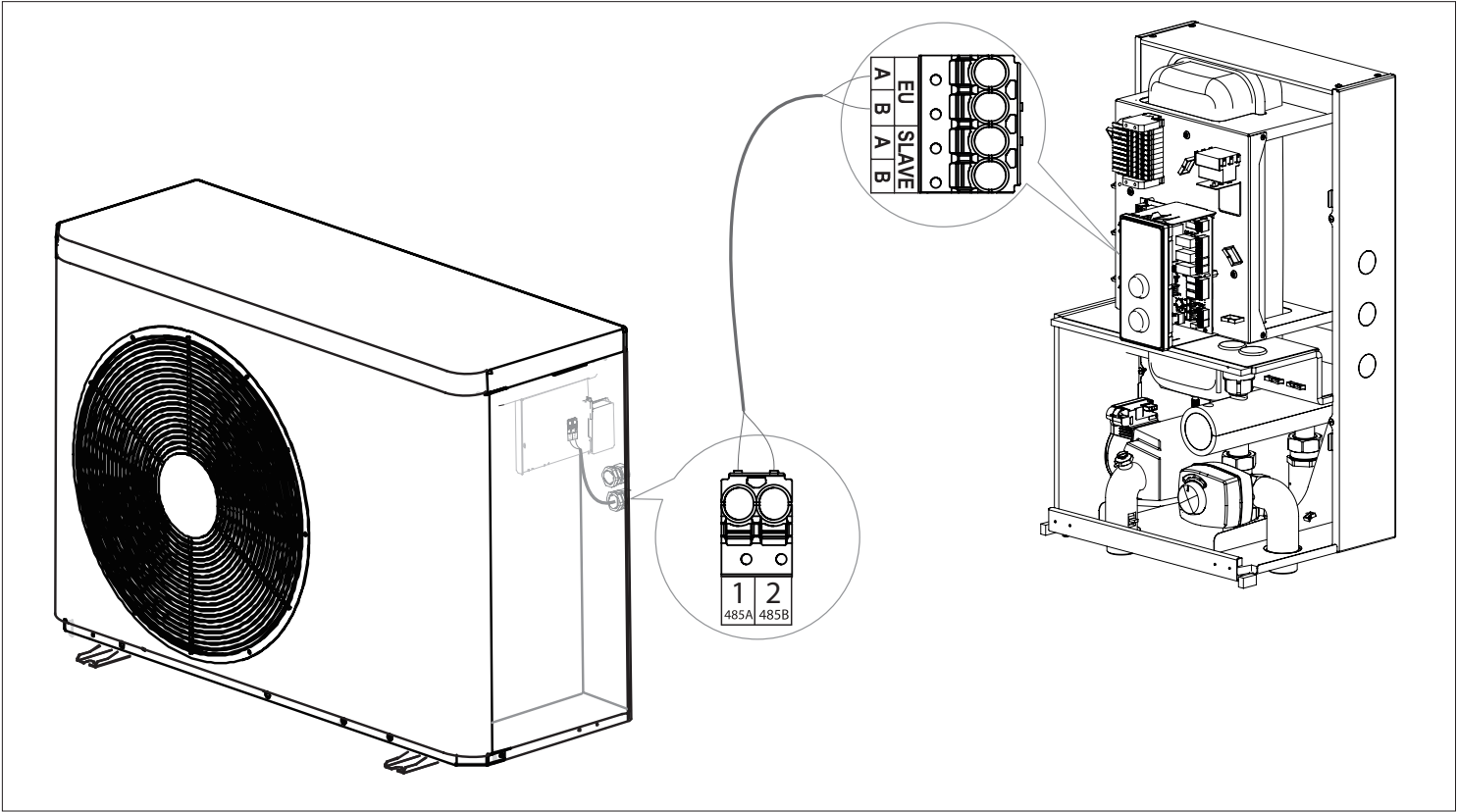
- Ⓐ - Communication bus cable to indoor module
- Ⓑ - Electrical terminal of compressor



Connection of communication bus cable between indoor and outdoor modules

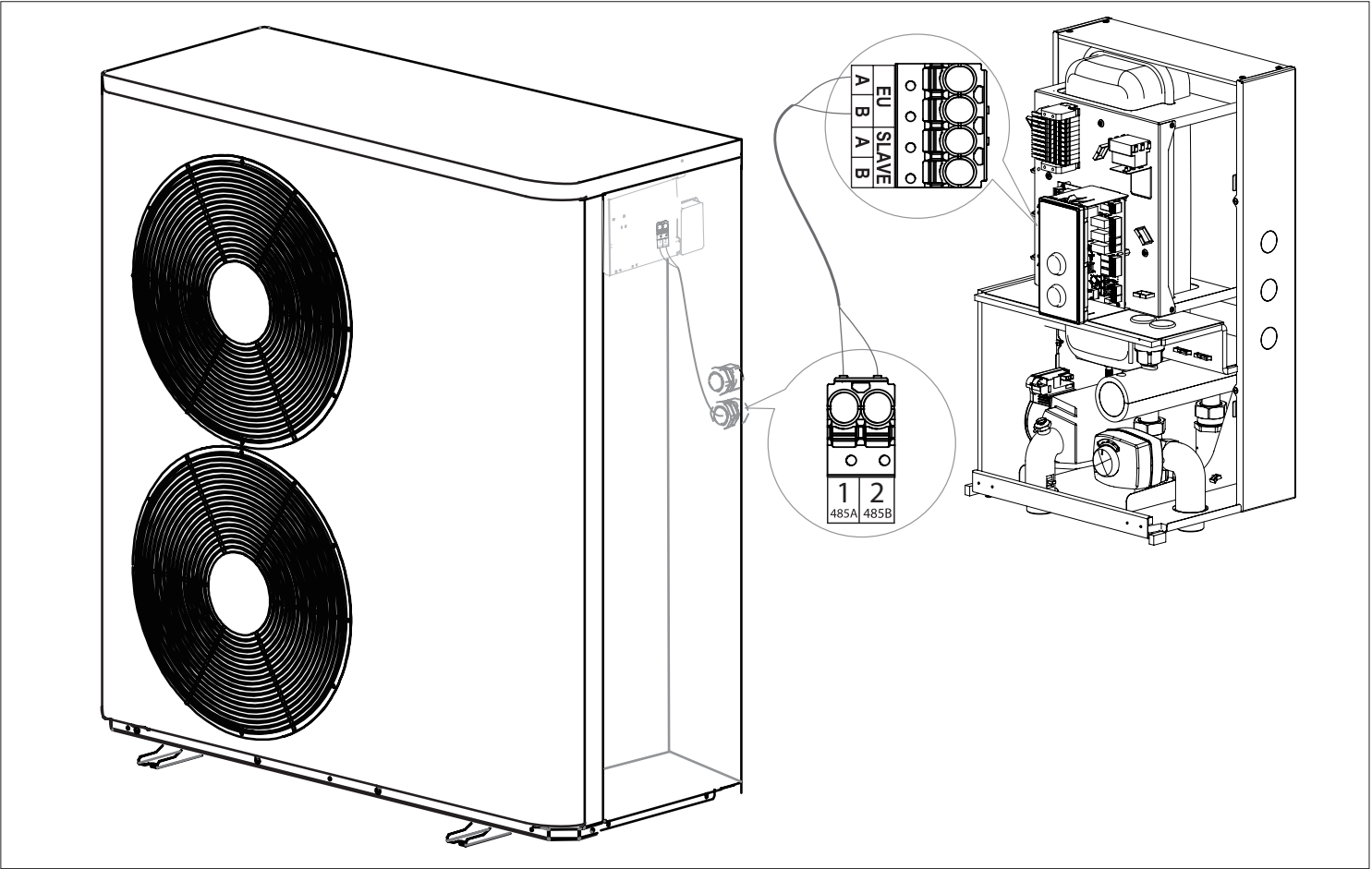
Outdoor module with one fan

HPM02-8; HPM02-12

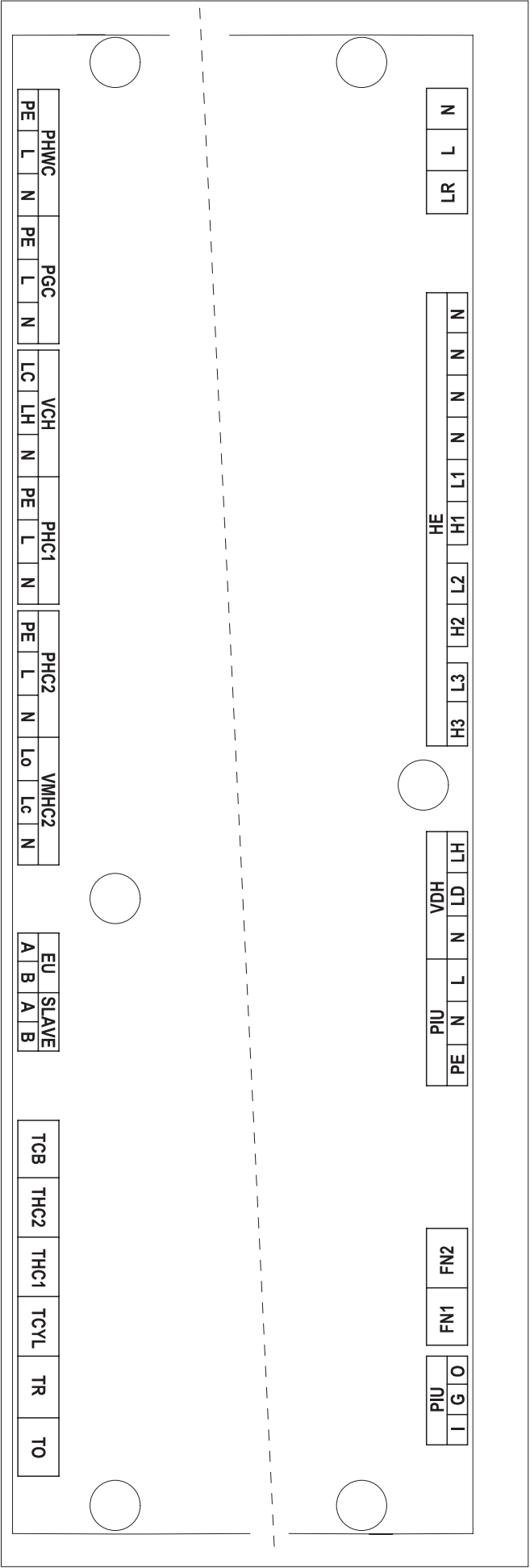


Outdoor module with two fans

HPM02-16/23



Indoor module: overview of connections



**Pumps:**

- PHWC - circulating tap water pump
- PGC - glycol circulation pump
- PHC1 - CH1 circulation pump (without mixer)
- PHC2 - CH2 circulation pump (with mixer)
- PIU - circulation pump in indoor unit

**Valves:**

- VCH - cooling / heating switching valve / circulation pump
- VMHC2 - mixing valve for CH2 circuit
- VDH - tap water/ central heating circuit switching valve

**Temperature sensor inputs:**

- TCB - water buffer temperature sensor
- THC2 - CH2 circuit supply temperature sensor (after the mixing valve)
- THC1 - CH1 circuit supply temperature sensor
- TCYL - tap water storage tank water temperature sensor
- TR - room temperature sensor
- TO - outdoor temperature sensor

**Control inputs/outputs:**

- PIU - circulation pump in indoor unit
- FN1, FN2 - functional inputs
- HE - heater control output

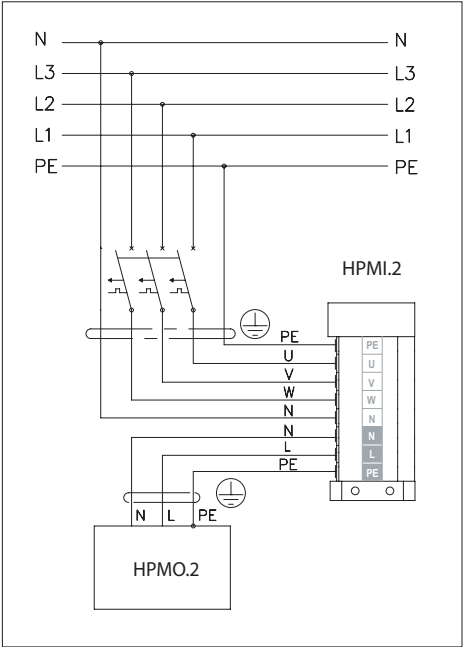
**Communication**

- EU - communication interface with outdoor unit
- SLAVE - Internet module communication interface

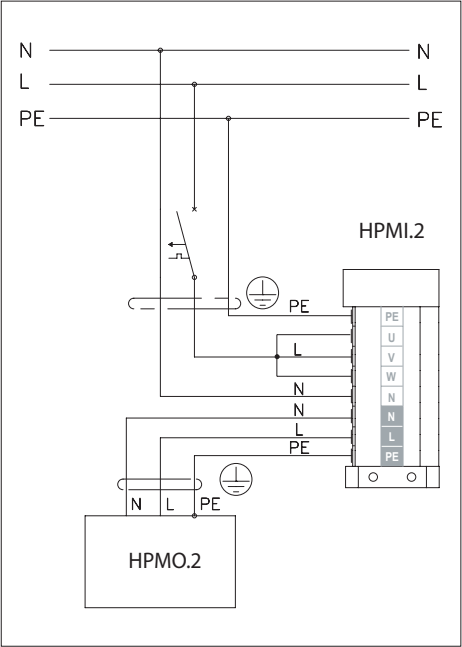
**Controller power supply**

- LR, L, N - heat pump controller power supply

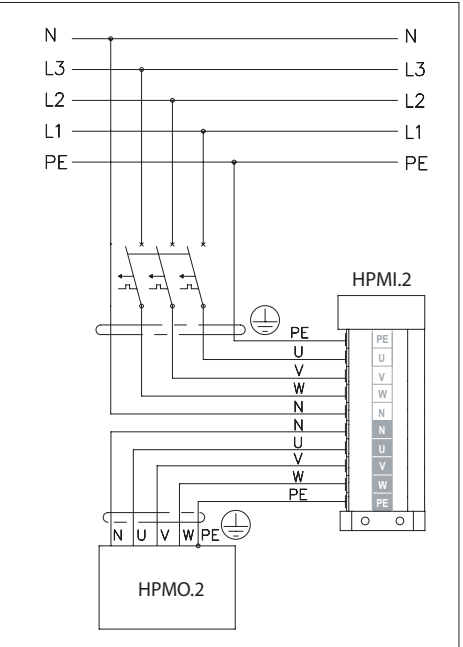
HPMI2-8 / HPMI2-12 - connection to 3-phase installation



HPMI2-8 / HPMI2-12 - connection to 1-phase installation

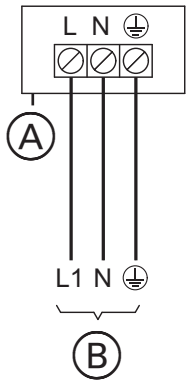


HPMI2-16+HPMO2-16 - connection to 3-phase installation



Electrical connection: outdoor module

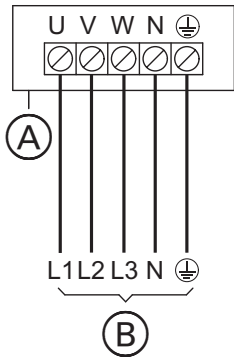
HPMO2-8 / HPMO2-12 - 230 V~ outdoor module electrical connection



Types	Wire	Max. Wire length	Max. protection
HPMO2-8	3 x 2,5 mm <sup>2</sup> <sub>lub</sub>	31m <sub>lub</sub>	B16A
HPMO2-12		32m	
	3 x 4,0 mm <sup>2</sup>	20m <sub>lub</sub>	B25A
		32m	

- (A) - Connection area of outdoor module  
(B) - 230 V/50 Hz Connection area in indoor module

HPMO2-16/23 - 400 V~ indoor module electrical connection



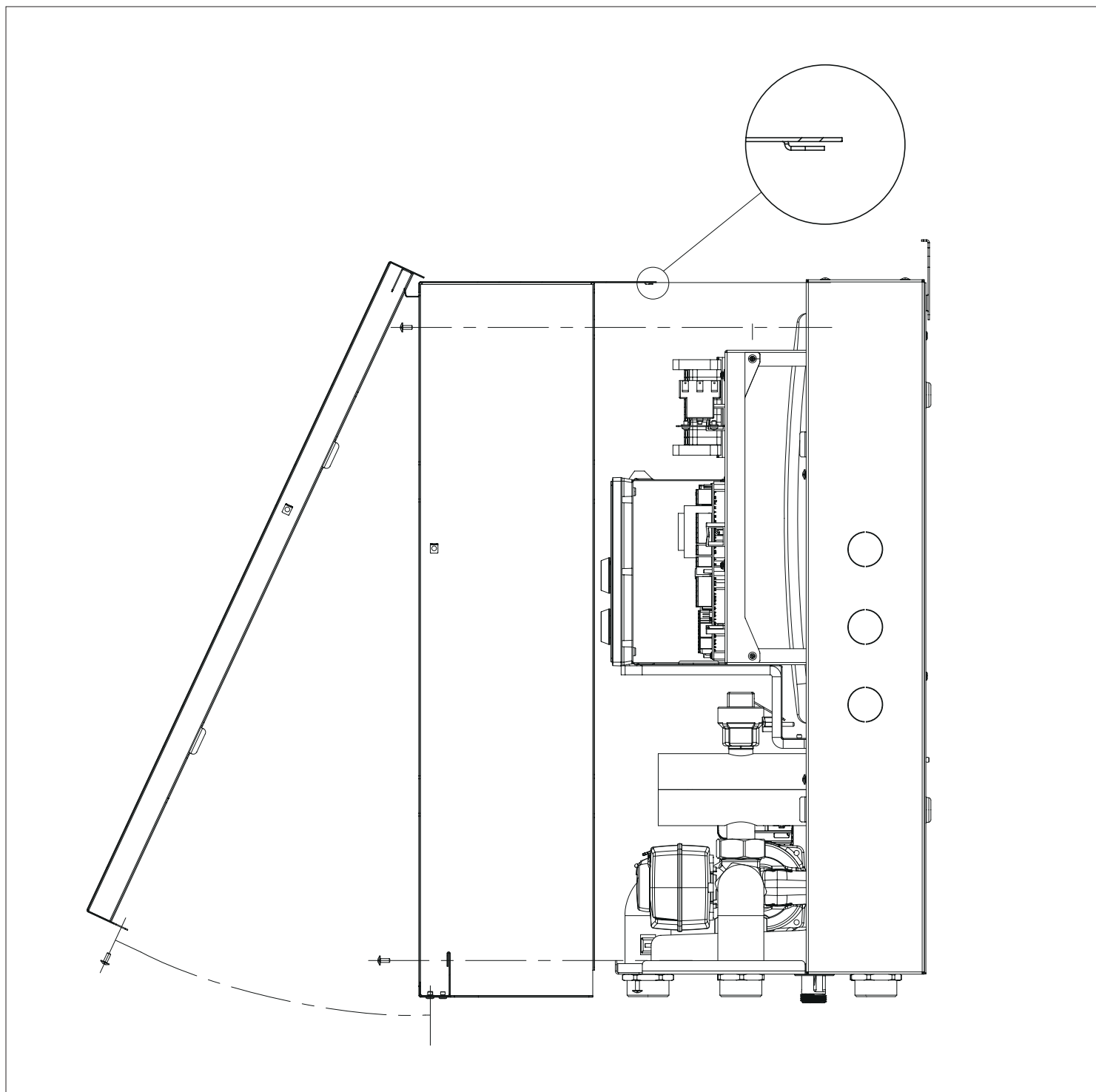
**Incorrect phase order may cause damage to the device. Make the electrical connection only in accordance with the specified phase order (see connection terminals), with a right-hand rotating field.**

Types	Wire	Max. Wire length	Max. Protection
HPMO2-16/23	5 x 2,5 mm <sup>2</sup>	60m	3 x B16A

- (A) - Connection area of outdoor module  
(B) - Connection area in indoor module 400 V/50 Hz

## Closing of the heat pump

### Indoor module: front panel installation



**A leaking housing may lead to damage caused by the condensate or vibration, and it may contribute to noise being produced.**

- Close the unit in a sound-proof and diffusion-tight manner.
- In the case of pipe and wire ducts, attention must be paid to the correct installation of thermal insulation.

If the components of the installation have not been earthed, there is a risk of a dangerous electric shock and component damage if the electrical installation is damaged.

Install protective wires on the front and side covers.

It is necessary to tighten the safety screws before the start-up.

## Connection of external sensors and control devices

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### **WE-019/01 cooling buffer temperature sensor (TCB input) - optional, additional equipment**

Keep the sensor connection cable as short as possible, do not run it in close proximity to power cables and do not wrap it around other cables. The sensor is required if the unit is configured to work with a fan coil [MAINTENANCE / CONFIGURATION -> Configuration -> Cooling -> Type: Fan coil].

### **Temperature sensor in WE-019/05 radiator heating circuit (THC1 input)**

The installation location for the sensor is shown in the hydraulic installation diagram. The sensor is required if the CO1 circuit is active [MAINTENANCE / CONFIGURATION -> Configuration -> CO1 circuit -> circuit: Yes].

### **WE-019/05 panel heating circuit temperature sensor (THC2 input)**

The installation location of the sensor is shown on the plumbing diagram.

The sensor is required if the CO2 circuit is active [MAINTENANCE / CONFIGURATION -> Configuration -> CO2 circuit -> circuit: Yes].

### **WE-019/01 tap water tank temperature sensor (TCYL input)**

Water temperature sensor in the tap water tank, place it in the tank socket.

### **WE-033 room temperature sensor (TR input)**

The room temperature sensor should be installed in a room that may serve as a reference for the building, away from radiators, windows, doors and passageways.

The minimum installation height is 150 cm. Keep the temperature sensor cable as short as possible, do not run it in close proximity to power cables and do not wrap it around other cables.

### **WE-027 outdoor temperature sensor (TO input)**

The sensor should be mounted in a shaded location on the north or north-west elevation of the building, away from windows and vents. Keep the temperature sensor cable as short as possible, do not run it in close proximity to power cables and do not wrap it around other cables.

### **Functional input 1 (FN1 input)**

When the input is opened, the unit's central heating is blocked. The input is active in the winter mode.

### **Functional input 2 (FN2 input)**

Forced outdoor cooling demand. The input is active in the summer mode. Shorting the circuit activates the unit in the cooling mode, according to the parameters set. An HP.HS.24 humidity sensor/switch (optional) can be plugged into the circuit to protect the plumbing system from condensation.

## Connection to the hydraulic system

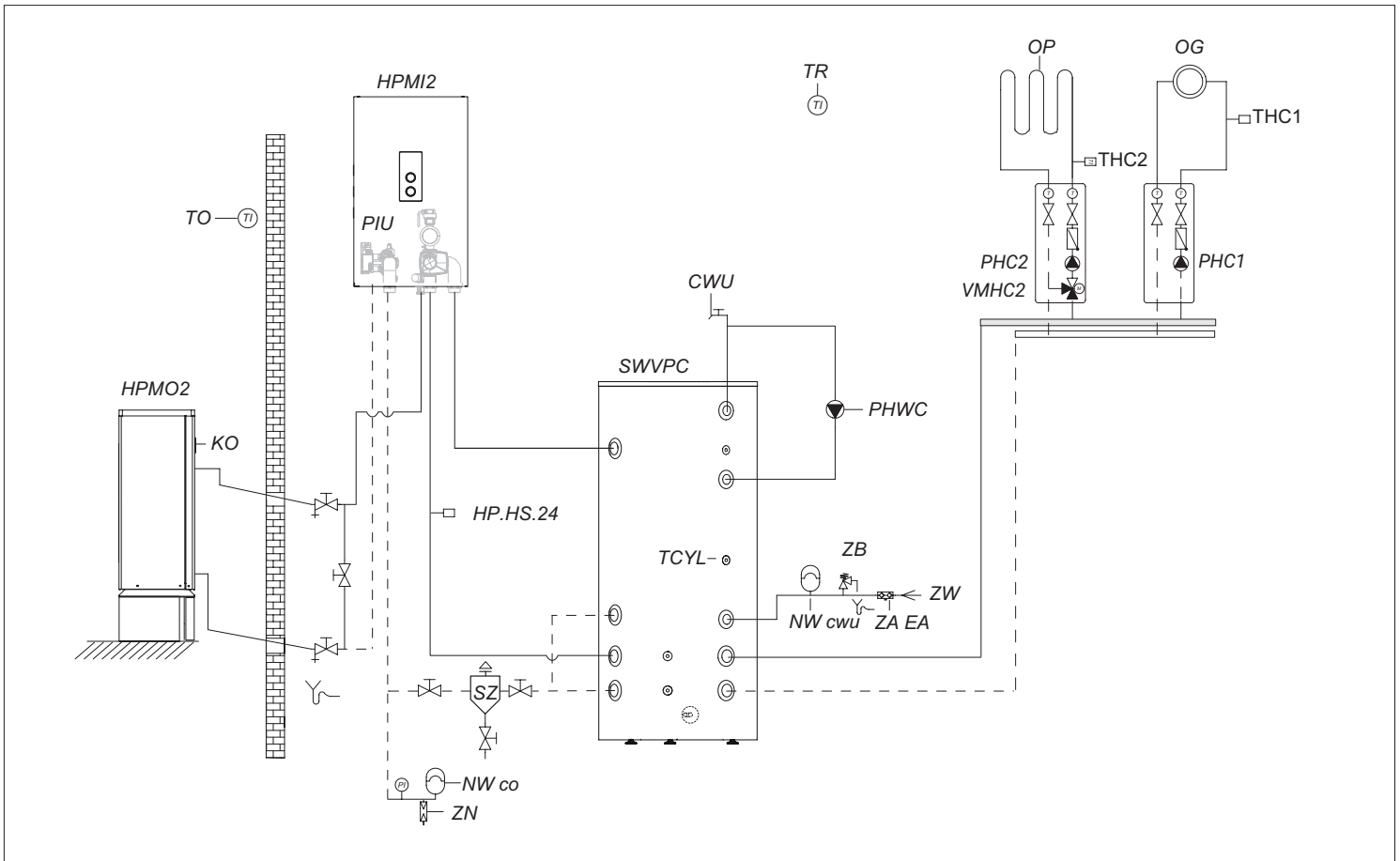
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The HPM2 heat pump can operate in a closed-loop hydraulic system (the minimum heating medium pressure is 0.6 bar).

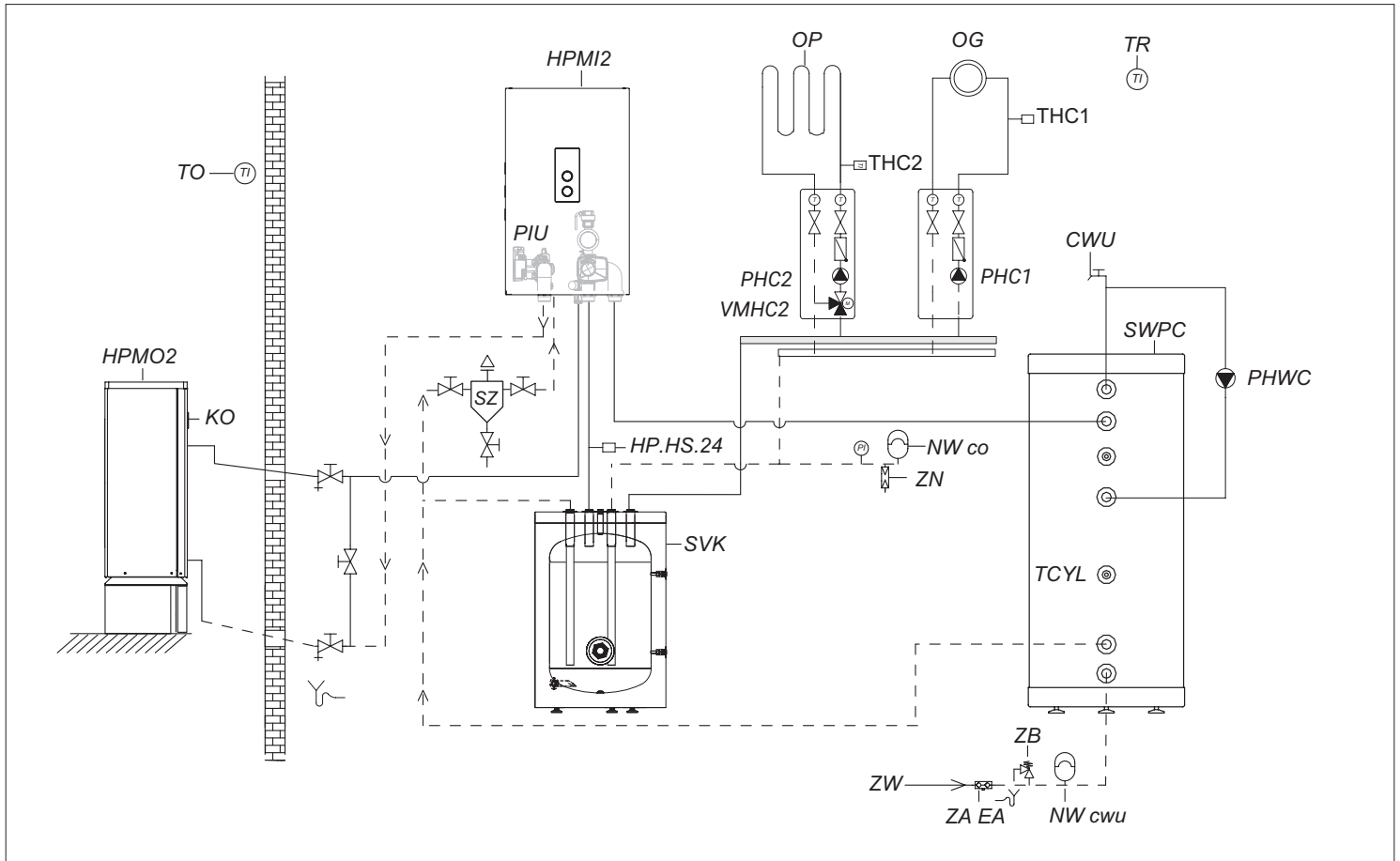
The hydraulic installation must be carried out in compliance with the applicable standards. The pipes connecting the heat pump to the indoor unit must have an internal diameter to ensure an adequate flow of the heating medium (see technical data table). Flexible hoses must be used to connect the heat pump to the hydraulic system to prevent the transmission of vibrations to the system. The heating medium pipes and connections must be thermally insulated. Do not switch off the unit when the outdoor air temperature is below freezing. This will protect the condenser of the outdoor unit from damage. If there is a risk of power failure, the heat pump heating circuit must be isolated from the hydraulic module by means of an additional exchanger and the heat pump heating circuit must be filled with an antifreeze. A prerequisite for the warranty is an installation of a solids separator at the unit inlet.

The hydraulic installation must be made in such a way that the HPM12 indoor unit can be operated in the heating circuit without the HPM02 outdoor unit (according to the installation diagrams below). This will ensure the operation of the heating system in the event of a failure of the HPM02 outdoor unit.

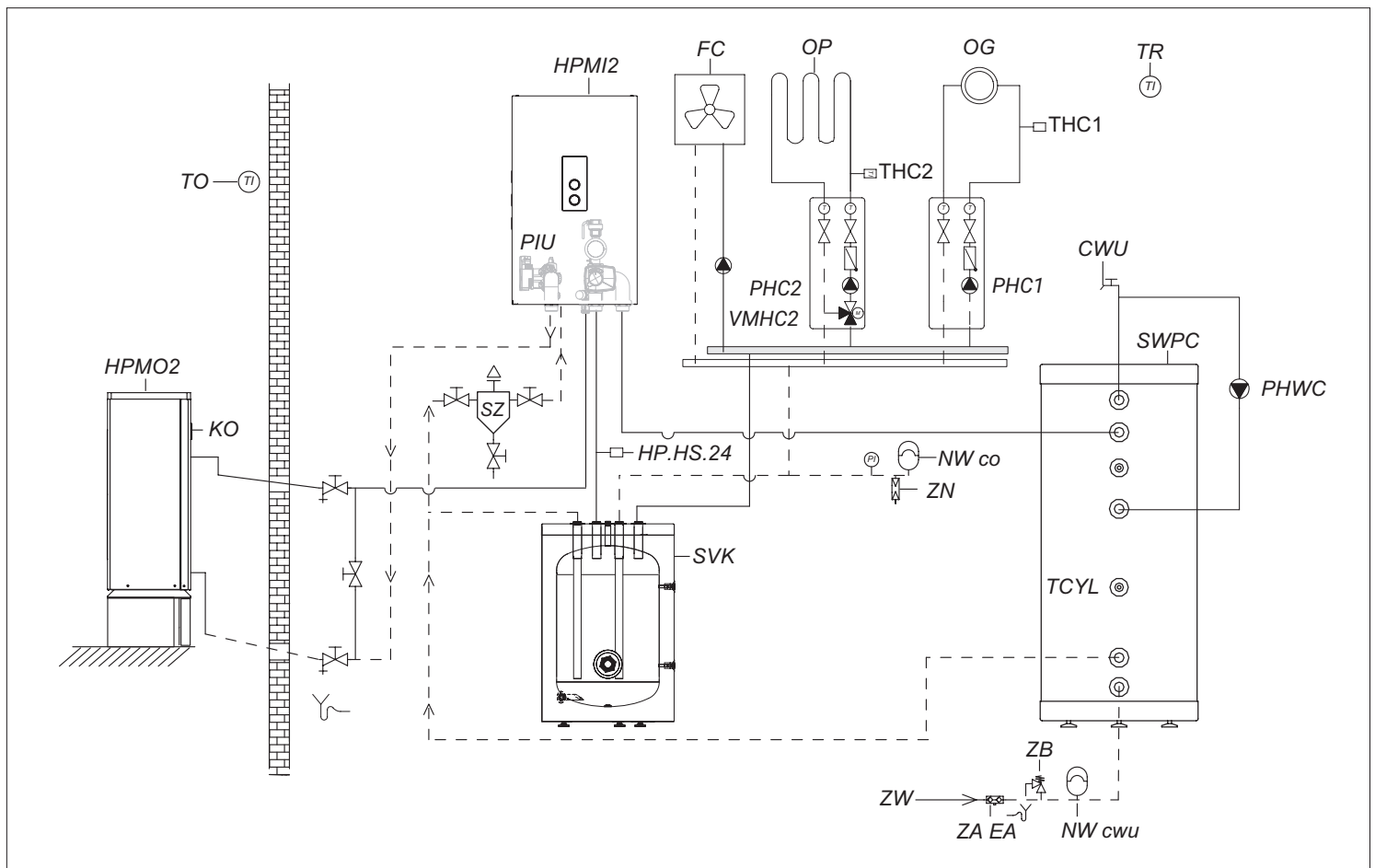




Example of an installation diagram of a heat pump with a panel heating/cooling circuit, a radiator circuit, and a tap water exchanger with a central heating/cooling water buffer.

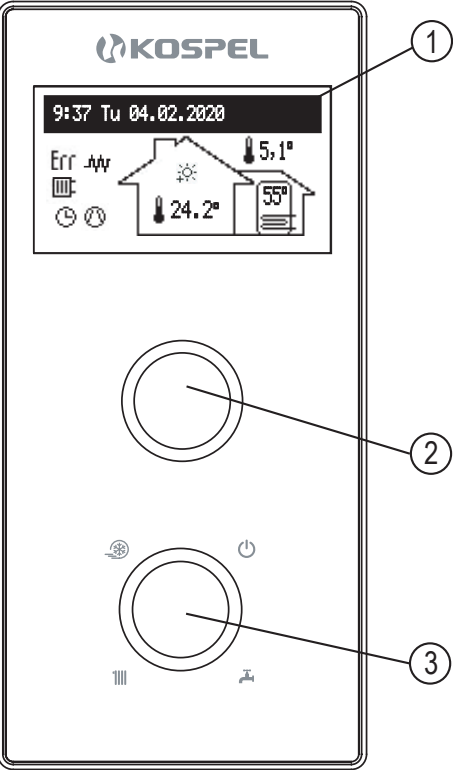


Example of an installation diagram of a heat pump with a panel heating/cooling circuit, a radiator circuit, a central heating/cooling water buffer and a tap water storage tank.



Example of an installation diagram of a heat pump system with a panel heating circuit, a radiator circuit, a heating buffer, a tap water tank and a cooling circuit with a fan coil

- |  |  |
|--|--|
| HPMO2 - heat pump  | SWVPC - tap water exchanger with central heating buffer              |
| HPMI2 - hydraulic module                                       | SVK - heating/cooling water buffer tank                              |
| KO - vent connection   | TCYL - storage tank temperature sensor (WE-019/01)                   |
| SZ - solids separator  | PHWC - circulating tap water pump                                    |
| TO - outdoor temperature sensor                                | HP.HS.24 - moisture switch   |
| PHWC - circulating tap water pump                              | CWU - hot tap water  |
| PGC - glycol cycle pump  | ZW - cold water inlet  |
| PHC1 - CH1 circulation pump (without mixer)                    | ZA EA - anti-siphon valve  |
| PHC2 - CH2 circulation pump (with mixer)                       | ZB - safety valve  |
| PIU - circulation pump in the indoor unit                      | NWcwu - hot tap water diaphragm expansion vessel                     |
| OG - radiator heating  | NWco - central heating expansion vessel                              |
| TR - room temperature sensor                                   | ZN - relief Valve  |
| OP - panel heating   | TCB - buffer temperature sensor (optional for cooling with fan coil) |
| THC1 - - medium temperature sensor in radiator heating circuit | FC - fan coil  |
| THC2 - medium temperature sensor in panel heating circuit      |  |
| VMHC2 - mixing valve for CH2 circuit                           |  |



- 1 - display
- 2 - navigation knob for preview and settings
- 3 - mode selection knob

Use the mode selection knob [3] to set one of the modes:

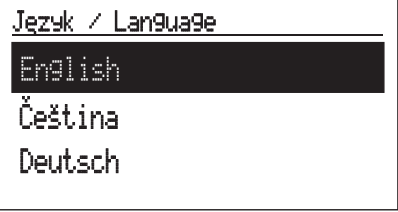
- winter
- summer
- standby

Turning the navigation knob [2] (left or right), with the winter or summer mode being active, switches the function screens on the display [1].

- main: indicates the basic parameters of the heat pump (see the table for details),
- preview of parameters: allows the input and output signals of the heat pump to be viewed,
- settings: allows the heat pump parameters to be adjusted to the user's preferences,
- service / configuration: allows to heating system configuration to object's conditions (available for installation company and specialized services after entering the access code) and preview of input and output heat pump's signals and current parameters,
- PARTY / HOLIDAY / MANUAL: it allows to the fast change of work's algorithm depending on the needs.

The individual functions are accessed by selecting the relevant function screen and pressing the navigation knob.

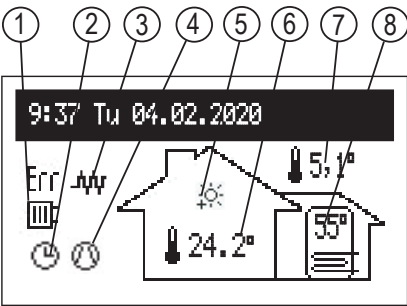
The occurrence of an error or warning in the heat pump is signalled on the main function screen by **Err** or by pressing the knob, a list of detected errors and warnings is available.



At first start-up, select the language and then the type of outdoor unit.



MAIN SCREEN:



- 1 - signalling of heat take-up
- 2 - heating programme on indication
- 3 - heater on indication
- 4 - compressor operation indication
- 5 - signalling of room temperature set
- 6 - room temperature
- 7 - outdoor temperature
- 8 - storage tank temperature

Indication of the running programme:

	According to a pre-set daily/weekly schedule
	Disinfection of the storage tank
	Defrosting
	PARTY - maintaining a comfortable temperature in the room and the cylinder
	HOLIDAYS - maintaining an economic or frost-free temperature in the room and the storage tank
	Implementation of the frost protection programme
	MANUAL - maintaining the desired temperature in the room

Indication of realised room temperature:

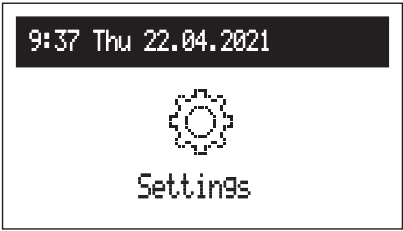
	Signalling of heat take-up > central heating
	Signalling of heat take-up > hot tap water
	Cooling operation indication

Other symbols

	Error indication
	Warning indication
	Heater switch-on indication
	Indicates that the compressor is switched on. Flashing symbol indicates bivalent mode.

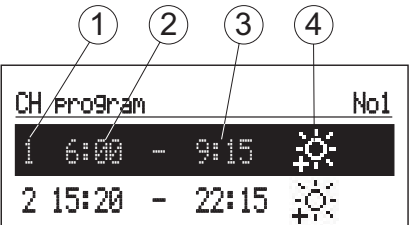
SETTINGS:

Adaptation of the device parameters to the user's preferences.



- Room temperature
  - Economy ☾, Comfort- ☼, Comfort ☼, Comfort+ ☼: setting the room temperature values available in the schedules
  - Party, Holiday: selection of temperatures to be implemented in programmes
  - Cooling: room temperature setting in the cooling mode (available with active panel cooling)
- Storage tank temperature: (available if hot tap water tank is active)
  - Economy ☾, Comfort ☼: setting the hot water temperature values available in the schedules.

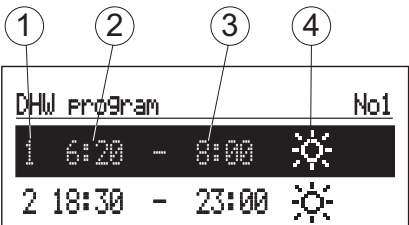
CH program



- 1 - no. of time frame (max 5)
- 2 - time of starting the selected temperature
- 3 - time of finishing the selected temperature
- 4 - temperature selection: ☼☼☼☼

- No. 1...No. 8 > setting 8 daily programs, in each daily program there are 5 editable time frames, which can have one of the room temperature sets (☼☼☼☼). In any other case, the economy temperature will be activated(☾).
- Setting up daily programs procedure is described in **Daily Schedule** paragraph.
- WEEKLY: assigning for each week day one of the previously set daily programs.

DHW program (only available in DHW cylinder systems with internal adjustment activated)



- 1 - the number of the time interval (max.5)
- 2 - start time of the selected temperature
- 3 - finish time of the selected temperature
- 4 - temperature selection ☼☼

- No. 1...No. 8 > setting 8 daily programs. In each daily program there are 5 editable time frames, which can have one of the room temperature sets (☼☼☼☼). In any other case, the economy temperature will be activated (☾).
- Setting up daily programs procedure is described in **Daily Schedule** paragraph.
- WEEKLY: assigning for each week day one of the previously set daily programs.

- Circulation program (available only within active circulation in system DHW)

①	②	③
Circulation Program No1		
1	6:00	8:00
2	18:30	23:00

- 1 - no. of time frame according to schedule (max 5)  
 2 - start time of circulation pump operation  
 3 - finish time of circulation pump operation

- No. 1 ... No. 8> setting of 8 daily programs in each daily program. There are 5 adjustable time intervals in which it will work circulation pump  
 Setting up daily programs procedure is described in **Daily Schedule** paragraph.
- WEEKLY: assigning for each week day one of the previously set daily programs.
- DISINFECTION (only available in systems with DHW):
  - WEEK DAY: the day for disinfection during.
  - TIME: the time it takes to disinfect with automatic program.
  - WORKING TIME: time of disinfection (calculated from the moment the temperature has reached disinfection).
  - AUTOMATIC WORK:
    - Yes - automatic work start of disinfection at the set time (time, day of the week, beginning time)
    - No-automatic disinfection turned off. Disinfection is carried out at the user's demand.
  - CIRCULATION: it is possible to set disinfection of the entire installation or only DHW.
  - ACTIVATE NOW: manual start of disinfection (independent of the day's or time's set).
- Cooling program (only available with active plane cooling)

①	②	③
Cooling Program No1		
1	6:00	8:00
2	18:30	23:00

- 1 - time interval number (max. 5)  
 2 - cooling function start time  
 3 - cooling function completion time

- No.1 ... No.8 setting 8 daily programs, in each daily program there are 5 adjustable time intervals in which the colling mode is performed.  
 / the procedure for setting the daily programs is described in the Daily Schedule section /.
- Weekly: assigning to each day of the week one of the preset daily programs.
- TIME / DATE:
  - setting of the current system time (YEAR / MONTH/ DAY / HOUR / MINUTE).
  - AUTOMATIC TIME CHANGE:
    - Yes - automatic system time changeover from summer to winter and vice versa,
    - No - automatic change turned-off

**Attention, in case of cooperation with the Internet module, automatic time change should be switched off.**
- INTERFACE:
  - BRIGHTNESS MIN: setting of the brightness of the display in stand-by mode.
  - BRIGHTNESS MAX: setting of the brightness of the display during the work.
  - SOUND:
    - Yes - the sound of working dial/
    - No - there is no sound of the working dial.
  - DIAL SENSITIVITY: 1 - high / 4 - low.

- LANGUAGE
  - choice of language menu
- SYSTEM:
  - MSPC PROGRAM: shows the version of indoor unit controllers program
  - PW PROGRAM: shows the version of panel's program
  - RESET: heat pump's start-up
  - FACTORY SETTINGS: restore

## SERVICE / CONFIGURATION:



### Configuration

Adaptation of the heat pump:

*\*Changes in the configuration menu are possible after entering an access code. When prompted for an access code, turn the navigation dial to the required code and confirm the code by pressing the dial. If you want to retract from the code request screen, hold the navigation dial or wait until automatic return to main function screen.*

**Code: 987**

- Central heating:
  - Regulation:
    - Per curve - temperature in CH installation is calculated on the basis of outside temperature and room temperature based on schedule,
    - Constant - in CH installation is equivalent to Supply temperature MAN, set individual for CH1 and CH2.
  - Glycol exchanger:
    - Yes - there is an additional exchanger in the system
    - No - there is no additional exchanger.
  - Building protection:
    - Yes - if the temperature in the building drops below 7C in the stand-by mode and the outside temperature is lower than 2C, heating will be turned on ,
    - No - protection is disabled..
  - Time of turning on the immersion heater: this parameter defines the time after which the heat pump is assisted it will be additional source of heat if it does not reach the set values parameters. The time is counted from the moment the point temperature is reached bivalent [*Configuration -> Heat pump -> Bivalent point*]. In case of if the outside temperature is above the bivalent point temperature, the additional heat source will not be turned on. In case of need for an additional heat source, the condition for its activation is the activation of the immersion heaters [*Configuration -> Heating element -> use of immersion heaters: Yes*],
  - Outside temp. Off: setting of selected temperature above which CH circuit will be switched off.
  - TO Calibration : calibration of the displayed outside temperature value.  
Depending on the sign, the parameter is added to or subtracted from the measured values.

- CH1 circuit:
  - Heating curve no.: selection of a heating curve (see Chapter Heating curve).  
**Note, the parameter is present when the control is set according to heating curve [Configuration -> Heating -> Regulation type: Acc. curve],**
  - Curve offset: Heating curve offset (see section Curve heating).  
**Note that the parameter is present when the control is set according to heating curve [Configuration -> Heating -> Regulation type: acc. curve].**
  - MAN flow temperature system flow temperature when operating with constants parameters (manual setting of the heating medium) [Configuration -> Heating -> Regulation type: Fixed parameters],
  - Temp. MAX: maximum flow temperature of the heating circuit.  
**ATTENTION: setting too high temperatures, not suitable for building parameters, type of heating used and degree building insulation can be carried out, among others, by to generate high operating costs.**
  - Circulation:
    - Yes - activation of the CH1 circuit,
    - No - turning off the circuit.

**Nothe, the CH1 circuit is intended for heating connection radiator.**

- CH2 circuit:
  - Heating curve no.: selection of a heating curve (see Chapter Curve heating).  
**Note that the parameter is present when the control is set according to heating curve [Configuration -> Heating -> Regulation type: acc. curve],**
  - Curve offset: heating curve offset (see section Curve heating).  
**Attention, the parameter is present when the regulation is set according to the heating cuve [Configuration -> Heating -> regulation type: Fixed parameters].**
  - MAN flow temperature system flow temperature when operating with constants parameters (manual setting of the heating medium) [Configuration -> Heating -> Regulation type: Fixed parameters],
  - Temp. MAX: maximum flow temperature of the heating circuit.  
**ATTENTION: setting too high temperatures, not suitable for building parameters, type of heating used and degree building insulation can be carried out, among others, by to generate high operating costs.**
  - valve time: time needed to switch the valve by 90 degrees C. Adjustment range from 60 to 480 seconds, factory default 120 seconds. During configuration, please check the set value with the value of the valve drive used,
  - Dynamics of regulation: the response speed of the valve drive to achieve the corresponding parameter in the CH2 circuit. PL-102B ... Default valve - average, in case of too slow investigation temperature of the CH2 circulation medium to the set value, should be increased dynamics. In the event of an overregulation of the medium temperature, dynamics should be reduced.
  - circulation:
    - Yes - activation of the CH2 circuit,
    - No - turning off the circuit.
- Cooling:
  - Type:
    - Off: cooling function inactive,
    - Fan coil,
    - Plane.
  - Temperature of the medium: temperature of the refrigerant,
  - Hysteresis: Hysteresis for the refrigerant.
- Cylinder:
  - Time without immersion heater: the parameter defines the time after which the heat pump is supported it will be an additional source of heat (immersion heater) if it does not reach the set value water temperature in the tank. Time is counted from the moment of reaching temperature of bivalent point [Configuration -> Heat pump -> Bivalent point]. In case the outside temperature is above temperature of the bivalent point, the additional heat source will not remain included. If there is a need for an additional heat, the condition for its activation is the activation of the immersion heaters [Configuration -> Heating element -> use of immersion heaters: Yes].
  - Frost protection:
    - Yes - activation of the storage tank frost protection in stand-by mode,
    - No - function inactive.
  - Cylinder:
    - Yes - DHW tank circuit activation,
    - No-cylinder inactive.



- The heat pump:
  - Bivalent point: the limiting outdoor temperature up to which the heat pump operates autonomously. Below this point, an additional heat source (heater) is activated,
  - Shut-down temperature: the limit outdoor temperature at which the heat pump will shut down. If heating is required for central heating or hot tap water, the heater will be the only heat source.
  - Type [kW]: type of outdoor unit installed.
  - Max power: max power setting for HPM2.Z-16/23.
- Room temperature:
  - TR control: room temperature control.  
Yes - heating will be switched off once the set room temperature read by the room temperature sensor has been reached  
No-room temperature control switched off. The room temperature reading does not affect the central heating operation.
  - TR hysteresis: room temperature hysteresis when Room Control is activated
  - TR calibration: calibrates the value of the indicated room temperature. The parameter is added or subtracted from the value measured depending on the sign.
- Circulation:
  - Yes - DHW circulation pump control system enabled,
  - No - DHW circulation pump system turned off.
- Pumps:
  - Pumps protection: short-term activation time of the circulation pumps with a longer one standstill (blocking protection),
  - Venting:
    - Off - venting turned off,
    - CH1 - CH1 circulation venting enabled,
    - CH2 - CH2 circulation venting enabled,

During the venting procedure (10min) the heat pump in the hydraulic module runs alternately at maximum and minimum speed and the pumps the respective circuits are on. Thanks to this, concentration occurs air bubbles, which makes it easier to remove them from the installation.
- Communication:
  - Device no.: device number on the communication system.

## PARTY / HOLIDAY / MANUAL



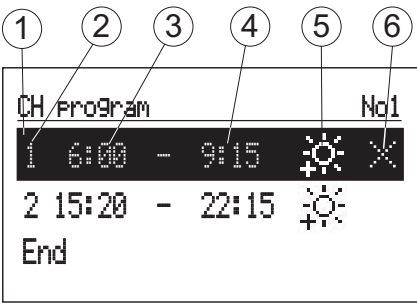
Quickly switch the hot water algorithm as required.

- Party: setting the duration of the mode (from 1 to 24 hours or until cancelled).
- Holiday: setting the duration of the mode (from 1 to 60 days or until cancelled).
- Manual: room temperature setting implemented by the control system: until cancelled.

\* If any of the modes above is activated, it is possible to deactivate it after entering "Party / Holiday / Manual".

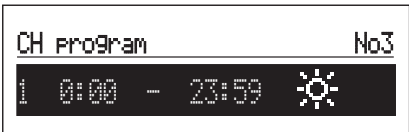
\* The symbol of the activated mode is indicated on the main function screen.

DAILY SCHEDULE:

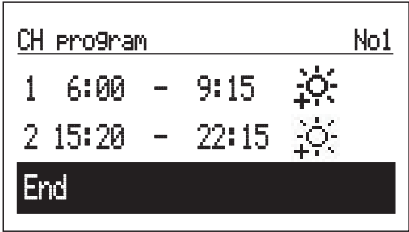


- 1 - time period panel
- 2 - no. of time frame according to schedule (max 5)
- 3 - start time
- 4 - finish time
- 5 - temperature selection (CH and DHW cylinder)
- 6 - command (active when editing):
  - ☒ accept
  - ☐ delete
  - ☐ add

In daily schedule CH circuit and DHW cylinder have defined starting time (3) and finishing time (4) of maintaining selected temperature value (5) in the room (CH) or DHW cylinder. Outside defined time frames economy temperature will be maintained in the room/ cylinder. For circulation circuit within the schedule there is an adjustment of start time (3) and finish time (4) of circulation pump's operation. In buffer mode there is an adjustment of start time (3) and finish time (4) of buffer's charging. To change the parameters for the daily schedule select chosen program number and press navigation dial. The first parameter flashes (start time) - use the navigation dial to set the new time frame value (hour and minutes separately) by turning the dial left/right and confirm it by pressing the dial again. At the same time next screen starts to flash allowing edition of next parameters (finish time). Last editable position is a command. In order to save changes select command ☒ and press the dial to finish editing. To delete selected time frame start editing chosen time frame and by pressing the dial go to command position, select command ☐ and press the dial.



To add new time frame, select last defined time frame and by pressing the dial go to command position, select command ☐ and press the dial to add new time frame (edition of new time frames described above). The entire day program is saved in the controller's memory when you exit the day program by pressing the "Save and exit" command.

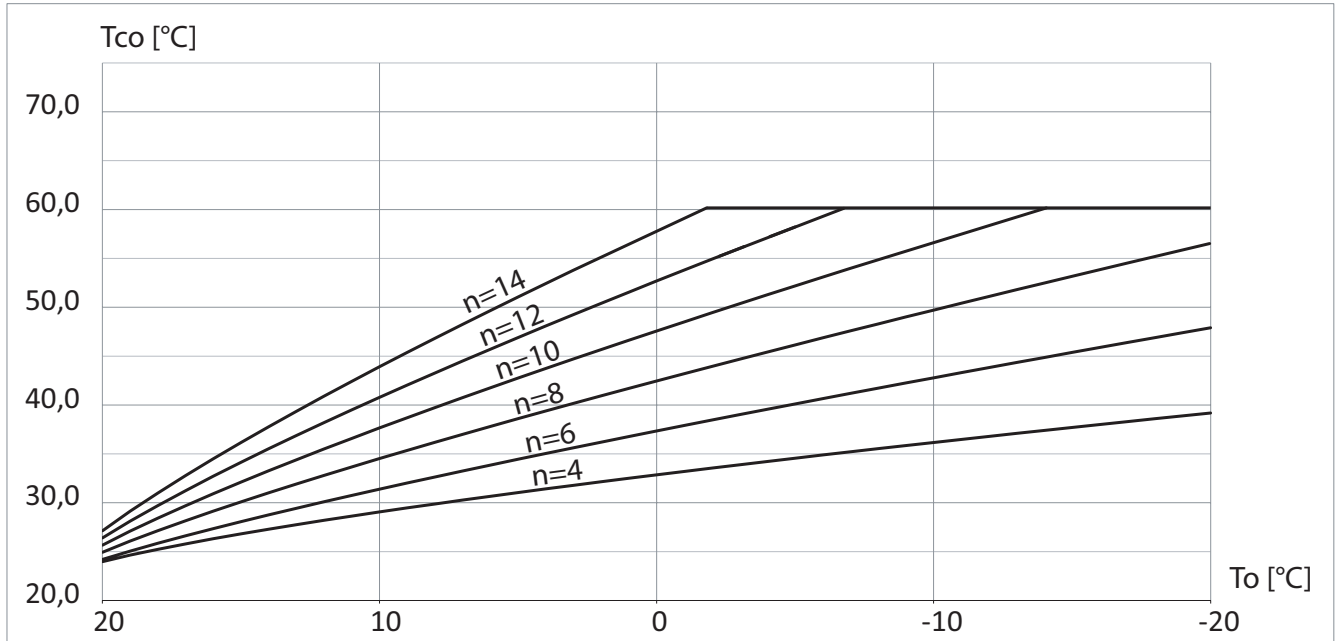


Protection against frost

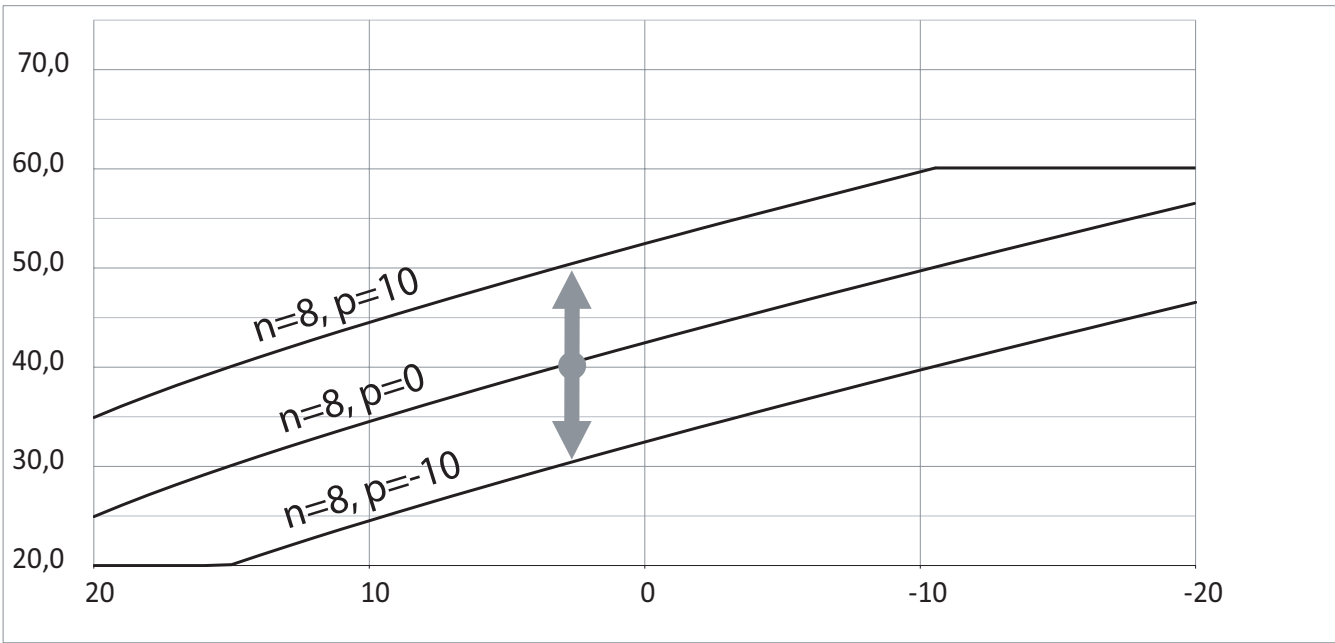
In the standby and summer modes, if the room temperature falls below 7°C, the central heating circuit will be activated. A TR sensor is required to activate the function.

Heating curve

The purpose of the heat pump controller is to maintain the temperature in the central heating system depending on the outdoor temperature. When the temperature outside the building is low, the need for heat is greater, whereas if the temperature outdoors is high, there is no need to maintain a high temperature in the system. The relationship between the outdoor temperature and the temperature of the central heating system can be represented in the form of a graph, the so-called heating curve. The figure shows a family of heating curves for a room temperature set point of 22°C. Depending on the characteristics of the building, the climate zone and the heating system type, a suitable curve needs to be selected.



If the curve needs to be shifted, change the [curve shift] parameter. The figure shows as an example curve no. 8 with a shift of -10°C and 10°C.



Tips on setting the “heating curve”

Course of heating	Actions concerning the “heating curve”
During cold seasons, it is too cold indoors.	Set the ‘slope’ to the next higher value.
During cold seasons, the rooms are too warm.	Set the ‘slope’ to the next lower value.
During transitional and cold seasons, it is too cold indoors.	Set the ‘level’ to a higher value.
During transitional and cold seasons, the rooms are too warm.	Set the ‘level’ to a lower value.
It is too cool indoors in transitional seasons, yet it is warm enough in cold seasons.	Set the ‘slope’ to the next lower value and the ‘level’ to a higher value.
It is too warm indoors in transitional seasons, yet warm enough in cold seasons.	Set the ‘slope’ to the next higher value and the ‘level’ to a lower value.

## Incorrect operation of the device

### The room temperature is too low

Cause	Remedial action
The heat pump is switched off.	<ul style="list-style-type: none"><li>■ Switch on the power switch</li><li>■ Switch on the main switch (if installed, outside the boiler room).</li><li>■ Switch on the fuse in the electrical switchboard (the house fuse).</li></ul>
The settings on the heat pump controller have been altered or are incorrect.	Space heating/cooling must be activated. Check and correct the following settings if necessary: <ul style="list-style-type: none"><li>■ Work programme</li><li>■ Heating curve</li><li>■ Room temperature</li><li>■ Time</li><li>■ Time program for space heating/cooling</li><li>■ Run additional electric heating for space heating, if necessary</li></ul>
Heating of water in the hot tap water exchanger in progress	<ul style="list-style-type: none"><li>■ Wait until the water in the hot tap water exchanger has warmed up.</li><li>■ If necessary, reduce the hot water intake or, temporarily, the normal hot water temperature.</li></ul>
The display shows "Warning" or "Fault".	<ul style="list-style-type: none"><li>■ Read out the type of notification. Confirm the notification.</li><li>■ If necessary, contact an Authorised Service Centre</li></ul>

### The room temperature is too high

Cause	Remedial action
The settings on the heat pump controller have been altered or are incorrect.	Space heating/cooling must be activated. Check and correct the following settings if necessary: <ul style="list-style-type: none"><li>■ Work programme</li><li>■ Room temperature</li><li>■ Heating curve/cooling temperature</li><li>■ Time</li><li>■ Time program for space heating/cooling</li><li>■ Activate the "active cooling mode" if necessary</li></ul>
The display shows "Warning" or "Fault".	<ul style="list-style-type: none"><li>■ Read out the type of notification. Confirm the notification.</li><li>■ If necessary, contact an Authorised Service Centre</li></ul>

### No hot tap water

Cause	Remedial action
The heat pump is switched off.	<ul style="list-style-type: none"><li>■ Switch on the main feed switch.</li><li>■ Switch on the main switch (if installed, outside the boiler room).</li><li>■ Switch on the fuse in the electrical switchboard (the house fuse).</li></ul>
The settings on the heat pump controller have been altered or are incorrect.	Hot tap water heating must be started. Check and correct the following settings if necessary: <ul style="list-style-type: none"><li>■ Work programme</li><li>■ Hot water temperature</li><li>■ Hot tap water heating timer programme</li><li>■ Time</li><li>■ Run additional electric heating, if necessary, to heat hot tap water</li></ul>
The display shows "Warning" or "Fault".	<ul style="list-style-type: none"><li>■ Read out the type of notification.</li><li>■ If necessary, contact an Authorised Service Centre</li></ul>

### Hot tap water temperature too high

Cause	Remedial action
The settings on the heat pump controller have been altered or are incorrect.	Check and, if necessary, correct the hot tap water temperatures set.

## Err „Warning”

Cause	Remedial action
Warning concerning special occurrence, operating condition of heat pump, heating system	If necessary, contact an Authorised Service Centre

## „Fault”

Cause	Remedial action
Fault in heat pump or in heating system	If necessary, contact an Authorised Service Centre

## Cleaning

### Note

**Commercially available cleaners and special cleaners for heat exchangers (evaporators) may cause damage to the heat pump.**

- Clean the surfaces of the unit with a damp cloth only.
- If necessary, clean the shutters of the heat exchanger (evaporator) with a long bristle brush.

### Operating module of the heat pump controller

The surface of the operating module can be cleaned with the microfibre cloth.

## Technical inspection and maintenance of the heating system

Regular maintenance ensures trouble-free, energy-efficient and environmentally-friendly operation in the heating/cooling mode. For this purpose, it is best to contract a specialist company for inspection and maintenance.

### Damaged connection wires

If the connection wires of the unit or of outdoor accessories are damaged, they must be replaced with specific connection cables. Only use the cables recommended by the manufacturer for replacement. Notify a specialist company for this purpose.

## Refrigerant

The unit contains fluorinated greenhouse gases (a refrigerant) listed in the Kyoto Protocol. The refrigerant type which the device operates with is indicated on the rating plate.

The Global Warming Potential (GWP) of the refrigerant is given as a multiple of the GWP of carbon dioxide (CO<sub>2</sub>). The GWP of carbon dioxide CO<sub>2</sub> is 1.

Refrigerant	Global Warming Potential GWP
R32	675 <sup>*1</sup> /677 <sup>*2</sup>

<sup>\*1</sup> According to the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change (IPCC)

<sup>\*2</sup> According to the Fifth Assessment Report adopted by the Intergovernmental Panel on Climate Change (IPCC)

## Keeping the device in good technical condition

### Checklist in relation to keeping the device in good technical shape

#### For systems with flammable refrigerants

- Anyone working on a refrigeration system is required to submit a proof of qualification issued by an accredited body authorised to issue industry certifications. The proof of qualification is a certificate of competence in the safe handling of refrigerants as prescribed in industry standards.
- Maintenance work must always be carried out in accordance with the manufacturer's requirements. If assistance by other persons is required during maintenance and repair work, then a person trained in the safe handling of flammable refrigerants is required to supervise the work being carried out at all times.
- In order to minimise the risk of fire, it is necessary to carry out safety checks before working on equipment where flammable refrigerants are used. Before working on a refrigeration circuit, the following measures must be taken:

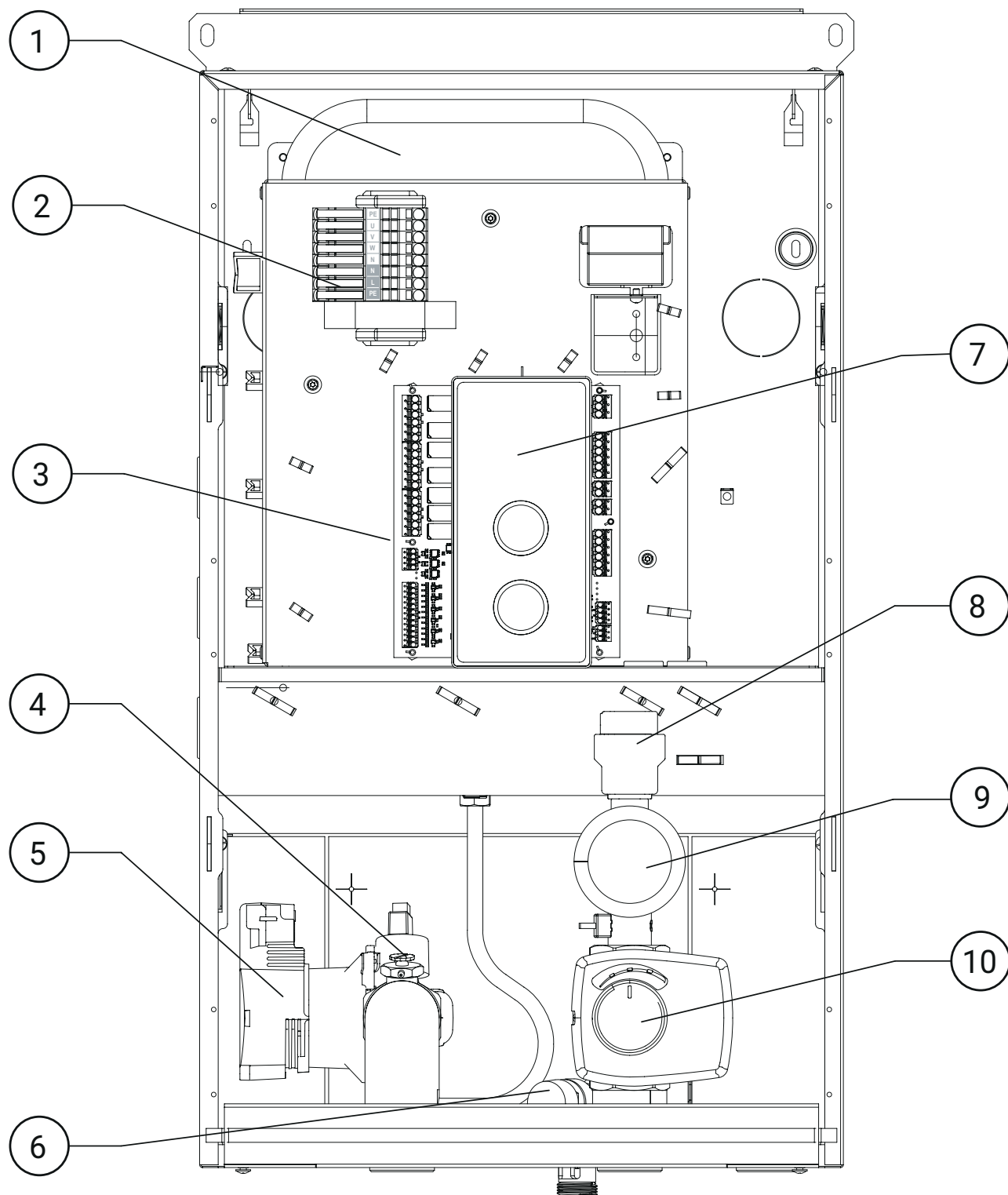
Action		Done	Tip
1	<b>General: place of work</b> <ul style="list-style-type: none"><li>■ Inform the persons listed below of the work to be carried out:<ul style="list-style-type: none"><li>- All maintenance staff</li><li>- All persons who are in the vicinity of the installation.</li></ul></li><li>■ Close off the area near the heat pump.</li><li>■ Check the surroundings of the heat pump for combustible materials and sources of ignition.</li></ul> Remove all combustible materials and sources of ignition.		
2	<b>Monitoring the presence of refrigerant</b> <ul style="list-style-type: none"><li>■ To identify flammable atmosphere in good time: Before, during and after the work, check the surroundings for refrigerant leaks using an ignition-protected refrigerant detector designed for R32. The refrigerant detector must not cause any sparks and must be properly sealed.</li></ul>		
3	<b>Fire extinguisher</b> <p>A CO<sub>2</sub> or powder extinguisher must be available in the cases described below:</p> <ul style="list-style-type: none"><li>■ Filling the system with refrigerant.</li><li>■ Performing welding or soldering work.</li></ul>		
4	<b>Sources of ignition</b> <ul style="list-style-type: none"><li>■ During any work carried out on a refrigeration circuit that contains or contained a refrigerant, ignition sources that could ignite the refrigerant must not be used. Any possible sources of ignition, including cigarettes, must be removed from the area where installation, repair, dismantling or disposal work is to be carried out that involves a hazard of the refrigerant leak.</li><li>■ Before starting work, check that there are no combustible materials or sources of ignition around the heat pump. Remove all combustible materials and sources of ignition.</li><li>■ Place no-smoking signs</li></ul>		
5	<b>Work area ventilation</b> <ul style="list-style-type: none"><li>■ Carry out repairs in the open air or ventilate the work area well before working on the cooling system or carrying out welding or soldering work.</li><li>■ Ventilation must be in operation at all times. The purpose of the ventilation is to dilute the refrigerant in the event of a leak and to discharge it outdoors if possible.</li></ul>		

6	<p><b>Inspection of the refrigeration installation</b></p> <ul style="list-style-type: none"> <li>■ Replaced electrical components must be suitable for the application and comply with the specifications provided by the manufacturer. Replace any defective components with original spare parts only.</li> <li>■ Replace components according to the recommendations issued by the company of Kospel. Contact Kospel technical service if necessary.</li> </ul> <p>Carry out the following checks:</p> <ul style="list-style-type: none"> <li>■ Check the operation of the ventilation. Ventilation openings must not be blocked or obstructed.</li> <li>■ If a system with hydraulic decoupling is used, check the secondary circuit for the refrigerant.</li> <li>■ Inscriptions and symbols must be clearly visible and legible. Replace any illegible inscriptions or symbols.</li> <li>■ Refrigerant lines or components must be fitted in such a way that they do not come into contact with corrosive substances.</li> </ul> <p>Exception: refrigerant lines are made of a corrosion-resistant material or are reliably protected against corrosion.</p>		
7	<p><b>Inspection of electric components</b></p> <ul style="list-style-type: none"> <li>■ When carrying out maintenance and repair work on eclectic parts, safety checks must be carried out: see below.</li> <li>■ If a safety-critical fault occurs, do not connect the installation until the fault has been rectified. If it is not possible to rectify the fault immediately, a suitable interim solution for the operation of the installation must be found if possible. Notify the user of the installation</li> </ul> <p>Carry out the following safety checks:</p> <ul style="list-style-type: none"> <li>■ Discharging of capacitors: ensure that no sparks are generated during the discharge process.</li> <li>■ When filling or draining the refrigerant, as well as when flushing the refrigeration circuit, do not place any electrical parts or live wires near the device.</li> <li>■ Check the earthing connection.</li> </ul>		
8	<p><b>Repairs to sealed casings</b></p> <ul style="list-style-type: none"> <li>■ During work on sealed components, the device must be powered off before the sealed cover is removed.</li> <li>■ To warn of a potentially hazardous situation, a permanently operating refrigerant detector should be placed at critical locations.</li> <li>■ Particular care must be taken when working on electrical parts so as not to modify the casing in a way that weakens its protective effect. This applies to a damage to cables, the creation of too many connectors on one connection terminal, the creation of connectors that do not meet the manufacturer's requirements, damage to seals and incorrect installation of cable feed-throughs.</li> <li>■ Ensure that the unit is installed correctly.</li> <li>■ Check that the seals are properly installed. Thereby, check that the seals reliably protect the device against the penetration of a flammable atmosphere. Replace any damaged hoses.</li> </ul> <p><b>! Attention</b>  <b>Silicone as a sealing agent may affect the performance of a leak detection devices. Do not use silicone as a sealing agent.</b></p> <ul style="list-style-type: none"> <li>■ Spare parts must comply with the manufacturer's guidelines.</li> <li>■ Work on components that are suitable for flammable atmospheres: these components do not need to be powered off.</li> </ul>		
9	<p><b>Repairs to parts that operate in a combustible atmosphere:</b></p> <ul style="list-style-type: none"> <li>■ Unless it can be established that the permissible voltage and current values will not be exceeded, no capacitive or inductive loads must be connected to the device.</li> <li>■ Only those components that meet the requirements for operation in a flammable atmosphere may be connected to voltage in a flammable atmosphere.</li> <li>■ Use only original spare parts or parts approved by the Kospel company. In the event of a leak, all other parts may ignite the refrigerant.</li> </ul>		
10	<p><b>Wiring</b></p> <ul style="list-style-type: none"> <li>■ Check that the wiring is not exposed to wear, corrosion, stretching, vibration or any adverse environmental conditions and that it is not located near sharp edges.</li> <li>■ When inspecting, also consider the effects of ageing and the effects of continuous vibration on the compressors and fans.</li> </ul>		

11	<b>Refrigerant detectors</b> <ul style="list-style-type: none"> <li>■ Under no circumstances use ignition sources to detect the refrigerant and refrigerant leaks.</li> <li>■ No flame detectors may be used to detect leaks.</li> </ul>		
12	<b>Leak detection</b> The methods described below are suitable for detecting leaks in systems filled with a flammable refrigerant: Leak detection with electronic refrigerant detectors: <ul style="list-style-type: none"> <li>■ Electronic leak detectors may not be adequately sensitive or need to be calibrated for a specific detection range. Calibrate the detector in a refrigerant-free environment.</li> <li>■ The refrigerant detector must be suitable for detecting R32.</li> <li>■ The refrigerant detector must contain no potential ignition sources.</li> <li>■ Calibrate the refrigerant detector for the refrigerant used. Set the trip threshold &lt; 3 g/a, which is suitable for R32. Leak detection using leak detection fluids:</li> <li>■ Leak detection fluids are suitable for most of refrigerants.</li> </ul> <b>!Attention</b> <b>Chlorine-containing leak detection fluids may react with the refrigerant.</b> <b>As a result, rust may form.</b> <b>Do not use any leak detection fluids that contain chlorine.</b>  Procedure when leaks are found in the refrigeration circuit: <ul style="list-style-type: none"> <li>■ Immediately extinguish any fire in the vicinity of the heat pump.</li> <li>■ Do not solder leaks on the refrigeration circuit.</li> </ul>		
13	<b>Refrigerant suction and evacuation</b> Perform the steps described in the "Refrigerant suction" section. Perform the steps described in the "Vacuum generation in refrigerant lines and indoor unit" section.		
14	<b>Refrigerant filling</b> Follow the steps described in the "Filling the refrigerant lines and indoor unit" section.		
15	<b>Decommissioning</b> Follow the steps described in the "Final decommissioning and disposal" section.		
16	<b>Marking</b> (inscriptions on the heat pump) A plate with the date and signature and the following information must be placed in a clearly visible position on the heat pump which has been decommissioned: <ul style="list-style-type: none"> <li>■ Flammable refrigerant</li> <li>■ Installation is not working.</li> <li>■ Refrigerant has been removed.</li> </ul>		
17	<b>Refrigerant and compressor oil recovery</b> <ul style="list-style-type: none"> <li>■ Refrigerant recovery: see the "Refrigerant suction" section.</li> <li>■ Compressor oil recovery: see the "Disposal of compressor and compressor oil" section.</li> </ul>		



## Indoor module: Overview of internal components



- [1] - Expansion vessel
- [2] - Electric connection
- [3] - Device controller
- [4] - Vent
- [5] - Circulation pump

- [6] - Safety valve
- [7] - Control panel
- [8] - Automatic air vent
- [9] - Heating unit
- [10] - Tee valve

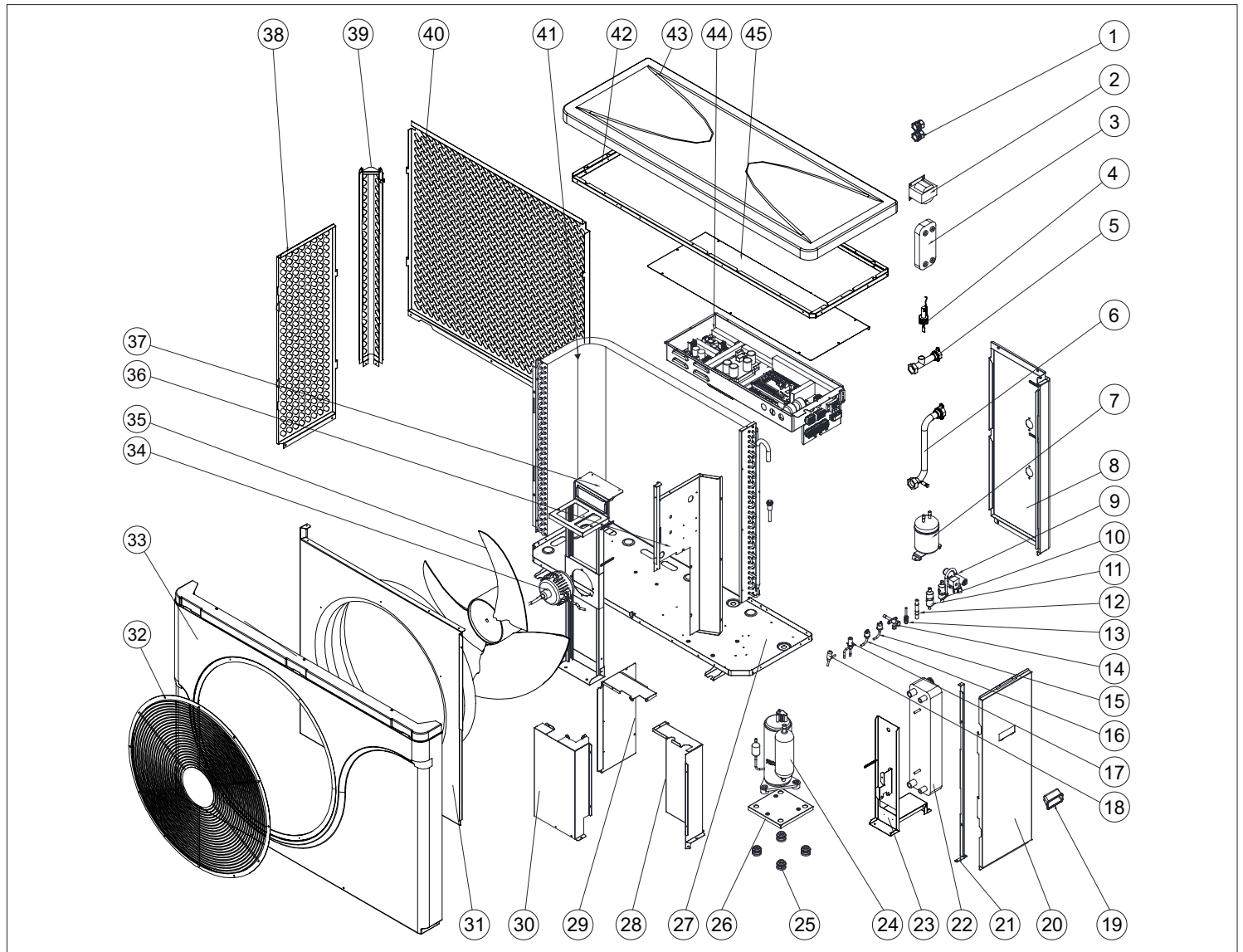
## Outdoor module: Overview of internal components

### Attention!

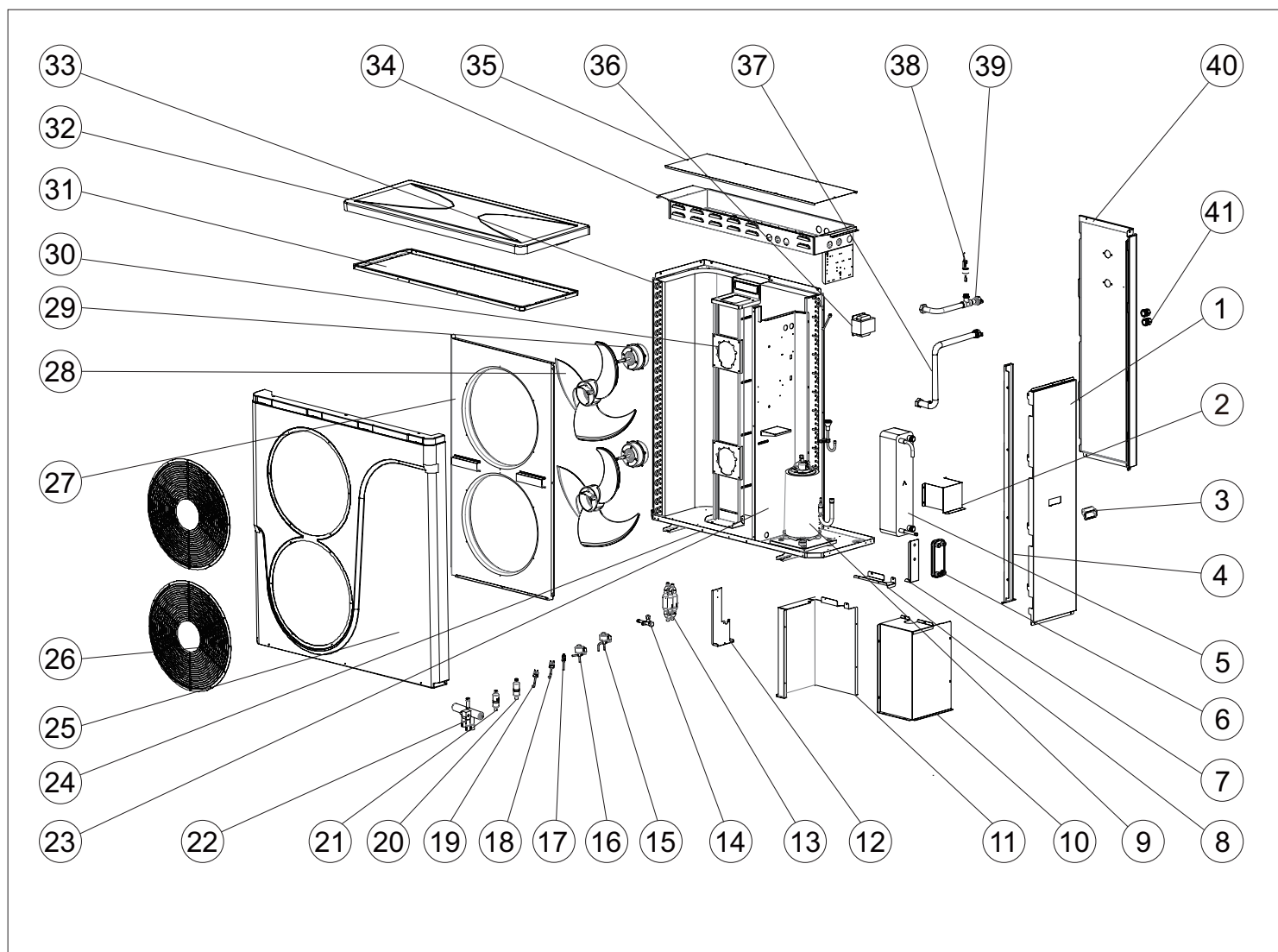
Touching conductive components may lead to dangerous electrocution injuries. Some components on the installation boards conduct electricity even when the supply voltage is switched off.

- When carrying out work on the outdoor module, disconnect the system from voltage, e.g. with a separate fuse or main switch. Check that the voltage has been disconnected and secure the device against restarting.
- Wait at least 4 minutes for the voltage of charged capacitors to drop before commencing work.

Outdoor module with one fan: HPM02-8, HPM02-12



- |  |                                     |  |
|--|-------------------------------------|--|
| [1] - Cable gland                          | [16] - Low pressure switch          | [31] - Wind deflector                  |
| [2] - Reactor                              | [17] - Electronic expansion valve   | [32] - Fan grille                      |
| [3] - Plate heat exchanger                 | [18] - Electronic expansion valve   | [33] - Top cover                       |
| [4] - Water flow switch                    | [19] - Handle                       | [34] - DC motor                        |
| [5] - Outlet water connector pipe assembly | [20] - Right panel assembly         | [35] - Axial fan blade                 |
| [6] - Inlet water connector pipe assembly  | [21] - Panel support                | [36] - Middle partition assembly       |
| [7] - Liquid Accumulator                   | [22] - Plate heat exchanger         | [37] - Motor Bracket Assembly          |
| [8] - Back Panel assembly                  | [23] - Plate heat exchanger bracket | [38] - Removable right net             |
| [9] - Four-way valve                       | [24] - Compressor                   | [39] - Column assembly                 |
| [10] - Filter                              | [25] - Compressor damping block     | [40] - Removable rear net              |
| [11] - Filter                              | [26] - Suspended Plate              | [41] - Finned heat exchanger           |
| [12] - Check Valve                         | [27] - Chassis assembly             | [42] - Top beam assembly               |
| [13] - Needle valve                        | [28] - Compressor cover1            | [43] - Top cover assembly              |
| [14] - Globe Valve                         | [29] - Compressor cover3            | [44] - Electrical box assembly         |
| [15] - High pressure switch                | [30] - Compressor cover2            | [45] - Electrical box waterproof cover |



- |  |                                   |
|--|-----------------------------------|
| [1] - Right panel                        | [22] - Four-way valve             |
| [2] - Plate heat exchanger bracket       | [23] - Middle partition assembly  |
| [3] - Handle                             | [24] - Suspended Plate            |
| [4] - Panel bracket                      | [25] - Front cover                |
| [5] - Plate heat exchanger               | [26] - Fan retainer               |
| [6] - Plate heat exchanger               | [27] - Wind deflector             |
| [7] - Plate heat exchanger bracket       | [28] - Axial fan blade            |
| [8] - Compressor cover panel             | [29] - Removable right net        |
| [9] - Compressor                         | [30] - Motor Bracket Assembly     |
| [10] - Compressor cover front side panel | [31] - Top beam                   |
| [11] - Compressor cover rear side panel  | [32] - Top cover                  |
| [12] - Check valve Bracket               | [33] - Finned-tube heat exchanger |
| [13] - Check Valve                       | [34] - Electrical box assembly    |
| [14] - Service valve                     | [35] - Electrical box cover panel |
| [15] - Electronic expansion valve        | [36] - Reactor                    |
| [16] - Electronic expansion valve(R410A) | [37] - Inlet pipe assembly        |
| [17] - Charge valve                      | [38] - Water flow switch          |
| [18] - High pressure switch              | [39] - Outlet pipe assembly       |
| [19] - Low Pressure switch               | [40] - Right back panel           |
| [20] - Filter                            | [41] - Cable gland                |
| [21] - Filter                            |                                   |

# Check-up of temperature sensor

## Connection to indoor module

The temperature sensors are connected to a low-voltage printed circuit board.

Temperature sensor	Measuring element
<div><ul style="list-style-type: none"><li>■ Outdoor temperature sensor WE-027</li><li>■ Buffer storage tank temperature sensor WE-019/01</li><li>■ Water temperature sensor in hot tap water storage tank, WE-019/01</li><li>■ Installation supply water temperature sensor WE-019/05</li><li>■ Room temperature sensors WE-033</li></ul></div>	NTC 10 kΩ

## Fuse check-up

- Fuse F1 is located on the main board of the indoor unit.

Fuse type:

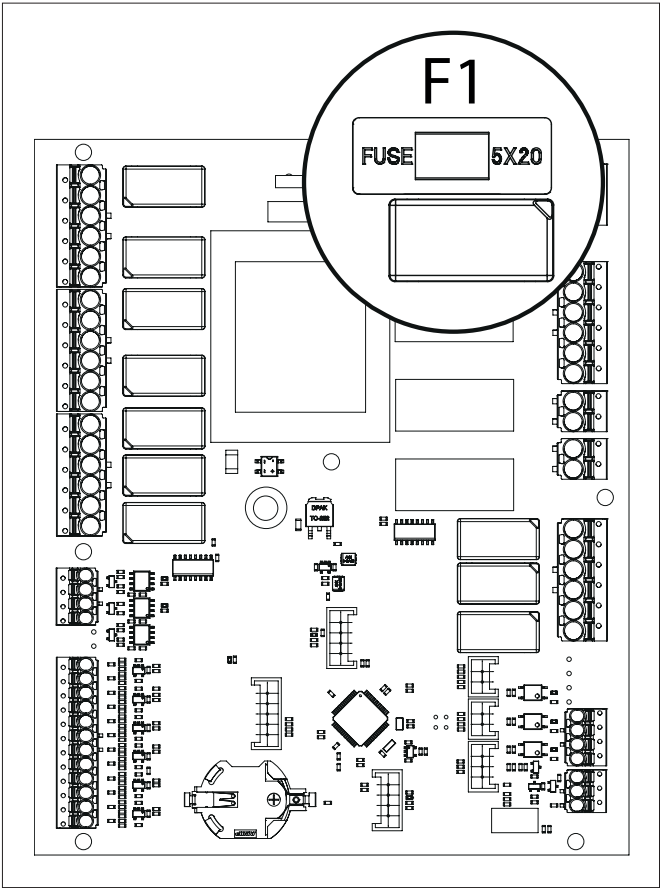
- T 2,0 A H, 250 V~
- Max. power loss < 2,5 W

1. Switch off the supply voltage
2. Open the connection space
3. Check the fuse, replace if necessary.

### Attention!

*Incorrect or improperly installed fuses may lead to an increased risk of fire.*

- *Install fuses without using force. Arrange fuses correctly.*
- *Use only fuses of the same type and with the same characteristics.*



### Attention!

*Removing the fuses does not result in the load circuit being disconnected from voltage. Contact with any live parts may lead to dangerous electrocution. When working on the unit, it is essential that the load circuit is also disconnected.*

## Final decommissioning and disposal

---

The products may be recycled.

The components and consumables must not be disposed of in municipal waste.

To decommission the installation, disconnect the electrical supply and allow the components to cool down.

All the components must be expertly disposed of.

Consumables (e.g. heating mediums) may be disposed of with municipal waste.

### Refrigerant suction

The heat pump may only be decommissioned by a specialist who is familiar with refrigerant disposal equipment. We recommend recovering the refrigerant. For this purpose, oil and refrigerant samples must be taken before the heat pump is switched off. Before starting the work, check the installation in accordance with the "Checklist in relation to keeping the device in good technical shape".

Consider the following:

- Only equipment that is suitable for the suction of the R32 refrigerant may be used.  
Check the condition of the suction equipment, also include confirmation of maintenance.  
All the electrical components of the suction equipment must be suitable for use in a flammable atmosphere.
  - Use only those cylinders that are suitable for storing the R32 refrigerant, i.e. special recyclable cylinders. The aforementioned cylinders must be marked appropriately.  
Refrigerant cylinders must possess a safety valve and shut-off valves that are permanently installed.
  - Check that the correct number of cylinders is available.
  - Cool down emptied refrigerant cylinders.
  - Do not mix different refrigerants in the same cylinder.
  - Prepare suitable means for transporting the refrigerant cylinders (if necessary).
  - Check the availability of personal protective equipment and how to use it correctly.
  - Check that disposal facilities and refrigerant cylinders meet relevant requirements.
  - Prepare a calibrated scale to determine the amount of refrigerant sucked.
1. Check the condition of the heat pump. Check that maintenance has been regularly conducted.
  2. Unplug the installation.
  3. Check that the safety requirements for work on the refrigeration circuit are met.
  4. Place the refrigerant cylinder on the scale.
  5. Connect the refrigerant bottle to the suction equipment. Connect the suction equipment to the refrigeration circuit using the collection line.
  6. Suck the refrigerant from all parts of the refrigeration circuit.

### Tip

- *The suction process must be supervised at all times by a trained employee.*
  - *Do not overfill the refrigerant cylinder; max. 80% of the permissible amount.*
  - *Do not exceed the permissible operating pressure in the cylinder.*
7. Close the shut-off valves after all the refrigerant has been sucked.
  8. Power off the suction equipment.
  9. Disconnect the cylinder from the refrigeration circuit. Send the refrigerant cylinder to a disposal facility.
  10. Purify and check the recovered refrigerant. Do not mix the refrigerant with other refrigerants.
  11. In a clearly visible location on the heat pump, attach a plate including the date and signature and the following information:
    - Flammable refrigerant
    - Installation is not working.
    - Refrigerant has been removed.

### Disposal of the compressor and compressor oil

1. Before draining the oil, depressurise the compressor to a suitable negative pressure so that there is no flammable refrigerant in the compressor.
2. Carefully drain the oil from the compressor. This process can be accelerated with an additional electric heater if necessary.
3. Dispose of the oil in a suitable place.
4. Return the compressor to the manufacturer.

## Technical data

OUTDOOR UNIT		HPM02-8	HPM02-12	HPM02-16/23
Heating power A+2/W35	kW	7,1	11,3	20,5
Power consumption A+2/W35	kW	1,78	2,87	5,11
Efficiency factor A+2/W35	-	4,01	3,94	4,02
Heating power A+7/W35	kW	2,3 - 8,2	3,8 - 12,5	7,0 - 23,0
Power consumption A+7/W35	kW	0,5 - 1,84	0,8 - 2,95	1,47 - 5,9
Efficiency factor A+7/W35	-	4,6 - 4,46	4,75 - 4,24	4,76 - 3,89
Heating power A-7/W35	kW	5,8	9,2	17,1
Power consumption A-7/W35	kW	1,66	2,73	4,93
Efficiency factor A-7/W35	-	3,49	3,37	3,47
Cooling capacity A35/W7	kW	1.56 - 6.0	2,2 - 10,0	5,3 - 15,0
Power consumption A35/W7	kW	0.63 - 2.36	1,1 - 3,8	2,03 - 6,59
Efficiency factor EER A35/W7	-	2.48 - 2.54	2,0 - 2,63	2,61 - 2,28

### Electrical installation

Electric supply		230V 1N AC, 50Hz	230V 1N AC, 50Hz	400V 3N AC, 50Hz
Degree of protection		IP X4	IP X4	IP X4
Maximum power consumption	kW	2,9	4,95	8,3
Maximum operating current	A	13	21,5	15
Power wire gauge*	mm <sup>2</sup>	3x2,5	3x2,5	5x2,5
* Recommended power wire for outdoor unit		H07BQ-F 3x2.5mm <sup>2</sup> 450/750V for outdoor use	H07BQ-F 3x2.5mm <sup>2</sup> 450/750V for outdoor use	H07BQ-F 3x2.5mm <sup>2</sup> 450/750V for outdoor use

### Maximum outer diameter of ducting D 18mm

Heating system				
Hydraulic connection		G1 (female thread)	G1 (female thread)	G1 (female thread)
Nominal flow	m <sup>3</sup> /h	1,0	1,7	2,9
Minimum flow	m <sup>3</sup> /h	0,6	0,7	0,85
Internal pressure drop	kPa	10	20	45
Maximum temperature of heating medium	°C	65	65	65

### Air and noise

Maximum DC power of fan	W	85	170	2x75
Maximum air flow	m <sup>3</sup> /h	3000	4500	2x2500
Minimum/maximum air temperature	°C	-25/43	-25/43	-25/43
Maximum sound pressure level at 1m distance	dB(A)	52	55	56
Maximum sound power level	dB(A)	60	63	64
Refrigerant				
Refrigerant type		R32	R32	R32
Compressor		Rotary with double piston	Rotary with double piston	Rotary with double piston

Maximum operating pressure of refrigerant				
High pressure side	MPa	4,4	4,4	4,4
Low pressure side	MPa	2,1	2,1	2,1
Amount of refrigerant	kg	1,1	1,8	2,0
GWP of refrigerant AR4 (according to IPCC Fourth Assessment Report)	tCO <sub>2</sub> /kg	0,675	0,675	0,675
CO <sub>2</sub> equivalent	tCO <sub>2</sub>	0,743	1,215	1,350
Dimensions (HxWxD)	mm	795 x 1165 x 450	928 x 1280 x 500	1329 x 1240 x 540
Mass	kg	90	132	160
<b>INDOOR UNIT</b>		<b>HPMI2-8</b>	<b>HPMI2-12</b>	<b>HPMI2-16</b>
Electrical installation				
Electric supply		230V~ /400V 3N AC, 50Hz	230V~ /400V 3N AC, 50Hz	400V 3N AC, 50Hz
Degree of protection		IP 22	IP 22	IP 22
Maximum output of additional electric heater	kW	6(2x3)	6(2x3)	9(3x3)
Power wire gauge				
for single-phase system	mm <sup>2</sup>	min 3x6; max 3x10	min 3x6; max 3x10	-
for three-phase system	mm <sup>2</sup>	min 5x2,5; max 5x10	min 5x2,5; max 5x10	min 5x2,5; max 5x10
Rated current of circuit breaker				
for single-phase system	A	40	50	-
for three-phase system	A	16	25	32
Heat pump communication cable	mm <sup>2</sup>	min.2x0,34; max 2x1,5	min.2x0,34; max 2x1,5	min.2x0,34; max 2x1,5
Heating system				
Hydraulic connection		G1¼ (male thread)	G1¼ (male thread)	G1¼ (male thread)
Maximum/minimum operating pressure	bar	3/0,5	3/0,5	3/0,5
Maximum temperature of heating medium				
Operation with heat pump	°C	60	60	60
Hot tap water disinfection	°C	70	70	70
Expansion vessel	l	12	12	12
Pre-pressure in expansion vessel	bar	1	1	1
Nominal flow	m <sup>3</sup> /h	1,0	1,7	2,9
Minimum flow	m <sup>3</sup> /h	0,6	0,7	0,85
Internal pressure drop	kPa	2	5	15
Dimensions (HxWxD)	mm	709 x 416 x 319	709 x 416 x 319	709 x 416 x 319
Mass	kg	29	29	29
Recommended inside diameter of hydraulic lines	mm	DN25	DN32	DN40
Dimension requirements for a technical room with an indoor module				
Minimum room cubic area	m <sup>3</sup>	3,7	6,0	6,7
Minimum room area (bottom edge of module at minimum height of 1.2m)	m <sup>2</sup>	-	-	8,5



## Product Sheet

A	Supplier's name or trademark	KOSPEL.Sp z o.o.			
B	Supplier model identifier		HPMO2-8	HPMO2-12	HPMO2-16/23
C	Seasonal energy efficiency class of space heating for the model, under moderate climate conditions (*)		A++	A++	A++
D	Rated thermal power, including the rated thermal power of any auxiliary heater under moderate climate conditions	kW	5	9	14
E	Seasonal energy efficiency of space heating under moderate climate conditions	%	135	128	135
F	Annual energy consumption under moderate climate conditions	kWh	3224	5456	8613
G	Sound power level L WA, in room	dB(A)	35	35	35
H	Special precautions to be taken during installation, assembly or maintenance of space heater	Before installation or maintenance, read the operating instructions and follow the guidelines contained therein.			
I	Not applicable				
J	Rated thermal power, including the rated thermal power of any auxiliary heater, under cold climate conditions	kW	4	8	13
	Rated thermal power, including the rated thermal power of any auxiliary heater, under warm climate conditions	kW	7	11	16
K	Seasonal energy efficiency of space heating under cold climate conditions	%	122	127	126
	Seasonal energy efficiency of space heating under warm climate conditions	%	172	165	173
L	Annual energy consumption under cold climate conditions	kWh	3191	6072	9962
	Annual energy consumption under warm climate conditions	kWh	2163	3565	4937
M	Sound power level L WA, outdoors	dB(A)	60	63	64

(\*) medium temperature application



## Energy efficiency class of temperature controller

The product data listed corresponds to the requirements of EU Regulation 811/2013.

Criterion	Energy efficiency class of temperature controller	Contribution to the energy efficiency of space heating
• Room thermostat for switching the heat generator on/off	1	1 %
• Weather regulator • Modulated heat generator	2	2 %
• Weather regulator • Non-modulated heat generator	3	1.5 %
• Room thermostat with TPI (Time-Proportional-Integral) properties • Non-modulated heat generator	4	2 %
• Modulated room thermostat • Modulated heat generator	5	3 %
• Weather control of regulator • Modulated heat generator • Room temperature sensor in combination with room temperature control	6	4 %
• Weather control of regulator • Non-modulated heat generator • Room temperature sensor in combination with room temperature control	7	3.5 %
• Single-room temperature controller with at least 3 temperature sensors • Modulated heat generator	8	5 %

# Heat pump HPM2.Z Kospel Sp. z o.o. start-up card

Start-up date			
Assembly address			
Installer's data	Stamp		Certificate no.
Data	Outdoor unit no.	Indoor unit no.	C.MI2 module no.
Data of additional devices	Type of plate exchanger	DHW cylinder type	Buffer CH type
Heating system*	Floor heating	Radiators	Mixed system
Heating system filled*	Drinking water	Treated water + corrosion inhibitor	Glycol solution propylene
<b>Checking activities outside*</b>			
<b>Outdoor unit:</b>			
Installed without restriction of air supply	YES	NO	
On a pedestal (stand)	YES	NO	
Mounted vibro-isolators	YES	NO	
Condensate is drained (infiltration at the level below freezing)	YES	NO	
Condensate discharge to the gutter - siphoned pipe, insulated, preferably with a heating cable	YES	NO	
Hydraulic connection made with a flexible hose	YES	NO	
Power and communication cable connected	YES	NO	
The outside temperature sensor is placed on the wall (according to the instructions)	YES	NO	
<b>Checking activities inside*</b>			
Internal temperature sensor placed in the room representative	YES	NO	
Internet module C.MI2 connected and configured (according to the instructions)	YES	NO	
A desilter filter is installed at the pump inlet	YES	NO	
Valves with discharge and bypass, pipes with a slight slope were installed (to drain the water from the outdoor unit when necessary)	YES	NO	
ZA thing at input FN1 has been installed - deactivation of the device operation lock	YES	NO	
Enter the values for the pressure and flow rate of the refrigerant in the heating circuit after commissioning	pressure (bar)	flow rate (l/min)	

\*cross out unnecessary



This equipment is marked with the separate collection symbol, the model of which is defined in the European standard EN 50419. The marking also means that the equipment was placed on the market after August 13, 2005.



The household plays an important role in contributing to reuse and recovery, including recycling of electrical and electronic equipment. Proper handling of used equipment has a positive effect on the protection of the natural environment and allows for the recovery of secondary raw materials.

All materials used in the packaging of our devices are recyclable, which means that they can be recycled again.

Used product can't be treated as general communal waste. Disassembled appliance has to be delivered to the collection point of electrical and electronic equipment for recycling. Appropriate utilisation of used product prevents potential negative environmental influences that may occur as a result of inappropriate handling of waste. In order to get more detailed information about recycling this product you should contact the local government unit, waste management service or the shop where this product has been purchased.



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