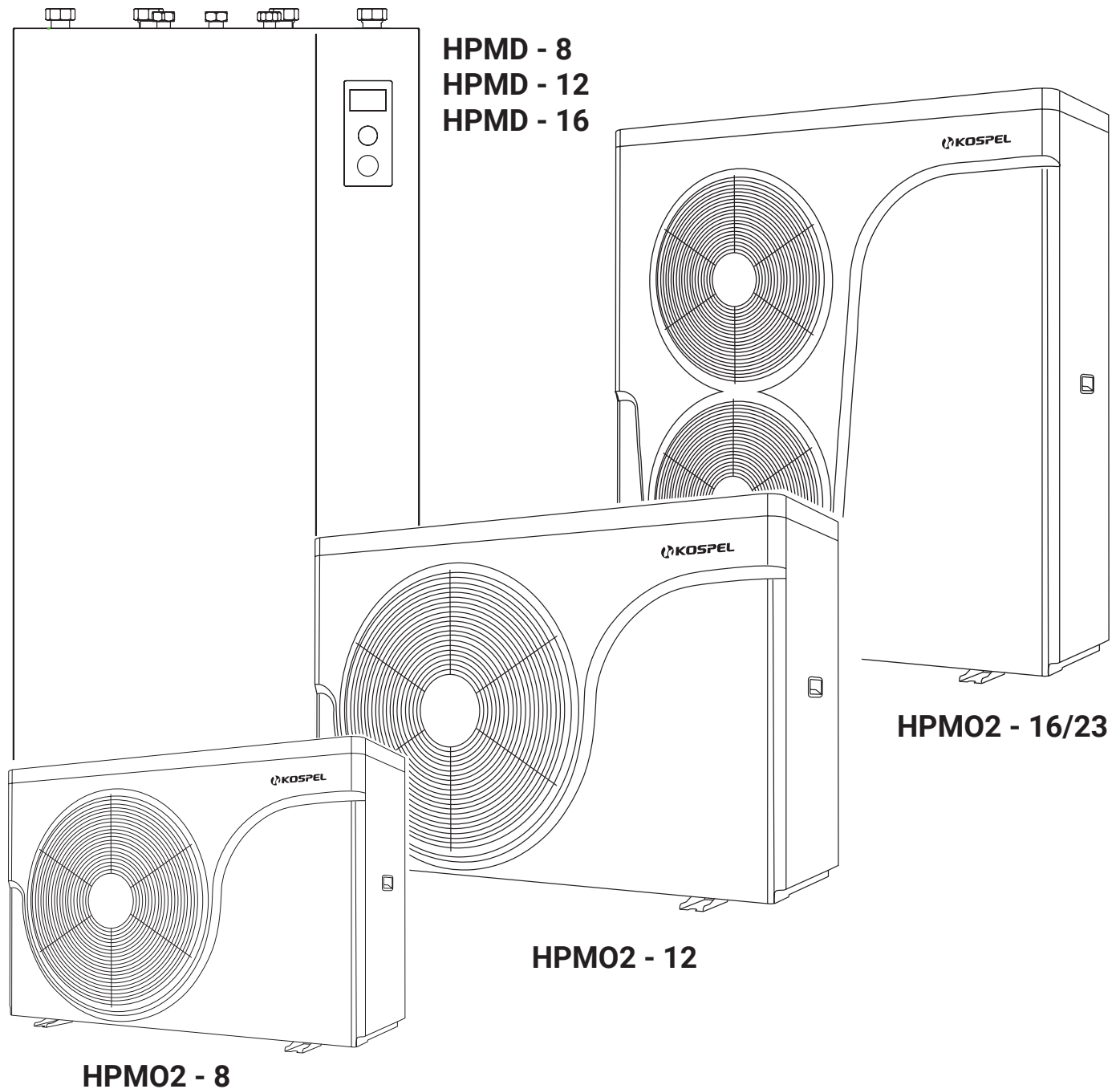


HPM2.C Heat Pump



Installation and Operating Instructions

Start-up card

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Read this manual thoroughly before use.
Follow the manual to ensure safe and correct operation of the product.
Keep the manual for reference.

Explanation of symbols



Follow the safety instructions carefully in order to prevent injury and damage.



Danger
This sign warns against danger of injury.



Warning
This sign warns of the danger of fire.



Note
This sign warns against property damage and environmental pollution.

Tip
Text marked with the word *Tip* contains additional information.



Refer to this manual when operating the product or its controls labelled with this symbol.

Target group



Danger
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.

- Only qualified electricians may service electrical components.
 - The first commission of this product for operation shall be done by the installer or a designated individual with suitable authorisation.
-

Applicable laws and regulations

- National electrical wiring and water plumbing installation codes.
- Statutory occupational hygiene and safety regulations.
- Statutory environmental protection regulations.
- Regulations of professional and insurance associations.
- Prevailing national safety regulations.

Safety Guidelines

1. Familiarizing yourself with the contents of this manual will enable proper installation and operation of the device, ensuring its long-lasting and reliable operation.
2. Inappropriate environmental conditions can cause damage to the installation and pose a risk to the safety of operation (avoid air pollution by chlorohydrocarbons contained in paints, solvents and cleaning agents, avoid constant high humidity, for example due to frequent laundry drying).
3. The installation of the device and the execution of electrical and hydraulic installation should be entrusted to a specialized service company and strictly follow the assembly and operation instructions of the product.
4. The electrical installation should be equipped with residual current protective devices and means ensuring disconnection of the device from the power source, in which the distance between the contacts of all poles is not less than 3mm.
5. The heat pump is a device sensitive to overvoltages, so the electrical installation must include surge protection devices.
6. In the event of an open flame, there is a risk of burns.
7. The refrigerant is R32; air-displacing, colorless, odorless gas that forms a flammable mixture with air.
8. The HPM2.C type heat pump heating system consists of a set of optimally selected elements:
 - Internal unit: HPMD
 - External unit: HPMO2
9. The manufacturer guarantees the correct operation and efficient working parameters of the HPM2.C heat pump only in cooperation with the set devices.
10. The manufacturer is not responsible for the installation of the HPM2.C heat pump with other devices, which may result in incorrect operation, lack of efficient working parameters of the heating system, increased heating system operating costs or failure of the HPM2.C heat pump.
11. The manufacturer is not responsible for the device incorrectly matched to the heating needs of the installation.



Danger

Incorrectly performed connection work can lead to life-threatening accidents. Work on devices can only be carried out by a qualified installer.

Device-related work

1. The device should be installed in accordance with national installation regulations.
2. A well-executed and compliant installation with the PN-IEC 60364 electrical standard.
3. According to its purpose, the device can only be installed and operated in closed heating systems according to EN 12828, taking into account the relevant assembly, service and operating instructions.
 - Only specialists authorized to do so can work on the refrigeration circuit.
 - The initial start-up should be carried out by an Authorized Installer or a person appointed by him/her who has the appropriate qualifications.



Note

The heat pump can only be used when it has been correctly installed and is in impeccable technical condition.



Note

The HPM2.C heat pump is a hermetically sealed device and contains fluorinated greenhouse gases.

Safety tips (cont.),



WARNING

Do not use defrosting or cleaning accelerants other than those recommended by the manufacturer. The device should be stored in a room without constantly operating sources of ignition (for example: open fire, operating gas device, or operating electric heater). It is not permitted to puncture or burn the device. Please note that refrigerants may be odorless. The device should be installed, operated, and stored in a room with the appropriate area and volume (table).
NOTE The manufacturer may provide suitable examples or additional information about the smell of the refrigerant.



Note

This device is intended for use by qualified or trained users in shops, light industry and farms, or for home use by laymen.

Device operation



Danger

All installation, service and maintenance work must be performed with the supply of electricity and water cut off.



Danger

Hot surfaces can cause burns.



Danger

Direct contact with the liquid and gaseous refrigerant can cause serious health damage.



Warning

Due to electrostatic discharge, sparks may appear, which can ignite leaking refrigerant (R32). Before performing work, touch grounded objects, such as heating pipes or water pipes, to dissipate static charges.

Device description

The HPM2.C heat pump is a device intended for heating/cooling the building and heating domestic water.

The device consists of two modules:

- External HPM02, a compressor heat pump.

The principle of operation of the device is to capture heat from the environment and transfer it to the heating circuit in the building. Low-temperature heat from the air is transferred through the evaporator to the heat pump installation filled with a refrigerant, which evaporates into gas. The gas is sucked from the evaporator by the compressor, which during compression raises its temperature and directs it to the condenser. In the condenser, the heat is transferred to the fluid filling the central heating installation, and the cooled fluid flows through the expansion valve and returns to the evaporator, after which the entire process begins again. In the case of cooling, this cycle is reversed and the heat is taken from the building and discharged outside.

- Internal HPMD, an internal "3in1" type heat pump unit consisting of:
 - a hydraulic module equipped with a controller for the entire system;
 - a DHW exchanger with a double coil
 - a buffer tank for the heating medium.

The principle of operation of the device is based on the regulation of the performance of the heat pump compressor, depending on the needs, with the activation of the electric heater via the controller of the internal module. The controller of the internal module regulates the heating power according to the set heating curve. If the heat pump is unable to cover the building's heat demand on its own, the controller automatically activates the electric heater, which together with the heat pump generates the desired heating medium temperature.

External temperature ranges for air/water heat pumps

Air/water heat pumps use external air as a heat source. They operate efficiently only within specific external temperature ranges, for example, between -25°C and +43°C. If the upper temperature limit is exceeded or the lower temperature limit is reached, the heat pumps switch off periodically. The appropriate notification appears on the heat pump regulator. To meet the heat demand for space heating and domestic hot water heating beyond temperature boundaries, the heat pump controller automatically activates available additional heating devices as needed - for example, electric auxiliary heating or another heat source.

Refrigeration cycle

All elements of the refrigeration cycle are located in the external module, including the refrigeration cycle regulator with an electronic expansion valve. Depending on the operating conditions, the compressor power is adjusted using an inverter. When the room cooling function is activated, the refrigeration cycle is reversed.

Hydraulic installation

The internal and external modules are connected via hydraulic lines with the heating medium. A built-in high-efficiency circulation pump forces the circulation of the heating medium between the condenser of the external module and the buffer tank/coil in the internal module.

Installation of heating/cooling water circuits

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

Heat pump controller

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

The heat pump controller is built into the internal module. Communication between the internal and external module is via a communication bus.

The installer's responsibilities include:

1. Installing the external and internal units according to the warranty conditions and the user manual.
2. Performing leak-free hydraulic connections of devices included in the HPM2.C system, eliminating leaks and non-tightness in the heating installation.
3. Electrical connection of the internal and external unit, connection of external, internal, storage tank, heating circuits, heating circuit pumps, circulation pump, mixing valve and other additional devices included in the installation.
4. Proper venting of the heating installation, internal unit, external unit, DHW heat exchanger coil. Checking the achievement of the required flow in the heating and DHW installation and the required pressure of the hydraulic installation.
5. Adjustment of hydraulic fittings located in the heating installation but not included in the HPM2.C system.
6. Performing an electric voltage measurement powering the internal unit.

The necessary activities involving the initial start-up include:

1. Starting the heating system PC and checking the correctness of its operation (correct setting of operating parameters and matching them to the thermal properties of the building, installation).
2. Configuration and setting of basic operating parameters (programming room and utility water temperatures).
3. Evaluation of the assembly for leaks, disturbing noises (for example, noise with poor venting).
4. Preliminary user instruction on how to use the PC system.
5. Noting the appropriate parameters in the form "HPM2.C Heat Pump Commissioning Card" in the user manual.
6. **Device registration by the company after performing the Initial Start-up in the Kospel sp. z o.o. "HPM2.C Heat Pump Registration" electronic system, no later than 2 days after starting the device.**

Activities to be performed during periodic inspection:

Checking the state of the electrical installation

- Measuring the voltage powering the internal HPMD units - ___ V.
- Checking the correctness of installed electrical wires in the HPMD internal unit (tightening of electrical wires).

Assessment of hydraulic installation tightness

- Reading the pressure of the heating medium on the control panel of the HPMD internal unit - ___ bar.

Cleaning the dirt separator

- Reading the flow value in the heating circuit during operation - ___ l/min, inlet temperature ___ °C, outlet temperature ___ °C.

Checking zone valves.

Cleaning filters.

Checking the operation of the three-way valve.

Checking the pressure of the HPMO2 external unit medium.

Assessment of the technical condition and cleaning of the evaporator.

Checking the drain's free flow.

Checking the correctness of installed electrical wires in the HPMO2 external unit (tightening of electrical wires).

Assessing the technical condition of the external unit.

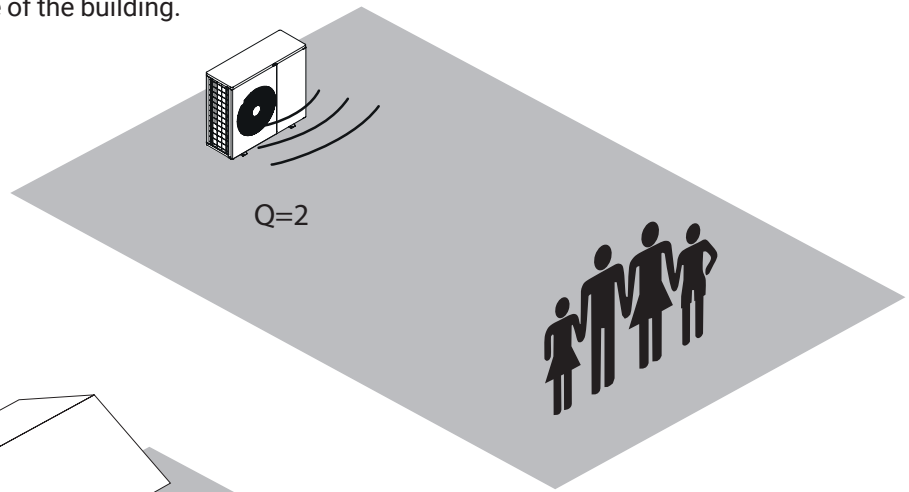
Checking the safety valve.

Noise

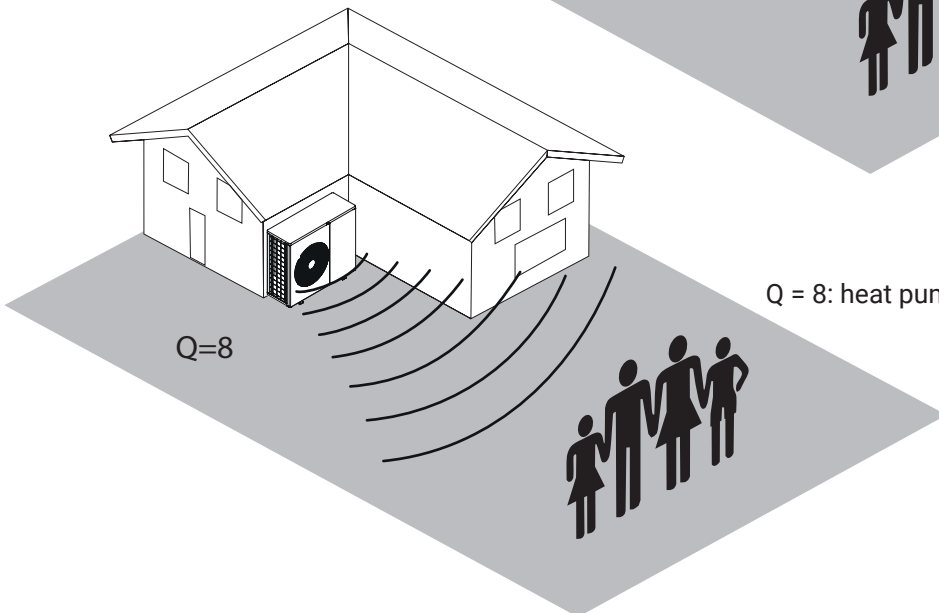
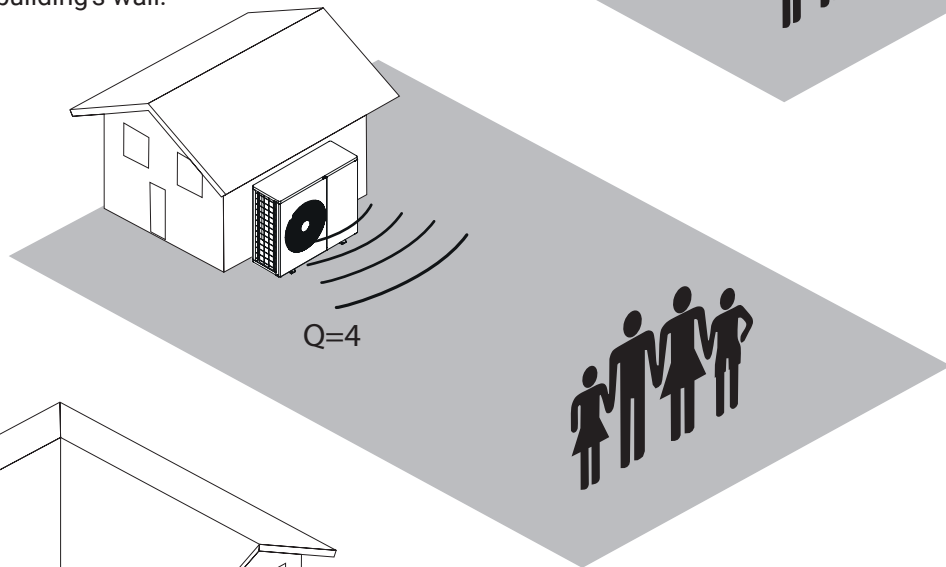
Sound pressure level for different distances from the device.

	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.

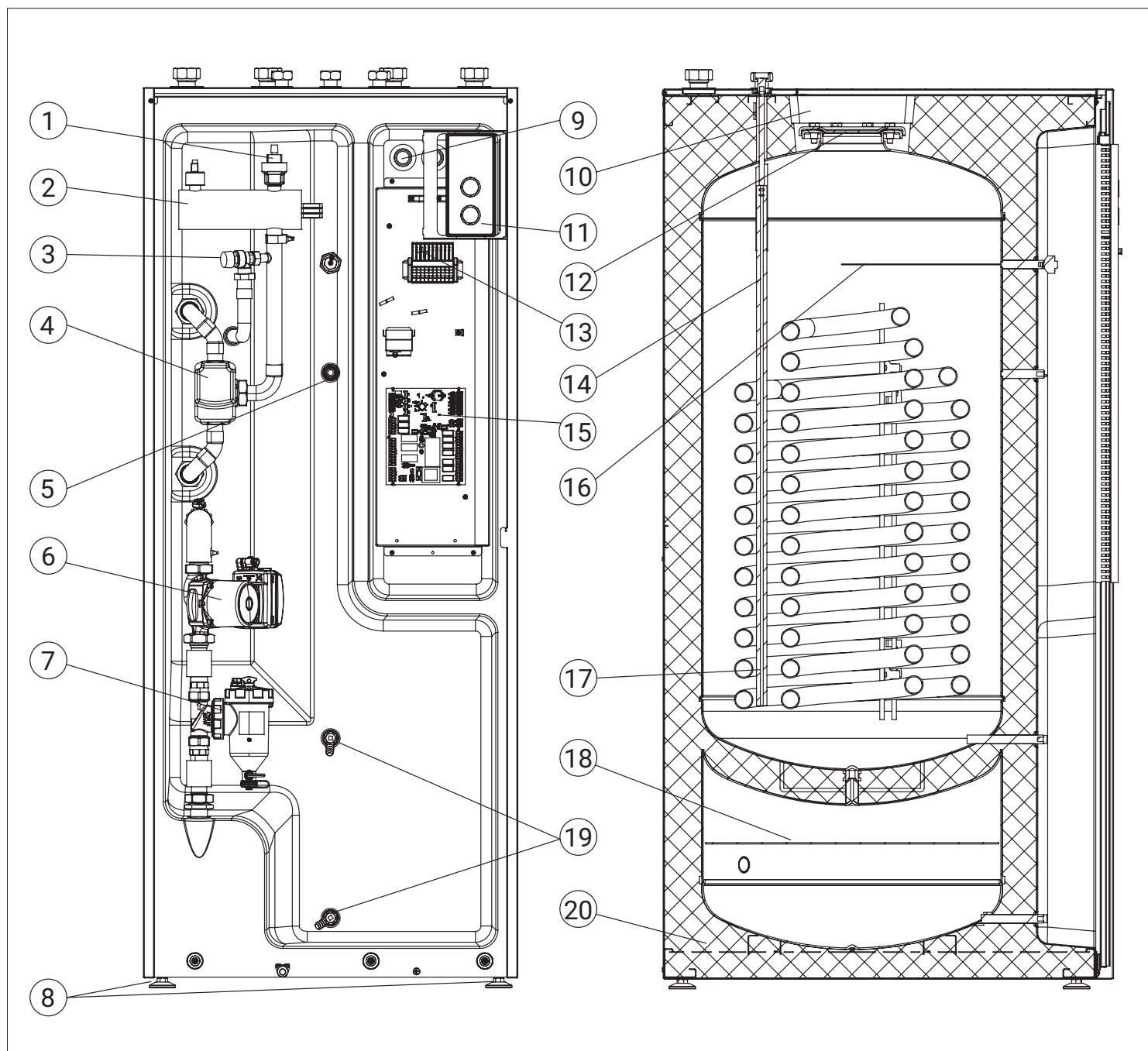


Q = 4: heat pump on the building's wall.



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

HPMD Construction



- [1] - Automatic air vent
- [2] - Heating assembly
- [3] - Safety valve
- [4] - Three-way valve
- [5] - DHW temperature sensor tube
- [6] - Circulation pump
- [7] - Solid impurities separator
- [8] - Feet
- [9] - Place for electrical wires outlet
- [10] - Revision hole insulation

- [11] - Control panel
- [12] - Revision hole
- [13] - Electrical connector
- [14] - Cold water supply tube
- [15] - Control board
- [16] - Electronic anti-corrosion protection
- [17] - Double heating coil
- [18] - Partition
- [19] - Drain valve
- [20] - Thermal insulation

HPM02 Construction

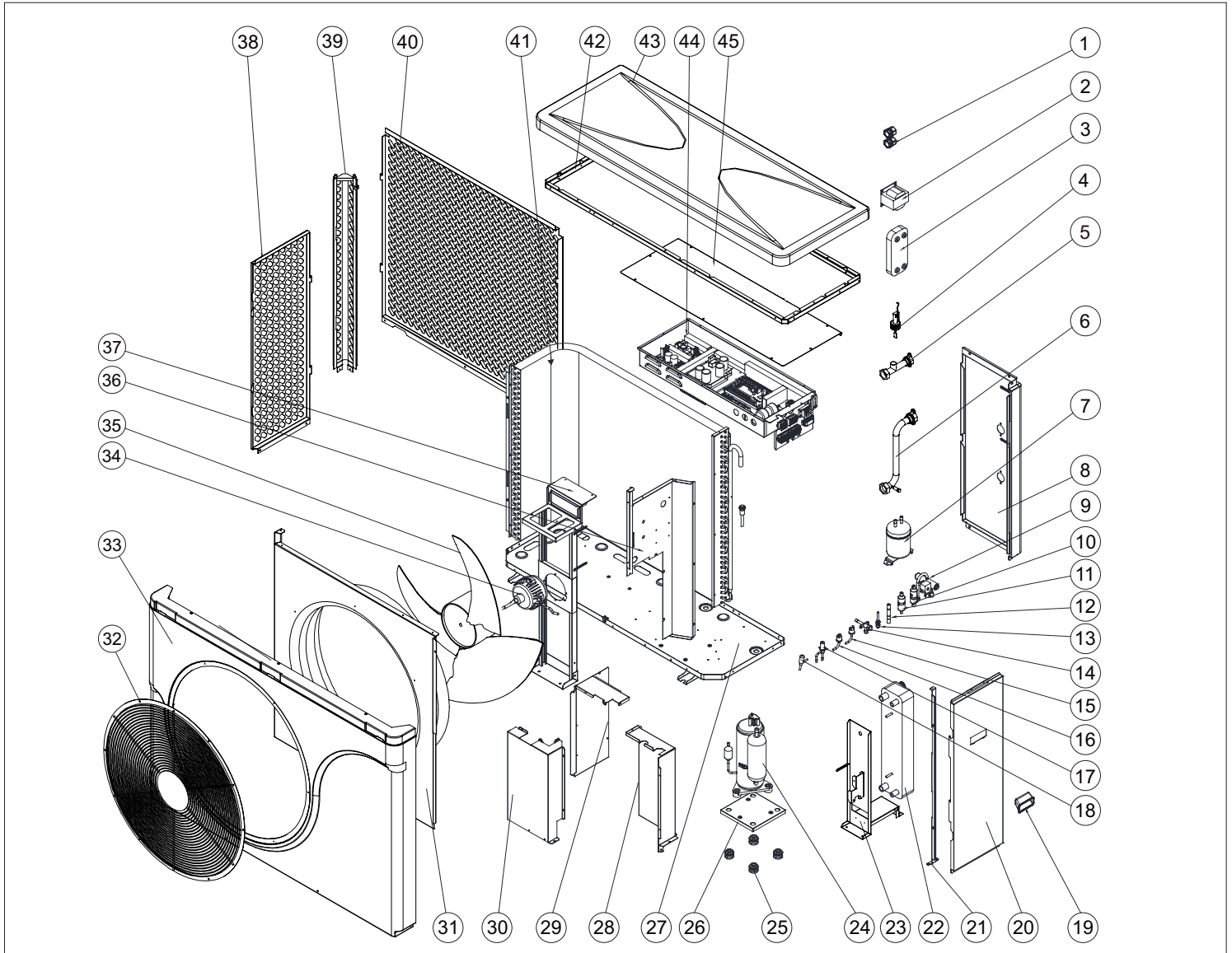


Danger

Touching components that conduct current can lead to serious injuries caused by electric shock. Some components on the installation plates conduct current even after the power supply is turned off.

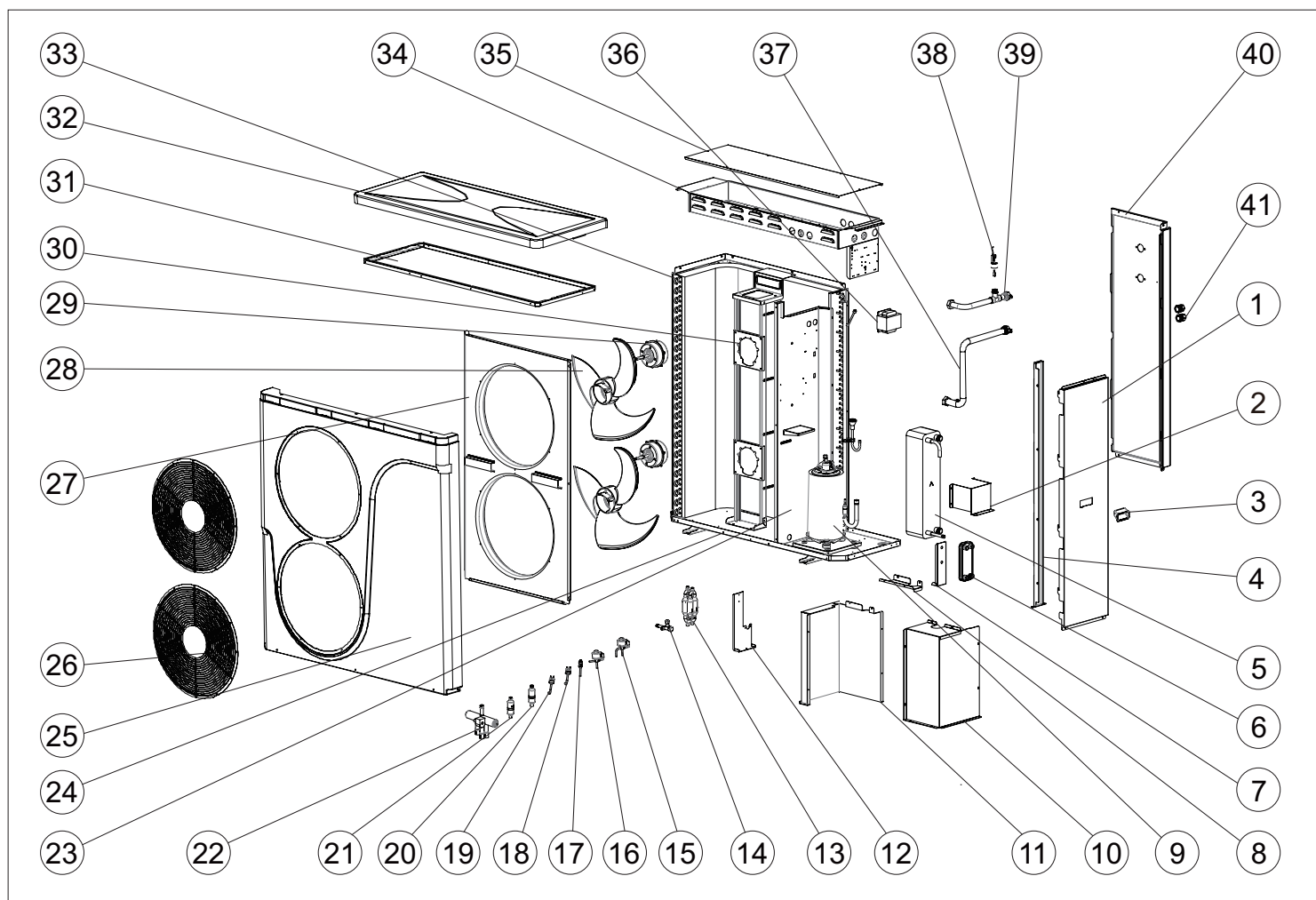
- When working on the external module, disconnect the installation from the power supply, e.g., by a separate fuse or main switch. Check that the voltage has been disconnected and secure against reactivation.
- Before starting work, wait at least 4 minutes for the voltage of the charged capacitors to drop.

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 |

Outdoor module with two fans: HPM02-16/23

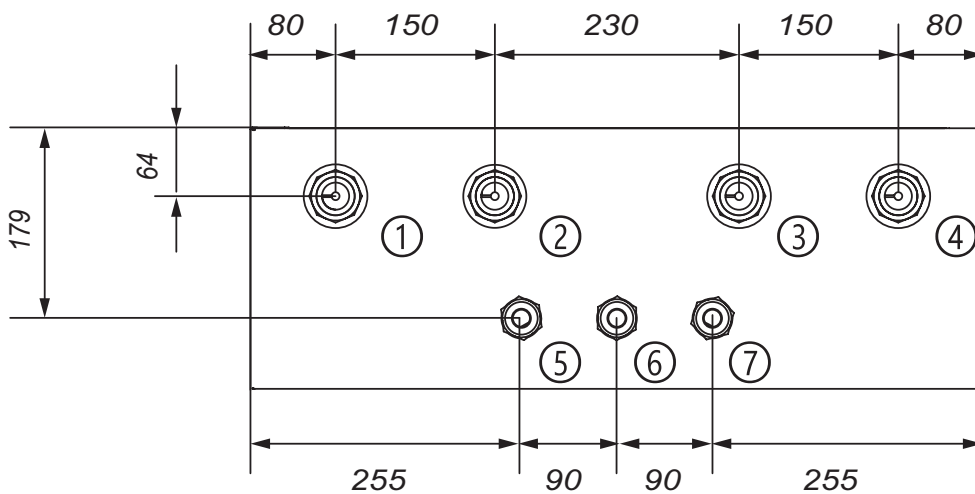
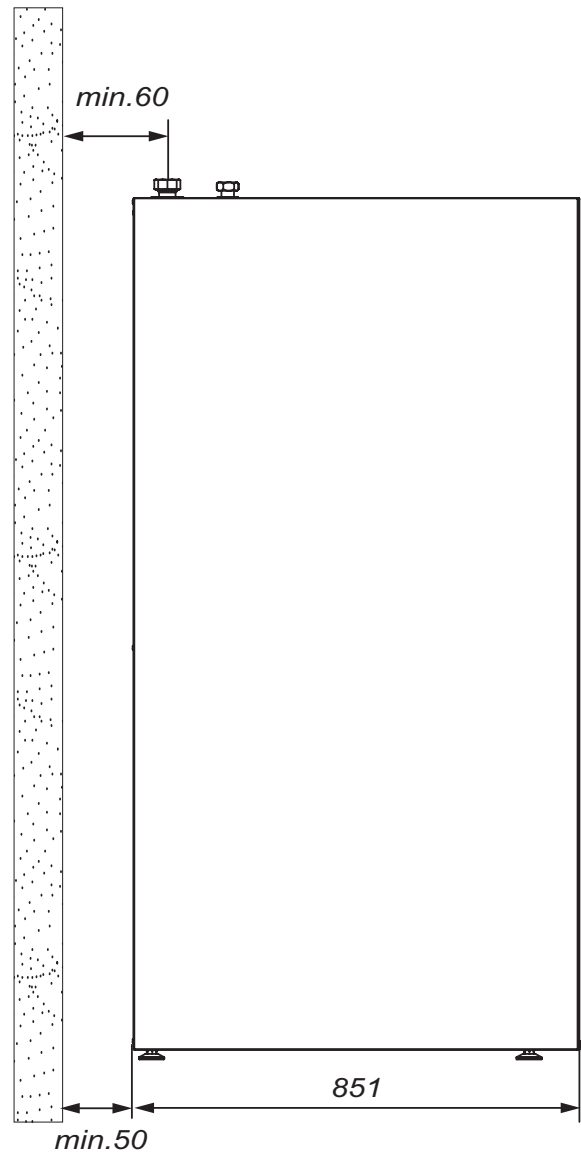
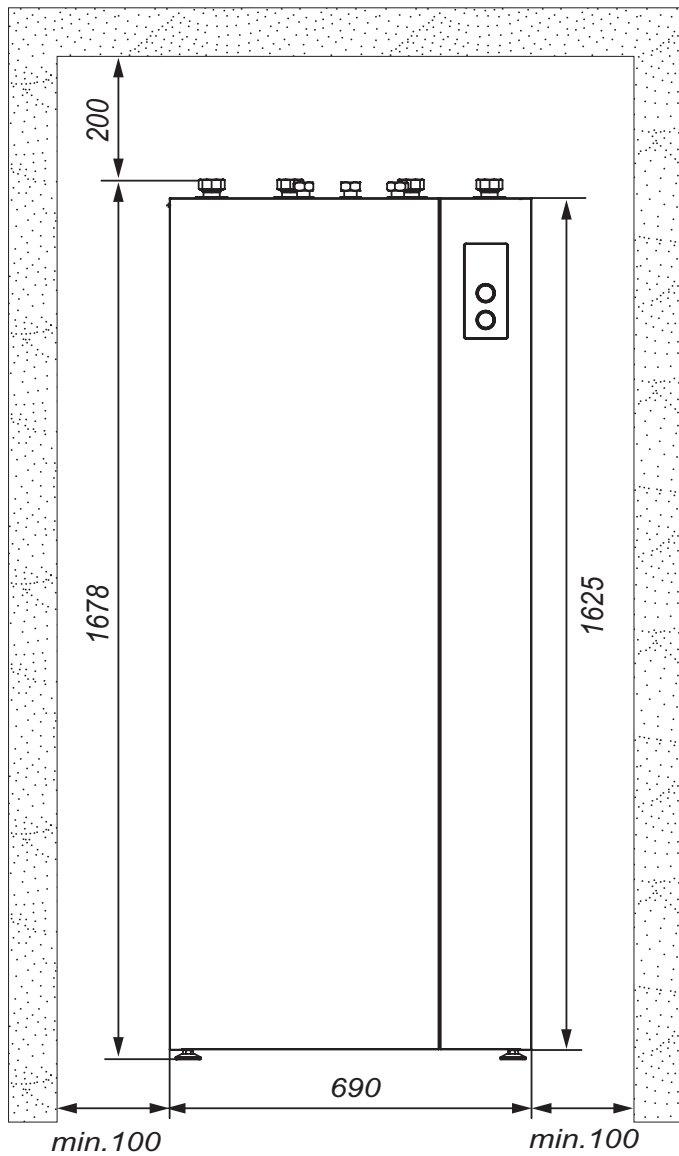


- | | |
|--|-----------------------------------|
| [1] - Right panel | [22] - Four-way valve |
| [2] - Plate heat exchanger bracket | [23] - Middle partition assembly |
| [3] - Handel | [24] - Suspended Plate |
| [4] - Panel bracket | [25] - Front cover |
| [5] - Plate heat exchanger | [26] - Fan retainer |
| [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 | |

Installation

Minimum clearances for the internal module

In conjunction with refrigerant R32: Strictly adhere to the minimum room surface area in addition to the minimum distances.



- [1] - Outlet to the heat pump 1¼"
- [2] - Inlet from the heat pump 1¼"
- [3] - Return from the heating/hot water installation 1¼"
- [4] - Heating supply 1¼"
- [5] - Hot water supply 1"
- [6] - Cold water supply 1"
- [7] - Circulation 1"



Note

Impacts, strong pressure, and high stress can cause damage to the external walls of the device. Do not load the top and front walls as well as the side walls.

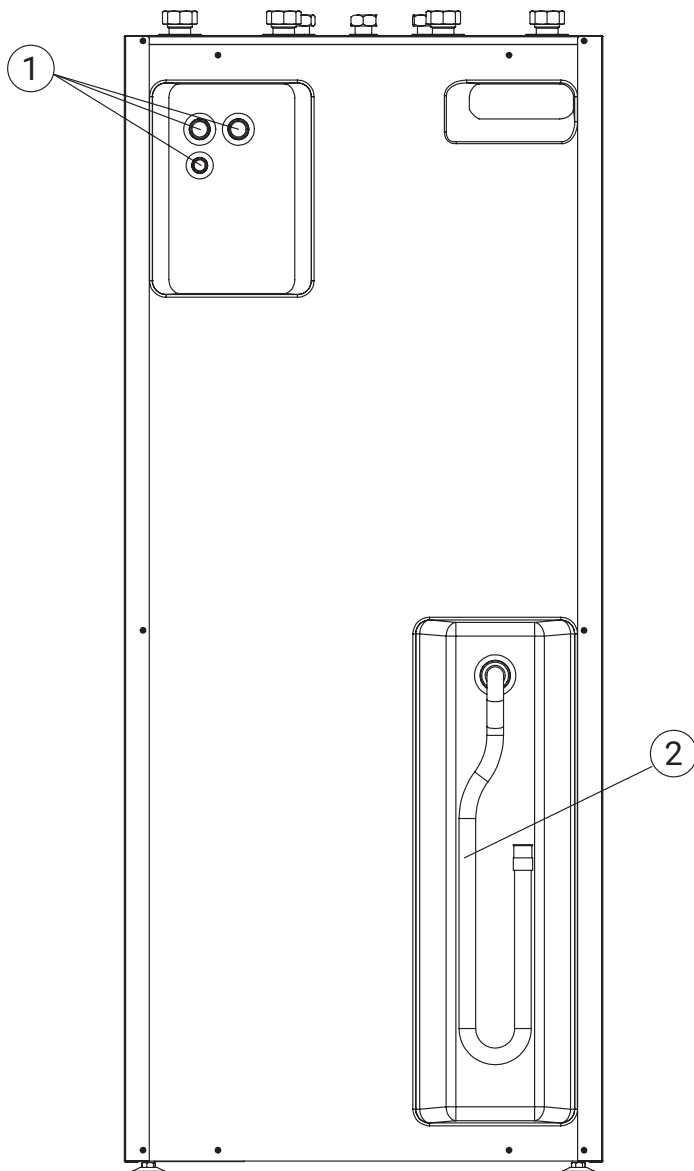
Tip

If several heat pumps are to be installed in one room, the minimum room volume should be calculated for the device with the most refrigerant.



Warning

Leaking flammable refrigerant (R32) can cause a fire in rooms with insufficient air supply.



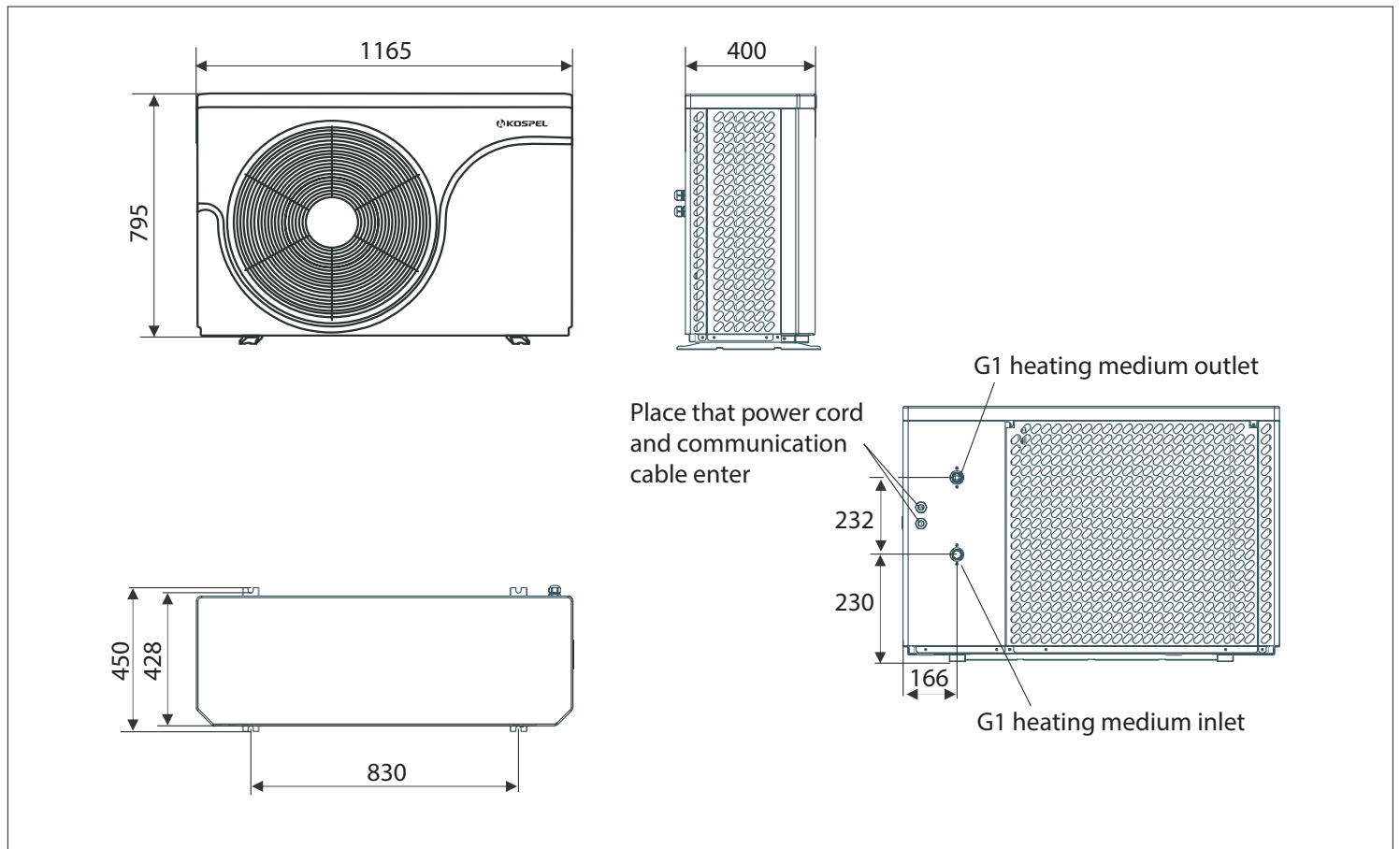
- Maintain a minimum room surface area.
- Provide adequate ventilation and exhaust systems.
- Do not use ignition sources in the utility room, e.g., open flames, turned-on gas appliances, electric heaters with exposed heating elements, etc.
Do not smoke in the utility room.

[1] - Point of entry for pipes

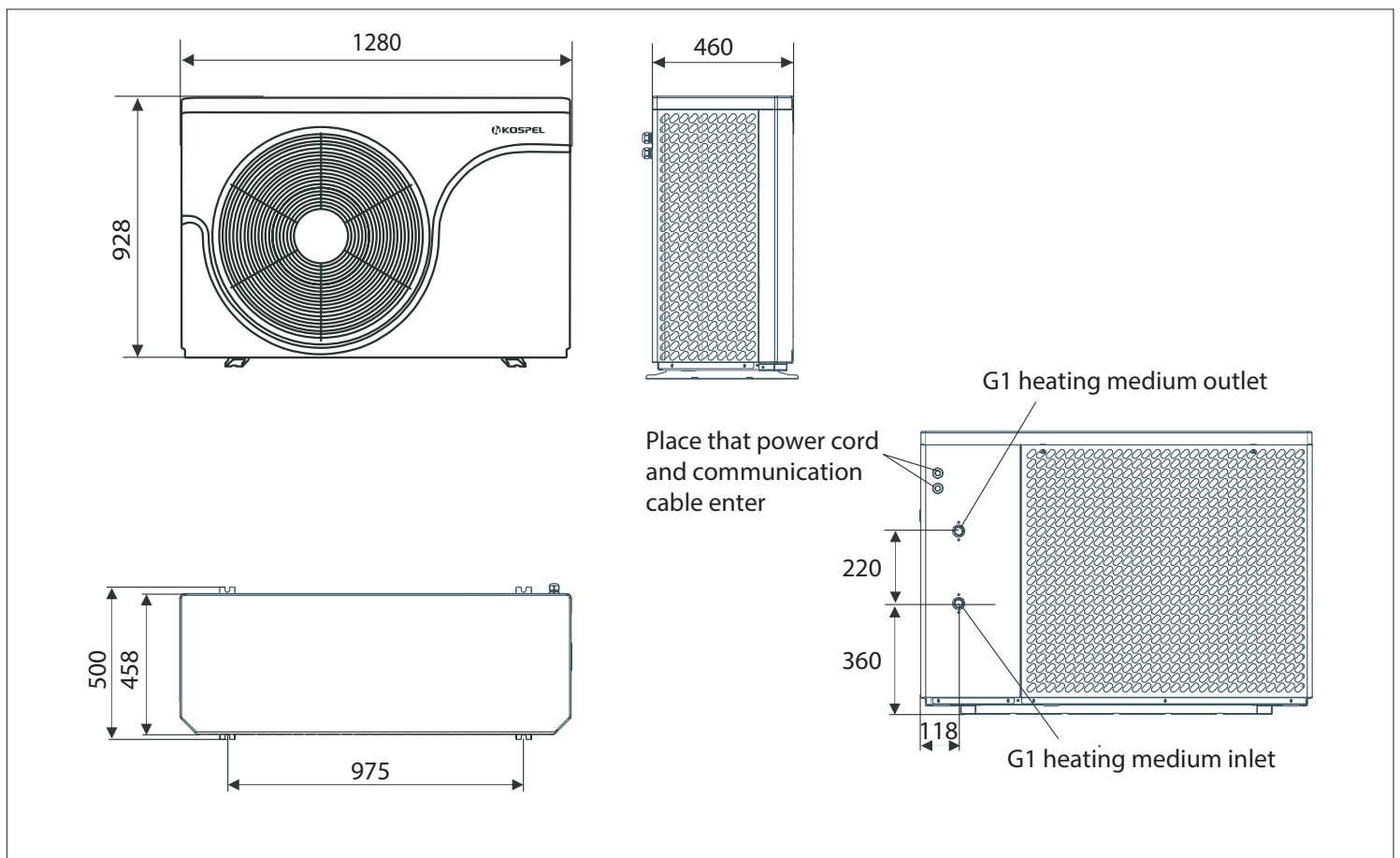
[2] - Drainage pipe

Installation (cont.)

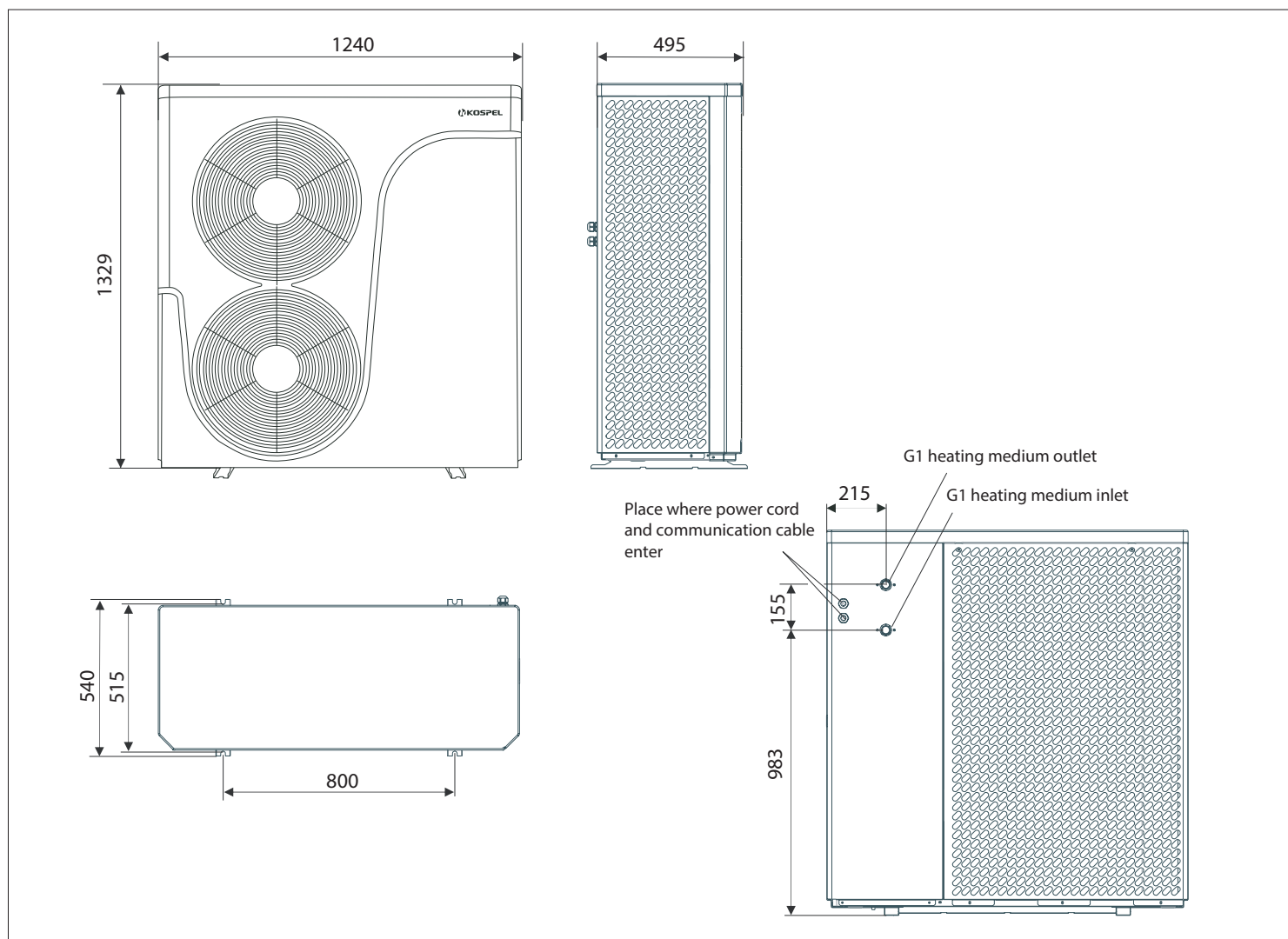
Outdoor module with one HPM02-8 fan



Outdoor module with one HPM02-12 fan



Outdoor module with two HPM02-16/23 fans



Transport

- Note**
- Impacts, strong pressure and high stress can cause damage to the external walls of the device. Do not load the top, front, and side walls.

- Note**
- A strong tilt of the external module may cause the compressor oil to penetrate the refrigeration circuit, resulting in a failure during device startup. Maximum tilt angle: 45° for approx. 4 min, otherwise 30°.

Mounting on the floor:

- Install the external module as a free-standing unit on a permanent support structure at least 100 mm high.
- In challenging climatic conditions (negative temperatures, snow, moisture), it is recommended to place the device on a pedestal 300 mm high.
- Consider the weight of the external module: see "Technical Data".

Positioning:

- Do not mount with the exhaust side against the wind.
- Wall ducts and protective pipes for hydraulic lines and electrical connection wires

Influence of weather conditions:

- When installing in wind-exposed locations, consider wind loads.
If installing the external module on a flat roof, significant wind loads can occur depending on the wind load zone and building height. In this case, we recommend commissioning a designer to design the support structure considering the requirements stated in the DIN 1991-1-4 standard.
- Include the external module in lightning protection.
- When designing rain protection or roofing, consider the device's heat intake (heating mode) and heat dissipation (cooling mode).

Condensate:

- Ensure free condensate drainage.
To allow infiltration, prepare a durable gravel base under the external module.

Sound and vibration damping between the building and the external module:

- Perform the hydraulic connection to the external unit using flexible connections.
- Lay the electrical connection wires of the internal/external module without stress.

Installation location

- Choose a location with good air circulation so that the outflow of cooled air and the inflow of warm air is possible.
- Do not install in room corners, in niches or between walls. This can lead to the re-ingestion of exhausted air.



Note

Restriction of free air flow can lead to the re-ingestion of cooled (heated in cooling mode) air and lead to disturbances in device operation, decreased efficiency, and consequently increased electricity consumption.

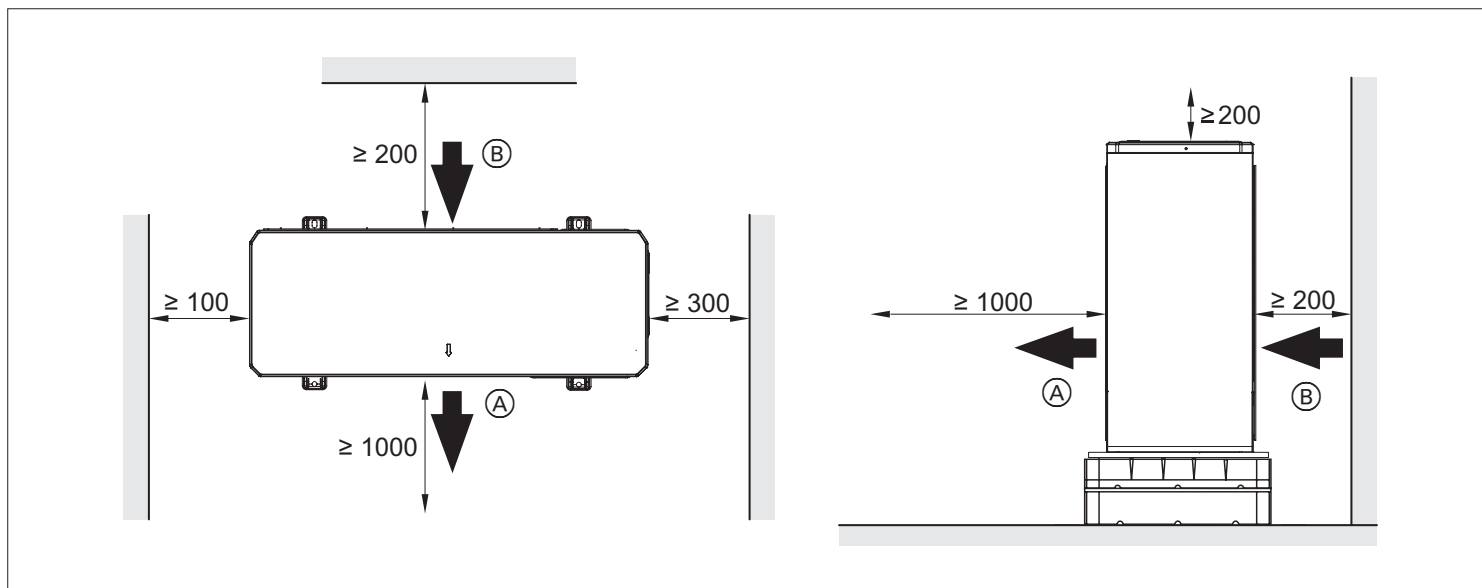
- In case of placement in an area exposed to strong wind, prevent wind action on the fan area. Strong wind can disrupt the air stream flow through the evaporator.
- Choose an installation location so that the evaporator does not get blocked by leaves, snow, etc.
- Consider the laws of physics concerning sound propagation and reflection when choosing the installation site.

Design guidelines

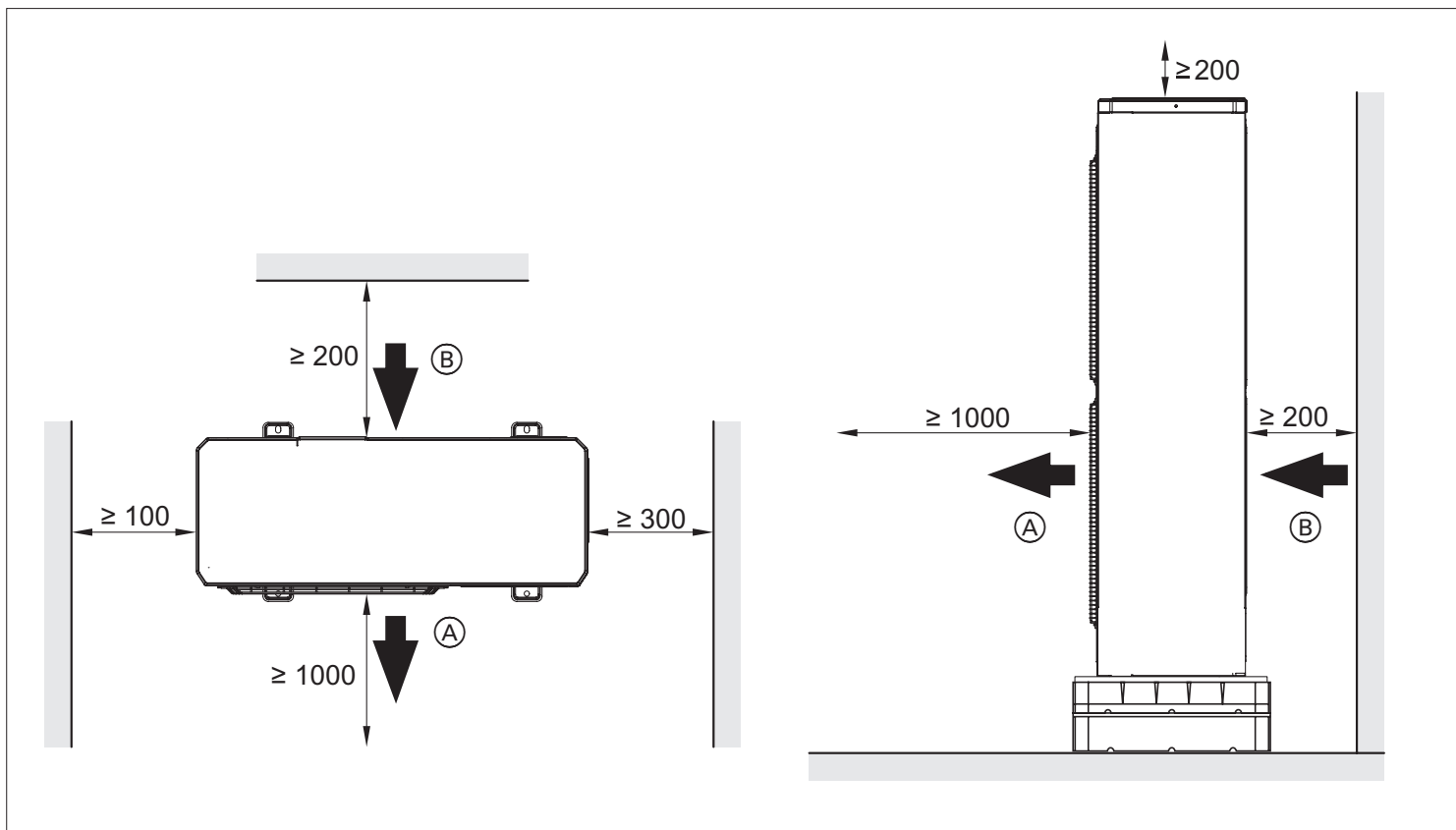
- Do not mount under windows or next to bedrooms' windows.
- Do not install in basement pits or ground depressions.
- Keep a minimum distance of 3 m from basement pits and windows.
- Maintain a gap from sidewalks, terraces, gutters, or surfaces with a protective coating of at least 3 m.
At an external temperature below 10°C, the blown out cooled air poses a risk of icing.
- Avoid "short circuits" of air streams with ventilation devices. Keep a minimum distance of 3 m from the suction area of ventilation devices.
- The installation site must be easily accessible, e.g., for maintenance work (see "Minimum distances with the external module").

Minimum distances at the outdoor module

Outdoor module with one fan



Outdoor module with two fans

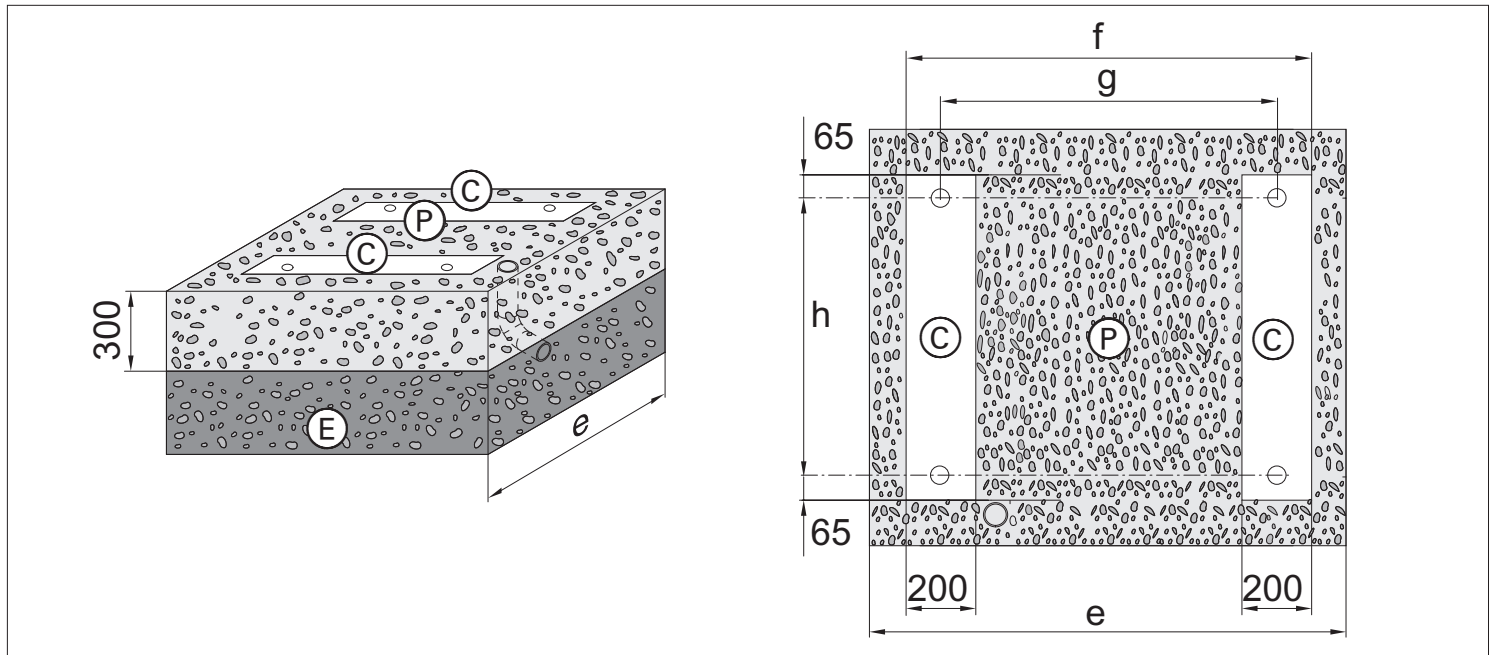


- (A) - Air outlet
- (B) - Air intake

Mounting on the ground

Foundations

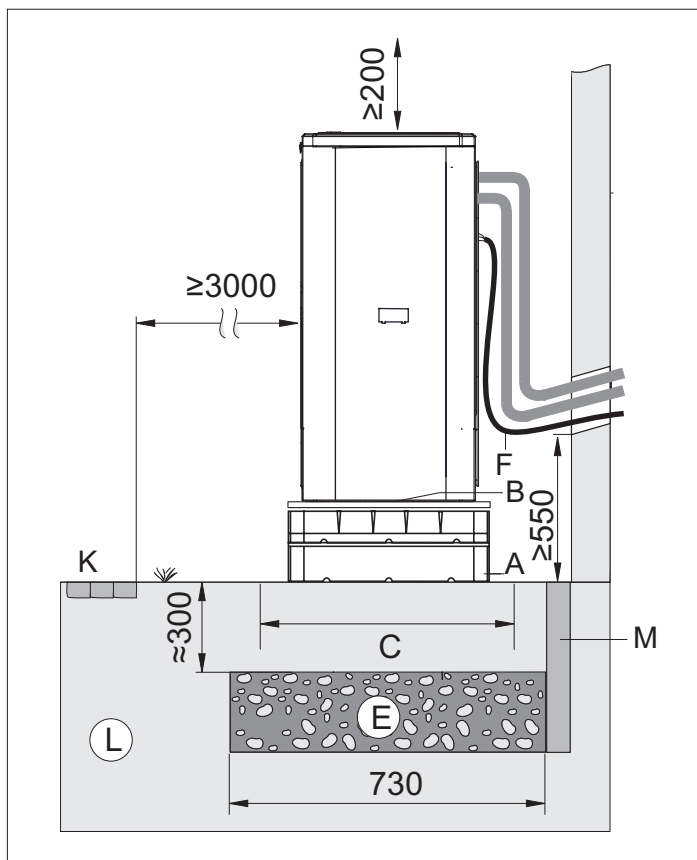
Mount the ground installation brackets on two horizontal foundation benches. It is recommended to make a concrete foundation according to the drawing. The given thicknesses of the layers are approximate values. They must be adapted to local conditions. Follow the principles of construction technology.



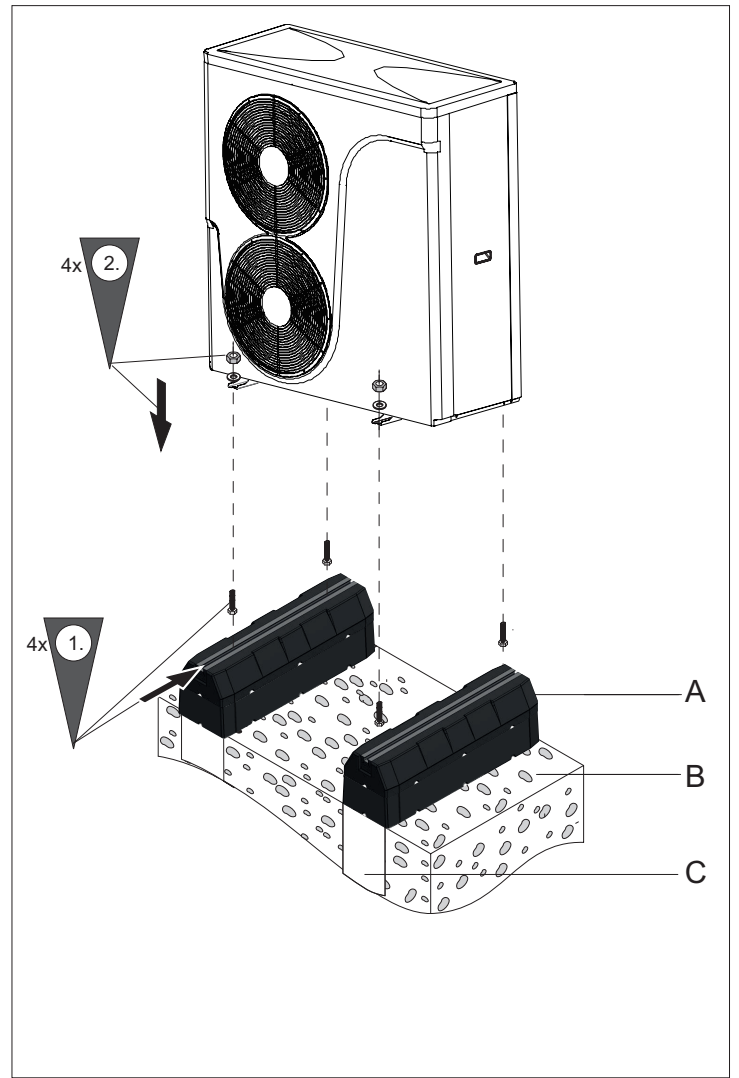
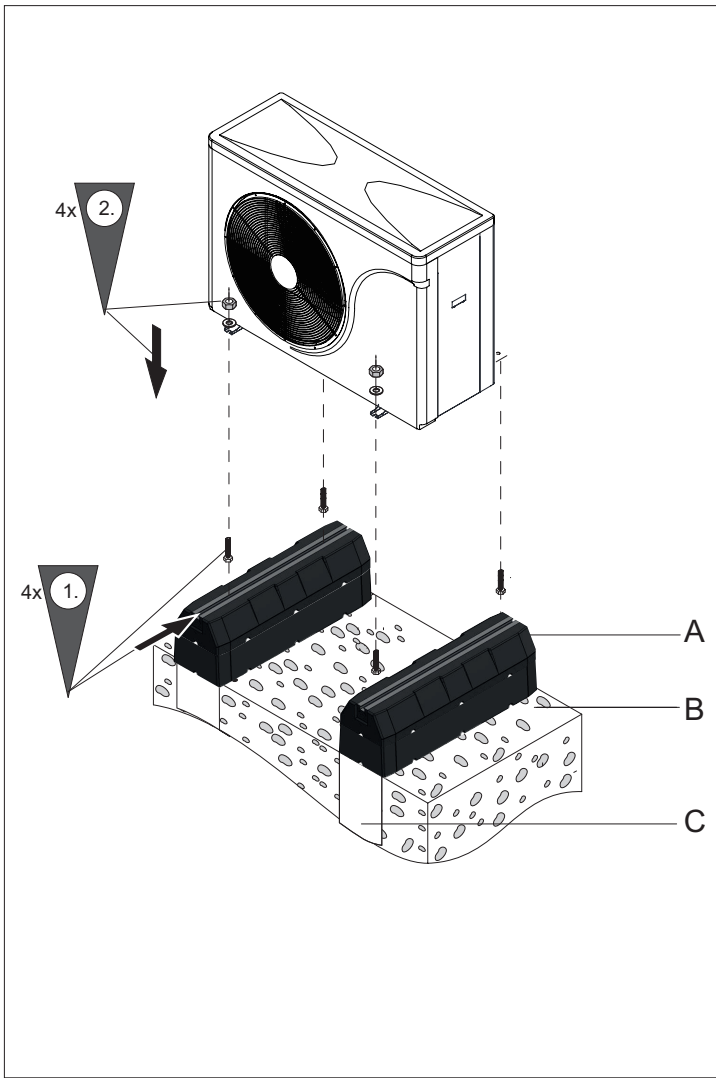
- Ⓒ - Strip foundations
- Ⓔ - Frost protection of the foundation (compacted gravel, e.g. 0 to 32/56 mm), layer thickness in accordance with local requirements and building regulations
- Ⓕ - Gravel bed to facilitate condensate absorption

Dimensions [mm]	e	f	g	h
HPMO2-8	1200	1030	830	430
HPMO2-12	1300	1175	975	460
HPMO2-16/23	1250	1000	800	515

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.

Connection to the electrical system

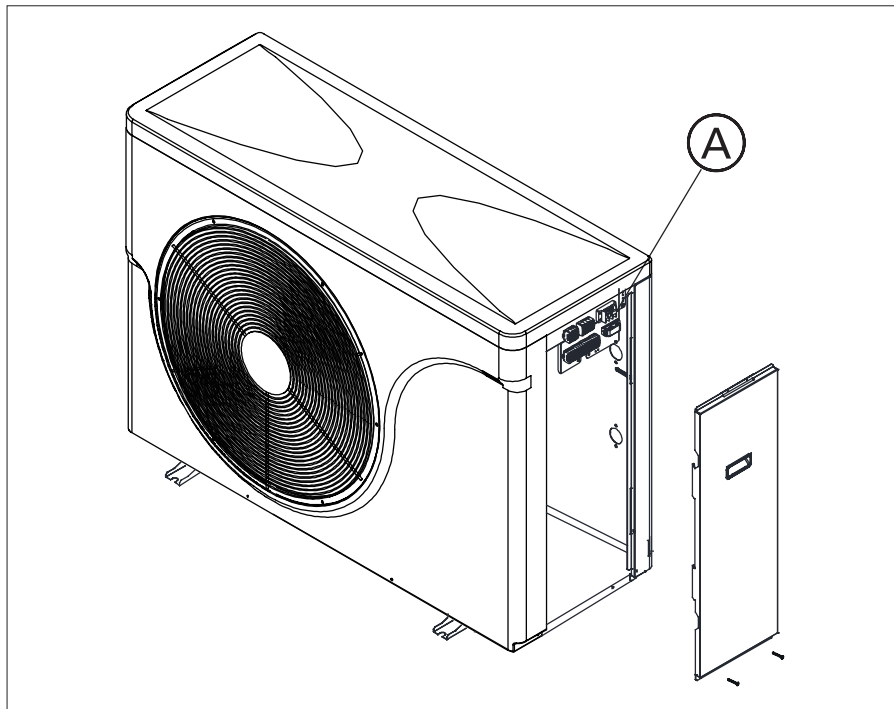
Outdoor module: terminals

Outdoor module with 1 fan: opening the connection area

HPM02-8

HPM02-12

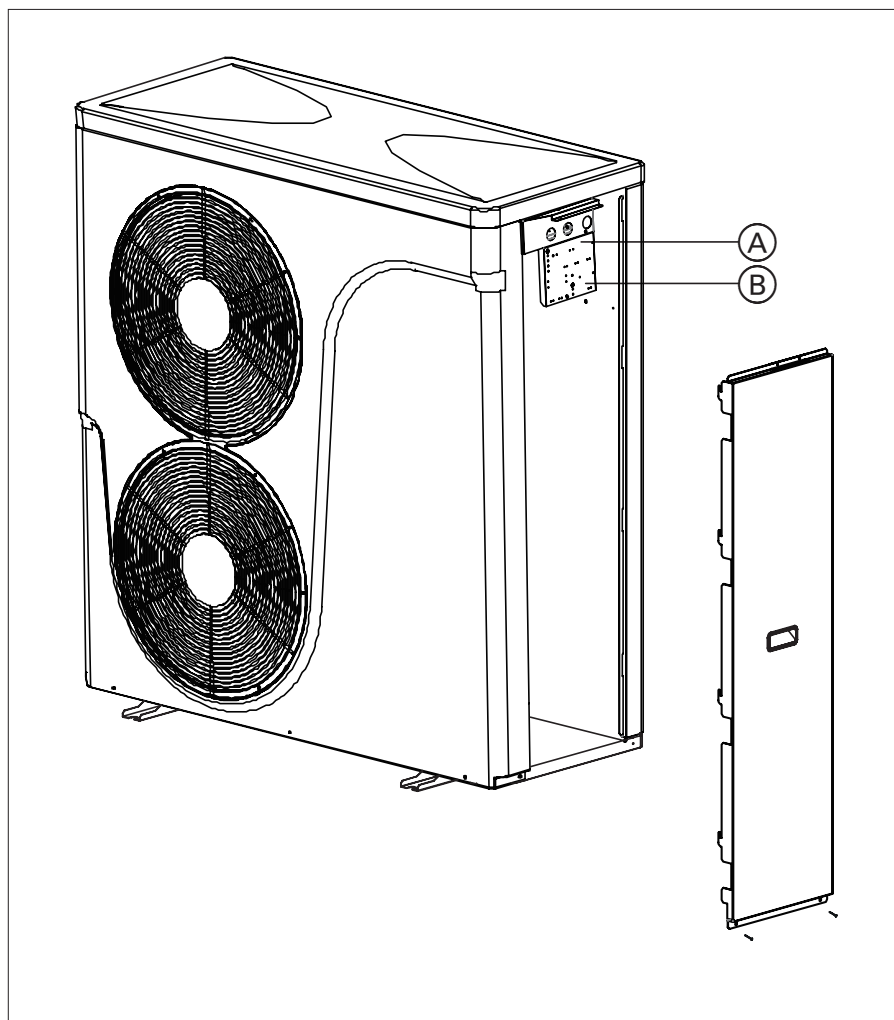
- Ⓐ - Connection area:
- Communication bus cable for indoor module
 - Electrical terminal of compressor



Outdoor module with 2 fans: opening the connection area

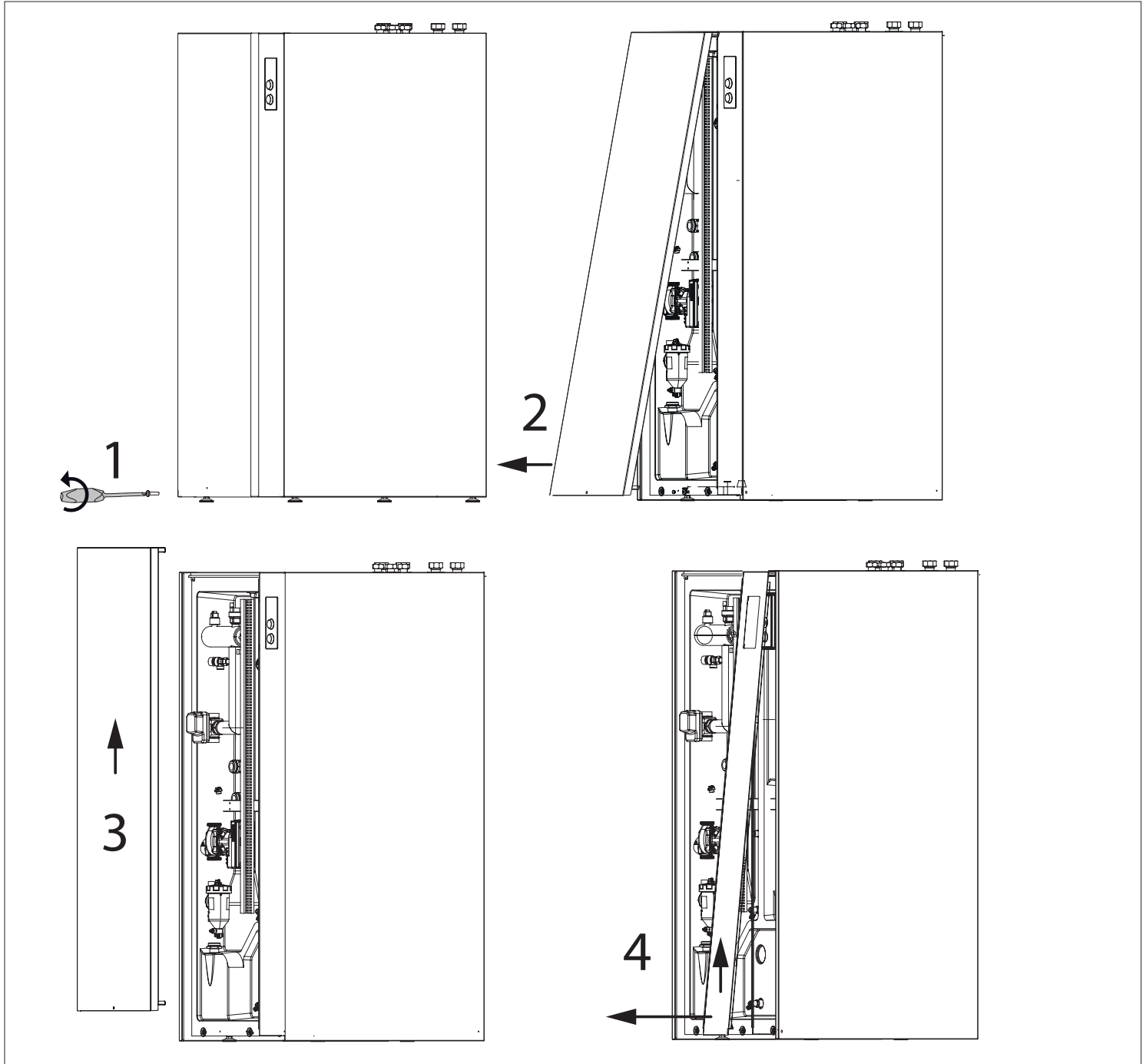
HPM02-16/23

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



Opening the HPMD Module

Internal Module: Front Cover Mounting



- !** **Note**
An unsealed housing can lead to damage caused by condensation, vibration, and can contribute to noise generation.
- The front cover is heavy, special care should be taken when removing it.

Tip

Remove the front cover by unscrewing the securing screw in the hole at the bottom of the cover with a crosshead screwdriver. Tilt the lower edge of the cover and lift it upwards removing it from the latches.

- Close the device in a soundproof and diffusion-tight manner.
- When it comes to pipe and cable penetrations, attention should be paid to the correct installation of thermal insulation.

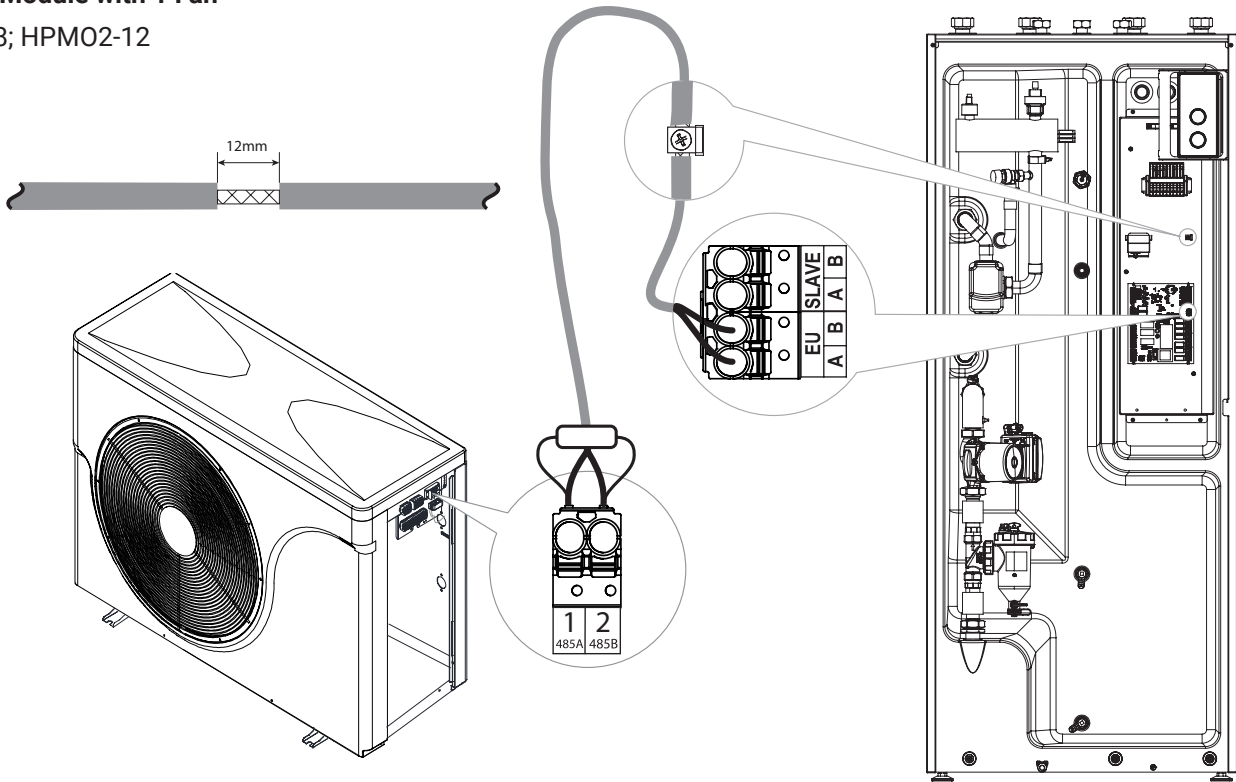
- !** **Danger**
If the installation components have not been grounded, in the event of electrical installation damage, there is a risk of serious injuries caused by electric current and damage to components.
Install protective wires on the front and side cover. Before starting, be sure to tighten the securing screws.

Connecting the communication bus wire between the internal and external modules

A LIYcY 2x0.5mm² cable should be used as the communication bus cable. There is a terminal for grounding the cable screen on the control circuit board. Remove 12mm of insulation from the cable, leaving the screen, place it under the terminal, and tighten it. Connect terminals A and B of the external module with a terminating resistor.

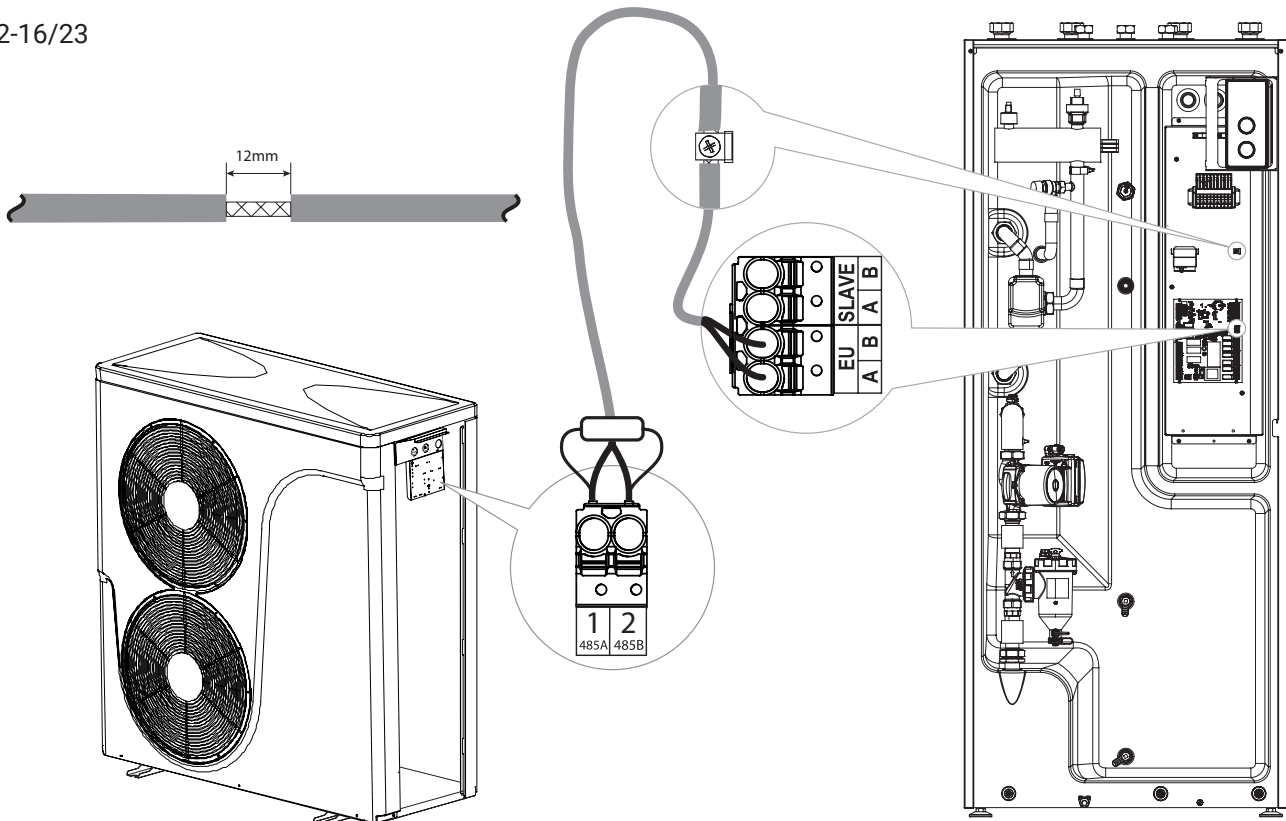
External Module with 1 Fan

HPM02-8; HPM02-12

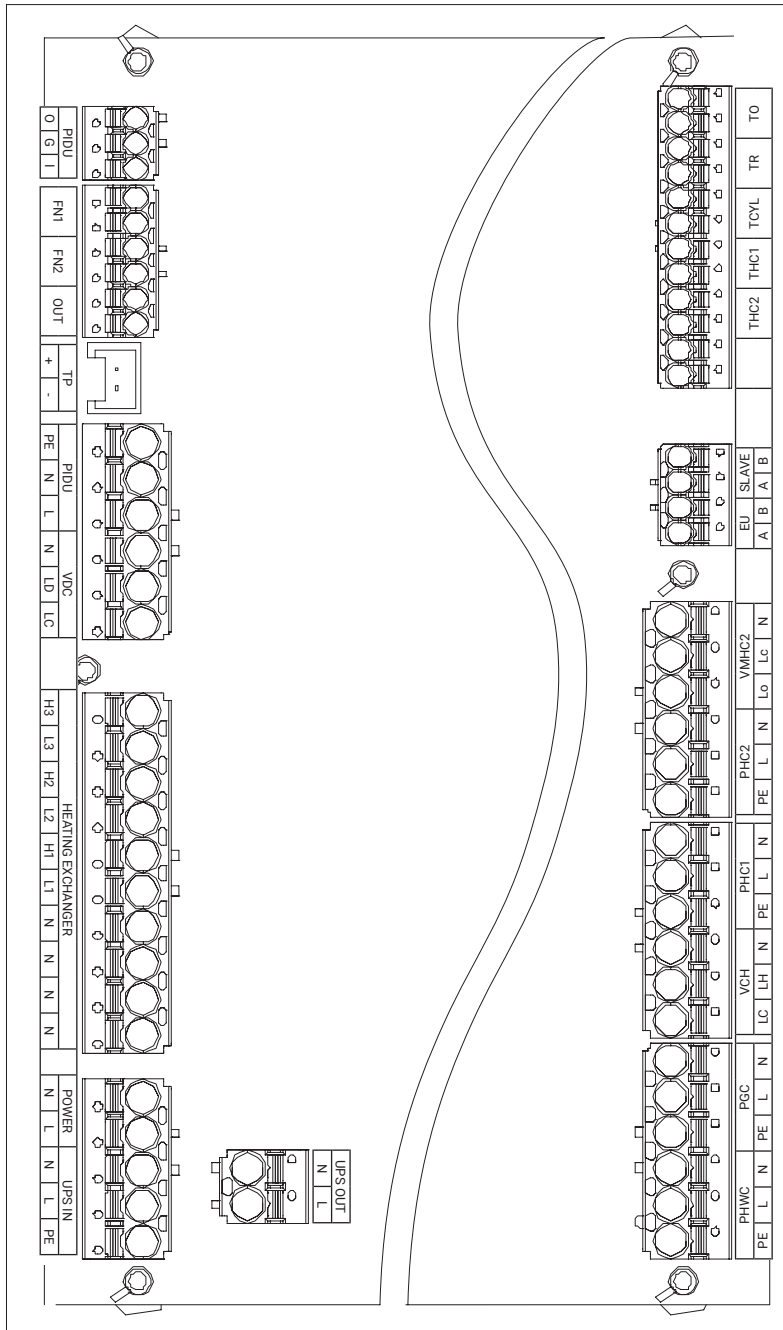


External Module with 2 Fans

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)
- PIDU - circulation pump in indoor unit

Valves:

- VCH - cooling / heating switching valve / circulation pump
- VMHC2 - mixing valve for CH2 circuit
- VDC - valve switching between domestic hot water and central heating circuits.

Temperature sensor inputs:

- 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:

- PIDU - circulation pump in indoor unit
- FN1, FN2- functional inputs
- HE - output controlling the heating elements.
- OUT - output from an external heat source.

Communication

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

Controller Power Supply

- POWER - power supply for the heat pump controller

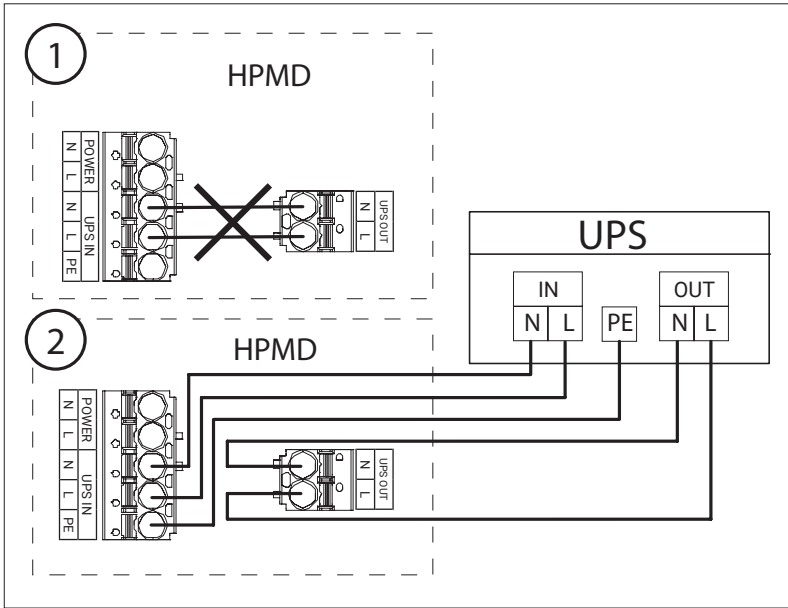
Emergency Power Supply

- UPS IN - UPS power supply
- UPS OUT - power from the UPS

Note

No voltage connection allowed at FN1 and FN2 inputs! Risk of permanent damage to the controller."

External UPS Power Source

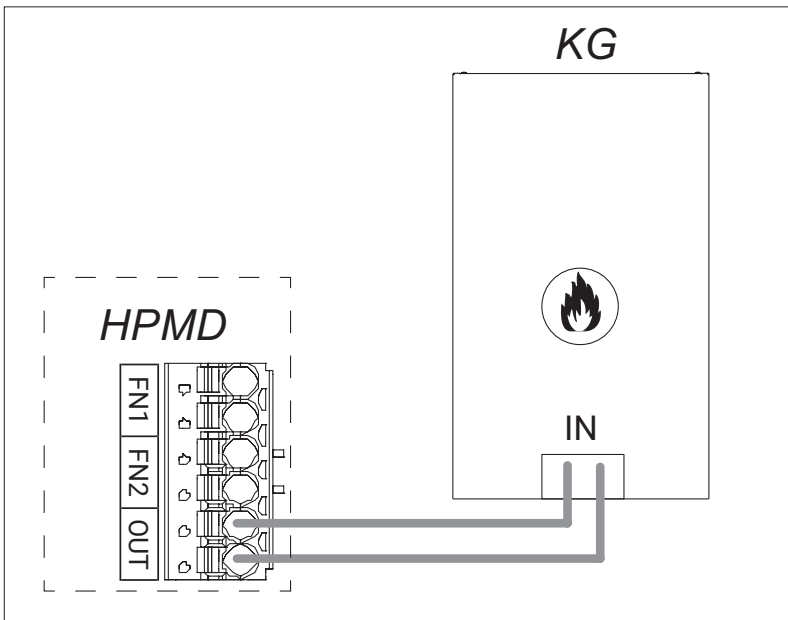


The device is designed to work with an emergency UPS power supply. In the event of a power outage in the energy network, functions related to protecting the hydraulic system from freezing on the external unit side are maintained. To connect the UPS, you should remove the factory jumpers on the UPS IN and UPS OUT inputs and connect according to the diagram.

To ensure 48-hour protection, you should use a UPS with the following parameters:

- minimum continuous power of 200W
- output voltage 230V 50 Hz
- battery capacity: 1,2 kWh (12V 100Ah)

External Alternative Source



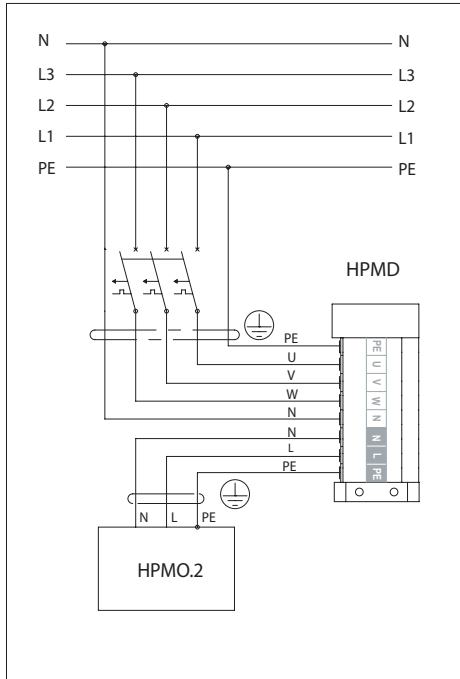
The device is designed to work in conjunction with an external alternative source, such as a gas boiler.

The source is controlled by the OUT relay output, when the limit temperature is reached the heat pump is turned off and the OUT output is shorted.

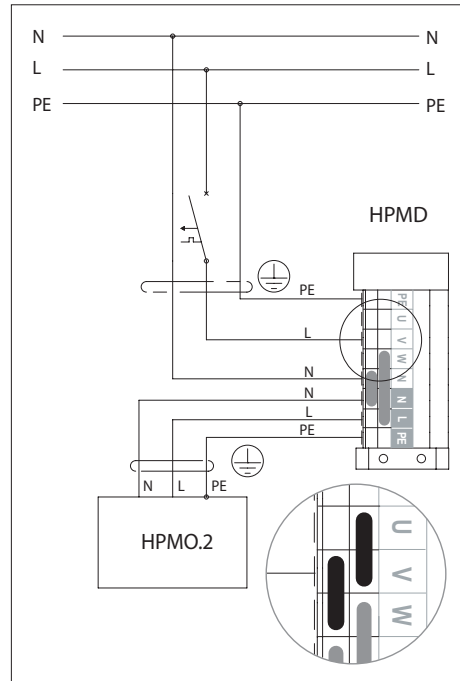
Electrical Connection

When connecting to a single-phase installation, bridges should be used to short the U V W terminals.

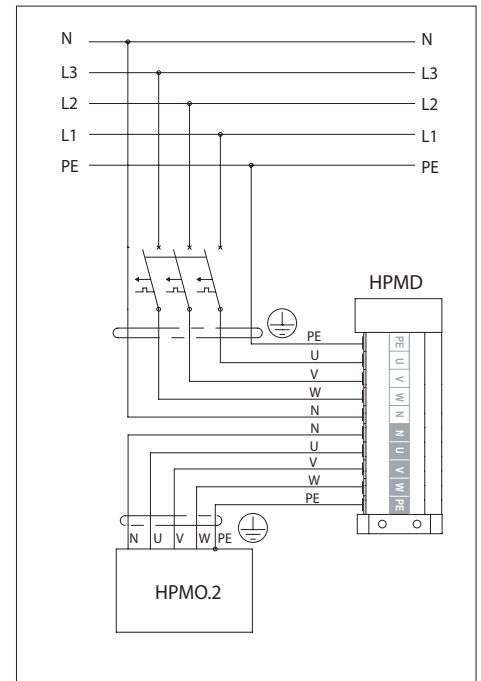
HPM2.C-8 / HPM2.C-12 connection to 3-phase installation



HPM2.C-8 / HPM2.C-12 connection to 1-phase installation

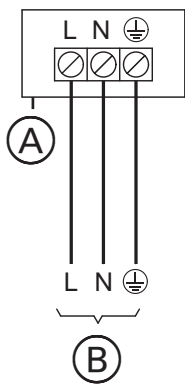


HPM2.C-16 connection to 3-phase installation



Electrical connection: outdoor module

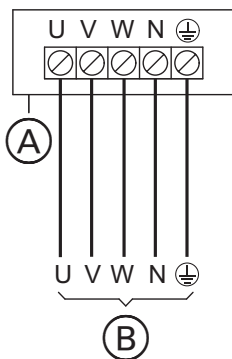
HPM02-8 / HPM02-12 - 230 V~ outdoor module electrical connection



Types	Wire	Max. Wire length	Max. protection
HPM02-8	3 x 2,5 mm ² or 3 x 4,0 mm ²	31m or 32m	B16A
HPM02-12		20m or 32m	B25A

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

HPM02-16/23 - 400 V~ indoor module electrical connection



Types	Wire	Max. Wire length	Max. Protection
HPM02-16/23	5 x 2,5 mm ²	60m	3 x B16A

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

Connection of external sensors and control devices

Radiator heating circuit temperature sensor WE-019/05 (THC1 input)

The location for installing the sensor is shown on the hydraulic installation diagram. The sensor is required if the CH1 circuit is active [Configuration / Service -> Configuration -> CH1 circuit -> circuit: Yes].

Underfloor heating circuit temperature sensor WE-019/05 (THC2 input)

The location for installing the sensor is shown on the hydraulic installation diagram. The sensor is required if the CH2 circuit is active [Configuration / Service -> Configuration -> CH2 circuit -> circuit: Yes].

Room temperature sensor WE-033 (TR input)

The room temperature sensor should be installed in a room representative of the building, away from radiators, windows, doors, and corridors. At a minimum height of 150 cm. The temperature sensor cable should be as short as possible, do not run it in close proximity to power cables, and do not wind it around other cables.

Outdoor temperature sensor WE-027 (TO input)

The sensor should be installed in a shaded location, on the northern or north-western facade of the building, away from windows and vents. The temperature sensor cable should be as short as possible, do not run it in close proximity to power cables, and do not wind it around other cables.

Functional Input 1 (FN1 input)

Opening the input blocks the heating of the device. The input is active in winter mode, allows for the control of the device's operation from an external controller. The input is of the non-voltage type.

Functional Input 2 (FN2 input)

External cooling demand enforcement. The input is active in summer mode. Circuit shorting starts the device in cooling mode, according to the set parameters. To protect the hydraulic installation from the condensation of moisture, a humidity sensor/switch HP.HS.24 (optional equipment) should be included in the circuit.

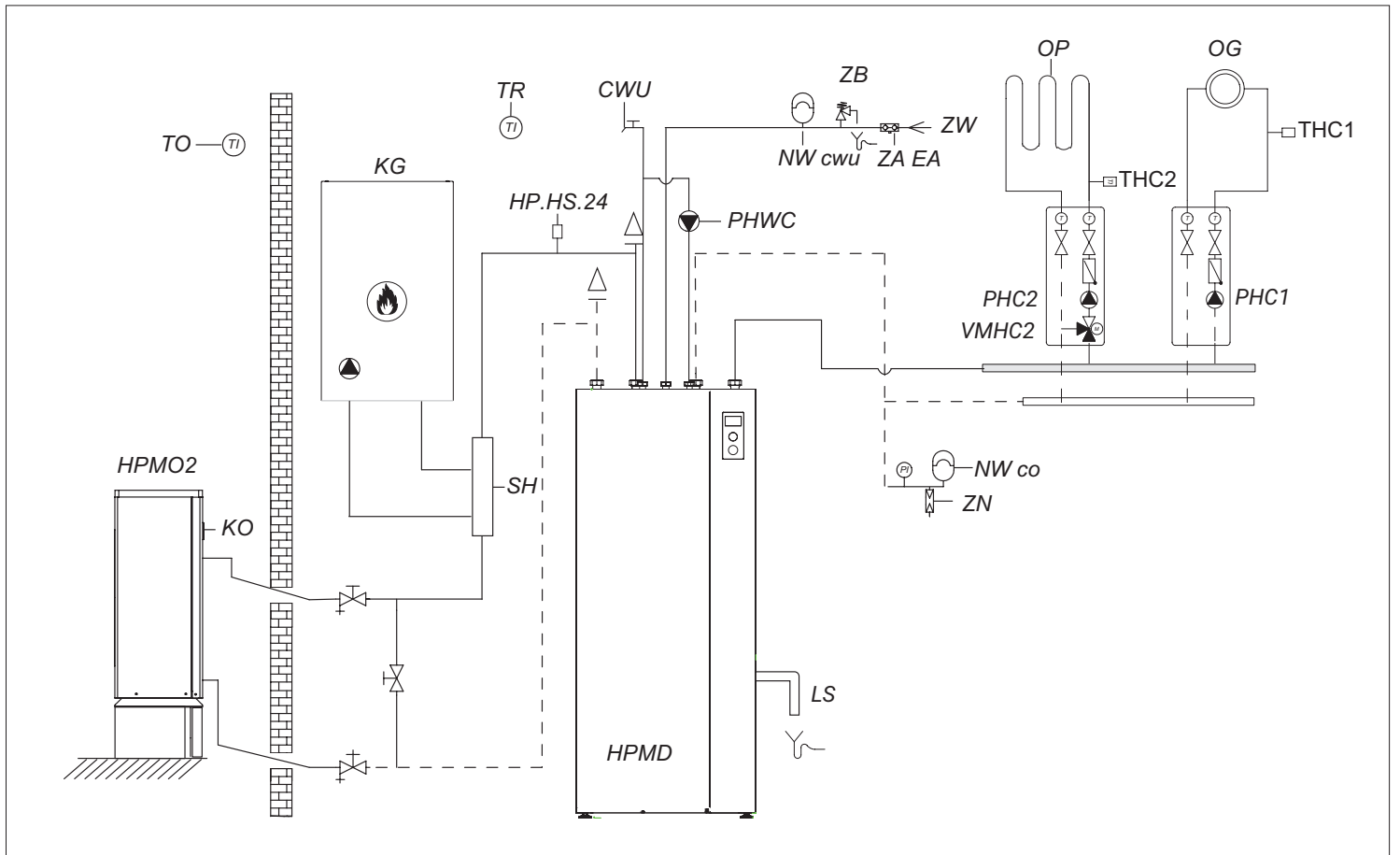
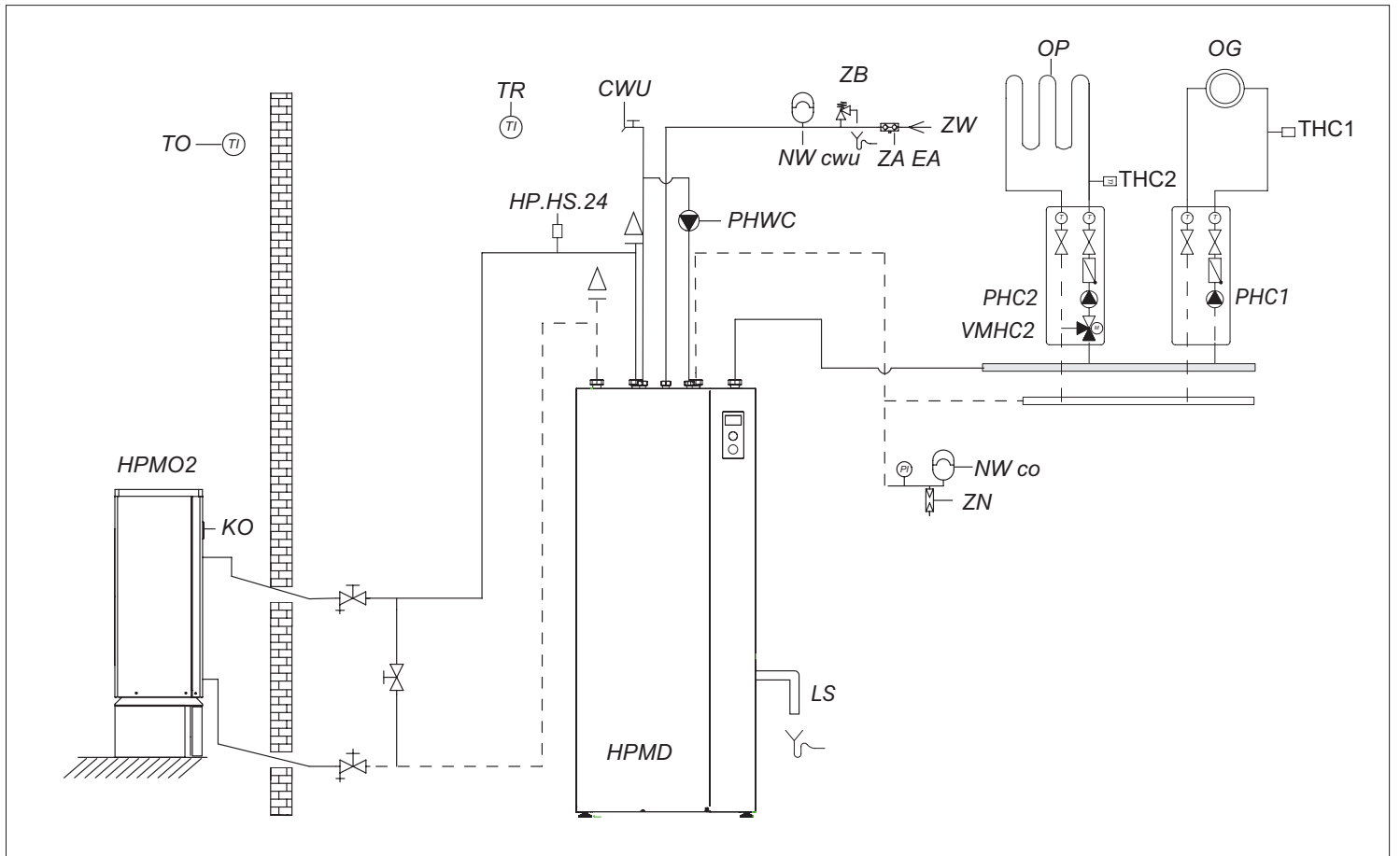
Connection to the hydraulic system

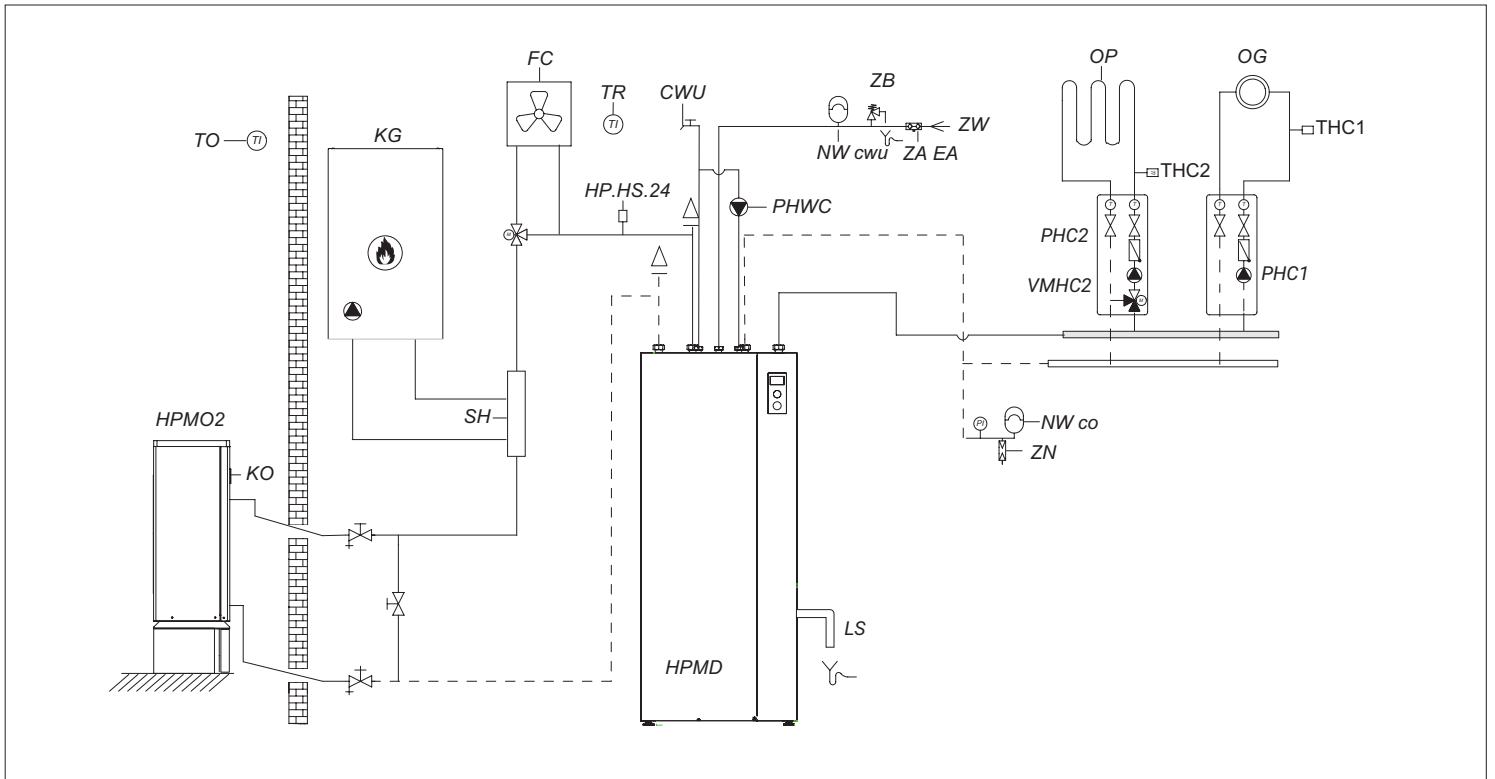
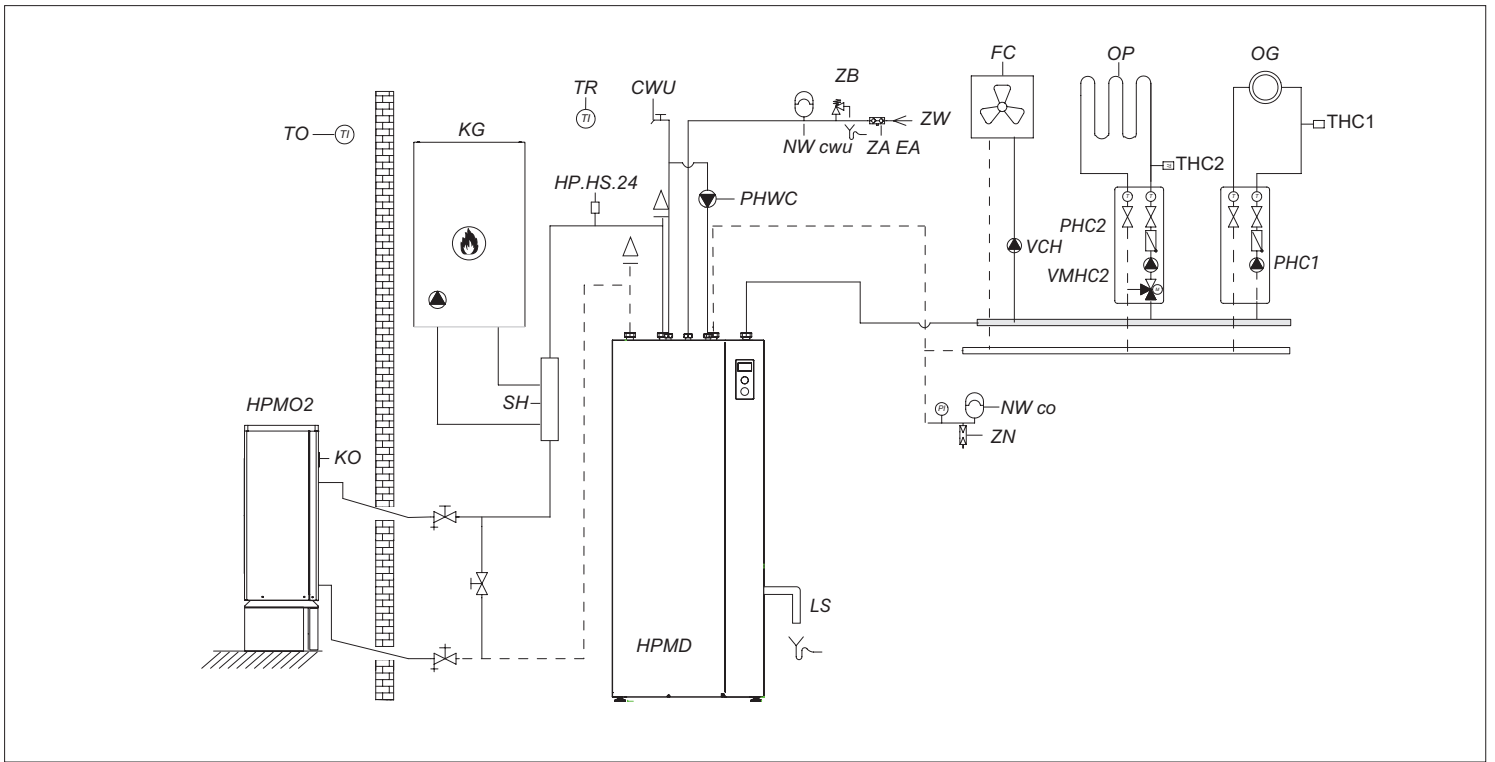
The HPM2 heat pump can operate in a closed-loop hydraulic system (the minimum heating medium pressure is 0.6 bar). The condition for the proper operation of the heat pump is the connection of PHC1 and PHC2 heating circuits found in the heating system to the heat pump controller.

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 HPMI2 indoor unit can be operated in the heating circuit without the HPMO2 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 HPMO2 outdoor unit.

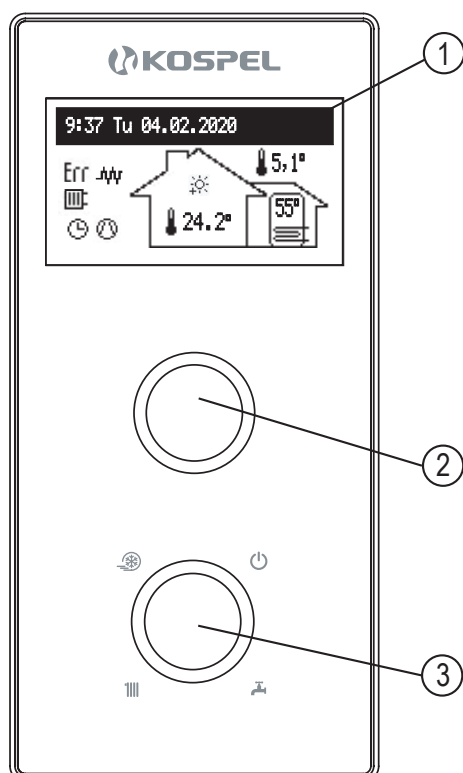
The heating medium system should be filled with water to the required pressure and vented. The indoor module has an automatic air vent, while the heat exchanger in the outdoor unit can be vented by loosening the nut of the air vent connector. The water used to fill and top up the heating circuit should be clean, without visible deposits and meet the quality of drinking water and the requirements of the VDI 2035 standard.





- | | |
|--|--|
| HPMO2 - heat pump | THC2 - underfloor heating circuit temperature sensor |
| HPMD - hydraulic module | VMHC2 - CH2 circuit mixing valve |
| KO - air vent | HP.HS.24 - humidity switch |
| TO - outdoor temperature sensor | CWU - hot utility water (DHW) |
| KG - alternative heat source | ZW - cold water inlet |
| SH - hydraulic coupling | ZA EA - anti-contamination valve |
| PHWC - domestic hot water circulation pump | ZB - safety valve |
| PHC1 - CH1 circuit pump (without mixer) | NWcwu - diaphragm expansion tank for hot utility water |
| PHC2 - CH2 circuit pump (with mixer) | NWco - diaphragm expansion tank for heating |
| OG - radiator heating | ZN - overflow valve |
| TR - room temperature sensor | FC - fan coil |
| OP - underfloor heating | LS - safety valve refrigerant discharge to sewage system |
| THC1 - radiator heating circuit temperature sensor | VCH - Fan coil unit circulation pump |

Operation of control panel



- 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:

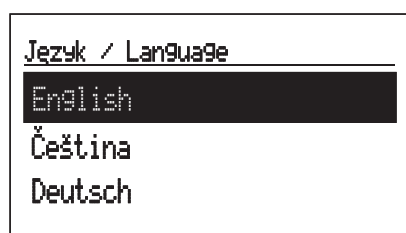
- winter or
- summer or
- standby

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.

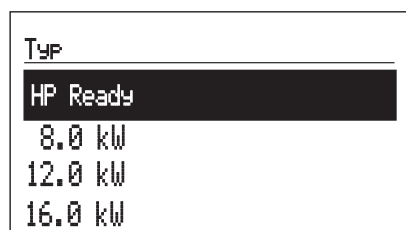
The individual functions are accessed by selecting the relevant function screen and pressing the navigation knob.

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.

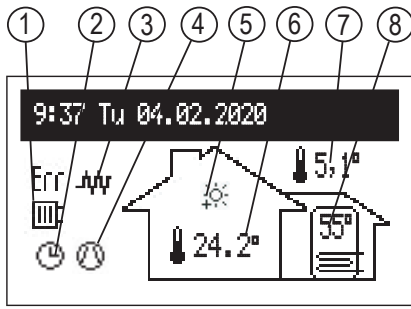


Upon first startup, a language selection menu will appear, followed by a menu for selecting the type of external unit - you should choose the parameter that matches the installed external unit HPM02.

In the case of no installed external unit, you should select the HP Ready parameter.



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 implemented work program:

	Operation in UPS mode
	According to the set daily/weekly schedule
	Disinfection of the reservoir
	Defrosting
	PARTY - maintaining a comfortable temperature in the room and reservoir
	HOLIDAY - maintaining an economical or frost-protecting temperature in the room and reservoir
	Implementation of frost protection program
	MANUAL - maintaining the set room temperature

Heat reception indication:

	Heat reception signal > CH
	Heat reception signal > DHW
	Cooling operation indication

Other symbols:

Err	Error occurrence indication
	Warning occurrence indication
	Heater activation indication
	External heat source activation indication
	Compressor activation indication. Flashing symbol indicates bivalent mode

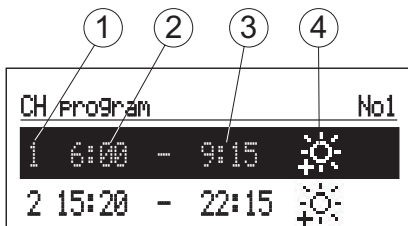
SETTINGS:

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.

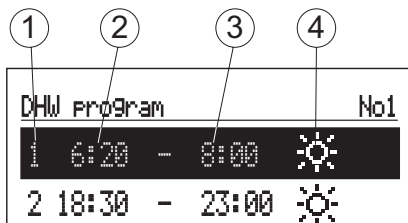
• CH program



- [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:

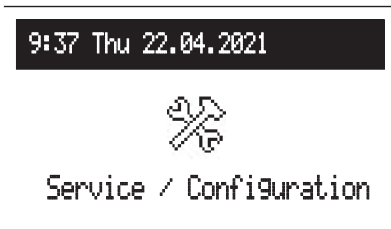
- setting of the current system time (YEAR / MONTH/ DAY / HOUR / MINUTE).
- AUTOMATIC TIME CHANGE:
 - Yes - automatic system time changeover from summer to winter and vice versa,
 - No - automatic change turned-off

- 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).

Hint: 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).

Hint: 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.

Hint: 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.

Hint: the CH1 circuit is intended for heating connection radiator.

- CH2 circuit:
 - Heating curve no.: selection of a heating curve (see Chapter Curve heating).

Hint: 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).

Hint: 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.

Hint: 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.
- Alternative source:
 - Type: choice of alternative source type,
 - none - alternative source is not connected,
 - 1 - alternative source connected in the primary circuit via hydraulic clutch.
 - Activation Temp.: border external temperature, after which the alternative source will be turned on and the heat pump will be turned off. In case of choosing the device type as HP Ready, the parameter is unavailable, the heating device uses only the external source.

Hint: set the external source agent temperature to 60°C.

- 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. In case of a lack of an installed external unit, choose HP Ready.
- 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



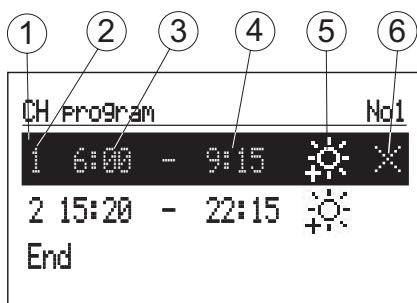
Quickly switch the hot water algorithm as required.

- 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

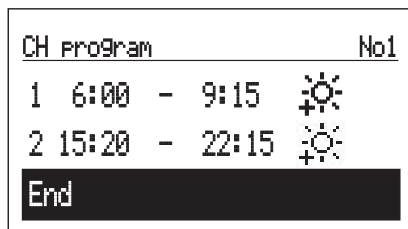
In daily schedule CH circuit and DHW cylinder have defined starting time (3) and finishing time (4) of maintaining selected temperature value (5) in the room (CH) or DHW cylinder. Outside defined time frames economy temperature will be maintained in the room/cylinder. For circulation circuit within the 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.



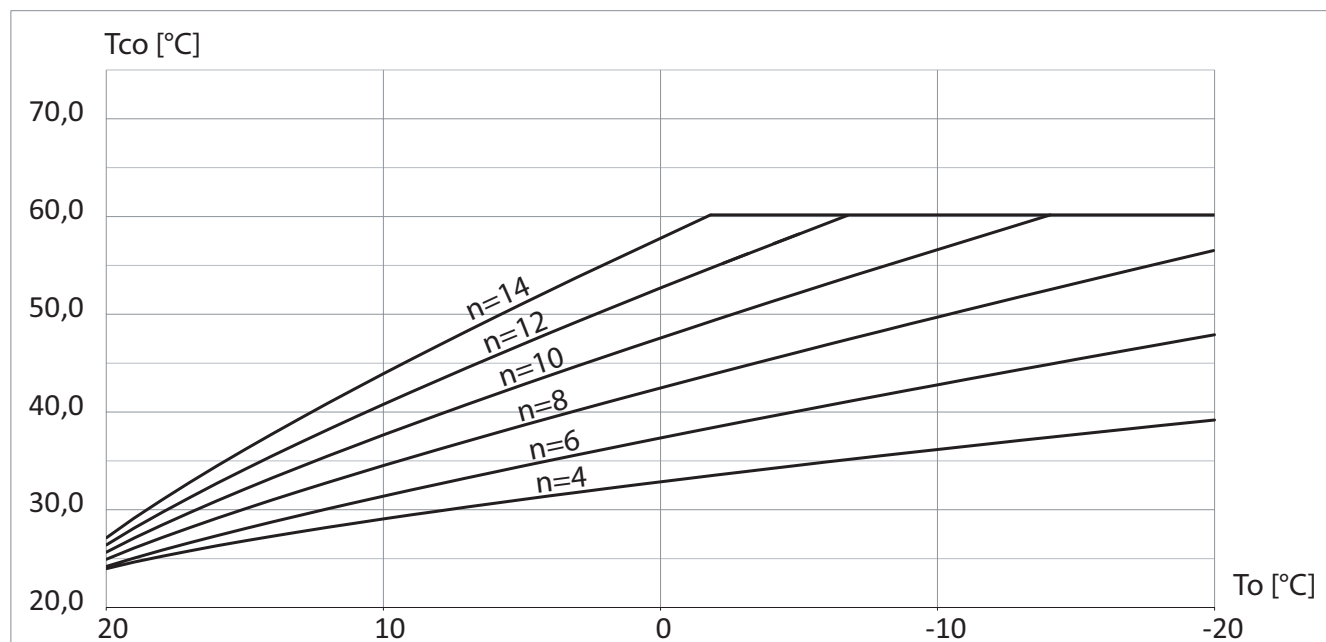
To add new time frame, select last defined time frame and by pressing the dial go to command position, select command and press the dial to add new time frame (edition of new time frames described above).

The entire day program is saved in the controller's memory when you exit the day program by pressing the "Save and exit" command.

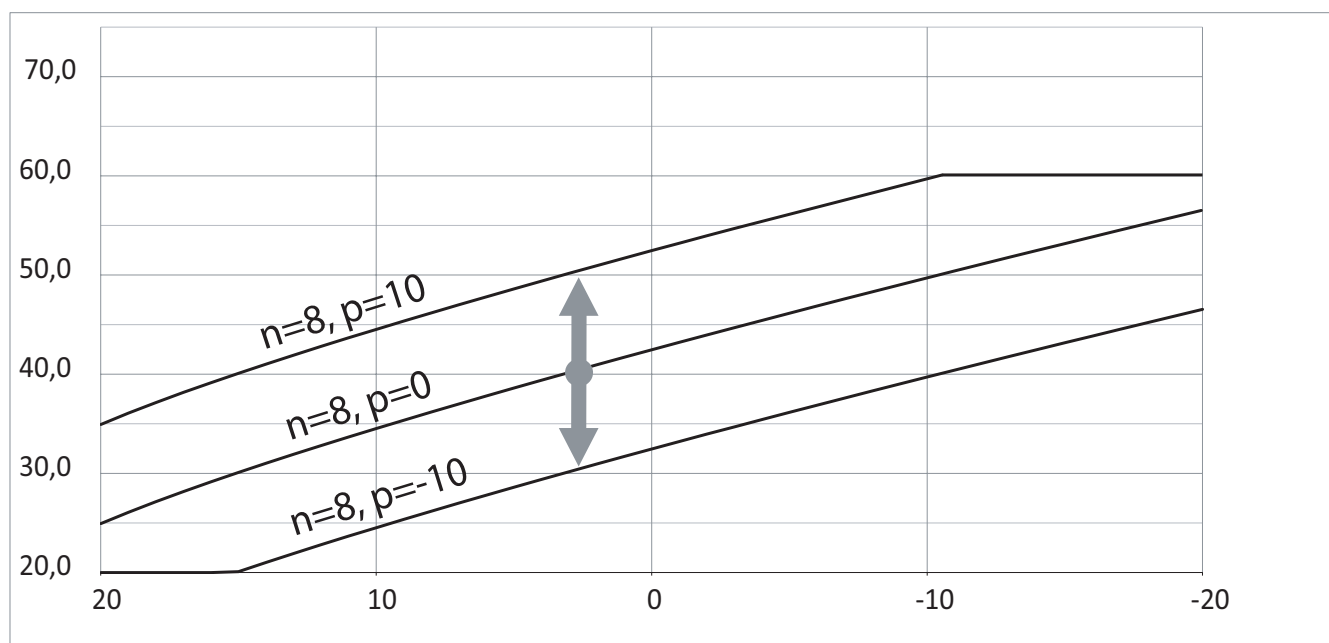


Heating curve

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

The room temperature is too high

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

No hot tap water

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

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

The evaporator fins are made of thin strips of aluminum. Do not use hard objects or agents containing chlorine, acids, or abrasive materials to clean the evaporator fins. Use generally available cleaning agents for evaporators and condensers in air conditioning and refrigeration installations.

- 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.

Dirt separator

The separator installed in the device requires periodic cleaning. The signal to perform this activity is the observed drop in the performance of the circulation pump. The separator should be cleaned if it is not possible to achieve the nominal flow of the heating agent in the circuit, at least once a year.

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 (CO₂). The GWP of carbon dioxide CO₂ is 1.

Refrigerant	Global Warming Potential GWP
R32	675 ^{*1} /677 ^{*2}

*1 According to the Fourth Assessment Report adopted by the Intergovernmental Panel on Climate Change (IPCC)

*2 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
<p>1 General: place of work</p> <ul style="list-style-type: none"> ■ Inform the persons listed below of the work to be carried out: <ul style="list-style-type: none"> - All maintenance staff - All persons who are in the vicinity of the installation. ■ Close off the area near the heat pump. ■ Check the surroundings of the heat pump for combustible materials and sources of ignition. <p>Remove all combustible materials and sources of ignition.</p>		
<p>2 Monitoring the presence of refrigerant</p> <ul style="list-style-type: none"> ■ 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. 		
<p>3 Fire extinguisher</p> <p>A CO₂ or powder extinguisher must be available in the cases described below:</p> <ul style="list-style-type: none"> ■ Filling the system with refrigerant. ■ Performing welding or soldering work. 		
<p>4 Sources of ignition</p> <ul style="list-style-type: none"> ■ 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. ■ 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. ■ Place no-smoking signs 		
<p>5 Work area ventilation</p> <ul style="list-style-type: none"> ■ 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. ■ 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. 		

6	<p>Inspection of the refrigeration installation</p> <ul style="list-style-type: none"> ■ 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. ■ Replace components according to the recommendations issued by the company of Kospel. Contact Kospel technical service if necessary. <p>Carry out the following checks:</p> <ul style="list-style-type: none"> ■ Check the operation of the ventilation. Ventilation openings must not be blocked or obstructed. ■ If a system with hydraulic decoupling is used, check the secondary circuit for the refrigerant. ■ Inscriptions and symbols must be clearly visible and legible. Replace any illegible inscriptions or symbols. ■ Refrigerant lines or components must be fitted in such a way that they do not come into contact with corrosive substances. <p>Exception: refrigerant lines are made of a corrosion-resistant material or are reliably protected against corrosion.</p>		
7	<p>Inspection of electric components</p> <ul style="list-style-type: none"> ■ When carrying out maintenance and repair work on eclectic parts, safety checks must be carried out: see below. ■ 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 <p>Carry out the following safety checks:</p> <ul style="list-style-type: none"> ■ Discharging of capacitors: ensure that no sparks are generated during the discharge process. ■ 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. ■ Check the earthing connection. 		
8	<p>Repairs to sealed casings</p> <ul style="list-style-type: none"> ■ During work on sealed components, the device must be powered off before the sealed cover is removed. ■ To warn of a potentially hazardous situation, a permanently operating refrigerant detector should be placed at critical locations. ■ 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. ■ Ensure that the unit is installed correctly. ■ 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. <p>! Attention Silicone as a sealing agent may affect the performance of a leak detection devices. Do not use silicone as a sealing agent.</p> <ul style="list-style-type: none"> ■ Spare parts must comply with the manufacturer's guidelines. ■ Work on components that are suitable for flammable atmospheres: these components do not need to be powered off. 		
9	<p>Repairs to parts that operate in a combustible atmosphere:</p> <ul style="list-style-type: none"> ■ 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. ■ Only those components that meet the requirements for operation in a flammable atmosphere may be connected to voltage in a flammable atmosphere. ■ 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. 		

10	<p>Wiring</p> <ul style="list-style-type: none"> ■ 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. ■ When inspecting, also consider the effects of ageing and the effects of continuous vibration on the compressors and fans. 		
11	<p>Refrigerant detectors</p> <ul style="list-style-type: none"> ■ Under no circumstances use ignition sources to detect the refrigerant and refrigerant leaks. ■ No flame detectors may be used to detect leaks. 		
12	<p>Leak detection</p> <p>The methods described below are suitable for detecting leaks in systems filled with a flammable refrigerant:</p> <p>Leak detection with electronic refrigerant detectors:</p> <ul style="list-style-type: none"> ■ 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. ■ The refrigerant detector must be suitable for detecting R32. ■ The refrigerant detector must contain no potential ignition sources. ■ Calibrate the refrigerant detector for the refrigerant used. Set the trip threshold < 3 g/a, which is suitable for R32. Leak detection using leak detection fluids: ■ Leak detection fluids are suitable for most of refrigerants. <p>!Attention</p> <p>Chlorine-containing leak detection fluids may react with the refrigerant.</p> <p>As a result, rust may form.</p> <p>Do not use any leak detection fluids that contain chlorine.</p> <p>Procedure when leaks are found in the refrigeration circuit:</p> <ul style="list-style-type: none"> ■ Immediately extinguish any fire in the vicinity of the heat pump. ■ Do not solder leaks on the refrigeration circuit. 		
13	<p>Refrigerant suction and evacuation</p> <p>Perform the steps described in the "Refrigerant suction" section.</p> <p>Perform the steps described in the "Vacuum generation in refrigerant lines and indoor unit" section.</p>		
14	<p>Refrigerant filling</p> <p>Follow the steps described in the "Filling the refrigerant lines and indoor unit" section.</p>		
15	<p>Decommissioning</p> <p>Follow the steps described in the "Final decommissioning and disposal" section.</p>		
16	<p>Marking (inscriptions on the heat pump)</p> <p>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:</p> <ul style="list-style-type: none"> ■ Flammable refrigerant ■ Installation is not working. ■ Refrigerant has been removed. 		
17	<p>Refrigerant and compressor oil recovery</p> <ul style="list-style-type: none"> ■ Refrigerant recovery: see the "Refrigerant suction" section. ■ Compressor oil recovery: see the "Disposal of compressor and compressor oil" section. 		

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

Fuse check-up

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

Fuse type:

- T 3,15A H, 250 V~
- Max. power loss \leq 2,5 W

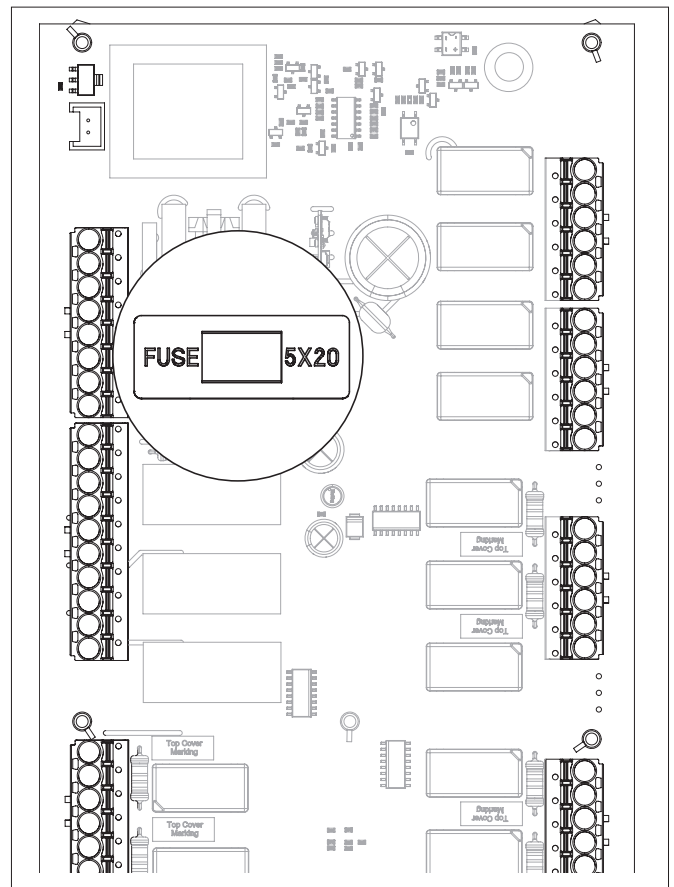
1. Switch off the supply voltage
2. Open the connection space
3. Check the fuse, replace if necessary.



Warning

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.**



Danger

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 ²	3x2,5	3x2,5	5x2,5

* Recommended power wire for outdoor unit. Maximum outer diameter of ducting 18mm		H07BQ-F 3x2.5mm ² 450/750V for outdoor use	H07BQ-F 3x2.5mm ² 450/750V for outdoor use	H07BQ-F 3x2.5mm ² 450/750V for outdoor use
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Heating system

Hydraulic connection		G1 (female thread)	G1 (female thread)	G1 (female thread)
Nominal flow	m ³ /h	1,0	1,7	2,9
Minimum flow	m ³ /h	0,66	1,02	1,86
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 ³ /h	3000	4500	2x2500
Minimum/maximum air temperature	°C	-25/43	-25/43	-25/43
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 ₂ /kg	0,675	0,675	0,675
CO ₂ equivalent	tCO ₂	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
INDOOR UNIT		HPMD-8	HPMD-12	HPMD-16
Electrical installation				
Electric supply		230V~ /400V 3N AC, 50Hz	230V~ /400V 3N AC, 50Hz	400V 3N AC, 50Hz
Degree of protection		IP 2X	IP 2X	IP 2X
Maximum output of additional electric heater	kW	6(2x3)	6(2x3)	9(3x3)
Power wire gauge				
for single-phase system	mm ²	min 3x6; max 3x10	min 3x6; max 3x10	-
for three-phase system	mm ²	min 5x2,5; max 5x6	min 5x2,5; max 5x6	min 5x2,5; max 5x6
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 ²	min.2x0,34; max 2x1,5	min.2x0,34; max 2x1,5	min.2x0,34; max 2x1,5
Heating system				
Nominal DHW capacity	l	225	225	225
Nominal DHW pressure	MPa	0,6	0,6	0,6
Maximum capacity of domestic water at 40°C [V ₄₀]	l	340	340	340
Nominal CH capacity	l	81	81	81
Nominal CH pressure (max./min.)	MPa	0,3 / 0,05	0,3 / 0,05	0,3 / 0,05
Hydraulic connection of the external unit and DHW installation (nut)		1"	1"	1"
Hydraulic connection of the external unit and CH installation (nut)		1¼"	1¼"	1¼"
Nominal temperature	°C	80	80	80
Maximum temperature of heating medium				
Operation with heat pump	°C	60	60	60
Hot tap water disinfection	°C	70	70	70
Nominal flow	m ³ /h	1,0	1,7	2,9
Minimum flow	m ³ /h	0,6	0,7	0,85
Internal pressure drop	kPa	6	17	49
Dimensions (HxWxD)	mm	1678 x 690 x 851	1678 x 690 x 851	1678 x 690 x 851
Mass	kg	216	216	216
Recommended internal diameter of hydraulic installation pipes connecting HPMD with HPMO2	mm	DN25	DN32	DN40
Dimension requirements for a technical room with an indoor module				
Minimum room volume	m ³	3,7	6,0	6,7
Minimum room area	m ²	-	-	8,5

Product Sheet

Supplier name or trademark		KOSPEL.Sp z o.o.		
Supplier model identifier		HPM2.C-8 (HPM02-8 + HPMD-8)	HPM2.C-12 (HPM02-12 + HPMD-12)	HPM2.C-16 (HPM02-16/23 + HPMD-16)
Declared load profile		XL	XL	XL
Seasonal energy efficiency class for room heating for the model in moderate climate conditions (*)		A++	A++	A++
Energy efficiency class for water heating		A	A	A
Rated heat output (Moderate climate) [Prated]	kW	8	12	16
Annual energy consumption in moderate climate conditions [QHE]	kWh	4698	7575	8588
Annual energy consumption (Moderate climate*) [AEC]	kWh	1554	1648	1636
Seasonal energy efficiency of room heating (Moderate climate*) [η_s]	%	131	125	147
Energy efficiency of water heating (Moderate climate*) [η_{wh}]	%	108	102	102
Sound power level L WA, indoor	dB(A)	36	39	44
Special precautions	Before installation or maintenance, please refer to the operating instructions and follow the guidelines contained therein.			
Rated heat output (Cold climate*) [Prated]	kW	7	11	16
Rated heat output (Warm climate*) [Prated]	kW	8	13	18
Annual energy consumption under (cold climate conditions*) [QHE]	kWh	5364	8482	10807
Annual energy consumption under (warm climate conditions*) [QHE]	kWh	2922	4284	5519
Annual energy consumption under (cold climate conditions*) [AEC]	kWh	1863	1995	1777
Annual energy consumption under (warm climate conditions*) [AEC]	kWh	1408	1421	1542
Seasonal energy efficiency of room heating (Cold climate*) [η_s]	%	118	120	139
Seasonal energy efficiency of room heating (Warm climate*) [η_s]	%	140	154	167
Energy efficiency of water heating (Cold climate*) [η_{wh}]	%	90	84	94
Energy efficiency of water heating (Warm climate*) [η_{wh}]	%	119	118	109
Sound power level L WA, outdoor	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
<ul style="list-style-type: none"> • Room thermostat for switching the heat generator on/off 	1	1 %
<ul style="list-style-type: none"> • Weather regulator • Modulated heat generator 	2	2 %
<ul style="list-style-type: none"> • Weather regulator • Non-modulated heat generator 	3	1.5 %
<ul style="list-style-type: none"> • Room thermostat with TPI (Time-Proportional-Integral) properties • Non-modulated heat generator 	4	2 %
<ul style="list-style-type: none"> • Modulated room thermostat • Modulated heat generator 	5	3 %
<ul style="list-style-type: none"> • Weather control of regulator • Modulated heat generator • Room temperature sensor in combination with room temperature control 	6	4 %
<ul style="list-style-type: none"> • Weather control of regulator • Non-modulated heat generator • Room temperature sensor in combination with room temperature control 	7	3.5 %
<ul style="list-style-type: none"> • Single-room temperature controller with at least 3 temperature sensors • Modulated heat generator 	8	5 %

Heat pump HPM2.C 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 Lorem ipsum dolor sit amet,	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
Checking activities outside*			
Outdoor unit:			
Installed without restriction of air supply	YES	NO	
On a pedestal (stand)	YES	NO	
Mounted vibro-isolators	YES	NO	
A permanent gravel base has been prepared for the external module ensuring free condensate drainage),	YES	NO	
Anti-freeze protection in case of power failure - optional	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	
Checking activities inside*			
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

Packaging contents

Internal unit HPMD	1 pcs.
External module HPM02	1 pcs.
Sensor WE-019/05	2 pcs.
Sensor WE-027	1 pcs.
Sensor WE-033/02	1 pcs.
Electrical jumper	2 pcs.
Warranty card with installation protocol	1 pcs.

Packaging disposal



This product is labelled with waste segregation collection symbol, as established in EN 50419. This label also means that the product is marketed after 13 August 2005.

Households have an important contribution to reuse and recovery of materials, which includes recycling of waste electrical and electronic equipment (WEEE). Proper disposal of WEEE contributes to environmental protection and helps recover recyclable materials.

All packaging materials for our products are recyclable and can be converted into more products.

This product once spent shall not be disposed with mixed household waste. Return the product to a WEEE collection point for recycling. Proper disposal of the spent product prevents potential environmental impact from incorrect waste management.


For more detailed information on how to recycle this product, contact your local authorities, waste management operators or the original seller.

Declaration of conformity; reference standards and directives

KOSPEL Sp. z o.o. declares with full responsibility that the HPM2.C Heat Pump mentioned in this user manual complies with the requirements of Directives and corresponding safety standards for electrical appliances for household use:

LVD (2014/35/EU)

EMC (2014/30/EU)

and bear the following symbol 

The full version of this declaration of conformity is available on the manufacturer's website: www.kospel.pl

Data protection notice

Detailed information regarding personal data protection is available on the manufacturer's website at www.kospel.pl, under the „Privacy Policy” tab.



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