KOSPEL

Heat Pump

HPS.Z

Assembly and operating instructions

Original instructions

Heat pump HPS.Z contains fluorinated greenhouse gases.

WARNING
Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater.
Do not pierce or burn.
Be aware that refrigerants may not contain an odour.
Appliance shall be installed, operated and stored in a room with a floor area larger than X m^2.

NOTE The manufacturer may provide other suitable examples or may provide additional information about the refrigerant odour

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

Safety instructions

1. Familiarising yourself with this user's manual will allow the correct installation and operation of the device, ensuring its long-term and reliable operation.
2. The appliance shall be installed in accordance with national wiring regulations
3. Efficient and made in accordance with PN-IEC 60364 electrical installation.
4. The appliance may only be installed and operated in closed heating systems according to EN 12828, taking into account the relevant installation, service and operating instructions.

- Work on the refrigerant circuit may only be carried out by authorised refrigeration engineers.
- The system must be commissioned by the system installer or a qualified person authorised by the installer.

5. Inadequate environmental conditions may damage the installation and endanger the safety of operation (avoid air pollution through chlorine-alkanas contained e.g. in paints, solvents and cleaners, avoid constant high humidity e.g. due to frequent drying of washing).
6. Installation of the appliance and execution of the electrical and hydraulic system shall be entrusted to a specialized service establishment and strictly adhere to the instructions for installation and operation of the device.
7. All installation work must be carried out with the electricity and water supply cut off.
8. As a result of electrostatic discharge, sparks may appear that may ignite the leaking refrigerant (R32). Before carrying out work, touch grounded objects, e.g. heating or water pipes, to discharge static loads.
9. Hot surfaces can cause burns.
10. Direct contact with liquid and gaseous refrigerant can cause serious damage to health.
11. The electrical installation shall be equipped with differential current protective devices and means of ensuring that the device is disconnected from a power source at a distance between the contacts of all poles of not less than 3 mm.
12. The heat pump is a surge-sensitive device and the electrical system must include surge protection devices.
13. In the event of an open fire, there is a danger of burns.
14. The refrigerant is air-displacing, colourless, embarrowing gas.

- R32 forms a combustible mixture in combination with air.
- R410A is not flammable.

Description

Heat pump HPS.Z is a device used to heat/cool the building and heat the DHW.

The device consists of two units:

- external unit HPSO, compressor heat pump.
  The principle of operation of the device consists in the capture of heat from the environment and transfer to the heating circuit in the building. Low temperature air heat is transmitted by the evaporator to the installation of a heat pump filled with refrigerant, which evaporating turns into gas. From the evaporator, the gas is sucked in by the compressor, which raises its temperature during compression and directs it to the condenser. In the condenser, heat is returned to the refrigerant that fills the central heating system, and the cooled liquid flows through the expansion valve and returns to the evaporator, after which the whole process begins again. In the case of cooling, this cycle is reversed and the heat is taken from the building and discharged outside.

- indoor HPSI unit with a built-in heating system controller.
  The principle of operation of the device is based on the need to adjust the efficiency of the heat pump compressor with the switching of the electric heater via the internal module controller. The internal module controller adjusts the heating power according to the set heating curve. If the heat pump is unable to cover the building's heat needs on its own, the controller automatically activates the electric heater, which together with the heat pump produces the desired temperature of the heating medium.

Outside temperature range for air-water heat pumps

Air-water heat pumps use external air as a heat source. Operation is only efficient within specified outdoor temperature ranges, e.g. between –20°C and 35°C. A notification appears on the heat pump regulator. To cover the heat demand for space heating and hot water heating outside the temperature limits, the heat pump regulator shall, if necessary, automatically switch on available auxiliary heating equipment, e.g. electric auxiliary heating.

Required additional equipment

Modbus connection cable between the external unit and the indoor unit with a length of 15 m or 30 m.

Cooling circuit

All components of the refrigeration circuit, with the exception of the condenser, are located in the external module, including the refrigeration circuit controller with electronic expansion valve. Depending on the operating conditions, the compressor power is adjusted with an inverter. The internal and external modules are connected to each other by refrigerant hydraulic hoses. For cooling heat pumps, the cooling circuit is reversed for room cooling. Overview of heat pumps assigned to used refrigerant: see section "Types".

Hydraulic installation

The high-performance circulation pump (secondary pump) built into the internal module supplies heating water to the secondary circuit. The central 3-way switching valve "heating/heating hot water" is responsible for switching between space heating and hot water heating.

Installation with heating water buffer tank

- Space heating
  The heat pump heats 3 heating/cooling circuits:
  1 heating/cooling circuit without a mixer and
  2 heating/cooling circuits with mixer.
- Room cooling
  The heat pump can only cool for one of the max. 3 heating/cooling circuits or through a separate cooling circuit. The heating water buffer tank is bypassed by a hydraulic bypass.

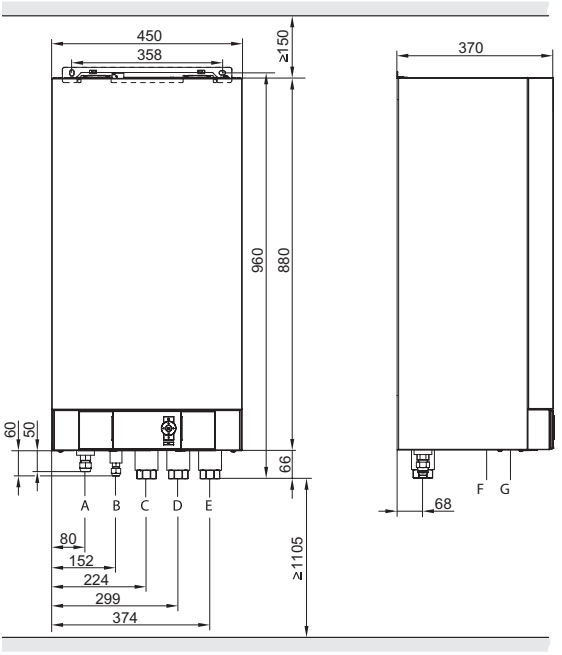
Installation with heating/cooling water buffer tank

- Space heating
  The heat pump can heat up to max. 3 heating/cooling circuits: 1 heating/cooling circuit without mixer and 2 heating/cooling circuits with mixer.
- Room cooling Heat pump can cool max. 3 heating/cooling circuits. It is not possible to cool the rooms through a separate cooling circuit.

Heat pump regulator

The entire heating system is monitored and controlled by the heat pump regulator. The heat pump controller is built into the internal module. Communication between the internal and external modules takes place via the Modbus.

Indoor unit



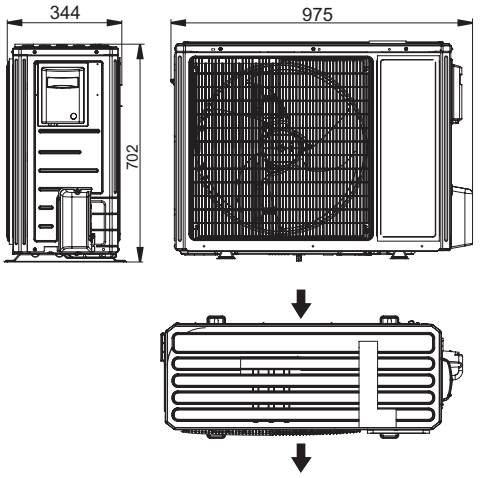
Ⓐ - *Hot gas line: see table below*
Ⓑ - *Liquid line: see table below*
Ⓒ - *DHW cylinder flow (heating water side): G1 1/4 (internal thread)*
Ⓓ - *Heating water return and DHW cylinder return: G1 1/4 (internal thread)*
Ⓔ - *Heating water flow G1 1/4 (internal thread)*
Ⓕ - *Cable entry <42 V*
Ⓖ - *Cable entry 400 V~/230 V~, >42 V*

Refrigerant lines

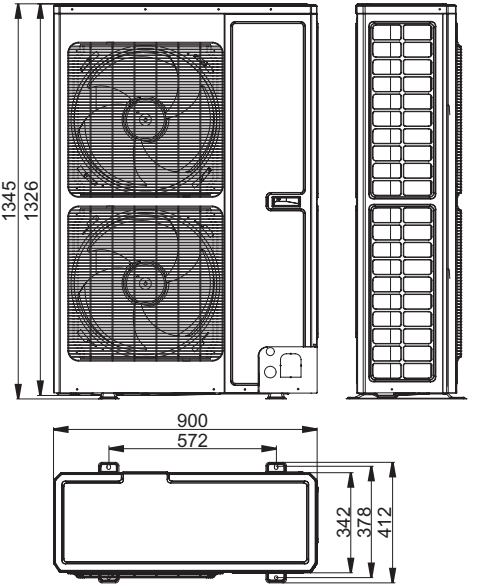
Meaning	Indoor unit connection types			
	HPSI-06		HPSI-09	
	Pipe ø	UNF thread	Pipe ø	UNF thread
Liquid line	6mm	1/4	10mm	5/8
Hot gas line	12mm	1/2	16mm	7/8

External unit

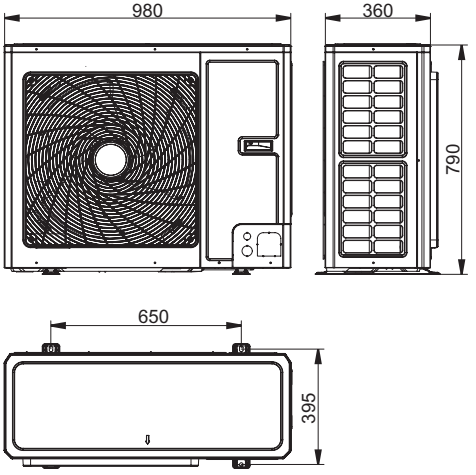
External unit with 1 fan
HPSO-6/230



External unit with 2 fans
HPSO-12/400; HPSO-16/400



External unit with 1 fan
HPSO-8/230



Transport

Note!

Avoid damaging the appliance during transportation. Never put weight on top of the appliance.

Note!

If the compressor in the external unit is steeply angled, lubricant will enter the refrigerant circuit and damage the appliance. Max. tilt angle: 45° for four minutes, after that time 30°.

Type of installation

- Floorstanding installation with cable entry above ground level
- Floorstanding installation with cable entry below ground level
- Wall mounting

Floor mounting:

- Use supports for floor standing installation.
  To secure the console use an anchor with a pulling force of at least 2.5 kN.
- Where such supports cannot be used, install the external unit free-standing on a solid base of at least 100 mm height.
- In difficult climatic circumstances (temperatures below zero, snow, humidity) install the appliance on a plinth of approx. 300 mm height.
- Weight of the external unit should be taken into account: see "Technical data".

Wall mounting:

- Use the wall mounting bracket set
- When mounting the unit on a wall, the wall must offer sufficient load-bearing capacity.

Positioning:

- Never install with the discharge side facing the main wind direction.
- Do not install the outdoor unit through cellar wells or bottom baths.
- Design wall outlets and protective pipes for the refrigerant lines and electrical cables without moulded parts and changes of direction.

Impact of weather conditions:

- When installing in wind-exposed areas, pay attention to wind loads.
  When installing an external module on a flat roof, significant wind loads may occur depending on the wind load zone and the height of the building. In this case, we recommend to support the structure taking into account the requirements of DIN 1991-1-4.
- Incorporate the external unit into the lightning protection system.
- Consider the heat absorbtion (heating mode) and heat emission (cooling mode) of the unit when planning your weatherproofing measures or an enclosure.

Condensate:

- Ensure the condensate can drain freely, and create a permanent gravel bed below the external unit as a soakaway.

Insulation of structure-borne noise and vibrations between the building and the external unit,:

- When cable entry is above ground level, fit pipe bends as anti-vibration mounts in refrigerant lines (see "Connecting refrigerant lines").
- Route electrical cables/leads between the internal and external units free of stress.
- Installation only on walls with high weight per area (> 250 kg/m2), in other words not on lightweight walls, roof structure etc.

Installation location

- Select a site with good air circulation, so that the cooled air can dissipate and be replenished by warm air.
- Never site in corners of rooms, recesses or between walls.
  This might result in the discharged air re-entering the unit.

Note!

Limiting the free flow of air can lead to re-suction of cooled (heated in cooling mode) air and lead to disruptions in the operation of the unit, deterioration of efficiency and, as a result, an increase in electricity consumption.

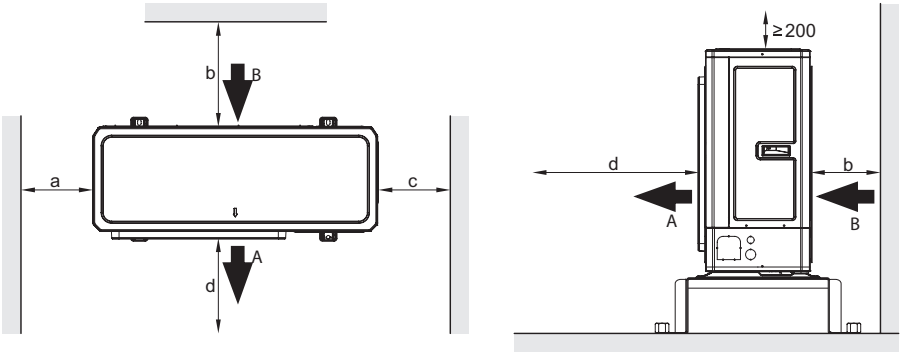
- When installing the unit where it is exposed to wind, ensure that the wind cannot influence the fan area. This could result in an "air short circuit" between the discharged and the inrushing air. Strong wind can have a negative influence on the evaporator ventilation.
- Take the lengths of the refrigerant lines into account (see "Connecting refrigerant lines").
- Select the installation site so that the evaporator cannot be blocked by leaves, snow etc.
- Select the installation site with due consideration of the statutory regulations on sound dissipation and reflections.

Design guidelines

- Never install next to or below bedroom windows.
- Do not install in basement wells or hollows in the field.
- Keep min. 3 m distance from cellar wells and windows.
- Never install closer than 3 m to pathways, downpipes or sealed surfaces. The cooled air in the discharge area creates a risk of ice forming when there are outside temperatures below 10°C.
- Avoid "short circuits" of air streams with ventilation devices. Keep min. 3 m distance from the suction area of the ventilation equipment.
- The installation site should be easily accessible, for example for maintenance work (see "Minimum clearances").

Minimum clearances

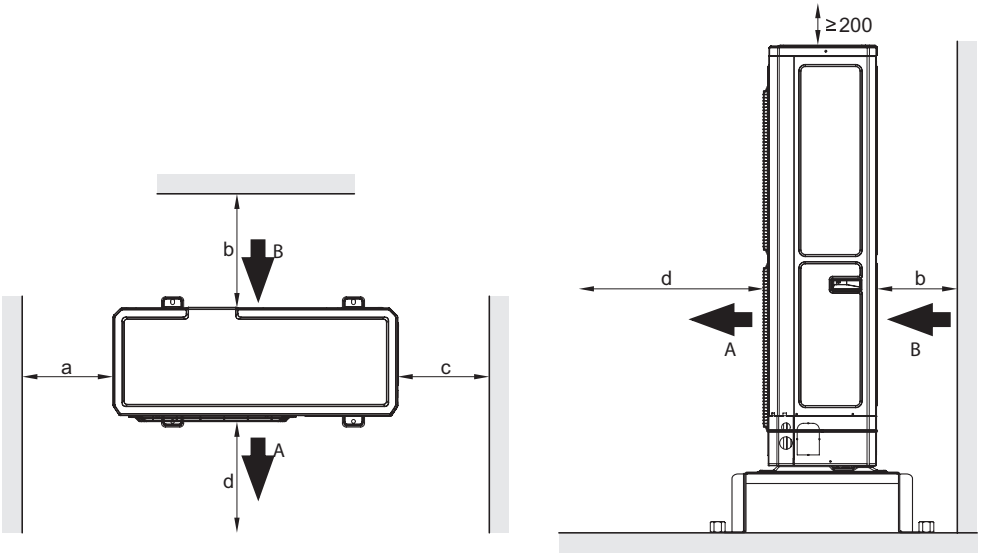
External unit with 1 fan



Ⓐ *- Air discharge*
Ⓑ *- Air intake*
ⓓ *- Min. front service access*

Dimensions [mm]	a	b	c	d
Cable entry above ground level	≥ 100	≥ 100	≥ 300	≥ 1000
Cable entry below ground level	≥ 100	≥ 400	≥ 300	≥ 1000

External unit with 2 fans



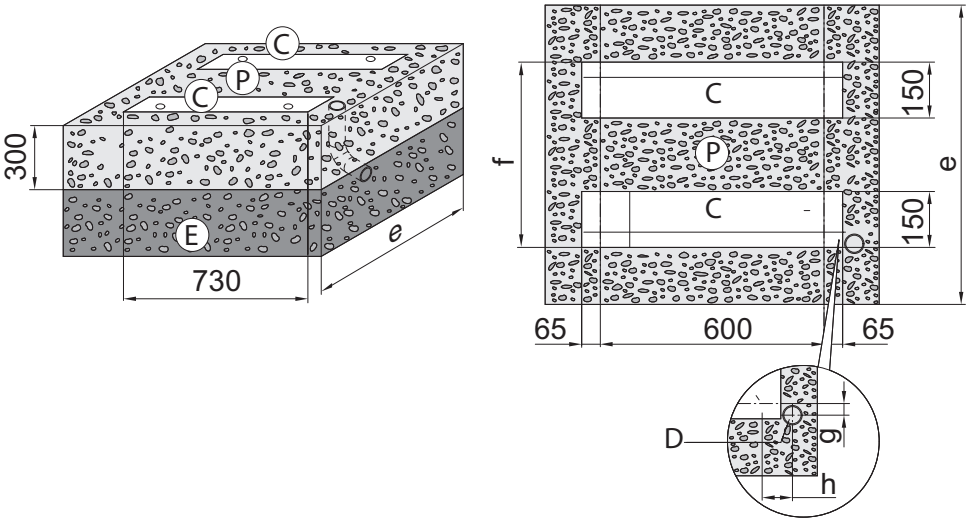
Ⓐ - *Air discharge*
Ⓑ - *Air intake*
ⓓ - *Min. front service accessu*

Dimensions [mm]	a	b	c	d
Cable entry above ground level	≥ 100	≥ 200	≥ 300	≥ 1000
Cable entry below ground level	≥ 100	≥ 400	≥ 300	≥ 1000

Floor mounting

Foundations

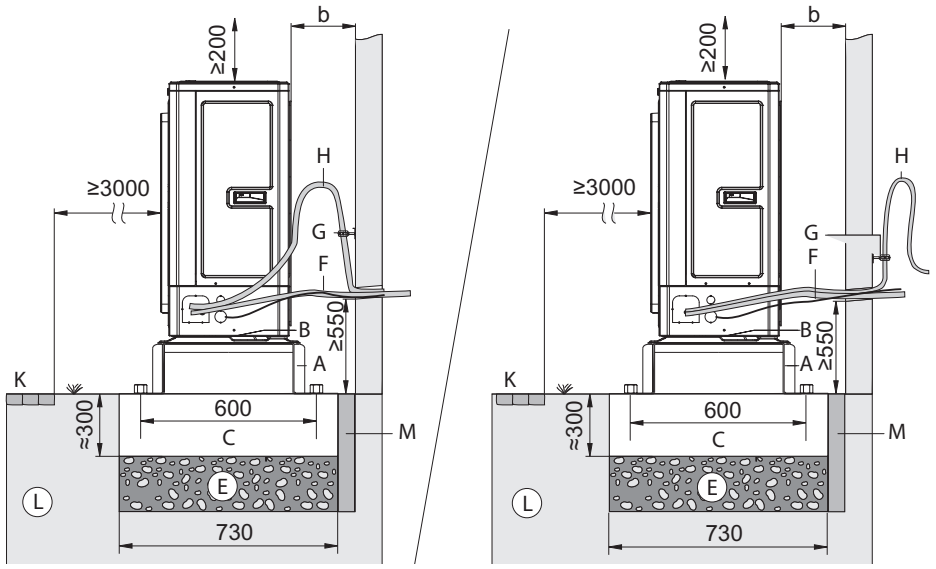
Mount supports for ground mounting on 2 horizontal foundation benches. It is recommended to make a concrete foundation according to the drawing. The given layer thicknesses are indicative values. They must be adapted to local conditions. Follow the rules of construction technology.



Ⓒ - *Concrete foundations*
Ⓓ - *Only for entries under ground level: Underground plastic pipe DN 125 with cover and 2 45° tubular knees, sealing the duct culvert is in the investor's duties.*
Ⓔ - *Protection of the foundation against freezing (compacted gravel, e.g. 0 to 32/56 mm), layer thickness in accordance with local requirements and construction technology rules*
Ⓟ - *Gravel substrate for easy soaking condensate. Apply an anchor with a pulling force of at least 2,5 kN.*

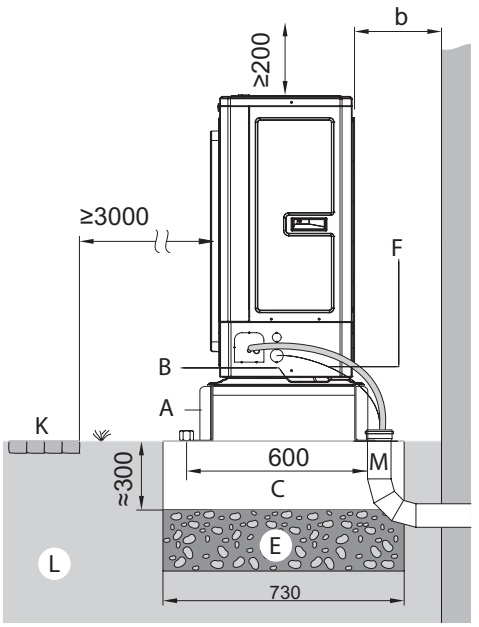
Dimensions [mm]	e	f	g	h
External unit with 1 fan	1000	750	90	130
External unit with 2 fans	1000	676	90	130

Mounting on a substrate with bracket, entries above ground level

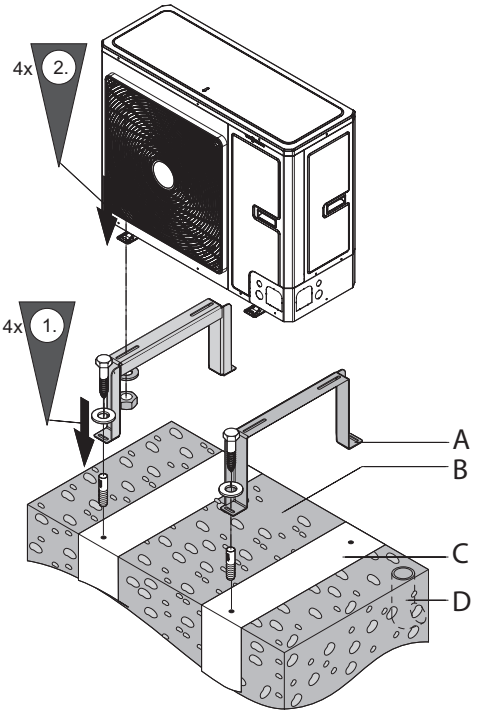


- (b) - *Distance from the wall when passed to the wire above ground level: see "Minimum clearances"*
- (A) - *Brackets for ground installation*
- (B) - *Bottom sheet openings for free condensate drain: Do not close holes*
- (C) - *Foundation belts*
- (E) - *Protection against freezing of the foundation (compacted gravel, e.g. from 0 to 32/56 mm), layer thickness in accordance with local requirements and construction technology rules*
- (F) - *Electrical wires connecting the internal module to the external module and supplying the electrical wire of the external module: Lay the wires without stress*
- (G) - *Pipe clamping ring with EPDM insert*
- (H) - *Tubular fitting for vibration compensation in hot gas line.*
  We recommend installing a tubular fitting to compensate for vibrations especially in lines < 5 m.
- (K) - *Pavement, terrace*
- (L) - *Soil*
- (M) - *Flexible separation layer between the foundation and the building*

Mounting on a substrate with bracket, entries under ground level



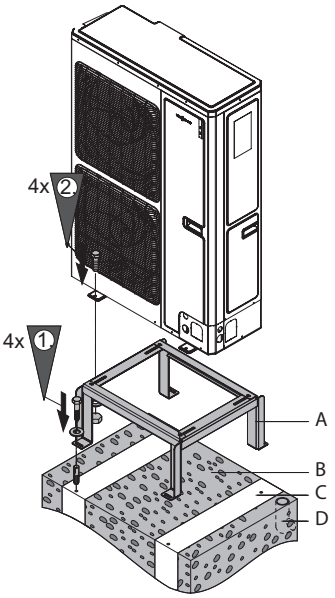
- ⓑ - *Distance from the wall when passed to the wire under ground level: see "Minimum clearances"*
- Ⓐ - *Brackets for ground installation*
- Ⓑ - *Bottom sheet openings for free condensate drain: Do not close holes*
- Ⓒ - *Foundation belts*
- Ⓔ - *Protection against freezing of the foundation (compacted gravel, e.g. from 0 to 32/56 mm), layer thickness in accordance with local requirements and construction technology rules*
- Ⓕ - *Electrical wires connecting the internal module to the external module and supplying the electrical wire of the external module: Lay the wires without stress*
- Ⓚ - *Pavement, terrrace*
- Ⓛ - *Soil*
- Ⓜ - *Underground plastic pipe DN 125 with lid and 3 30° tubular fittings, sealing the duct passage in the cover within the scope of the investor's duties*



Note

We recommend letting condensate drain away freely (without condensate pipe).

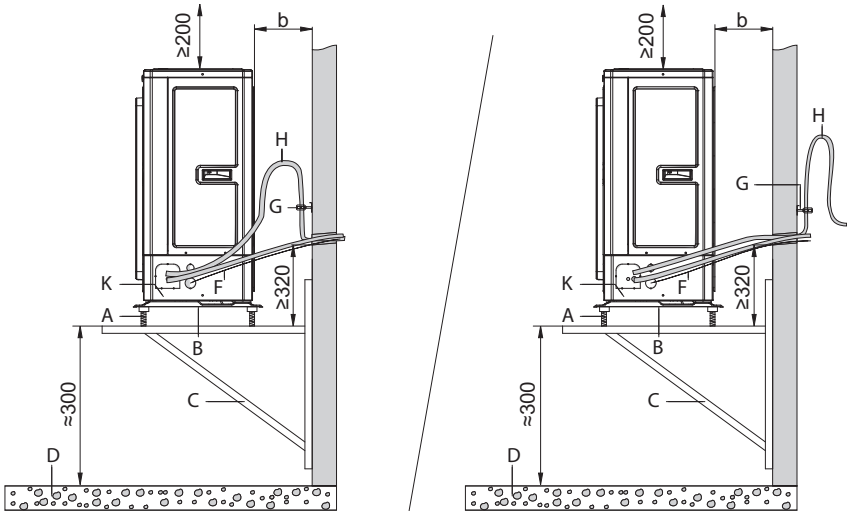
- Ⓐ - *Bracket for mounting on the ground*
- Ⓑ - *Gravel substrate for easy condensation*
- Ⓒ - *Concrete foundation: chapter "Foundations"*
- Ⓓ - *Underground plastic pipe DN 125 (only for entries under ground level)*



Ⓐ - *Bracket for mounting on the ground*
Ⓑ - *Gravel substrate for easy condensation*
Ⓒ - *Concrete foundation: chapter "Foundations".*
Ⓓ - *Underground plastic pipe DN 125 (only for entries under ground level)*

Wall mounting with wall mount bracket kit

Installation must be carried out using only wall mounting bracket kits.



ⓑ - *See chapter: see "Minimum clearances"*
Ⓐ - *Bracket vibration damper*
Ⓑ - *Bottom sheet openings for free condensate drain: Do not close holes*
Ⓒ - *Wall mount bracket (optional)*

Ⓓ - *Gravel substrate for easy condensation*
Ⓕ - *Electrical wires connecting the internal module to the external module and supplying the electrical wire of the external module:*
Lay the wires without stress.
Ⓖ - *Pipe clamping ring with EPDM insert*
Ⓗ - *Tubular fitting for vibration compensation in hot gas line.*
We recommend installing a tubular fitting to compensate for vibrations especially in lines < 5 m.
Ⓚ - *Electric auxiliary heating of condensate capture bath*

Installing the indoor unit

Transport
Avoid damaging the appliance during transportation. Never put weight on top of the appliance..

Minimum room area in combination with R32 refrigerant.

It is essential to maintain a minimum room area of 3 m^2.
- The minimum area of a room can be calculated in a group of rooms.
- When adding refrigerant due to a longer line refrigerant, there is no need to adjust the minimum surface area rooms.
- Strictly observe the maximum filling volume of 1850 g.

Minimum room volume (according to EN 378) in combination with the refrigerant R410A

With the use of a given refrigerant and based on the specified volumes filling, the following minimum room volume can be determined: 5,7 m^3.

For cords > 10 m long, is required additional refrigerant. The minimum volume of the room must be recalculated depending on the additional filling.

The minimum volume of the technical room according to EN 378 depends on the quantity refrigerant charge and its chemical composition.

$$V_{min} = \frac{m_{maks}}{G}$$

V_{min} Minimum room volume in m^3
m_{maks} Max. refrigerant filling quantity in kg
G Practical limit value according to EN 378, depending on the chemical composition refrigerant. Up to R410A: 0,44 kg /m^3

Note

If several heat pumps are installed in one room, it is necessary to calculate minimum room volume for the device with the largest amount of refrigerant.

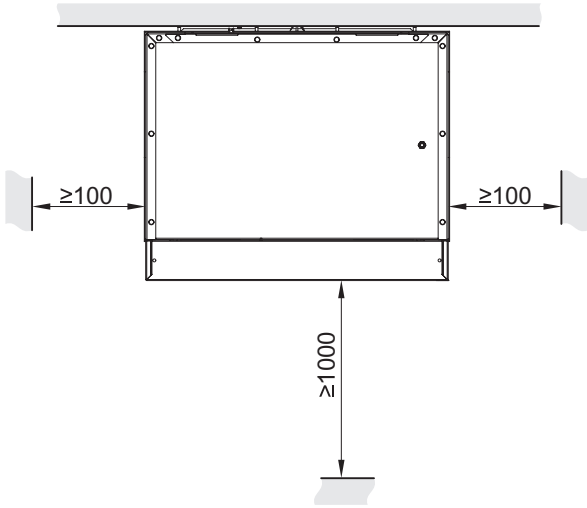
Attention!

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

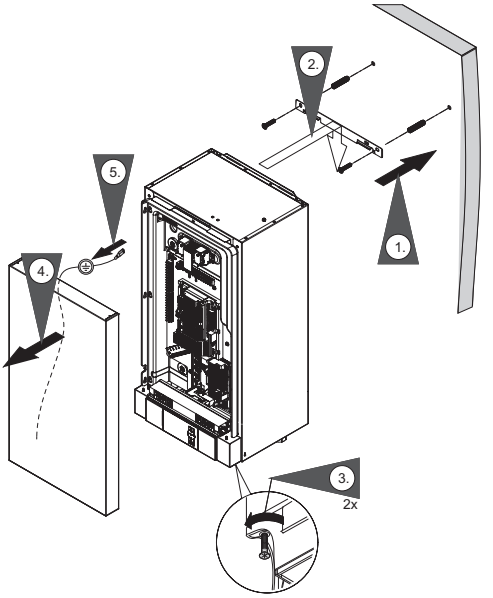
- Keep a minimum floor space.
- Provide adequate ventilation and exhaust ventilation systems.
- In the installation room, do not use ignition sources, eg. open sources fire, gas appliance on, electric heater with exposed heating element etc.
  Do not smoke in the technical room.
- Electrical components installed within 1 m of conductive parts the refrigerant in the installation must meet the requirements for hazardous areas explosion, zone 2.

Minimum spacing

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



The assembly of indoor module on the wall



Connecting the refrigerant piping

- The outdoor unit is filled with refrigerant.
- Through sleeves, for sealing the opening of the refrigerant lines are delivered with the indoor module.
- Refrigerant lines containing a flammable refrigerant (R32) must be routed between the indoor and outdoor units without breaks (EN 60335).

Anti-fall arches

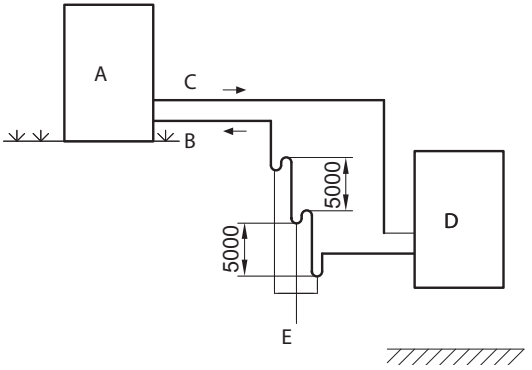
The use of anti-fall arches ensures reliable cooling oil return to the compressor.

Attention!

Errors in the design and installation of anti-fall arches can lead to damage to the device.

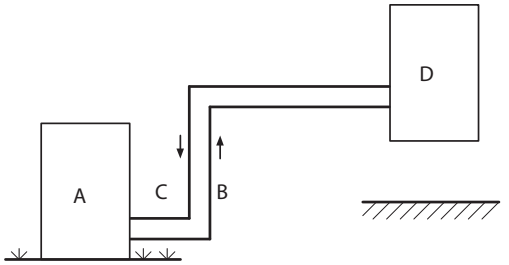
- The outdoor module is more than 5 m higher than the indoor module:
  Anti-fall arches must be provided in the vertical hot gas line.
- The indoor module is set higher than the outdoor module:
  There is no need to install anti-fall arches.

Outdoor unit higher than indoor unit



Ⓐ - *outdoor module*
Ⓑ - *hot gas line*
Ⓒ - *liquid line*
Ⓓ - *indoor module*
Ⓔ - *anti-fall arches*

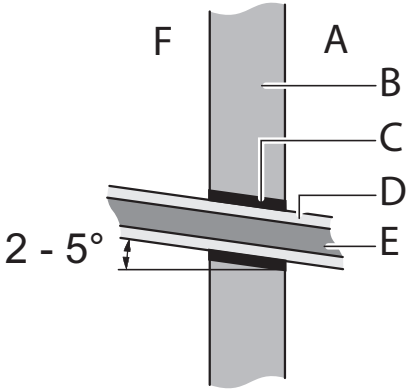
Outdoor module lower than indoor module



Ⓐ - *outdoor module*
Ⓑ - *hot gas line*
Ⓒ - *liquid line*
Ⓓ - *indoor module*

Wall culvert

The indoor unit is connected to the outdoor unit via wires refrigerant and electric connecting pipe. For this purpose, wall entries are required. In the case of making culverts, pay attention to load-bearing elements, lintels, insulation elements (e.g. vapor barriers), etc.



Ⓐ - *outside the building*
Ⓑ - *wall*
Ⓒ - *PCW or PE pipe etc.*
Ⓓ - *diffusion-tight thermal insulation*
Ⓔ - *refrigerant cords*
Ⓕ - *inside the building*

Cords length

- Max. height difference indoor module - outdoor module: 10 m
- Min. cord length: 5 m
- Max. cord length:
  Types HPS.Z-06/230; HPS.Z-08/230: 25 m
  HPS.Z-12/400 types; HPS.Z-16/400: 30 m

Sound and vibration damping

Notes on wiring installation

Wall culvert:

- No wall opening in load-bearing elements, lintels, elements insulation (e.g. vapor barriers) etc.
- Avoid acoustic bridges, ie. contact between the metal (refrigerant line) and the building structure.

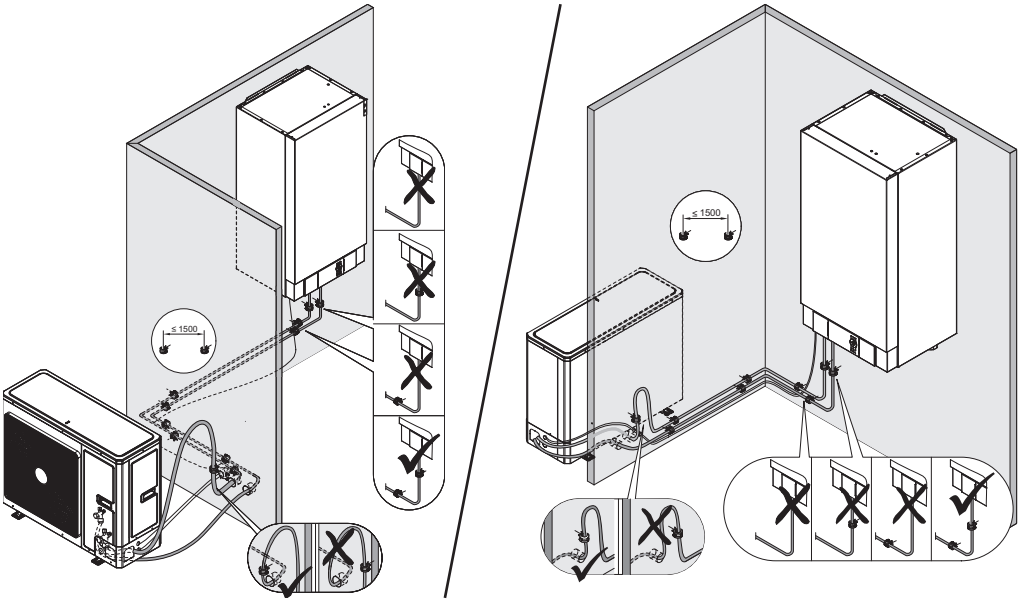
Laying cords:

- Route the electric lines stress-free and separate from the refrigerant lines.
- Lay the hot gas line with a bend.
  As a result, the transmission of vibrations via the pipe walls is reduced.
  The pipe bend can be installed inside or outside the building.
- Pipe bend to compensate for vibrations with a short hot gas line it should be narrower than with a longer hot gas line.
- Insulate all refrigerant pipes.

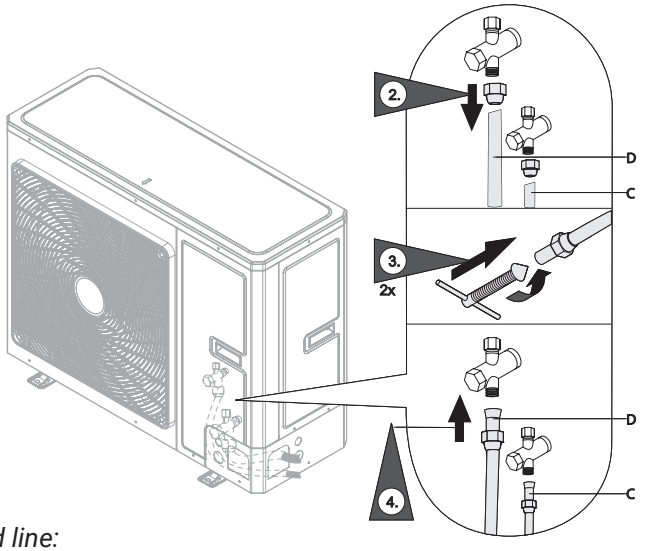
Fixing the refrigerant lines:

- Only secure the refrigerant lines with pipe clamps with flexible insulating insert (EPDM).
- Attach the vibration compensation pipe bend directly behind the pipe bend (towards the outer wall).
- Secure the refrigerant lines with pipe clamps at a distance 2,0 m. We recommend using clamps to secure the refrigerant lines pipes at a distance of 1,5 m.
- We recommend the installation of pipe clamps only on components with a weight per square meter ≥ 250 kg / m^2.
- Do not install refrigerant lines on partition walls or ceilings that separate from the rooms that require a low ceiling noise level (e.g. bedroom).

Vibration compensation outside the building **Vibration compensation inside the building**



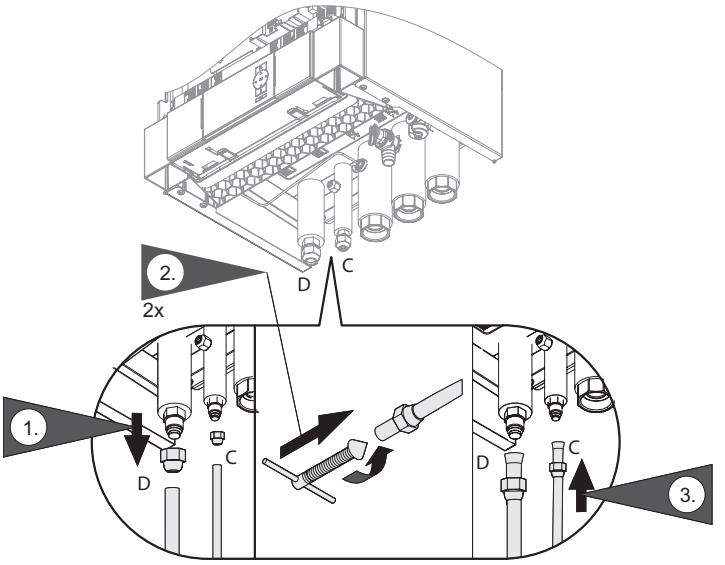
Outdoor module: connecting the refrigerant piping



Ⓒ *- Liquid line:*
Type HPSO-6/230; HPSO-8/230: ø6 mm for ¼ UNF
Type HPSO-12/400; HPSO-16/400: ø10 mm for 5/8 UNF

Ⓓ *- hot gas line:*
Type HPSO-6/230; HPSO-8/230: ø12 mm for 1/2 UNF
Type HPSO-12/400; HPSO-16/400: ø16 mm dla ⅞ UNF

Indoor module: connecting the refrigerant piping



Ⓒ - *liquid line:*
Type HPSO-6/230; HPSO-8/230: ø6 mm to ¼ UNF with reduction connector on the 7/16 UNF
Type HPSO-12/400; HPSO-16/400: ø10 mm dla 5/8 UNF

Ⓓ - *hot gas line :*
Type HPSO-6/230; HPSO-8/230: ø12 mm for 1/2 UNF
Type HPSO-12/400; HPSO-16/400: ø16 mm for ⅞ UNF

Tightening torques for the refrigerant piping

Line	Connection	Tightening torques Nm
liquid line ø 6 mm	5/8 UNF	33 to 42
	1/4 UNF	15 to 20
hot gas line ø 12 mm	7/8 UNF	63 to 77
	1/2 UNF	50 to 54
liquid line ø10 mm	5/8 UNF	33 to 42
hot gas line ø 16 mm	7/8 UNF	63 to 77

Flushing the refrigerant lines and indoor module

Purge the refrigerant lines and the indoor module with nitrogen.
The indoor module is factory-charged with nitrogen, overpressure 1 to 2 bar (0,1 to 0,2 MPa).

Check the refrigerant lines for leaks

Perform a leakage and pressure test with dry nitrogen at a pressure of min. 20 bar (max. 43 bar).

Drain the refrigerant lines and the indoor module

Attention!

Commissioning depends on the weather conditions. At temperatures below 0°C, moisture in the refrigerant piping may condense or sublimation. If drops of water and / or pieces of ice get into the compressor, this will damage the device.

In the case of high relative humidity or outside temperatures below 0°C, observe the following instructions:

- Use nitrogen 5.0 for the pressure test.
- Maintain the surface temperature of the pipes when emptying the hoses refrigerant above 0°C.

Attention!

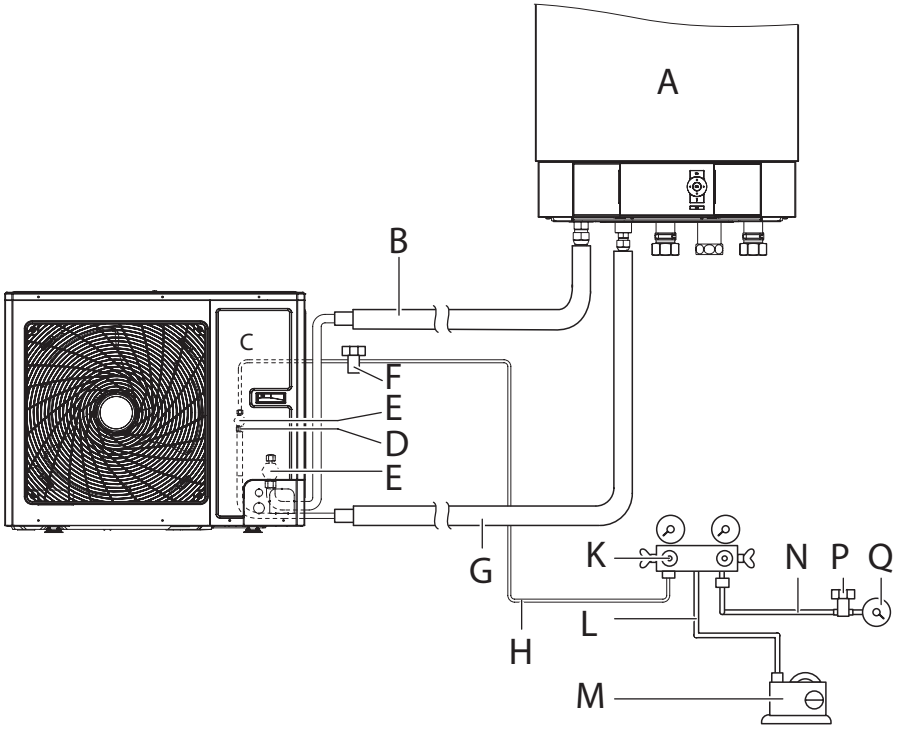
Skin contact with the refrigerant can damage the skin. Wear protective goggles and gloves when working on the refrigerant circuit.

Attention!

Escaping refrigerant pollutes the environment.

- Before emptying the refrigerant lines and the indoor module, all connections must be checked for tightness with an aerosol leak detection.
- Keeping the valves on the outdoor module closed, introduce nitrogen into the device through the service valve. The test pressure is equal to the maximum pressure permissible operating pressure.

Generating a vacuum in the indoor module using a vacuum gauge



Ⓐ - *indoor module*
Ⓑ - *hot gas line*
Ⓒ - *outdoor module*
Ⓓ - *service valve (Schrader valve)*
Ⓔ - *filling valve*
Ⓕ - *cut-off valve*
Ⓖ - *liquid line*
Ⓗ - *filling hose between the pressure gauge group and the outdoor module*
Ⓚ - *set of pressure gauges*
Ⓛ - *hose connecting the pressure gauge set and the vacuum pump*
Ⓜ - *vacuum pump*
Ⓝ - *hose connecting the pressure gauge set and the vacuum gauge*
Ⓟ - *vacuum gauge valve*
Ⓠ - *vacuum gauge*

Attention!

Hypertension damages the vacuum gauge. Do not pressurize the vacuum gauge.

1. Close all valves at the pressure gauge set.
2. Make the connections as shown in the previous drawing.

Note

- *The cut-off valve Ⓔ must remain closed.*
- *Lock all connections with a second open-ended spanner.*

3. Switch on the vacuum pump. Open the vacuum pump valve on the gauge block and a hot gas line valve.
4. After approx. 5 minutes, open the valve to the vacuum gauge. The vacuum pump should be running until the vacuum gauge shows a value close to "0" (at least 30 min).

Note

The required operating time of the vacuum pump depends on the external conditions.

5. Close the vacuum pump valve on the gauge set. Switch off the pump vacuum and wait approx. 5 minutes. If the vacuum gauge reads rise, it is leaks. Repair the leak and repeat the entire process.
6. Close all valves at the pressure gauge set.
7. Disconnect the vacuum pump and vacuum gauge.

Filling the the refrigerant lines and the indoor module

Note

- *The outdoor unit is filled with refrigerant.*
- *No additional refilling is required for cords length of 5 to 10 m.*
- *Length of the refrigerant piping.*
- *The refrigerant may only be topped up when liquid.*
- *In combination with R32 refrigerant: Observe the notes on safety and activities when working with flammable refrigerants.*

Danger

Skin contact with the refrigerant can damage the skin. Wear protective goggles and gloves when working on the refrigerant circuit.

Attention!

Filling the system with refrigerant or extracting refrigerant can cause the condenser to freeze up. The condenser should be rinsed with water after on the secondary side or empty it completely.

Attention!

Mechanical load can damage the connections. Check all connections with the second open-end spanner.

Cord length approx. 10 m

1. Unscrew the plugs on the cut-off valves on the outdoor module.
2. Open both cut-off valves. Screw the plugs back on.
3. Quickly unscrew the filling hose from the service valve (Schrader valve) on the outdoor module. The pressure in the piping must be greater than ambient pressure.
4. Screw the acorn nut with the copper sealing cap onto the valve service (Schrader valve) on the outdoor module: Tightening torque from 15 up to 20 Nm.

Cord length 10 m

1. Connect the gauge block to the refrigerant cylinder with a hose connecting. Drain the connection line and gauge block.
2. Top up the required amount of refrigerant: 54 g per meter of cord length.

Attention!

Escaping refrigerant pollutes the environment. Suction refrigerant from the charging hoses and gauge block.

3. Close valves on the pressure gauge block.
4. Unscrew the plugs of the cut-off valves on the outdoor module.
5. Open both cut-off valves. Screw the plugs back on.
6. Quickly unscrew the filling hose from the service valve (Schrader valve) on the outdoor module. The pressure in the piping must be greater than ambient pressure.
7. Screw the acorn nut with the copper sealing cap onto the valve service (Schrader valve) on the outdor module: Tightening torque from 15 up to 20 Nm.
8. Mark the amount of replenished refrigerant on the type plate and save in the maintenance book.

Note *for appliances from 3,0 kg capacity R410A:*

- *It is necessary to keep a maintenance book.*
- *It is necessary to check for leaks once a year.*

Checking the refrigerant circuit for leaks

Attention!

Open flames may ignite the leaking flammable medium refrigerant (R32). This can lead to buckling and fires.

- Do not weld when working on the refrigerant circuit.
- If round wrap connections are opened, remake them.
- Replace damaged components completely.

Attention!

The refrigerant is an air-displacing, non-poisonous gas. Uncontrolled leakage of refrigerant in closed rooms may cause shortness of breath or asphyxiation.

- Provide adequate ventilation in confined spaces.
- It is essential to comply with the regulations and guidelines for handling with this refrigerant.

Attention!

If the refrigerant comes in contact with the skin, it may cause frostbite. During the works on the refrigerant circuit, wear protective goggles and gloves . Check connections for refrigerant leakage:

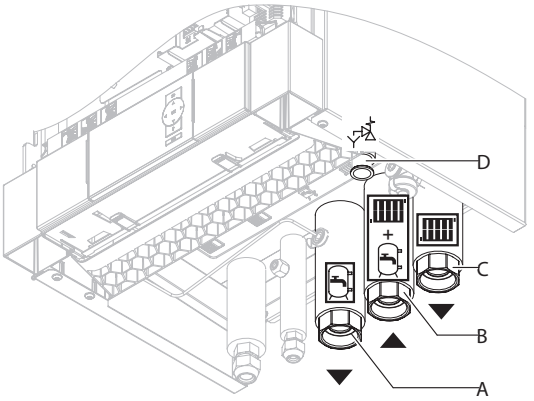
- All connections with a bead curl on the refrigerant lines between the indoor and outdoor module.
- All welding and bolted connections for refrigerant lines in the indoor and outdoor module.

Attention!

When working on the refrigerant circuit, refrigerant can leak out.

Any work on the refrigeration circuit may only be performed by a certified one personnel (in accordance with EU Regulations 517/2014 and 2015/2067).

Connecting the secondary circuit



1. Connect the hydraulic connections to the heat pump.
2. Check the internal tightness hydraulic connections.
3. Thermally insulate the wires inside the building. In case of heat pumps with cooling function use thermal insulation and vapor barrier.
4. Safety valve drain line through ventilation should be connected to the pipe with a slope to sewage system.

Ⓐ *- DHW exchanger supply (on the heating water side): G 1¼ (internal thread)*
Ⓑ *- DHW return and return from the DHW exchanger: G 1¼ (internal thread)*
Ⓒ *- DHW supply: G 1 1/4 (internal thread)*
Ⓓ *- Safety valve drain line*

Connecting the refrigerant circuit

For surface cooling systems (e.g. heating circuit in a heating system cooling mat) a humidity switch is required (accessory additional).
Requirements for the humidity switch:

- Electrical connection, depending on the type of humidity switch:
  - 24 V (recommendation):

Connection to F11 on the controller and sensor PCB

  - 230 V ~, 0.5 A:

Connection to X3.8 / 3.9 on head terminals

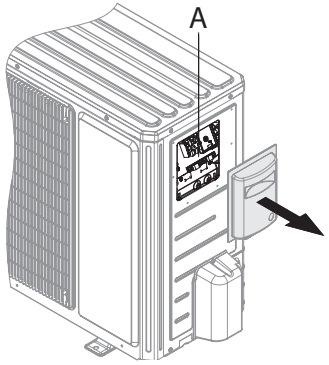
- Installation in the room to be cooled on the chilled water supply (remove thermal insulation if necessary).
- If more rooms with varying humidity are required for the cooling circuit air, install several humidity switches and connect them in series:

Design the switch contacts as normally closed contacts.

Outdoor module: connection overview

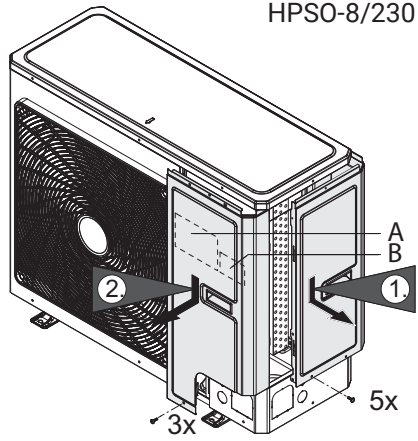
Outdoor module with 1 fan: opening of the connection space

HPSO-6/230



Ⓐ *- Connection space*
- *Modbus cable to the indoor module*
- *Compressor electrical connection*

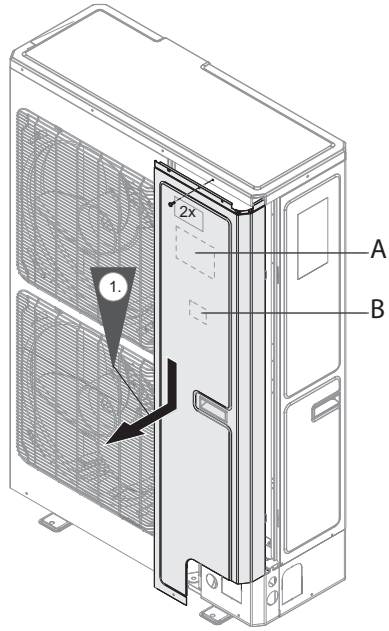
HPSO-8/230



Ⓐ *- Modbus cable to the indoor module*
Ⓑ *- Compressor electrical connection*

Outdoor module with 2 fans: opening of the connection space

HPSO-12/400
HPSO-16/400

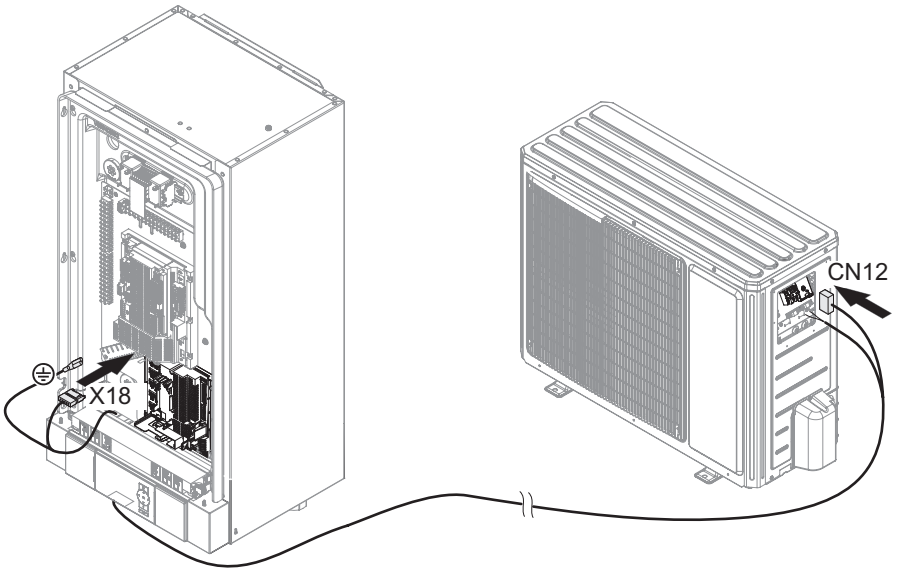


Ⓐ *- Modbus cable to the indoor module*
Ⓑ *- Compressor electrical connection*

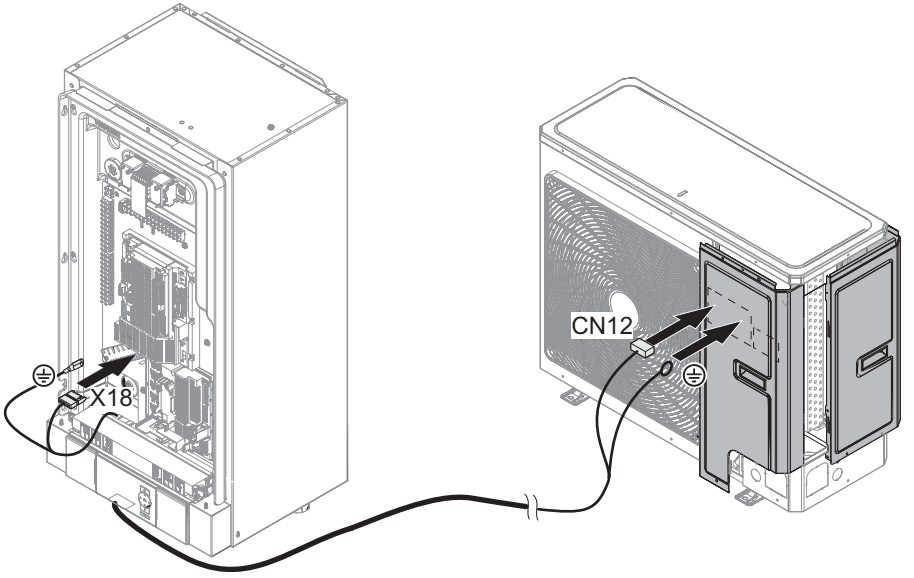
Connecting the Modbus connection cable between the indoor and outdoor module

Outdoor module with 1 fan

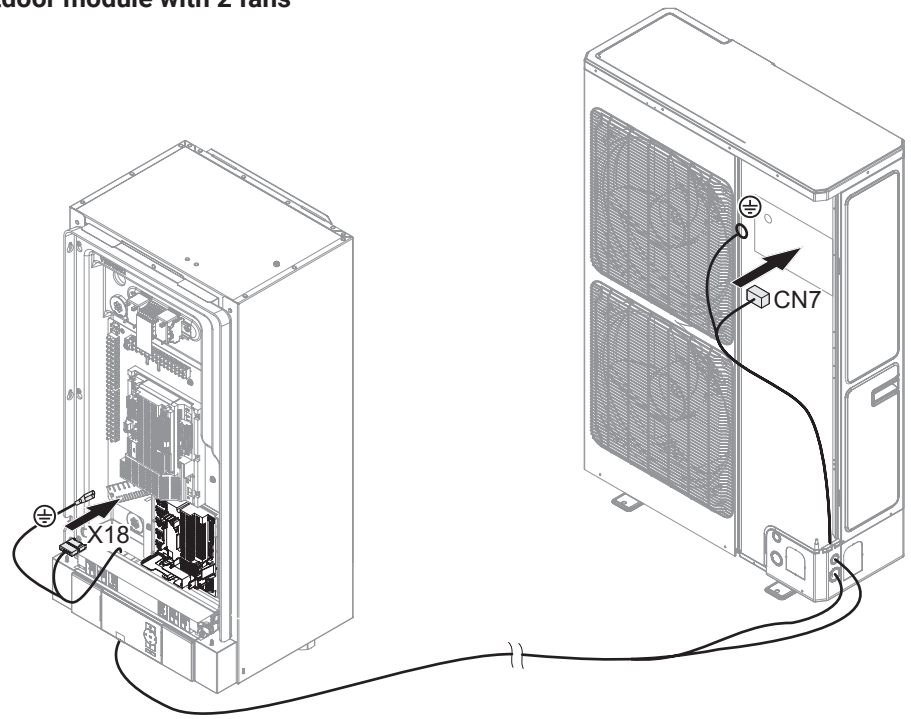
HPSO-6/230



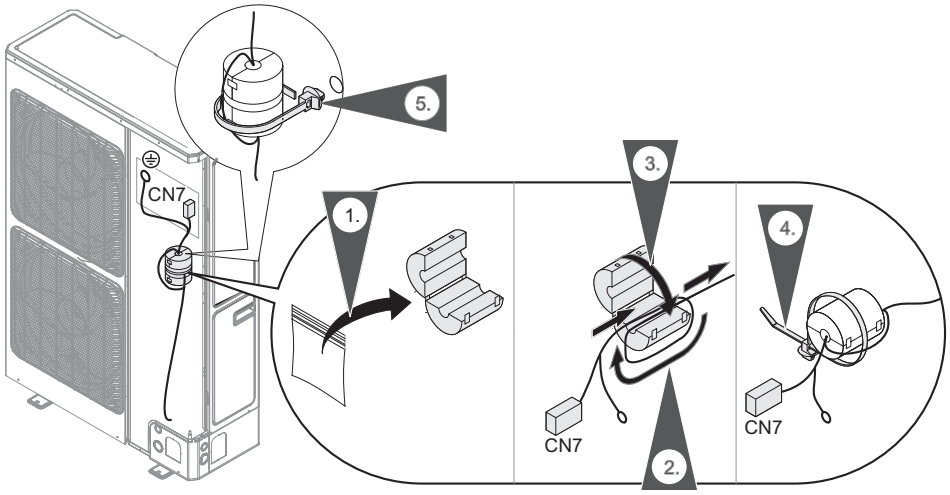
HPSO-8/230



Outdoor module with 2 fans



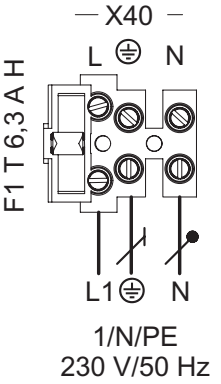
HPSO-12/400 types only; HPSO-16/400: removing electromagnetic interference in the connecting wires



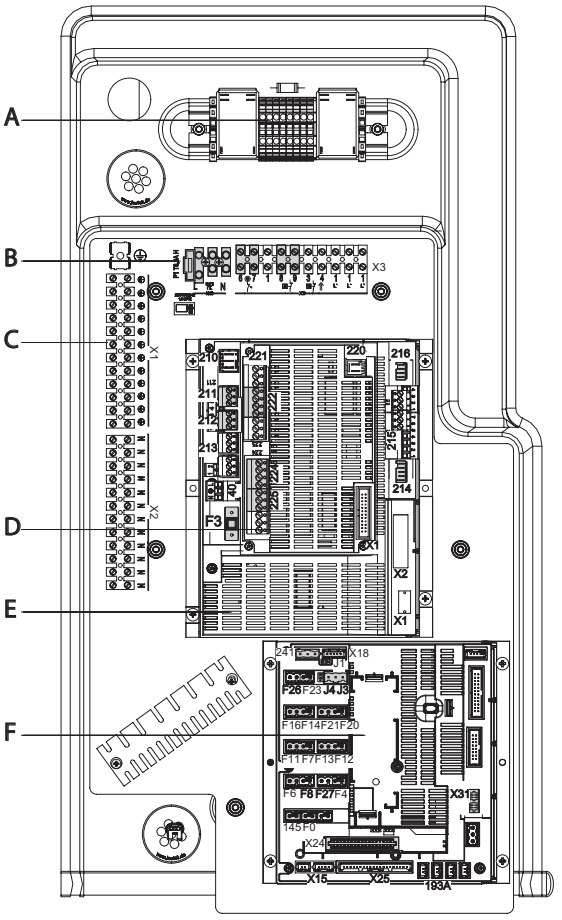
230 V ~ electrical connection of the heat pump control unit

Note

- *This connection must be made with a flexible one power cord.*
- *This connection must not be blocked. fuse max. 16 A*
- *Standard tariff: the lowest tariff with a delivery lock electricity by the power plant is not possible*
- *Recommended flexible power cable: 3 x 1.5 mm²*
- *Flexible power cord recommended with power supply blocked by EV: 5 x 1.5 mm²*



Indoor module: Connections overview



Ⓐ - *Control module and electrical connection of DHW instantaneous water heater*

Ⓑ - *Electrical connection of the controller heat pump 230 V ~. F1 T fuse 6.3 A*

Ⓒ - *Terminal strips.*
X1 Terminals for protective conductors all belonging installation components
X2 Neutral terminals all belonging installation components

Ⓓ - *Extended installation plate on the motherboard*

Ⓔ - *Motherboard: F3 T fuse 2,0*

Ⓕ - *Low voltage installation plate*

Indoor module: Main board (operating components 230 V ~)

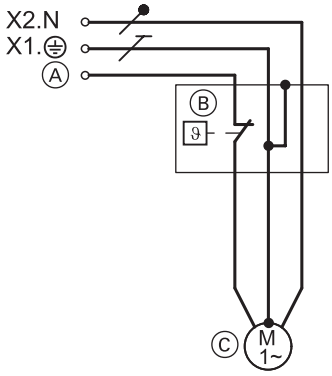
- The specified power is the recommended connected load
- The sum of the power of all components directly connected to the regulator heat pumps (e.g. pumps, valves, fault reporting devices, contactors): 1000 W. If the total power <1000 W, the power of a single component (e.g. pump, valve, signaling device, contactor) may be higher than the set value. The permissible power of the respective relay must not be exceeded.
- The specified current value is the maximum switching current of the switching contact. Take the total current of 5 A. Setting the required parameters during start-up.

Plug 211		
Clamps	**Function**	**Description**
211.2 	Secondary pump	Connection parameters ■ Power: 140 W ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A ■ Connect the controller in series temperature limiter maximum temperature the heating circuit of the installation underfloor heating (if is installed). Secondary pump is connected factory. Connect the regulator temperature provided by investor.
211.3 	Flow heater control DHW, grade 1	
211.4 	■ three-way diverter valve "Heating / Warm DHW " ■ Pump for charging the exchanger DHW ■ two-way cut-off valve	Connection parameters ■ Power: 130 W ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A ***Note*** *Depending on the version of the installation, no all components are mounted.*
211.5 ❄ **AC**	Only for the heat pumps with cooling function: three-way diverter valves to bypass the buffer tank DHW in cooling mode	Connect the three-way diverter valves in parallel. Connection parameters ■ Power: 10 W ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A

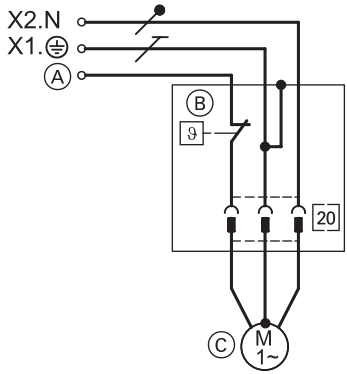
Plug 212		
Clamps	**Function**	**Description**
212.2 	Heating circuit pump without mixer A1 / HC1	■ If a DHW buffer is installed, pump is connected additionally, except the secondary pump. ■ Connect the controller in series as temperature limiter of circuit maximum temperature in underfloor heating (if installed). Connection parameters Connection parameters ■ Power: 100 W ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A
212.3 	DHW circulation pump	Connection parameters ■ Power: 50 W ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A
212.4 	Three-way diverter valve for buffer cylinder bypass heating water or heat pump for two-system operation alternative.	Connection parameters ■ Power: 130 W ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A

Connection of a thermostat controlling the pump power supply as a maximum temperature limiter in the underfloor heating system.

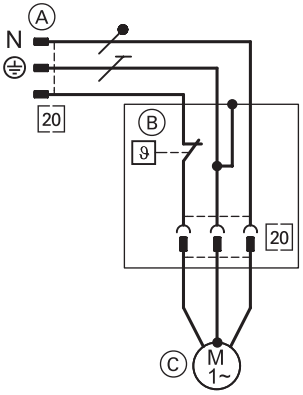
Connecting a control thermostat power supply to the pump



Control thermostat connection power supply to the pump



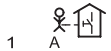
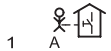
	Connection Ⓐ to the controller	**Circulation pump Ⓒ**
Heating circuit without mixer A1 / HC1 ■ Without DHW buffer cylinder	211.2	Secondary pump
■ With DHW buffer cylinder	212.2	Heating circuit pump A1/HC1
Heating circuit with mixer M2 / HC2	225.1	Heating circuit pump M2/HC2



Connection of a pump flow control thermostat to the mixer.

Ⓐ - *plug* 20*, connect to the mixer*
Ⓑ - *thermostat*
Ⓒ - *heating circuit pump M3/HC3*

Plug 214		
Clamps	**Function**	**Description**
214.1  *M2*	Switching from outside the heating / cooling circuits Rooms heating demand for the heating circuit M2 / HC2	Wejście cyfrowe 230 V~: ■ 230 V ~: Demand for space heating for heating circuit M2 / HC2 active ■ 0 V: No demand ■ Switching capacity 230 V, 0.15 A
214.2  *M2*	Switching from outside the heating / cooling circuits Rooms cooling demand for the heating circuit M2 / HC2	230 V ~ digital input: ■ 230 V ~: Demand for space cooling for heating circuit M2 / HC2 active ■ 0 V: No demand ■ Switching capacity 230 V, 0.15 A
214.3  *M3*	Switching from outside the heating / cooling circuits Rooms heating demand for the heating circuit M3 / HC3	230 V ~ digital input: ■ 230 V ~: Demand for space heating for heating circuit M3 / HC3 active ■ 0 V: No demand ■ Switching capacity 230 V, 0.15 A
214.4  *M3*	Switching from outside the heating / cooling circuits Rooms cooling demand for the heating circuit M3/ HC3	230 V ~ digital input: ■ 230 V ~: Demand for space heating for heating circuit M3 / HC3 active ■ 0 V: No demand ■ Switching capacity 230 V, 0.15 A

Plug 214		
Clamps	**Function**	**Description**
216.1  	Rooms heating demand for the heating circuit A1 / HC1 or	230 V ~ digital input: ■ 230 V ~: Demand for space heating for heating circuit A1 / HC1 active ■ 0 V: No demand ■ Switching capacity 230 V, 2 mA
216.2  	Rooms cooling demand for the heating circuit A1/ HC1	230 V ~ digital input: ■ 230 V ~: Demand for space cooling for heating circuit M3 / HC3 active ■ 0 V: No demand ■ Switching capacity 230 V, 0.15 A

Indoor module: Extended installation plate on the motherboard (operating components 230 V ~)

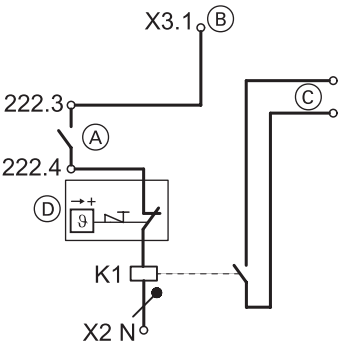
Notes on connection parameters

- The specified power is the recommended connected load
- The sum of the power of all components directly connected to the regulator heat pump (e.g. pumps, valves, fault reporting devices, contactors) can not exceed 1000W. If the total power <1000 W, the power of a single component (e.g. pump, valve, signaling device, contactor) may be higher than the set value.
  The permissible power of the respective relay must not be exceeded.
- The specified current value is the maximum switching current of the switching contact. Take the total current of 5 A.
- The control of the external heat generator is not low voltage safety. Setting the required parameters during commissioning.

Plug 222		
Clamps	**Function**	**Description**
222.1 	Mixer motor control external heat source Signal Mixer CLOSED.	Connection parameters: ■ Power: 10 W ■ Voltage: 230 V ~ ■ Max. contact current: 0,2 (0,1) A
222.2 	Mixer motor control external heat source Signal Mixer OPEN.	Connection parameters: ■ Power: 10 W ■ Voltage: 230 V ~ ■ Max. contact current: 0,2 (0,1) A

Clamps	Function	Description
222.3 222.4 	Control of external heat source and after 1st securing temperature limiter (in the scope of the investor's responsibilities, max. 70°C) for switching off and switching the following components: Space heating: ■ Secondary pump of heat pump ■ External heat source DHW heating: ■ three-way diverter valve "DHW heating"	Voltage free contact Note ■ The switching contact is potential free normally open contact closed when needed hot. ■ Do not supply low voltage by contact. For this purpose the investor has to install the relay. ■ Boiler water temperature sensor or in an external heat source (plug F20) must register average outdoor temperature heat generator. Connection parameters (contact load): ■ Voltage: 230 V ~ ■ Max. contact current: 4 (2) A connecting a safety temperature limiter: Space heating ■ In series to the secondary pump (connection 211.2) ■ In series with external control heat generator Reheating of domestic hot water ■ In series with three-way valve switch "Heating/Domestic hot water heating" (connection 211.4)

Safety temperature limiter for heat pump in conjunction with an external one heat generator.



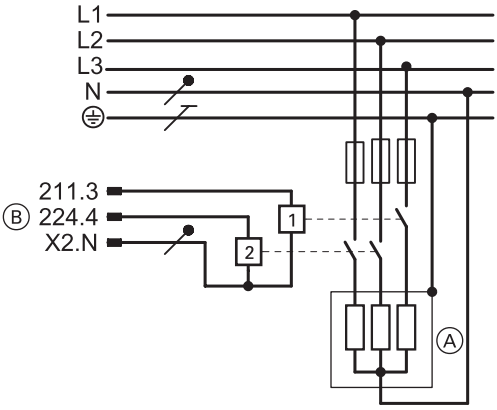
Ⓐ - *Clamps on the extended installation board*
Ⓑ - *Place the bridge from X3.1 on 222.3*
Ⓒ - *Connection to an external heat source to the terminals "External demand"*
Ⓓ - *Zabezpieczający ogranicznik temperatury do SKKrony pompy ciepła (maks. 70°C)*

K1 relay

- *Dimensioning according to the external heat generator*
- *Comply with the safety regulations*

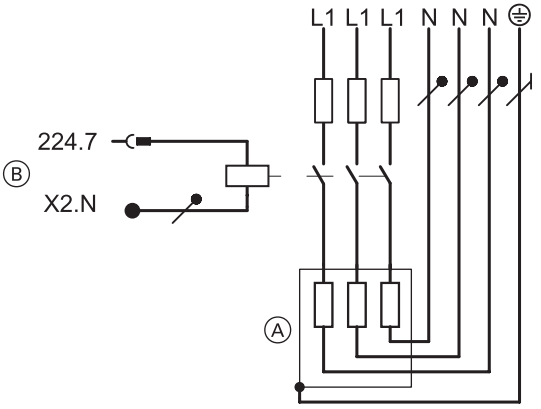
Plug 224		
Clamps	**Function**	**Description**
224.4	Flow heater control DHW, grade 2	Connection parameters ■ Power: 10 W ■ Voltage: 230V~ ■ Max. contact current: 4 (2) A
224.7	Circulation pump to the DHW heating or immersion heater control	Connection parameters ■ Power: 100 W ■ Voltage: 230V~ ■ Max. contact current: 4 (2) A

Control and load circuit of instantaneous water heater



Ⓐ - *Control and load circuit of instantaneous water heater*
Ⓑ - *Connection on the motherboard and extended installation plate*
211.3 1. st grade
224.4 2. st grade

Immersion heater 230V`, in the scope of the investor's supply



Ⓐ - *Immersion heater, electric power supply 1/N/PE 230 V/50 Hz*
Ⓑ - *Controller connection terminals heat pump*

Plug 225		
Clamps	**Function**	**Description**
2251 M2	Heating circuit pump with mixer M2 / HC2	Connect the temperature controller in series as a maximum temperature limiter maximum of heating circuit underfloor heating installation (if fitted). Connection parameters ■ Power: 100 W ■ Voltage: 230V~ ■ Max. contact current: 4 (2) A
2252 M2 ▼	Mixer motor control heating circuit M2/HC2 Signal Mixer CLOSED. ▼	Connection parameters ■ Power: 10 W ■ Voltage: 230 V ~ ■ Max. contact current: 02 (01) A
2253 M2 ▲	Mixer motor control heating circuit M2/HC2 Signal Mixer OPEN. ▲	Connection parameters ■ Power: 10 W ■ Voltage: 230 V ~ ■ Max. contact current: 02 (01) A

Indoor module: Terminal strips (signaling and safety connections)

Clamps	Function	Description
X3.1	Switched phase	Via the regulator's power switch ***Note*** *Pay attention to the total load 1000 W all connected components.*
X3.6 X3.7 	Power supply blocked by ZE (factory fitted bridge)	Potential-free contact required turn: ■ Closed: The heat pump is running ■ Open: the heat pump is not running ■ Connection parameters 230 V ~, 0.15 A. When connecting, remove the bridge.
		Note ■ *Parameter setting is not necessarily* ■ *The compressor is switched off "permanently", as soon as the contact is opened.* ■ *Power failure signal via ZE causes disconnection supply voltage from a given component, if applicable from ZE.* ■ *For an instantaneous water heater can be selected disabled levels (parameter "Power for instantaneous water heater at the block. ZE 790A ").* ■ *Control unit electrical connection heat pumps (3 x 1.5 mm²) and delivery lock signal wire power via ZE can be connected to 5-wire cable.*
X3.8 X3.9 	Only for heat pumps with function cooling: ■ Frost protection sensor and / or Switch humidity 230 V ~ ■ Or bridge For heat pumps without cooling function: ■ Bridge	Potential-free contact required turn: ■ Closed: the security chain uninterrupted ■ Open: security chain interrupted, the heat pump is not running ■ Connection parameters 230V~, 0.15 A.

Clamps	Function	Description
		Connection: ■ Serial connection, if available are both safety components ■ Fit the bridge, if there is no available component security.
X40.L1	Electrical connection of the controller heat pumps: Phase L1 X40 ⏚ Cable connection protective X40.N Connection for neutral conductor	electrical connectio 230V~

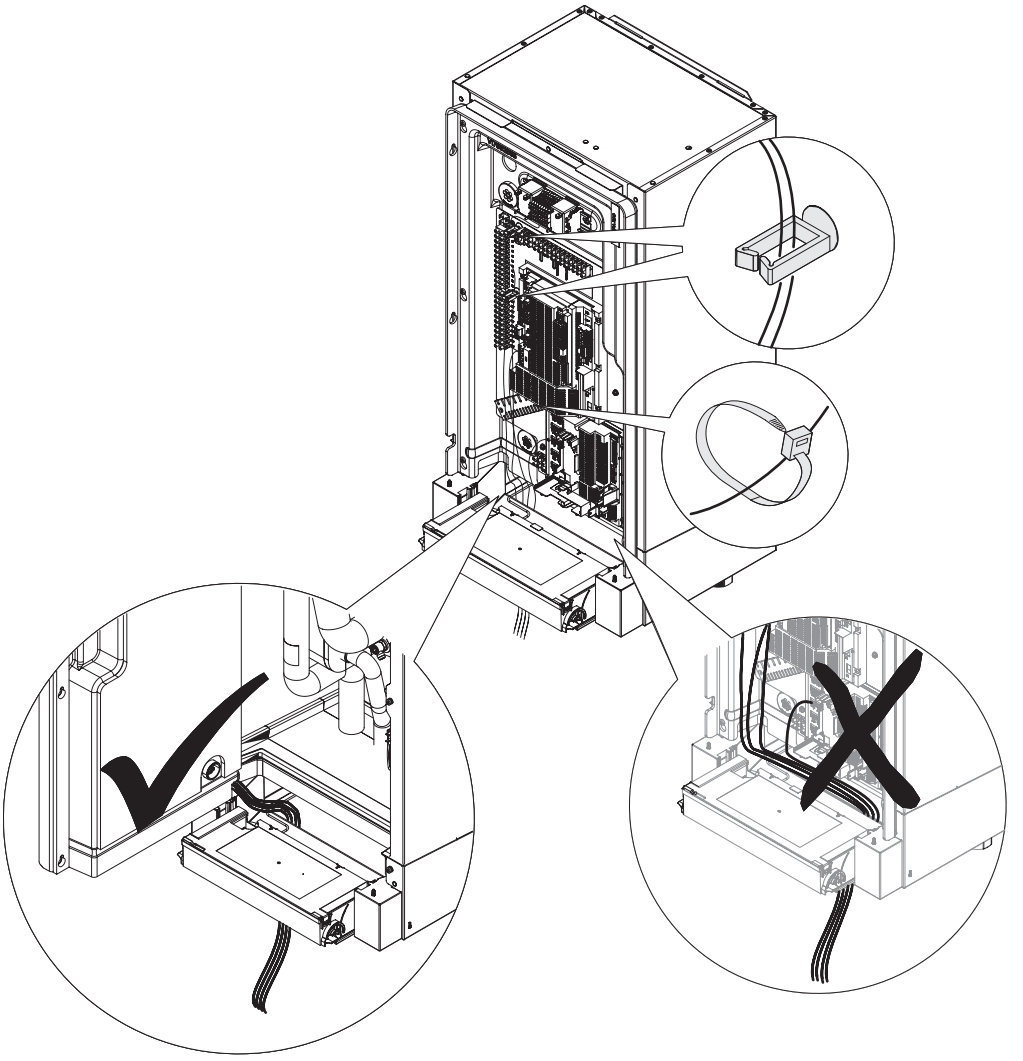
Indoor module: Low voltage PCB (low voltage connections)

Setting the required parameters during commissioning.

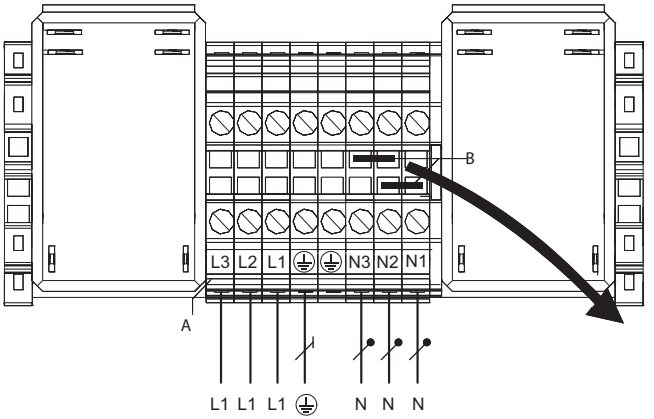
Sensors		
Plug	**Sensor**	**Type**
F0	Outdoor temperature sensor	NTC 10 kΩ
F4	Temperature sensor in the buffer cylinder	NTC 10 kΩ
F6 (X25.5/X25.6)	Upper water temperature sensor in the DHW exchanger	NTC 10 kΩ
F7 (X25.7/X25.8)	Lower water temperature sensor in the DHW exchanger	NTC 10 kΩ
F11	Humidity switch 24 V ⎓ or bridge ***Note*** ■ *cooling water: If cooling is done with several heating / cooling circuits for each heating / cooling circuit must be installed humidity switch. Several humidity switches connect in series.* ■ *If the humidity switch 230 V ~ (connection to X3.8 / X3.9) is used during cooling, fit the bridge, otherwise the heat pump will not turns on ("CA Primary Security Device" message).*	-

Plug	Sensor	Type
F12	Heating flow temperature sensor with mixer M2 / HC2	NTC 10 kΩ
F13	System flow temperature sensor (on buffer cylinder and external mixer heat generator)	NTC 10 kΩ
F14	Cooling circuit flow temperature sensor (heating circuit without mixer A1 / HC1 or separate cooling circuit SKK)	NTC 10 kΩ
F16	Room temperature sensor in the cooling circuit ■ Required for a separate SKK cooling circuit ■ Recommended for the heating / cooling circuit without mixer A1 / HC1	NTC 10 kΩ
F20	Temperature sensor of water in the boiler of the external heat generator	NTC 10 kΩ
F23	In the case of a cascade of heat pumps: Temperature sensor at the exit of the buffer cylinder	NTC 10 kΩ
145	KM bus (spare cores) ■ Mixer extension kit for the heating circuit M3 / HK3,	-
241	Modbus (do not swap wires) Connection of the energy meter of the photovoltaic system	-
J1	Modbus terminating resistor bridge Terminating resistor active (delivered condition) Load resistor inactive	-
X18	Modbus (do not swap wires) ■ Connected at the factory: Bus connection cable Modbus with external module	-
X31	Space for coding plug	-

Indoor module: Laying electrical wiring to the space connection



Electrical connection - water heater
1/N/PE 230 V/50 Hz

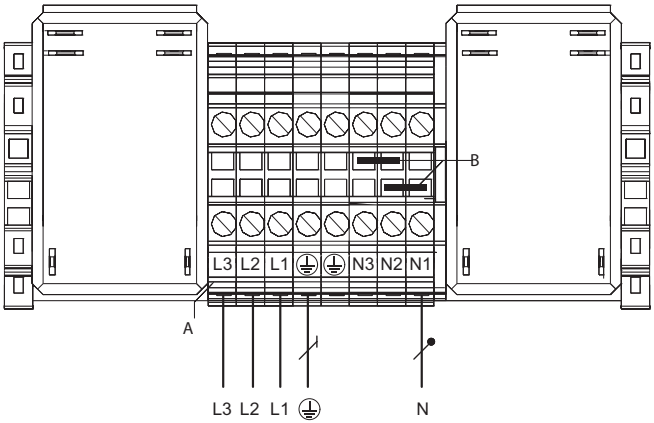


Ⓐ - *Electrical connection terminals of module control instantaneous water heater*
Ⓑ - *Bridges*

On the electrical connection 1/N/PE 230 V/50 Hz remove both B bridges.

- Recommended power supply cord: 7 x 2,5 mm^2
- Fuse protection max. 16 A
- The possibility of applying a low tariff and blocking the supply of electricity by ZE.

3/N/PE 400 V/50 Hz



Ⓐ - *Electrical connection terminals of module control instantaneous water heater*
Ⓑ - *Bridges*

On the electrical connection 3/N/PE 400 V/50 Hz don't remove B bridges.

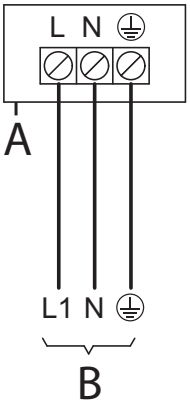
- Recommended power supply cord: 5 x 2,5 mm2
- Fuse protection max. 16 A
- The possibility of applying a low tariff and blocking the supply of electricity by ZE.

Electric connection - outdoor module

- You can apply a low tariff and a blockade of electricity supply by the energetic plant.
- When using the low tariff with blockage of electricity supply by the energetic plant, no parameter settings are required. Compressor during blockade is turned off.
- During the blockade of electricity supply by the energy company, they are not supported diagnostics functions of the outdoor module.

Free clamps for internal use only

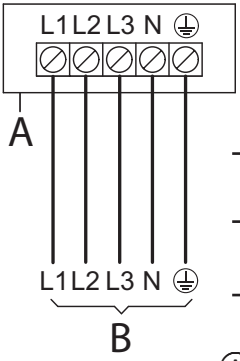
Electrical connection to 230 V ~ outdoor module



Types	Cord	Max. cord's length	Max. safety
HPSO-6/230	3 x 2,5 mm² lub 3 x 4,0 mm²	31m lub 32m	B25A
HPSO-8/230		20m lub 32m	B25A

Ⓐ - *Connection space for the external module*
Ⓑ - *Electrical connection 230 V/50 Hz*

Electrical connection to 400 V~ outdoor module



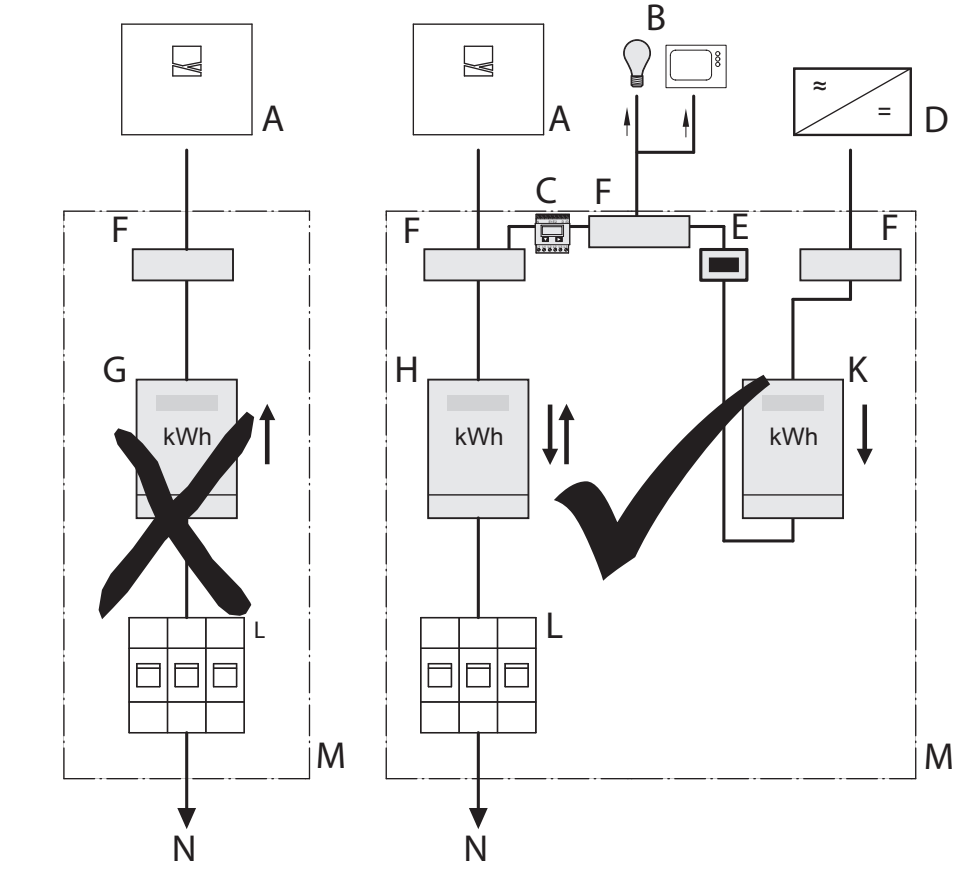
The wrong phase sequence can cause damage device. Only carry out the electrical connection in accordance with the given phase sequence (see connection clamps), with a clockwise rotating field.

Types	Cord	Max. cord's length	Max. safety
HPSO-12/400 HPSO-16/400	5 x 2,5 mm²	60m	3 x B13A

Ⓐ - *Connection space for the external module*
Ⓑ - *Electrical connection 400 V/50 Hz*

Power supply combined with self-consumption

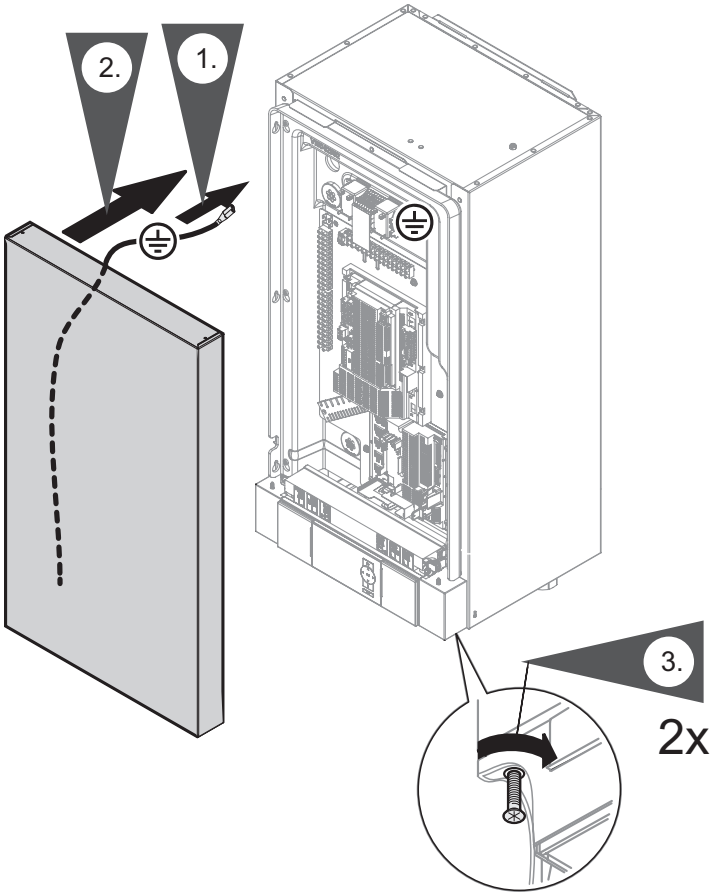
No electricity supply blocked by the energy company



Ⓐ - *Heat pump*
Ⓑ - *Other consumers (own energy) in the house*
Ⓒ - *Electric energy meter*
Ⓓ - *Frequency converter*
Ⓔ - *Switch off the photovoltaic installation*
Ⓕ - *Connection clamp*
Ⓖ - *Double-tariff meter (for special heat pump tariff)*
Must not be used in conjunction with the photovoltaic system used for their own needs.
Ⓗ - *Bidirectional meter (for the photovoltaic installation used on its own demand): Retrieving energy from the ZE and sending energy to the ZE*
Ⓚ - *Counter with reverse lock: For energy production by the photovoltaic system*
Ⓛ - *Household connection switch (switch cabinet)*
Ⓜ - *Switch cabinet*
Ⓝ - *Home junction box*

Closing the heat pump

Indoor module: assembly of the front panel



A leaky cover can lead to damage caused by condensate, vibration and may contribute to noise generation.

- Close the device soundproof and diffusion-proof.
- For pipe and line entries, pay attention to correct installation of thermal insulation.

If system components are not grounded, if the system is damaged
electricity, there is a risk of serious injury from electric current and damage to components.
Install the protective hoses on the front and side covers.
It is necessary to tighten the securing bolts before commissioning.

Start-up and adaptation of the heat pump regulator to local conditions and building conditions, as well as maintenance training must be carried out a licensed installation company.

Commissioning with the commissioning assistant

The start-up assistant automatically guides the user through all menus, in which it is necessary to make settings. "Coding level 1" is activated automatically.

Attention!

Incorrect operation at "Coding level 1" can result to the damage of device and heating installation.

Observe the notes under "Setting levels", otherwise warranty rights expire.

Setting levels

To avoid wrong service of the heat pump or other system components, not all parameters are available for all setting levels. Eg. parameters can only be called up in the "Installer" setting level.

Installation's user
The heating system is operated via the main menu and the extended menu and can be operated by people who have been trained in this field by the installer company (specialist).

- The basic menu features the basic operating functions and displays, e.g. setting a set room temperature or selecting a working mode.
- The extended menu offers advanced functions such as program setting temporal. Press ☰. to call up the extended menu.

Specialist
Additional functions and level parameters are available at this setting level coding 1.

- The "specialist" setting level includes the functions of the "installation's user".
- Coding level 1 settings may only be changed by employees an installation company trained in the field of pumps.

Sprache	
Deutsch	DE ☑
Bulgarski	BG ☐
Cesky	CZ ☐
Dansk	DK ☐
Wählen mit	▲▼

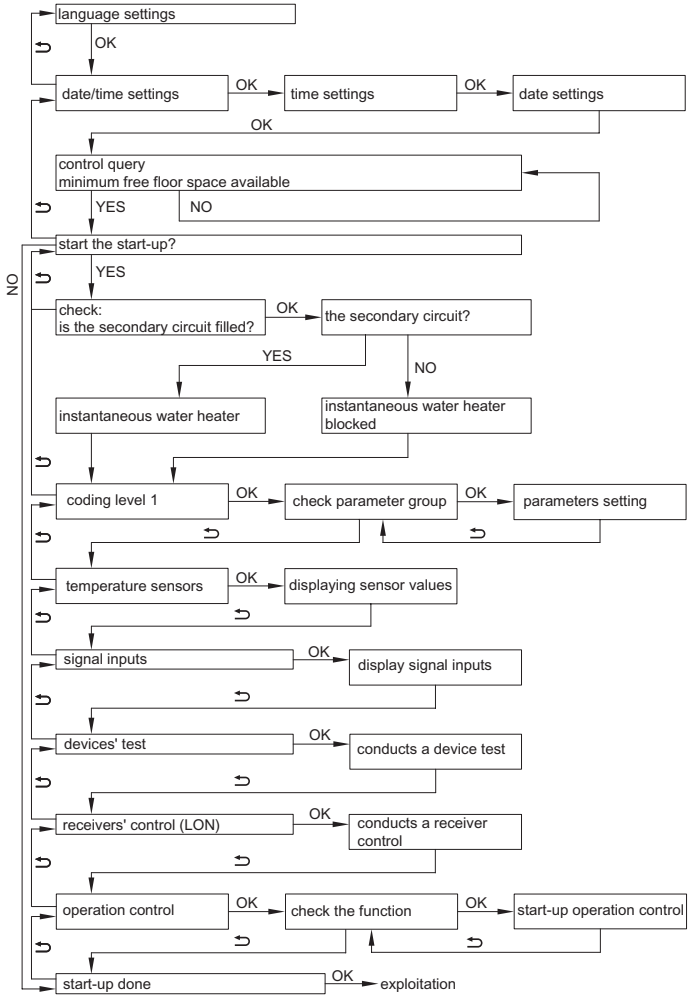
Turn on the power switch on the controller.

- The query "Start start-up?" appears automatically on the first starting up.

You can also use the start-up assistant switch on manually: for this when switching on, hold down the symbol ☰ on the controller (a progress bar is visible).

- During the 1st start-up, the message is shown in German.

- Manual control of some device components during start-up causes the display of messages by the controller. The messages do not mean device malfunction.



Start-up without commissioning assistant

Start-up service menu

The service menu can be accessed from any menu level.

Press **OK** + ☰ simultaneously and keep it pressed for approx. 4 s.

The service menu is active until the message "Finish service?" or when no service has been performed for 30 minutes.

Setting parameters, using the example of "installation scheme 7000"
To set a parameter, first select the parameter group and then given parameter.

Service menu:
1. Press **OK** + ☰ simultaneously and keep it pressed for approx. 4 s.
2. Select "Coding level 1".
3. Select the parameter group: "installation definition".
4. Select the parameter: "installation scheme 7000."
5. Set the installation diagram: Eg. "6".

Alternatively, if the service menu is already active:

Advanced menu:
1. ☰
2. service
3. select "coding level 1"
4. select the parameter group" "installation definition"
5. select the parameter "installation scheme 7000"
6. set the installation diagram: Eg. 6

Required heat pump parameters

"Compressor stage 5030" The heat output of the heat pump depends on the type set at first start-up.

Types	HPSO-12/400 +HPSI-09	HPSO-16/400 +HPSI-09	HPSO-6/230 +HPSI-06	HPSO-8/230 +HPSI-06
Compressor stage 5030	12 kW	16 kW	6 kW	8 kW

Overview of all possible installation diagrams

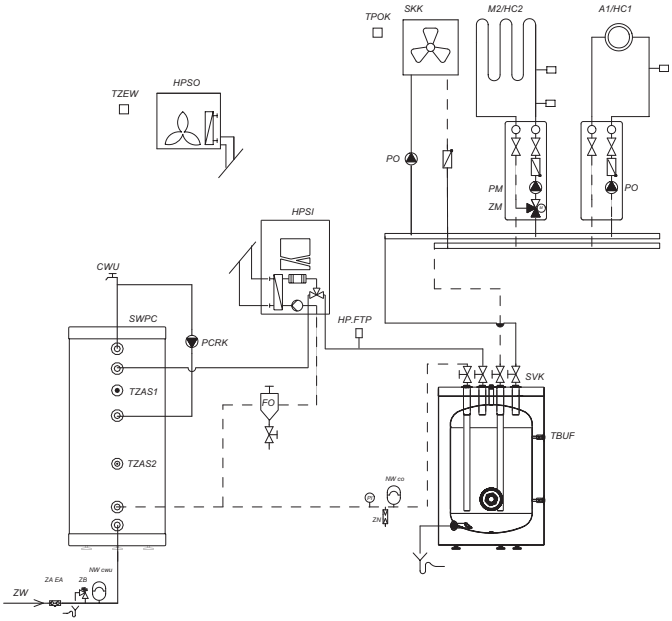
Subassembly	Installation scheme											
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Heating circuit												
A1/HC1	–	X	X	–	–	X	X	–	–	X	X	–
M2/HC2	–	–	–	X	X	X	X	X	X	X	X	–
M3/HC3	–	–	–	–	–	–	–	X	X	X	X	–
DHW cylinder	X	–	X	–	X	–	X	–	X	–	X	–
Immersion heater	O	–	O	–	O	–	O	–	O	–	O	–
DHW buffer cylinder	–	O	O	X	X	X	X	X	X	X	X	–
DHW / cooling buffer cylinder	–	O	O	O	O	O	O	O	O	O	O	–
External heat generator	O	O[*1]	O[*1]	O	O	O	O	O	O	O	O	–

[*1] Only in conjunction with the DHW buffer cylinder

Subassembly	Installation scheme											
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
DHW cylinder	O	O	O	O	O	O	O	O	O	O	O	O
Cooling												
A1/HC1	–	O	O	–	–	O	O	–	–	O	O	–
M2/HC2	–	–	–	O	O	O	O	O	O	O	O	–
M3/HC3	–	–	–	–	–	–	–	O	O	O	O	–
Separate cooling circuit SKK	O	O	O	O	O	O	O	O	O	O	O	–
Energy meter	O	O	O	O	O	O	O	O	O	O	O	–

X The subassembly was selected.
0 You can add a subassembly.

An exemplary diagram of an installation with a plane heating circuit, radiator, heating / cooling water buffer, hot utility water tank and a cooling circuit with a fan coil.



HPS0 - *heat pump (outdoor unit)*
HPSI - *hydraulic module (heat pump indoor unit)*
SKK - *cooling circuit*
M2/HC2 - *plane heating*
A1/HC1 - *radiator heating*
HP.HS.24 - *humidity switch for 1 cooling circuit*
HP.HS.230 - *humidity switch in case of more than 1 cooling circuit (for switching off the circulation pump in the cooling circuit)*
TZM - *temperature sensor of the medium in the surface heating circuit (WE-019/01)*
PM - *plane heating circuit pump*
ZM - *mix valve*
PO - *circulation pump*
HP.FTP - *frost protection thermostat*
FO - *desilter filter*
TZAS1 - *upper cylinder temperature sensor (WE-019/01)*
TZAS2 - *lower cylinder temperature sensor (WE-019/01)*
TPOK - *room temperature sensor (WE-033/02)*
TZEW - *outdoor temperature sensor (WE-027)*
SWPC - *DHW cylinder*
SVK - *DHW / cooling water buffer*
PCRK - *DHW circulation pump*
TBUF - *buffer temperature sensor (WE-019/01)*
CWU - *DHW*
ZW - *cold water*
NWco - *CH expansion vessel*
NWcwu - *DHW expansion vessel*
ZA - *anti-contamination valve EA class*
ZB - *safety valve*
ZN - *relief valve*

Circulation pumps parameters and the rest subassemblies

Circulation pump

Parameter		Setting
Installation definition ➔		
	Installation scheme 7000	- with heating circuit HC1 without mixer or - with heating circuit HC2 with mixer or - with heating circuit HC3 with mixer

DHW circulation pump

Parameter		Setting
Advanced menu ➔		
	Circulation time program	Set circulation time program

Circulation pump for DHW heating

Parameter		Setting
External heat generator ➔		
	Starting the outside of the 7B00 heat generator	„1”
	Start the external product. heat for heating DHW 7B0D	„1”

Mixi valve with actuator for the heating circuit M3/HK3

Parameter		Setting
Installation definition ➔		
	Installation scheme 7000	With heating circuit HC3 with mixer

Cooling function parameters

Cooling function in systems with a heating water buffer cylinder

Parameter		Setting
Cooling ➔		
	Cooling function 7100	„3”
	"Cooling circuit 7101"	„1” heating circuit HC1 „2” heating circuit HC2 „3” heating circuit HC3 „4” cooling circuit SKK

Buffer cylinder ➔		
	Start-up of buffer cylinder 7200	„1” *Note* *Only set in conjunction with a diagram installations 1 and 2. In the case of diagrams installation of 3 to 10 buffer cylinder is necessary and factory set. Not set up in the case of the installation diagram 11.*

Room temperature sensor for a separate cooling circuit

Parameter		Setting
Cooling ➔		
	"Ranking room temp sensor separate cooling circuit 7106"	„0” connection F16 „1” heating circuit HC1 „2” heating circuit HC2 „3” heating circuit HC3 „4” not set!

Cooling function for systems with a heating / cooling water buffer cylinder

Parameter		Setting
Cooling ➔		
	Cooling function 7100”	„3”
Buffer cylinder ➔		
	"Enable buffer cylinder/low loss header 7200"	„2”
Heating circuit 1/Heating circuit 2/Heating circuit 3 ➔		
	Cooling 2030 and/or Cooling 3030 and/or Cooling4030	„2”

Parameters of the external heat generator

Parameter		Setting
External heat generator ➔		
	Starting the outside of the 7B00 heat generator	„1”

Start-up of external heat generator

Parameter		Setting
External heat generator ➔		
	Start the external product. heat for heating DHW 7B0D	„1”

Immersion heater parameters

Parameter		Setting
DHW ➔		
	Activation of electric heating for heating DHW 6015	„1”
	Activation of additional electric heating for heating DHW 6014	„1”

Parameters of the use of own energy

Parameter		Setting
Photovoltaic installation ➔		
	Activation of self-energy consumption - photovoltaic installation 7E00	„1”
	Electric power threshold 7E04	„0” to „300” (≙ 0 do 30 kW)

Unlocking the relevant functions for self-consumption

Parameter		Setting
Photovoltaic installation ➔		
	Activation of consumption own energy temp. DHW 2 7E10	„1”
	Activation of consumption own energy for heating DHW 7E11	„1”
	Activation of consumption own energy in DHW buffer cylinder 7E12”	„1”
	Activation of consumption own energy for heating 7E13	„1”
	Activation of consumption own energy for cooling 7E15	„1”
	Start-up of consumption own energy in buffer cylinder of cooling water 7E16	„1”

Setting the temperature difference to the set value required for selected function

Parameter		Setting
Photovoltaic installation →		
	Raising the value of the hot temperature exchange DHW - photovoltaic installation 7E21	„0" do „500" (≙ 0 do 50 K)
	Increasing the value of the exchange temp. heating water buffer tank - photovoltaic installation 7E22	„0" do „400" (≙ 0 do 40 K)
	Raising the temp. in the room - photovoltaic installation 7E23	„0" do „100" (≙ 0 do 10 K)
	Reduction of the temp. in the room - photovoltaic installation 7E25	„0" do „100" (≙ 0 do 10 K)
	Reduction of the value of the exchange temp. heating water buffer tank - photovoltaic installation 7E26	„0" do „100" (≙ 0 do 10 K)

Checking the operation of the installation

Display an overview of the installation

The system overview shows the status of the heat pump components and system as well temperature.

Service menu:

1. Press **OK** and ☰ simultaneously and hold it for approx. 4 s.
2. "Diagnostics"
3. "Installation overview"
4. ◀/▶ to switch between the "System overview - installer" and "Overview installation - user "

Performing a functional check

As part of a function test, the functions of various system components can be checked.

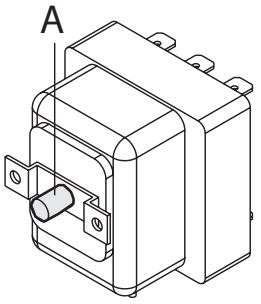
Service menu:

1. Press **OK** and ☰ simultaneously and hold it for approx. 4 s.
2. "Service functions"
3. "Function check"
4. Activate required function, e.g. "Domestic hot water". Only those functions are displayed which are available for a given installation version. During the function check an overview of the installation is displayed.
5. End function with ⮌.

four-way diverter valve in the outdoor module

- The four-way diverter valve is energized in heating mode.
- In cooling mode, the four-way diverter valve in the outdoor module is not live. The heat pump is operating in reverse mode (bypass refrigerant).
- If the four-way diverter valve was de-energized during start-up of heat pump, the heat pump starts in reverse operation.

Safety temperature limiter unlocking



Ⓐ *- Button safety temperature limiter unlocking*

Attention!

If the heat pump, e.g. during storage or transport, is exposed to the operation of the temperature lower than –15°C, the protective device may trip the temperature limiter in the instantaneous water heater. In this case, the instantaneous water heater does not heat up. Warm safety temperature limiter to more than 20°C. Press the button unlocking safety temperature limiter.

Note

The high limit safety cut-off can only be unlocked when the temperature at the sensor is less than 85°C.

The heating device is factory set and ready for operation:

Space heating / space cooling

- From 00:00 to 24:00 the rooms are heated up to 20°C "Change of temp. room." (normal room temperature).
- If the system includes a buffer cylinder, this will also be heated.
- Active cooling mode is blocked.

Heating DHW

- DHW is heated daily from 00:00 to 24:00 up to 50°C "Change of DHW temp.".
- Any installed DHW circulation pump is turned off.
- The electric auxiliary heating is activated.

Frost protection

- The heat pump and exchanger are protected against freezing DHW and buffer tank.

Note
Frost protection is guaranteed in the following cases only with the use of additional heating (provided by the investor):
- Air / water heat pumps: At temperatures below −15°C
- In the case of a heat pump failure

Auxiliary heating systems are e.g. an instantaneous water heater supplied heat pump or oil / gas boiler.

Winter / summer time changeover

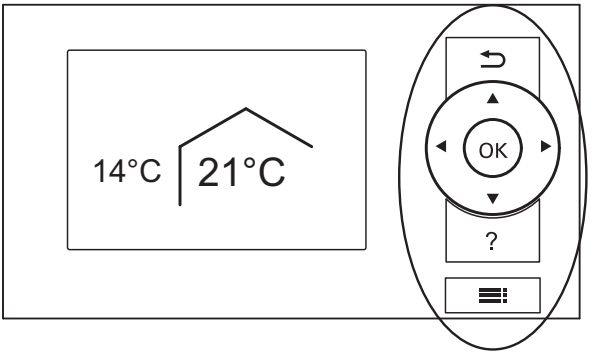
- The time is changed automatically.

Date and time

- The date and time are set by your heating installer.

The settings can be changed individually depending on the requirements.
No settings are lost if the electricity supply is interrupted.

Operating the heat pump control unit



2 control levels are available:

- The standard menu
- The extended menu

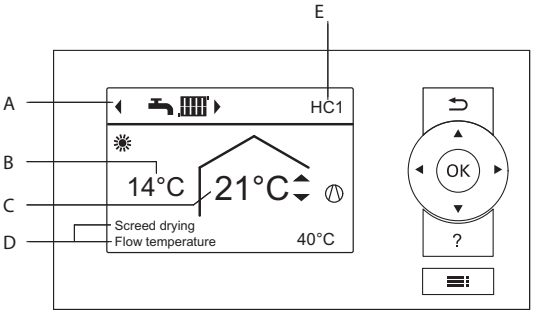
⮌	Allows to take one step back in the menu or terminate an adjustment in progress
✣	Cursor keys Scrolls through the menu or adjusts values
OK	Confirms your selection or saves the setting made
?	Calls up "Operating info" (see following chapter) or additional information on the selected menu
☰	Calls up the extended menu.

Symbols on the display

These symbols are not always displayed, but appear subject to the system version and the operating condition.

	Frost protection is active
	Central heating to standard room temperature
	Central heating with reduced room temperature
	Party mode is active for central heating
	Economy mode is active for central heating
	For air/water heat pumps: Fan is running
	Instantaneous heating water heater is switched on (electric booster heater)
	In conjunction with a cooling circuit: Cooling mode is active
	In conjunction with a photovoltaic system: Utilisation of power generated on site is active
SG Ready	In conjunction with a special connection to the power supply utility (Smart Grid): Power-OFF or utilisation of excess power is active. The heat pump start characteristics are influenced by the power supply utility

Standard menu: Displays and settings



Ⓐ - *Operating program for the preferred heating/coolling circuit Ⓔ*
Ⓑ - *Current outside temperature*
Ⓒ - *Set room temperature for the preferred heating/ cooling circuit Ⓔ*
Ⓓ - *Information bars*
Ⓔ - *Preferred heating/cooling circuit: Not shown if only one heating/ cooling circuit is installed.*

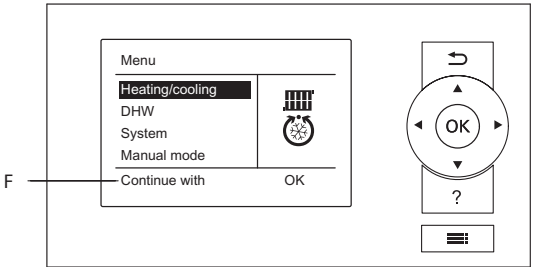
In the standard menu, you can make and check the following settings for the preferred heating/cooling circuit Ⓔ:

- Standard room temperature (user's preferred temperature).
- Operating program. Call up the standard menu:
- Screensaver is active. Press **OK**.
- If you are in the extended menu: press ⮌, repeatedly until the standard menu appears.

Extended menu: Displays and settings

In the extended menu, you can adjust and call up all the settings from the heat pump control unit range of functions, e.g. holiday program and time programs.
Call up the extended menu as follows:

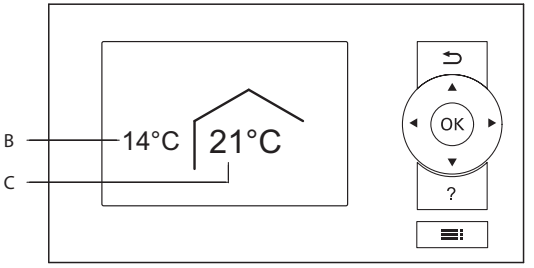
- If the screen saver is active: Press **OK** and ☰.
- From anywhere in the menu: Press ☰.



Ⓕ - *Dialogue line*

Screensaver

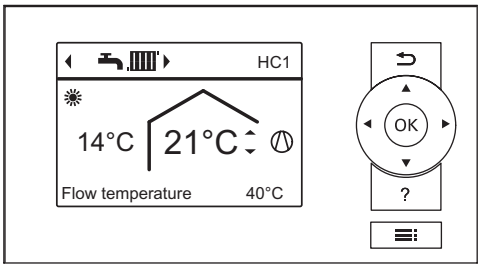
The screensaver will become active if you have not adjusted any settings on the programming unit for a few minutes. The display brightness is reduced.



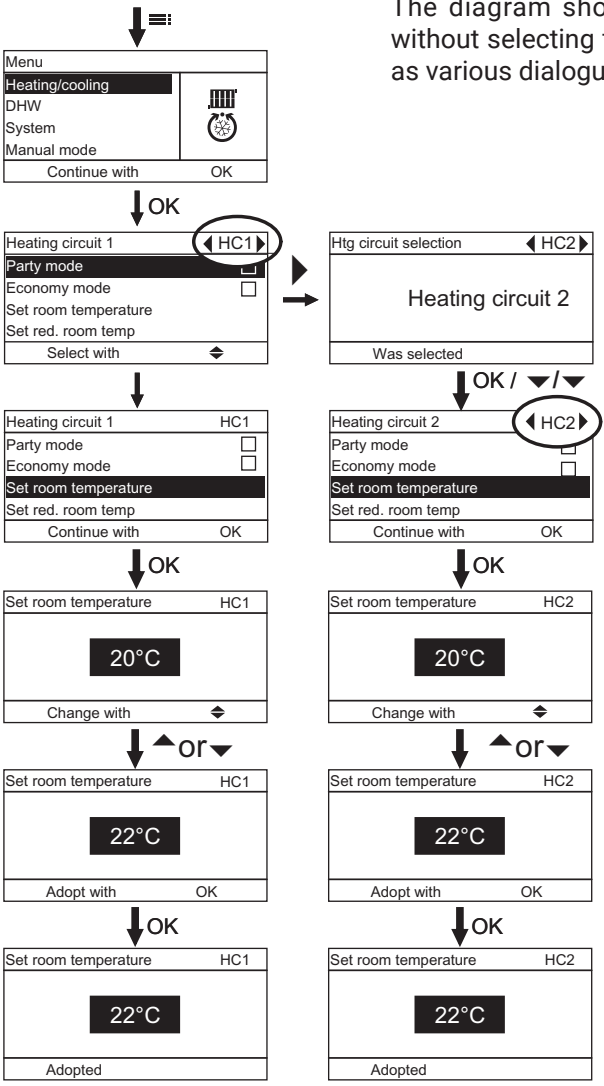
Ⓑ - *Current outside temperature*
Ⓒ - *Set room temperature*

1. Press **OK**.
   This takes you to the standard menu.
2. Press ☰.
   The selected menu point is highlighted in white. This takes you to the extended menu. Instructions on what to do are provided in dialogue line F.

Control system



You can input the central heating/central cooling settings for every heating/cooling circuit. It is therefore necessary to select the required heating/cooling circuit prior to inputting the settings (e.g. room temperature). The following diagram shows how to input settings, using the set room temperature setting as an example.
The diagram shows the setting with and without selecting the heating circuit, as well as various dialogue lines.



Operating program information

Using the "Operating program", you set the functions that you want on your system, e.g. whether you want rooms heated, or DHW heating only.
If multiple heating circuits are present in your heating system, set the "Operating program" separately for each heating circuit.

Only central heating

Heating circuit	System version with DHW heating		System version without DHW heating	
	Symbol	Operating program	Symbol	Operating program
Heating circuit „HC1”, „HC2”, „HC3”	⏻	Stand-by mode	⏻	Stand-by mode
		Only DHW	-	-
		Heating and DHW		Heating "Htg"

Central heating and central cooling

Heating/cooling circuit	System version with DHW heating		System version without DHW heating	
	Symbol	Working mode	Symbol	Working mode
Heating circuit „HC1”, „HC2”, „HC3”	⏻	Stand-by mode	⏻	Stand-by mode
		Only DHW	-	-
		Heating/cooling and DHW (Factory setting)		Heating/cooling
Separate cooling circuit „SKK”	⏻	Stand-by mode	⏻	Stand-by mode
		Only DHW	-	-
		Cooling and DHW (Factory setting)		Cooling

Functions of the operating programs

Central heating/central cooling and DHW heating

Symbol	Operating mode	Function
	Heating and DHW	■ The rooms of the selected heating circuit are heated in accordance with the room temperature and time program specified: see chapter "Central heating/central cooling". ■ DHW is heated in accordance with the DHW temperature and time program specified: see chapter "DHW heating".
	Heating/cooling and DHW	■ The rooms of the selected heating/cooling circuit are heated/cooled in accordance with the room temperature and time program specified: see chapter "Central heating/central cooling" ■ DHW is heated in accordance with the DHW temperature and time program specified: see chapter "DHW heating".
	Cooling and DHW	■ The rooms in the separate cooling circuit are cooled constantly. You cannot set a time program. ■ DHW is heated in accordance with the DHW temperature and time program specified: see chapter "DHW heating".

DHW heating

Symbol	Operating mode	Function
	Only DHW	■ DHW is heated in accordance with the DHW temperature and time program specified: see chapter "DHW heating". ■ No central heating/central cooling. ■ Frost protection for a buffer cylinder (if installed) is active.

Central heating/central cooling

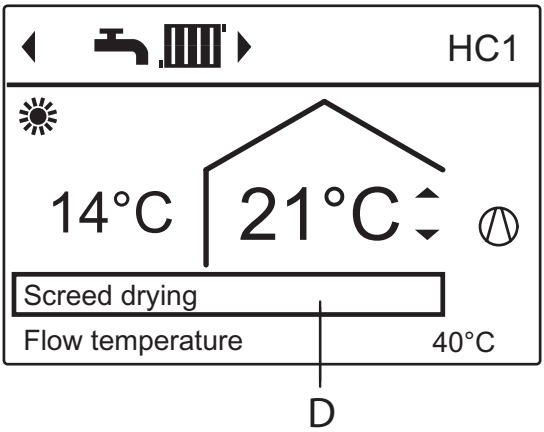
Symbol	Operating mode	Function
	Heating	■ The rooms of the selected heating circuit are heated in accordance with the room temperature and time program specified: see chapter "Central heating/central cooling".
	Heating/cooling	■ The rooms of the selected heating/cooling circuit are heated/cooled in accordance with the room temperature and time program specified: see chapter "Central heating/central cooling".
	Cooling	■ The rooms in the separate cooling circuit are cooled constantly. You cannot set a time program.

Anti-frost protection

Symbol	Operating mode	Function
	Stand-by mode	■ No central heating/central cooling ■ No DHW heating ■ Frost protection for the heat pump, DHW cylinder, heating/cooling circuits and a buffer cylinder (if installed) is active.

Special operating programs

Special operating programs are available according to system equipment.



Ⓓ - *Special operating programs in the upper information bar*

Screed drying

This function is enabled by your contractor. Your screed is dried in line with a set time program (temperature/time profile) suitable for the relevant building materials. Your settings for room heating/room cooling have no effect for the duration of screed drying (max. 30 days). This function can be changed or switched off by your heating contractor.

External hook-up

- Your contractor has connected external switching contacts to your heat pump control unit and set their functions. With these switching contacts, the heat pump or particular system components such as a mixer can be switched on or off.

or

- Your contractor has integrated the heat pump into a building management GLT system. This system switches particular functions, system components or operating programs on or off, regardless of your settings.

Note

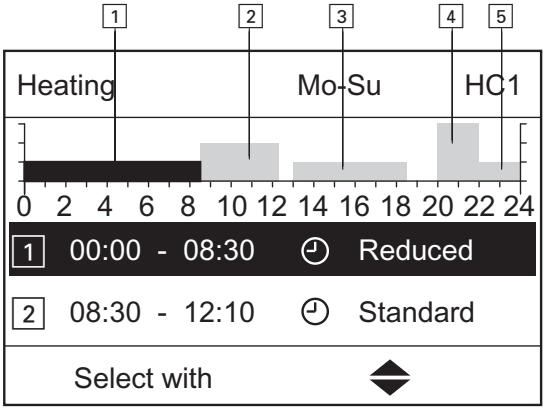
While "External hook-up" is active, you cannot change the set operating program on the heat pump control unit. Once "External hook-up" has ended, the heat pump control unit continues using the previously set operating program.

Procedure for setting a time program

The time program allows you to divide the day into sections. These are called time phases. It is for you to decide what happens in these time phases, e.g. whether your rooms should be heated to the standard room temperature. For this, set an operating status for each time phase. The available operating statuses differ, e.g. through different temperature levels.

- You can set the time program individually, to be the same, or different, for every day of the week.
- You can select up to 8 time phases per day.
- The time phases are numbered.
- For each time phase you set the start and end points. The selected time phase is illustrated by a white bar on the time chart. The length of the bar reflects the length of time.
- The individual operating status is indicated on the time chart by bars of different heights. Where several time phases overlap, the operating status with the highest bar takes priority.
- In the extended menu, you can call up the time programs under "Information".

Example of operating status and time phases in the time for central heating/cooling program.



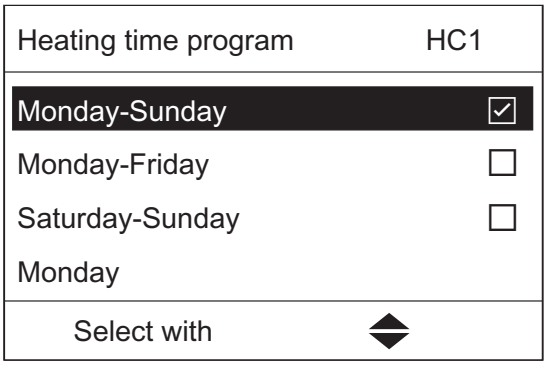
1. Extended menu: ☰
2. Heating/cooling.
3. If applicable, use ◀/▶ to select the required heating/ cooling circuit.
4. Time program heating/cooling.
5. Select part of the week or a day.
6. Select a time phase [1] to [8]. The selected time phase is illustrated by a white bar on the time chart.
7. Set the start and end points for the relevant time phase. The length of the white bar on the time chart is adjusted accordingly.
8. Select the required operating status "Reduced", "Standard" or "Fixd value". The individual operating status is indicated on the time chart by bars of different heights.
9. Press ⮌, to exit the menu.

If you want to terminate a time phase setting process prematurely, keep pressing until the required display appears.

- Time program for part of the week: "Monday–Sunday" ("Mo-Su").
- Time phase [1]: 00:00 to 08:30: „Reduced”
- Time phase [2]: 08:30 to 12:10: „Standard”
- Time phase [3]: 13:00 to 18:30:00: „Reduced”
- Time phase [4]: 20:00 to 22:00: „Fixd value”
- Time phase [5]: 22:00 to 24:00: „Reduced”

Between the time phases, the "Stand-by" operating status is active; in the example shown from 12:10 to 13:00 h and from 18:30 to 20:00 h.

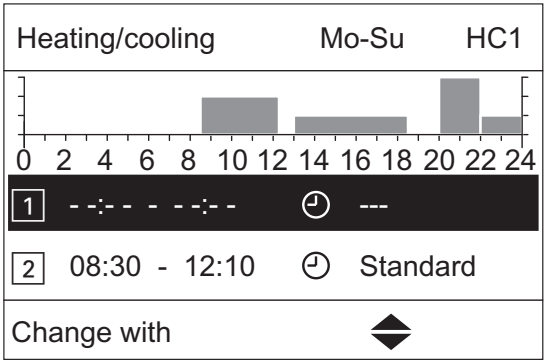
Setting the time program effectively



In order to set the same time program for every day except Monday it is necessary to:

1. Select the period "Monday–Sunday" and set the time program. The tick is always set at the sections of the week with identical time phases. Factory setting: same for all days of the week, therefore "Monday–Sunday" is ticked.
2. Then select "Monday" and adjust the time program for that day. The selected time phases for "Monday–Sunday" remain active for "Tuesday" to "Friday". "Saturday–Sunday" is ticked because this is now the only part of the week where the set time phases match the days shown.

Deleting time phases



- Set the time for the end point to the same time that was set for the start point.

or

- For the start point, select a time prior to 00:00 h. The display shows the selected time phase as "- - : - -".

Setting the standard room temperature for central heating/central cooling

The standard room temperature is the temperature at which you feel comfortable. Your home is always heated or cooled to this temperature when a time phase with the operating status "Standard" is active in the time program. Setting the time program for central heating/central cooling.
Fabric setting: 20*C.

For the preferred heating/cooling circuit

1. Standard menu: ◆ for the required value.
2. **OK** to confirm.

For all heating/cooling circuits

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/cooling circuit.
4. "Set room temperature".
5. Set the required value.

Setting the reduced room temperature for central heating

You can set the room temperature for those time periods during which you require less heat.
This room temperature applies to the following time periods:

- In the time phases for which you set the operating status to "Reduced" in the "Time program".
- In the holiday program.

Factory setting: 16 °C.
No set reduced room temperature can be set for a separate cooling circuit.

1. Extended menu: ☰
2. "Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/cooling circuit.
4. "Set red. room temp".
5. Set the required value.

Setting the operating program for central heating/central cooling

In the "Operating program" for central heating you set whether the central heating is enabled or not. For an overview of the operating programs, see section "Operating programs information".

For the preferred heating/cooling circuit

1. Standard menu: ◂/▸ for the operating program: E.g. "Heating and DHW".
2. **OK** to confirm.

For all heating/cooling circuits

1. Extended menu: ☰
2. "Heating" or "Heating/cooling"
3. If applicable, use ◂/▸ to select the required heating/cooling circuit
4. "Operating program"
5. Select the required operating program, e.g. "Heating and DHW"

Setting the operating program for central heating/central cooling

In the time programs for central heating and central cooling you set the time phrases during which your home is heated or cooled and to what temperature.
To do so, select an operating status for each time phase: See chapter "Operating status for central heating/central cooling".

Factory setting: one time phase from 00:00 to 24:00 for every day of the week with the "Standard" operating status.

- The factory setting is suitable for operation with underfloor heating systems.
- No time program can be set for a separate cooling circuit.

1. Extended menu: ☰
2. "Heating" or "Heating/cooling".
3. If applicable, use ◂/▸ to select the required heating/cooling circuit.
4. "Time program heating" or "Time proghtg/cooling".
5. Set the required time phases and operating status.

- Between the time phases, rooms are neither heated nor cooled. Only the heat pump frost protection is active ("Stand-by" operating status).
- When making settings, please bear in mind that your heating system requires some time to heat or cool the rooms to the required temperature.

Operating status for central heating/central cooling

"Standard"

- Central heating/central cooling takes place to the standard room temperature "Set room temperature"

"Reduced"

- Central heating/central cooling takes place to the reduced room temperature "Set red. room temp". In the "Reduced" operating status, a heating/cooling circuit is not cooled.

"Fixd value"

- Central heating takes place with the max. permissible flow temperature of the respective heating circuit, irrespective of the outside temperature.
- Central cooling takes place with the min. flow temperature of the respective heating circuit, irrespective of the outside temperature.
- Factory settings: Your contractor may have adjusted these values.
  - Max. heating flow temperature: 40°C.
  - Min. cooling flow temperature: 20°C.

Central heating/central cooling with buffer cylinder

System with heating water buffer cylinder

For central heating, the heating water buffer cylinder supplies your heating/cooling circuits with heat. The heat pump heats the heating water buffer cylinder automatically, as soon as the outside temperature falls below the heating limit. This heating limit has been set by your contractor.

For central cooling (if installed), the heat pump supplies the cooling circuit directly, not via the heating water buffer cylinder. Central cooling is automatically switched on if the outside temperature rises above the cooling limit. The cooling limit has also been set by your contractor.

System with heating water/coolant buffer cylinder

A heating water/coolant buffer cylinder can either heat or cool your heating/cooling circuits. To heat your home, you must switch on central heating via the heating water/coolant buffer cylinder. To cool your home, you must switch on central cooling via the heating water/coolant buffer cylinder.

- Simultaneous central heating and central cooling is not possible.
- Central cooling via a separate cooling circuit is not possible.

Switching on central heating for heating water/coolant buffer cylinder

1. Extended menu: ☰
2. "System"
3. "Buffer cyl operating mode"
4. "Heating mode"

Switching on central cooling for heating water/coolant buffer cylinder

1. Extended menu: ☰
2. "System"
3. "Buffer cyl operating mode"
4. "Cooling mode"

Setting the time program for central heating with buffer cylinder

In the time program for central heating with buffer cylinder, you set the time phases in which your buffer cylinder is heated and to what temperatures. In addition, you specify whether the entire volume of the buffer cylinder or just the top section is heated. When setting the time program, you select an operating status for each time phase: See chapter "Operating status for heating the buffer cylinder".

This time program applies either to a heating water buffer cylinder or to a heating water/coolant buffer cylinder in heating mode.

Factory setting: One time phase from 00:00 to 24:00 for every day of the week with the "Standard" operating status.

- The time phases for heating the buffer cylinder must cover all time phases for central heating (for all heating circuits).
- If you switch off heating of the heating water buffer cylinder with the time program (all time phases are deleted "- - : - -"), your rooms will not be heated.
- We recommend that the buffer cylinder should be heated continuously.

1. Extended menu: ☰
2. "System"
3. "Time prog buffer cyl"
4. Set the required time phases and operating status.

- The buffer cylinder is not heated between the time phases. Only frost protection for the buffer cylinder is active.
- When setting the time program, please bear in mind that your heat pump requires some time to heat the buffer cylinder to the required temperature.

Operating status for heating the buffer cylinder

"Standard"

- The entire volume in the buffer cylinder is heated to the highest set flow temperature for all connected heating/cooling circuits.
- The set flow temperature of a heating/cooling circuit results from the heating curve, the outside temperature and the required room temperature.

"Reduced"

- The top section of the buffer cylinder is heated to the highest set flow temperature for all connected heating/cooling circuits.
- The set flow temperature of a heating/cooling circuit results from the heating curve, the outside temperature and the required room temperature.

"Fixd value"

- The entire volume in the buffer cylinder is heated to a fixed temperature.
  Factory setting: 50°C. Your contractor may have adjusted this value.
- You can utilise the "Fixd value" operating status, e.g. to heat the buffer cylinder to a higher temperature with economical night tariff power.

Note

Above a specified outside temperature, the buffer cylinder will no longer be heated, even in the "Fixd value" operating status. Your contractor can adjust this temperature limit.

Setting the time program for room cooling with heating water/coolant buffer cylinder

In the time program for room cooling with a heating water/coolant buffer cylinder, you set the time phases when your buffer cylinder is cooled and to what temperatures. In addition, you specify whether the entire volume of the buffer cylinder or just the top section is cooled. When setting the time program, you select an operating status for each time phase: See chapter "Operating status for cooling the buffer cylinder".

Note

This time program applies only to a heating water/coolant buffer cylinder in cooling mode.

Factory setting: One time phase from 00:00 to 24:00 for every day of the week with the "Standard" operating status.

- The time phases for cooling the buffer cylinder must cover all time phases for central cooling (for all heating/cooling circuits).
- If you switch off cooling of the cooling water buffer cylinder with the time program (all time phases are deleted "- - : - -"), your rooms will not be colled.
- We recommend that the buffer cylinder should be cooled continuously.

1. Extended menu: ☰
2. "System"
3. "Time prog. coolnt buff cyl."
4. Set the required time phases and operating status.

- The buffer cylinder is not cooled between the time phases. Only frost protection for the buffer cylinder is active.
- When setting the time program, please bear in mind that your heat pump requires some time to cool the buffer cylinder to the required temperature.

Operating status for cooling the heating water/coolant buffer cylinder

"Standard"
- The entire volume in the buffer cylinder is cooled to the lowest set flow temperature for all connected heating/cooling circuits.
- The set flow temperature of a heating/cooling circuit results from the cooling curve, the outside temperature and the required room temperature.

"Reduced"
- The top section of the buffer cylinder is cooled to the lowest set flow temperature for all connected heating/cooling circuits.
- The set flow temperature of a heating/cooling circuit results from the cooling curve, the outside temperature and the required room temperature.

"Fixd value"
- The entire volume in the buffer cylinder is cooled to a fixed temperature.
  Factory setting: 20 °C. Your contractor may have adjusted this value.
- You can utilise the "Fixd value" operating status, e.g. to cool the buffer cylinder to a lower temperature with economical night tariff power.

Setting the heating curve/cooling curve

So that your rooms are heated or cooled optimally at all outside temperatures, you can adjust the "Level" and "Slope" of the "Heating curve" or the "Cooling curve". In this way you influence the flow temperature of the heat pump.

Setting curves for central heating/central cooling

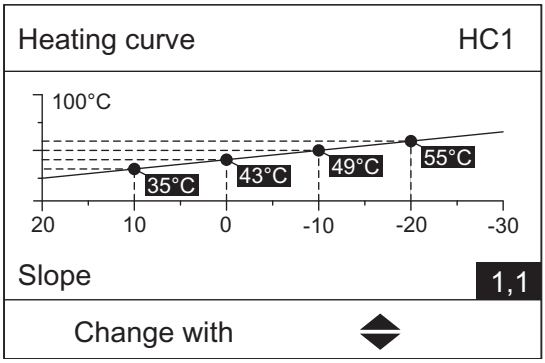
Factory setting

	„Slope”	„Level”
Heating curve	0,6	0
Cooling curve	1,2	0

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/ cooling circuit.
4. "Heating curve" or "Cooling curve".
5. "Slope" or "Level".
6. Set the required value.

You will be provided with tips on when and how tSKKange the heating curve slope and level. Press ?.

Example: changing the heating curve slope to 1.1
A graph clearly shows the change in the heating curve as soon as you alter the value for the slope or level.



Set flow temperatures are assigned to the different outside temperatures. Outside temperatures are shown on the horizontal axis. Set flow temperatures for the heating circuit are highlighted.

Tips for setting the "Heating curve"

Heating characteristics	Adjustments to the "Heating curve"
The home is too cold during the winter.	Set the "Slope" to the next level up.
The home is too warm during the winter.	Set the "Slope" to the next level down.
The home is too cold during the spring, autumn and winter.	Set the "Level" to a higher value.
The home is too warm during the spring,autumn and winter.	Set the "Level" to a lower level.
The home is too cold during the spring, autumn but warm enough during the winter.	Set the "Slope" to the next level down and "Level" to a higher value.
The home is too warm during the spring, autumn but warm enough during the winter.	Set the "Slope" to the next level up and "Level" to a lower value.

Tips for setting the "Cooling curve"

Cooling characteristics	Adjustments to the "Cooling curve"
The home is too warm during the summer.	Set the "Slope" to the next level up.
The home is too cold during the summer	Set the "Slope" to the next level down.
The home is too warm during the spring, autumn and summer.	Set the "Level" to a higher value.
The home is too cold during the spring,autumn and summer.	Set the "Level" to a lower level.
The home is too warm during the spring, autumn but cold enough during the summer.	Set the "Slope" to the next level down and "Level" to a higher value.
The home is too cold during the spring, autumn but cold enough during the summer.	Set the "Slope" to the next level up and "Level" to a lower value.

Stopping central heating/central cooling

To switch off central heating for a heating/cooling circuit, select the "Only DHW" or "Stand-by mode" operating program.

For the preferred heating/cooling circuit

1. Standard menu:

◀/▶ for the operating program:

- "Only DHW" (no central heating/cooling) or
- "Standby mode" (frost protection active).

2. **OK** to confirm.

For all heating/cooling circuits

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/cooling circuit.
4. "Operating program".
5.

■ "Only DHW" (no central heating/cooling)

or

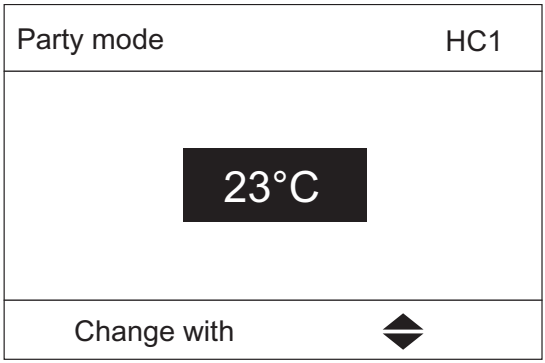
■ "Standby mode" (frost protection active)

Temporarily adjusting the room temperature

If you wish to adjust the room temperature temporarily, select "Party mode". "Party mode" is independent of the time program for central heating/central cooling.

- For central heating, the home is heated to the temperature set for "Party mode".
- For central cooling, the home is cooled to the temperature set for "Party mode".
- If your contractor has not made alternative adjustments, DHW is heated to the selected DHW temperature first, before central heating/central cooling commences.
- The DHW circulation pump is switched on (if installed)

Setting Party mode for central heating/central cooling



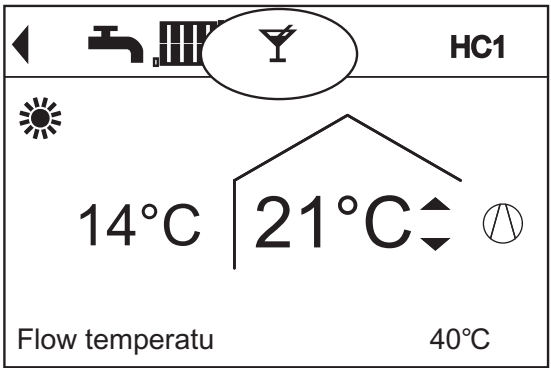
1. Extended menu: ☰.
2. "Heating" or "Heating/cooling"
3. If applicable, use ◀/▶ to select the required heating/ cooling circuit.

Note

"Party mode" cannot be set for a separate cooling circuit.

4. "Party mode"
5. Set the required room temperature for "Party mode".

Display in the standard menu: For the preferred heating/cooling circuit



Ending "Party mode"

- "Party mode" ends automatically after 8 hours.

or

- "Party mode" ends automatically if the time program changes to the "Standard" or "Fixd value" operating status.

or

- Set "Party mode" to "OFF".

Saving energy during short periods of absence

To save energy, select "Economy mode" when you leave home.

- The room temperature for central heating will be reduced, regardless of the "Time program".
- In "Economy mode", cooling via a heating/cooling circuit is switched OFF.
- "Economy mode" cannot be set for a separate cooling circuit.

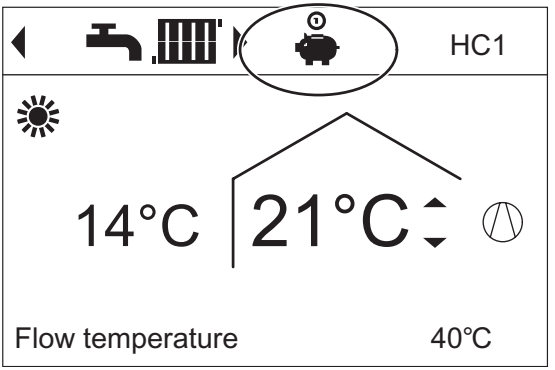
Note

You can select "Economy mode" only in the "Heating and DHW" or "Heating" operating program.

Setting Economy mode for heating

1. Extended menu:
2. "Heating" or "Heating/cooling"
3. If applicable, use ◀/▶ to select the required heating/cooling circuit
4 "Economy mode"

Display in the standard menu: For the preferred heating circuit



Note
The display of the set room temperature in the standard menu does not change.

Ending "Economy mode"

- "Economy mode" ends automatically if the time program changes to the "Reduced" or "Standby" operating status.

or

- Set "Economy mode" to "OFF".

Saving energy during long periods of absence

To save energy during long periods of absence, select "Holiday program".
The holiday program has the following effects:

- Central heating:
  - For heating/cooling circuits in the "Heating and DHW" or "Heating/cooling and DHW" operating program:

The rooms are heated to the set reduced room temperature ("Set red. room temp")

  - For heating/cooling circuits in the "Only DHW" operating program:

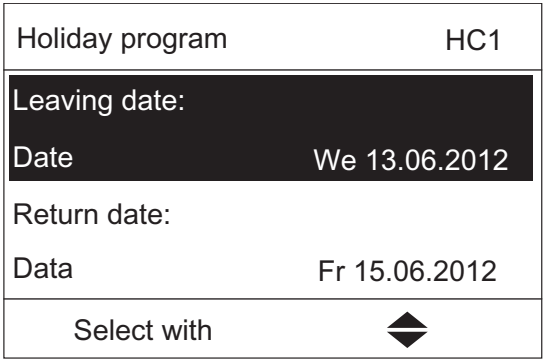
  No central heating; frost protection for the heat pump and buffer cylinder (if installed) is active.

- Central cooling:
  No cooling via a heating/cooling circuit; a separate cooling circuit continues to be cooled.
- DHW heating:
  No DHW heating; frost protection for the DHW cylinder is active.

Note
The holiday program affects all heating/cooling circuits. Your contractor can change this factory setting.

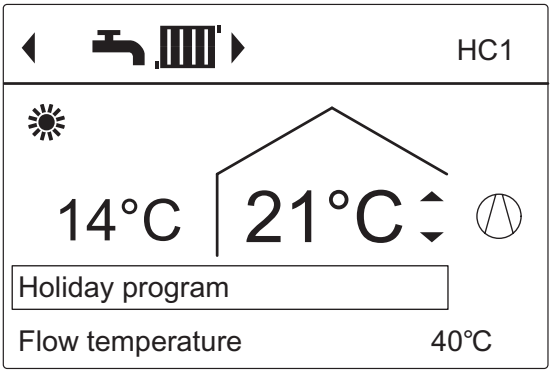
Setting the Holiday program for central heating/central cooling, ventilation

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling"
3. "Holiday program"
4. Set the required departure and return dates.



The holiday program starts at 00:00 h on the day following your departure and ends at 00:00 h on the day of your return. This means that on the days of departure and return the set time program is active.

Display in the standard menu



Note

In the extended menu, you can call up the set holiday program under "Information"

Changing "Holiday program"

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling".
3. "Holiday program".
4. "Change program".
5. Set the required departure and return dates.

Cancelling or deleting the "Holiday program"

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling"
3. "Holiday program"
4. "Delete program"

Setting the standard DHW temperature

Your DHW is always heated to this temperature when a time phase with the operating status "Standard" is active in the time program. Setting the time program for DHW heating.

Factory setting: 50 °C

1. Extended menu: ☰.
2. "DHW"
3. "Set DHW temperature"
4. Set the required value.

Setting the higher DHW temperature

The DHW will be heated to the higher DHW temperature under the following circumstances:

- In the time program for DHW heating, a time phase for the "Temp. 2" operating status is enabled.
- You have selected once-only DHW heating.
- You have selected manual mode.

Factory setting: 60°C

1. Extended menu: ☰
2. "DHW"
3. "Set DHW temperature 2"
4. Set the required value.

Note

Where necessary, enable the electric booster heater in order to achieve the required DHW temperature.

Setting the operating program for DHW heating

In the for DHW heating operating program you set whether DHW heating is enabled or not. Overview of the operating programs:

For the preferred heating/cooling circuit

1. Standard menu:
   ◀/▶ for the operating program: e.g. "Only DHW".
2. **OK** to confirm.

For all heating/cooling circuits

1. Extended menu: ☰.
2. Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/cooling circuit.
4. "Operating program".
5. E.g. "Only DHW".

Setting the time program for DHW heating

In the time program for DHW heating, you set the time phases in which your DHW is heated and to what temperatures. To do so, select an operating status for each time phase: See chapter "Operating status for DHW heating".
Factory setting: one time phase from 00:00 to 24:00 for every day of the week with the "Top" operating status

1. Extended menu: ☰.
2. "DHW".
3. "Time program DHW".
4. Set the required time phases and operating status.

Note

- *The DHW is not heated between the time phases. Only frost protection for the DHW cylinder is active.*
- *When setting time programs, bear in mind that your heating system requires some time to heat the DHW cylinder to the required temperature. Select a correspondingly earlier start time. Use the "Start optimisation" and "Stop optimisation" functions.*
- *Your rooms will not be heated whilst the DHW cylinder is being heated*

Operating status for DHW heating

The operating statuses for DHW heating differ as follows depending on the type of DHW cylinder you have installed.

DHW cylinder with one temperature sensor at the top applies to the following versions:

- DHW cylinder with temperature sensor at the top

"Top"

- The top section of the DHW cylinder is heated to the "Set DHW temperature", e.g. when there is little DHW demand.

"Standard"

- The top section of the DHW cylinder is heated to the "Set DHW temperature".

"Temp. 2"

- The top section of the DHW cylinder is heated to the "Set DHW temperature 2": Se

DHW cylinder with two temperature sensors, applies to the following version:

- DHW cylinder with temperature sensors at the top and bottom

"Top"

- The top section of the DHW cylinder is heated to the "Set DHW temperature", e.g. when there is little DHW demand.

"Standard"

- The entire volume of the DHW cylinder is heated to the "Set DHW temperature".

"Temp. 2"

- The entire volume of the DHW cylinder is heated to the "Set DHW temperature 2".

Setting start optimisation

Start optimisation ensures that DHW is available at the set temperature at the beginning of a time phase in the time program- DHW heating starts automatically earlier.

1. Extended menu:
2. "DHW"
3. "Start optimisation"

Setting stop optimisation

The stop optimisation ensures that the DHW cylinder is always fully heated at the end of the time phase in accordance with the time program.

1. Extended menu:
2. "DHW"
3. "Stop optimisation"

Setting a time program for the DHW circulation pump

In the time program for the DHW circulation pump, you set the time phases in which the circulation pump runs constantly or at intervals.
To do so, select an operating status for each time phase: See chapter "Operating status for the DHW circulation pump".
No time phases are factory set for the DHW circulation pump, i.e. the DHW circulation pump is switched off.

1. Extended menu: ☰.
2. "DHW".
3. "Time prog DHW circ".
4. Set the required time phases and operating status.

Note
Between the time phases the DHW circulation pump remains off.

Operating status for the DHW circulation pump

"5/25cycls"

- The DHW circulation pump starts every 30 minutes for 5 minutes (pause duration 25 minutes).

"5/10cycls"

- The DHW circulation pump starts every 15 minutes for 5 minutes (pause duration 10 minutes).

"ON"

- The DHW circulation pump runs constantly.

Increasing DHW temperature temporarily

If there is an increased demand for domestic hot water, you can temporarily increase the DHW temperature.
To do so, switch on "1x DHW heating". DHW is heated to the higher DHW temperature ("Set DHW temperature 2").

Starting 1x DHW heating

Note
One of the following operating programs must be set for at least one heating/cooling circuit:

- *"Heating and DHW".*
- *"Heating/cooling and DHW".*
- *"Cooling and DHW".*
- *"Only DHW".*

1. Extended menu: ☰.
2. "DHW".
3. "1x DHW heating".

Note
This function terminates automatically as soon as "Set DHW temperature 2" has been reached.

Stopping DHW heating

You do not want to heat DHW, nor heat or cool the rooms:
For this purpose, switch on "Stand-by mode".

For the preferred heating/cooling circuit
1. Standard menu:
   ◀/▶ for the "Stand-by mode" operating program (frost protection).
2. **OK** to confirm.

For all heating/cooling circuits
1. Extended menu: ☰.
2. "Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/cooling circuit.
4. "Operating program".
5. "Stand-by mode" (frost protection).

You do not want to heat DHW, but do want to provide central heating:
For this purpose, set the standard DHW temperature to its lowest value.

1. Extended menu: ☰.
2. "Heating" or "Heating/cooling".
3. If applicable, use ◀/▶ o select the required heating/ cooling circuit.
4. "Operating program".
5. Depending on the selected heating/cooling circuit: e.g. "Heating and DHW".
6. ⮌ until the menu appears.
7. "DHW".
8. "Set DHW temperature".
9. Set 10 °C.

Enabling or blocking the electric booster heater for central heating

If there is a high heat demand for the central heating, the instantaneous heating water heater is switched on in addition to the heat pump.

Since frequent use of an electric booster heater increases power consumption, you will have to enable this booster heater for central heating.

Factory setting: Blocked

1. Extended menu: ☰.
2. "System"
3. "Electric heating"

Enabling or blocking the electric booster heater for DHW heating

If there is a high heat demand for DHW heating, the instantaneous heating water heater is switched on in addition to the heat pump.

Since frequent use of an electric booster heater increases power consumption, you will have to enable this booster heater for DHW heating.

Factory setting: Enabled:

1. Extended menu: ☰
2. "DHW"
3. "DHW with electr.heating"

Setting the time program for the electric booster heater

In the time program for the electric booster heater, set the time phases in which this booster heater is allowed to be switched on and at what output stage.
To do so, select an operating status for each time phase: See chapter "Operating status for electric booster heater".
Factory setting: one time phase from 00:00 to 24:00 for every day of the week with the "Stage3" operating status.

1. Extended menu: ☰
2. "System"
3. "Time prog. elec. heater"
4. Set the required time phases and operating status.

Outside the set time phases the electric booster heater is blocked.

Operating statuses of electric booster heater

"Step 1"

- Only the lowest power level can be switched on."

"Step 2"

- The lowest and medium power levels can be switched on.

" Step 3"

- All power levels can be switched on. (applies to HPSI-09 indoor unit)

Enabling and blocking active cooling mode

In active cooling mode, the heat pump is in operation. The available cooling capacity is comparable to the heating output of the heat pump.

- The cooling function must be set by your contractor.
- Since frequent use of active cooling mode increases power consumption, you will have to enable this function.

System without buffer cylinder or with heating water buffer cylinder

1. Extended menu: ☰.
2. "Heating/cooling".
3. If applicable, use ◀/▶ to select the required heating/cooling circuit.
4. "Active cooling mod."

System with heating water/coolant buffer cylinder

1. Extended menu: ☰.
2. "System".
3. "Active cooling mod."

Setting the time program for quieter operation

In the time program for quieter operation, set the time phases in which the speed of the fan and, if required, of the compressor are limited. To do so, select an operating status for each time phase: See chapter "Operating status for quieter operation".
Factory setting: no time phase from 00:00 to 24:00 for every day of the week. The fan speed is not limited.

1. Extended menu: ☰.
2. "System".
3. "Time prog. noise red."
4. Set the required time phases and operating status.

- The fan speed is not limited between the set time phases.
- If the setting for noise reduced mode is blocked, "Cannot be changed" is shown for 4 s. Your contractor can lift this block. You can call up a time program set by the contractor under "Information".

Operating status for quieter operation

"Stop1"

- The max. fan speed and, if necessary, that of the compressor, are reduced by a small amount.

"Stop"

- The heat pump does not operate. Central heating and DHW heating are provided by the auxiliary heater, e.g. electric booster heater.

Note

You have to enable available booster heaters, e.g. electric booster heater.
If no booster heater is available, your rooms will not be heated and DHW heating will not take place.

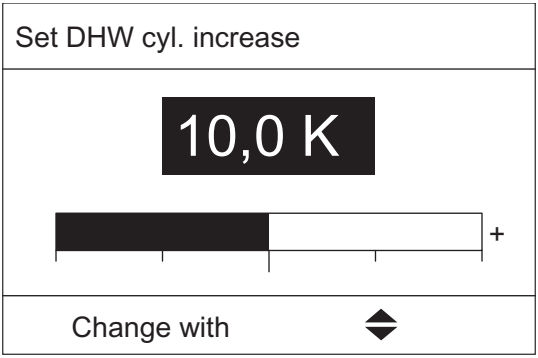
Utilising power from a photovoltaic system (power generated on site)

You can use the power from your photovoltaic system (power generated on site) to operate the heat pump. For this, you enable one or more functions.
To utilise power generated on site, select the appropriate operating program for central heating, central cooling or DHW heating, e.g. "Heating and DHW".
To increase the utilisation of power generated on site, you can raise the set temperature for the following functions or lower it for cooling:

Function	Set temperature	
	increase	setback
Standard DHW temperature		
"DHW cylinderheating"	„"Set DHW cyl.increase"	-
Higher DHW temperature		
"Set DHW temperature 2"	-	-
Buffer cylinder heating		
"Heating htg water buff cyl"	"Set htg water buffer increase"	-
Central heating		
"Raise roomtemperature"	"Set room temp. increase"	-
Central cooling		
"Room temperature cooling"	-	"Set room temp. reduction"
Cooling the heating water/coolant buffer cylinder		
"Coolant buffer cyl cooling"	-	"Set cooling water buffer red"

1. Extended menu: ☰.
2. "PV ctrl strategy"
3. Select the required function, e.g. "DHW cylinder heating""
4. Set the required temperature increase or temperature reduction. E.g. 10 Kelvin (10 K) for "Set DHW cyl. increase" to increase the set temperature for the standard DHW temperature from 50 °C to 60 °C.
5. If required, repeat steps 3 and 4 for further functions.

- If you enable several functions for the utilisation of power generated on site, the functions for DHW heating will have priority over the functions for central heating/ central cooling.
- Activating "Set DHW temperature 2" is only appropriate if you have not set a time phase for the "Temp. 2" operating status in the time program for DHW heating. If you still have the "Temp. 2" operating status set in the time program, your DHW cylinder may be heated with electricity from the grid in these time phases.
- In parallel to the utilisation of power generated on site, a percentage of power can be drawn from the grid for operating the heat pump. Your contractor can enable this function.



Note
Utilisation of power generated on site and utilisation of excess power from the grid (Smart Grid) are both enabled. If the utilisation of power generated on site and Smart Grid are enabled and active simultaneously, the function with the largest temperature increase or reduction is used.

Utilising excess power

Smart Grid, the operation of the heat pump will be matched to the available amount of power in the grid (grid utilisation).

Not a lot of power in the grid (grid overload)
Your power supply utility can block your heat pump. During this power-OFF period, central heating is provided by the buffer cylinder. If no buffer cylinder is installed or its temperature is too low, the rooms are heated using the available auxiliary heaters, e.g. electric boiler. DHW can only be heated during the power-OFF period using the auxiliary heaters.

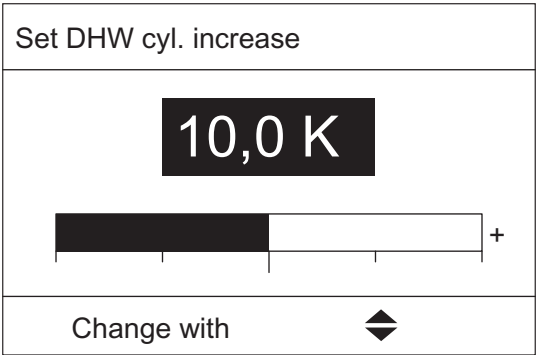
Large amount of excess power (power is free)
Your power supply utility switches your heat pump on directly.
DHW, the buffer cylinder and the heating circuits are automatically heated to the max. possible temperatures.

Small amount of excess power (power is cheap)
The heat pump runs in standard operation with modified set temperatures.
You can increase these set temperatures for the following functions or reduce them for cooling.

Function	Set temperature	
	increase	setback
DHW heating		
"DHW cylinder heating"	"Set DHW cyl. increase"	-
Heating the heating water buffer cylinder		
"Heating htg water buff cyl"	"Set htg. water buffer increase"	-
Central heating		
"Raise roomtemperature"	"Set room temp. increase"	-
Central cooling		
"Room temperature cooling"	-	"Set room temp. reduction"

1. Extended menu: ☰⋮.
2. "Smart Grid"
3. Select the required function, e.g. "DHW cylinder heating"
4. Set the required temperature increase or temperature reduction. E.g. 10 Kelvin (10 K) for "Set DHW cyl. increase" to increase the set temperature for the standard DHW temperature from 50 °C to 60 °C.
5. If required, repeat steps 3 to 4 for further functions.

If you enable several functions for the utilisation of excess power, the functions for DHW heating will have priority over the functions for central heating.
Utilisation of power generated on site and utilisation of excess power from the grid (Smart Grid) areboth enabled.



Note
If the utilisation of power generated on site and Smart Grid are enabled and active simultaneously, the function with the largest temperature increase or reduction is used.

Setting the display contrast

You can make the menu texts easier to read. To do so, adjust the contrast of the display to suit the lighting conditions in the room.

1. Extended menu: ☰.
2. "Settings"
3. "Contrast"
4. Set the required contrast.

Setting the display brightness

You would like to be able to read the text in the menu better. Change the brightness level of the "Control" display.
You can also alter the "Screen saver" brightness.

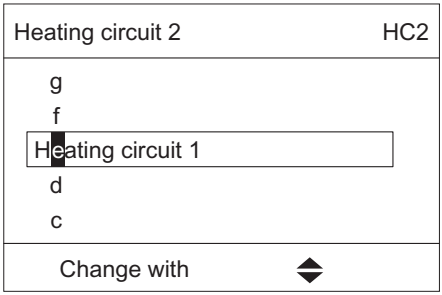
1. Extended menu: ☰.
2. "Settings"
3. "Brightness"
4. "Control" or "Screen saver"
5. Set the required brightness.

Setting names for heating/cooling circuits

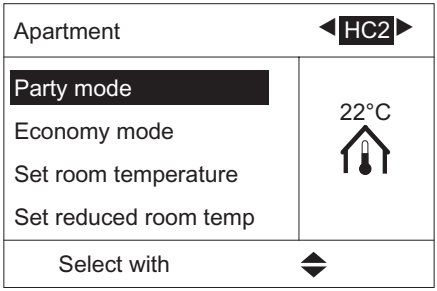
You can designate all heating/cooling circuits individually. The abbreviations "HC1", "HC2", "HC3" and "SKK" are retained.

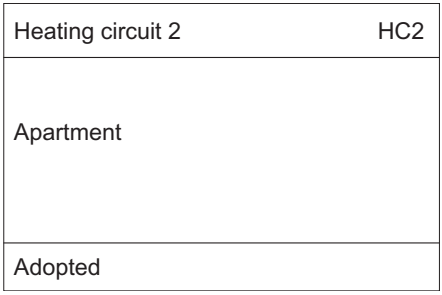
1. Extended menu: ☰.
2. "Settings"
3. "Name for heating circuit"
4. "Heating circuit 1", "Heating circuit 2", "Heating circuit 3" or "Cooling circuit SKK"
5. "Change?"
6. You can select the required character with ▲▼.
7. ◀/▶ takes you to the next character.
8. Press **OK** to accept all entered characters at once and simultaneously exit this menu.

Note
You can delete the name entered with "Reset?".



In the menu for "Heating circuit 2" the name "Apartment" will appear.





Setting the preferred heating/cooling circuit for the standard menu

If your system has more than one heating/cooling circuit, any operation on the standard menu always relates to the preferred heating/cooling circuit.
Select the preferred heating/cooling circuit from this menu.

1. Extended menu: ☰
2. "Settings".
3. "Standard menu".
4. Select the heating/cooling circuit:

- "Heating circuit 1" "HC1" is displayed.
- "Heating circuit 2" "HC2" is displayed.
- "Heating circuit 3" "HC3" is displayed.
- "Cooling circuit SKK" (for the separate cooling circuit) "SKK" is displayed.

Setting the time and date

The time and date are factory-set. If your heating system has been shut down for a prolonged period, you may need to reset the time and date.

1. Extended menu: ☰.
2. "Settings".
3. "Time/Date".
4. Set the time and date.

Setting menu language

1. Extended menu: ☰
2. "Settings"
3. "Language"
4. Select the required language.

Setting the temperature unit (°C/°F)

1. Extended menu: ☰.
2. "Settings"
3. "Temperature unit"
4. Select the temperature unit "°C" or "°F".

Restoring factory settings

You can restore the factory settings of all modified values for every heating/cooling circuit, DHW heating and other system settings separately.

1. Extended menu: ☰
2. "Settings".
3. "Standard setting".
4. Select the required system setting, e.g. "DHW".

System setting	Settings and values that are reset
"System"	■ Time program for central heating with buffer cylinder ■ Time program for central cooling with buffer cylinder ■ Electric booster heater is blocked for central heating. ■ Time program for electric booster heater ■ Time program for reduced noise operation
"Heat management"	■ Control strategy ■ Energy prices for electricity and fuel ■ Primary energy factors for electricity and fuel
"DHW"	■ Standard DHW temperature ■ Higher DHW temperature ■ Time program for DHW heating ■ Time program for DHW circulation pump ■ Electric booster heater is enabled for DHW heating. ■ Start and stop optimisation are switched off.
"Electr booster heater"	■ Electric booster heater is blocked for central heating. ■ Time program for electric booster heater
"Heating circuit 1" "Heating circuit 2" "Heating circuit 3"	■ Standard room temperature ■ Reduced room temperature ■ Time program for central heating ■ Heating curve slope and level ■ Comfort and energy saving functions ("Party mode", "Economy mode" and "Holiday program") are stopped. *If names have been given to the heating/cooling circuits, these are retained: see chapter "Setting names for heating/cooling circuits".*
„Cooling”	■ Standard room temperature ■ Cooling curve slope and level ■ Active cooling mode is blocked.
„Pfotovoltaic installation”	■ Utilisation of power generated on site is switched off for all components
„Smart Grid”	■ No function is enabled for utilising surplus power.

Calling up information

You can call up current temperatures, set values, time programs and operating states. In the extended menu, information is split into groups:

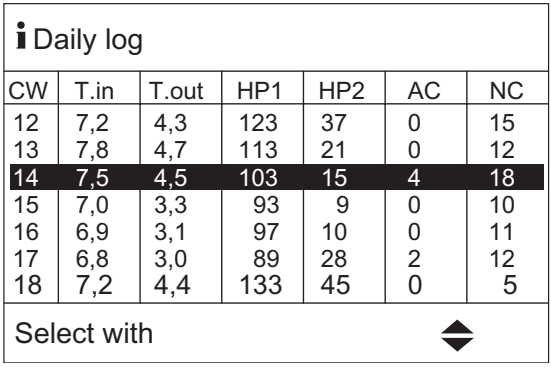
- "System"
- "Heating circuit 1"
- "Heating circuit 2"
- "Heating circuit 3"
- "Cooling circuit SKK"
- "DHW"
- "Heat pump"
- "Energy statement"
- "Daily log"

Detailed call-up options for the individual groups can be found in chapter "Overview of extended menu"

Note
If names have been given to the heating/cooling circuits, these are shown: see chapter "Setting names for heating/cooling circuits".

1. Extended menu: ☰.
2. "Information".
3. Select the group.
4. Select the information you wish to call up.

Daily log



The daily log lists the following information for each calendar week ("CW") in tabular form.

1. Extended menu: ☰.
2. "Information".
3. "Daily log".

Column	Meaning
„T.in”	Minimum air temperature on entering the heat pump
„T.out”	Minimum air temperature on exiting the heat pump
„HP1”	Hours run, heat pump stage 1
„HP2”	Hours run, heat pump stage 2
„AC”	Total hours run in "active cooling" mode plus hours run for defrosting the evaporator
„NC”	Hours run with the "natural cooling" function

This information is retained permanently, even if the heat pump control unit is faulty.

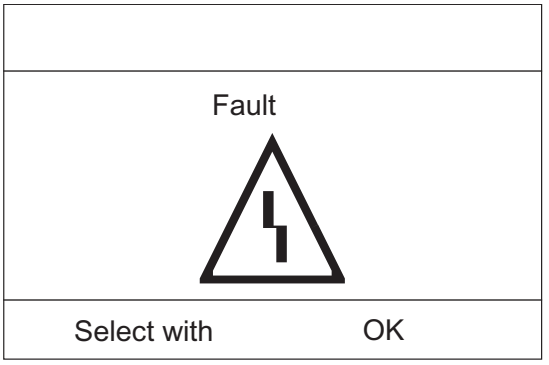
Calling up messages

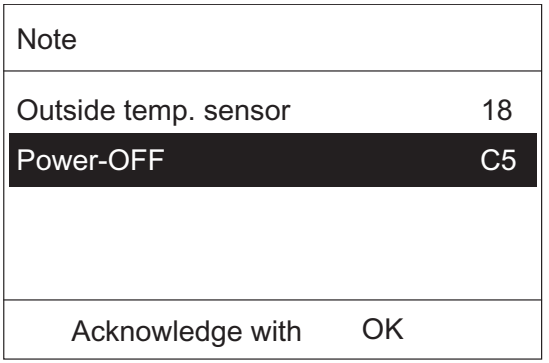
In the case of special events or operating states in connection with your heat pump or heating system, the heat pump control unit displays notes, warnings or fault messages. Alongside the plain text message, the associated symbol flashes on the display.

"Note"
"Warning"
"Fault"

In addition, the fault indicator (red) flashes on the heat pump control unit. An alarm for issuing fault messages (e.g. a buzzer), if installed, is switched on.

Example of a fault:





1. Pressing **OK** provides you with additional information regarding the displayed message.
2. You can scroll through the list of messages. The header of each message shows whether it is a note, warning or fault message.

   Pressing ? provides you with the following information regarding the selected message:

- Date and time when the message occurred for the first time.
- Information about the characteristics of the heat pump and heating system.
- Tips on steps you can take yourself before notifying your contractor.

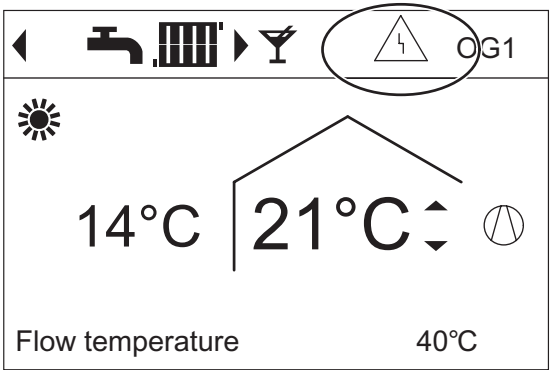
3. If warnings or fault messages are shown(△, ⚠) , make a note of the message text and the message code next to it. In the example: "Fault", "Outside temp. sensor 18".

   This enables the contractor to be better prepared and may save you unnecessary travelling costs.

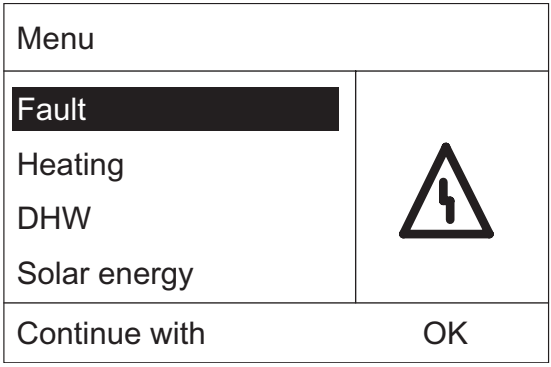
   It is not necessary to notify your contractor about a Note (👁). In the example: "Note", "Power-OFF C5".
4. Acknowledge all messages. For this, follow the instructions in the menu.

   The message will be adopted into the "Fault", "Warning" or "Note" menu.

Display in the standard menu



Display in the extended menu



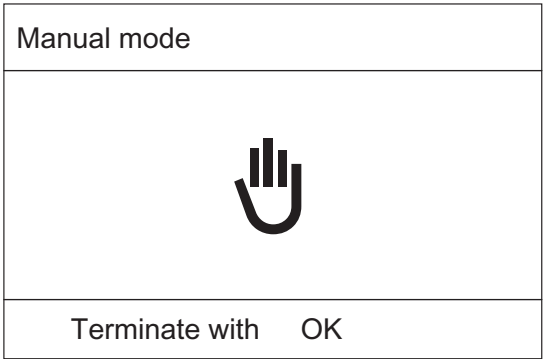
Calling up acknowledged messages

1. Extended menu:
2. "Fault", "Warning" or "Note"

Note

- *If you have connected an alarm to alert you to fault messages (e.g. a buzzer), this is deactivated when the fault message is acknowledged.*
- *If the fault cannot be rectified until later, the fault message will reappear at 7:00 the following day. The alarm is switched on again (if installed).*
- *If you acknowledge fault message "Heat pump A9", both heating and DHW heating are provided entirely by the available auxiliary heaters, e.g. instantaneous heating water heater (if installed and enabled). As this may be associated with high electricity costs, we recommend having the heat pump checked by your contractor immediately.*

Manual mode



In manual mode, central heating and DHW heating operate independently of the time programs:

- Uncontrolled heating with a set flow temperature of 45 °C
- DHW heating with "Set DHW temperature 2"
- No central cooling
- The buffer cylinder will be heated to the "Fixd value" temperature.

Note

Use manual mode only after consulting your contractor.

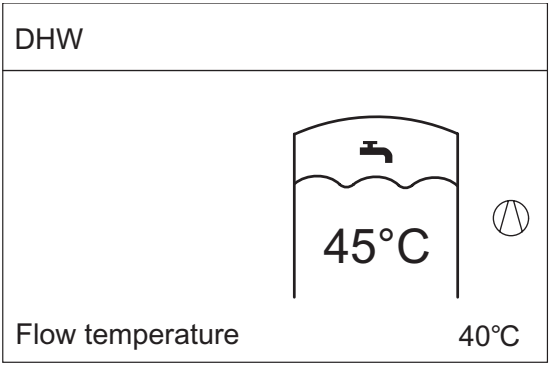
1. Extended menu: ☰.
2. "Manual mode".

Note
Key ☰ returns you to the extended menu. You can call up any information and adjust all settings. These settings become active after manual mode ends.

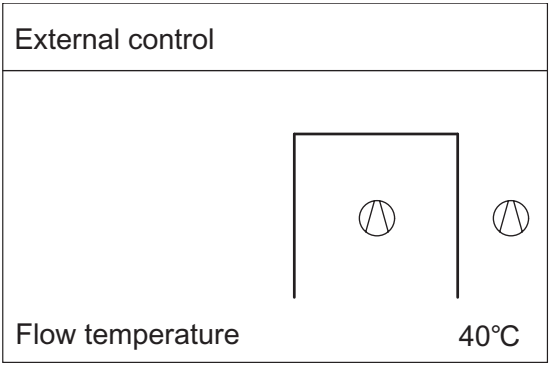
Special system versions

The displays in the standard menu and the extended menu differ depending on the system version.
At both control levels, only those functions that are relevant for your system version are available to you.

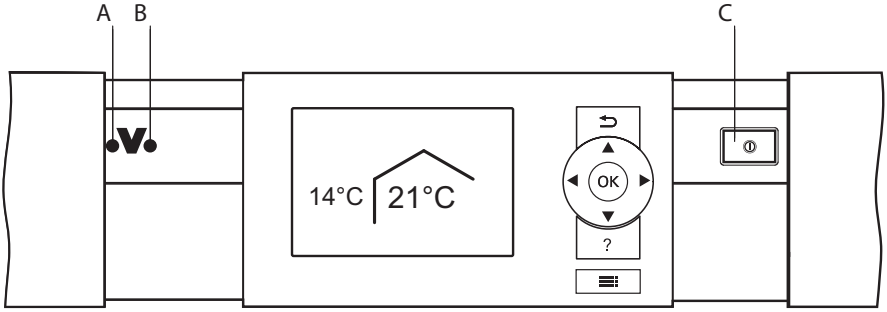
Standard menu for the DHW system version



Standard menu with "External control"



Control unit at the front of the heat pump



Ⓐ *- Fault indicator (red)*
Ⓑ *- ON indicator (green)*
Ⓒ *- ON/OFF switch*

Shutting down the heat pump

With frost protection monitoring
For every heating/cooling circuit, select the operating program "Stand-by mode".

For the preferred heating/cooling circuit
1. Standard menu: ◀/▶ for the operating program "Standby mode" (frost protection)
2. **OK** to confirm.

For all heating/cooling circuits
1. Extended menu: ☰.
2. "Heating" or "Heating/cooling"
3. If applicable, use / to select the required heating ◀/▶ cooling circuit
4. "Operating program"
5. "Standby mode" (frost protection)

- The circulation pumps are briefly started every 24 hours to prevent them from seizing up.

In the following cases, frost protection is only guaranteed with a booster heater (on site):
- Air/water heat pumps: At temperatures below −15°C.
- When there is a heat pump fault.

Auxiliary heaters may include instantaneous heating water heaters (electric booster heaters) or oil/gas boilers (fossil fuel booster heaters).

Without frost protection monitoring (shutting down the system).

1. Switch the ON/OFF switch OFF.
2. Isolate the system from the power supply, e.g. at a separate fuse or a mains isolator.

Attention!

If outside temperatures below 3°C are expected, take appropriate measures to protect the heat pump and the heating system from frost. If necessary, contact your contractor.

Information on shutting down for longer periods

- *Circulation pumps may seize up when they are not supplied with power.*
- *It may be necessary to reset the date and time: see chapter "Setting the time and date".*

Starting the heat pump

1. Switch ON the power supply, e.g. at a separate fuse or a mains isolator.
2. Switch ON/OFF switch ON. After a short time, the standard menu is displayed. The green ON indicator illuminates. Your heat pump is now ready for operation.

Faults

Rooms are too cold

Cause	Remedy
The heat pump is off.	■ Turn on the ON/OFF switch. ■ Switch ON the mains isolator (if installed, outside the boiler room). ■ Set the fuse in the power distribution board (main domestic fuse).
Settings made at the heat pump control unit have been changed or are incorrect.	Central heating/central cooling must be enabled. Check the following settings and correct if required: ■ Operating program. ■ Room temperature. ■ Time. ■ Time program for central heating/central cooling. ■ Central heating time program for buffer cylinder. ■ Heating curve/cooling curve. ■ If necessary, select central heating for the buffer cylinder. ■ If necessary, enable the electric booster heater for central heating (if installed).
The DHW cylinder is being heated.	■ Wait until the DHW cylinder has been heated up. ■ Reduce the DHW draw-off rate or temporarily reduce the standard DHW temperature as required.

"Note", "Warning" or "Fault" is shown.	■ Check what type of message it is. Acknowledge the message. ■ If necessary, notify your contractor
"Screed drying" is selected.	■ No action required ■ As soon as the period for screed drying has expired, the heat pump continues in the selected operating program.

Rooms are too hot

Cause	Remedy
Settings made at the heat pump control unit have been changed or are incorrect.	Central heating/central cooling must be enabled. Check the following settings and correct if required: ■ Operating program. ■ Room temperature. ■ Time. ■ Time program for central heating/central cooling. ■ Central cooling time program for buffer cylinder. ■ Heating curve/cooling curve. ■ If necessary, select central cooling for the buffer cylinder. ■ Enable "Active cooling mode" if required.
"Note", "Warning" or "Fault" is shown.	■ Check what type of message it is. Acknowledge the message. ■ If necessary, notify your contractor.

There is no hot water

Cause	Remedy
The heat pump is off.	■ Turn on the ON/OFF switch. ■ Switch ON the mains isolator (if installed, outside the boiler room). ■ Set the fuse in the power distribution board (main domestic fuse).
Settings made at the heat pump control unit have been changed or are incorrect.	DHW heating must be enabled. Check the following settings and correct if required: ■ Operating program. ■ DHW temperature. ■ Time program DHW heating. ■ Time. ■ If necessary, enable the electric booster heater for DHW heating (if installed).
"Note", "Warning" or "Fault" is shown.	■ Check what type of message it is. Acknowledge the message. ■ If necessary, notify your contractor.

The DHW is too hot

Cause	Remedy
Settings made at the heat pump control unit have been changed or are incorrect.	Check and if necessary correct the standard DHW temperature.

„👁" is flashing and "Note" is displayed.

Cause	Remedy
Reference to a particular event or operating state of the heat pump connetced to heating system.	Proceed as described in chapter: Calling up messages

„△" is flashing and "Warning" is displayed.

Cause	Remedy
Warning due to a particular event or operating state of the heat pump connected to heating system.	Proceed as described in chapter: Calling up messages

„⚠" is flashing and "Fault" is displayed.

Cause	Remedy
Fault at the heat pump or the heating system	Proceed as described in chapter: Calling up messages

"Power-OFF C5" is displayed

Cause	Remedy
This message is displayed whilst the power supply is blocked by the power supply utility.	■ No action required ■ The heat pump restarts automatically with the selected operating program as soon as the power supply utility restores the power supply.

"E8 Heat management" is displayed

Cause	Remedy
■ No primary energy factors are set. ■ No fuel or electricity prices are set.	■ Set the primary energy factors. ■ Set the fuel and electricity prices. If this fault recurs, notify your contractor.

"External hook-up" is displayed

Cause	Remedy
The operating program set at the heat pump control unit has been switched over by an external device.	No action required

"Controls locked out" is displayed

Cause	Remedy
Control of the heat pump is blocked.	Your contractor can lift this block

Cleaning the heating system

Attention!

Commercially available domestic cleaning agents and special cleaning agents for the heat exchanger (evaporator) can damage the heat pump.

- ***Clean the appliance surfaces only with a damp cloth.***
- ***If necessary, clean the heat exchanger fins (evaporator) only with a dustpan brush with long bristles.***

Programming unit of the heat pump control unit
Clean the surface of the programming unit with the microfibre cloth provided..

Heating system inspection and maintenance

The inspection and maintenance of a heating system is prescribed by the Energy Saving Ordinance [EnEV -Germany] and the DIN 4755, DIN 1988-8 and EN 806 standards.
Regular maintenance ensures trouble-free, energy efficient and environmentally responsible heating and cooling operation. For this, it is best to arrange an inspection and maintenance contract with your local contractor.

Damaged cables / lines

If there is damage to the connecting cables or lines of the appliance or externally installed accessories, these must be replaced with special cables or lines. Only use the Producer's cables / lines as replacement. For this, notify your qualified contractor.

Refrigerant

The appliance contains fluorinated hydrocarbons (refrigerant) included in the Kyoto Protocol. The type plate indicates the type of refrigerant used in the appliance. The global warming potential (GWP) of the refrigerant is expressed as a multiple of the GWP of carbon dioxide (CO2). The GWP of CO2 is 1.

Refrigerant	Global warming potential GWP
R32	675*1/677*2
R410A	2088*1/1924*2

***1 Based on the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*
**2 Based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)*

Overview of extended menu

Depending on the features of your heating system, not all of the menu entries listed here may be available under ☰:

Extended menu ☰:

Heating, Heating/cooling or Cooling HC1/HC2/HC3/SKK	
"Party mode"	
"Economy mode"	
"Set room temperature"	
"Set red. room temp"	
"Operating program"	
	"Heating and DHW" or "Heating/cooling and DHW" or "Htg" or "Cooling" or "Cooling and DHW"
	"Only DHW"
	"Standby mode"
"Time program heating" or "Time proghtg/cooling"	
"Holiday program"	
"Heating curve"	
Active cooling mod.	
"Cooling curve"	

"DHW"		
	"Set DHW temperature"	
	"Operating program"	
		"Time program"
		"Standby mode"
	"1x DHW heating"	
	"Time program DHW"	
	"Time prog DHW circ"	
	"DHW with electr.heating"	
	"Start optimisation"	
	"Stop optimisation"	
	"Set DHW temperature 2"	

"System"	
	Buffer cyl operating mode
	Active cooling mod.
	"Time prog buffer cyl"
	Time prog. coolnt buff cyl.
	"Time prog. noise red."
	"Electric heating"
	"Time prog. elec. heater"

Heat management		
	Appliance control strategy	
		Economical
		Ecological
	Primary energy factors	
		Current
		Fuel

Energy prices	
	Stand. electr. tariff
	Low electr. tariff
	Prem. electr. tariff
	Fuel price
	PV on-site consump.
Electr. tariff times	
Energy consumption	

"PV ctrl strategy"
"Set DHW temperature 2"
"DHW cylinder heating"
"Heating htg water buff cyl"
"Raise room temperature"
"Room temp. cooling"
Coolant buffer cyl. cooling

„Smart Grid”
"DHW cylinder heating"
"Heating htg water buff cyl"
"Raise room temperature"
"Room temp. cooling"

Note
Subject to the features of your heating system, not all of the call-up options may be available under "Information".
Further details can be called up for any information marked with ▸.

"Information"		
	„System”	
		"Outside temperature"
		"Common flow temp"
		Operating status system ▸
		"Time prog. noise red."
		"Heating season"
		"Cooling period"
		"Buffer cylinder"
		Buffer cyl. operating mode ▸
		"Op. status buffer cylinder"
		Time prog buffer cyl ▸
		Coolant buffer op. status
		Time prog. coolnt buff cyl.
		Valve heating/cooling ▸
		Coolant buffer temp.
		Coolant buffer t. set
		Cooling w coolant buff.
		Coolant buffer flow t
		Coolant buff set flow t
		Coolant buffer mixer ▸
		Coolant buffer pump
		Active cooling
		Natural cooling
		External heat source
		Time prog. elec. heater ▸
		"Central fault"
		"Lag heat pump 1"
		"Lag heat pump 2"
		"Lag heat pump 3"
		"Lag heat pump 4"
		"Subscriber no."
		"Ext. hook-up 0..10V"
		"Time"
		"Date"
		"Radio clock signal"
		"Screed drying days"

"Information"		
	Heating circuit HC1, HC2, HC3	
		"Operating program"
		"Operating status"
		Time program heating ▸ or Time proghtg/cooling ▸
		"Set room temp."
		"Room temperature"
		"Set red. room temp"
		"Set party temperature"
		Heating curve ▸
		"Heating circuit pump"
		Holiday program ▸
		"Mixer"
		Flow temperature
		Set flow temperature
		Cooling curve ▸
		"Active cooling"
		"Natural cooling"
		"Mixer cooling"
		"Flow temp. cooling"
		Heating season
		Cooling period
		Demand htg mode
		Demand cool mode
	Cooling circuit SKK	
		Operating program
		"Operating status"
		"Set room temp."
		"Room temperature"
		"Mixer"
		"Flow temperature"
		"Cooling curve"
		„Active Cooling”
		„Natural Cooling”

"Information"		
	"DHW"	
		Operating program ▸
		Operating status ▸
		Time program DHW ▸
		Time prog DHW circ ▸
		DHW temperature ▸
		"Cylinder primary pump"
		"DHW circulation pump"
		"1x DHW heating"
		"Cylinder reheating"
		"Cylinder reheating" (h)
	"Heat pump"	
		"Compressor" or "Compressor 1"
		"Primary pump/Fan" or "Primary pump/Fan 1"
		"Alternative source"
		"Secondary pump" or "Secondary pump 1"
		"Valve heating/DHW" or "Valve heating/DHW 1"
		"Hours run compressor" or "Hours run compressor 1"
		"No. of starts comprssr" or "No. of starts comprssr 1"
		"Compressor 2"
		"Primary pump/Fan 2"
		"Secondary pump 2"
		"Valve heating/DHW 2"
		"Hours run comprssr2"
		"No.of starts cmprssr2"
		"Inst.water heater st.1"
		"Inst.water heater st.1" (h)
		"Inst.water heater st.2"
		"Inst.water heater st.2" (h)
		"SPF heating"
		"SPF DHW"
		"SPF overall"
		"SPF cooling"

"Information"		
Dual mode operation (Heat management)		
	Appliance control strategy	
	External heat source	
	Electr. tariff times ▸	
	Primary energy factors ▸	
	Primary energy factors ▸	
"Daily log"		

"Settings"		
Dual mode operation (Heat management)		
"Time / Date"		
"Language"		
"Contrast"		
"Brightness"		
	"Control"	
	"Screen saver"	
"Temperature unit"		
"Name for heating circuit"		
"Standard menu"		
"Standard setting"		
	"System"	
	"Compressor 1"	
	"Compressor 2"	
	"Heat management"	
	"DHW"	
	"Solar"	

	"Electr booster heater"
	"Internal hydraulics"
	"Buffer cylinder"
	"Heating circuit 1"
	"Heating circuit 2"
	"Heating circuit 3"
	"Cooling"
	"Photovoltaics"
	„Smart Grid”
	"Primary source"
	"Primary source 2"
	"Time"
	"Communication"
	"Control"

Manual mode

Maintenance in good working order

Maintenance checklist

For installations with combustible refrigerants

- Every person performing work on a refrigeration system is required to submit a confirmation of qualification issued by an accredited body authorized for certification in industry. Confirmation of qualification is a certificate of competence in the safe handling of refrigerants in the manner applicable in industry.
- Service work should always be carried out in accordance with the manufacturer's requirements. If the help of other people is needed during maintenance and repair work, then a person trained in the safe handling of combustible refrigerants is obliged to constantly supervise the work performed.
- In order to minimize the risk of fire, it is necessary to perform a safety control before starting work on equipment in which combustible refrigerants are used. Before starting work on the refrigeration circuit, the following actions should be taken:

	Action	Completed	Remarks
1	**General - Workplace** ■ Inform the following persons of the work to be carried out: – All maintenance personnel – All persons who are in the vicinity of the installation. ■ Cut off the heat pump environment ■ Check for combustible materials and ignition sources in the heat pump environment. Remove all combustible materials and ignition sources.		
2	**Refrigerant monitoring** ■ To identify the combustible atmosphere early enough: Before, during and after the work, check the environment for refrigerant leaks using an ignition-protected refrigerant detector designed for R32. The refrigerant detector must not cause sparks and must be properly sealed		
3	**Fire extinguisher** In the cases described below, a CO2 or powder fire extinguisher must be available: ■ Filling the plant with refrigerant. ■ Performing welding or soldering work		
4	**Ignition sources** ■ Ignition sources must not be used for any refrigerant operation that may cause the refrigerant to ignite. All possible ignition sources, including cigarettes, must be removed from the place where installation, repair, dismantling or disposal will be carried out. ■ Before starting work, check for combustible materials and ignition sources in the vicinity of the heat pump. Remove all combustible materials and ignition sources. ■ Place non-smoking signs.		

5	**Workplace ventilation** ■ Repairs should be carried out in the open air or well ventilated workplace before starting work on the cooling system or welding and soldering. ■ Ventilation must work at all times. The task of ventilation is to dilute the refrigerant in the event of its leakage and, if possible, to drain it outside		
6	**Refrigeration circuit inspection** ■ The electrical components must be suitable for the application and comply with the manufacturer's specifications. Replace damaged components only with original spare parts. ■ Components should be replaced as directed by Kospel. If necessary, contact the Kospel technical service. Carry out the following checks: ■ The amount of refrigerant must not be greater than acceptable for the technical room. ■ Check the operation of ventilation. Ventilation openings must not be clogged or obscured. ■ If a hydraulically decoupled system is used, check that the secondary circuit is filled with refrigerant. ■ Inscriptions and symbols must be clearly visible and legible. Replace unreadable inscriptions or symbols. ■ Refrigerant lines or components must be fitted in such a way that they do not come into contact with corrosive substances. Exception: refrigerant lines are made of corrosion-resistant material or reliably protected against corrosion		

7	**Control of electrical parts** ■ During maintenance and repair work on eclectic parts, safety checks must be carried out: see below. ■ If there is a high importance fault for safety, you should not connect the installation before removing the fault. If it is not possible to immediately remove the fault, as far as possible, you must find the appropriate temporary solution to work on the installation. Notify the installation user. Perform the following security checks: ■ Discharge of capacitors: Make sure that the discharge process does not arise. ■ When pouring or draining the refrigerant, and also when rinsing the refrigeration circuit, do not place electrical parts or wires that are under voltage in close vivinity to the device. ■ Check the grounding connection.		
8	**Repair of sealed enclosures** ■ Disconnect the device from voltage during work on sealed components before removing the sealed cover. ■ To warn of a potentially dangerous situation, a permanent refrigerant detector should be placed in critical places. ■ Particular care should be taken not to modify the housing in a way that weakens its protective effect when working with electrical parts. This includes damage to wires, the creation of too many connectors on one connection terminal, the creation of connectors that do not meet the manufacturer's requirements, damage to gaskets and incorrect installation of cable pass-throughs. ■ Ensure that the device is installed correctly.		

	■ Check that the seals are properly seated. Thus, check whether the gaskets reliably protect against the penetration of the combustible atmosphere. Replace damaged wires. **! Note** **Silicone as a sealant may affect the operation of leak detection devices. Do not use silicone as a sealant**. ■ Spare parts must meet the manufacturer's guidelines. ■ Work on components that are suitable for combustible atmosphere: these components do not need to be disconnected from the power supply.		
9	**Repair of parts which operate in a combustible atmosphere:** ■ If it cannot be determined that the permissible voltage and current values are not exceeded, do not connect capacitive or inductive loads to the device. ■ Only parts that meet the requirements for operation in a combustible atmosphere can be connected to the voltage in a combustible atmosphere. ■ Use only original spare parts or parts approved by this company Kospel. In the event of a leak, all other parts can ignite the refrigerant.		
10	**Wiring** ■ Check that the wiring is not exposed to wear, corrosion, stretching, vibrations or influence of adverse ambient conditions and is not near sharp edges.. ■ During the inspection, take into account the impact of the aging effect and the impact of continuous vibrations of the compressors and fans.		
11	**Refrigerant detectors** ■ Under no circumstances should ignition sources be used to detect refrigerant and its leaks. ■ Do not use any flame detectors.		

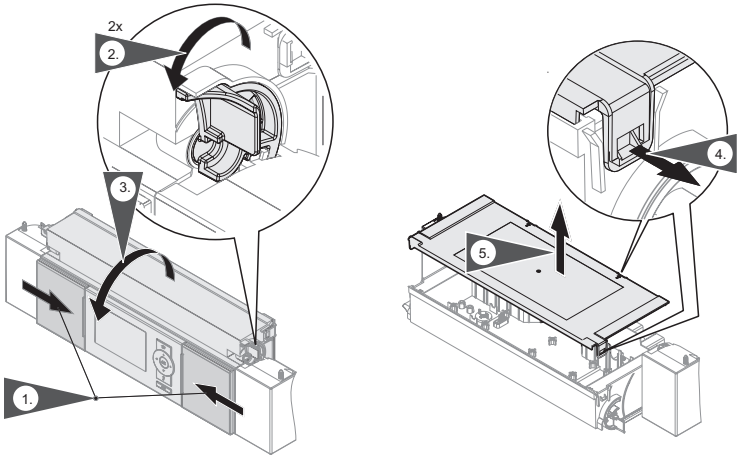
12	**Leak detection** For leak detection in installations filled with combustible refrigerant, the following methods are sutable: Leak detection using electronic refrigerant detectors: ■ Electronic leak detectors may not be suitably sensitive or must be calibrated for a specific detection range. Calibrate the detector in a refrigerant-free environment. ■ The refrigerant detector must be capable of detecting R32. ■ The refrigerant detector must not contain potential ignition sources. ■ Calibrate the refrigerant detector for the refrigerant used. Set the activation threshold < 3 g/a, which is suitable for R32. Leak detection with leak detection fluids: ■ Leak detection fluids are suitable for most refrigerants. **! Note** **Chlorine-containing leak detection fluids may react with refrigerant. As a result, rust can form. Do not use leak detection fluids that contain chlorine.** Handling of leakage in the refrigeration circuit: ■ Immediately extinguish any fire near the heat pump. ■ Do not solder leaks on the refrigeration circuit.		
13	**Suction and emptying of the refrigerant** Perform the activities described in the chapter "Refrigerant suction". Perform the steps in the section "Vacuum generation in refrigerant lines and indoor unit".		

14	**Refrigerant pouring** Perform the steps described in the chapter "Filling the refrigerant lines and the indoor unit".		
15	**Decommissioning** Follow the steps in "Final decommissioning and disposal"		
16	Marking (inscriptions on the heat pump) On a heat pump that has been taken out of service, a plate with the date and signature and the following information shall be placed in a clearly visible place: ■ Refrigerant with flammable properties. ■ Installation not working. ■ Refrigerant has been removed.		
17	**Refrigerant and compressor's oil recovery** ■ Refrigerant recovery: see chapter "Refrigerant suction". ■ Compressor's oil recovery: see section "Disposal of compressor and compressor oil".		

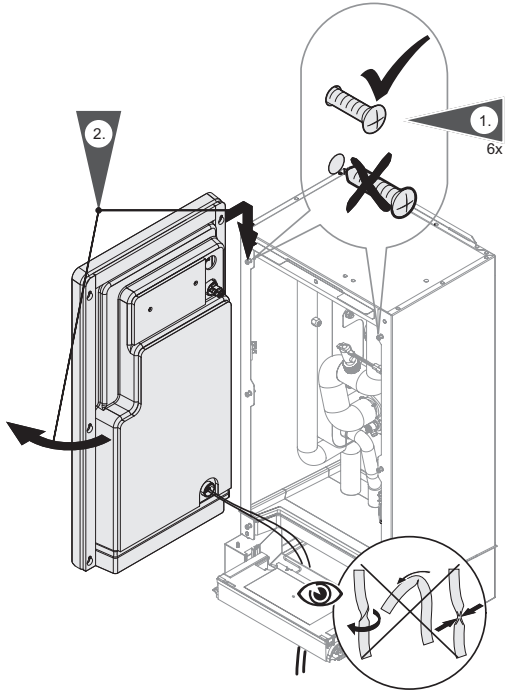
Overview of electrical components

- Indoor unit:
- Outdoor unit:

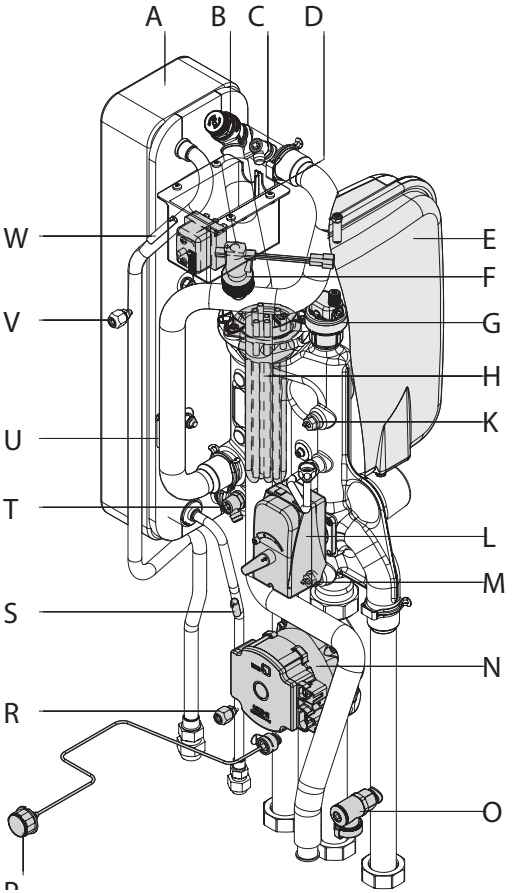
Indoor unit: Opening the programming unit



Indoor unit: Placing the control unit panel in its service position



Indoor unit: Overview of internal components



Ⓐ *Condenser*
Ⓑ *Safety valve*
Ⓒ *Secondary circuit air vent valve*
Ⓓ *High limit safety cut-out for the instantaneous heating water heater*
Ⓔ *expansion vessel 10 l*
Ⓕ *Flow switch*
Ⓖ *Quick-action air vent valve G ⅜*
Ⓗ *Instantaneous heating water heater*
Ⓚ *Flow temperature sensor for secondary circuit (F8)*
Ⓛ *3-way diverter valve "central heating/ DHW heating"*
Ⓜ *Secondary circuit return temperature sensor (F9)*
Ⓝ *Secondary pump*
Ⓞ *Secondary circuit drain & fill valve*
Ⓟ *Pressure gauge*
Ⓡ *Indoor unit service valve: Schrader valve; can be used in place of the outdoor unit service valve for checking the pressure and evacuating the refrigerant circuit.*
Ⓢ *Secondary circuit flow temperature sensor upstream of instantaneous heating water heater (F3)*
Ⓣ *Drain valve*
Ⓤ *Reversible suction gas temperature sensor (F24)*
Ⓥ *Indoor unit service valve: Schrader valve; can be used in place of the outdoor unit service valve for checking the pressure and evacuating the refrigerant circuit.*
Ⓦ *Liquid gas temperature sensor (F25)*

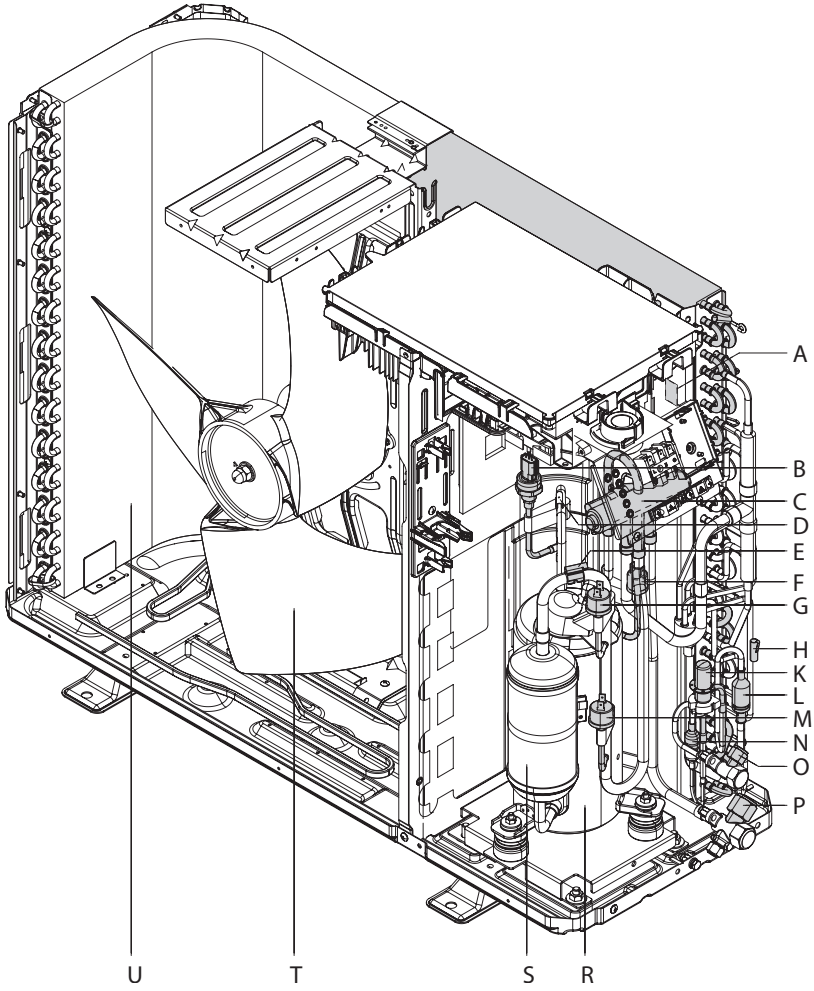
Outdoor unit: Overview of internal components

Attention!

Contact with live components can lead to serious injury from electric current. Some components on PCBs remain live even after the power supply has been switched off.

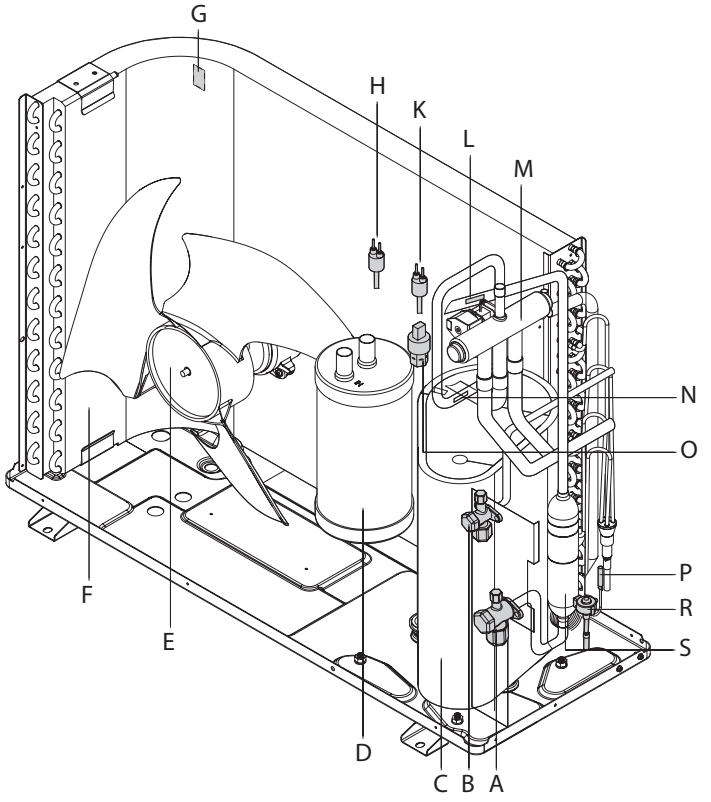
- ***When working on the outdoor unit, isolate the system from the power supply, e.g. at a separate MCB/fuse or a mains isolator. Check the system is no longer live and safeguard against reconnection.***
- ***Prior to working on the appliance, wait at least 4 min until the voltage on the charged capacitors has completely dropped out.***

Outdoor unit with 1 fan: HPSO-6/230



Ⓐ *Air intake temperature sensor (outdoor, RT15)*
Ⓑ *High pressure sensor*
Ⓒ *4-way diverter valve*
Ⓓ *Evaporator suction gas temperature sensor (suction, RT17)*
Ⓔ *Hot gas temperature sensor (discharged, RT16)*
Ⓕ *Protective high-pressure switch (pHi)*
Ⓖ *High pressure switch (pHi)*
Ⓗ *Defrost temperature sensor (defrosting, RT14)*
Ⓚ *Electronic expansion valve*
Ⓛ *Filter*
Ⓜ *Low-pressure switch (pHi)*
Ⓝ *Filter*
Ⓞ *Hot gas temperature sensor*
Ⓟ *Liquid line*
Ⓡ *Compressor*
Ⓢ *Refrigerant receiver*
Ⓣ *Fan*
Ⓤ *Heat exchanger (evaporator)*

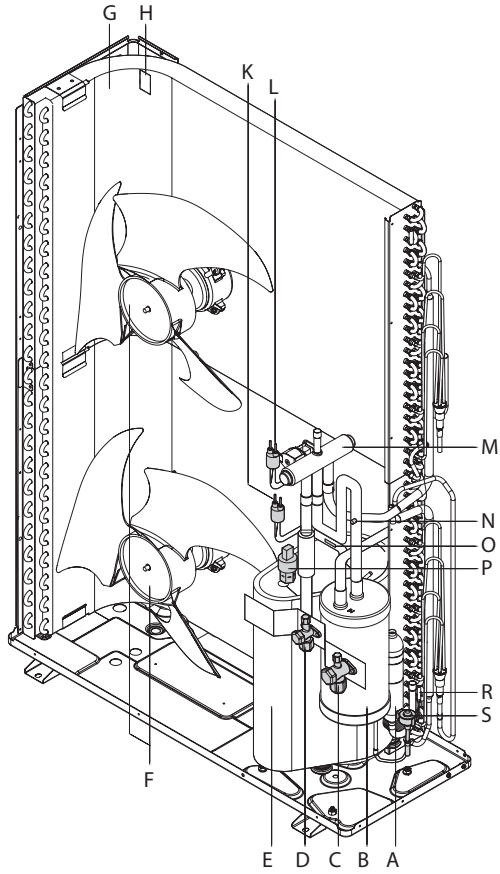
Outdoor unit with 1 fan: HPSO-8/230



Ⓐ *Liquid line*
Ⓑ *Hot gas line*
Ⓒ *Compressor*
Ⓓ *Liquid separator*
Ⓔ *Fan*
Ⓕ *Evaporator*
Ⓖ *Air intake temperature sensor (outdoor, RT15)*
Ⓗ *Low pressure switch (pHi)*
Ⓚ *High pressure switch (pHi)*
Ⓛ *Suction gas temperature sensor (suction, RT17)*
Ⓜ *4-way diverter valve*
Ⓝ *Hot gas temperature sensor (discharged, RT16)*
Ⓞ *High pressure sensor*
Ⓟ *Defrost temperature sensor (defrosting, RT14)*
Ⓡ *Electronic expansion valve*
Ⓢ *Oil separator*

Outdoor unit with 2 fans

Ⓐ *Oil separator*
Ⓑ *Liquid separator*
Ⓒ *Liquid line*
Ⓓ *Hot gas line*
Ⓔ *Sprężarka*
Ⓕ *Fan*
Ⓖ *Compressor*
Ⓗ *Air intake temperature sensor (outdoor, RT2)*
Ⓚ *Low pressure switch (pHi)*
Ⓛ *High pressure switch (pHi)*
Ⓜ *4-way diverter valve*
Ⓝ *Suction gas temperature sensor (suction, RT4)*
Ⓞ *Hot gas temperature sensor (discharged, RT3)*
Ⓟ *High pressure sensor*
Ⓡ *Defrost temperature sensor (defrosting, RT1)*
Ⓢ *Electronic expansion valve*



Draining secondary side heat pump

1. Close the on-site boiler drain & fill valve.
2. Drain the heat pump at the drain & fill valve in the secondary circuit: See chapter "Indoor unit: Overview of internal components".

Checking the temperature sensors

Connection to the indoor unit

Temperature sensors are connected to the controller and sensor PCB:

Temperature sensor	Test element
■ Outside temperature sensor (F0) ■ Buffer temperature sensor (F4) ■ Cylinder temperature sensors top (F6) and bottom (F7) ■ System flow temperature sensor (F13) ■ Cooling circuit flow temperature sensor (direct heating circuit A1/HC1 or separate cooling circuit SKK) (F14) ■ Boiler water temperature sensor, external heat generator (F20) ■ For heat pump cascades: Buffer outlet temperature sensor (F23) ■ Room temperature sensors	NTC 10 kΩ
■ For heat pump cascades: Swimming pool flow temperature sensor (F21)	NTC 20 kΩ
■ Secondary circuit flow temperature sensor (F8) ■ Secondary circuit return temperature sensor (F9) ■ Secondary circuit flow temperature sensor upstream of instantaneous heating water heater (F3) ■ Reversible suction gas temperature sensor (F24) ■ Liquid gas temperature sensor (F25)	Pt500A (PTC)

Connection to the outdoor unit

Temperature sensors are connected to the refrigerant circuit controller in the outdoor unit (see label in the outdoor unit):

Temperature sensor	Test element
■ Refrigerant circuit controller temperature sensor (defrosting): RT1 in the case of type HPS.Z-12/400 i HPS.Z-16/400 RT14 in the case of type HPS.Z-06/230 i HPS.Z-08/230 ■ Compressor suction gas temperature sensor (suction): RT4 in the case of type HPS.Z-12/400 i HPS.Z-16/400 RT17 in the case of type HPS.Z-06/230 i HPS.Z-08/230	NTC 20 kΩ
■ Air intake temperature sensor (outdoor): RT2 in the case of type HPS.Z-12/400 i HPS.Z-16/400 RT15 in the case of type HPS.Z-06/230 i HPS.Z-08/230	NTC 15 kΩ
■ Hot gas temperature sensor (discharged): RT3 in the case of type HPS.Z-12/400 i HPS.Z-16/400 RT16 in the case of type HPS.Z-06/230 i HPS.Z-08/230	NTC 50 kΩ

Indoor unit: NTC 10 kΩ (blue marking)

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-40	336,500	-8	49,647	24	10,449	56	2,878	88	0,976	120	0,389
-39	314,870	-7	47,055	25	10,000	57	2,774	89	0,946	121	0,379
-38	294,780	-6	44,614	26	9,572	58	2,675	90	0,918	122	0,369
-37	276,100	-5	42,315	27	9,165	59	2,579	91	0,890	123	0,360
-36	258,740	-4	40,149	28	8,777	60	2,488	92	0,863	124	0,351
-35	227,550	-3	38,107	29	8,408	61	2,400	93	0,838	125	0,342
-34	227,550	-2	36,181	30	8,057	62	2,316	94	0,813	126	0,333
-33	213,550	-1	34,364	31	7,722	63	2,235	95	0,789	127	0,325
-32	200,510	0	32,650	32	7,402	64	2,158	96	0,765	128	0,317
-31	188,340	1	31,027	33	7,098	65	2,083	97	0,743	129	0,309
-30	177,000	2	29,495	34	6,808	66	2,011	98	0,721	130	0,301
-29	166,350	3	28,048	35	6,531	67	1,943	99	0,680	131	0,293
-28	156,410	4	26,680	36	6,267	68	1,877	100	0,680	132	0,286
-27	147,140	5	25,388	37	6,016	69	1,813	101	0,661	133	0,279
-26	138,470	6	24,165	38	5,775	70	1,752	102	0,642	134	0,272
-25	130,370	7	23,009	39	5,546	71	1,694	103	0,623	135	0,265
-24	122,800	8	21,916	40	5,327	72	1,637	104	0,606	136	0,259

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-23	115,720	9	20,880	41	5,117	73	1,583	105	0,589	137	0,253
-22	109,090	10	19,900	42	4,917	74	1,531	106	0,572	138	0,247
-21	102,880	11	18,969	43	4,726	75	1,481	107	0,556	139	0,241
-20	97,070	12	18,087	44	4,543	76	1,433	108	0,541	140	0,235
-19	91,600	13	17,251	45	4,369	77	1,387	109	0,526	141	0,229
-18	86,474	14	16,459	46	4,202	78	1,342	110	0,511	142	0,224
-17	81,668	15	15,708	47	4,042	79	1,299	111	0,497	143	0,219
-16	77,160	16	14,995	48	3,889	80	1,258	112	0,484	144	0,213
-15	72,929	17	14,319	49	3,743	81	1,218	113	0,471	145	0,208
-14	68,958	18	13,678	50	3,603	82	1,180	114	0,458	146	0,204
-13	65,227	19	13,069	51	3,469	83	1,143	115	0,445	147	0,199
-12	61,722	20	12,490	52	3,340	84	1,107	116	0,434	148	0,194
-11	58,428	21	11,940	53	3,217	85	1,072	117	0,422	149	0,190
-10	55,330	22	11,418	54	3,099	86	1,039	118	0,411	150	0,185
-9	52,402	23	10,921	55	2,986	87	1,007	119	0,400		

Indoor unit: NTC 20 kΩ (orange marking)

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-40	702,156	10	40,034	60	4,943	110	1,009	165	0,259	215	0,097
-35	503,154	15	31,537	65	4,136	115	0,879	170	0,233	220	0,089
-30	364,902	20	25,027	70	3,478	120	0,768	175	0,209	225	0,081
-25	257,655	25	20,000	75	2,937	125	0,673	180	0,189	235	0,075
-20	198,442	30	16,090	80	2,492	130	0,592	185	0,171	235	0,069
-15	148,362	35	13,028	85	2,123	135	0,522	190	0,154	240	0,063
-10	112,403	40	10,613	90	1,816	140	0,461	195	0,140	245	0,058
-5	85,788	45	8,696	95	1,559	145	0,409	200	0,127	250	0,054
0	66,048	50	7,166	100	1,34	150	0,364	205	0,116	255	0,050
5	51,214	55	5,936	105	1,16	160	0,289	210	0,106	260	0,046

Indoor unit: Pt500A (green marking))

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-30	441,1	1	502,0	32	562,3	63	623,9	94	681,2	125	739,8
-29	443,1	2	503,9	33	564,2	64	622,0	95	683,1	126	741,7
-28	445,1	3	505,9	34	566,1	65	625,8	96	685,0	127	743,5
-27	447,0	4	507,8	35	568,1	66	627,7	97	686,9	128	745,4
-26	449,0	5	509,8	36	570,0	67	629,7	98	688,8	129	747,3
-25	451,0	6	511,7	37	571,9	68	631,6	99	690,7	130	749,2
-24	453,0	7	513,7	38	573,9	69	633,5	100	692,6	131	751,1
-23	454,9	8	515,6	39	575,8	70	635,4	101	694,4	132	752,9
-22	456,9	9	517,6	40	577,7	71	637,3	102	696,3	133	754,8
-21	458,9	10	519,5	41	579,7	72	639,2	103	698,2	134	756,7
-20	460,8	11	521,5	42	581,6	73	641,1	104	700,1	135	758,6
-19	462,8	12	523,4	43	583,5	74	643,1	105	702,0	136	760,4
-18	464,8	13	525,4	44	585,4	75	645,0	106	703,9	137	762,3
-17	466,7	14	527,3	45	587,4	76	646,9	107	705,8	138	764,2
-16	468,7	15	529,3	46	589,3	77	648,8	108	707,7	139	766,1
-15	470,6	16	531,2	47	591,2	78	650,7	109	709,6	140	767,9
-14	472,6	17	533,2	48	593,2	79	652,6	110	711,5	141	769,8
-13	474,6	18	535,1	49	595,1	80	654,5	111	713,4	142	771,7
-12	476,5	19	537,0	50	597,0	81	656,4	112	715,3	143	773,6
-11	478,5	20	539,0	51	598,9	82	658,3	113	717,2	144	775,4
-10	480,5	21	540,9	52	600,9	83	660,2	114	719,0	145	777,3
-9	482,4	22	542,9	53	602,8	84	662,1	115	720,9	146	779,2
-8	484,4	23	544,8	54	604,7	85	664,0	116	722,8	147	781,0
-7	486,3	24	546,8	55	606,6	86	665,9	117	724,7	148	782,9
-6	488,3	25	548,7	56	608,6	87	667,9	118	726,6	149	784,8
-5	490,2	26	550,6	57	610,5	88	669,8	119	728,5	150	786,7
-4	492,2	27	552,6	58	612,4	89	671,7	120	730,4	151	788,5
-3	494,2	28	554,5	59	614,0	90	673,6	121	732,2	152	790,4
-2	496,1	29	556,5	60	616,2	91	675,5	122	734,1	153	792,3
-1	498,1	30	558,4	61	618,2	92	677,4	123	736,0	154	794,1
0	500,0	31	560,3	62	620,1	93	679,3	124	737,9	155	796,0

Outdoor unit: NTC 15 kΩ (no marking)

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-20	144,000	6	36,320	32	11,090	58	3,990	84	1,645	110	0,758
-19	138,100	7	34,580	33	10,630	59	3,848	85	1,594	111	0,737
-18	128,600	8	32,940	34	10,200	60	3,711	86	1,544	112	0,717
-17	121,600	9	31,380	35	9,779	61	3,579	87	1,497	113	0,697
-16	115,000	10	29,900	36	9,382	62	3,454	88	1,451	114	0,678
-15	108,700	11	28,510	37	9,003	63	3,333	89	1,408	115	0,660
-14	102,900	12	27,180	38	8,642	64	3,217	90	1,363	116	0,642
-13	97,400	13	25,920	39	8,297	65	3,105	91	1,322	117	0,625
-12	92,220	14	24,730	40	7,975	66	2,998	92	1,282	118	0,608
-11	87,350	15	23,60	41	7,653	67	2,898	93	1,244	119	0,592
-10	82,750	16	22,530	42	7,352	68	2,797	94	1,207	120	0,577
-9	78,430	17	21,510	43	7,065	69	2,702	95	1,171	121	0,561
-8	74,350	18	20,540	44	6,791	70	2,611	96	1,136	122	0,547
-7	70,500	19	19,630	45	6,529	71	2,523	97	1,103	123	0,532
-6	66,880	20	18,750	46	6,278	72	2,439	98	1,071	124	0,519
-5	63,460	21	17,930	47	6,038	73	2,358	99	1,039	125	0,505
-4	60,230	22	17,140	48	5,809	74	2,280	100	1,009	126	0,492
-3	57,180	23	16,390	49	5,589	75	2,205	101	0,9801	127	0,480
-2	54,310	24	15,680	50	5,379	76	2,133	102	0,952	128	0,467
-1	51,590	25	15,000	51	5,179	77	2,064	103	0,925	129	0,456
0	49,020	26	14,360	52	4,986	78	1,997	104	0,898	130	0,444
1	46,800	27	13,740	53	4,802	79	1,933	105	0,873		
2	44,310	28	13,160	54	4,625	80	1,871	106	0,848		
3	42,140	29	12,600	55	4,456	81	1,811	107	0,825		
4	40,090	30	12,070	56	4,294	82	1,754	108	0,802		
5	38,150	31	11,570	57	4,139	83	1,699	109	0,779		

Outdoor unit: NTC 20 kΩ (no marking)

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-25	265,500	1	62,130	27	18,320	53	6,403	79	2,577	105	1,164
-24	249,900	2	59,080	28	17,550	54	6,167	80	2,495	106	1,131
-23	235,300	3	56,190	29	16,800	55	5,942	81	2,415	107	1,099
-22	221,600	4	53,460	30	16,100	56	5,726	82	2,339	108	1,069
-21	208,900	5	50,870	31	15,430	57	5,519	83	2,265	109	1,039
-20	196,900	6	48,420	32	14,790	58	5,320	84	2,194	110	1,010
-19	181,400	7	46,110	33	14,180	59	5,130	85	2,125	111	0,983
-18	171,400	8	43,920	34	13,590	60	4,948	86	2,059	112	0,956
-17	162,100	9	41,840	35	13,040	61	4,773	87	1,996	113	0,930
-16	153,300	10	39,870	36	12,510	62	4,605	88	1,934	114	0,904
-15	145,000	11	38,010	37	12,000	63	4,443	89	1,875	115	0,880
-14	137,200	12	36,240	38	11,520	64	4,289	90	1,818	116	0,856
-13	129,900	13	34,570	39	11,060	65	4,140	91	1,763	117	0,833
-12	123,000	14	32,980	40	10,620	66	3,998	92	1,710	118	0,811
-11	116,500	15	31,470	41	10,200	67	3,861	93	1,658	119	0,790
-10	110,300	16	30,040	42	9,803	68	3,729	94	1,609	120	0,769
-9	104,600	17	28,680	43	9,420	69	3,603	95	1,561	121	0,749
-8	99,130	18	27,390	44	9,054	70	3,481	96	1,515	122	0,729
-7	94,000	19	26,170	45	8,705	71	3,364	97	1,470	123	0,710
-6	89,170	20	25,010	46	8,370	72	3,252	98	1,427	124	0,692
-5	84,610	21	23,900	47	8,051	73	3,144	99	1,386	125	0,674
-4	80,310	22	22,850	48	7,745	74	3,040	100	1,346	126	0,656
-3	76,240	23	21,850	49	7,453	75	2,940	101	1,307	127	0,640
-2	72,410	24	20,900	50	7,173	76	2,844	102	1,269	128	0,623
-1	68,790	25	20,000	51	6,905	77	2,752	103	1,233	129	0,607
0	65,370	26	19,140	52	6,648	78	2,663	104	1,198	130	0,592

Outdoor unit: NTC 50 kΩ (no marking)

ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ	ϑ/°C	R/kΩ
-25	660,930	1	153,000	27	45,074	53	15,753	79	6,332	105	2,872
-24	620,940	2	145,420	28	43,163	54	15,173	80	6,129	106	2,792
-23	583,720	3	138,260	29	41,313	55	14,618	81	5,934	107	2,715
-22	549,040	4	131,500	30	39,610	56	14,085	82	5,746	108	2,640
-21	516,710	5	126,170	31	37,958	57	13,575	83	5,565	109	2,568
-20	486,550	6	119,080	32	36,384	58	13,086	84	5,390	110	2,498
-19	458,400	7	113,370	33	34,453	59	12,617	85	5,222	111	2,431
-18	432,100	8	107,960	34	33,453	60	12,368	86	5,061	112	2,365
-17	407,510	9	102,850	35	32,088	61	11,736	87	4,904	113	2,302
-16	384,510	10	98,006	36	30,787	62	11,322	88	4,754	114	2,241
-15	362,990	11	93,420	37	29,544	63	10,925	89	4,609	115	2,182
-14	342,830	12	89,075	38	28,359	64	10,544	90	4,469	116	2,124
-13	323,940	13	84,956	39	27,227	65	10,178	91	4,335	117	2,069
-12	306,230	14	81,052	40	26,147	66	9,827	92	4,204	118	2,015
-11	289,610	15	77,349	41	25,114	67	9,490	93	4,079	119	1,963
-10	274,020	16	73,896	42	24,128	68	9,166	94	3,958	120	1,912
-9	259,370	17	70,503	43	23,186	69	8,954	95	3,841	121	1,865
-8	245,610	18	67,338	44	22,286	70	8,555	96	3,728	122	1,816
-7	232,670	19	64,330	45	21,425	71	8,268	97	3,619	123	1,770
-6	220,500	20	61,478	46	20,601	72	7,991	98	3,514	124	1,725
-5	209,050	21	58,766	47	19,814	73	7,726	99	3,413	125	1,682
-4	198,270	22	56,189	48	19,061	74	7,470	100	3,315	126	1,640
-3	188,120	23	53,738	49	18,340	75	7,225	101	3,220	127	1,600
-2	178,650	24	51,408	50	17,651	76	6,988	102	3,129	128	1,560
-1	169,680	25	49,191	51	16,990	77	6,761	103	3,040	129	1,522
0	161,020	26	47,082	52	16,358	78	6,542	104	2,955	130	1,485

Checking the fuses

- Fuse F1 is located on the mains terminal of the heat pump control unit.

Fuse type:

  - 6.3 A H (slow), 250 V~
  - Max. power loss ≤ 2.5 W

- Fuse F3 is located on the main PCB.

Fuse type:

  - 2.0 A H (slow), 250 V~
  - Max. power loss ≤ 2.5 W

- The fuses for the fan and the refrigerant circuit controller are located in the outdoor unit above the EEV PCB.

1. Switch OFF the power supply.
2. Opening the wiring chamber.
3. Check fuses. Replace if necessary.

Attention!

Incorrect or improperly fitted fuses can lead to an increased risk of fire.

- ***Insert fuses without using any force. Position fuses correctly.***
- ***Only use structurally identical types with the same response characteristics.***

Attention!

Removing the fuse does not switch the power circuit to zero volt. Contact with 'live' components can lead to serious injury from electric current.

Before working on the equipment, always ensure that the power circuit is also at zero volt.

Products can be recycled.
Components and consumables of the installation must not be disposed of in municipal waste.
To take the system out of service, disconnect the electrical power supply and wait for the components to cool down.
All components must be professionally disposed of. Consumables (e.g. heating mediums) can be disposed of together with household waste.

Refrigerant suction

The installation can only be put out of service by a specialist who knows the equipment intended for the disposal of refrigerants. We recommend refrigerant recovery. To do this, oil and refrigerant samples must be taken before the heat pump is put out of service. Before starting work, check the installation in accordance with the "maintenance checklist".

Consider the following:

- Only devices suitable for suction of R32 may be used. Check the condition of the suction device and also include confirmation of maintenance. All electrical components of the suction unit must be suitable for use in a combustible atmosphere.
- Use only cylinders that are suitable for the accumulation of R32 refrigerant, i.e. special recyclable cylinders. The above-mentioned cylinders must have an appropriate marking. Refrigerant cylinders must have a safety valve and permanent shut-off valves.
- Check that the right number of cylinders is available.
- Chill empty refrigerant cylinders.
- Do not mix different refrigerants in one cylinder.
- Prepare suitable means for transporting the refrigerant cylinder (if necessary).
- Check the availability of personal protective equipment and how to use it correctly.
- Check, that the disposal facilities and refrigerant cylinders meet the relevant requirements.
- Prepare a calibrated scale to determine the suctioned refrigerant's quantity.

1. Check the condition of the heat pump. Ensure that the maintenance deadlines have been kept.
2. Disconnect the system from the voltage.
3. Check that the safety requirements for work with refrigeration circuit are met.
4. Place the refrigerant cylinder on the scale.
5. Connect the refrigerant cylinder to the suction unit. Connect the extraction unit to the refrigeration circuit using a collecting line.
6. Extract 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 fill the refrigerant cylinder too much, max. 80% of the allowed capacity.*
- *Do not exceed the allowed working pressure in the cylinder.*

7. After suction of the entire refrigerant, close the shut-off valves.
8. Turn off the suction device.
9. Disconnect the cylinder from the refrigeration circuit. Send the refrigerant cylinder to a disposal facility.
10. Clean and inspect the recovered refrigerant. Do not mix the refrigerant with other refrigerants.
11. In a clearly visible place, place a plate on the heat pump with the date and signature and the following. information:

- Refrigerant with flammable properties.
- Installation not working.
- Refrigerant has been removed.

Disposal of compressor and compressor's oil

1. Before draining the oil, lower the pressure in the compressor to the appropriate vacuum value so that there is no combustible refrigerant in it.
2. Carefully drain the oil from the compressor. This process can be accelerated, if necessary, with an additional electric heater.
3. Dispose of the oil in a suitable place.
4. Send the compressor back to the manufacturer.

Heat pumps with 230V external unit		**HPSO-6/230 +HPSI-06**	**HPSO-8/230 +HPSI-06**
Heating output data according to EN 14511 (A2/W35)		230V~	
Rated heating output	kW	4	6
Fan speed	rpm	600	
Power consumption	kW	1,28	1,67
Coefficient of performance ε (COP) in heating mode		3,51	3,60
Output control	kW	2,0 do 5,0	3,6 do 9,0
Heating output data according to EN 14511(A7/W35, spread 5 K)			
Rated heating output	kW	6	8
Fan speed	rpm	600	
Power consumption	kW	1,23	1,74
Coefficient of performance ε (COP) in heating mode		4,90	4,66
Output control	kW	3,0 do 7,7	4,7 do 12,0
Heating output data according to EN 14511(A7/W35)			
Rated heating output	kW	4	6
Power consumption	kW	1,61	2,22
Coefficient of performance ε (COP) in heating mode		2,75	2,70
Output control	kW	1,9 do 4,5	2,7 do 7,5
Cooling performance data according to EN 14511 (A35/W7, spread 5 K)			
Rated cooling capacity	kW	4	6
Fan speed	1/min	700	600
Power consumption	kW	1,28	1,91
Energy efficiency ratio EER in cooling mode		3,51	3,20
Output control	kW	2,5 do 5,0	5,0 do 10,0

Cooling performance data according to EN 14511 (A35/W18, spread 5 K)		HPSO-6/230 +HPSI-06	HPSO-8/230 +HPSI-06
Cooling performance data according to EN 14511 (A35/W18, spread 5 K)	kW	6	7
Fan speed	1/min	700	600
Power consumption	kW	1,05	1,49
Energy efficiency ratio EER in cooling mode		5,23	4,70
Output control	kW	3,5 do 7,0	3,6 do 10,0
Air inlet temperature			
Heating mode			
■ Min.	°C	–20	–20
■ Max.		35	35
Cooling mode			
■ Min.	°C	10	10
■ Max.		48	48
Heating water			
Minimum flow rate	l/h	700	
Minimum capacity of the heating system, without cut off	l	52	
Max. external pressure drop (RFH) at min. flow rate	mbar kPa	700 70	
Max. flow temperature	°C	58	
Electrical values of the external unit			
Rated voltage, compressor		1/N/PE 230 V/50 Hz	
Max. rated current, compressor	A	9	18,8
Cos φ		1,0	
Starting current, compressor	A	2	4
Fuse protection	A	1 x B13	1 x B20
IP rating		IPX4	

Electrical power consumption		HPSO-6/230 +HPSI-06	HPSO-8/230 +HPSI-06
Electrical values of the indoor unit			
Heat pump control unit/PCB			
Rated voltage		1/N/PE 230 V/50 Hz	
Internal fuse		T 6,3 A/250 V	
Fuse protection, power supply		1 x B16A	
Instantaneous heating water heater			
Rated voltage		1/N/PE 230V/50Hz	3/N/PE 400 V/50 Hz
Heating output	kW	6,0	
Fuse protection, power supply		B32A / 3 x B16A	
Fan (max.)	W	86	150
External unit (max.)	kW	2,1	4,3
Secondary pump (PWM)	W	2 do 60	
EEI energy efficiency index		≤ 0,2	
Control unit/PCB, external unit (max.)	W	5	10
Control unit/PCB, internal unit (max.)	W	5	
Max. rating, control unit/PCB	W	1000	
Cooling circuit			
Refrigerant		R32	
Protective fittings		A2L	
Refrigerant charge	kg	0,95	1,6
Global warming potential (GWP)		677	
CO2 equivalent	t	0,64	1,08
Max. line length	m	25	
Top-up amount for line lengths >10 m	g/m	16	
Compressor (hermetically sealed)	Type	Rotating piston	
Oil	Type	FW68DA	
Oil capacity	l	0,42	0,95
Permiss. operating pressure			
Heating/colling on the high pressure side	bar MPa	43/43 4,3/4,3	
Heating/colling on the low pressure side	bar MPa	2,0/5,5 0,2/0,55	

		HPSO-6/230 +HPSI-06	HPSO-8/230 +HPSI-06
Dimensions of the external unit			
Total length	mm	344	360
Total width		975	980
Total height		702	790
Dimensions of the indoor unit			
Total length	mm	370	
Total width		450	
Total height		880	
Total weight			
External unit	kg	59	80
Indoor unit		45	
Permissible operating pressure, secondary site	bar MPa	3 0,3	
Connections (inside thread)			
Heating water flow	G	1¼	
Heating water return and DHW cylinder return		1¼	
DHW cylinder flow		1¼	
Refrigerant connections			
Liquid line			
Pipe ø	mm	6 x 1	
Indoor unit	UNF	¼	
External unit		¼	
Hot gas line			
Pipe ø	mm	12 x 1	
Indoor unit	UNF	½	
External unit		½	
Max. line length, liquid line, hot gas line			
Min.	m	5	
Max.		25	

Heat pumps with 400V~ external unit		HPSO-12/400 +HPSI-09	HPSO-16/400 +HPSI-09
Heating output data according to EN 14511 (A2/W35)			
Rated heating output	kW	7	9
Fan speed	obr./ min	800	
Power consumption	kW	2,24	2,86
Coefficient of performance ε (COP) in heating mode		3,31	3,32
Output control	kW	5,5 do 10,0	5,9 do 11,0
Heating output data according to EN 14511 (A7/W35, spread 5 K)			
Rated heating output	kW	12	16
Fan speed	rpm	800	
Power consumption	kW	2,58	3,60
Coefficient of performance ε (COP) in heating mode		4,45	4,37
Output control	kW	6,0 do 13,0	7,6 do 16,7
Heating output data according to EN 14511 (A-7/W35)			
Rated heating output	kW	7	9
Power consumption		2,71	3,20
Coefficient of performance ε (COP) in heating mode		2,73	2,72
Output control	kW	3,4 do 9,0	4,0 do 10,6
Cooling performance data according to EN 14511 (A35/W7, spread 5 K)		**HPSO-12/400 +HPSI-09**	**HPSO-16/400 +HPSI-09**
Rated cooling capacity	kW	5	7
Power consumption		2,08	2,60
Energy efficiency ratio EER in cooling mode		2,48	2,63
Output control	kW	3,7 do 10,3	5,0 do 12,1
Cooling performance data according to EN 14511 (A35/W18, spread 5 K)			
Rated cooling capacity	kW	8	9
Fan speed	rpm	800	
Power consumption	kW	2,07	2,58
Energy efficiency ratio EER in cooling mode		3,82	3,61
Output control	kW	4,7 do 14,8	5,3 do 17,0

Electrical values of the indoor unit		HPSO-12/400 +HPSI-09	HPSO-16/400 +HPSI-09
Air inlet temperature			
Heating mode			
Min	°C	–22	
Max.		35	
Cooling mode			
Min.	°C	10	
Max.		48	
Heating water			
Minimum flow rate	l/h	900	
Minimum capacity of the heating system, without cut off	l	52	70
Max. external pressure drop (RFH) at min. flow rate	mbar kPa	700 70	
Max. flow temperature	°C	55	
Electrical values of the external unit			
Rated voltage, compressor		3/N/PE 400 V/50 Hz	
Max. rated current, compressor	A	10,6	
Cos φ		1,00	
Starting current, compressor	A	5	
Fuse protection		3 x B13A	
IP rating		IPX4	
Heat pump control unit/PCB			
Rated voltage		1/N/PE 230 V/50 Hz	
Internal fuse		T 6,3 A/250 V	
Fuse protection, power supply		1 x B16A	
Instantaneous heating water heater			
Rated voltage		1/N/PE 230 V/50 Hz	3/N/PE 400 V/50 Hz
Heating output	kW	9,0	
Fuse protection, power supply		B40A / 3 x B16A	

Electrical values of the indoor unit		HPSO-12/400 +HPSI-09	HPSO-16/400 +HPSI-09
Electrical power consumption			
Fan (max.)	W	240	
External unit (max.)	kW	5,5	
Secondary pump (PWM)	W	2 do 60	
EEI energy efficiency index		≤ 0,2	
Control unit/PCB, external unit (max.)	W	50	
Control unit/PCB, internal unit (max.)		5	
Max. rating, control unit/PCB		1000	
Cooling circuit			
Refrigerant		R410A	
Protective fittings		A1	
Refrigerant charge	kg	2,5	
Global warming potential (GWP)*1		1924	
CO2 equivalent	t	4,8	
Top-up amount for line lengths >10 m to <30 m	g/m	54	
Compressor (hermetically sealed)	Type	Rotating piston	
Oil	Type	FV50S	
Oil capacity	l	1,35	
Permiss. operating pressure			
High pressure side	bar MPa	43 4,3	
Low pressure side	bar MPa	1,3 0,13	

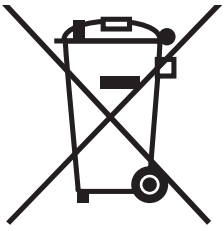
Dimensions of the external unit		HPSO-12/400 +HPSI-09	HPSO-16/400 +HPSI-09
Total length	mm	342	
Total width		900	
Total height		1345	
Dimensions of the indoor unit			
Total length	mm	370	
Total width		450	
Total height		880	
Total weight			
External unit	kg	114	
Indoor unit		48	
Permissible operating pressure, secondary site	bar MPa	3 0,3	3 0,3
Connections (inside thread)			
Heating water flow	G	1¼	1¼
Heating water return and DHW cylinder return		1¼	1¼
DHW cylinder flow		1¼	1¼
Refrigerant connections			
Liquid line			
Pipe ø	mm	10 x 1	10 x 1
Indoor unit	UNF	⅝	⅝
External unit		⅝	⅝
Hot gas line			
Pipe ø	mm	16 x 1	16 x 1
Indoor unit	UNF	⅞	⅞
External unit		⅞	⅞
Max. line length, liquid line, hot gas line			
Min.	m	5	5
Max.		30	30

A	Supplier's name or trademark		KOSPEL.Sp. z o.o.			
B	Supplier's model identifier		**HPSO-12/400 +HPSI-09**	**HPSO-16/400 +HPSI-09**	**HPSO-6/230 +HPSI-06**	**HPSO-8/230 +HPSI-06**
C	Seasonal energy efficiency class space heating for the model, in conditions of modrate climate (*)		**A+**	**A+**	**A++**	**A++**
D	Rated thermal power, including rated thermal power of any additional heaters under moderate climate conditions	kW	9	11	4	7
E	Seasonal energy efficiency of room heating in moderate climate conditions	%	110	111	125	125
F	Annual energy consumption under conditions of moderate climate	kWh	6317	7854	2589	4271
G	Sound power level L WA, indoors	dB(A)	41	41	41	41
H	Special precautions applied during assembly, installation or maintenance of the device	**Before installation or maintenance please read the operating manual and follow the instructions with the guidelines it contains.**				
I	N/A					
J	Rated thermal power, including rated thermal power of any additional heaters, in cool climate conditions	kW	6	6	3	6
	Rated thermal power, including rated thermal power of any additional heaters, in warm climate conditions	kW	6	8	4	8
K	Seasonal energy efficiency of room heating in cool climate conditions	%	94	94	90	98
	Seasonal energy efficiency of room heating in warm climate conditions	%	136	144	156	159
L	Annual energy consumption under cool climate conditions	kWh	5955	6274	3472	5877
	Annual energy consumption under warm climate conditions	kWh	2370	2670	1353	2693
M	Sound power level L WA, outdoors	dB(A)	64	64	62	64

(*) medium temperature application

A	Supplier's name or trademark		KOSPEL.Sp. z o.o.			
B	Supplier's model identifier		**HPSO-12/400 +HPSI-09**	**HPSO-16/400 +HPSI-09**	**HPSO-6/230 +HPSI-06**	**HPSO-8/230 +HPSI-06**
C	Seasonal energy efficiency class space heating for the model, in conditions of modrate climate (*)		**A++**	**A++**	**A+++**	**A+++**
D	Rated thermal power, including rated thermal power of any additional heaters under moderate climate conditions	kW	9	13	5	6
E	Seasonal energy efficiency of room heating in moderate climate conditions	%	155	151	175	176
F	Annual energy consumption under conditions of moderate climate	kWh	4664	6807	2358	2945
G	Sound power level L WA, indoors	dB(A)	41	41	41	41
H	Special precautions applied during assembly, installation or maintenance of the device	**Before installation or maintenance please read the operating manual and follow the instructions with the guidelines it contains.**				
I	N/A					
J	Rated thermal power, including rated thermal power of any additional heaters, in cool climate conditions	kW	7	7	5	7
	Rated thermal power, including rated thermal power of any additional heaters, in warm climate conditions	kW	7	9	6	9
K	Seasonal energy efficiency of room heating in cool climate conditions	%	125	127	135	141
	Seasonal energy efficiency of room heating in warm climate conditions	%	196	204	225	238
L	Annual energy consumption under cool climate conditions	kWh	5284	5842	3393	4604
	Annual energy consumption under warm climate conditions	kWh	1930	2386	1152	1879
M	Sound power level L WA, outdoors	dB(A)	64	64	62	64

(*) low temperature application



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

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

Start-up date			
Assembly address			
Installer's data	Stamp		Certificate no.
Device's details	external unit no.	Indoor unit no.	
Auxiliary device's details	DHW cylinder type	Buffer tank type	
Heating system*	Floor heating	Radiators	Mixed system
Heating system filled*	Drinking water	Treated water + corrosion inhibitor	Glycol solution propylene

Outdoor activities checklist*		
External unit:		
Installed without restriction of air supply	YES	NO
On a pedestal (stand)	YES	NO
Anti-virbration mounts installed	YES	NO
Condensate is drained (infiltration at the level below freezing)	YES	NO
Condensate discharge to the gutter - siphoned pipe, insulated, preferably with a heating cable	YES	NO
Correct arrangement of the outside refrigerant lines (according to the instructions)	YES	NO
Power and communication cable connected	YES	NO
Outside temperature sensor is placed on the wall (according to the instructions)	YES	NO

Indoor activities checklist*		
Leak test has been carried out and the system has been filled with refrigerant	YES	NO
Desilter filter is installed at the installation's return	YES	NO
Correct arrangement of the inside refrigerant lines (according to the instructions)	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

*cross out unnecessary

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