*the better way to heat*

alpha innotec

Brine/Water Heat Pumps
Brine heat station

# Operating Manual
## WZSV 42K3M

UK

83072100bUK

# Table of contents

# 1 About this operating manual

This operating manual is part of the unit.

► Before working on or with the unit read the operating manual carefully and follow it for all activities at all times, especially the warnings and safety instructions.

► Keep the operating manual to hand at the unit and hand over to the new owner if the unit changes hands.

► If you have any questions or anything is unclear, ask the local partner of the manufacturer or the factory's customer service.

► Note and follow all reference documents.

## 1.1 Validity

This operating manual refers solely to the unit identified by the nameplate and unit sticker (→ “Rating plate”, page 7 and “Unit sticker”, page 3).

## 1.2 Reference documents

The following documents contain additional information to this operating manual:

- Planning & design manual, hydraulic integration
- Operating manual of the heating and heat pump controller
- Brief description of the heat pump controller
- Operating manual of the expansion board (accessories)
- Logbook, if included with this unit by the manufacturer

### Unit sticker

The unit sticker contains important information for contact with the manufacturer or the local partner of the manufacturer.

► Stick on the unit sticker (barcode with serial and product number) here.

## 1.3 Symbols and identification markings

### Identification of warnings

| Symbol | Meaning |
|---|---|
|  | Safety-relevant information. Warning of physical injuries. |
| **DANGER** | Indicates imminent danger resulting in severe injuries or death. |
| **WARNING** | Indicates a potentially dangerous situation, which can result in severe injuries or death. |
| **CAUTION** | Indicates a potentially dangerous situation, which can result in moderate or minor injuries. |
| **IMPORTANT** | Indicates a potentially dangerous situation, which can result in property damage. |

### Symbols in the document

| Symbol | Meaning |
|---|---|
|  | Information for qualified personnel |
|  | Information for the owner/operator |
| ✓ | Requirement for action |
| ▶ | Procedural instructions: Single step action prompt |
| 1., 2., 3., … | Procedural instructions: Numbered step within a multi-step action prompt. Keep to the given order. |
|  | Additional information, e.g. a tip on making work easier, information on standards |
| → | Reference to further information elsewhere in the operating manual or in another document |
| ● | Listing |
|  | Secure connections against twisting |

## 1.4 Contact

Addresses for purchasing accessories, for service cases or for answers to questions about the unit and this operating manual can be found on the internet at any time and is kept up-to-date:

- Germany: www.alpha-innotec.de
- EU: www.alpha-innotec.com

# 2 Safety

Only use the unit if it is in proper technical condition and only use it as intended, safely and aware of the hazards, and follow this operating manual.

## 2.1 Intended use

The unit is designed for household use and is solely intended for the following purposes:

- Heating
- Domestic water heating
- Cooling

► Proper use includes complying with the operating conditions (→ “Technical data / Scope of supply”, page 24) and the operating manual and noting and following the reference documents.

► When using the local regulations note: laws, standards, guidelines, directives.

All other uses of the unit are not as intended.

## 2.2 Personnel qualifications

The operating manuals supplied with the product are intended for all users of the product.

The operation of the product via the heating and heat pump control and work on the product which is intended for end customers / operators is suitable for all age groups of persons who are able to understand the activities and the resulting consequences and can carry out the necessary activities.

Children and adults who are not experienced in handling the product and do not understand the necessary activities and the resulting consequences must be instructed and, if necessary, supervised by persons experienced in handling the product and who are responsible for safety.

Children must not play with the product.

The product may only be opened by qualified personnel.

All procedural instructions in this operating manual is solely directed at qualified, skilled personnel.

Only qualified, skilled personnel is able to carry out the work on the unit safety and correctly. Interference by unqualified personnel can cause life-threatening injuries and damage to property.

► Ensure that the personnel are familiar with the local regulations, especially those on safe and hazard-aware working.

► Ensure that the personnel are qualified to handle refrigerant.

► Work on the refrigerating circuit may only be carried out by qualified personnel with appropriate qualifications for refrigeration system installation.

► Qualified personnel with electrical training are the only people permitted to work on the electrics and electronics.

► Other work on the system should only be carried out by qualified specialists, such as:
  - Heating engineers
  - Plumbers

During the warranty and guarantee period, servicing and repairs may only be carried out by personnel authorised by the manufacturer.

## 2.3 Personal protective equipment

During transport and work on the unit, there is a risk of cuts due to the sharp edges of the unit.

► Wear cut-resistant protective gloves.

During transport and work on the unit, there is a risk of foot injuries.

► Wear safety shoes.

When working on liquid-conveying lines, there is a risk of injury to the eyes due to leakage of liquids.

► Wear safety goggles.

## 2.4 Residual risks

### Electric shock

Components in the unit are live with life-threatening voltage. Before working on the unit:

► Disconnect unit from power supply.

► Protect unit against being switched back on again.

► Residual voltage at the inverter. Wait for 90 seconds before opening the unit.

Existing earthing connections within housings or on mounting plates must not be altered. If this should nevertheless be necessary in the course of repair or assembly work:

► Restore earthing connections to their original condition after completion of the work.

### Injuries caused by high temperatures

► Before working on the unit, let it cool down.

### Injury due to flammable liquids and potentially explosive atmospheres

Constituents of antifreeze mixtures, e.g. ethanol, methanol, are highly flammable and form an explosive atmosphere:

► Mix antifreeze in well-ventilated rooms.

► Note the hazardous substance markings and comply with the relevant safety regulations.

### Injuries and environmental damage due to refrigerant

The unit contains refrigerant that is hazardous to health and the environment. If (primary) refrigerant leaks from the unit, there is a risk of an explosion:

1. Switch off unit.
2. Thoroughly ventilate installation room.
3. Notify authorised customer service.

### Safety labels

► Observe safety labels on and in the unit.

## 2.5 Disposal

### Batteries

Improper disposal of the buffer battery damages the environment.

► Dispose of the buffer battery in an environmentally compatible way according to the local regulations.

### Media harmful to the environment

Improper disposal of environmentally harmful media (antifreeze, refrigerant) damages the environment:

► Collect media safely.

► Dispose of the media in an environmentally compatible way according to the local regulations.

## 2.6 Avoid damage to property

### Decommissioning/draining the heating

If the system/heat pump is decommissioned or drained after already being filled, it must be ensured that the condenser and any heat exchangers have been drained completely for the event of freezing temperatures. Residual water in heat exchangers and condensers can result in damage to the components.

► Completely drain the system and the condenser, and open vent valves.

► Blow them clear with compressed air, if required.

### Improper action

Requirements for minimum scale and corrosion damage in hot water heating systems:

- Proper planning, design and start-up
- Closed system with regard to corrosion
- Integration of adequately dimensioned pressure retention
- Use of deionised heating water (VE water) or with water corresponding to VDI 2035 only
- Regular servicing and maintenance

If a system is not planned, designed, started up and operated according to the given requirements, there is a risk that the following damage and faults will occur:

- Malfunctions and the failure of components, e.g. pumps, valves
- Internal and external leaks, e.g. from heat exchangers
- Cross-section reduction and blockages in components, e.g. heat exchanger, pipes, pumps
- Material fatigue
- Gas bubbles and gas cushion formation (cavitation)

- Negative effect on heat transfer, e.g. formation of coatings, deposits, and associated noises, e.g. boiling noises, flow noises

► Note and follow the information in this operating manual for all work on and with the unit.

### Unsuitable quality of the fill and make-up water in the heating circuit

The efficiency of the system and the life of the heat generator and the heating components depend decisively on the quality of the heating water.

If the system is filled with untreated domestic water, calcium precipitates as scale. Limescale deposits form on the heat transfer surfaces of the heating. The efficiency drops and energy costs rise. In extreme cases the heat exchangers are damaged.

► Fill the system with deionised heating water (VE water) or with water corresponding to VDI 2035 only (low-salt operation of the system).

### Unsuitable quality of the water in the domestic hot water tank

► Ensure that the electrical conductivity of the domestic water is at least equivalent to the required value (→ “Technical data / Scope of supply”, page 24) and that the drinking water is of drinking water quality.

### Unsuitable quality of the water or the water-antifreeze mixture in the heat source

► Use of pure water in a flat-plate collector or a borehole heat exchanger (vertical collector) is not permitted

► For operation of the heat source with water or a water-antifreeze mixture, ensure that the water used fulfils the quality specifications of the heating water side.

→ “7 Flushing, filling and venting“, from page 17

### Using groundwater

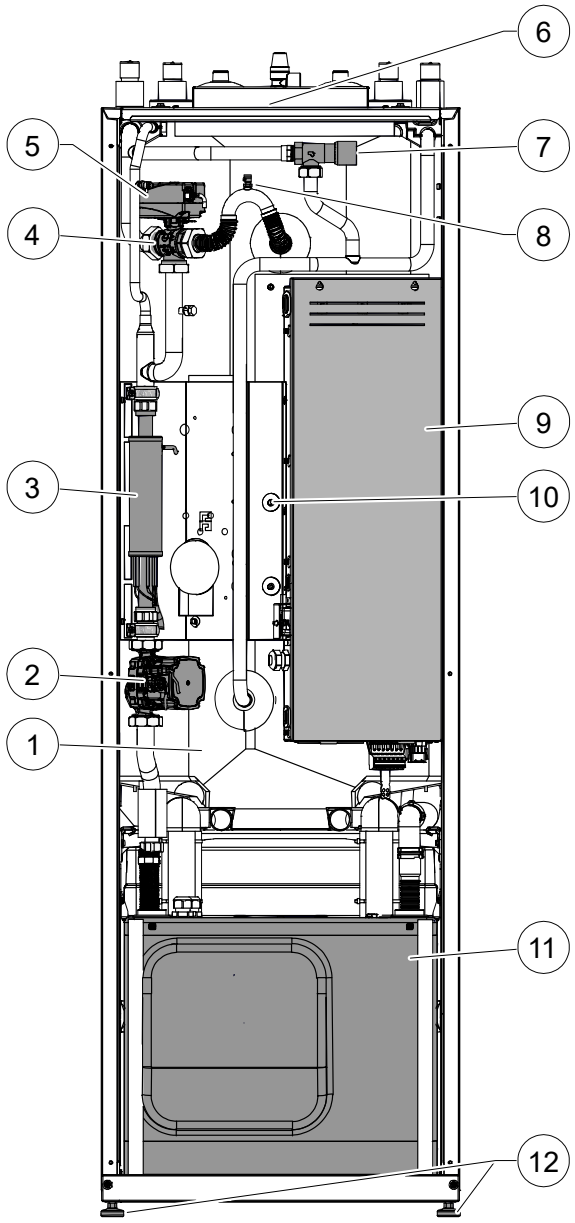
► If using groundwater install an intermediate exchanger.

# 3 Description

## 3.1 Layout

**NOTE**
This section essentially names the components relevant for fulfilling the tasks described in this operating manual.

### Housing with unit components




1 Domestic hot water tank
2 Heating circuit/hot water circulation pump
3 Heating element
4 3-way switching valve, heating circuit/ domestic hot water

5 Valve motor
6 Position of rating plate
7 Overflow valve
8 Venter
9 Electrical switch cabinet
10 Domestic hot water tank sensor
11 Module box
12 Height-adjustable feet (4x)

## Rating plate

Rating plates are attached to the following places on the unit:

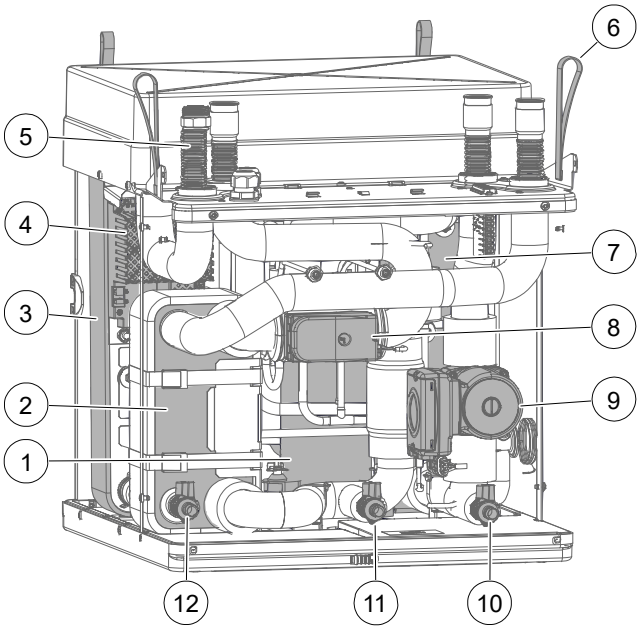
- at the top of the heating station
- left-hand side, on the module box

The rating plate contains the following information at the top:

- Unit type, product number
- Serial number, unit index

The rating plate also contains an overview of the most important technical data.

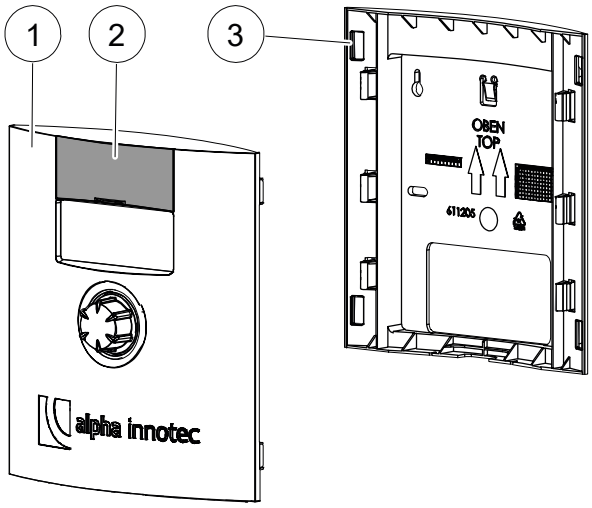
## Module box




1 Compressor
2 Heating exchanger
3 Condenser
4 Inverter
5 Vibration isolator (4x)
6 Lifting lug (4x)
7 Evaporator
8 Switching valve for the cooling circuit, with valve motor
9 Heat source circulation pump
10 Heat source filling and drain tap
11 Heat source filling and drain tap
12 Heating filling and drain tap

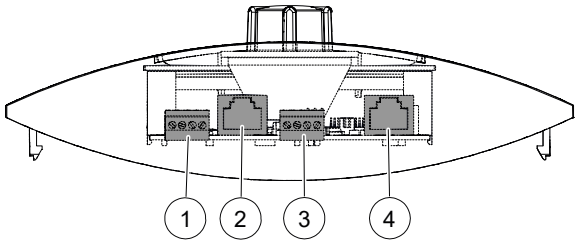
**NOTE**
The hose connectors are not part of the scope of delivery with all KFE ball valves.

### Control unit




1 Control panel
2 Push up flap upstream of USB connection (for qualified personnel for software updates and for data logging)
3 Wall bracket (only necessary for wall-mounted installation)

### Underside of the control panel




1 Connection room control unit RBE RS 485 (accessory)
2 RJ45 connection cable to the network link
3 Connection LIN bus to the regulator board
4 RJ45 connection not assigned

## 3.2 Accessories

The following accessories are available for the unit through the manufacturer's local partner:

- Additional masking plate for the front cover panel, if the control is mounted on the wall
- Room thermostat for switching the cooling function
- Dew point monitor for protecting a system with cooling function at low flow temperatures
- Expansion board
- Heating circuit safety package
- Heat source circuit safety package
- Installation package IPSW 1"-28 (Shut-off devices for the heating circuit and for the heat source)
- Air / magnetic sludge separator
- Installation package IPWMZ 1"-28 for external heat quantity recording

## 3.3 Function

Liquid refrigerant is evaporated (evaporator), the energy for this process is environmental heat and comes from the “ground” heat source (collector, borehole heat exchanger or groundwater via intermediate exchanger). The gaseous refrigerant is compressed (compressor), this causes the pressure to rise and therefore the temperature too. The gaseous refrigerant with high temperature is liquefied (condenser).

Here the high temperature is discharged to the heating water and is used in the heating circuit. The liquid refrigerant with high pressure and high temperature is expanded (expansion valve). The pressure and temperature drop and the process begins again.

Due to the integrated switching valve and the integrated energy efficiency circulation pump the heated heating water can be used for charging the domestic hot water or for heating the building. The temperatures required and use are controlled by the heat pump controller. Reheating, drying out screed or increasing the domestic hot water temperature can be carried out using the integrated electric heating element, which is activated by the heat pump controller as and when necessary.

An integrated overflow valve ensures that the heat pump does not switch to high-pressure fault if all heating circuits are closed. The integrated vibration isolators for the heating circuit and heat source prevent structure-borne sound and vibrations from being transferred onto the fixed pipes and therefore into the building.

### Cooling

The cooling function has the following options (→ operating manual of the heating and heat pump controller):

- Passive cooling (without compressor)
- Control of the cooling function via the heating and heat pump controller
- Automatic switching between heating and cooling mode

### Network connection on the control

The control can be connected to a computer or network via a network cable. The heating and heat pump controller can then be controlled from the computer or from the network.

# 4 Operation and care

**NOTE**
The unit is operated via the control of the heating and heat pump controller (→ operating manual of the heating and heat pump controller).

## 4.1 Energy and environmentally aware operation

The generally accepted requirements for energy-aware and environmentally-aware operation of a heating system also apply to use of a brine/water heat pump. The most important measures include:

- No unnecessarily high flow temperature
- No unnecessarily high domestic hot water temperature (note and follow local regulations)
- Do not open windows with gap /tilt open (continuous ventilation), but instead open wide for a short time (purge ventilation)

## 4.2 Maintenance

Wipe down the outside of the unit only using a damp cloth or cloth with mild cleaning product (washing-up liquid, neutral cleaning product). Do not use any harsh, abrasive, acid or chlorine-based cleaning products.

# 5 Delivery, storage, transport and installation

**IMPORTANT**
Damage to the housing and the unit components due to heavy objects.

► Do not place any objects on the unit.

## 5.1 Scope of supply

**NOTE**
On delivery the accessories are enclosed in two packages on the housing.

► Check delivery immediately after receipt for outwardly visible damage and completeness.

► Notify supplier of any defects immediately.

The separate pack included contains:

- Sticker with the unit number for attaching to page 3 of this manual
- Control unit, consisting of the control, wall bracket and masking plate
- 6-mm anchors with screws (2x each) for wall-mounting the control unit
- Safety valve, outdoor sensor
- Compression fittings (4x)
- Screws for the strain reliefs in the electrical switch box (12x)
- Replacement material after dismantling the module box:
  - Insulation hoses (2x)
  - Cable ties (4x)
  - O-rings (6x), flat gasket (1x)

## 5.2 Storage

► Where possible do not unpack the unit until directly before installation.

► Store unit protected against:

- Moisture/damp
- Frost
- Dust and dirt

## 5.3 Unpacking and transport

**NOTE**
The module box can be removed for transport (→ “Dismantle the module box”, page 12).

### Notes on safe transport

The heating station and the module box are heavy (→ “Technical data / Scope of supply”, page 24). There is a risk of injuries or damage to property if the housing with the unit components falls or overturns or if the module box falls.

► The heating station and module box must be transported and installed by several persons.

► Secure the heating station during transport. Carry the module box by the carrying lugs.

There is a risk of cutting your hands on sharp edges of the unit.

► Wear cut resistant protective gloves.

The hydraulic connections are not designed for mechanical loads.

► Do not lift or transport the unit by the hydraulic connections.

If the module box is tilted by more than 45°, compressor oil runs into the cooling circuit.

► Do not tilt the unit with installed module box by more than 45°.

Transport the unit preferably with a pallet truck, alternatively with a handcart.

### Transport with a pallet truck

► Transport the unit to the place of installation packaged and secured on a wooden pallet.

### Unpacking

**NOTE**
If the unit is not transported by a pallet truck: Do not lift off the pallet until after unpacking and dismantling the housing panels.

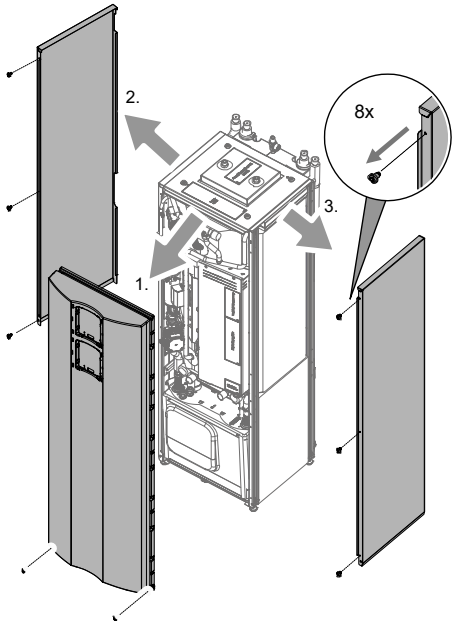
1. Remove plastic films. Ensure that you do not damage the unit.
2. Dispose of the mounting bracket, transport and packaging material in an environmentally friendly way according to local regulations.
3. Remove the film from the plastic element of the front panel in the place of installation.

### Dismantle housing panels for transport with handcart or carrying the unit

✓ Unit is unpacked (→ “Unpacking”, page 10).

To avoid damage to the housing panels:

1. Undo 2 screws at the bottom of the front panel. Lift up the front panel and put it down in safe place.
2. Undo 3 screws at the right panel. Lift up the side panel and put it down in safe place.
3. Undo 3 screws at the left panel. Lift up the side panel and put it down in safe place.



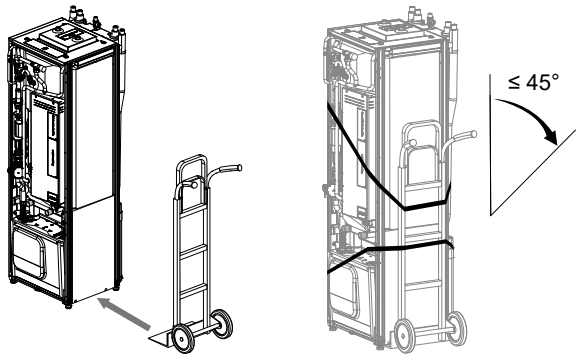
### Transport with a handcart

**NOTE**

- If transporting with a handcart the module box must be pushed in.
- The following figure with the handcart shows transporting the unit on its left-hand side; it can also be transported on its right-hand side.

✓ Housing panels are dismantled.

To avoid damage: On a handcart, load the unit on its side only.




Transport unit on the handcart.

### Carrying the unit

✓ Housing panels are dismantled.

1. Dismantle module box (→ “Dismantle the module box”, page 12) and carry it by the support lugs to the place of installation.
2. Carry the housing with the unit components separately to the place of installation.

## 5.4 Installation

### Installation room and space requirements

**NOTE**

Note and follow the local regulations and standards regarding the installation room and space requirements. The table shows the regulations as per EN 378-1 relevant in Germany.

| Refrigerant | Limit [kg/m³] |
|---|---|
| R 134a | 0.25 |
| R 404A | 0.52 |
| R 407C | 0.31 |
| R 410A | 0.44 |
| R 448A | 0.39 |
| R 454B | 0.059 |

→ “Technical data / Scope of supply”, page 24

$$\textbf{Minimum room volume} = \frac{\text{Refrigerant capacity [kg]}}{\text{Limit [kg/m}^3\text{]}}$$

**NOTE**

If several heat pumps of the same type are installed only one heat pump need to be taken into account. If several heat pumps of different types are installed, only the heat pump with the largest refrigerant volume needs to be taken into account.

✓ Minimum volume corresponds to the requirements for the refrigerant used.

✓ Installation inside the building only.

✓ Installation room is dry and frost-free.

✓ Clearance dimensions are met (→ “Installation plans”, from page 28).

✓ The surface/floor is suitable for installation of the unit:

- level and horizontal
- load-bearing capacity for the unit's weight

### Aligning the unit

► Align the unit horizontally and stably in the installation site using the height-adjustable feet and a spanner size SW 13. Adjustment range: 25 mm.

# 6 Installation and connection

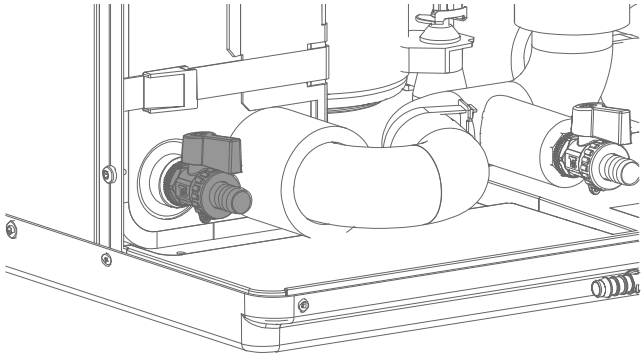
## 6.1 Dismantle the module box

**IMPORTANT**
If the module box is tilted by more than 45°, compressor oil runs into the cooling circuit.

► Do not tilt the module box by more than 45°.

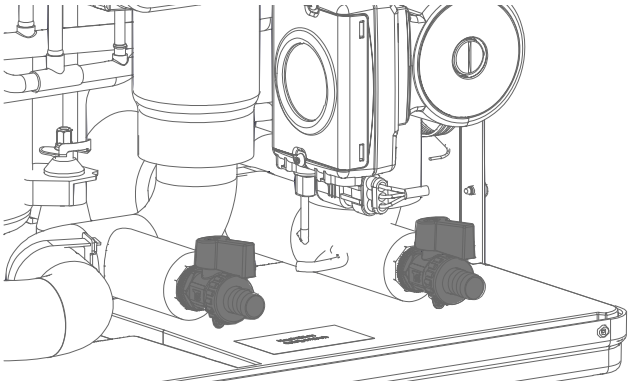
**NOTE**
- If necessary the module box can be dismantled for easier transport of the unit or for service reasons.
- Steps 1 to 5 are only required if the module box is connected and filled.

1. Remove the front panel of the module box (→ “7.1 Remove the front panel of the module box”, page 17).
2. Drain the unit via the filling and drain tap of the heating.



**NOTE**
The hose connectors are not part of the scope of delivery with all KFE ball valves.

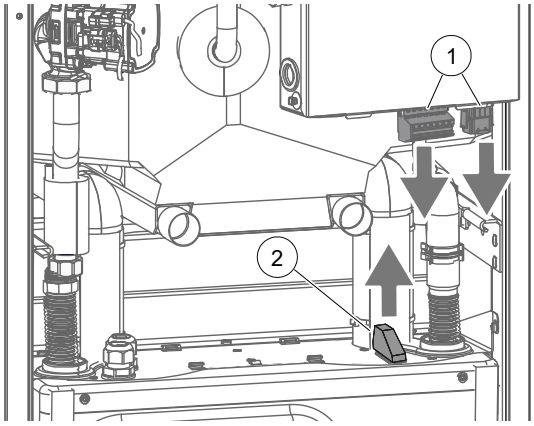
3. Drain the unit via the filling and drain taps of the heat source.



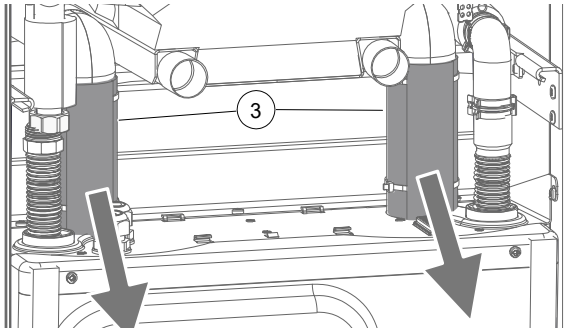
4. Disconnect the electrical connections:

4.1. Disconnect 2 white connectors (①) at the bottom of the electrical control cabinet. To do this, release the lugs by pressing on the sides of the connectors.

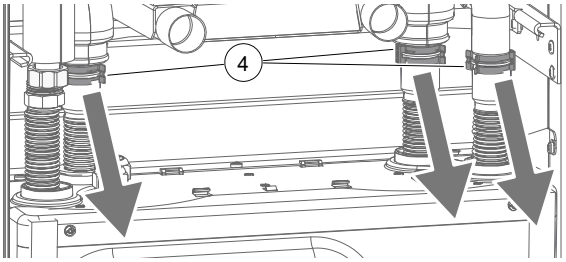
4.2. Pull out the black rectangular connector (②) at the top of the module box.



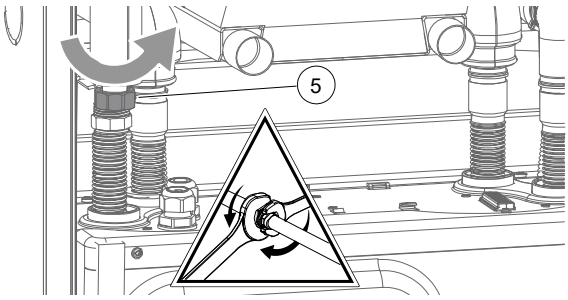

5. Remove the insulation (③) on the hydraulic connections.



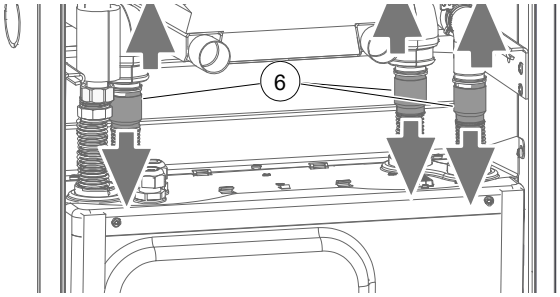

6. Remove 3 clips (④) on the hydraulic connections.



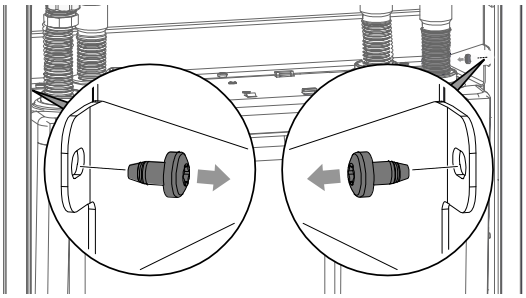
7. Use spanner size SW 37 to unscrew the heating flow (⑤).



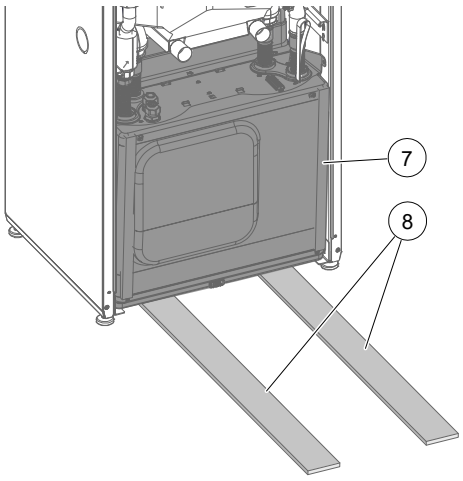

8. Disconnect the hydraulic connections; to do this, push the pipes (⑥) apart as far as necessary.



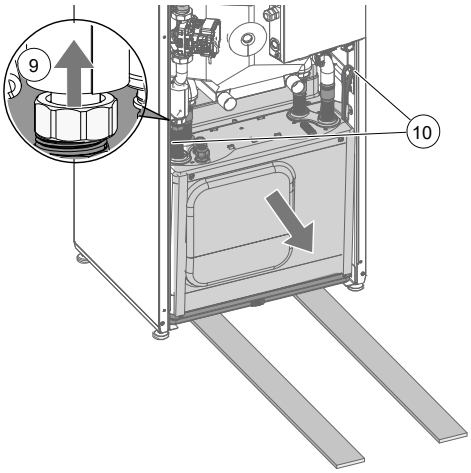

9. Remove the 2 side retaining screws.



10. To protect the floor and move the module box (⑦) more easily: place boards (8) under it, e.g. from the packaging material.

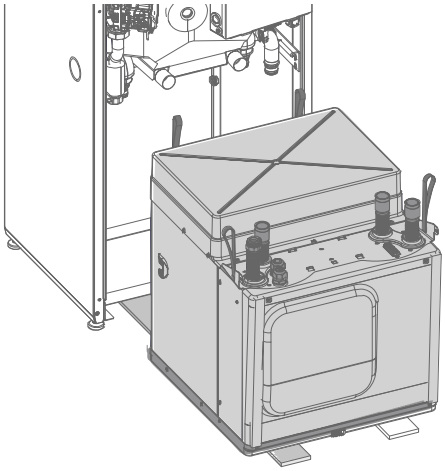



11. Lift and hold nut (⑨) on the heating flow.




12. Slowly and carefully pull out the module box by the carrying lugs (⑩). Ensure that none of the pipes are damaged

13. Pull out the module box completely and place it on the boards.



## 6.2 Install the module box

1. Place the module box carefully in the bottom of the heating station and slowly and carefully push it in.

1.1. Lift and hold nut on the heating flow.

1.2. Lift up pipes so that they do not get damaged.

2. Attach the two side retaining screws.

3. Connect the hydraulic connections. At the same time, replace O-rings on the heat pump connections (→ separate pack included).

4. Perform pressure test and insulate pipes with the enclosed insulation hoses (→ separate pack).

5. Connect the electrical cables:

5.1. Plug in 2 white connectors at the bottom of the electrical control cabinet. Ensure that the connectors move easily and the lugs latch into position.

5.2. Plug in the black rectangular connector at the top of the module box.

## 6.3 Install the hydraulic connections

**NOTE**
The safety valve that is integrated or included in delivery has a tolerance of plus / minus 10% for the set pressure. If local regulations, laws, standards or directives require a smaller tolerance range, the safety valve must be replaced on site with a safety valve that meets the requirements.

**IMPORTANT**
Dirt and deposits in the (existing) hydraulic system can cause damage to the heat pump.

► Ensure that a sludge separator is installed in the hydraulic system.

► Rinse the hydraulic system thoroughly prior to establishing the hydraulic connection of the heat pump.

**NOTE**
The heat source can be connected from the top, right or left.

If the heat source will be connected at the side, the cables can be cut to a residual length of at least 250 mm from the edge of the device (→ “Dimensional drawings“, page 26).

**IMPORTANT**
Damage to the copper pipes due to unacceptable loading!

► Secure all connections against twisting.

✓ The heat source system has been installed in accordance with the specifications (→ planning & design manual, dimensioned diagrams, installation plans).

✓ Cross-sections and lengths of the pipes for the heating circuit and heat source are dimensioned adequately.

✓ The free pressure of the circulation pumps produces at least the minimum throughput required for the unit type (→ “Technical data / Scope of supply”, page 24).

✓ The cables for the heat source and the heating are fixed to the wall or ceiling via a fixed point.

### Install the compression fittings and ball valves

**IMPORTANT**
Leaks or fracture of the union nut due to excessive force!

► Tighten the union nuts only as far as described here.

1. Check pipe ends for scratches, dirt and deformation.
2. Check proper position of the clamping ring on the fitting.
3. Push the pipe through the clamping ring up to the limit stop in the fitting.
4. Tighten the union nut hand-tight and attach waterproof marking.
5. Tighten union nut with ¾ rotation.
6. Check connection for leaks.

If the connection leaks:

1. Undo connection and check pipe for damage.
2. Tighten the union nut hand-tight and retighten with the open-ended spanner with ⅛ to ¼ turn, as the clamping ring is already in a clamping position.

### Connect the unit to the heat source, domestic water pipes and heating circuit

1. Install shut-off devices at the connections of the heat source and heating circuit.
2. Insert a vent at the highest point of the heat source and the heating circuit.
3. Recommendation: Fit a dirt filter with mesh size 0.9 mm onto the heat source inlet.
4. Connect the domestic hot water tank according to the local regulations.
5. Recommendation: To balance out pressure fluctuations and water hammers and avoid unnecessary loss of water, install an expansion vessel with through-flow fitting.
6. Ensure that the operating overpressures (→ “Technical data / Scope of supply”, page 24) are not exceeded. Install pressure reducer if necessary.

## 6.4 Connect the electrical cables

**IMPORTANT**
Irreparable damage to the compressor due to wrong rotating field!

► Ensure that there is a clockwise rotating field for the compressor load infeed.

### Basic information on the electrical connection

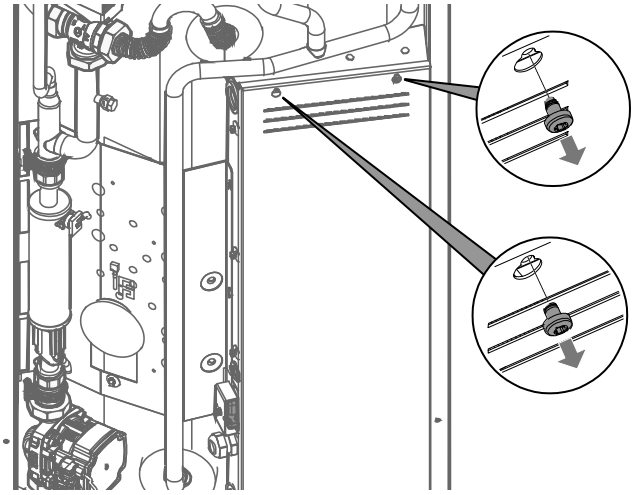
**NOTE**
Ensure that the unit is supplied with electricity at all times. After working inside the unit and attaching the unit panelling, switch the power supply back on immediately.

- The specifications of the local energy supply company may apply to electrical connections
- Fit the power supply for the heat pump with an all-pole miniature circuit-breaker with at least 3 mm contact spacing (per IEC 60947-2)
- Note the level of the tripping current (→ “Technical data / Scope of supply”, page 24)
- Comply with the electromagnetic compatibility regulations (EMC regulations)
- Lay unshielded power supply cables and shielded cables (bus cable) sufficiently far apart (> 100 mm)
- Maximum line length: 30 m.
  The LIN-bus cable must be a shielded cable of at least 4 x 0.5 mm²

### Pull in the cables and conductors and make the connections

1. Strip the sheathing of all cables to external loads before laying in the cable duct of the electrical switch box.
2. Open electrical switchbox:

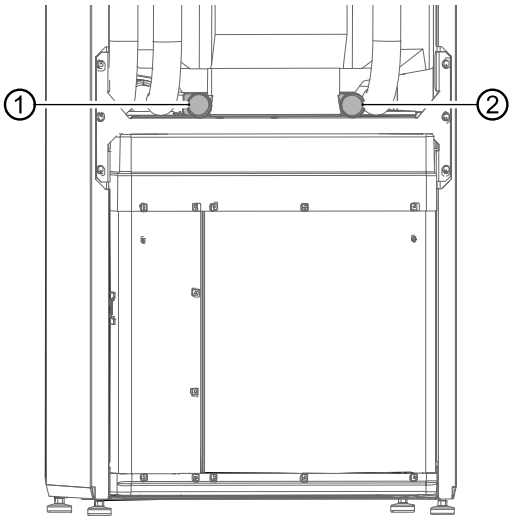
2.1. Undo 2 screws at the top of the cover panel of the electrical switch box.



2.2. Unhook cover panel.

3. Lay the control / sensor cables and unit supply cable and connect:

3.1. Route cables through the reserve conduits (①) and (②) only, from behind into the inside of the unit.



3.2. Route cables from underneath through the cable openings in the switch box.

3.3. Connect cables to the respective terminals (→ “Terminal diagram”, page 34).

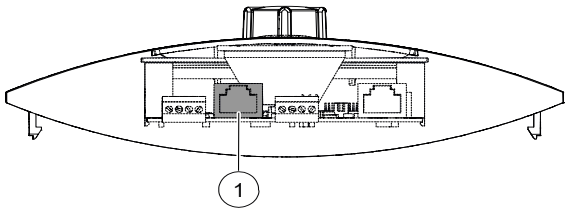
4. Route all cables introduced into the switch box through the strain reliefs and tighten the strain reliefs using the screws from the separate pack.

5. Close the switch box by re-attaching the side cover and tighten the side cover.

### Operate the controller via a PC /network

1. During installation lay a shielded network cable (category 6) through the unit.

2. Plug the RJ-45 connector of the network cable into the socket of the control unit (①).




**NOTE**

The network cable can be retrofitted at any time.

## 6.5 Installing the control panel

**NOTE**

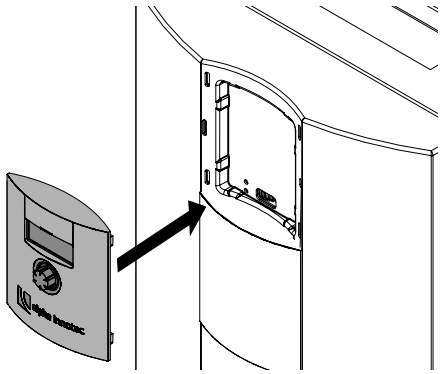
The control can be inserted in a recess in the front panel of the unit or can be installed on the wall.

### Insert the control in the unit and connect

1. If required: Remove masking plate from the slot. To do this, dismantle the front panel (→ “Dismantle housing panels for transport with handcart or carrying the unit”, page 10), press the lugs together and push out of the openings.

2. Remove film from the plastic element of the front panel.

3. Position the control unit in the recess in the front panel of the unit and press the latching lugs into the openings.

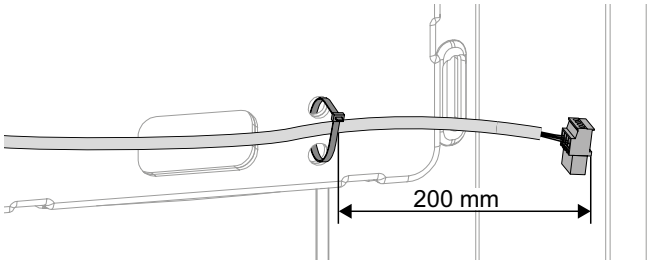


4. Cut the cable to length generously so that the front panel can be removed and placed to the side of the unit. Do not cut the cable ties for strain relief of the LIN bus cable at the electric switch box.

4.1. Cut the LIN bus cable approx. 1.1 m from the fixing of the strain relief at the electrical switch box.

4.2. Cut all other cables approx. 1.2 m.

5. Use cable ties (→separate pack) to fix the LIN bus cable to a web of the masking plate around 20 cm in front of the connector (strain relief).

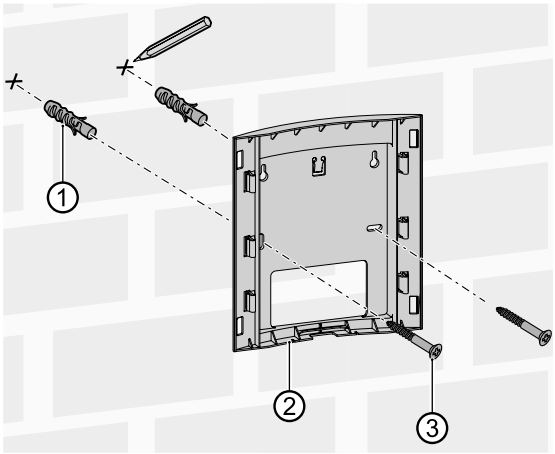


6. Push the cable through the opening in the front panel of the unit and from below into the control unit.
7. Press the lugs of the control into the openings in the front panel of the unit.
8. Insert cover in the free slot.

### Mount the control on the wall and connect it

**IMPORTANT**
Mount the wall bracket with control panel **only vertically** on a wall!

1. Release the rear bracket from the control.
2. If visually unattractive: Cut off the lugs on the rear of the control (are only needed to insert in the front panel).
3. Mark 2 drillholes (→ Dimensional drawing “Wall bracket”, page 27).
4. If cables are fed in from underneath: Break out the web at the bottom in the middle of the wall bracket. Use side-cutters if necessary.
5. Fix the wall bracket (②) with 2 wall plugs (①) and 2 screws (③).

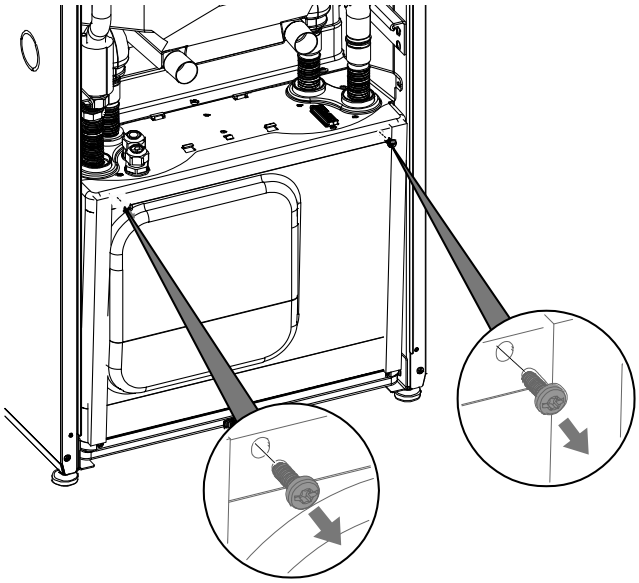



6. Feed in the cables from the wall (e.g. in-wall box) or from below.
7. Route the LIN bus cable from the top right-hand side at the rear from the heat pump and plug into the control at the bottom.
8. Push the control onto the wall bracket.
9. Push on cover. If applicable, position second cover (accessories) on the second unused slot.

# 7 Flushing, filling and venting

## 7.1 Remove the front panel of the module box

► Unscrew the front panel of the module box.



## 7.2 Fill, flush and vent heat source

Frost protection must be provided in the heat source. Below are the approved antifreeze agents based on:

- Monopropylene glycol
- Monoethylene glycol
- Ethanol
- Methanol

Antifreeze agents based on salt are not permitted.

► When selecting the antifreeze agent, it must be ensured that it is compatible with the following materials:
  - Brass (CW602N and CW614N)
  - Stainless steel (AISI304, AISI316 and AISI316L)
  - Copper (Cu-DHP CW024A - EN1652)
  - Cast iron (EN-GJL-150)
  - Composite (PES 30% GF)
  - EPDM (ethylene propylene diene rubber)
  - PTFE (Polytetrafluoroethylene)
  - FKM (fluororubber)

  If an antifreeze agent is not compatible with one of these materials, it may not be used.

Antifreeze agents from our product range are safe with regard to our units and the accessories purchased from us and guarantee compatibility with the listed materials.

► Pressure losses must be observed when selecting the antifreeze agent.

► The antifreeze agent that is selected and used must comply with the specifications and requirements of the local authorities and water management authorities.

**WARNING**
**Methanol and ethanol can give off flammable and explosive gases. Therefore, the safety provisions for the anti-freeze must be noted and followed!**
**The hazard markings of all anti-freezes used must be noted and the relevant safety provisions must be followed.**

► Make sure that the mixing ratio of water and antifreeze agent meets the required minimum antifreeze temperature in the heat source.

→ “Technical data / Scope of supply”, page 24

► For operation of the heat source with water or water-antifreeze mixture, ensure that the water used fulfils the quality specifications of the heating water side.

→ “Heating water quality”, page 19

✓ Drain pipe of the safety valve is connected.

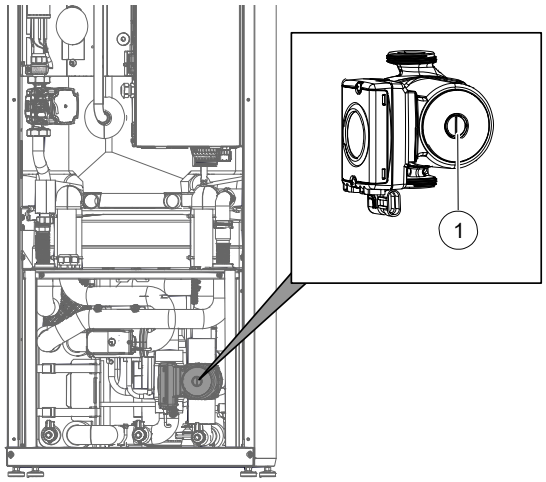
✓ Room is ventilated.

1. Flush the heat source system thoroughly.
2. Mix antifreeze with water thoroughly with the required ratio, before adding to the heat source.
3. Check the concentration of the water-antifreeze mixture.
4. Fill the heat source with the water-antifreeze mixture.
   Fill until the system is air-free.
5. Fill the unit via the ball valves in the module box.

## 7.3 Vent the circulation pump of the heat source

✓ The front panel of the module box is unscrewed.

1. Place vessel for collecting discharging liquid under the outlet.
2. Undo deflating screw (①) in the middle of the circulation pump of the heat source.




**NOTE**
The hose connectors are not part of the scope of delivery with all KFE ball valves.

3. Wait until liquid is discharged uniformly.
4. Screw the deflating screw (①) of the circulation pump of the heat source back on tightly.
5. Screw the front panel of the module box.
6. Dispose of collected liquid according to the local regulations.
7. Set system pressure to 1 bar.

## 7.4 Flush and fill the heating and domestic hot water charging circuit

### Heating water quality

**NOTE**

- For detailed information refer, among other things, to the VDI Guidelines 2035 “Vermeidung von Schäden in Warmwasserheizanlagen”
- Required pH value: 8.2 … 10;
  for aluminium materials:
  pH value: 8.2 … 8.5

► Fill the system with deionised heating water (VE water) or with water corresponding to VDI 2035 only (low-salt operation of the system).

Advantages of low-salt operation:

- Low corrosion-promoting properties
- No formation of mineral scale
- Ideal for closed heating circuits
- Ideal pH value due to self-alkalisation after filling the system

► If the required water quality is not achieved, consult a company specialising in the treatment of heating water.

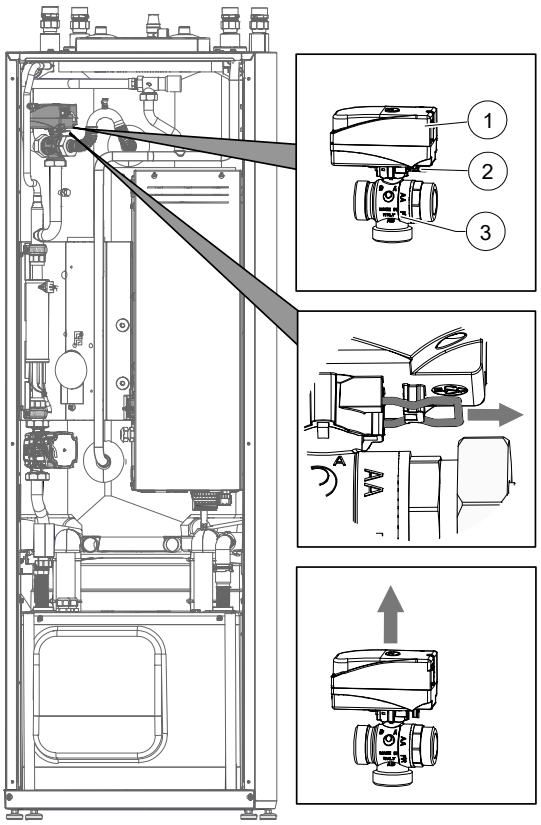
► Keep a system log for hot water heating systems in which relevant planning data is entered (VDI 2035).

✓ Drain pipe of the safety valve is connected.

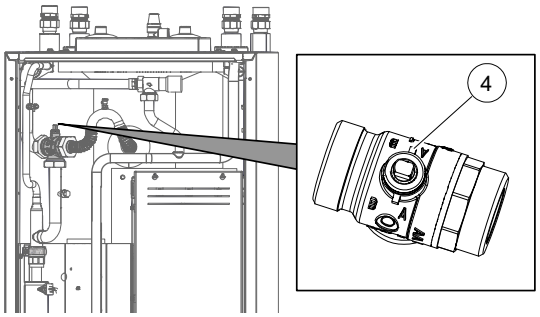
✓ The front panel of the module box is unscrewed.

► Ensure that the set pressure of the safety valve is not exceeded.

1. Pull the U-clip (②) off the floor of the valve motor (①).
2. Pull the valve motor carefully upwards and off the 3-way switching valve (③).

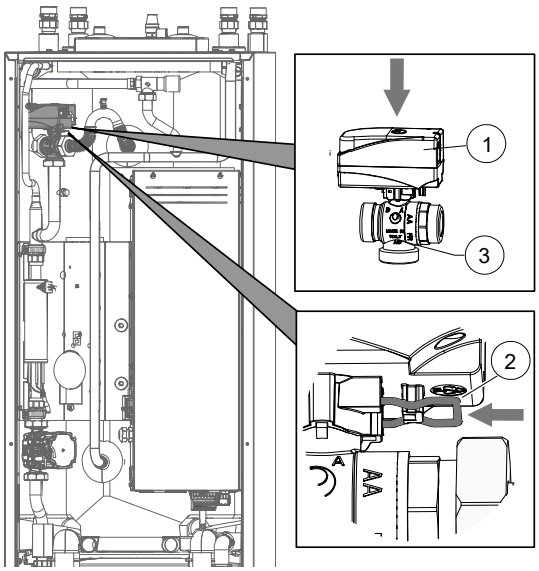



3. Turn the spindle (④) of the 3-way switching valve so that the rounded side of the spindle points in the direction of marking A of the connections of the 3-way switching valve.




4. Flush the domestic hot water charging circuit for approx. 1 minute.
5. Turn the spindle so that the rounded side of the spindle points in the direction of marking B of the connections of the 3-way switching valve.
6. Flush heating circuit thoroughly, until no more air is discharged.

7. Position the valve motor (①) on the 3-way switching valve (③).
8. Insert the U-clip (②) into the floor of the valve motor.




9. Ensure that the U-clip has latched into position correctly:

✓ Valve motor sits securely on the 3-way switching valve.

✓ Both prongs of the U-clip sit on the lug.

✓ The tips of the U-clip are visible by approx. 2 mm (not significantly more!).

10. Screw the front panel of the module box.

## 7.5 Flush, fill and vent the domestic hot water tank

✓ Drain pipe of the safety valve is connected.

► Ensure that the set pressure of the safety valve is not exceeded.

1. Open the domestic water inlet valve at the domestic hot water tank.
2. Open taps for domestic hot water.
3. Flush the domestic hot water tank until no more air discharges from the valves at the taps.
4. Close taps for domestic hot water.

# 8 Insulate hydraulic connections

1. Insulate heating circuit, heat source and domestic water pipes according to the local regulations.
2. Open shut-off devices.
3. Perform a pressure test and check for leaks.
4. Insulate the internal piping of the module box with the insulation material from the separate pack included.
5. Insulate external piping on site.
6. Insulate all connections, fittings and pipes.
7. Insulate heat source so that it is vapour-diffusion tight.
8. Insulate the heating circuit vapour-diffusion tight.

# 9 Set the overflow valve

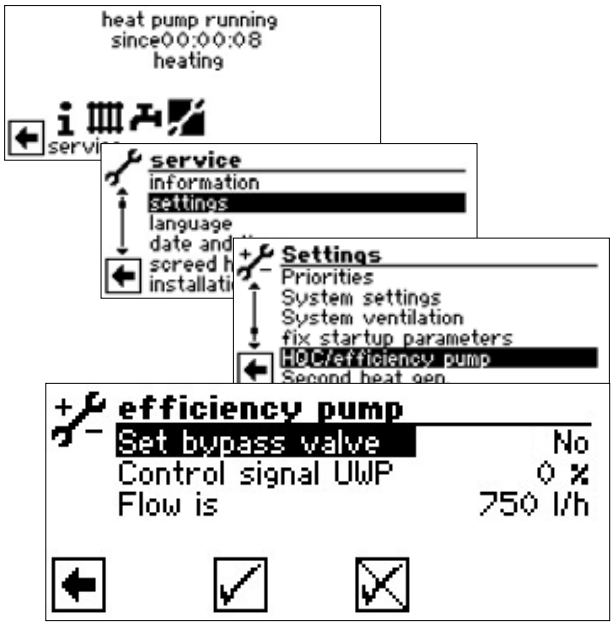
**NOTE**

- The activities in this section are only necessary for in-line tank integration.
- Complete the worksteps quickly, otherwise the maximum return temperature can be exceeded and the heat pump switches to high-pressure fault.
- Turn the adjusting knob at the overflow valve to the right to increase the temperature difference (the temperature drop), turn it to the left to reduce it.

✓ System is running in heating mode (ideally in cold condition).

The IBN assistant already provides the option, in the event of the integration of the storage tank in series to adjust the overflow valve according to to the hydraulic system.

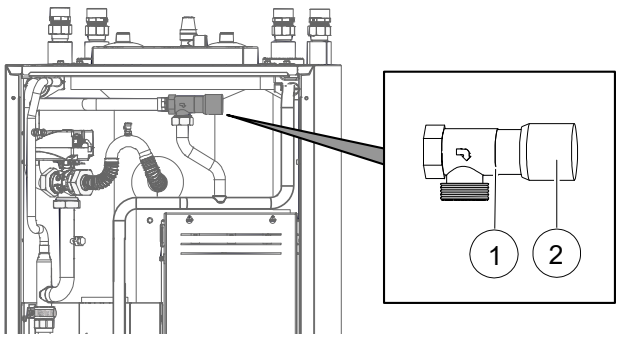

Confirm the IBN assistant or:




The “Set bypass valve” menu item is set by default to “No”. The overflow valve adjustment function is deactivated.

- The UWP control signal is the indication of the currently required pump capacity in %
- If the flow rate is the current flow rate (measuring accuracy +/- 200 l/h)

1. Fully open the overflow valve, close the heating circuits
2. If the “Set bypass valve” menu item is set from “No” to “Yes”, the circulation pump is activated with 100% – and the pump starts up.
3. If the control signal UWP reaches 100%, close the overflow valve to the extent that the maximum flow rate (→ “Technical data / Scope of supply”, page 24) can be ensured.




① Overflow valve
② Rotary-push button

4. If you exit the “Set bypass valve” menu or at the latest after one hour, the circulation pump switches back to standard regulation
5. Open valves to heating circuit.

# 10 Commissioning

**NOTE**
The first filling and initial startup of the domestic hot water tank must be carried out by qualified personnel.

✓ Relevant planning & design data of the system is documented in full.

✓ The competent energy supplier has been notified of operation of the heat pump system.

✓ System is air-free.

✓ Installation check using the rough checklist has been completed successfully.

✓ Clockwise rotating load infeed field is present at the compressor

✓ Heating station is installed and mounted according to this operating manual

✓ The electrical installation has been carried out properly in accordance with this operating manual and local regulations

✓ The power supply for the heat pump is equipped with an all-pole circuit-breaker with at least 3 mm contact spacing (IEC 60947-2)

✓ The level of the tripping current is compliant

✓ Heating circuit is flushed and vented

✓ Frost protection of the heat source meets the requirements

→ “Technical data / Scope of supply”, page 24

✓ All shut-off devices of the heating circuit are open

✓ All shut-off devices of the heat source are open

✓ The pipe systems and components of the system are leak-tight

1. Fill out carefully and sign the notice of completion for heat pump systems.
2. In Germany: Send notice of completion for heat pump systems and rough checklist to the manufacturer’s factory customer service department.
   In other countries: Send notice of completion for heat pump systems and rough checklist to the manufacturer’s local partner.
3. Arrange for the heat pump system to be commissioned by after-sales service authorised by the manufacturer; this is a chargeable service.

# 11 Maintenance

**NOTE**
We recommend that you sign a maintenance agreement with an accredited heating company.

## 11.1 Basic principles

The cooling circuit of the heat pump requires no regular maintenance.

Local regulations – e.g. EU Regulation (EC) 517/2014 – among other things, require leak checks beforehand and/or for a logbook to be kept for certain heat pumps.

The hermetic tightness and refrigerant fill quantity are criteria for whether a logbook has to be kept and leak tests performed or not, and at what time intervals.

► Ensure compliance with local regulations with regard to the specific heat pump system.

## 11.2 Maintenance as required

- Checking and cleaning the components of the heating circuit and the heat source, e.g. valves, expansion vessels, circulation pumps, filters, dirt traps
- Checking the function of the safety valve (on site) for the domestic hot water tank and the safety valve for the heating circuit

## 11.3 Clean and flush the evaporator and condenser

► Clean and flush the evaporator/condenser strictly according to the manufacturer's regulations.

► After flushing the evaporator/condenser with chemical cleaning product: neutralise any residues and flush the evaporator/condenser thoroughly with water.

## 11.4 Yearly maintenance

► Record the quality of the heating water analytically. In case of deviations from the specifications, take suitable measures without delay.

# 12 Faults

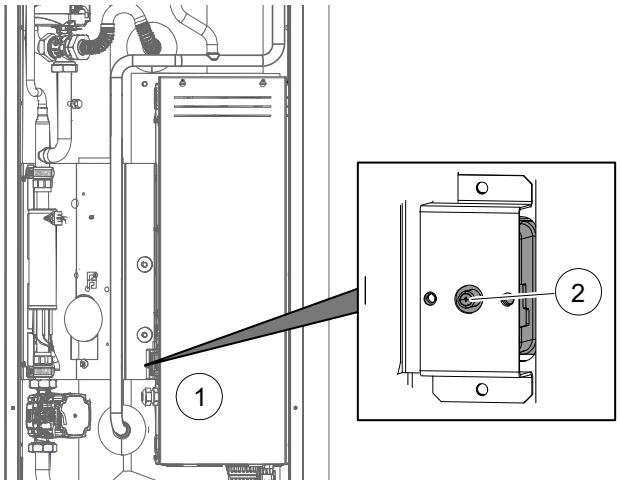
► Read out the cause of the fault via the diagnostics program of the heating and heat pump controller.

► Contact the local partner of the manufacturer or the factory's customer service. Have the fault message and unit number (→ “Unit sticker”, page 3) to hand.

## 12.1 Unlock the safety temperature limiter

A safety temperature limiter is installed in the electric heating element. If the heat pump fails or there is air in the system:

► Check whether the Reset button (②) of the safety temperature limiter (①) has jumped out (by approx. 2 mm).




► Press the reset button (②) back in again.

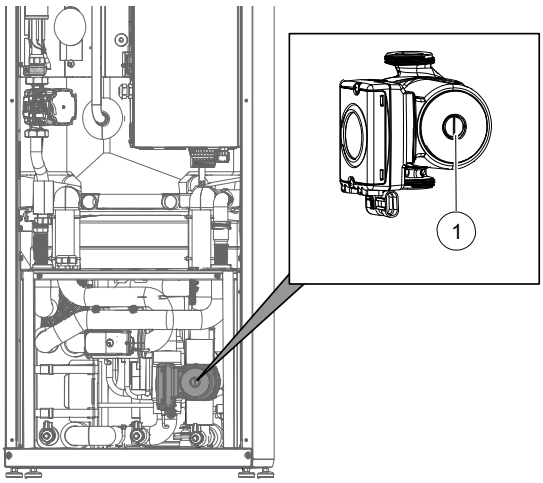
► If the safety temperature limiter trips again, contact the local partner of the manufacturer or the factory‘s customer service.

## 12.2 Manually unblock the circulating pumps

Circulating pumps can block due to sediments or longer standstill periods. This blockage can be removed manually.

### Release the blockage of the heat source circulation pump

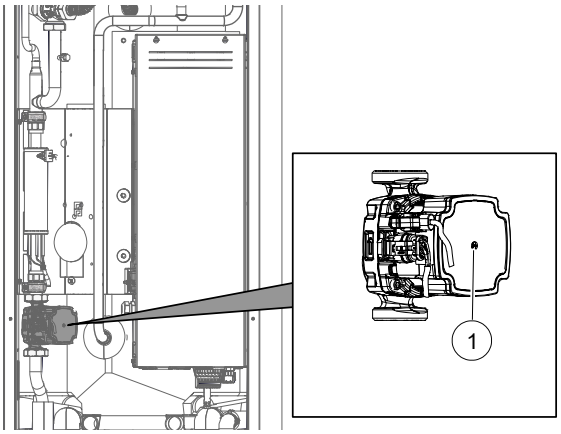
1. Unscrew the front panel of the module box.
2. Undo deflating screw (①) in the middle of the circulation pump of the heat source.




3. Insert a screwdriver into the opening and release the blocked shaft in the direction of rotation of the circulating pump.
4. Reinsert and tighten the deflating screw (①).
5. Screw the front panel of the module box.

### Release the blockage of the heating circulating pump

► Insert the screwdriver into the hole (①), press the plunger in the circulating pump against the shaft and release the blocked shaft in the direction of rotation of the circulating pump.




# 13 Dismantling and Disposal

## 13.1 Dismantling

► Collect all media safely.

► Separate components by their materials.

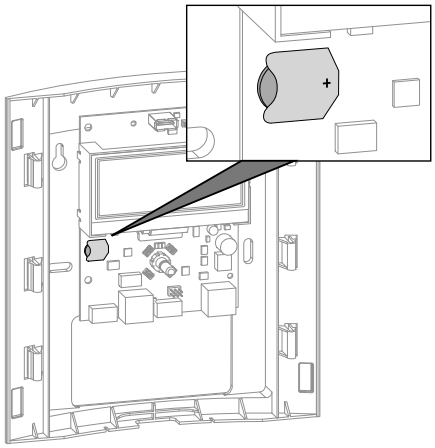
## 13.2 Disposal and Recycling

► Dispose of media harmful to the environment according to local regulations, e.g. antifreeze mixture, refrigerant.

► Recycle or ensure proper disposal of unit components and packaging materials according to local regulations.

## 13.3 Removal of the buffer battery

1. Use a screwdriver to push out the buffer battery on the processor board of the control.



2. Dispose of the buffer battery according to local regulations.

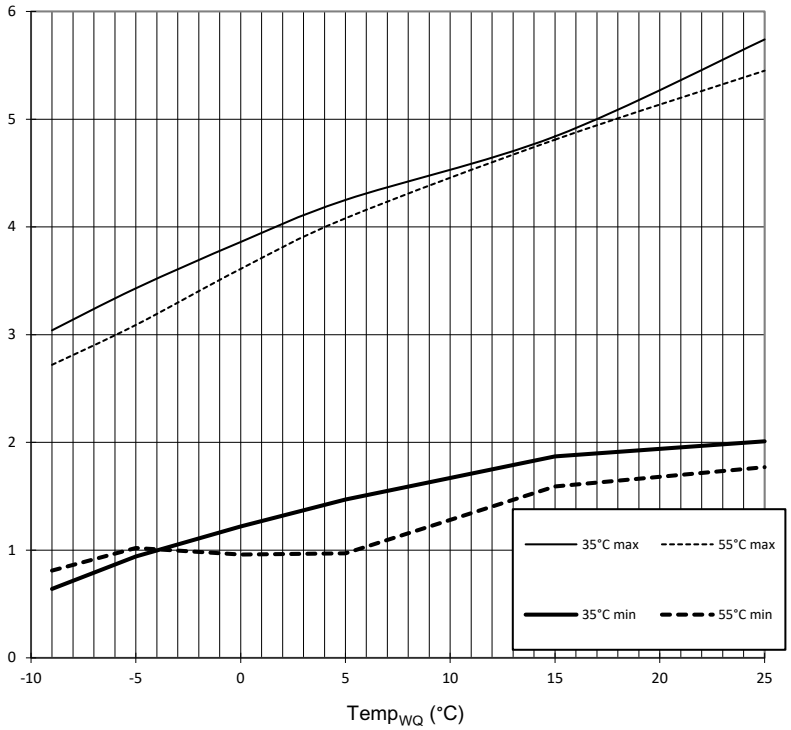
# Technical data / Scope of supply

| Performance data | | | | WZSV 42K3M |
|---|---|---|---|---|
| Heating capacity \| COP | for B0/W35 acc. to EN 14511-x | | kW \| COP | 2.55 \| 4.31 |
| | for B0/W45 acc. to EN 14511-x | | kW \| COP | 2.42 \| 3.34 |
| | for B0/W55 acc. to EN 14511-x-x | | kW \| COP | 2.13 \| 2.48 |
| | for B7/W35 flow of B0/W35 | | kW \| COP | 2.84 \| 4.74 |
| Heating capacity | for B0/W35 | min. I max. | kW \| kW | 1.02 \| 3.90 |
| | for B0/W45 | min. I max. | kW \| kW | - \| 3.59 |
| | for B0/W55 | min. I max. | kW \| kW | - \| 3.45 |
| | for B7/W35 | min. I max. | kW \| kW | 1.35 \| 4.55 |
| Cooling capacity at max. flow rate (B10/W18), units with passive cooling: Identifier K | | | kW | 10.5 |
| **Operating limits** | | | | |
| Heating circuit return min. \| Heating circuit flow max. Heating | | within heat source min./max. | °C | 20 \| 65 |
| Heating circuit return min. \| Heating circuit flow max. Cooling | | within heat source min./max. | °C | – \| – |
| Heat source, heating | | min. I max. | °C | -9 \| 30 |
| Additional operating points | | | … | B-5/W60 |
| **Installation location** | | | | |
| Room temperature | | min. I max. | °C | 5 \| 35 |
| Relative humidity maximum (non-condensing) | | | % | 60 |
| **Sound** | | | | |
| Sound pressure level at 1 m distance from edge of unit | | min. I max. | dB(A) | 30 \| 40 |
| Sound power level | | min. I max. | dB(A) | 38 \| 48 |
| Sound power level acc. to DIN EN 12102-1 | | | dB(A) | 42 |
| Tonality \| Low-frequency | | | dB(A) \| • yes – no | – |
| **Heat source** | | | | |
| Volume flow (pipe dimensioning) | | | l/h | 700 |
| Free pressure (with cooling)***) \| Pressure loss (with cooling) \| Flow rate | | | bar (bar) \| bar (bar) \| l/h | – (0.72) \| – (–) \| 700 |
| Approved anti-freeze mixture | | Monoethylene glycol \| Propylene glycol \| Methanol \| Ethanol | | • \| • \| • \| • |
| Anti-freeze concentration: Minimum frost protection down to | | | °C | -15 |
| Max. allowable operating pressure | | | bar | 3 |
| Circulation pump control range | | min. I max. | l/h | - \| - |
| **Heating circuit** | | | | |
| Flow rate (pipe dimensioning) I Min. volume buffer tank in series I Min. volume separation buffer tank | | | l/h \| l \| l | 500 \| - \| - |
| Free pressure (with cooling) \| Pressure loss (with cooling) \| Flow rate | | | bar (bar) \| bar (bar) \| l/h | – (0.75) \| – (–) \| 500 |
| Max. allowable operating pressure | | | bar | 3 |
| **General unit data** | | | | |
| Data of the standards according to version | | | EN14511-x I DIN EN 12102-1 | 2019 I 2018 |
| Total weight (with cooling) | | | kg (kg) | – (238) |
| Box weight (with cooling) ı Tower weight (with cooling) | | | kg (kg) \| kg (kg) | – (79) \| – (160) |
| Refrigerant type \| Refrigerant capacity | | | … \| kg | R410a \| 0.9 |
| **Domestic hot water tank** | | | | |
| Net volume | | | l | 178 |
| Material | Enamel \| Stainless steel | | • yes – no | • \| – |
| Protective anode | Impressed current \| Magnesium | | • yes – no | • \| – |
| Heat exchanger area | | | m² | 2.28 |
| Domestic hot water temperature Heat pump operation I Electric heating element | | | up to °C \| up to °C | 58 \| 65 |
| Mixed water quantity according to ErP: 2009/125/EG (at 40°C, draw-off of 10 l/min) | | | l | 240 |
| Mixed water quantity 40°C at 10l/min \| Tank temperature 60°C | | | l | - |
| Mixed water quantity 40°C at 10l/min \| Tank temperature 50°C | | | l | - |
| Standing loss according to ErP ErP: 2009/125/EG (at 65°C) | | | W | 60 |
| Maximum allowable temperature | | | °C | 95 |
| Operating pressure \| Max. pressure \| Test pressure | | | bar \| bar \| bar | 6 \| 10 \| 13 |
| Nominal size cleaning flange | | | DN | - |
| Insulation thickness tank | | | mm | - |
| U-value of tank insulation | | | W/(m²xK) | - |
| Maximum sulphide content of drinking water | | | mg/l | - |
| Maximum chloride content of drinking water | | | mg/l | - |
| Electrical conductivity | | | µS/cm | > 100 |
| **Electrics** | | | | |
| Voltage code \| all-pole fuse protection for heat pump *)**) | | | … \| A | 1~N/PE/230V/50Hz \| C10 |
| Voltage code \| all-pole fuse protection for heat pump *) + electric heating element **) | | | … \| A | – \| – |
| Voltage code \| Control voltage fuse protection **) | | | … \| A | 1~N/PE/230V/50Hz \| B10 |
| Voltage code \| Electric heating element fuse protection **) | | | … \| A | 3~N/PE/400V/50Hz \| B16 |
| HP*): effect. power consumption B0/W35 (partial load operation) EN 14511-x-x I Electric consumption I cosφ | | | kW \| A \| … | 0.58 \| 2.6 \| 0.97 |
| HP*): effective power consumption B0/W35 acc. to EN 14511-x-x: min. I max. | | | kW \| kW | 0.29 \| 0.87 |
| HP*): Max. machine current I Max. power consumption within the operating limits | | | A \| kW | 2.2 \| 1.5 |
| Starting current: direct \| with soft starter | | | A \| A | < 5 \| – |
| Degree of protection | | | IP | 20 |
| Zmax | | | Ω | 0.194 |
| Residual current circuit breaker | | if required | type | B |
| Electric heating element output | | 3 \| 2 \| 1 phase | kW \| kW \| kW | 6 \| 4 \| 2 |
| Circulation pump power consumption, heating circuit I heat source | | min. I max. | W \| W | 2 – 60 \| 3 – 87 |
| **Other unit information** | | | | |
| Safety valve Heating circuit \| Response pressure | | | included in scope of supply: • yes – no \| bar | • \| 3 |
| Safety valve Heat source \| Response pressure | | | included in scope of supply: • yes – no \| bar | – \| – |
| Buffer tank \| Volume | | | included in scope of supply: • yes – no \| l | – \| – |
| Diaphragm expansion vessel Heating circuit \| Volume \| Prepressure | | | incl. in scope of supply: • yes – no \| l \| bar | – \| – |
| Diaphragm expansion vessel Heat source \| Volume \| Prepressure | | | incl. in scope of supply: • yes – no \| l \| bar | – \| – |
| Overflow valve \| Changeover valve, heating - domestic hot water | | | integrated: • yes – no | • \| • |
| Vibration decoupling, Heating circuit \| Heat source | | | included in scope of supply or integrated: • yes – no | • \| • |
| Controller \| Heat quantity recording \| Extension board | | | included in scope of supply or integrated: • yes – no | • \| • \| – |

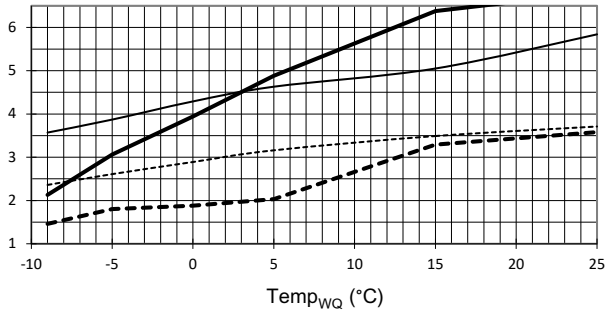
*) Only compressor, **) Follow local regulations, ***) Figures for 25% mono-ethylene glycol
The performance data and the operating limits apply to clean heat exchangers I Index: m

813634a

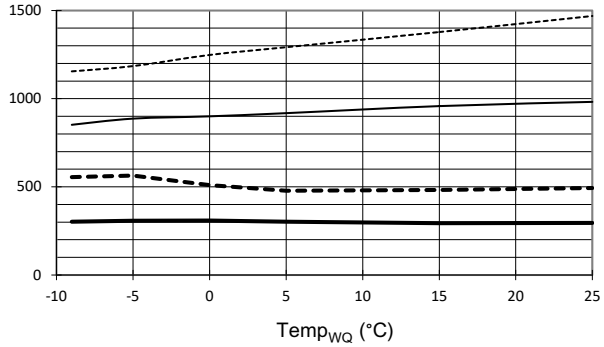
Qh (kW)



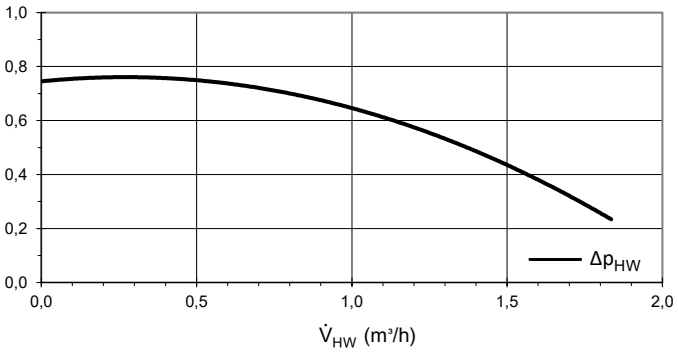

COP



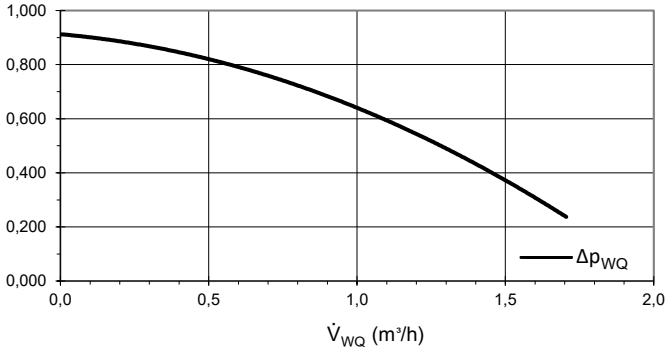

Pe (W)



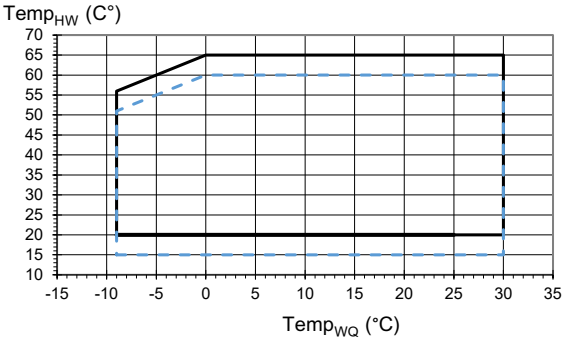

$\Delta p_{HW}$ (bar)




$\Delta p_{WQ}$ (bar)



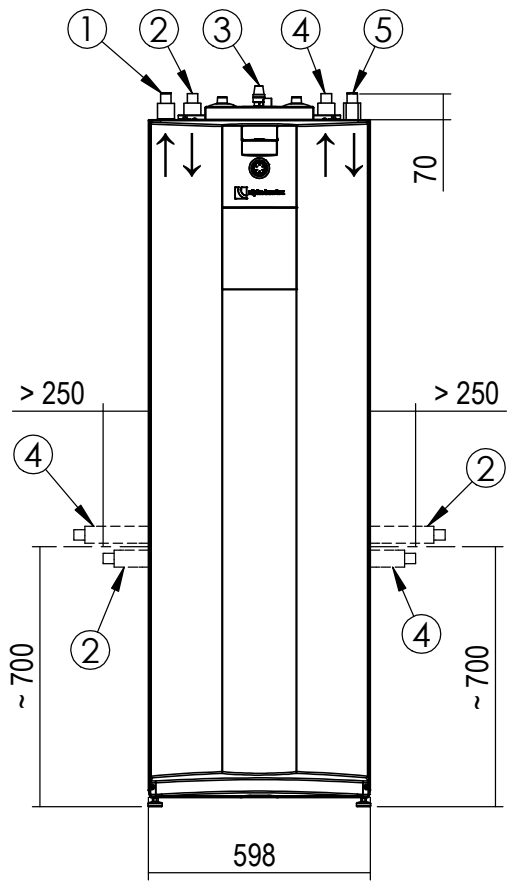

Temp$_{HW}$ (C°)



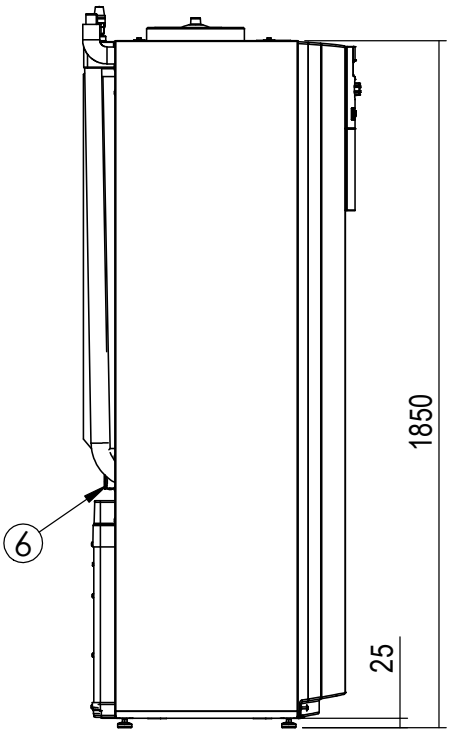

823325

| Keys: | UK823325 |
|---|---|
| Qh | Heating capacity |
| Pe | Power consumption |
| COP | Coefficient of performance |
| Temp$_{WQ}$ | Heat source temperature |
| $\Delta p_{HW}$ | Maximum free pressure heating circuit |
| $\dot{V}_{HW}$ | Heating water volume flow rate |
| $\Delta p_{WQ}$ | Maximum pressure loss heat source |
| $\dot{V}_{WQ}$ | Heat source volume flow rate |
| Temp$_{HW}$ | Heating water temperature |
| ——— | Flow |
| - - - - | Return |

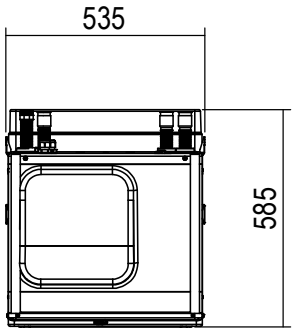
**A1**



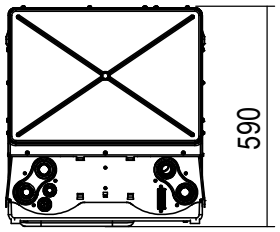

**B1**



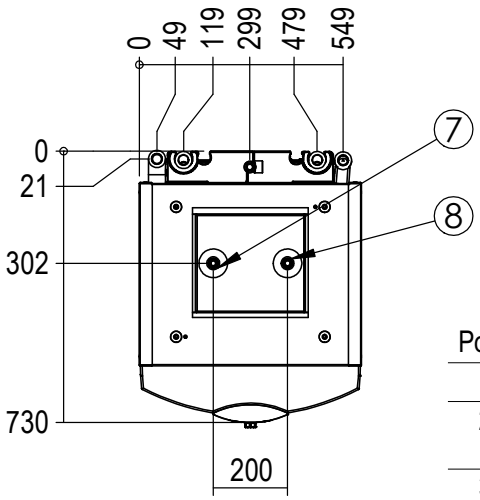

**A2**




**C2**




**C1**




Keys: UK819536

All dimensions in mm..

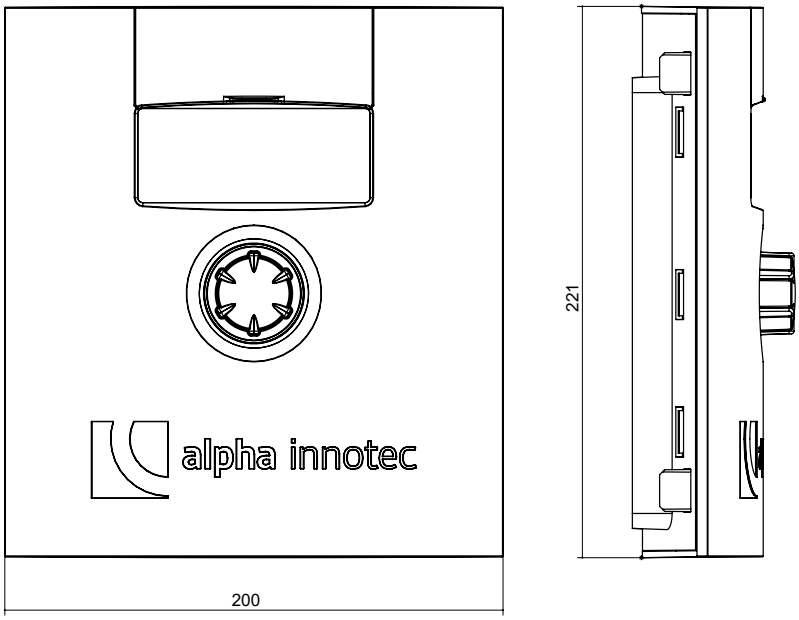
| | |
|---|---|
| A1 | Front view |
| B1 | Side view from left |
| C1 | Plan view |
| A2 | Front view of module box |
| C2 | Top view of module box |

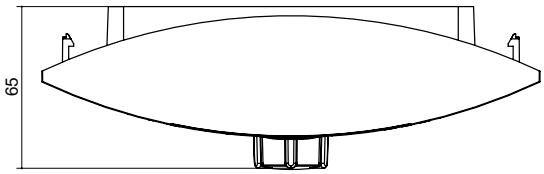
| Pos. | Name | Dim. |
|---|---|---|
| 1 | Heating water outlet (flow) | Ø 28 *) |
| 2 | Heat source inlet (in heat pump) optionally at the top, on the right or left | Ø 28 *) |
| 3 | Heating circuit safety valve (in the separate package) | Rp ¾" internal thread |
| 4 | Heat source outlet (from heat pump) optionally at top, right or left | Ø 28 *) |
| 5 | Heating water inlet (return) | Ø 28 *) |
| 6 | Empty cable duct for electric / sensor cable | Ø 33 **) |
| 7 | Drinkwater cold | R ¾" external thread |
| 8 | Drinkwater warm | R ¾" external thread |

*) outside diameter **) inside diameter

## Dimensional drawings

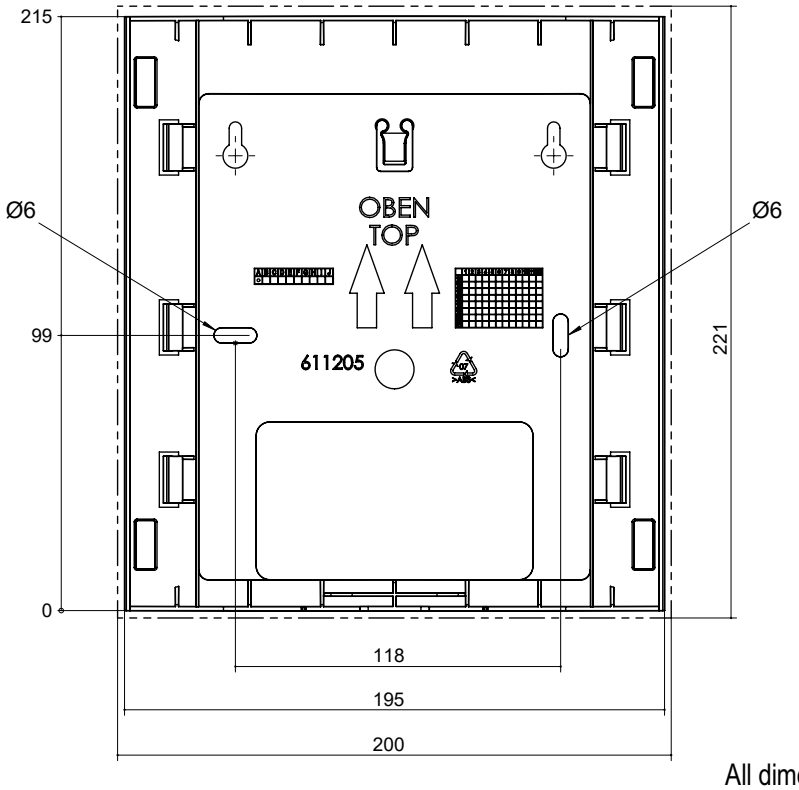
## Control unit



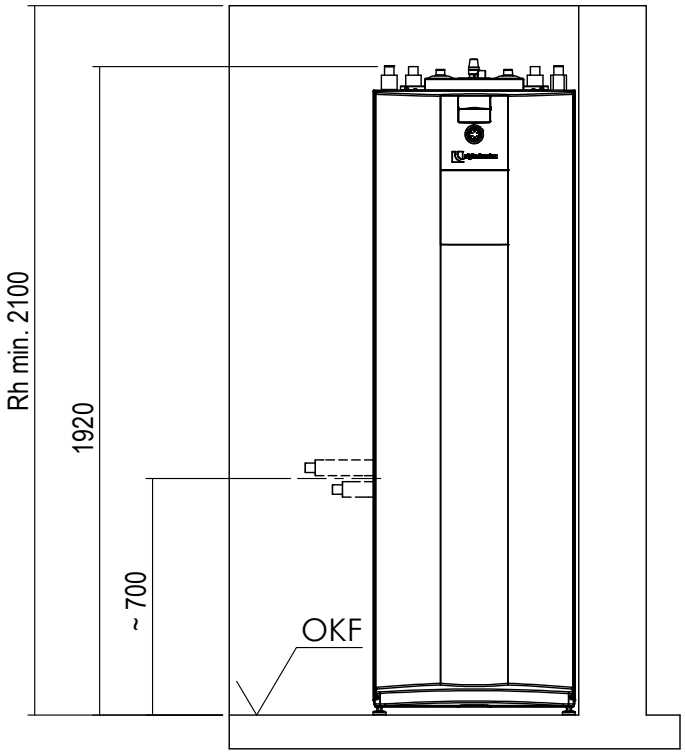

All dimensions in mm..

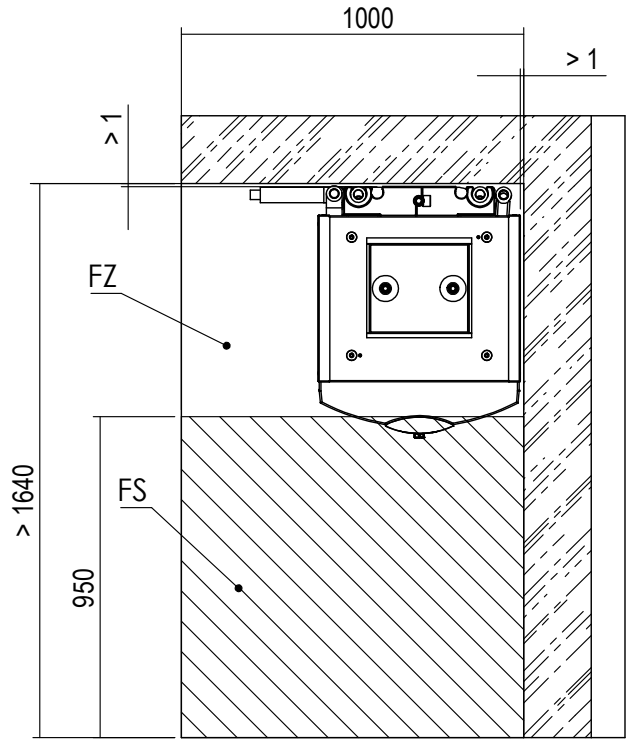
## Wall bracket




All dimensions in mm..

# V1



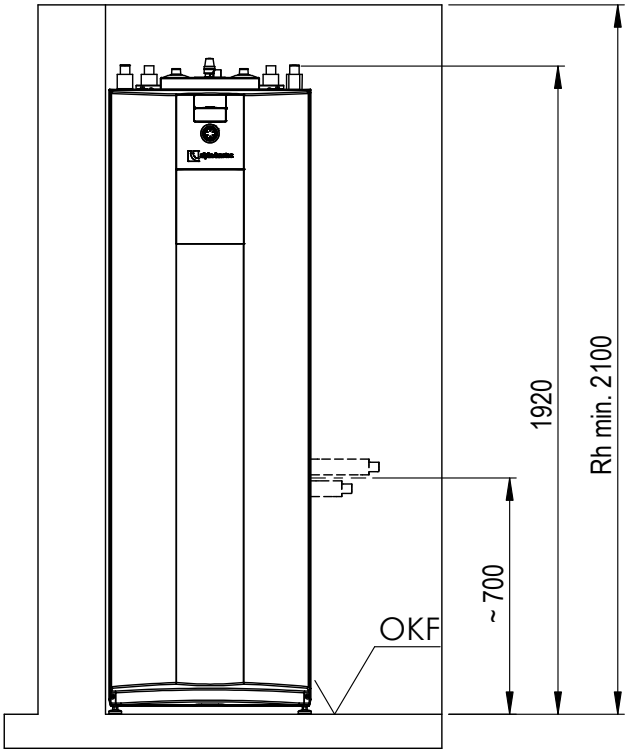



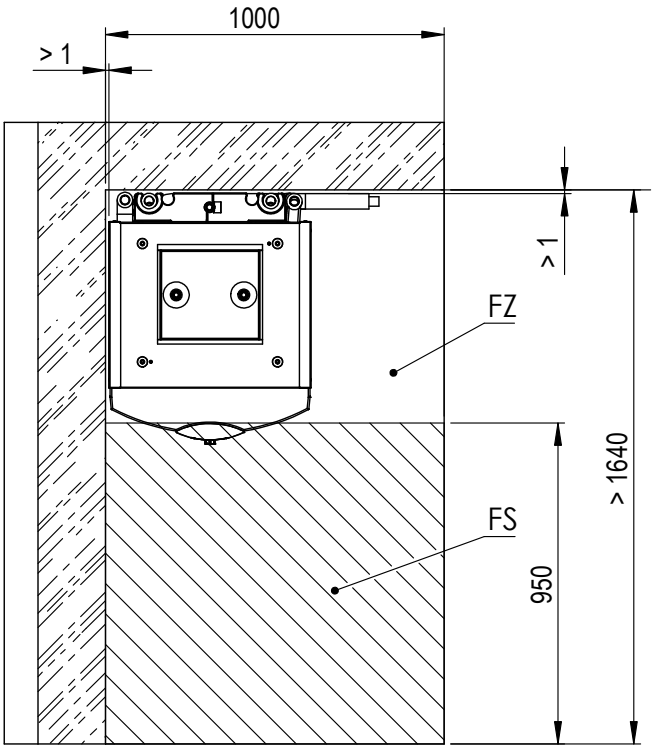

Keys: UK819537

All dimensions in mm.

| | |
|---|---|
| V1 | Version 1 |
| FS | Free space for service purposes |
| FZ | Free space for functionally necessary accessories |
| OKF | Finished floor level |
| Rh min. | minimum room height |

# V2



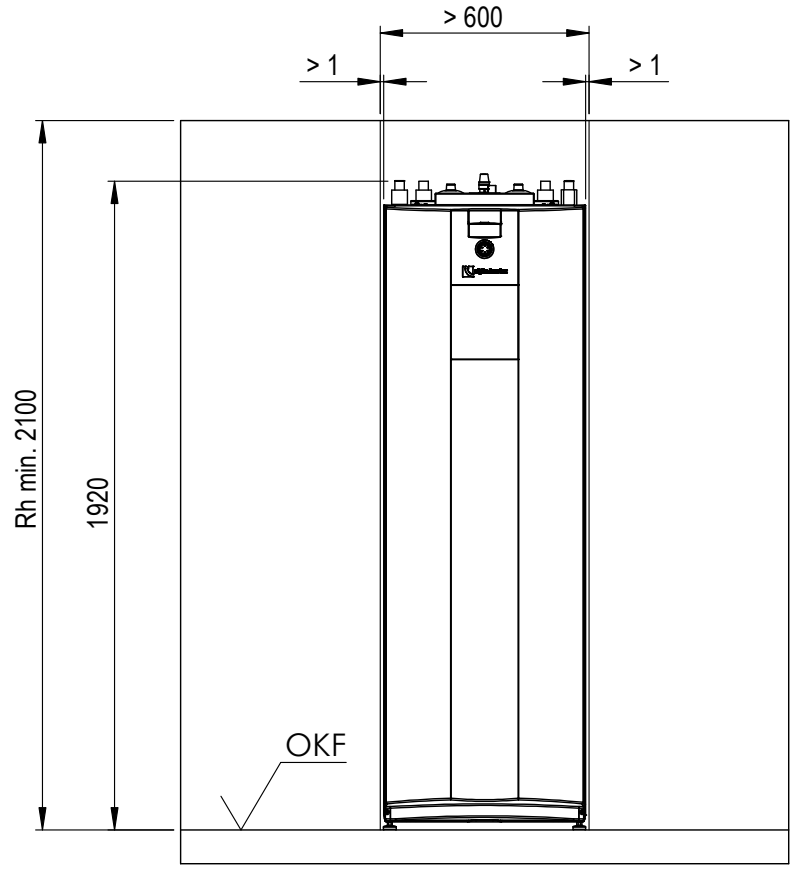



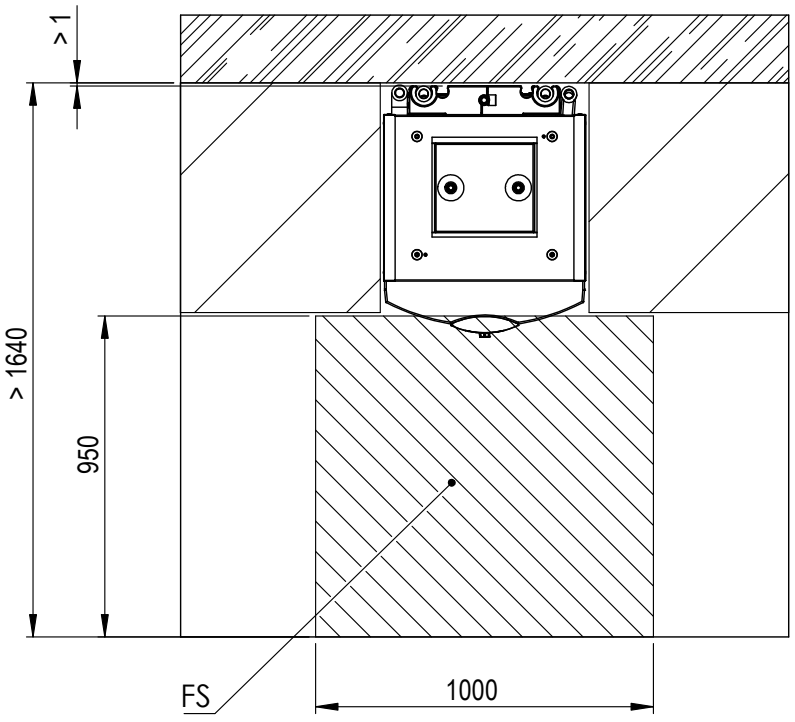

Keys: UK819537

All dimensions in mm.

| | |
|---|---|
| V2 | Version 2 |
| FS | Free space for service purposes |
| FZ | Free space for functionally necessary accessories |
| OKF | Finished floor level |
| Rh min. | minimum room height |

# V3

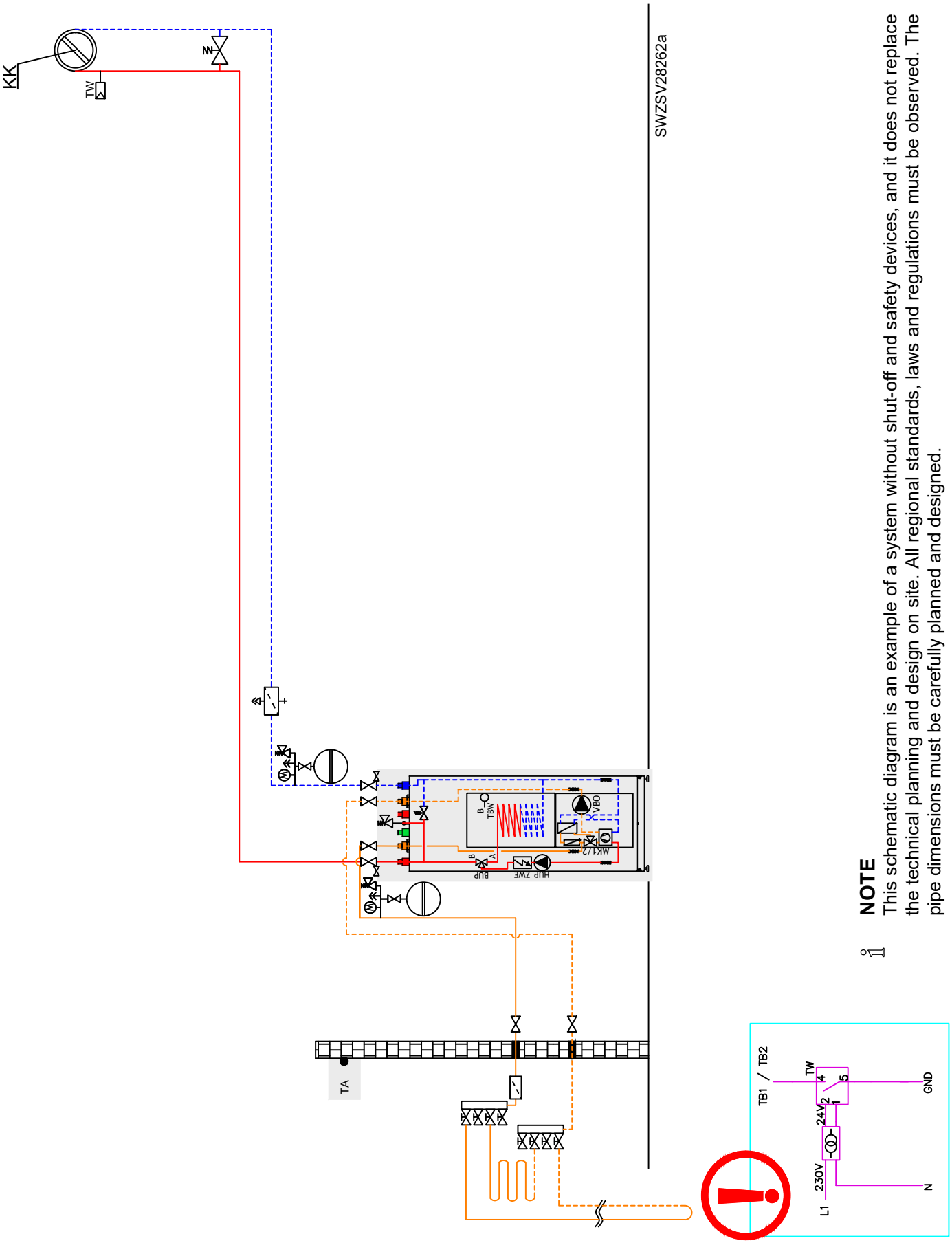



Keys: UK819537

All dimensions in mm.

| | |
|---|---|
| V3 | Version 3 |
| FS | Free space for service purposes |
| OKF | Finished floor level |
| Rh min. | minimum room height |




**NOTE**

This schematic diagram is an example of a system without shut-off and safety devices, and it does not replace the technical planning and design on site. All regional standards, laws and regulations must be observed. The pipe dimensions must be carefully planned and designed.

Vibration isolation

Shut-off device and drainage

Shut-off device with dirt trap

Safety group

Shut-off device

Circulation pump

Non return valve/ one way valve

Overflow valve

Membrane expansion vessel

Second heat generator (ZWE)

3-way mixing valve / switching valve

4-way mixing valve / switching valve

Dirt-trap (max. 0.6 mm mesh)

Wall breakthrough

Brine manifuld

Ground slinkies

Ground collector

Flow switch

Groundwater spring pump with flow direction groundwater

Buffer tank:
- TPS Stratified storage tank
- RPS Series buffer tank
- TPSK Stratified storage tank (cooling)
- WTPSK Stratified storage tank, wall-mounted (cooling)

Multifunction tank

Domestic hot water tank

Volume flow meter

Heat meter

Gas- or oil-boiler

Wood boiler

Brine pressure switch

Swimming pool heat exchanger

Separation heat exchanger / intermediate heat exchanger

Solar domestic hot water tank

Pipe lead-in

Fresh water station (TWS)

RBE Room control unit

Dew-point monitor

Supply heat pump

| | |
|---|---|
| BUP | Circulation pump / switching valve domestic hot water |
| MK1/2/3 | Mixer circuit 1/2/3 (heating or cooling function) |
| HUP | Circulation pump heating circuit |
| FP1/2/3 | Circulation pump / switching valve |
| ZUP | Feed circulating pump |
| ZIP | Circulation pump |
| BLP | Domestic hot water charging pump |
| VBO | Heat source circulation pump |
| TA | Outdoor temperature sensor |
| TBW | Sensor domestic hot water |
| TFB/TB | Sensor mixer circuit |
| TRL ext. | Sensor external return |
| TRL | Sensor return |
| TVL | Flow sensor |
| TEH | Sensor desuperheater |
| HK | Heating circuit |
| HMK | Heating mixing circuit |
| KK | Cooling circuit |
| KMK | Cooling mixing circuit |
| SPP | Safety package primary |
| SPS | Safety package secondary |
| Ent. | Circulation pump desuperheater |
| 101 | Controls supplied by customer |

Split:

| | |
|---|---|
| QN10 | Switching valve domestic hot water / heating |
| QN12 | Switching valve cooling / heating |
| QN11 | Mixing valve additional heating |
| GP12 | Circulation pump |
| BT1 | Outdoor temperature sensor |
| BT7 | upper domestic hot water (displayed value) |
| BT3 | Sensor return |
| BT6 | Sensor domestic hot water |
| BT64 | Flow sensor cooling |
| BT15 | Temperature sensor, liquid state |
| BT25 | Flow temperature heating |
| BT71 | Return temperature heating / cooling |
| BT52 | Sensor heating boiler |
| BT50 | Room temperature sensor |
| XL1 | Flow heating |
| XL2 | Return heating / cooling |
| XL3 | Cold water |
| XL4 | Domestic hot water |
| XL5 | Circulation |
| Xl10 | Flow cooling |
| XL13 | Liquid refrigerant |
| XL14 | Gaseous refrigerant |
| XL18 | Flow second heat generator |
| XL19 | Return second heat generator |
| X2 | Terminal second heat generator |
| EP Split | Expansion board Split (not included in scope of delivery) |

Controls supplied by customer / on-site components:

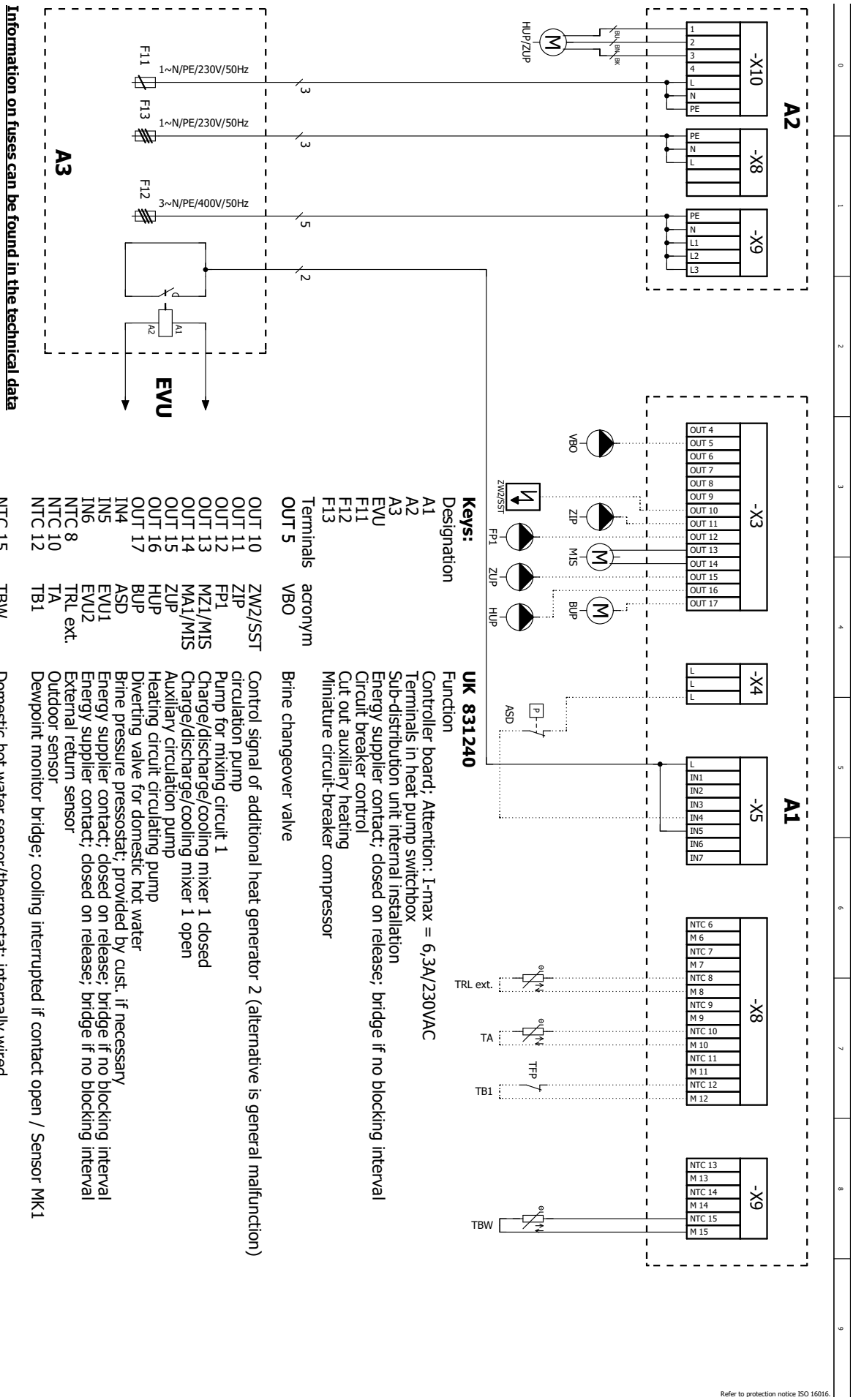
Parts and components shown in the colour "grey" must be provided by the customer and also operated with a regulation provided by the customer.
The temperature difference control SLP of the additional board is excepted from this.

General:

Pipes, fittings and fixtures must be designed and insulated in accordance with the current and valid standards, guidelines and recognised rules of technology (e.g.: vapour diffusion-tight insulation if the temperature falls below the dew point).

# WZSV 42K3M

# Terminal diagram




**Information on fuses can be found in the technical data**

**Keys:**

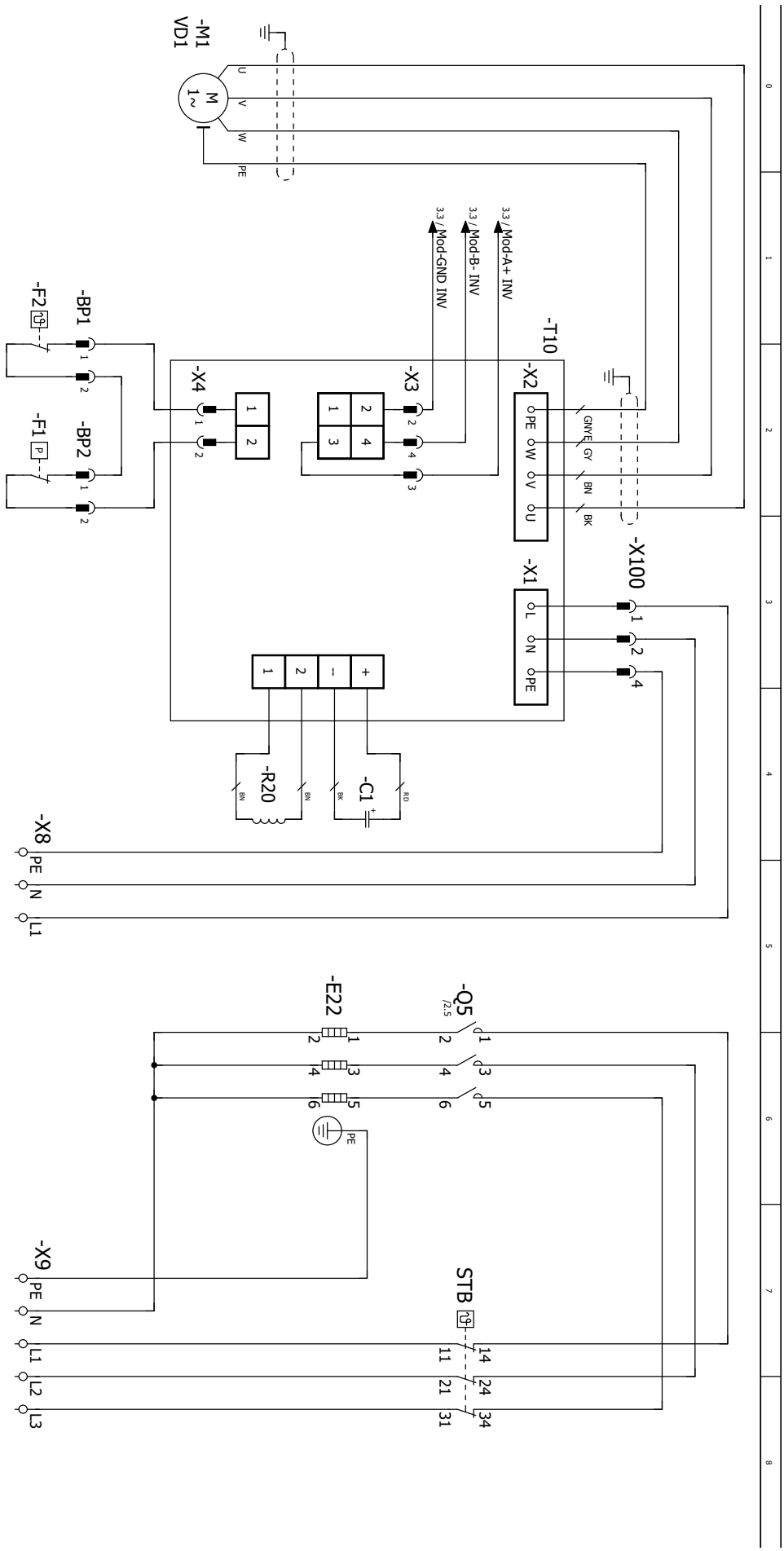
| Designation | Terminals | acronym |
|---|---|---|
| A1 | **OUT 5** | VBO |
| A2 | OUT 10 | ZW2/SST |
| A3 | OUT 11 | ZIP |
| EVU | OUT 12 | FP1 |
| F11 | OUT 13 | MZ1/MIS |
| F12 | OUT 14 | MA1/MIS |
| F13 | OUT 15 | ZUP |
| | OUT 16 | HUP |
| | OUT 17 | BUP |
| | IN4 | ASD |
| | IN5 | EVU1 |
| | IN6 | EVU2 |
| | NTC 8 | TRL ext. |
| | NTC 10 | TA |
| | NTC 12 | TB1 |
| | NTC 15 | TBW |
| | X3-X12 | X3-X12 |
| | X8 | X8 |
| | X9 | X9 |
| | X10 | X10 |

**UK 831240**

| Function |
|---|
| Controller board; Attention: I-max = 6,3A/230VAC |
| Terminals in heat pump switchbox |
| Sub-distribution unit internal installation |
| Energy supplier contact; closed on release; bridge if no blocking interval |
| Circuit breaker control |
| Cut out auxiliary heating |
| Miniature circuit-breaker compressor |
| Brine changeover valve |
| Control signal of additional heat generator 2 (alternative is general malfunction) |
| circulation pump |
| Pump for mixing circuit 1 |
| Charge/discharge/cooling mixer 1 closed |
| Charge/discharge/cooling mixer 1 open |
| Auxiliary circulation pump |
| Heating circuit circulating pump |
| Diverting valve for domestic hot water |
| Brine pressure pressostat; provided by cust. if necessary |
| Energy supplier contact; closed on release; bridge if no blocking interval |
| Energy supplier contact; closed on release; bridge if no blocking interval |
| External return sensor |
| Outdoor sensor |
| Dewpoint monitor bridge; cooling interrupted if contact open / Sensor MK1 |
| Domestic hot water sensor/thermostat; internally wired |
| Terminal strips on controller board |
| Distribution box power supply output compressor |
| Power supply, output, additional heating |
| Terminal in switch box heat pump |

Refer to protection notice ISO 16016.

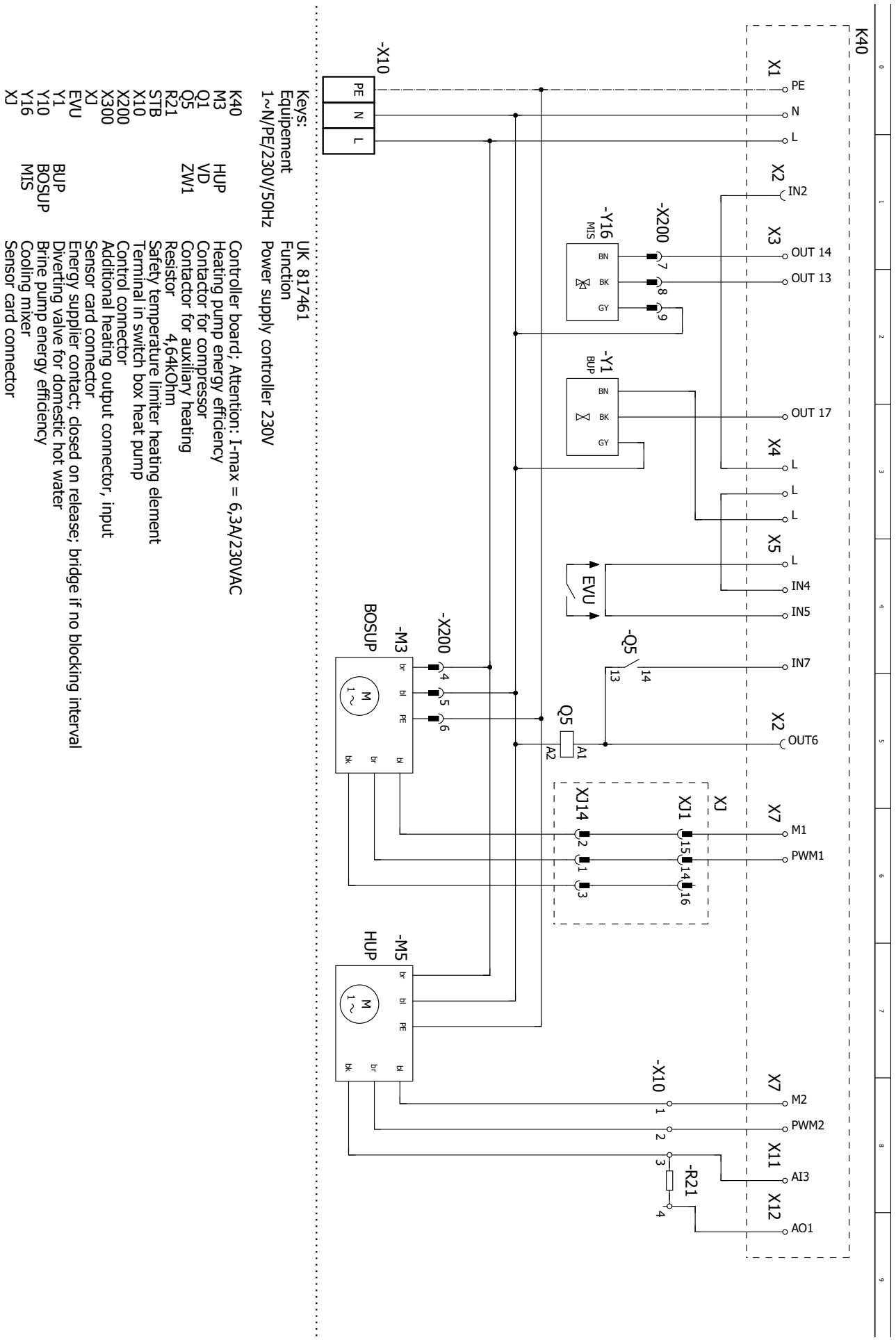
# Circuit diagram 1/4




Keys:

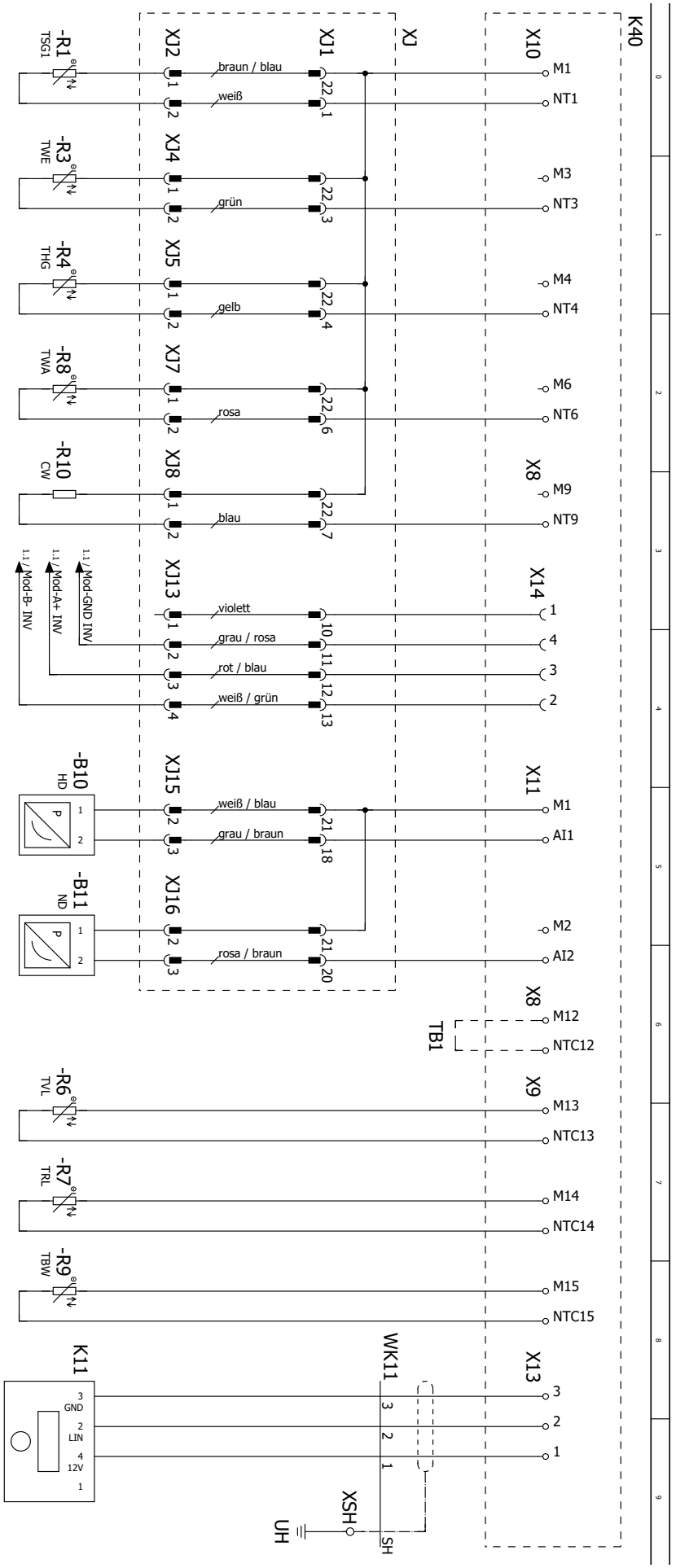
| | | |
|---|---|---|
| Equipement | | UK 817461 |
| | Function | |
| 1~N/PE/230V/50Hz | L1,N,PE: Power supply output compressor | 1~N/PE/230V/50Hz |
| 3~N/PE/400V/50Hz | L1,L2,L3,N,PE: Einspeisung Leistung Zusatzheizung | 3~N/PE/400V/50Hz |
| C1 | Kondensator | |
| R20 | Netzdrossel | |
| F1 HDP | High-pressure switch | |
| F2 | Temperature switch | |
| M1 VD1 | Compressor inverter | |
| T10 | Contactor for auxiliary heating | |
| Q5 | Safety temperature limiter heating element | |
| STB | Terminal in switch box heat pump | |
| X8 | Terminal in the switch box; power supply additional heating output | |
| X9 | Power supply WP | |
| X100 | | |

# Circuit diagram 2/4



# Circuit diagram 3/4

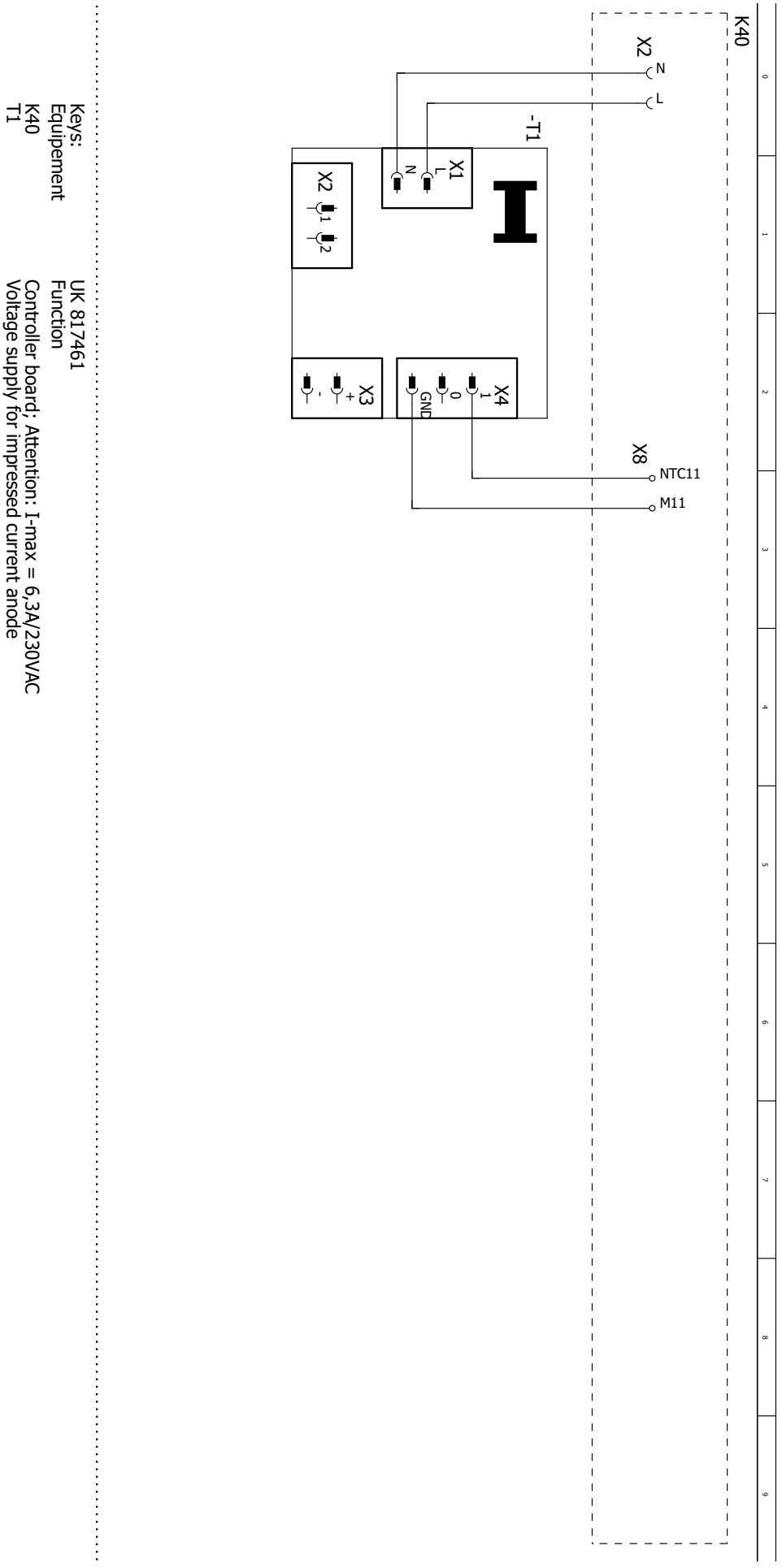
# WZSV 42K3M




Keys:

| Equipement | | UK 817461 Function |
|---|---|---|
| B10 | HD | High-pressure sensor |
| B11 | ND | Low pressure sensor |
| K11 | | Control unit |
| K22 | | Electronic expansion valve |
| K40 | | Controller board; Attention: I-max = 6,3A/230VAC |
| | TB1 | Brücke Taupunktwächter; Bei geöffnetem Kontakt Kühlung unterbrochen / MK1 |
| R1 | TSG1 | Suction sensor, condenser |
| R3 | TWE | Heat source input sensor |
| R4 | THG | Hot gas sensor |
| R6 | TVL | flow temperature sensor |
| R7 | TVR | return temperature sensor |
| R8 | TWA | Heat source output sensor |
| R9 | TBW | Domestic hot water sensor |
| R10 | CW | Encoding resistor !!! KEINE ÜBERSETZUNG !!! |
| XJ | | Sensor card connector |

# Circuit diagram 4/4




Keys:
Equipement
K40 UK 817461
T1 Function
Controller board: Attention: I-max = 6,3A/230VAC
Voltage supply for impressed current anode

UK

ait-deutschland GmbH
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D-95359 Kasendorf

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W www.alpha-innotec.de

alpha innotec – an ait-deutschland GmbH brand