Original operating instructions

WP SAT 15 & WP SAT 40

As of April 2026

ratiotherm
Smart Energy Systems

INFORMATION

These operating instructions form part of the technical documentation for the device in accordance with:

- Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
- Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment

These operating instructions are intended for the operator, who must provide them to staff who come into contact with the equipment. The operator must ensure that the information contained in these operating instructions and in the accompanying documents has been read and understood.

NOTE: If you have the slightest doubt, consult the operating instructions, which must be kept in a known and easily accessible place.

The manufacturer accepts no liability for damage to persons, animals or property, or to the appliance itself, resulting from improper use, failure to observe or insufficient observance of the safety criteria contained in these operating instructions, or caused by modification of the appliance or the use of unsuitable spare parts. The copyright for these operating instructions is held exclusively by the company:

ratiotherm

Smart Energy Systems

ratiotherm GmbH & Co. KG
Wellheimer Straße 34
91795 Dollnstein Germany

Date: 07/11/2022

TABLE OF CONTENTS

1. INFORMATION ABOUT THE DOCUMENT

The following notes serve as a guide through the complete documentation. Additional documents apply in conjunction with these operating instructions. These operating instructions for the specialist installer form part of the ratiotherm WP SAT 15/40 outdoor unit. The ratiotherm WP SAT 15/40 unit must not be operated without these operating instructions. The operating instructions must be made available to the operator and the specialist installer at all times for reference. If the WP SAT 15/40 is sold, the instructions must be supplied with it. We accept no liability for damage resulting from failure to observe these instructions.

1.1 SAFETY AND WARNING NOTICES

Signal words and colours

The following signal words are based on DIN ISO 3864-2 and are used in this documentation. The safety colours have been adopted from the ISO 3864-1 standard. The design complies with DIN EN 82079-1 and ANSI Z 535.4.

Signal word	Explanation
DANGER	Indicates a hazardous situation which, if ignored, will result in death or serious injury .
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury .
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor injury or damage to .
NOTE	Indicates user-friendly features and cross-references. A warning indicates risks of property damage or the risk of injury.

1.2 SAFETY SIGNS

1.2.1 OTHER SYMBOLS IN ACCORDANCE WITH DIN ISO 7010

Some of the following specific safety symbols in accordance with DIN EN ISO 7010 and DIN ISO 3864 are used at relevant points in this operating manual and, depending on the combination of signal word and graphic symbol, require special attention. Please note the distinction between:

- Mandatory signs – prescribe an action (e.g. use eye protection).
- Warning signs – illustrate a source of danger and supplement a warning message.
- Prohibition signs – prohibit certain actions.

Symbol	Explanation	Symbol	Explanation
	General warning sign		Warning of flammable substances
	Warning of electrical voltage		General prohibition sign
	Warning of hot surfaces		No entry

Symbol	Explanation	Symbol	Explanation
	Follow instructions		General mandatory sign
	Disconnect power supply before maintenance or repair		Use hand protection

1.2.2 Other symbols in accordance with DIN ISO 7000

Symbol	Explanation	Symbol	Explanation
	Refer to the operating instructions		Service indicator, Refer to the user manual (operating instructions)
	Instructions for use/Operating instructions		

1.2.3 Other symbols

Symbol	Explanation	Symbol	Explanation
	Recycling		Dispose of packaging material in accordance with regulations

2. IDENTIFICATION AND NOTES

2.1 PRODUCT DATA

Equipment designation: Heat pump (air/water) Type:
WP SAT 15 / SAT 40
Year of manufacture: See type plate
Country of origin: Germany

2.2 INTENDED USE

The WP SAT 15 / SAT 40 unit is designed to utilise environmental heat from the ambient air to provide direct heating support and hot water supply in combination with a WP indoor unit. Any other or extended use of the unit is considered improper and therefore inappropriate. In such cases, the unit's safety and protective functions may be compromised. ratiotherm GmbH & Co. KG accepts no liability for any damage resulting therefrom. Intended use also includes:

- Following all instructions in this operating manual,
- Observing all warnings, and
- Compliance with the inspection and maintenance requirements.

The WP SAT 15 / SAT 40 unit is manufactured in accordance with the state of the art and recognised safety regulations. The unit is intended exclusively for domestic and/or commercial use for hot water production (domestic hot water) and for heating or cooling.

Improper or unauthorised use may pose a risk to the life and limb of the user or third parties. Furthermore, it may cause damage to the device and other property. The SAT 15/40 device is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or by persons with a lack of experience and/or knowledge. The operator and user bear sole responsibility for any risks.

2.3 TARGET GROUPS

For safety reasons, the design of the device does not permit use by persons with disabilities (e.g. visual impairments).

⚠ DANGER! Only carry out tasks for which you are authorised.

2.3.1 TARGET GROUP MATRIX

Tasks	Operators and operators	Qualified personnel
Transport/storage		X
Assembly/installation		X
Commissioning/Adjustment		X
Automatic operation (control)	X	X
Set-up/conversion/technical modification		X
Maintenance/inspections/repairs		X
Cleaning	X	X
Troubleshooting		X
Decommissioning/Dismantling/Disposal		X

2.3.2 TARGET GROUP DEFINITION

Operators and users

A person who has purchased the appliance for use in an existing system for direct heating support and hot water production. The person must have knowledge of the necessary safety devices and protective measures.

Qualifications for users and operators:

- Of legal age and physically/mentally capable of carrying out work on the appliance.
- Knowledge of how to operate the product, provided by qualified personnel and the operating instructions

Qualified personnel

A person employed by a qualified specialist company for heating ar must have acquired specialist knowledge and experience through professional training. The person must possess knowledge of relevant standards, be able to assess the tasks assigned to them (e.g. training of staff, switching on, programming and switching off) and identify potential hazardous situations.

Qualifications for qualified personnel:

- Of legal age and physically/mentally capable of carrying out work on the appliance.
- Skills: several years' experience working on heating systems and hot water supply

2.4 INCORRECT APPLICATIONS

2.4.1 REASONABLY FORESEEABLE MISUSE

Reasonably foreseeable misuse that poses a risk to personnel, third parties or the appliance applies to all operating modes:

- Using the appliance contrary to its intended use.
- The use of components not certified by the manufacturer.
- Operating the device outside its physical operating limits.
- Modifying the control software without prior consultation with ratiotherm GmbH & Co. KG.
- Modifications to the device, as well as additions and alterations, without prior consultation with ratiotherm GmbH & Co. KG.
- Operating the equipment in contravention of the provisions of the risk assessment.
- Bypassing or disabling protective and safety devices.
- Operating the appliance when it is clearly faulty.
- Operation of the device by persons (including children) with reduced physical, sensory or mental capabilities.

⚠ DANGER

Unauthorised modifications to the device

Unauthorised modifications pose a risk of death or injury.

Do not make any unauthorised modifications to the appliance without prior approval from ratiotherm GmbH & Co. KG

2.4.2 UNFORESEEABLE MISUSE

Unforeseeable misuse may occur as a result of:

- disasters,
- the impact of foreign objects and/or
- Force majeure.

2.5 WARRANTY, LIABILITY, GUIDELINES, STANDARDS AND LAWS

In principle, the "General Terms and Conditions of Sale and Delivery" of ratiotherm GmbH & Co. KG apply. The "General Terms and Conditions of Sale and Delivery" are made available to the operator no later than upon conclusion of the contract. Warranty and liability claims for personal injury and property damage are excluded if the damage is attributable to one or more of the following causes:

- Improper use of the device,
- Improper handling of the device,
- Operation of the device with defective safety devices,
- Failure to observe the safety and warning instructions in the operating instructions,
- Unauthorised structural modifications to the device,
- Failure to carry out the specified maintenance measures, and
- Disasters involving foreign objects or force majeure.

The operating instructions must be read before using the appliance. The operating instructions familiarise staff with the handling of the appliance and provide details on all stages of the appliance's life cycle. The operating instructions must be accessible to staff at all times. The safety and warning instructions in the operating instructions and on the appliance must be observed and complied with. For any further questions beyond the scope of these operating instructions, please contact ratiotherm GmbH & Co. KG.

When using the appliance in Germany, the following guidelines, standards and laws must be observed in particular:

- VDE and EVU regulations and provisions (in particular VDE 0100)
- Regulations and provisions of the local utility companies
- DVGW Worksheet W 382 "Installation and operation of pressure reducers in drinking water consumption systems"
- DIN 1988 – TRWI Technical Rules for Drinking Water Installations
- DIN 4753 – Water heating systems for drinking and service water
- DIN 8947 – Ready-to-connect heat pumps for water heating with electrically driven compressors
- Accident Prevention Regulations VGB 20 Accident Prevention Regulations "Refrigeration Systems" with implementation instructions
- Energy Saving Ordinance (EnEV) – Ordinance on energy-saving thermal insulation and energy-saving building services engineering in buildings, 2009

NOTE

Guidelines, standards and laws

Further guidelines, standards and laws, e.g. building regulations, may apply locally. **In principle, the statutory guidelines, standards and laws applicable in the respective country must be observed.**

3. SAFETY INSTRUCTIONS

DANGER! Read and follow the operating instructions before working on or with the appliance.
Despite all the precautions taken, there may still be residual risks that are not immediately apparent. You can reduce these residual risks by observing and complying with the general safety instructions and warnings, as well as by using the appliance for its intended purpose.

3.1 GENERAL SAFETY INSTRUCTIONS

Observe the following general safety instructions:

- The volume of water increases during the heating process. Therefore, never block the safety valve's discharge pipe.
- Please note that hot water may escape from the vent pipe.
- If you notice any leaks around the appliance, switch it off and disconnect it from the rest of the heating system. The leaks must then be repaired immediately.
- To prevent corrosion of the appliance, do not use the following products: sprays, solvents, chlorine-based cleaning agents, paints, adhesives, etc.
- Components that have not been tested with the appliance may cause damage to the appliance or impair its functions. Use only original spare parts and original wear parts.
- Have the assembly/installation/commissioning/adjustment of the unit carried out only by qualified personnel.
- Observe the applicable regulations, rules and guidelines as well as local installation requirements.
- To avoid injuries of any kind, the general accident prevention regulations must be observed under all circumstances and appropriate personal protective equipment must be used.
- Technical modifications to the system are not permitted. This also applies to the retrofitting of safety devices and to welding on load-bearing parts.
  Safety devices must not be taken out of service. Only original spare parts and original accessories from the manufacturer must be used.

3.2 ADDITIONAL NOTES

Local accident prevention regulations apply to all work carried out on the equipment. Please also observe the

- applicable binding regulations on accident prevention,
- recognised technical rules for safe and professional working,
- existing environmental protection regulations and
- other applicable regulations.
- The water temperature at the hot water taps can reach up to 60 °C. Carefully check the water temperature at the hot water taps before placing your hands fully under the water jet.
- Do not make any modifications to the components:
  - To the air source heat pump and the water and electricity pipes;
  - To the safety valve;
  - To structural conditions that may affect the operational safety of the unit;
  - To structural conditions in the vicinity of the appliance, insofar as these may affect the operational safety of the appliance.

3.3 RESIDUAL RISK

⚠ WARNING

Measures/work carried out by unauthorised/unqualified personnel

Measures/work carried out on the device and/or its components and connections by unauthorised/unqualified personnel pose a risk of serious injury.

In the event of a fault, allow work on the device and/or its components and connections to be carried out only by qualified personnel.

⚠ WARNING

Damaged insulation

Damaged insulation poses a serious risk of burns on hot and/or cold surfaces.

Protect yourself with suitable PPE (e.g. heat- and cold-resistant protective gloves).

Allow hot or cold surfaces to cool down or warm up before carrying out work. Replace damaged insulation.

⚠ WARNING

Ignition sources in the hazard zone

Ignition sources in the danger zone can cause flammable substances to ignite and/or explode.

Keep ignition sources away from the danger zone.

4. DESIGN AND FUNCTION

4.1 TECHNICAL DATA

WP SAT	SAT 15	SAT 40	Unit
Unit data			
Sound level at a distance of 5 m	30	40	dB(A)
Dimensions	1374 x 1085 x 580	2260 x 1110 x 1170	W x H x D (mm)
Weight	145	230	kg
Evaporator type	Air heat exchanger		
Material	Aluminium, copper		
Air flow rate	5000	2 x 7500	m³/h
Nominal heat output for air	12	30	kW
Max. operating pressure	6	6	bar
Brine flow rate	1.5 to 3.5	3.5 to 9.7	m³/h
Electrical			
Mains connection	400 V / 3-phase / 50 Hz	400 V / 3-phase / 50 Hz	
Fuse protection for max. operating current	16	16	A
Heating element			
Rated power	4.8	10.2	kW

4.2 FUNCTION DESCRIPTION

To operate a heat pump as effectively as possible, a reliably available environmental energy source is essential, as this ensures the building's heat supply. With our WP SAT brine-to-air outdoor unit, a brine heat pump – which is actually powered by geothermal energy – can incorporate air as an additional source. The add-on module enables the use of air as an energy source, either as a backup or to optimise efficiency. Particularly during the summer months, the air temperature is higher than that of the brine, thereby enabling a significant increase in the COP. This is particularly advantageous for use in combination with PVT collectors, as there are weather conditions in which PVT collectors can harvest very little ambient heat.

To avoid having to rely on the heating element, the heat pump can continue to utilise ambient heat efficiently by switching to the WP SAT air unit. Naturally, the WP SAT can also be used as the sole energy source and, if required, can be cascaded to provide greater output.

The WP SAT is also suitable for use wherever probe fields or ground collectors cannot be made larger, or where a larger collector area must be dispensed with for cost reasons. Even if geothermal energy is not available, or only to a limited extent, in existing systems for whatever reason, a WP SAT can be retrofitted. The WP SAT is 100% compatible with all ratiotherm geothermal heat pumps.

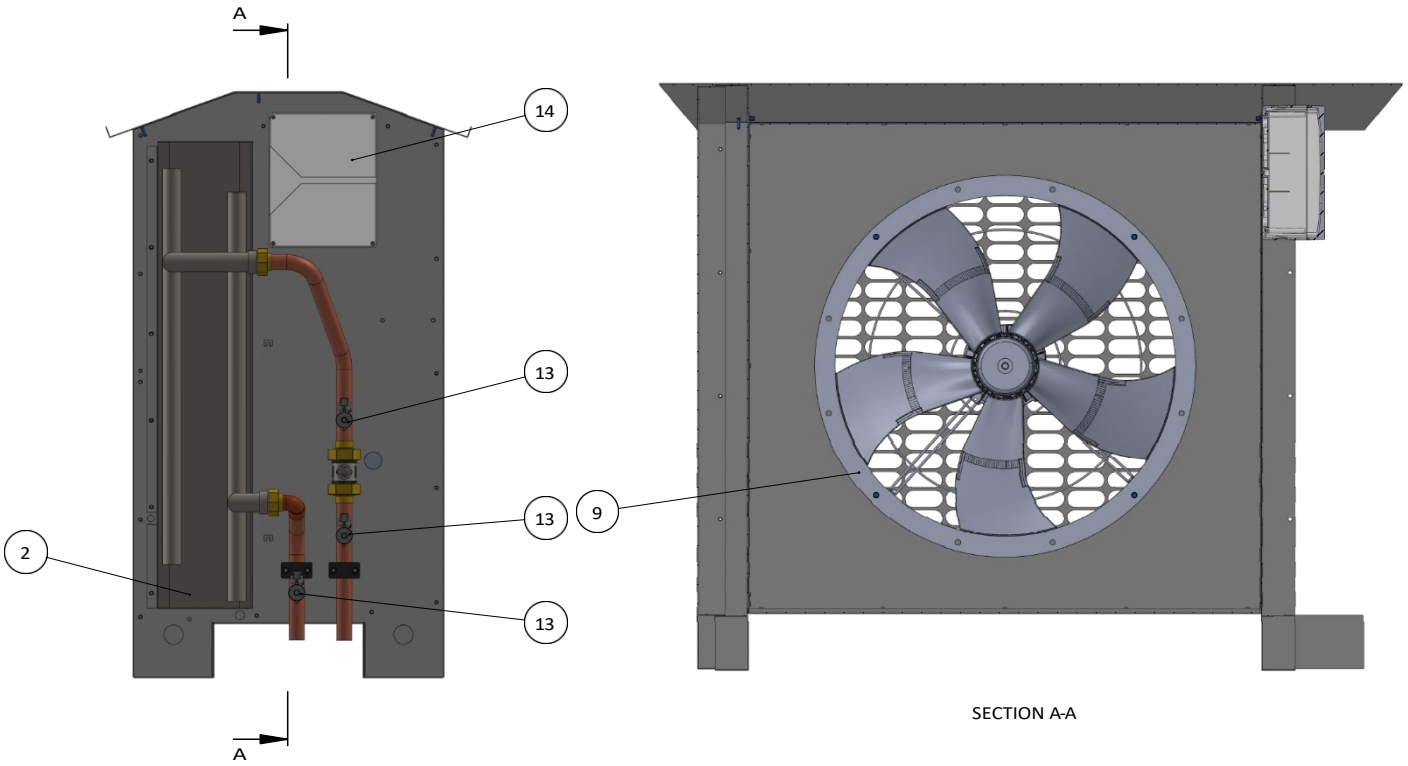
The unit can also be combined with third-party products via an external control unit.

ADVANTAGES

- Very easy installation, as no handling of refrigerant is required
- No leak test required, unlike with many conventional split systems
- Low noise levels thanks to a special fan and a sound-optimised housing
- A fully integrated system when combined with other ratiotherm components
- Very low maintenance

4.3 INSTALLATION AND SPARE PARTS

The air source heat pump is designed to cope with all weather conditions. The outdoor unit is installed outdoors in such a way that air can flow freely through the evaporator and does not recirculate. An axial fan conveys the air to the evaporator.

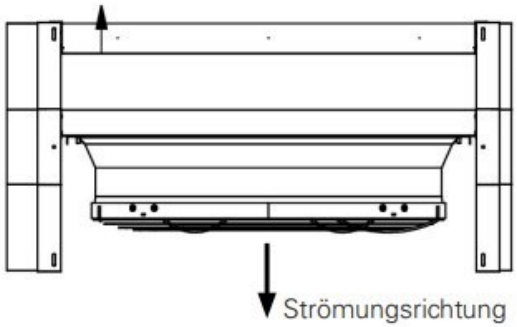


Item number	Designation	Description	Quantity
1	Sheet metal set, external part		1
2	Heat exchanger fins		1
9	Fan	ra/14649	1
10	Ball valve	ra/11634	1
13	KFE valve	ra/12064	3
14	Electrical box	ra/12603	1

4.4 SOUND PRESSURE SAT 15

Power	30%	100%
5 m	30.4 dB	31.8 dB
3 m	30.4 dB	33.1 dB
1 m	30.5 dB	38.0 dB

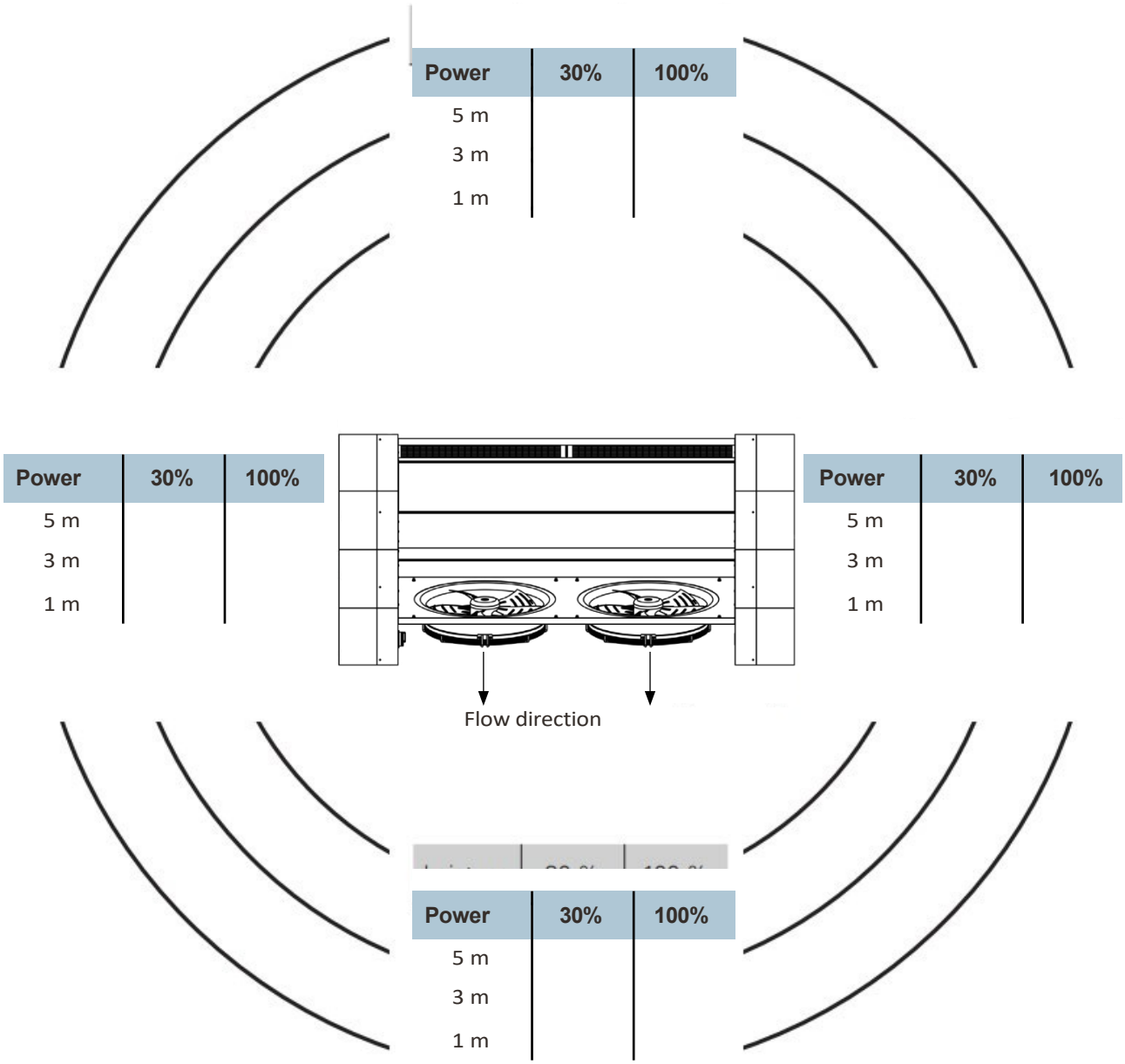
Power	30%	100%
5 m	30.5 dB	30.8 dB
3 m	30.5 dB	31.0 dB
1 m	30.5 dB	33.0 dB



Power	30%	100%
5 m	30.5 dB	30.8 dB
3 m	30.5 dB	31.0 dB
1 m	30.5 dB	33.0 dB

Power	30%	100%
5 m	30.5 dB	32.4 dB
3 m	30.6 dB	33.5 dB
1 m	30.6 dB	39.2 dB

4.5 NOISE LEVEL SAT 40



4.6 CONTROL LOGIC

The brine outdoor unit is designed to supplement or serve as the sole source for a brine heat pump. It features an air-brine finned heat exchanger, a fan, a 9 kW heating element for defrosting, a defrost bypass, a sump heater to prevent icing, and its own control system.

The control unit regulates the fan, detects the need for defrosting and carries this out accordingly. The heat pump must be deactivated during defrosting. The control unit issues the appropriate signals for this. There are two options for control. The options and corresponding signals are shown in the table:

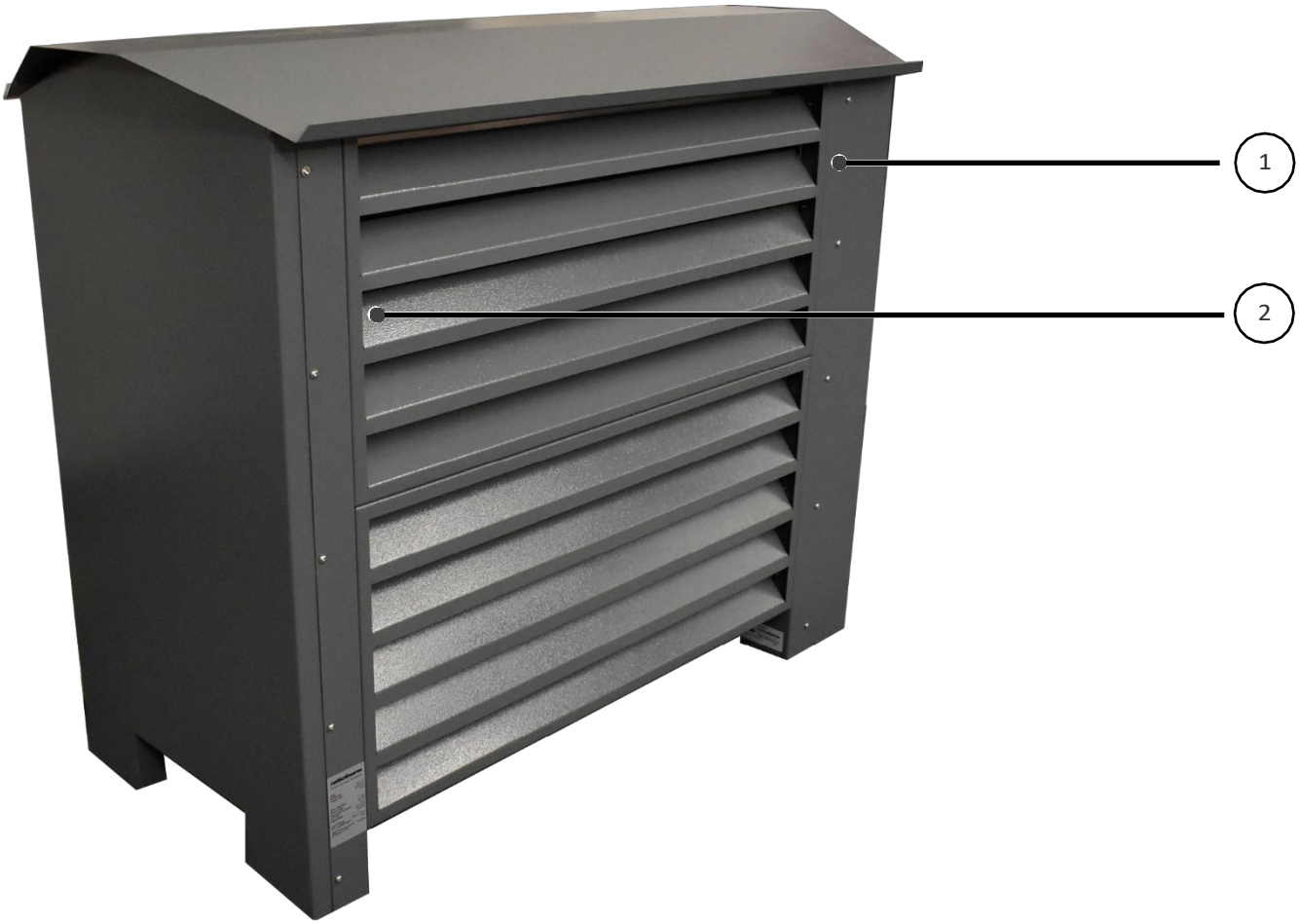
	CAN bus	Analogue/digital signals
Activation of the outdoor unit (fan)	Digital signal received from 11/1	Digital signal to S4
Deactivation of the heat pump during defrost	Digital signal received from 14/2	Digital output to A6 (230V or potential-free)
Fan speed control	Analogue signal received from 11/4	No option to set to maximum speed
Defrost enable	Digital signal received from 11/14	Not possible; defrost is detected automatically and initiated immediately

You must switch between control modes using the fixed setting (F4, ‘Self-defrost’). When this is active, the outdoor unit operates as a stand-alone unit and triggers defrosting immediately without waiting for feedback from the heat pump (recommended for use with third-party equipment). The fixed value is active as standard. When used in combination with a ratiotherm heat pump, the fixed value must be deactivated. The heat pump deactivates itself and the source pump first, and then initiates defrosting.

The maximum fan speed can be set via fixed value F1, “Fan Speed Day”. Level 20 corresponds to 10.00 V, level 10 corresponds to 5.00 V. Level 11 is set as standard, resulting in a fan speed of 5.50 V. If the outdoor unit is used in combination with a ratiotherm heat pump, the fan speed varies in line with the compressor speed within the range of 3.00 V to maximum fan speed.

4.7 SAFETY DEVICES

The unit is equipped with various safety devices. The safety devices are shown in the following figure:



1	Protective enclosure or housing	**2**	External sensor

5. TRANSPORT, ASSEMBLY AND INSTALLATION

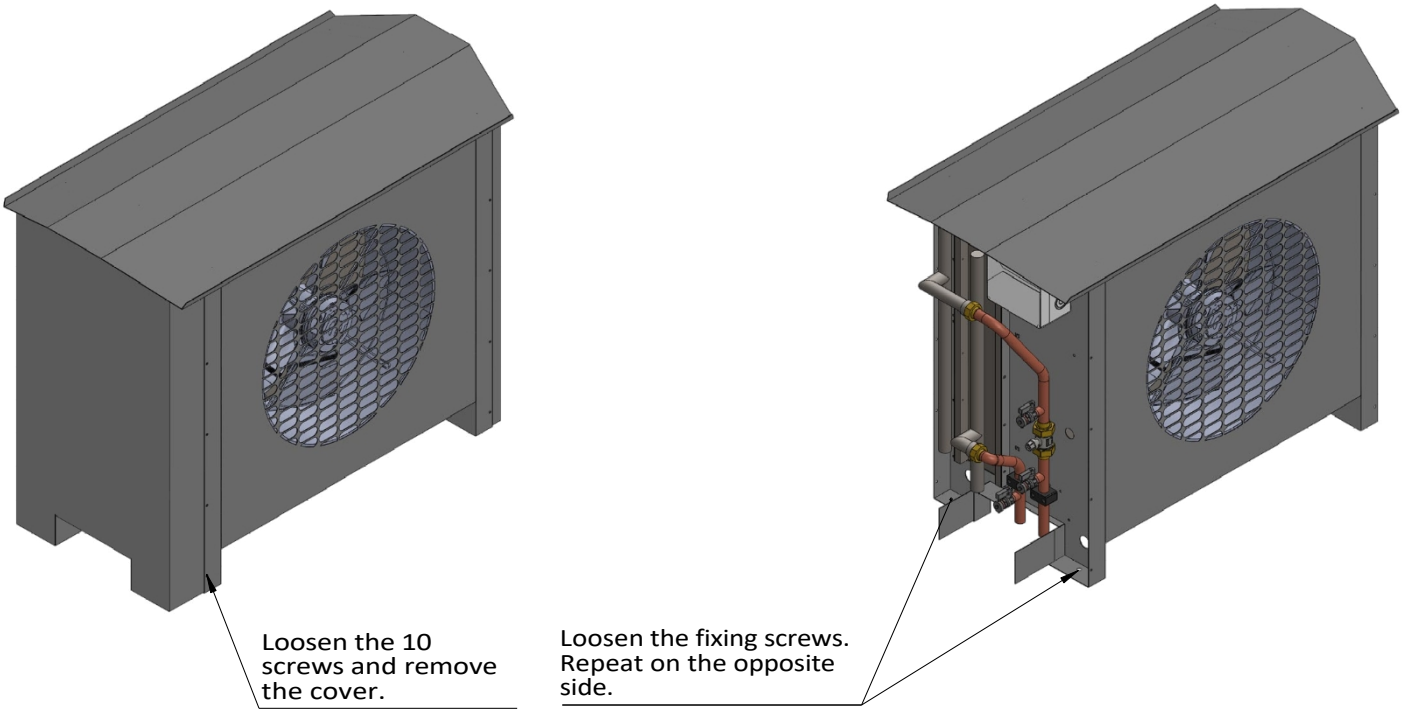
5.1 TRANSPORT AND UNPACKING

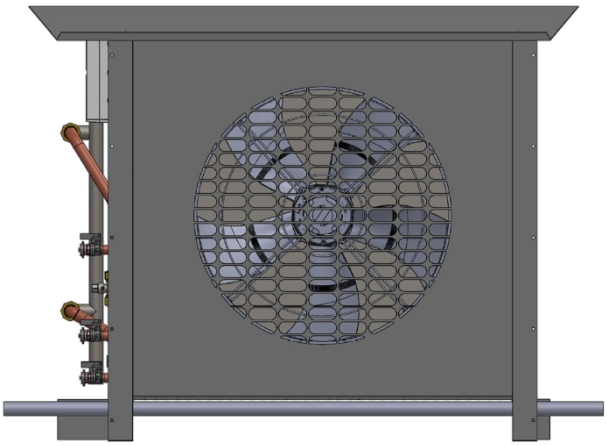
The following instructions regarding the transport of the device must be observed:

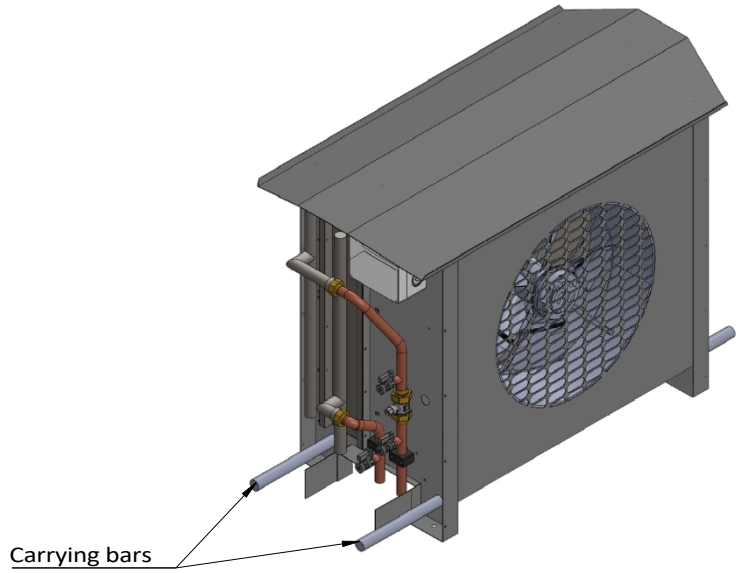
- Transport must only be carried out by qualified personnel.
- Protect yourself by wearing PPE (e.g. safety footwear, etc.).
- Take the weight of the unit (approx. 140 kg or 220 kg) into account when selecting the appropriate lifting equipment (forklift, pallet truck, etc.).
- Take note of the device's centre of gravity.
- Remove all packaging materials.
  NOTE: Do not damage the unit when removing the packaging materials.
- When disposing of the transport and storage packaging, comply with local waste disposal regulations and applicable environmental protection laws.
- When unpacking the device, check that the delivery is complete.
- Please use the delivery notes and packing lists enclosed to check the contents.

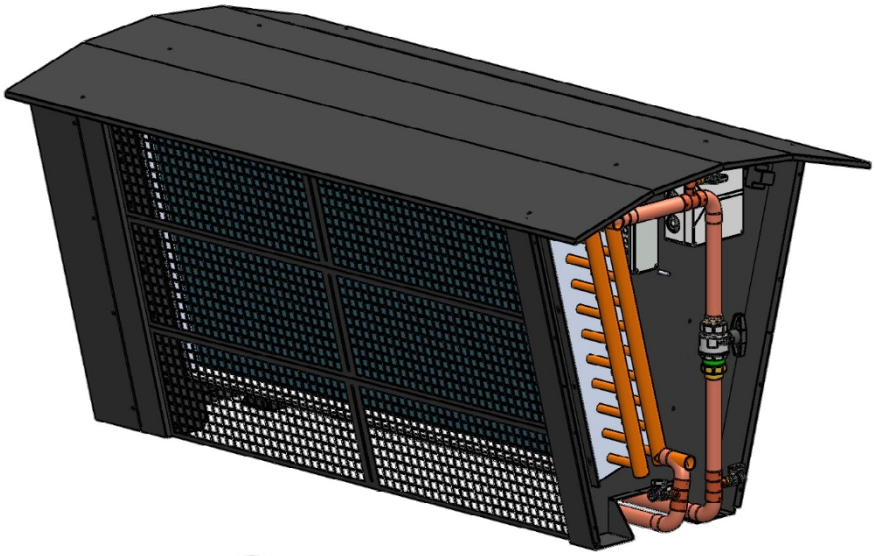
The responsible specialist tradesman (qualified personnel) must ensure the following measures are taken:

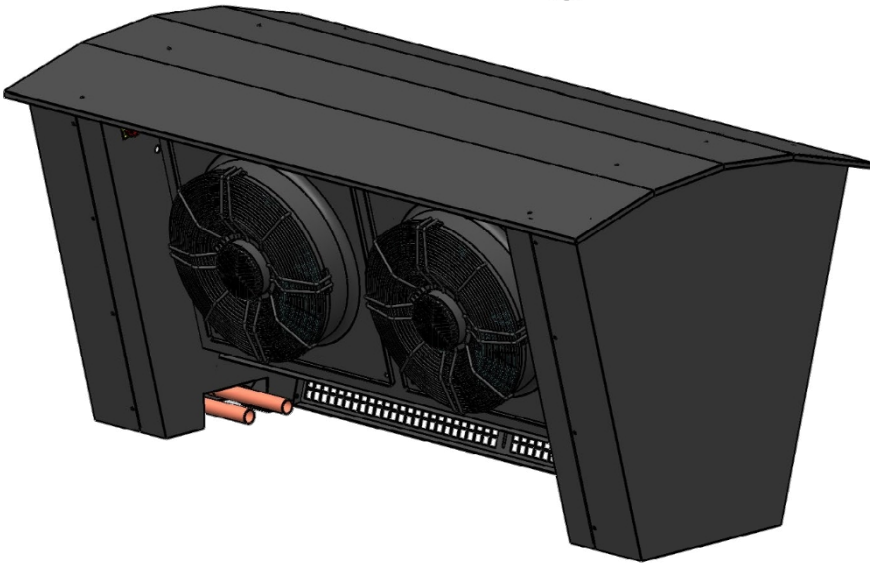
- Illuminate the work area for assembly and installation with additional lighting units if necessary.
- The staff have the necessary qualifications and receive the necessary training.
- Staff have read and understood the operating instructions.
- Staff have access to the operating instructions at all times.
- Local accident prevention and environmental regulations are implemented and complied with.
- Staff are instructed by the relevant supervisor and unauthorised persons are kept away from the equipment.
- The unit is only handed over and operated when it is in a safe and serviceable condition, and any damage to the heat pump is repaired immediately or the damaged heat pump is taken out of service straight away.





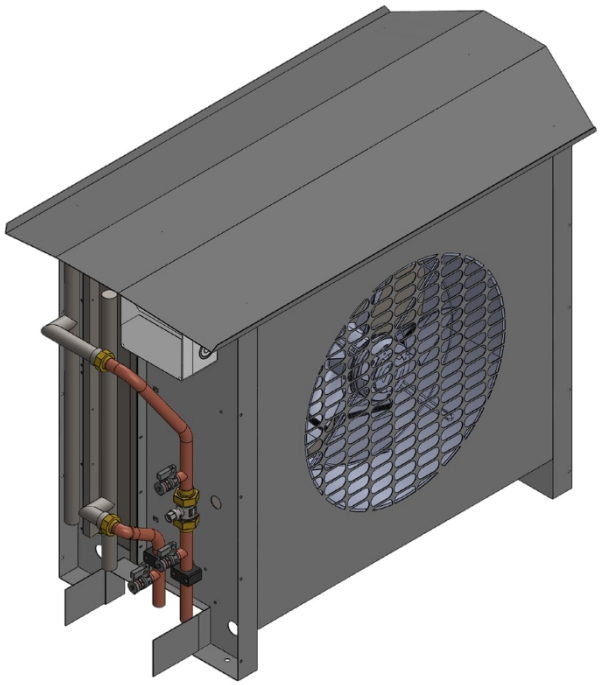

Carrying bars

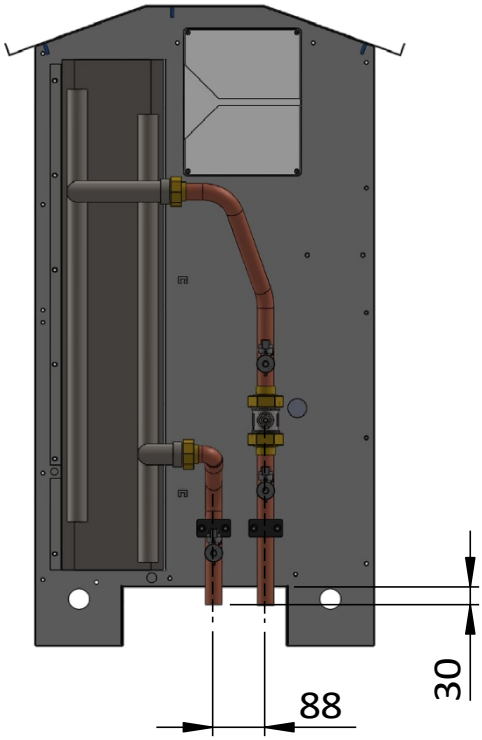


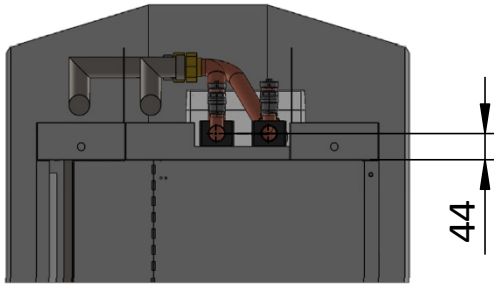


5.1.1 OUTDOOR UNIT

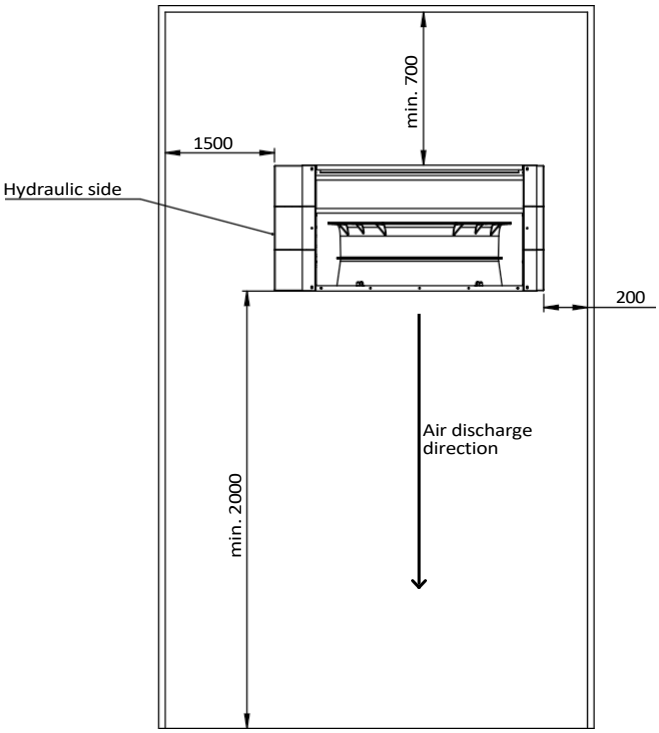
- If the satellite system is installed close to a wall, a **minimum distance** of 0.70 metres must be maintained (sound reflection).
- A free airflow (5,000 or 15,000 m³/h) must be ensured. The outdoor unit must not be enclosed or housed.
- Before installing the SAT system, a suitable **foundation** must be (see SAT system dimensions and foundation plan).
- As heat pump operation generates **condensate** depending on the output and humidity (approx. 1 l/h), provision must be made for the condensate to drain away if the ground beneath the SAT system is impermeable.
- The SAT system can be installed as standard at a **maximum** distance **of 20 m** (single pipe length) from the indoor unit; longer pipe lengths are only possible after consultation with ratiotherm.



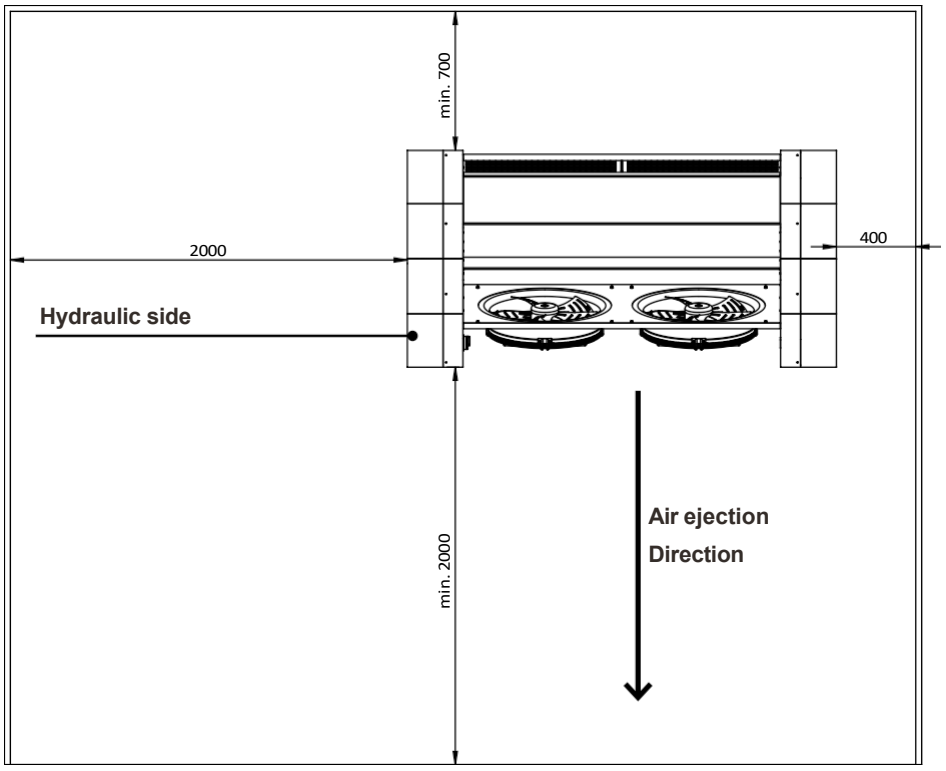




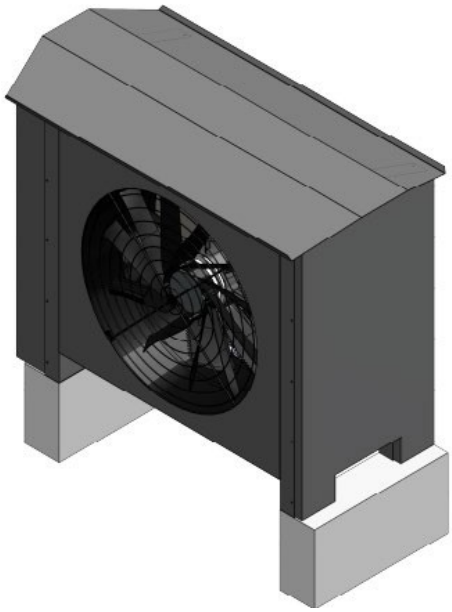
5.2 MAINTENANCE AREA SAT 15

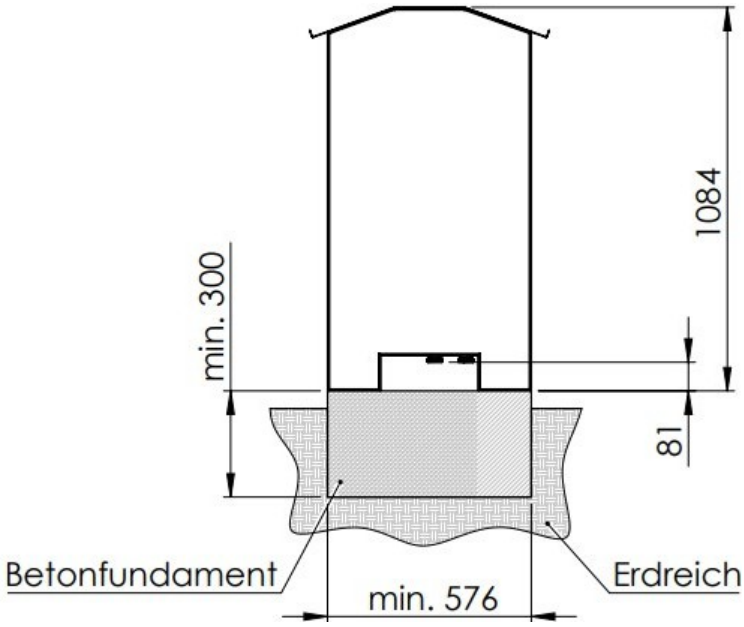


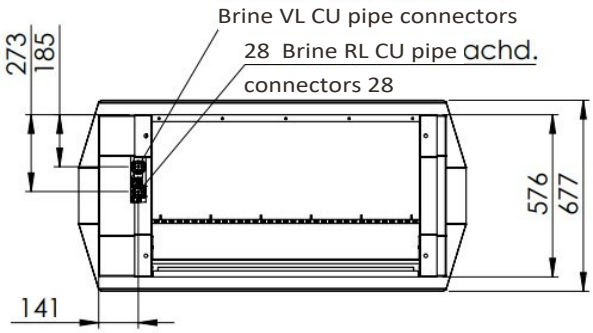
5.3 MAINTENANCE RANGE SAT 40

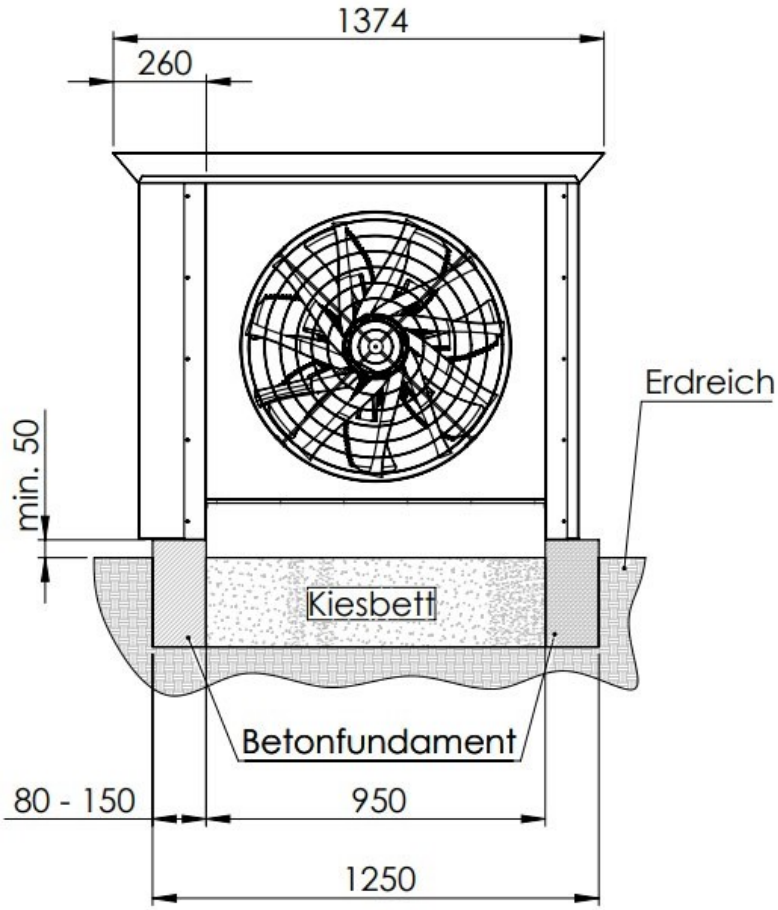


5.4 FOUNDATION SAT 15

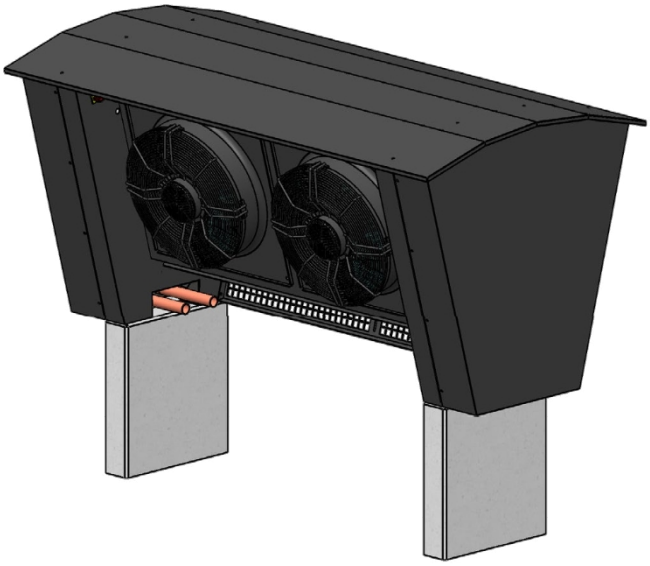


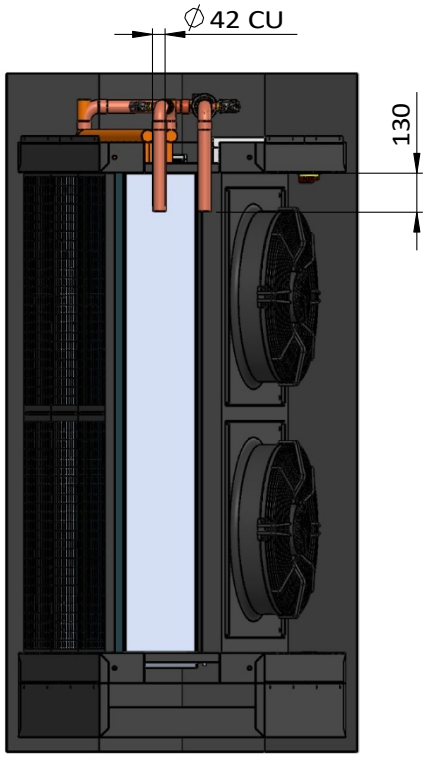


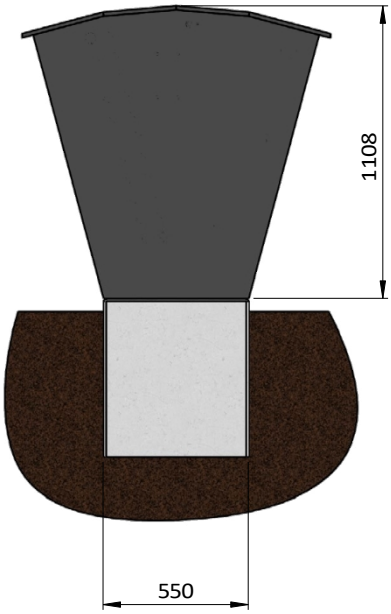


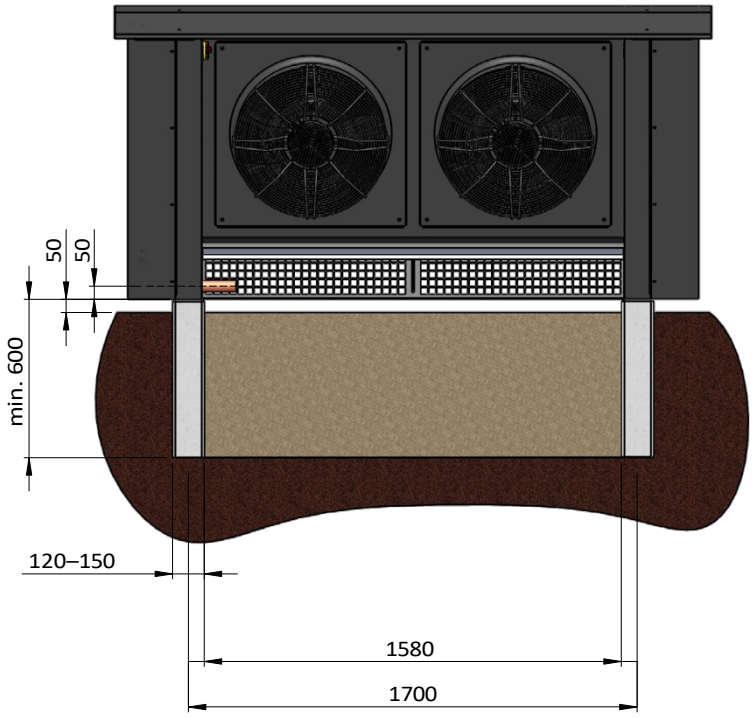


5.5 FUNDAMENT SAT 40









5.6 HYDRAULIC INSTALLATION

Please note the following:

1. Primary side: Outdoor unit to indoor unit

- The circuit between the indoor and outdoor units must be protected with antifreeze down to -30°C.
  Recommendation: Aqua Concept coracon WT 6N-30
- Hold the connections in place whilst tightening.
- Flat-sealing connections must be sealed against condensation ingress.
  Recommendation:
  - Generously lubricate the thread and sealing surface with Fermit.
  - Alternatively, seal the screw connection with silicone.

The following dimensions must be used:

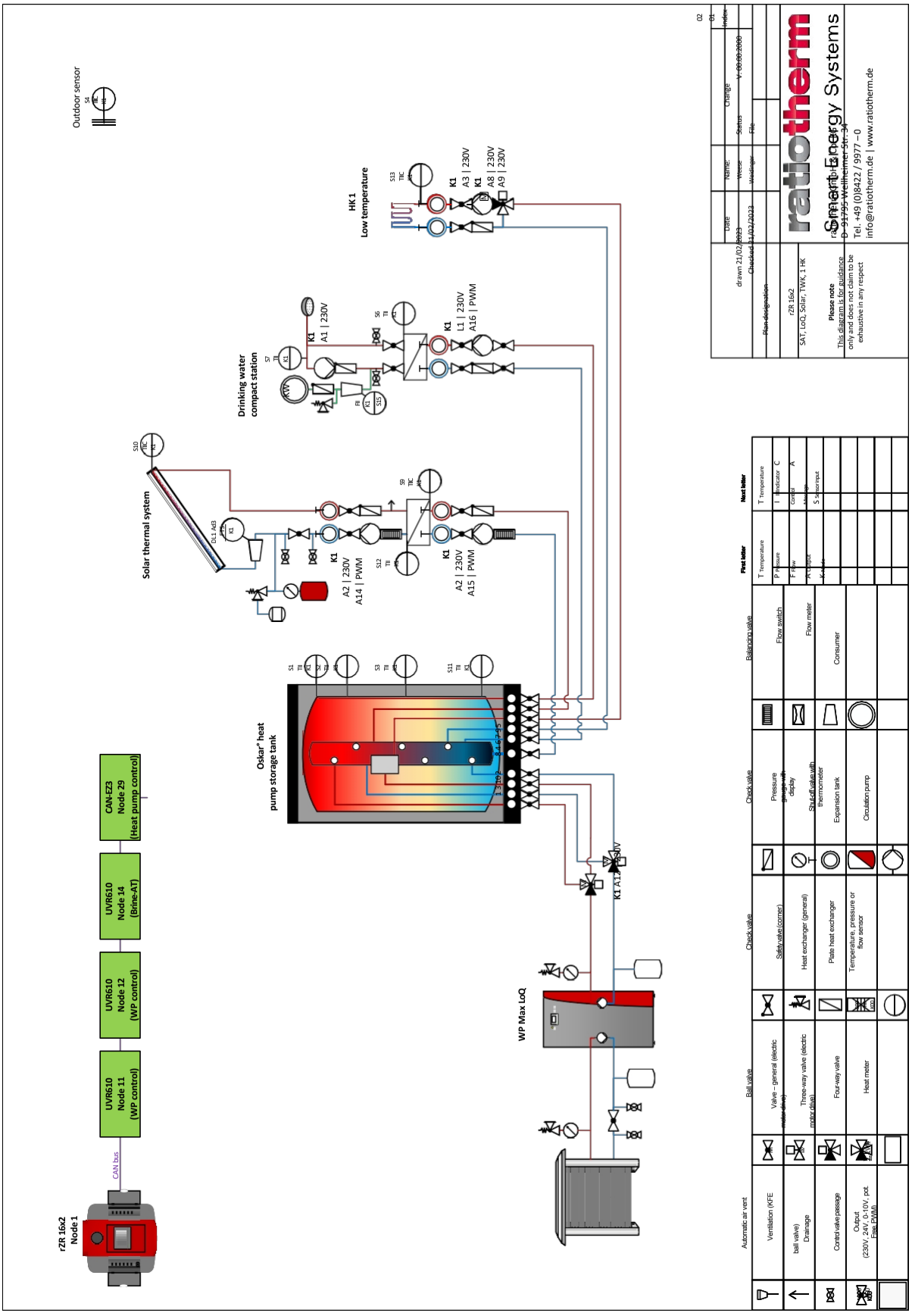
	DN32 (carbon steel: d_a 35 x s 1.5 = 32 d_i) (PE pipe: d_a 40 x s 3.7 = 32.6 d_i)	DN40 (Carbon steel: d_a 42 × s 1.5 = 40 d_i) (PE pipe: d_a 50 x s 4.6 = 40.8 d_i)	DN50 (Carbon steel: d_a 52 x s 1.5 = 50 d_i) (PE pipe: d_a 63 x s 5.8 = 51.4 d_i)
SAT 15	up to 11 m	up to 30 m	x
SAT 40	x	up to 5 m	up to 20 m

* 3k spread, at rated power

* Available pressure drop over entire length: 10,000 Pa, assumed pipe roughness 0.0070 mm

d_a = outer diameter d_i = inner diameter s = wall thickness

5.6.1 HYDRAULIC DIAGRAM: STANDARD WITH SOLAR



5.6.2 WATER REQUIREMENTS

NOTE: The system water must contain no more than 50% glycol.

NOTE: Ensure that the system water meets all requirements. If the properties are not optimal for more than two criteria (°) or if a criterion does not meet the minimum requirement (-), **no** warranty claim can be made.

Parameter	Unit	Concentration	Copper
pH	/	< 6.0 6.0–7.5 7.5–8.5 8.5–10.0 > 10	- ° + ° °
Conductivity	µS/cm	< 10 10–500 500–1,000 > 1,000	+ + ° -
Chloride	mg/L	< 10 10–50 50–80 80–100 100–1,000 > 1,000	+ + + + ° -
free chlorine	mg/L	< 0.5 0.5–1.0 1.0–5.0 > 5.0	+ + ° -
Total hardness	°dH	< 5 5–15 15–30 > 30	+ + ° -
Ammonia (NH_3, NH_4^+)	mg/L	< 2 2–20 > 20	+ ° -
Alkalinity (HCO_3^-)	mg/L	< 60 60–300 > 300	+ + °
Sulphate (SO_4^{2-})	mg/L	< 100 100–300 > 300	+ ° /- -
HCO_3^- / SO_4^{2-}	mg/L	> 1.5 < 1.5	+ ° /-
Nitrates (NO_3)	mg/L	< 100 > 100	+ °
Hydrogen sulphide (H_2S)	mg/L	< 0.05 > 0.05	+ ° /-
free carbon dioxide (CO_2)	mg/L	< 5 5–20 > 20	+ ° -
Manganese	mg/L	< 0.1 > 0.1	+ °
Iron (Fe)	mg/L	< 0.2 > 0.2	+ °
Aluminium	mg/L	< 0.2 > 0.2	+ °

5.7 ELECTRICAL INSTALLATION

DANGER!

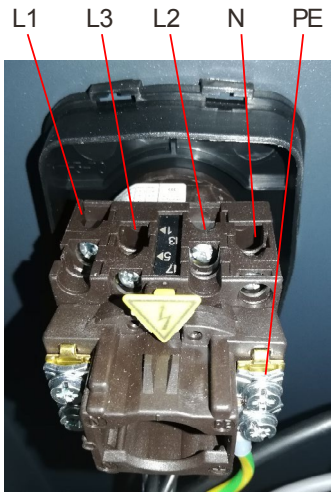
- The power supply to the heater comes from the control cabinet and must be protected by a separate Type B residual current circuit breaker **(RCD)** with a trip current of no more than **300 mA, a 10 ms short-time delay** and a suitable rating. Recommendation: ABB F204B-80/0.3
- A separate RCD must be provided for each outdoor and indoor unit!
- The RCD must be clearly labelled separately for the heater, e.g. as 'WP'. Please ensure the correct phase/neutral connection when wiring.
- Ensure clockwise rotation.
- The unit must be earthed.
- Use cables with a cross-section appropriate to the heater's power rating.
- The electrical installation must comply with current standards and generally accepted engineering practice.
- Never work on the hydraulics or mechanics of the unit whilst it is live.
- The same applies when filling or subsequently pressurising the system.
- Even if the unit's main switch is switched off, voltage is still present at the cable terminal.
- To completely disconnect the unit from the mains, the RCD in the control cabinet must be switched off.
- Maintenance work may only be carried out by an authorised person.
- Never short-circuit the heat pump's safety pressure limiter.

5.7.1 TERMINAL DIAGRAM AND DESCRIPTION

- Recommended fuse for outdoor unit: B16 3-pin.
- Ensure the CAN bus is wired correctly! Do not use a star-shaped network! Use a shielded, 4-pin cable! Follow the instructions for the technical alternative. One end at the outdoor unit, the other end at rZR 16x2.

X5					X6			
L1	L2	L3	N	PE	GND	12V	CAN-H	CAN-L
400 V mains					CAN bus (connection to the interior unit)			

- Non-binding cable recommendation: Unitronic Bus CAN FD P 2x2x0.5
- **Note:** For SAT-40, connect directly to **the emergency stop switch**. A strain relief must be provided on site.



1 = L1
3 = L2
5 = L3
7 = N

5.7.2 ELECTRICAL CONNECTION RATINGS

WARNING! Installation and wiring must only be carried out by authorised qualified personnel.

- We reserve the right to make changes to all specifications, images and drawings.
- The generally applicable and recognised rules of good engineering practice, as well as any local regulations, must be strictly observed! Values apply to installation in conduits with a cable length of up to 100 m.

Type	SAT 15	SAT 40
Fuse:	B16 3-pole	B16 3-pole
Cable cross-section:	5G 2.5 mm²	5G 4 mm²

6. OPERATION

6.1 SETTINGS

Fixed values	Description	Setting options	Default
Fan speed tag	Maximum speed setting	Levels 8 to 20	Level 11
Self-defrosting	Automatic defrosting of the heat pump	OFF/ON	OFF
Fan speed Defrost	Fan speed during defrost	0.0% to 100.0%	10.0%
Fan speed during defrost	Fan speed after defrosting during the drain phase	0.0% to 100.0%	50.0%
Defrost activation temperature	Threshold temperature below which the defrost timer starts (reference sensor : T-evaporator).	-20.0 °C to 20.0 °C	0.0 °C
T. Defrost deactivation	Setpoint temperature at which defrosting ends (reference sensor: T-evaporator).	5.0 °C to 20.0 °C	18.0 °C

7. MAINTENANCE

To ensure continuous operational readiness, operational safety, reliability and a long service life, the appliance must be inspected regularly by a recognised, qualified and ratiotherm-authorised specialist. We recommend having the appliance serviced annually.

NOTE: We recommend taking out a maintenance contract.

⚠ WARNING

Improper handling

Improper handling of the appliance can result in a risk of serious injury. **Never attempt to carry out maintenance work and/or repairs on the appliance yourself.**

For maintenance work, engage a recognised, qualified and ratiotherm GmbH & Co. KG-authorised specialist tradesman (qualified personnel).

7.1 TROUBLESHOOTING

Error message	
Fault description	**Fan fault**
Behaviour of the outdoor unit	■ Fan does not start.
Cause of fault	■ Fan not connected to the mains
Troubleshooting	■ Connect the fan to the mains ■ Check the fan control

7.2 CLEANING

7.2.1 CLEANING THE HEATING SIDE

- Cleaning: to be carried out by a plumber
- Flushing device: Connect to the supply and return pipes of the condenser
- Condenser: Flush against the normal flow direction (take the gravity brake into account)

7.2.2 CLEANING THE HEAT PUMP

- The units can be cleaned using a standard household cleaner (see below for exceptions).
- Check the air inlets and outlets (regularly check the grilles of the intake and exhaust hoods for leaves and other debris).
- Brush away the dirt. The fan should not be running whilst you are brushing, as the dirt could otherwise be sucked into the unit.

NOTE

Improper cleaning

Using the wrong cleaning products can damage the appliance surfaces.

Please note the following instructions.

- Do not use abrasive or cleaning agents that could damage the plastic casing, fittings or controls.
- Do not use sprays, solvents or cleaning agents containing chlorine.
- Clean the heat pump casing with a damp cloth and a little soap.
- Avoid placing or leaning objects on or against the heat pump.

NOTE

Limescale deposits

Limescale deposits can cause the safety valve to become stuck.

Operate the heating system's safety valve manually once a month.

7.3 CHECKING THE HEAT PUMP FOR LEAKS

In accordance with Regulation (EC) No 842/2006 on certain fluorinated greenhouse gases, the heat pump must be checked regularly for leaks. This check may be carried out by a recognised and qualified specialist tradesman (with certification as a refrigeration engineer or a state-certified technician specialising in refrigeration technology). The following must be observed:

- DIN EN 378:2000 "Refrigerating systems and heat pumps – Safety and environmental requirements"
- VDMA Standard Sheet 24243 (August 2005) "Refrigeration machines and systems – Leak-tightness of refrigeration systems and heat pumps – Leak detection/leak testing"

NOTE

Leak test

The inspection must be carried out in accordance with the equipment log. The results of the inspection must be documented in accordance with the regulations and retained for at least 5 years. The The "System Logbook for Heat Pumps" contains a system log for this purpose.

7.4 SYMBOLS ON THE UNIT

To provide staff with important information and warnings, standardised safety symbols based on the standards DIN EN ISO 7010, DIN ISO 3864 and DIN ISO 7000 have been used. These safety symbols are:

- Clearly visible to all,
- must be kept in a recognisable/legible condition and
- Replaced when necessary.

As the design of the device and the complexity of the production processes do not permit the use of people with disabilities (e.g. those with visual impairments) for safety reasons, the manufacturer has chosen not to include tactile symbols. The requirements for personnel and the technical qualifications required to operate the device are set out in Chapter *2.3, 'Target Groups',* on page 31.

7.5 MAINTENANCE SCHEDULE

DANGER! Do not operate the device if any faults are found

Maintenance work	Measures	Interval
Operators and operators		
Visual and functional inspection	■ Check the device for any visible external defects and mechanical damage. ■ Carry out a visual inspection of the control elements. ■ Carry out a visual and functional inspection of all safety devices.	Monthly
Cleaning the appliance	■ Follow the instructions in section *7.2 Cleaning*	as required
Qualified personnel		
Checking electrical components	■ Check the electrical components for damage. ■ Carry out repairs if necessary.	Annually
Inspection of hydraulic components	■ Check the hydraulic components for damage. ■ Carry out repairs if necessary.	Annually
Inspection of refrigeration components	■ Check the refrigeration components for damage. ■ Carry out repairs if necessary.	Annually
Inspection of safety devices	■ Carry out a visual and functional inspection of all safety devices. ■ Document these checks.	Annually
Check symbols on equipment	■ Check the symbols on the device. ■ Replace the symbols if necessary.	Annually
Inspection Third-party components	■ Refer to the manufacturer's documentation for the purchased components.	Annually

8. DECOMMISSIONING

When the heat pump is taken out of service, the unit must only be dismantled by qualified personnel. Hazardous substances and waste must be disposed of properly. When dismantling the heat pump, observe the instructions at the beginning of the technical documentation and the safety instructions listed below.

⚠ DANGER

Fatal electric shock

There is a risk of fatal electric shock from the electrical components.

Disconnect the unit from the power supply before taking it out of service or dismantling it.

Secure the device to prevent it from being switched on again.

8.1 TEMPORARY DECOMMISSIONING

NOTE

Incorrect decommissioning

Improper decommissioning of the device may result in damage to components and impaired functionality.

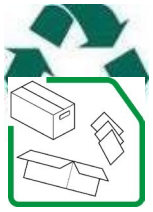
Switch off the unit at the main switch.

Please note the following:

- Frost may cause damage to the unit.
- Water freezes at outdoor temperatures below 0 °C.
- Decommissioning without draining the heating circuit is only permitted at temperatures above 0 °C.

8.2 FINAL DECOMMISSIONING AND DISPOSAL

Only a specialist company may carry out final decommissioning/disposal. Environmental requirements regarding the recovery, reuse and disposal of operating fluids and components in accordance with current standards must be observed.



NOTE

Improper disposal

Improper disposal of the unit may result in environmental pollution and/or damage.

Dispose of electrical and electronic components as well as the heat pump's refrigerant properly and in accordance with applicable local regulations.

9. EC DECLARATION OF CONFORMITY

In accordance with the Low Voltage Directive 2014/35/EU, Annex IV, and the Pressure Equipment Directive (2014/68/EU), Annex IV. We hereby declare, under our sole responsibility:

Manufacturer	
ratiotherm GmbH & Co. KG Wellheimer Straße 34 91795 Dollnstein	Email: info@ratiotherm.de Telephone: +49 (0) 8422/9977-0 Website: www.ratiotherm.de

that the device:

Device name: **WP SAT 15 / SAT 40**

Year of manufacture: see type plate

Intended use: The WP SAT 15 / SAT 40 unit is designed to utilise ambient heat the ambient air to provide direct heating support and hot water supply.

In the version supplied, it complies with the directives

- Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
- Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of pressure equipment

as well as the harmonised standards and directives listed below, to which this declaration refers:

Harmonised standards applied:	Applicable EC Directives
■ DIN EN 378-1-4	■ Directive 2014/30/EU
■ DIN EN ISO 12100	■ Directive 2014/35/EU
■ DIN EN 60204-1	■ Directive 2014/68/EU
■ DIN EN 60335-1	■ Directive 2009/125/EC
■ DIN EN 60335-2-40	■ Directive 2011/65/EU

Technical documentation is available. Name and address of the person authorised to compile the technical documentation:

Name: Julian Kruck, Head of Heat Pump Technology

Address: ratiotherm GmbH & Co. KG, Wellheimer Straße 34, 91795 Dollnstein

We hereby certify that the certification procedure has been carried out in accordance with the Low Voltage Directive 2014/35/EU, Annex IV, and the Pressure Equipment Directive (2014/68/EU), and that the provisions of standard DIN EN ISO/IEC 17050-1 “Conformity assessment – Supplier’s declaration of conformity – Part 1: General requirements” have been observed in issuing this declaration of conformity. This declaration shall cease to be valid in the event of any modification to the equipment not agreed with us. Any unauthorised modification of this nature shall exclude any liability on our part.

Dollnstein, on _____ Signature of authorised representative: _____

Details of the person authorised to issue this declaration on behalf of the manufacturer or their authorised representative:

Name: _____ Position: _____

Address: ratiotherm GmbH & Co. KG, Wellheimer Straße 34, 91795 Dollnstein

10. NOTES

You can find us here

ratiotherm
Smart Energy Systems

ratiotherm GmbH & Co. KG
Wellheimer Straße 34
91795 Dollnstein

Direct contact:
T +49 (0) 8422 9977-0
info@ratiotherm.de www.ratiotherm.de