Original operating instructions

WP Max-HiQ WF06 & WP Max-LoQ WF06

As of 2025-10

ratiotherm
Smart Energy Systems

INFORMATION

These operating instructions are 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 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 Member States relating to the making available on the market of pressure equipment

These operating instructions are intended for the operator and must be handed over to personnel who come into contact with the device. The operator must ensure that the information contained in the operating instructions and the accompanying documents is read and understood.

NOTE

If in any 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, objects or the device itself caused by:

- improper use,
- non-compliance,
- insufficient attention

the safety criteria contained herein or by:

- modification of the device,
- use of unsuitable spare parts.

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For better readability, the generic masculine form is used in this original operating manual. The personal designations used refer to all genders.

As of: 7 October 2024

TABLE OF CONTENTS

1. INFORMATION ABOUT THE DOCUMENT

The following notes serve as a guide through the entire documentation. Other documents are also valid in conjunction with these operating instructions. These operating instructions for specialist tradesmen are part of the ratiotherm WP Max-HiQ WF06 and WP Max-LoQ WF06 heat pumps. The ratiotherm WP Max-HiQ/LoQ WF06 heat pump must not be operated without this document.
The operating instructions must be made available to the operator and the specialist technician for information at all times. If the ratiotherm WP Max-HiQ/LoQ WF06 heat pump is sold, the instructions must be included. ratiotherm GmbH & Co. KG accepts no liability for damage caused by 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 DIN 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 not avoided, 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 property damage.
NOTE	Indicates operating instructions and cross-references. A note excludes the risk of property damage or injury.

1.2 SAFETY SIGNS

1.2.1 OTHER SIGNS IN ACCORDANCE WITH DIN EN ISO 7010

Some of the following special safety signs in accordance with DIN EN ISO 7010 and DIN ISO 3864 are used in the relevant sections of 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 ⇨ depict a source of danger and supplement a warning notice.
- 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
	Follow instructions		General mandatory sign
	Disconnect before maintenance or repair		Use hand protection

1.2.2 OTHER SYMBOLS ACCORDING TO DIN ISO 7000

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

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

Device designation: Heat pump (water/water) or (brine/water) Type: WP Max-HiQ WF06 & Max-LoQ WF06
Year of manufacture: See type plate
Country of origin: Germany

2.2 INTENDED USE

The WP Max-HiQ/LoQ WF06 device uses heat from various sources to provide direct heating support and hot water preparation. Any other or extended use of the device is considered improper and therefore inappropriate. In this case, the safety and protective functions of the device may be impaired. ratiotherm GmbH & Co. KG is not liable for any damage resulting from this. Intended use also includes:

- Observing all instructions in this operating manual,
- observe all warnings and
- compliance with the inspection and maintenance conditions.

The WP Max-HiQ/LoQ WF06 device is state-of-the-art and has been constructed in accordance with recognised safety regulations. The device is intended exclusively for domestic and/or commercial use for hot water preparation (domestic water) and for heat or cold generation.

Improper or unintended use may result in danger to the life and limb of the user or third parties. In addition, damage to the device and other property may occur. The WP Max-HiQ/LoQ WF06 device is not intended for use by persons (including children) with limited physical, sensory or mental abilities, or persons with insufficient experience and/or knowledge. The risk is borne solely by the operator and user.

2.3 TARGET GROUPS

For safety reasons, the design of the device does not allow it to be used by persons with disabilities (e.g. with visual impairments). DANGER Only perform tasks for which you are authorised.

2.3.1 TARGET GROUP MATRIX

Tasks	Operators and users	Specialist 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/fault rectification		X
Decommissioning/dismantling/disposal		X

2.3.2 TARGET GROUP DEFINITION

Operators and users

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

Qualification of operators and users:

- Of legal age and physically/mentally capable of working on the device
- Knowledge of how to operate the product, imparted by specialist personnel and t

Specialist personnel

A person employed by a qualified specialist company for heating systems and hot water supply. The specialist personnel must have acquired special knowledge and experience through professional training. The person must have knowledge of relevant standards, be able to assess the work assigned to them (e.g. instruction of personnel, switching on, programmes and switching off) and be able to identify potential hazardous situations.

Qualification of specialist personnel:

- Of legal age and physically/mentally capable of working on the device
- Knowledge and several years of experience in working on heating and hot water systems

2.4 MISUSE

2.4.1 REASONABLY FORESEEABLE MISUSES

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

- Using the device contrary to its intended use
- Feeding in components that are not certified by the manufacturer
- Operating the device outside its physical limits
- Modifying the control software without prior consultation with ratiotherm GmbH & Co. KG
- Making c h a n g e s to the device or adding or modifying components without prior consultation with ratiotherm GmbH & Co. KG
- Operating the device contrary to the provisions of the risk assessment
- Bypassing or decommissioning protective and safety devices
- Operating the device with obvious faults
- Operation of the device by persons with limited physical, sensory or mental abilities or by children

DANGER

Unauthorised modifications to the device

Unauthorised modifications pose a risk of death or injury.

Do not make any unauthorised modifications to the device without the prior consent of ratiotherm GmbH & Co. KG.

2.4.2 UNFORESEEABLE E MISUSE/ABUSE

Unforeseeable misuse may occur due to:

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

2.5 WARRANTY, LIABILITY, GUIDELINES, STANDARDS AND LAWS

The "General Terms and Conditions of Sale and Delivery" of ratiotherm GmbH & Co. KG apply in principle. The "General Terms and Conditions of Sale and Delivery" are available to the operator at the latest 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
- Operating the device with defective protective devices
- Failure to observe the safety and warning instructions in the operating manual
- Unauthorised structural modifications to the device
- Inadequate implementation of the specified maintenance measures
- Disasters involving foreign objects or force majeure

The operating instructions must be read before handling the device. The operating instructions familiarise personnel with the handling of the device and provide information on all phases of the device's life cycle.
The operating instructions must be accessible to personnel at all times. The safety and warning notices in the operating instructions and on the device must be observed and complied with. If you have any further questions that go beyond the scope of these operating instructions, please contact ratiotherm GmbH & Co. KG.

The following guidelines, standards and laws must be observed when using the device in Germany:

- VDE and EVU regulations and provisions (in particular VDE 0100)
- Regulations and provisions of 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 plant technology in buildings from 2009

NOTE

Guidelines, standards and laws

Additional local guidelines, standards and laws, e.g. building regulations, may apply. As a general rule, the legal guidelines, standards and laws applicable in the respective country must be observed.

3. SAFETY INSTRUCTIONS

DANGER

Read and observe the operating instructions before starting work on and with the device.
Despite all precautions taken, there may still be some residual risks that are not immediately apparent. You can reduce the existing residual risks by observing and complying with the general safety instructions and warnings as well as the intended use.

3.1 GENERAL SAFETY INSTRUCTIONS

Observe the following general safety instructions:

- The volume of water increases during the heating process. Therefore, never close the blow-off line of the safety valve.
- Hot water may escape from the blow-off line.
- If leaks occur in the vicinity of the appliance, switch off the appliance and isolate it from the rest of the heating system. The leaks must then be repaired immediately.
- Do not use the following products to prevent corrosion on the device: sprays, solvents, chlorine-based cleaning agents, paints, adhesives, etc.
- Components that have not been tested with the device may cause damage to the device or impair its functions. Only use original spare parts and original wear parts.
- Only allow qualified personnel to carry out the assembly/installation/commissioning/adjustment of the device.
- Observe the existing regulations, rules and guidelines as well as the local installation requirements.
- To prevent 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 welding on load-bearing parts. Safety devices must not be taken out of operation. Only original spare parts and original accessories from the manufacturer may be used.

3.2 ADDITIONAL INFORMATION

Local accident prevention regulations apply to all work on the device. The following must also be observed:

- applicable binding regulations for accident prevention
- Recognised technical rules for safe and professional working practices
- existing environmental protection regulations
- Other applicable regulations

The outlet temperature at the hot water taps can be up to 60 °C. Carefully check the water temperature at the hot water taps before placing your hands completely under the water jet.

Do not make any changes to the following components:

- Air heat pump and water and electricity pipes
- Safety valve;
- structural conditions that may affect the operational safety of the appliance;
- structural conditions in the vicinity of the appliance, insofar as these may affect the operational safety of the appliance.

3.3 RESTRICTED 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 serious risk of injury.

In the event of malfunctions, only allow qualified personnel to carry out measures/work on the device and/or its components and connections.

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 working. Replace damaged insulation.

WARNING

Ignition sources in the danger 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. STRUCTURE AND FUNCTION

4.1 TECHNICAL DATA

	HiQ WF06	LoQ WF06	Unit
Performance data Heating mode			
	W20/W55	W10/W55	
Heating output	3.06 to 8.7	2.5 to 7.2	kW
Power consumption	0.66 to 2.2	0.66 to 2.2	kW
COP at rated power	4.91	3.77	
Compressor			
Design	Fully hermetic, rotary piston, inverter		
Blocking current LRA	32		A
Oil quantity	0.63		litres
Evaporator			
Design	Copper-brazed plate heat exchanger		
Material	Stainless steel / copper		
Brine flow rate	0.6 to 1.8		m³/h
Pressure loss	0.3		bar
Temperature difference	3		K
min. / max. source temperature	10 / 55	-5 / 15	°C
Connection dimensions	1",AG		
Condenser			
Design	Copper-brazed plate heat exchanger		
Material	Stainless steel / Copper		
Water flow rate	0.8 to 1.5		m³/h
Pressure loss	0.2		bar
Temperature difference	5 to 10		K
min. / max. flow temperature	30 / 72	25 / 72	°C
Connection dimension	1",AG		
Refrigeration circuit			
Working medium	R134 A		
Filling quantity	1.8		kg
Max. operating pressure	26		bar
Electrical			
Mains connection	230 V / 1 ~ / 50 Hz		
Fuse protection	Individual fuse 16		A
Max. operating current compressor	16		A
Power of the electric rod	3		kW
Device data			
Sound pressure level Inner section at a distance of 1 m	4		dB(A)
Dimensions of interior	880 x 1131 x 350		WxHxD (mm)
Weight	145		kg

Max. operating pressure water	3	bar

4.2 FUNCTION DESCRIPTION

The WP Max-HiQ WF06 high-temperature heat pump is suitable for widely varying source temperatures in the range from 10 to 55 °C. This flexibility is achieved by a patented process that enables the system to always reach the optimum operating point despite changing source temperatures. The WP Max-LoQ WF06 heat pump, on the other hand, is suitable for source temperatures below 15 °C. The maximum flow temperature for both heat pump types is 72 °C. The areas of application for the heat pumps range from sustainable heating and energy networks, to photovoltaic-controlled electricity use, to charging large heat storage tanks, to use as conventional water/water or brine/water heat pumps. Thanks to their speed control, they cover a wide range of outputs and are therefore ideally suited for the use of fluctuating energy quantities from photovoltaics, for example.

ADVANTAGES

- Use of highly fluctuating sources possible
- Maximum flexibility thanks to speed-controlled inverter operation
- Flow temperatures up to 72 °C possible
- Integrated energy management (smart grid-compatible)
- Easy installation thanks to complete pre-assembly at the factory, no refrigeration licence required
- With ratiotherm components, a fully coordinated, future-proof system

4.2.1 ADDITIONAL OPTIONS

AllQ option:

This option combines Max-LoQ with Max-HiQ. Two expansion valves and a bypass pump enable the source temperature to be extended to -15 to 55 °C. This allows a heat pump to use, for example, an outdoor air unit and solar thermal energy as a source.

E-Stab option:

A 3 kW electric heating element can be integrated into the device as an emergency heat generator. Thanks to a 3-stage control system based on a comparison of the target and actual temperatures, the heating element can ensure security of supply in the event of a mains or compressor failure. It can also be activated for floor drying.

Remote maintenance/interface module option (CoE, ModBus):

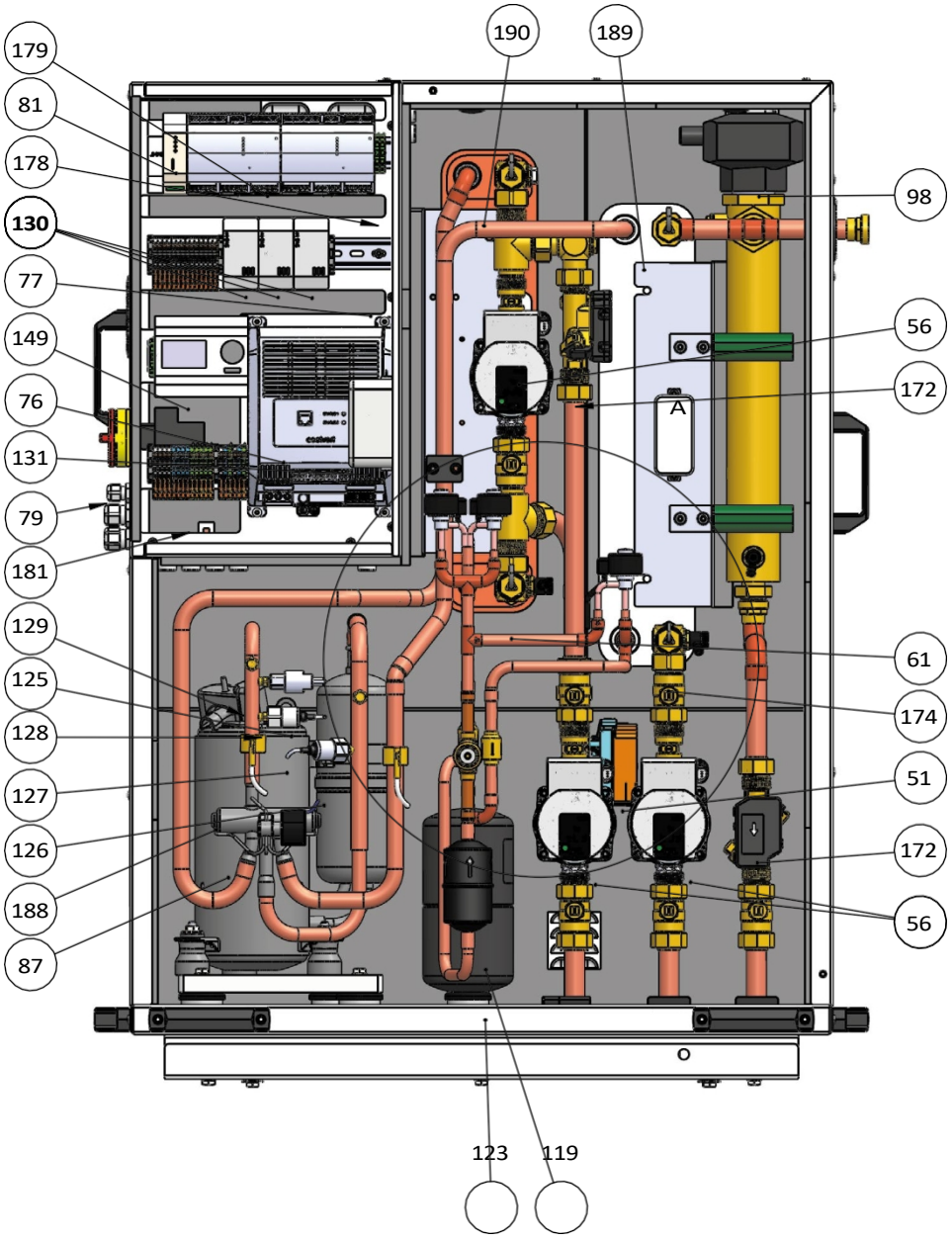
The remote maintenance module provides an Ethernet interface. When connected to a network, this enables remote maintenance of the device. It also allows connection to higher-level building management systems via ModBus/TCP or CAN-over-Ethernet. The interface is configured according to customer requirements.

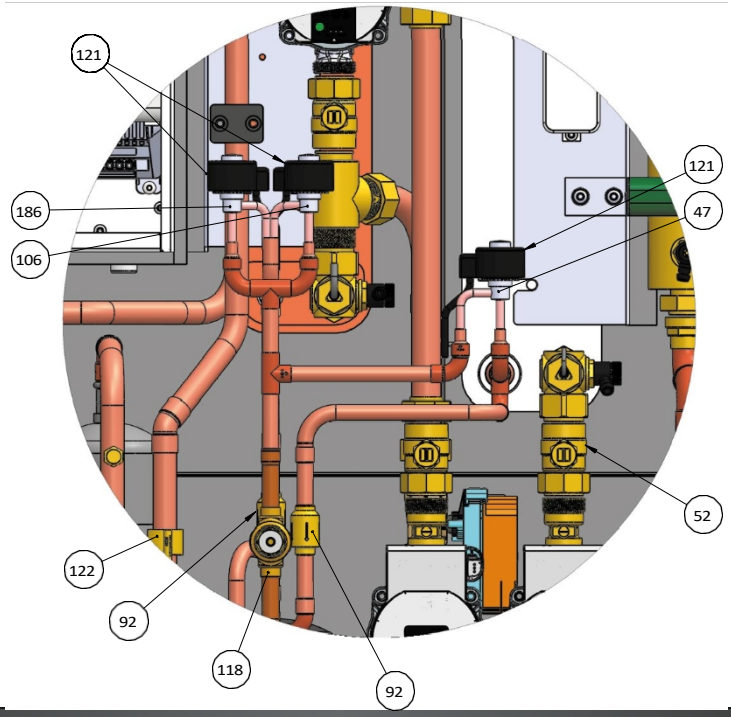
Option: Active cooling:

With this option, a 4-way valve is installed in the heat pump's refrigeration circuit. This enables the refrigeration circuit to be reversed. This allows the heating circuit to be cooled even if the mains temperature is above the cooling setpoint temperature.

4.3 STRUCTURE AND SPARE PARTS

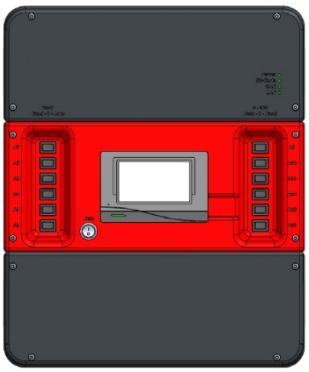
The ratiotherm WP Max-HiQ/LoQ WF06 heat pump has a complete refrigeration cycle and uses a source circuit as its primary energy source. The refrigeration circuit is a hermetically sealed circuit consisting of a rotary piston compressor, a condenser (plate heat exchanger), an evaporator (plate heat exchanger) and two electronic expansion valves that control the flow of refrigerant. The refrigerant R134a is used as the working medium. The ratiotherm WP Max-HiQ/LoQ WF06 heat pump is shipped fully filled and ready for operation. No further refrigeration commissioning is required. The ratiotherm WP Max-HiQ/LoQ WF06 heat pump is controlled by the RSM610 controller from Technische Alternativen. All parameters and operating states of the heat pump are shown on a separate display. The WP Max-HiQ/LoQ WF06 heat pump can be operated in combination with most electric, gas or oil boilers.





Position number	Designation	Description	Quantity
47	Expansion valve 2.0	ra/13037	1
51	2-way valve	ra/14334	1
56	Wilo Para pump	ra/13309	3
61	Immersion sensor	ra/13612	3
76	Inverter Invertek	ra/14542	1
77	C.M.I.	ra/50.OP.FWM01	1
79	Main switch	ra/14466	1
80	Fan	ra/15040	1
87	4-way valve	ra/13052	1
92	Check valve	ra/10528	2
106	Expansion valve 1.65	ra/13036	1
118	Sight glass	ra/13055	1
119	filter dryer	ra/12201	1
122	Contact sensor	ra/12859	2
123	Collector	ra/14590	1
125	Pressure sensor ACB	ra/10076	1
126	Pressure sensor 15 bar	ra/13048	1
127	Pressure sensor 40 bar	ra/13049	1
130	Control components	ra/13047	3
131	Interference filter	ra/14617	1
149	Energy meter	ra/14445	1
154	Monitor	ra/95.10.3212	1
172	Volume flow sensor	DN20_Metal	2
174	Volume flow sensor	Allengra	2
186	Expansion valve 1.3	ra/13290	1
188	Compressor	ra/13296	1
189	Plate heat exchanger Condenser	ra/13193	1
190	Plate heat exchanger evaporator	ra/13192	1

4.4 CONTROL LOGIC AND CONTROL

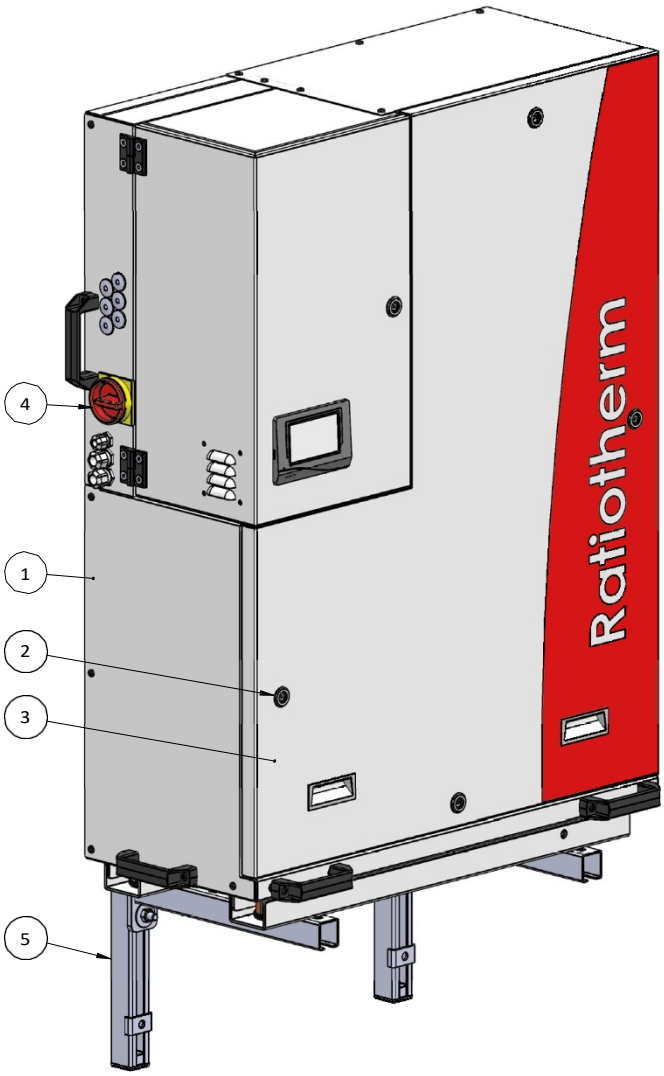


Control logic:

- The heat pump is activated via a potential-free digital signal. This activates the pumps and valves. After 45 seconds, the compressor starts up. From model year 20/45 onwards, the heat pump is also activated when a 0-10 V signal is applied to X3.2. This gives the user the choice of whether to activate the system digitally or via 0-10 V.
- When the system is activated, the minimum running time is 5 minutes. An error immediately switches off the system.
- A 0-10 V signal can be used to set the target speed of the compressor or the target outlet temperature (adjustable via a fixed value) from an external control system.
- If there is no 0-10 V signal, the compressor runs at a constant, adjustable speed (factory setting: 75 %).
- If a 0-10 V signal lower than 1.9 V is present, the heat pump is started in cooling mode. If available, the 4-way valve is switched and the speed of the compressor is regulated to the set cooling temperature.
- The compressor speed is limited during the start-up phase, which is why full speed is only reached after 4 x 1.5 minutes.
- If the source temperature inside the evaporator falls below an adjustable value (factory setting: 11 °C) for longer than 1 minute, the system is switched off for frost protection reasons. If the evaporator temperature is above 55 °C, start-up is also prevented. Once the temperatures return to normal, the machine starts up as usual.
- If the source temperature falls below 8 °C for water/water or an adjustable value for brine/water, a frost protection fault is triggered and the system is blocked for 7 minutes or, if this occurs repeatedly, locked.
- The condenser pump regulates the deltaT between the heating flow and return (factory setting 6 K).
- If the heating flow temperature rises above 69 °C, the pump begins to increase its speed to prevent it from switching off.
- If the heating flow temperature exceeds 72 °C, the system automatically switches off for 20 minutes. If the temperature drops during this time, the system restarts after the 20-minute waiting period.
- The evaporator pump regulates the deltaT between the source inlet and outlet (factory setting 3 K).
- If an anomaly is detected (HD, ND, antifreeze), an error is triggered and the system is blocked for 5 or 7 minutes. This cannot be acknowledged with the reset button! If the same error occurs three times within an hour, the system is locked. The lock can be released using the reset button.
- To prevent anomalies, high pressure, low pressure and compressor temperature are monitored and, if necessary, the speed is reduced for at least 8 minutes.

4.5 SAFETY DEVICES

The device is equipped with various safety devices. The safety devices are shown in the following illustration:



1	Protective enclosure or housing
2	Mechanical lock
3	Protective door
4	Main switch ON/OFF
5	Wall bracket

5. TRANSPORT, ASSEMBLY AND INSTALLATION

5.1 TRANSPORT AND UNPACKING

The following instructions for transporting the device must be observed:

- Only allow qualified personnel to carry out the transport.
- Protect yourself with PPE (e.g. safety shoes, etc.).
- Take the weight of the device (approx. 145 kg) into account when selecting the appropriate lifting equipment (forklift, pallet truck, etc.).
- Take the centre of gravity of the device into account.
- Remove all packaging materials.

  NOTE Do not damage the device when removing the packaging materials.
- When disposing of the transport and storage packaging, comply with local disposal regulations and applicable environmental protection laws.
- When unpacking the device, check that the delivery is complete.
- Use the delivery notes and packing lists provided to check the contents.

Storage conditions:

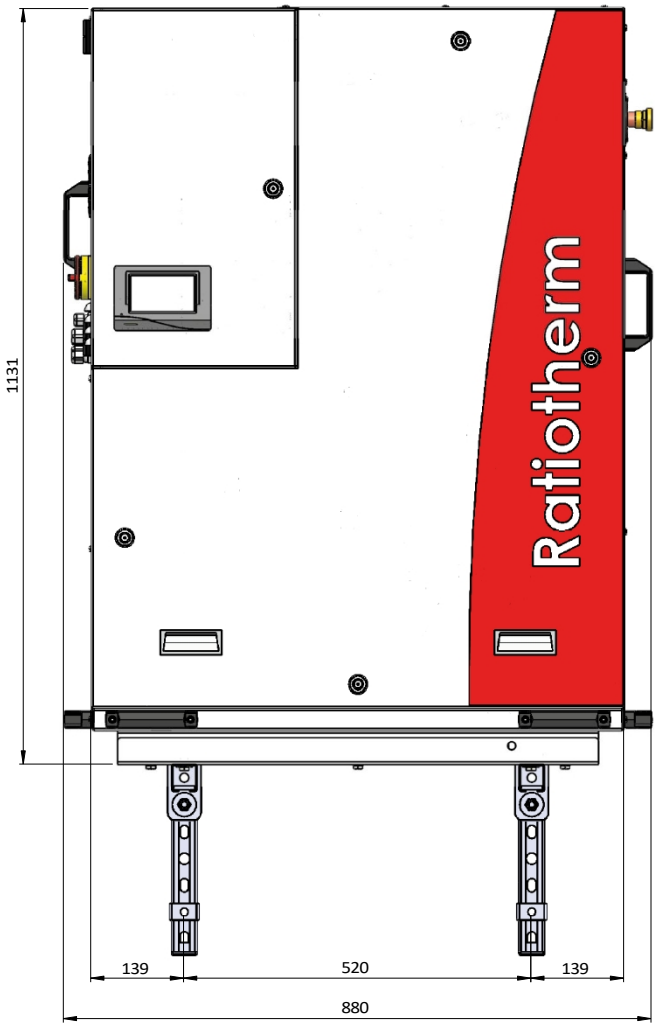
- Ensure frost-free storage.

Transport conditions:

- If the heat pump is to be installed in the basement, a sack truck with stair function is recommended for transport.
- If necessary, the heat pump may be tilted backwards by a maximum of 45° (the front of the unit must face forwards/upwards).
- After tilting the heat pump, the device must be left to stand for 6 hours.

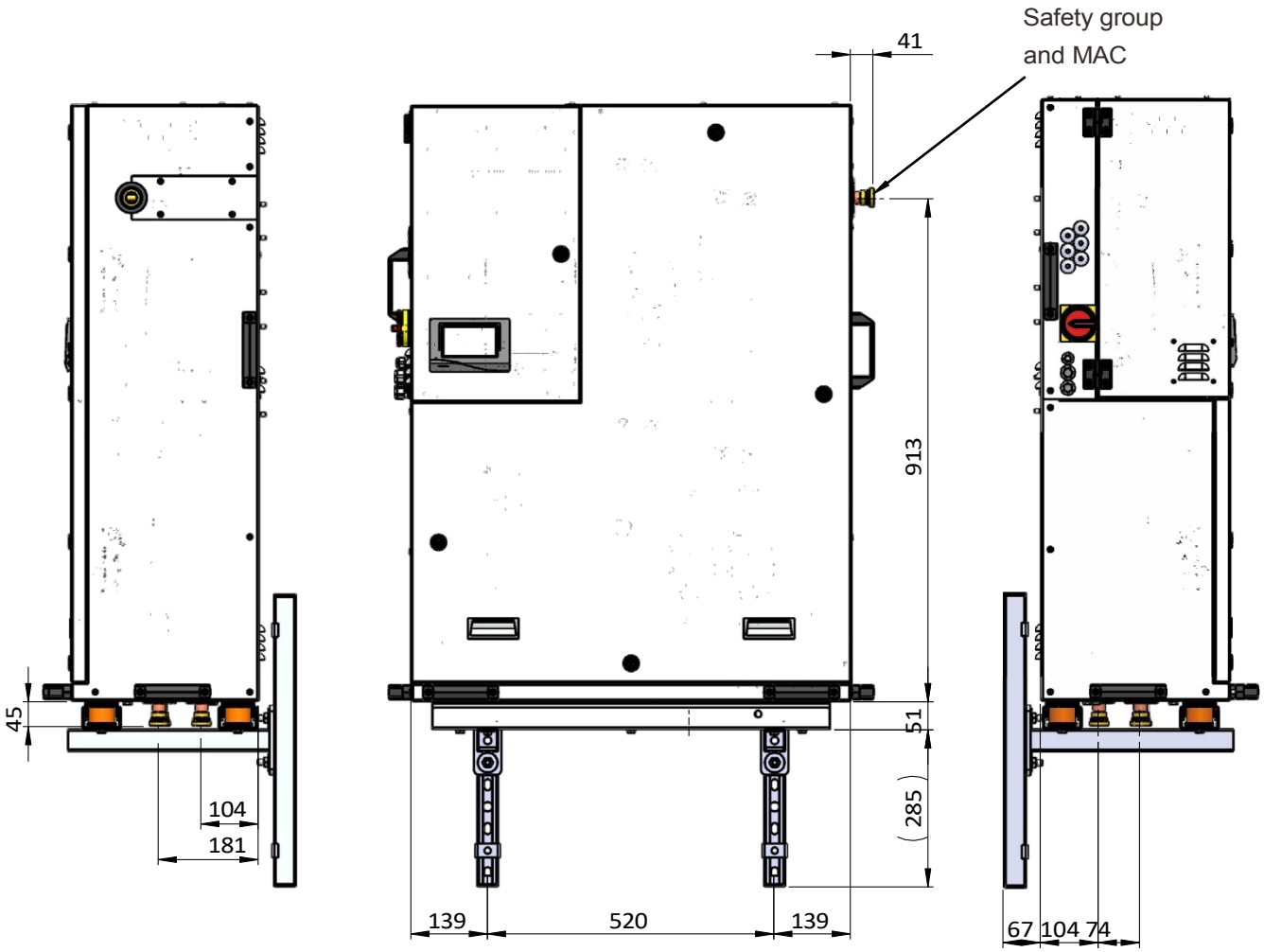
Installation conditions:

- A floor drain must be provided to protect against water damage.
- The WP Max-HiQ/LoQ WF06 heat pump must be installed in a clean, ventilated and dry location. The ambient temperature must be permanently > 10 °C and < 35 °C.
- The minimum distances must be observed for maintenance reasons.
- In exhibition rooms with sound-reflecting walls, the operating noise can be significantly amplified. Acoustic insulation on the relevant surfaces can remedy this.



All dimensions are given in millimetres.

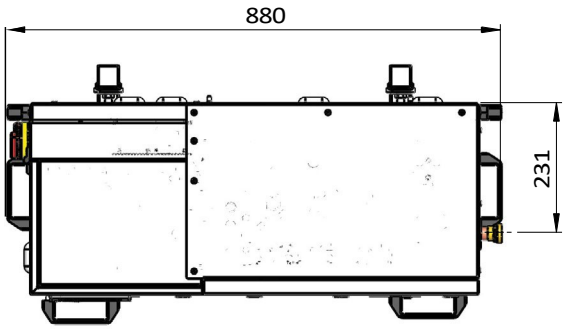
Dimensions:



View from the left side

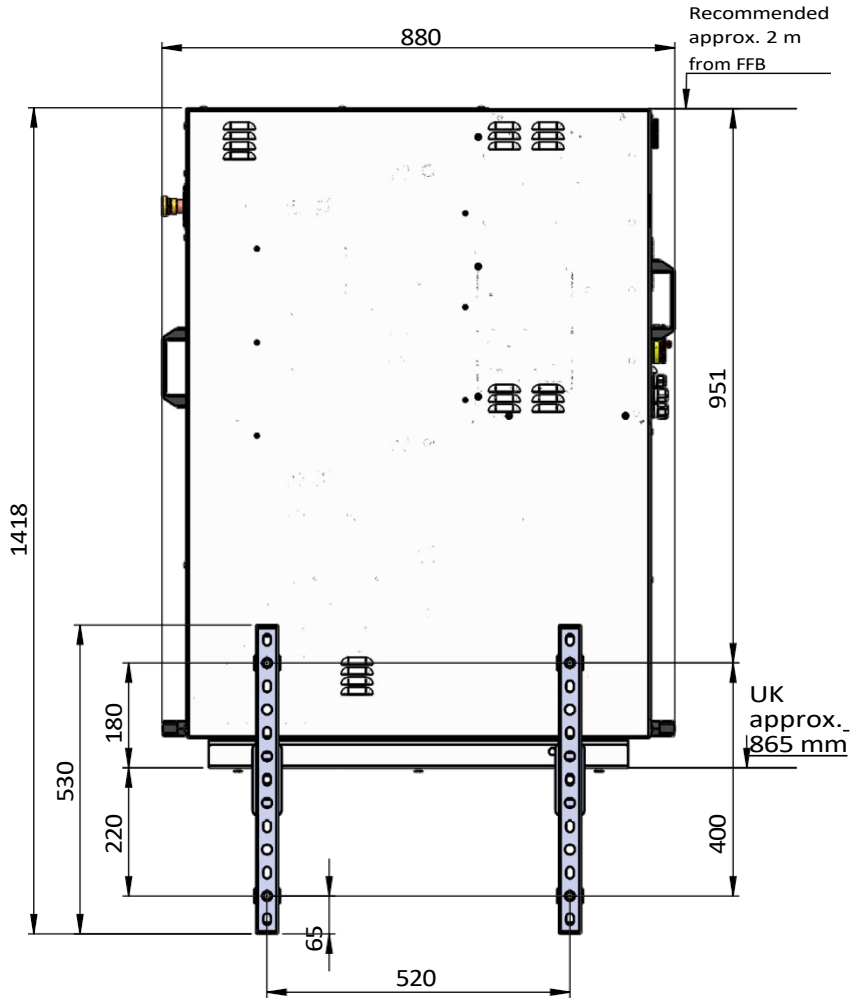
View from the front

View from the right side

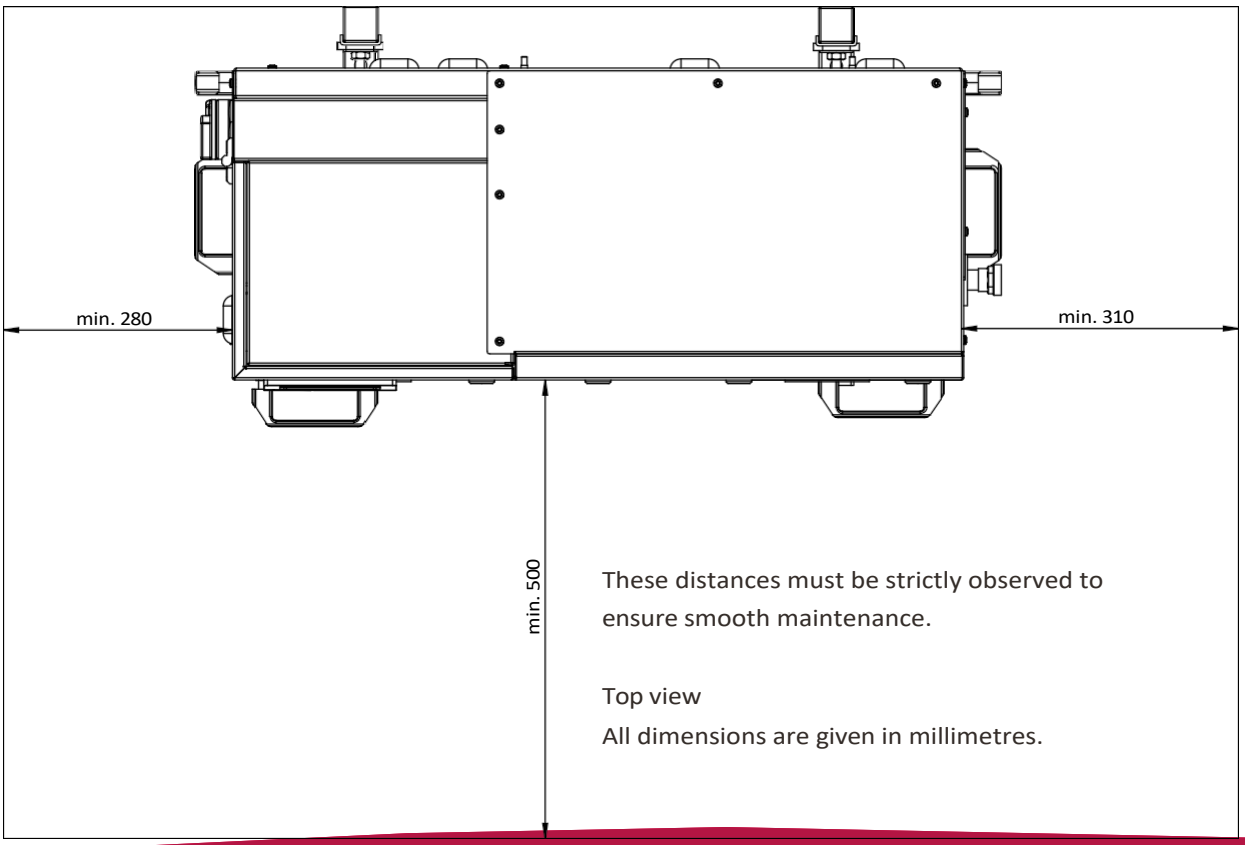


View from above

All dimensions are given in millimetres.



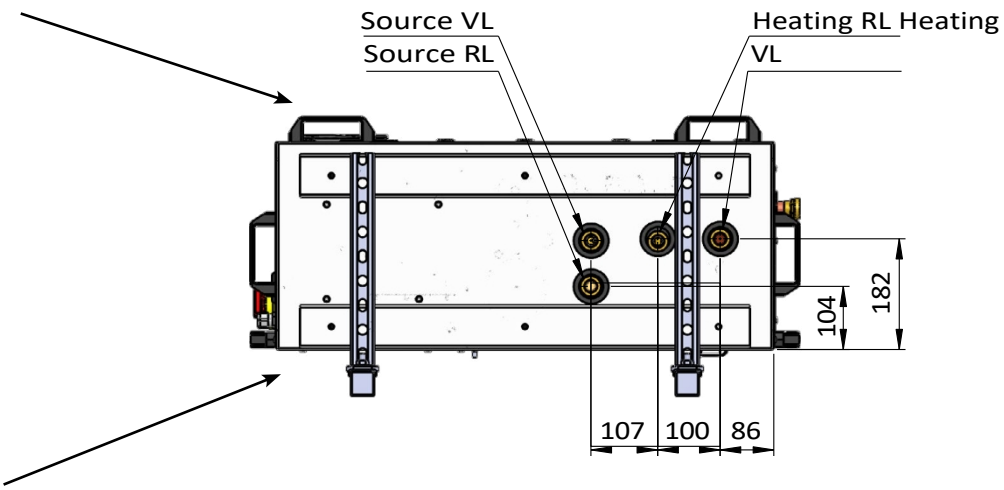
Maintenance areas:



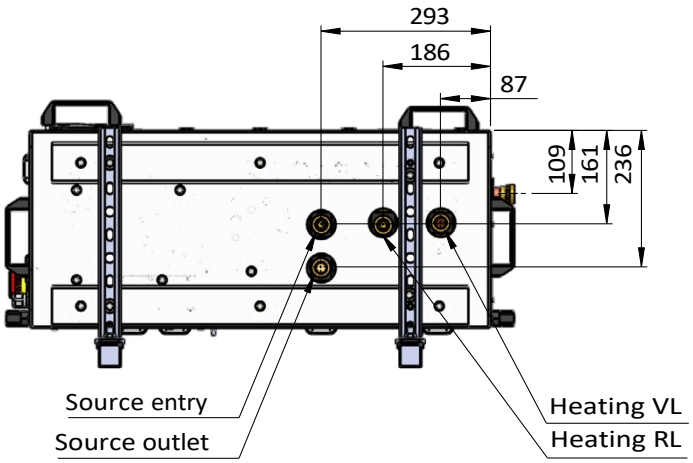
5.2 HYDRAULIC INSTALLATION

5.2.1 CONNECTION DIMENSIONS AND DIMENSIONS

Front of heat pump



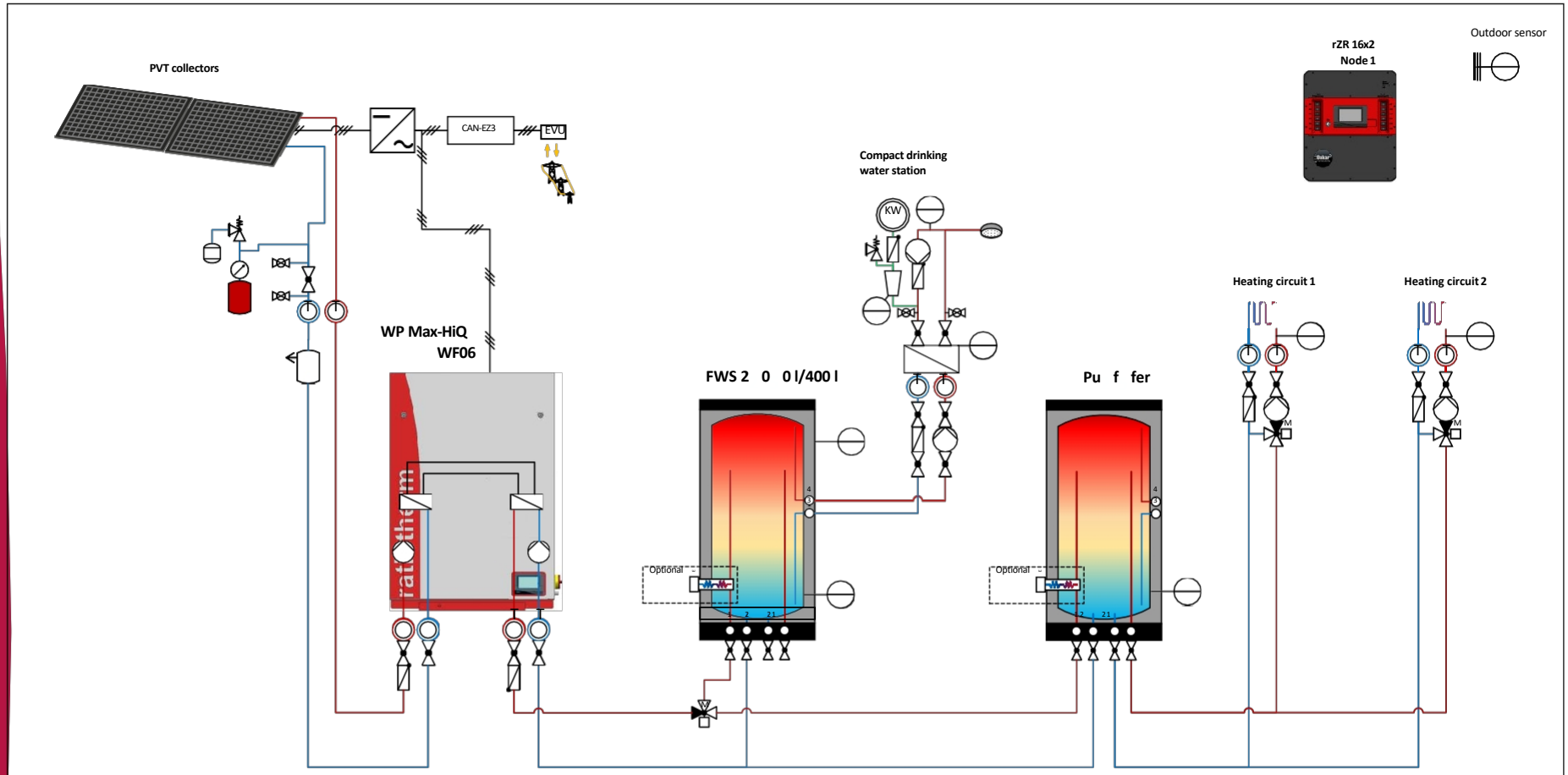
Rear side WP



View from below;
All dimensions are given in millimetres.

- Shut-off valves and vents must be provided on site.
- Sludge separators and magnetite separators must also be provided on site.
- A vibration-decoupled connection via hoses must be installed. Recommendation: Cornerstone TWS 25
- The condenser/sink pump is integrated into the device; a mains pump can be integrated as an option.
- Please fill the system via the return line.
- When tightening, please hold the connections in place!

5.2.2 HYDRAULIC DIAGRAM



	Automatic vent		Ball valve		Check valve		Check valve		Balancing valve	First letter	Subsequent letter
	Vent		Valve – general (electromotive drive)		Safety valve (corner)		Pressure gauge with display		Flow switch	T Temperature	T Temperature
	(KFE ball valve) Drain		Three-way valve (electromotive drive)		Heat exchanger (general)				Flow meter	P Pressure	I Indicator C
	Valve regulating passage		Four-way valve		Temperature, pressure or full flow sensor		Shut-off valve with thermometer			F Flow	Control A
	Output						Expansion vessel			A Output	Message
	(230V, 24V, 0-10V, pot. Free, PWM)		Heat meter				Pump			K Node	
										S Sensor	

Index	Date	Name G.	Change
02			
01			
	Signed 29 January 2025	Biber	Status V. 00.00.2000
	Checked		File

Plan designation

WP Max-HiQ WF06

Attention

This diagram is only a recommendation and does not constitute any kind of guarantee.

Claim to completeness.

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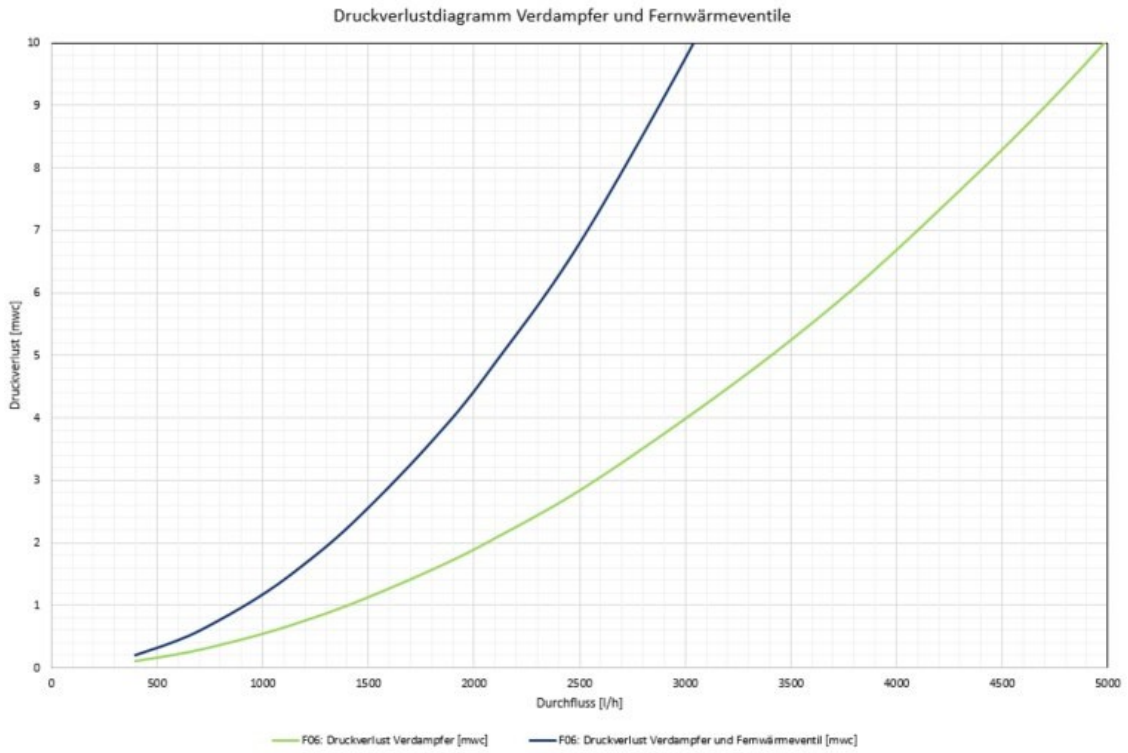
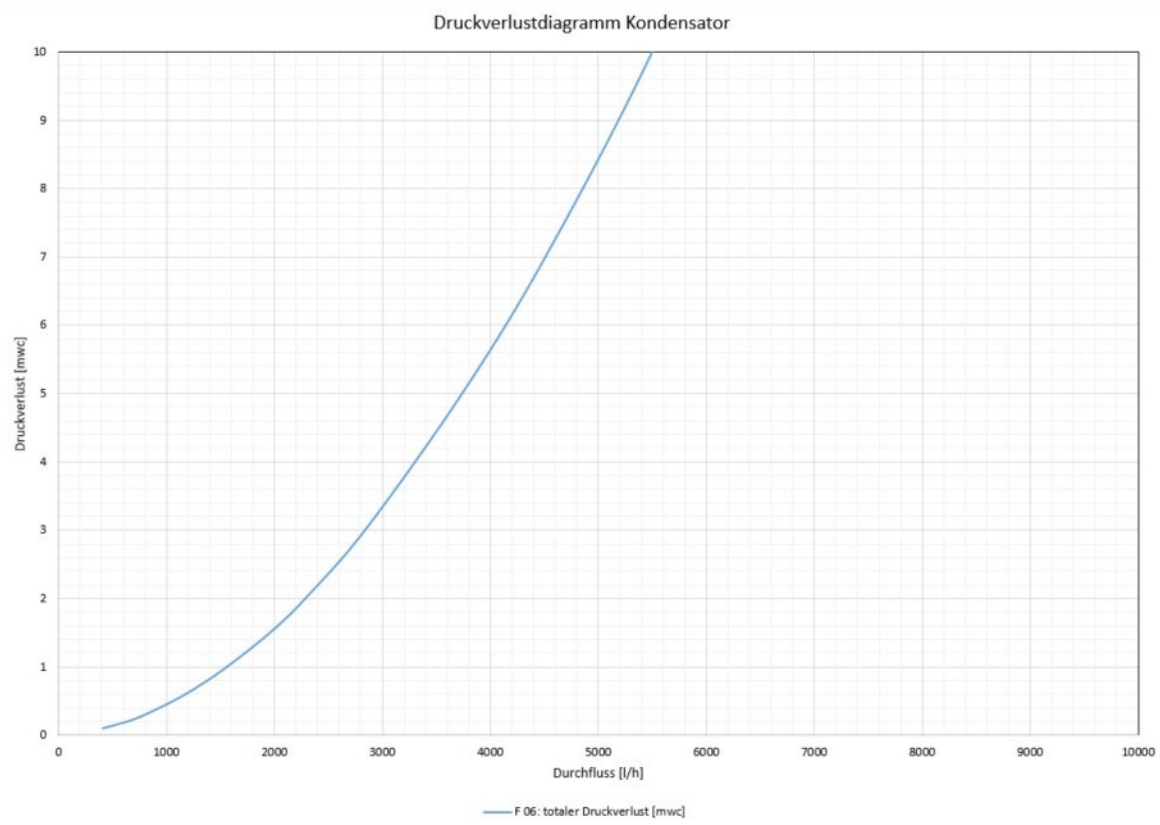
5.2.4 PRESSURE LOSS DIAGRAM EVAPORATOR



5.2.3 PRESSURE LOSS DIAGRAM CONDENSER



5.2.5 REQUIREMENTS FOR SYSTEM WATER

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	+ ◦

NOTE

- The system water may contain a maximum of 50% glycol.
- Ensure that the system water meets all requirements. If the properties are not optimal (°) for more than two criteria or if one criterion does not meet the minimum requirement (-), no warranty claim can be made.

5.2.6 GROUNDWATER REQUIREMENTS

Parameter	Unit	Concentration	Copper soldered	Stainless steel	Screwed
pH value	/	< 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	°	+	+

Depending on the water quality of the well, the use of a safety heat exchanger is recommended. Based on the water quality found, the table can be used to decide whether and which safety heat exchanger should be used. If the properties are not optimal for more than two criteria (°) or if a criterion does not meet the minimum requirement (-), the use of the respective type should be avoided.

5.3 ELECTRICAL INSTALLATION

DANGER

- The power supply to the heater comes from the building distribution system and must be protected by a separate type B residual current device with a tripping current of 300 mA (RCD), 10 ms short-time delay and with the appropriate power rating. Recommendation: ABB F204B-40/0.3

  A separate RCD must be provided for each outdoor or indoor unit!
- The residual current circuit breaker must be marked separately for the heater, e.g. as "WP". Please ensure that the phase/neutral conductor is correctly assigned during wiring.
- Ensure that the rotating field is clockwise.
- The individual phases must be fused separately.
- The device must be earthed.
- Use cable cross-sections appropriate for the power rating of the heater.
- The electrical installation must comply with the applicable standards and generally accepted rules of technology.
- Never work on the hydraulics or mechanics of the device while it is live.
- The same applies when filling or subsequently pressurising.
- Even when the main switch of the device is turned off, voltage is still present at the cable terminal.
- To completely disconnect the device from the mains, the RCD circuit breaker in the switch cabinet must be switched off.
- Maintenance work may only be carried out by an authorised person.
- Never short-circuit the safety pressure limiter of the heat pump.

5.3.1 ELECTRICAL CONNECTION POWER

WARNING

A separate type B residual current circuit breaker must be provided for the heat pump circuit!

- Only allow authorised specialists to carry out the installation and wiring.
- Errors and changes to all information, images and drawings are reserved.
- The generally applicable and recognised rules of technology and any local regulations must be observed!
- Values apply to installation in conduits up to 100 m in length.

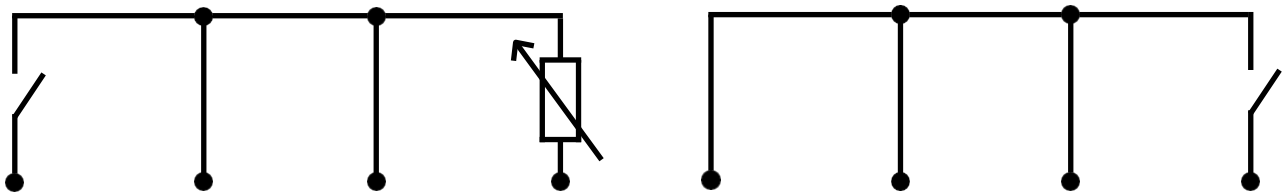
	Typ	WF06
Control voltage	Fuse	B10A 1-pole
	Cable cross-section	3G 1.5 mm²
Compressor	Fuse	B16 1-pole
	Cable cross-section	3G 2.5 mm²
Heating element	Fuse	B16 1-pole
	Cable cross-section	3G 2.5 mm²

5.3.2 TERMINAL DIAGRAM AND DESCRIPTION

- Terminal block X1 is intended for the compressor, control voltage and heating element. A 3-phase supply cable can also be used, allowing the electric heating element and heat pump to be operated in parallel.
- X3.3 and X3.4 are used to process a signal from the network operator/energy supplier. X3.3 is backwards compatible with the EVU contact.
- Please wire the EVU contact as a normally open contact (closed when EVU lock is active).

X1								
L1	L1	L1	N	N	N	PE	PE	PE
Compressor	Heating element	Control	Compressor	Heating element	Control	Compressor	Heating element	Control
	Bridged, with separate supply line Remove bridge!			Bridged, with separate supply line Remove bridge!				
230 V mains supply cable								

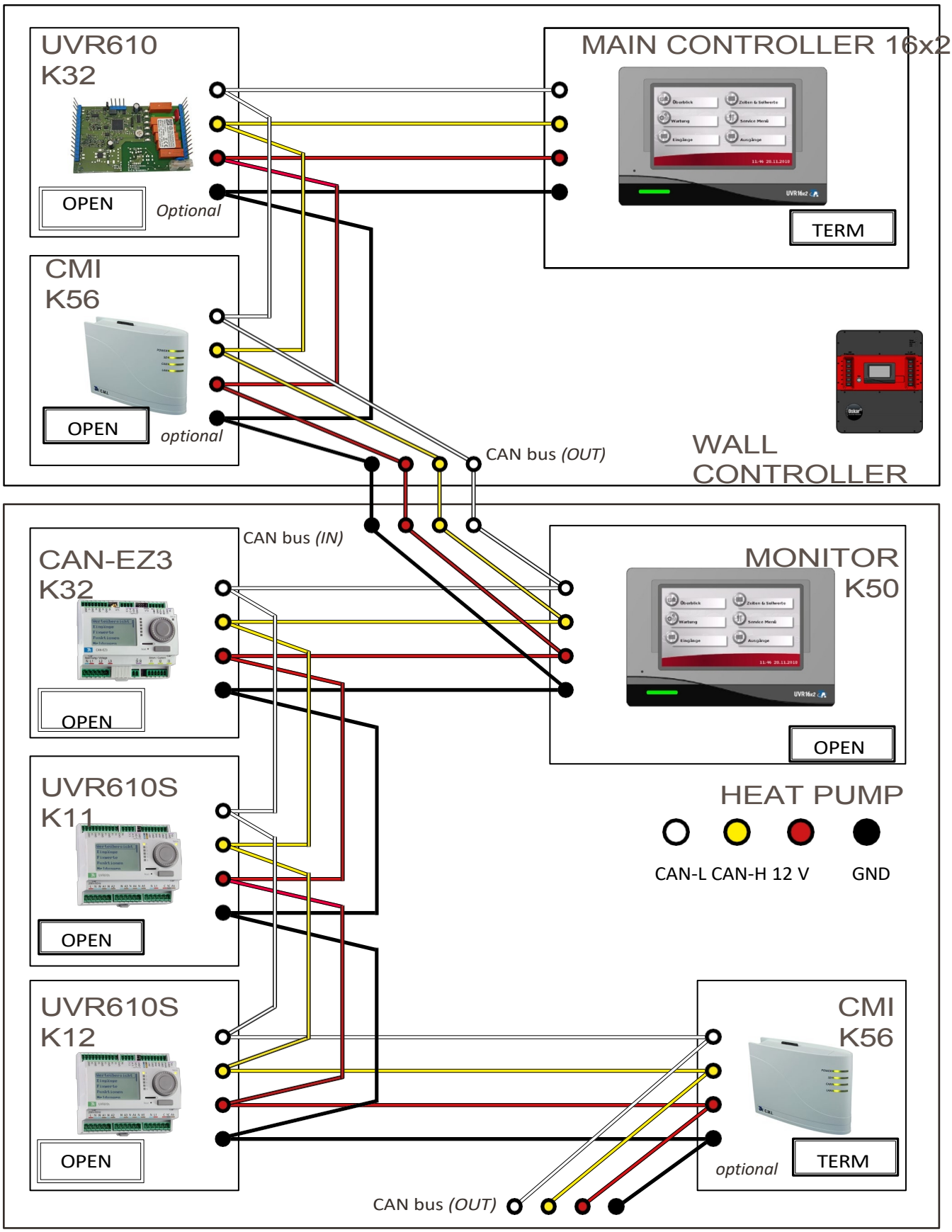
X2					
1	N	PE	2	N	PE
230 V Fault output			230 V output source pump		



X3							
1	GND	GND	2	3	GND	GND	4
Request contact (potential-free)		Speed signal (0 - 10 V)		Smart Grid 1 / EVU		Smart grid 2	

X3							
GND	12 V	CAN-H	CAN-L	GND	12 V	CAN-H	CAN-L
CAN bus *(IN)* (Connection to RT-GLT)				CAN bus *(OUT)* (Connection to RT-GLT)			

5.3.3 CAN BUS PLAN (STANDARD)



CAN bus (OUT) terminal, if the heat pump is not the last participant. Schematic representation. In reality, the CAN bus (IN) and CAN bus (OUT) are located next to each other.

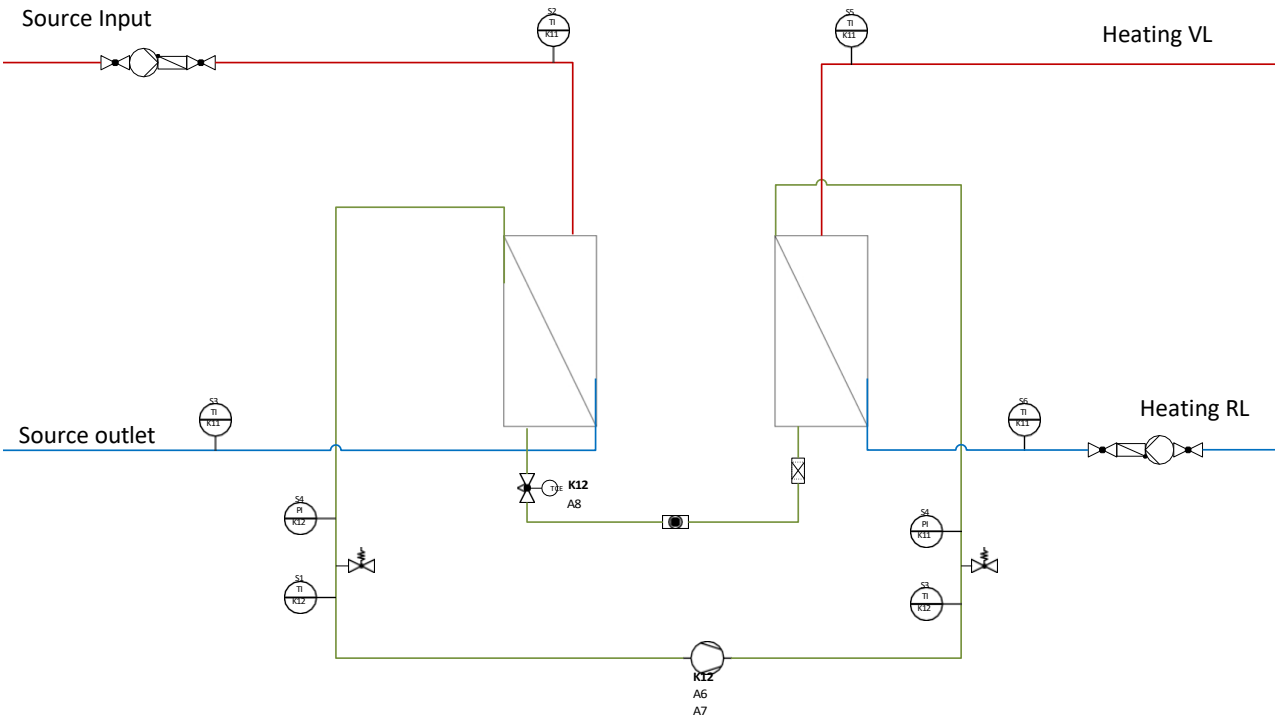
5.3.4 CAN BUS PLAN DESCRIPTION

Unitronic CAN bus colours

NOTE

- Ensure that the CAN bus is wired correctly! No star-shaped network!
- Set up the network as a chain.
- The total load of all devices must not exceed 6 watts.
- The jumper for the termination must be set to TERM on the first and last CAN bus participants.
- Participants in between must be set to OPEN.
- Use a shielded, 4-pin cable!
- Follow the instructions in the technical alternative.
- Non-binding cable recommendation: Unitronic Bus CAN FD P 2x2x0.5

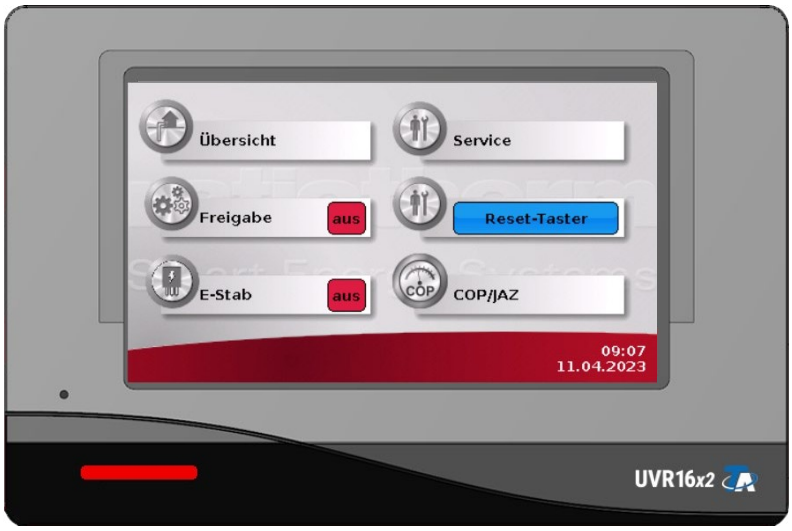
5.4 COOLING CIRCUIT AS DIAGRAM



	Automatic air vent		Ball valve		Check valve		Check flap		Balancing valve	First letter		Second letter	
	Ventilation	M	Valve – general (electric motor drive)		Safety valve (corner)		Pressure gauge with display		Flow switch	T	Temperature	T	Temperature
	(KFE ball valve) Drain	M	Three-way valve (electric motor drive)		Heat exchanger (general)		Shut-off valve with thermometer		Flow meter	P	Pressur e	I	Indicator
	Regulating valve Passage		Four-way valve	S00 ∑ K00	Temperature, pressure or volume flow sensor		Expansion vessel			F	Flow	C	Control
A00 K00	Output (230V, 24V, 0-10V, potential-free, PWM)	∑ kWh	Heat meter				Pump			A	Outlet	A	Signal
										K	Node		
										S	Sensor		

6. OPERATION

6.1 CONTROLLER OPERATION



- The rZR16x2 is operated via a 4.3" touch screen (= touch-sensitive screen).
- For easier handling, a stylus is provided, which is inserted above the controller (under the cover).
- The stylus can be used to tap on control surfaces and scroll through the display view by sliding the scroll bar.
- Selecting one of the windows takes you to the corresponding submenu.

The indicator light can display different statuses:

- Red steady light - The controller is booting up (=start-up routine after switching on, a reset or update) or displaying a message that has not yet been deleted.
- Orange steady light - Hardware initialisation after booting.
- Green steady light - Normal operation of the controller.
- Green "flashing" - After hardware initialisation, the controller waits approx. 30 seconds to obtain all the information necessary for operation (sensor values, network inputs).

Control elements:

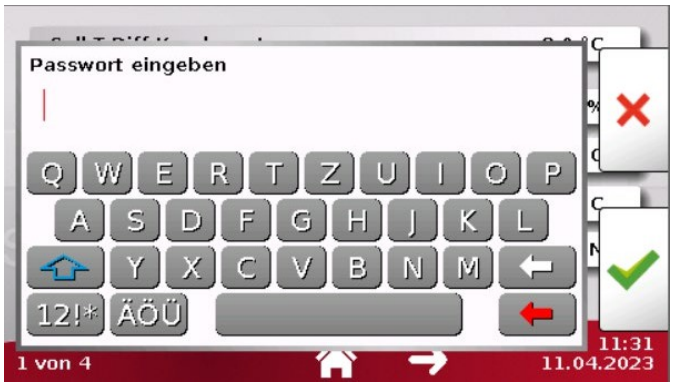
Previous page | Main menu | Next page

Main switch:

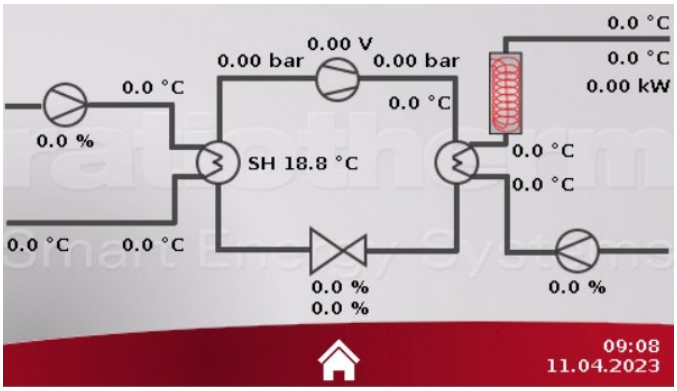
ON/OFF switch

6.1.1 MENU STRUCTURE

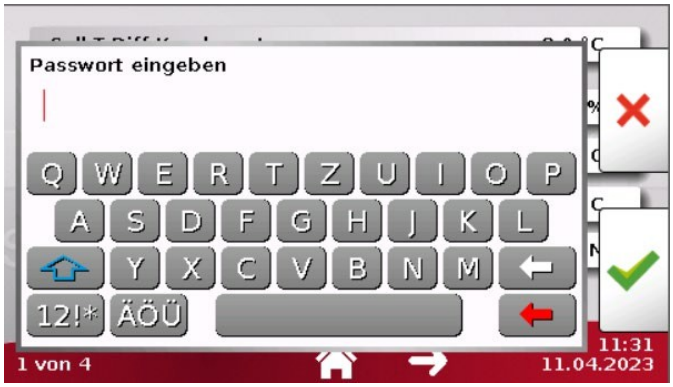
Designation	Symbol	Description
On this surface Press		Yellow frame
Shows the path		Yellow arrow
Shows the path on the next page		Yellow line



- Enter password
- Enter the specialist password to access the specialist menu.

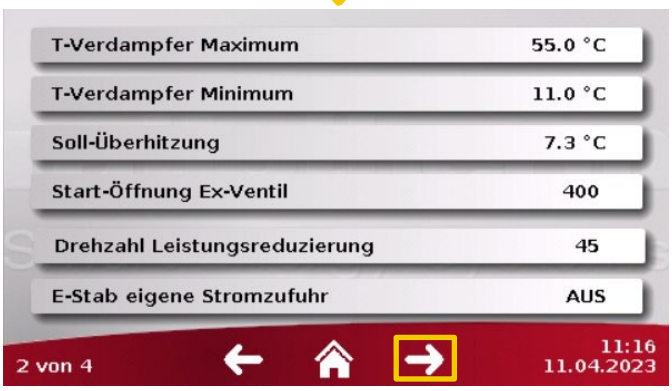



Übersicht
Service
Freigabe
aus
Reset-Taster
E-Stab
aus
COP/JAZ
09:07
11.04.2023


Passwort eingeben
1 von 4
11:31
11.04.2023


Fixwerte
Inbetriebnahme starten
Handbetrieb
nicht aktiv
12:02
31.01.2025

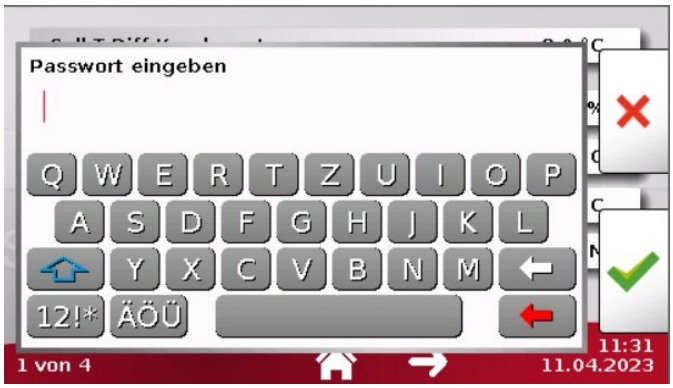

Soll-T-Diff Kondensator 8.0 °C
Soll-Drehzahl Verdi. Fix 75.0 %
Soll-T-Diff Verdampfer 3.5 °C
T-Soll Verda. Eintritt 30.0 °C
0-10V Temperaturvorgabe EIN
1 von 4
11:15
11.04.2023


T-Verdampfer Maximum 55.0 °C
T-Verdampfer Minimum 11.0 °C
Soll-Überhitzung 7.3 °C
Start-Öffnung Ex-Ventil 400
Drehzahl Leistungsreduzierung 45
E-Stab eigene Stromzufuhr AUS
2 von 4
11:16
11.04.2023

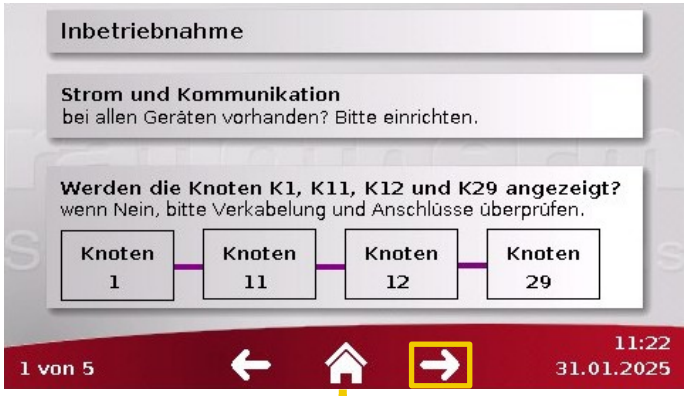

Durchflusskontrolle AUS
Grenze Hochdruck 24.30 bar
Grenze Niederdruck 0.20 bar
Grenze Frostschutz 8.0 °C
ND Notlauf 0.30 bar
HD Notlauf 23.10 bar
3 von 4
11:20
31.01.2025


T-Verd.-Austritt Notlauf 110.0 °C
Zeit ND/HD-Fehler 05m 00s
Zeit Frostschutz-Fehler 07m 00s
Zeit bis Störung 01h 00m
4 von 4
11:21
31.01.2025


Übersicht
Service
Freigabe
aus
Reset-Taster
E-Stab
aus
COP/JAZ
09:07
11.04.2023

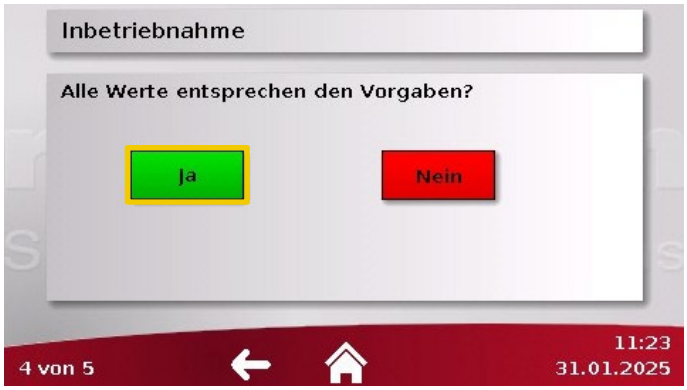

Passwort eingeben
1 von 4
11:31
11.04.2023

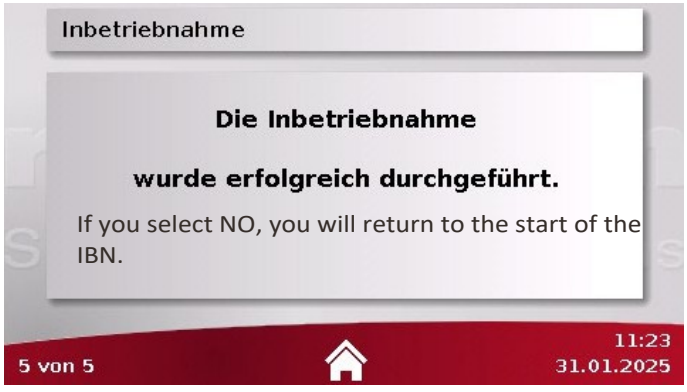

Fixwerte
Inbetriebnahme starten
Handbetrieb
nicht aktiv
12:02
31.01.2025

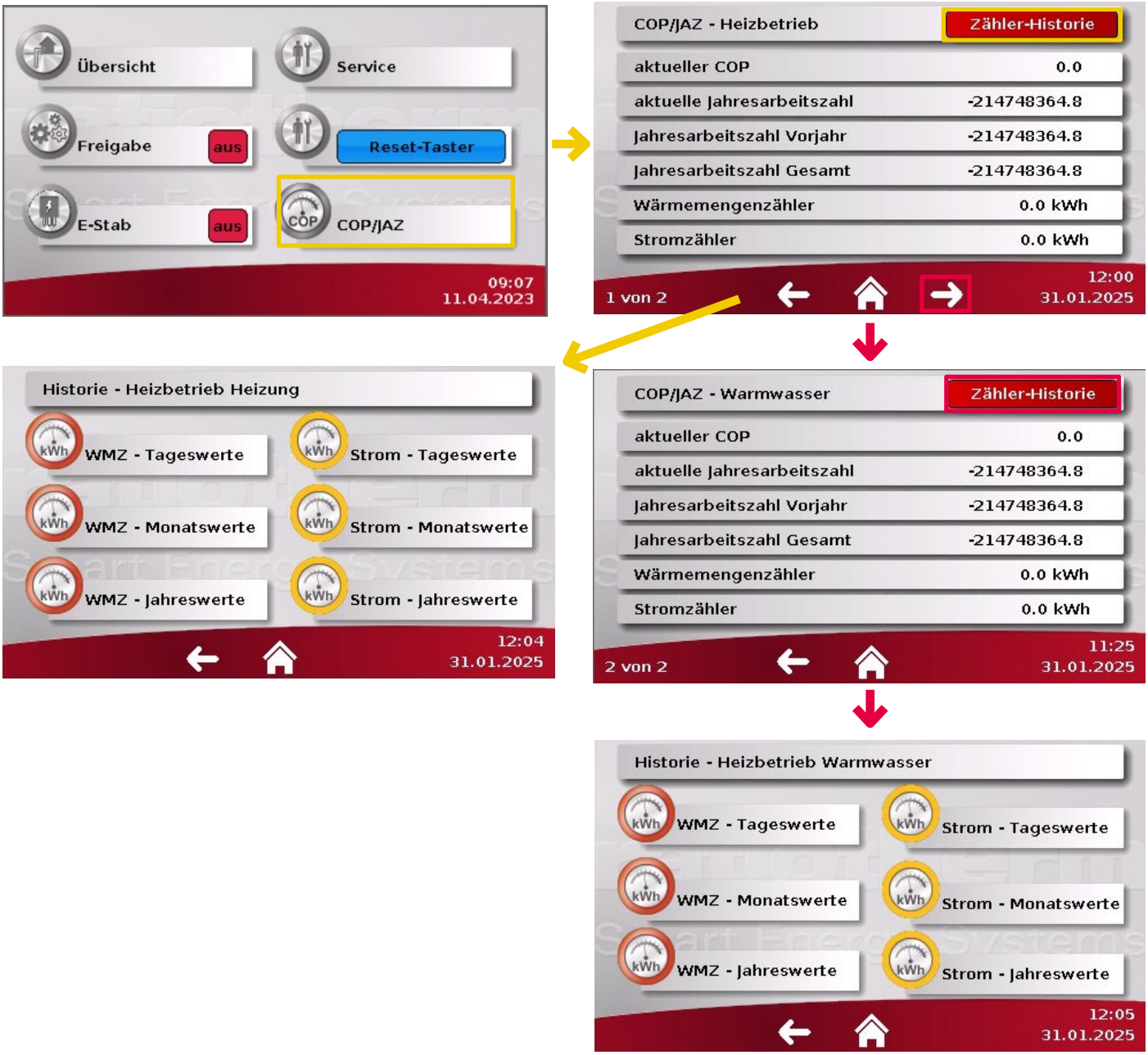

Inbetriebnahme
Strom und Kommunikation
bei allen Geräten vorhanden? Bitte einrichten.
Werden die Knoten K1, K11, K12 und K29 angezeigt?
wenn Nein, bitte Verkabelung und Anschlüsse überprüfen.
Knoten 1
Knoten 11
Knoten 12
Knoten 29
1 von 5
11:22
31.01.2025


Inbetriebnahme
Quellseite mit Frostschutz gefüllt?
Ist Betriebsdruck >1500 mbar?
0.0 mbar
Pumpen händisch aktivieren
K11 A3 und K11 A10 auf "Hand Ein"
ca. 30 Sekunden warten.
K11 A3
K11 A10
Auto
Auto
Ist Durchfluss >1,0 m3/h?
0 l/h
wenn nein, Absperrungen überprüfen und erneut entlüften.
Pumpen wieder in den Autobetrieb überführen.
2 von 5
11:22
31.01.2025

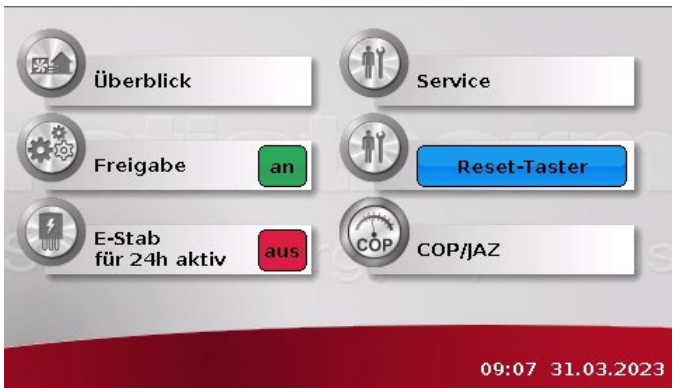

Inbetriebnahme
Heizungsseite gefüllt?
Ist Betriebsdruck >1000 mbar?
0.0 mbar
Pumpen händisch aktivieren
K11 A1 und K11 A9 auf "Hand Ein"
ca. 30 Sekunden warten.
K11 A1
K11 A9
Auto
Auto
Ist Durchfluss >0,7 m3/h?
0 l/h
wenn nein, Absperrungen überprüfen und erneut entlüften.
Pumpen wieder in den Autobetrieb überführen.
3 von 5
11:23
31.01.2025


Inbetriebnahme
Alle Werte entsprechen den Vorgaben?
Ja
Nein
4 von 5
11:23
31.01.2025


Inbetriebnahme
Die Inbetriebnahme
wurde erfolgreich durchgeführt.
If you select NO, you will return to the start of the IBN.
5 von 5
11:23
31.01.2025



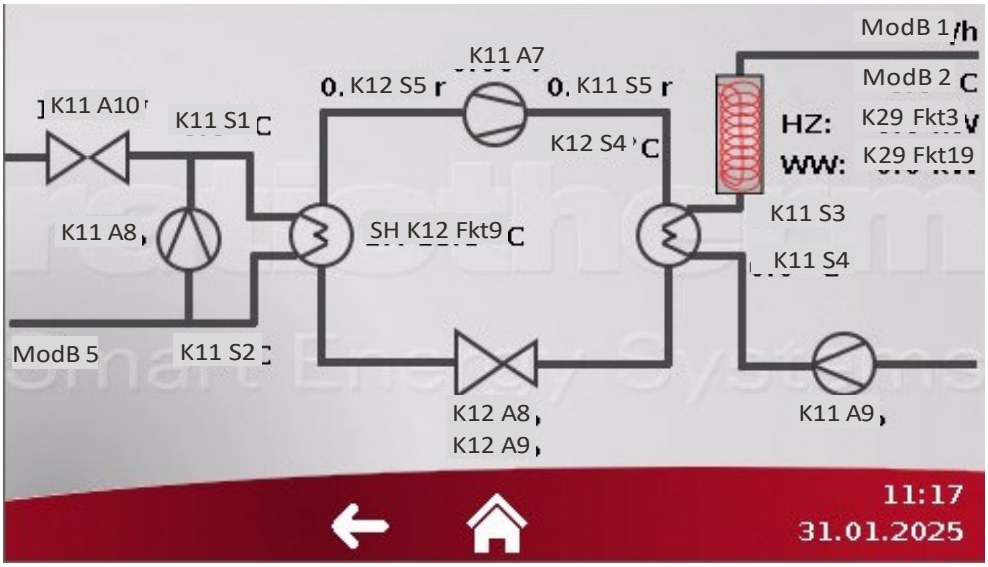
6.1.2 MENU DESCRIPTION



- Enable: ON
- Heat pump may start up when requested.

- E-rod: ON
- The E-rod can be switched on independently of the bivalence temperature.

6.1.3 HEAT PUMP OVERVIEW



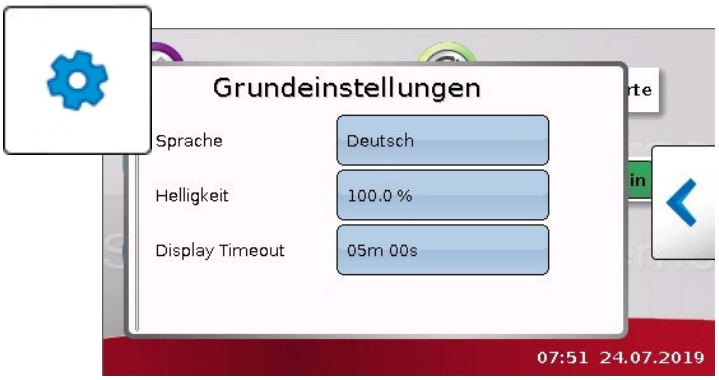
K11 S1	Temp. Evaporator inlet
K11 S2	Temp. evaporator outlet
K11 S3	Heat pump flow temperature
K11 S4	Temp. Heat pump return
K11 S5	High pressure
K11 A7	Compressor 0 - 10 V
K11 A8	Evaporator pump PWM
K11 A9	Condenser pump PWM
K11 A10	District heating valve 0 - 10 V
K12 S4	Temp. compressor outlet
K12 S5	Low pressure
K12 A8	Ex-valve 1 PWM
K12 A9	Ex valve 2 PWM
SH K12 Fkt9	Actual overheating
K29 Fkt3	WMZ Heating mode
K29 Fkt19	WMZ Hot water mode
ModB 1	Heating volume flow
ModB 2	Heat pump flow temperature
ModB 5	Primary flow

Intermediate menu

Press and hold the display for 5 seconds to access the intermediate menu, which allows you to adjust the basic settings or switch to the control menu.

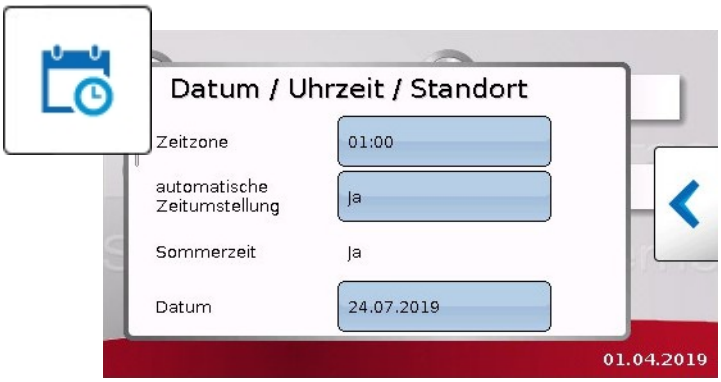
Controller menu

Link to the controller menu



Basic settings

You can set the language, brightness and display timeout.



Date/time/location

Set the time zone and date

6.2 SETTINGS

Fixed values Specialist	Description	Setting options	Preset Settings
Target T-Diff Condenser	Target temperature difference at the condenser	1 °C to 10 °C	8 °C
Target speed Compressor	Target speed of the compressor when no external speed signal is present.	0% to 100	75
Target T-Diff evaporator	Setpoint temperature difference between evaporator on entrance and exit	1°Cto8°C	3.5 °C
T-setpoint evaporator inlet	Target evaporator inlet temperature (mixed temperature injection circuit)	10°Cto30°C	30 °C
0-10V Temperature setpoint	If value ON, the signal is interpreted as target temp. inter- If value OFF, then as target speed.	OFF/ON	ON
T-evaporator maximum	Maximum permissible evaporator temperature	35 °C to 70 °C	55 °C
T-evaporator minimum	Minimum permissible evaporator temperature	8 °C to 20 °C	11 °C
Target overheating to10°C	Target superheat of the expansion valve in the outdoor unit Part during normal operation	0°Cup	5.3 °C
Start opening of expansion valve	Start opening of the expansion valve in the outdoor unit	Levels 0 to 500	Level 280
Speed Power reduction	Compressor speed during power reduction is active.	stages0to100	Stage 45
E-bar own power supply	Enabling parallel operation of E-rod and compressor. Only possible if the E-rod has its own power supply. separate power supply.	OFF / ON	OFF
Flow control ~~High-pressure limit~~	~~Minimum flow rate deactivated.~~ When ON, the heat pump is switched off if the temperature falls below a Maximum pressure at which a high-pressure fault or	OFF/ON 20 bar to	OFF 24 bar
Low pressure limit	Minimum pressure at which an LP error or LP fault is triggered.	0.8 bar to 5 bar	1 bar
Frost protection limit	Minimum temperature at which a frost protection error or a frost protection malfunction is triggered.	4 °C to 12 °C	8 °C
ND Emergency operation	Minimum pressure at which a temporary reduction in performance is triggered.	1 bar to 10 bar	1.5 bar
HD emergency mode	Maximum pressure at which a temporary reduction in performance is triggered.	15 bar to 25 bar	22 bar
T.-Verd. outlet emergency operation compressor, Time ND/HD error	Maximum discharge temperature of the at which a temporary power reduction is triggered. Time lock for restart if LV/HV fault has occurred.	80 °C to 130 °C ~~0 to 24 h~~	110 °C ~~5 min~~
Time frost protection error	Time lock for restart if frost protection error has occurred.	~~0 to 24 hours~~	~~7 min~~
Time until malfunction	If three faults occur within one hour, the machine switches off.	~~0 to 24 hours~~	~~60 min~~

7. MAINTENANCE

Regular inspection of the appliance by a recognised, qualified and ratiotherm-authorised specialist is essential to ensure long-term operational readiness, operational safety, reliability and a long service life. We recommend having maintenance carried out annually.

NOTE We recommend taking out a maintenance contract.

WARNING

Improper handling

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

For maintenance work, commission a recognised, qualified specialist tradesman (specialist personnel) authorised by ratiotherm GmbH & Co. KG.

7.1 TROUBLESHOOTING

7.1.1 HIGH PRESSURE

Error message	HD error	HD malfunction
Error description	High pressure protection of the refrigeration circuit has been triggered.	
Behaviour of the heat pump	• System locked for 5 minutes • If 3 errors occur within 60 minutes, switch to HD fault	• System lockout • Unlock by pressing the reset switch
Cause of error	• Lack of heat dissipation • Blockage of the refrigeration circuit • Heat sink too hot	
Troubleshooting	• Check the sink temperature or target temperatures • Temperatures below max. water temperature according to type plate • Check heat dissipation to the medium (pump, heat exchanger) • Vent and check the heating pressure • Refrigeration check	

7.1.2 LOW PRESSURE

Error message	ND error	ND fault
Error description	Low pressure protection of the refrigeration circuit has been triggered.	
Behaviour of the heat pump	• System locked for 5 minutes • If 3 faults occur within 60 minutes, switch to HD fault	• System lockout • Unlock by pressing the reset switch
Cause of error	• Heat absorption too cold • Insufficient refrigerant charge • Blockage of the refrigeration circuit	
Troubleshooting	• Check the sink temperature or target temperatures • Temperatures below max. water temperature according to type plate • Check the heat output to the medium (pump, heat exchanger) • Vent and check the heating pressure • Refrigeration check	

7.1.6 FROST PROTECTION

Error message	Frost protection error	Frost protection malfunction
Error description	Frost protection limit of the hydraulic circuit has been triggered	
Behaviour of the heat pump	• System lockout for 10 minutes • If 3 errors occur within 60 minutes Switch to frost protection fault	• Lock the system • Unlock by pressing the reset switch
Cause of error	• Lack of heat absorption in the inner section • Heat source too cold	
Troubleshooting	• Check the heat source (temperatures, pumps, heat exchangers) • Vent	

7.1.3 FAN

Error message	Fan malfunction
Fault description	Fan fault contact does not close.
Behaviour of the heat pump	• System lock • Unlocking by pressing the reset switch
Cause of error	• No power supply • Blockage of the fan wheel • Other fan malfunction
Troubleshooting	• Check the power supply • Check that the fan wheel is free to move • Replace the fan

7.1.4 INVERTER

Error message	Inverter malfunction
Fault description	Inverter fault contact does not close.
Behaviour of the heat pump	• System lock • Unlocking by pressing the reset switch
Cause of fault	• No power supply • Other inverter malfunction
Troubleshooting	• Check the power supply (right-hand field, phase failure) • Check the error code (see appendix)

7.1.5 HOT GAS

Error message	Hot gas
Error description	Compressor outlet temperature is too high for 20 minutes.
Behaviour of the heat pump	• System lockout • Unlocking by pressing the reset switch
Cause of error	• Compressor outlet temperature too high for 20 minutes
Troubleshooting	• Check sensor plausibility • Refrigeration check

7.2 CLEANING

7.2.1 CLEANING THE HEATING SIDE

- Cleaning: to be carried out by a plumber
- Flushing device: connection to the condenser's supply and return lines
- Condenser: flush against the normal flow direction (note gravity brake)

7.2.2 CLEANING THE HEAT PUMP

- The units can be cleaned with a standard household cleaner (see below for exceptions).
- Check the air inlets and outlets (regularly check the intake and exhaust hood grilles for adhering leaves and other dirt).
- Sweep away any dirt. The fan should not be running while sweeping, as otherwise the dirt could be sucked into the device.

NOTE

Improper cleaning

Using the wrong cleaning agents can damage the appliance surfaces. Please note the following:

- Do not use abrasive or cleaning agents that could damage the plastic casing, fittings or controls.
- Do not use sprays, solvents or chlorine-based cleaning agents.
- 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

Limescale deposits can cause the safety valve to stick.

Operate the safety valve of the heating system manually once a month.

7.3 LEAK TEST OF THE HEAT PUMP

In accordance with Regulation (EC) No. 842/2006 on certain fluorinated greenhouse gases, the heat pump must be checked regularly for leaks. This check can be carried out by a recognised and qualified specialist (with certification as a refrigeration engineer or 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) "Refrigerating machines and systems - Leak tightness of refrigeration systems and heat pumps - Leak detection/leak testing"

NOTE

Leak test

The test must be carried out in accordance with the system logbook. The results of the test must be documented in accordance with regulations and kept for at least 5 years. A system log can be found in the "System logbook for heat pumps".

7.4 SYMBOLS ON THE DEVICE

In order to provide staff with important information and warnings, standardised safety symbols based on the DIN EN ISO 7010, DIN ISO 3864 and DIN ISO 7000 standards were used.
These safety signs are clearly visible to everyone, must be kept in a recognisable and legible condition and must be replaced if necessary.
As the design of the device and the complexity of the production processes do not allow the use of persons with disabilities (e.g. with visual impairments) for safety reasons, the manufacturer has decided not to affix tactile symbols. The requirements for personnel and the technical qualifications required to operate the device are described in chapter "2.3 Target groups" on page 6.

7.5 MAINTENANCE PLAN

DANGER! Do not operate the device if there are any defects.

Maintenance work	Measures	Interval
Operators and users		
Visual and functional inspection	• Check the device for visible defects and mechanical damage. • Perform a visual inspection of the operating elements. • Perform a visual and functional inspection of all safety devices.	Monthly
Cleaning the device	• Observe the information in Chapter "7.2 Cleaning" on the previous page.	As required
Qualified		
Inspection of electrical components Inspection of	• Check the electrical components for damage. • Carry out repairs if necessary.	Annuall
hydraulic components Inspection of refrigeration	• Check the hydraulic components for damage. • Carry out repairs if necessary.	y
components Inspection of safety devices	• Check the refrigeration components for damage. • Carry out repairs if necessary.	Annuall
	• Perform a visual and functional inspection of all safety devices.	y
Checking symbols on the device	• Document these checks.	Annuall
Checking purchased components	• Check the symbols on the device. • Renew the symbols if necessary.	y
	• Observe the manufacturer's documentation for purchased components.	Annually
		Annually
		Annually

8. DECOMMISSIONING

When the heat pump is taken out of service, it must only be dismantled by qualified personnel. Hazardous materials and waste must be disposed of properly. When dismantling the heat pump, observe the instructions at the beginning of the original operating instructions and the safety instructions listed below.

DANGER

Fatal electric shock

There is a risk of fatal electric shock from electrical equipment.

Disconnect the device from the power supply before decommissioning/dismantling.

Secure the device against being switched back on.

8.1 TEMPORARY DECOMMISSIONING

NOTE

Improper decommissioning

Improper decommissioning of the device may result in damage to components and functional impairments.

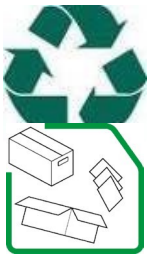
Switch off the device at the main switch.

Please note the following information:

- Frost can cause damage to the device.
- 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 the final decommissioning/disposal. Environmental requirements regarding the recovery, reuse and disposal of operating materials and components in accordance with current standards must be observed.



NOTE

Improper disposal

Improper disposal of the device can cause environmental pollution and/or damage.

Dispose of electrical and electronic components and the refrigerant from the heat pump 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	Email	info@ratiotherm.de
Wellheimer Straße 34	Telephone:	+49 (0) 8422/9977-0
91795 Dollnstein	Website	www.ratiotherm.de

that the device:

Device name: **WP Max-HiQ WF06, WP Max-LoQ WF06**

Year of manufacture: see type plate

Intended use: The heat pump uses heat from various sources to provide direct heating support and hot water preparation.

The version supplied 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 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 Member States relating to the making available on the market of pressure equipment

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

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

Applied harmonised standards:	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

Documents to be compiled:

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 the standard DIN EN ISO/IEC 17050-1 "Conformity assessment – Declaration of conformity by suppliers – Part 1 : General requirements" have been observed in issuing this declaration of conformity. This declaration shall cease to be valid if any changes are made to the device without our consent. Any unauthorised changes in this sense shall exclude any liability on our part.

Dollnstein, _____ Signature of authorised representative: _____ Details of the person authorised to issue this declaration on behalf of the manufacturer or its authorised representative:

Name: _____ Position: _____

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

You can find us here

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