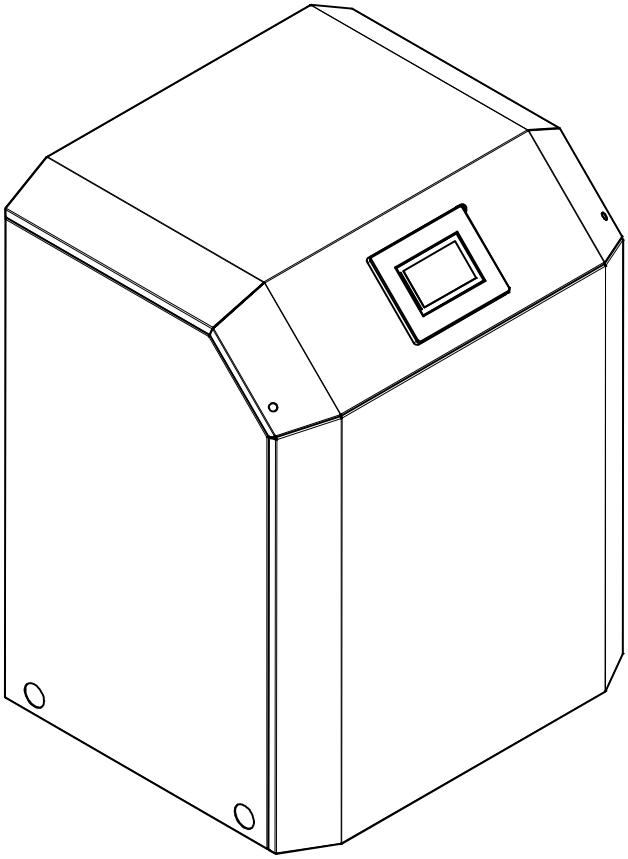
Glen Dimplex Deutschland

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SI 6TU
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Montage- und Gebrauchsanweisung

Sole/Wasser-Wärmepumpe für Innenaufstellung

Installation and Operating Instruction

Brine-to-Water Heat Pump for Indoor Installation

Instuctions d'installation et d'utilisation

Pompe à chaleur eau glycolée-eau pour installation intérieure

Bestell-Nr. | Order no. | No de commande: 452235.66.22b

DE | EN | FR · FD 0507

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1 Safety notes

1.1 Symbols and markings

Particularly important information in these instructions is marked with CAUTION! and NOTE.

⚠ CAUTION!

Immediate danger to life or danger of severe personal injury or significant damage to property.

i NOTE

Risk of damage to property or minor personal injury or important information with no further risk of personal injury or damage to property.

1.2 Intended Use

This device is only intended for use as specified by the manufacturer. Any other use beyond that intended by the manufacturer is prohibited. This requires the user to abide by the relevant project planning documents. Please refrain from tampering with or altering the device.

1.3 Legal Regulations and Directives

This heat pump is designed for use in a domestic environment according to Article 1, Paragraph 2 k) of EU directive 2006/42/EC (machinery directive) and is thus subject to the requirements of EU directive 2014/35/EU (low-voltage directive). It is thus also intended for use by non-professionals for heating shops, offices and other similar working environments, in agricultural establishments and in hotels, guest houses and similar / other residential buildings.

This heat pump conforms to all relevant DIN/VDE regulations and EU directives. Refer to the EC Declaration of Conformity in the appendix for details.

The heat pump must be connected to the power supply in compliance with all relevant VDE, EN and IEC standards. Any further connection requirements stipulated by local utility companies must also be observed.

The heat pump is to be connected to the heat source system and the heating system in accordance with all applicable regulations.

This unit can be used by children aged 8 and over and by persons with limited physical, sensory or mental aptitude or lack of experience and/or knowledge, providing they are supervised or have been instructed in the safe use of the unit and understand the associated potential dangers.

Children must not play with the device. Cleaning and user maintenance must not be carried out by children without supervision.

⚠ CAUTION!

When operating or maintaining a heat pump, the legal requirements of the country where the heat pump is operated apply. Depending on the refrigerant quantity, the heat pump must be inspected for leaks at regular intervals by a certified technician, and these inspections must be recorded.

More information can be found in the accompanying log book.

1.4 Energy-Efficient Use of the Heat Pump

By operating this heat pump you are helping to protect our environment. Both the heating system and the heat source must be properly designed and dimensioned to ensure efficient operation. It is particularly important to keep water flow temperatures as low as possible. All connected energy consumers should therefore be suitable for low flow temperatures. Raising the heating water temperature by 1 K corresponds to an increase in energy consumption of approx.
2.5 %. Low-temperature heating systems with flow temperatures between 30 °C and 50 °C are particularly well-suited for energy-efficient operation.

2 Purpose of the Heat Pump

2.1 Application

The brine-to-water heat pump is to be used exclusively for the heating of heating water. It can be used in new or previously existing heating systems. A mixture of water and antifreeze (brine) is used as the heat transfer medium in the heat source system. Borehole heat exchangers, ground heat collectors or similar systems can be used as the heat source system.

The circulating pump(s) must be controlled using the heat pump manager.

If function-relevant or safety-relevant pump functions, such as integration of the heat pump into the building management system, are not supported, then this can result in loss of warranty and cause a write-off of the heat pump.

The circulating pump(s) and the heat pump controller must always be ready for operation.

The specifications in the technical documents must be followed, particularly limit values for the minimum and – if available – maximum warm/cold water volume flow.

2.2 Operating Principle

The heat generated by the sun, wind and rain is stored in the ground. This heat stored in the ground is collected at a low temperature by the brine circulating in the ground collector, ground coil or similar device. A circulating pump then conveys the “heated” brine to the evaporator of the heat pump. There the heat is given off to the refrigerant in the refrigerating cycle. This cools the brine so that it can once again absorb thermal energy in the brine circuit.

The refrigerant is drawn in by the electrically driven compressor, compressed and “pumped” to a higher temperature level. The electrical power needed to run the compressor is not lost in this process. Most of it is absorbed by the refrigerant.

Subsequently, the refrigerant is passed through the condenser where it transfers its heat energy to the heating water. Depending on the set operating point (thermostat setting), the heating water is thus heated up to a max. of 62 °C.

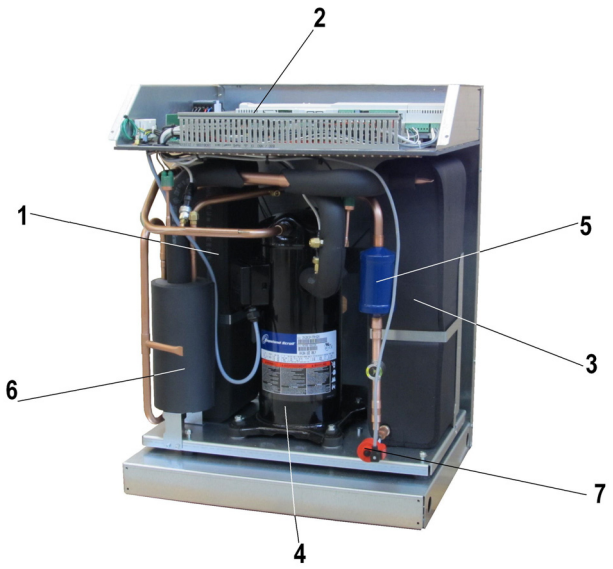
3 Basic Device

The basic device consists of a heat pump for indoor installation wired ready for use with metal casing, switch box and integrated heat pump manager. The refrigeration circuit is "hermetically sealed" and contains the fluorinated refrigerant R410A included in the Kyoto protocol. Information on the GWP value and CO_2 equivalent of the refrigerant can be found in the chapter Device information. The refrigerant is CFC-free, non-ozone depleting and non-combustible.

All components required for the operation of the heat pump are located on the control panel. An external temperature sensor including fixing accessories and a dirt trap are supplied with the heat pump. The supply for the load current and the control voltage must be installed by the customer.

The supply lead of the brine circulating pump (to be provided by the customer) must be connected to the control panel. If required, a motor protection device and/or contactor must be provided here.

The customer must provide both the heat source system and the brine circuit manifold.

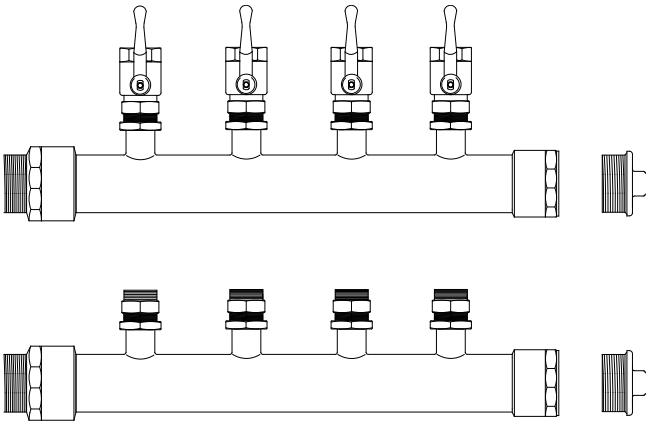


1) Liquifier
2) Control panel
3) Evaporator
4) Compressor
5) Filter dryer
6) Economizer
7) Expansion valve

4 Accessories

4.1 Brine Circuit Manifold

The brine circuit manifold merges the individual collector loops of the heat source system into a single main pipe which is connected to the heat pump. Integrated ball valves allow the individual brine circuits to be shut off for de-aeration purposes.



4.2 Remote control

A remote control adds convenience and is available as a special accessory. Operation and menu navigation are identical to those of the heat pump manager. Connection takes place via an interface (special accessories) with RJ 12 Western plug.

NOTE

In the case of heating controllers with a removable operating element, this can also be used directly as a remote control.

4.3 Building management technology

The heat pump manager can be connected to a building management system network via supplementation of the relevant interface plug-in card. The supplementary installation instructions of the interface card must be consulted regarding the exact connection and parameterisation of the interface.

The following network connections can be made on the heat pump manager:

- Modbus
- EIB, KNX
- Ethernet

⚠ CAUTION!

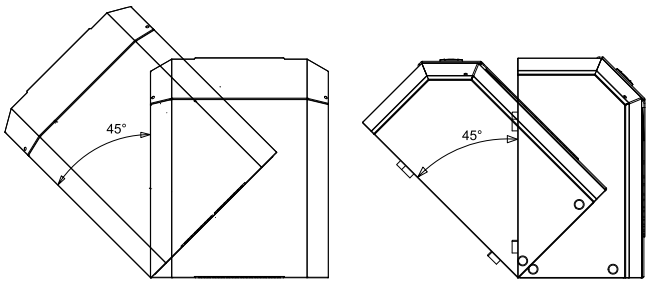
If the heat pump or circulating pump is controlled externally, an flow rate switch is required to prevent the compressor from being switched on when there is no volume flow.

5 Transport

A lift truck is suited for transporting the unit on a level surface. Carrying straps may be used if the heat pump needs to be transported on an uneven surface or carried up or down stairs. These straps can be passed directly underneath the wooden pallet.

⚠ CAUTION!

The heat pump is not secured to the wooden pallet.



⚠ CAUTION!

The heat pump must not be tilted more than 45° (in any direction).

Use the holes provided in the sides of the frame to lift the unit without the pallet. The side panel assemblies must be removed for this purpose. Any commercially available length of pipe can be used as a carrying aid.

⚠ CAUTION!

Do not use the holes in the panel assemblies for lifting the device!

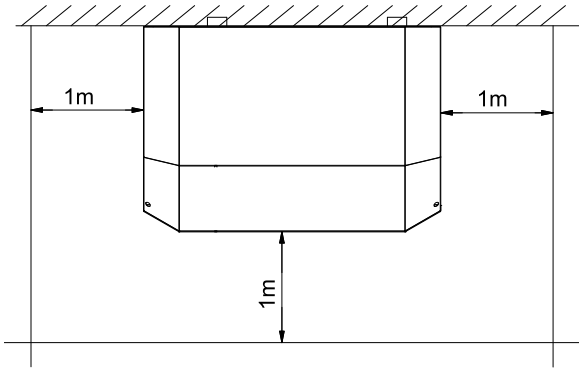
6 Set-up

6.1 General Information

The heat pump has been designed for areas that are accessible to the general public, as well as for areas that are not accessible to the general public.

The brine-to-water heat pump must be installed in a frost-free, dry room on an even, smooth and horizontal surface. The entire frame should lie directly on the floor to ensure an adequate soundproof seal. If supporting feet are used, the heat pump must be installed horizontally. In this case, the specified sound level can be up to 3 dB(A) higher, and additional sound insulation measures may be necessary.

The heat pump must be installed so that maintenance work can be carried out without hindrance. This can be ensured by maintaining a clearance of approx. 1 m in front of and on each side of the heat pump.



Neither frost nor temperatures higher than 35°C must occur in the installation location at any time of the year.

NOTE

The heat pump is not intended for use above 2000 metres (mean sea level).

6.2 Acoustic Emissions

The heat pump operates silently due to efficient sound insulation. Internal insulation measures should be carried out to prevent vibrations from being transmitted to the foundation or to the heating system.

7 Installation

7.1 General Information

The following connections need to be established on the heat pump:

- Flow and return of the brine (heat source system)
- Flow and return flow of the heating system
- Temperature sensor
- Voltage supply

7.2 Heating System Connection

⚠ CAUTION!

Flush the heating system prior to connecting the heat pump.

Before connecting the heating water system to the heat pump, the heating system must be flushed to remove any impurities, residue from sealants, etc. Any accumulation of deposits in the liquifier could cause the heat pump to completely break down.

Once the heating system has been installed, it must be filled, de-aerated and pressure-tested.

NOTE

Pump units with check valves maintain the specified flow directions. If there is incorrect distribution or breaking off of the volume flow, these units (and the check valves in particular) must be checked! The use of check valves are mandatory in the event of several heating circuits or parallel connections for heat pumps in order to avoid incorrect distribution.

⚠ CAUTION!

The maximum test pressure in the heating circuit and the brine circuit is 6.0 bar (ü). This value must not be exceeded.

Consideration must be given to the following when filling the system:

- Untreated filling water and make-up water must be of drinking water quality (colourless, clear, free from sediments)
- Filling water and make-up water must be pre-filtered (pore size max. 5 µm).

Scale formation in domestic hot water heating systems cannot be avoided, but in systems with flow temperatures below 60 °C, the problem can be disregarded. With high-temperature heat pumps and in particular with bivalent systems in the higher performance range (heat pump + boiler combination), flow temperatures of 60 °C and more can be achieved. The following standard values should therefore be adhered to with regard to the filling and make-up water according to VDI 2035, sheet 1: The total hardness values can be found in the table.

Total heat output in kW	Total alkaline earths in mol/m³ and/or mmol/l	Specific system volume (VDI 2035) in l/kW		
		< 20	≥ 20 < 50	≥ 50
		Total hardness in °dH		
< 50	≤ 2.0	≤ 16.8	≤ 11.2	< 0.11[1]
50 - 200	≤ 2.0	≤ 11.2	≤ 8.4	
200 - 600	≤ 1.5	≤ 8.4	< 0.11[1]	
> 600	< 0.02	< 0.11[1]		

1. This value lies outside the permissible value for heat exchangers in heat pumps.

Fig. 7.1:Guideline values for filling and make-up water in accordance with VDI 2035

For systems with an above-average specific system volume of 50 l/kW, VDI 2035 recommends using fully demineralized water and a pH stabiliser to minimize the risk of corrosion in the heat pump and the heating system.

⚠ CAUTION!

With fully demineralized water, it is important to ensure that the minimum permissible pH value of 7.5 (minimum permissible value for copper) is complied with. Failure to comply with this value can result in the heat pump being destroyed.

Minimum heating water flow rate

The minimum heating water flow rate through the heat pump must be assured in all operating states of the heating system. This can be accomplished, for example, by installing either a dual differential pressureless manifold or an overflow valve. The procedure for adjusting an overflow valve is described in the Chapter Start-Up.

NOTE

The use of an overflow valve is only recommended for panel heating and a max. heating water flow of 1.3 m³/h. System faults may result if this is not observed.

The antifreeze function of the heat pump manager is active whenever the heat pump manager and the heat circulating pumps are ready for operation. If the heat pump is taken out of service or in the event of a power failure, the system has to be drained. The heating circuit should be operated with a suitable antifreeze if heat pump systems are implemented in buildings where a power failure can not be detected (holiday home).

7.3 Heat Source Connection

The following procedure must be observed when connecting the heat source:

Connect the brine pipe to the heat pump flow and return. The hydraulic integration diagram must be adhered to.

⚠ CAUTION!

The supplied dirt trap must be inserted in the heat source inlet of the heat pump to protect the evaporator against the ingress of impurities.

The brine liquid must be produced prior to charging the system. The liquid must have an antifreeze concentration of at least 25 % to ensure frost protection down to -14 °C.

Only monoethylene glycol or propylene glycol-based antifreeze may be used.

The heat source system must be de-aerated and checked for leaks.

⚠ CAUTION!

The brine solution must contain at least a 25 % concentration of a monoethylene glycol or propylene glycol-based antifreeze, which must be mixed before filling.

NOTE

If necessary, the operating range can be extended to a brine inlet temperature of -10 °C. In this case, the minimum brine concentration must be adjusted to 30 %. (Freezing temperature -17 °C)

⚠ CAUTION!

The maximum test pressure in the heating circuit and the brine circuit is 6.0 bar (ü). This value must not be exceeded.

NOTE

A suitable de-aerator (micro bubble air separator) must be installed in the heat source circuit by the customer.

7.4 Temperature sensor

The following temperature sensors are already installed or must be installed additionally:

- External temperature sensor (R1) supplied (NTC-2)
- Return temperature heating circuit (R2) installed (NTC-10)
- Return temperature primary circuit (R24) installed (NTC-10)
- Flow temperature heating circuit (R9) installed (NTC-10)
- Flow temperature primary circuit (R6) installed) (NTC-10)

7.4.1 Sensor characteristic curves

Temperature in °C			-20	-15	-10	-5	0	5	10
NTC-2 in kΩ			14.6	11.4	8.9	7.1	5.6	4.5	3.7
NTC-10 in kΩ			67.7	53.4	42.3	33.9	27.3	22.1	18.0
15	20	25	30	35	40	45	50	55	60
2.9	2.4	2.0	1.7	1.4	1.1	1.0	0.8	0.7	0.6
14.9	12.1	10.0	8.4	7.0	5.9	5.0	4.2	3.6	3.1

The temperature sensors to be connected to the heat pump manager must correspond to the sensor characteristic curve illustrated in Fig.7.2 on pag. 6. The only exception is the external temperature sensor included in the scope of supply of the heat pump (see Fig.7.3 on pag. 6)

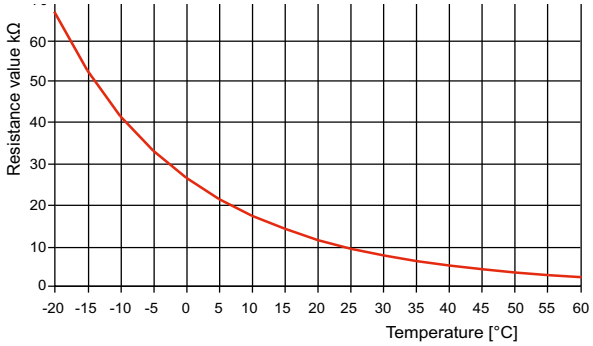


Fig. 7.2:Sensor characteristic curve NTC 10

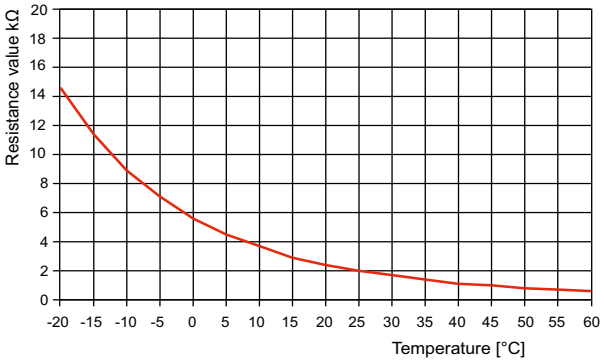


Fig. 7.3:Sensor characteristic curve, standardised NTC-2 according to DIN 44574 External temperature sensor

7.4.2 Mounting the external temperature sensor

The temperature sensor must be mounted in such a way that all weather conditions are taken into consideration and the measured value is not falsified.

- Mount on the external wall on the north or north-west side where possible
- Do not install in a “sheltered position” (e.g. in a wall niche or under a balcony)
- Not in the vicinity of windows, doors, exhaust air vents, external lighting or heat pumps
- Not to be exposed to direct sunlight at any time of year

Dimensioning parameter sensor lead	
Conductor material	Cu
Cable-length	50 m
Ambient temperature	35 °C
Laying system	B2 (DIN VDE 0298-4 / IEC 60364-5-52)
External diameter	4-8 mm

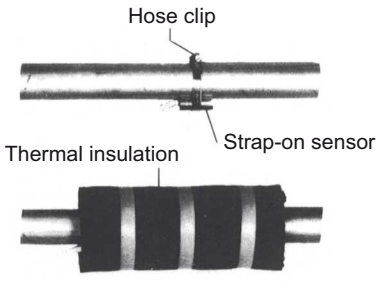
7.4.3 Installing the strap-on sensor

It is only necessary to mount the strap-on sensors if they are included in the scope of supply of the heat pump but have not yet been installed.

The strap-on sensors can be fitted as pipe-mounted sensors or installed in the immersion sleeve of the compact manifold.

Mounting as a pipe-mounted sensor

- Remove paint, rust and scale from heating pipe.
- Coat the cleaned surface with heat transfer compound (apply sparingly).
- Attach the sensor with a hose clip (tighten firmly, as loose sensors can cause malfunctions) and thermally insulate.



7.4.4 Hydraulic distribution system

The compact manifold and the dual differential pressureless manifold function as an interface between the heat pump, the heating distribution system, the buffer tank and, in some cases, even the hot water cylinder. A compact system is used to simplify the installation process, so that a lot of different components do not have to be installed individually. Further information can be found in the relevant installation instructions.

Compact manifold

The return sensor can remain in the heat pump, or should be installed in the immersion sleeve. The remaining empty space between the sensor and the immersion sleeve must be filled completely with heat transfer compound.

dual differential pressureless manifold

In order for the heating circuit pumps of the generator and consumer circuits to supply the flow to the return sensor, this must be installed in the immersion sleeve of the dual differential pressureless manifold.

7.5 Electrical connection

7.5.1 General

All electrical connection work must be carried out by a trained electrician or a specialist for the specified tasks in accordance with the

- installation and operating instructions,
- country-specific installation regulations (e.g. VDE 0100),
- technical connection conditions of the energy suppliers and supply grid operators (e.g. TAB) and
- local conditions.

To ensure that the frost protection function of the heat pump works properly, the heat pump manager must remain connected to the power supply and the flow must be maintained through the heat pump at all times.

The switching contacts of the output relay are interference-suppressed. Therefore, depending on the internal resistance of the measuring instrument, a voltage can also be measured when the contacts are open. However, this will be much lower than the line voltage.

Extra-low voltage is connected to controller terminals N1-J1 to N1-J11; N1-J19; N1-J20; N1-J23 to N1-J26 and terminal strip X3; X5.1. If, due to a wiring error, the line voltage is mistakenly connected to these terminals, the heat pump manager will be destroyed

7.5.2 Electrical installation

1) The supply electric cable for the output section of the heat pump (up to 4-core) is fed from the electricity meter of the heat pump via the utility blocking contactor (if required) into the heat pump Connection of the mains cable to the control panel of the heat pump via terminal X1: L1/L2/L3/PE.

   An all-pole disconnecting device with a contact gap of at least 3 mm (e.g. utility blocking contactor or power contactor) and an all-pole circuit breaker with common tripping for all external conductors must be installed in the power supply for the heat pump (tripping current and characteristic in compliance with the device information).

⚠ CAUTION!

Ensure that there is a clockwise rotating field: With incorrect wiring the starting of the heat pump is prevented. A corresponding warning is indicated on the display of the heat pump manager (adjust wiring).

2) The three-core electric supply cable for the heat pump manager (heating controller N1) is fed into the heat pump . Connection of the control line to the control panel of the heat pump via terminal X2: L/N/PE.
   Details on the power consumption of the heat pump are listed on both the product information sheet and the type plate.
   The (L/N/PE~230 V, 50 Hz) supply cable for the heat pump manager must have a constant voltage. For this reason, it should be tapped upstream from the utility blocking contactor or be connected to the household current, as important protection functions could otherwise be lost during a utility block.
3) The utility blocking contactor (K22) with 3 main contacts (1/3/5 // 2/4/6) and an auxiliary contact (NO contact 13/14) should be dimensioned according to the heat pump output and must be supplied by the customer. The NO contact of the utility blocking contactor (13/14) is looped from terminal strip X3/G to connector terminal X3/A1. **CAUTION! Extra-low voltage!**
4) The contactor (K20) for the immersion heater (E10) of mono energy systems (HG2) should be dimensioned according to the radiator output and must be supplied by the customer. It is controlled (230 V AC) by the heat pump manager via terminals X2/N and X2/K20.
5) The contactor (K21) for the flange heater (E9) in the hot water cylinder should be dimensioned according to the radiator output and must be supplied by the customer. It is controlled (230 V AC) by the heat pump manager via terminals X2/N and X2/K21.
6) The contactors mentioned above in points 3, 4 and 5 are installed in the electrical distribution system. The mains cable for the installed pipe heater must be laid and secured in accordance with the valid standards and regulations.
7) All installed electric cables must have permanent wiring.
8) The heat circulating pump (M13) is connected to terminals X2/N and X2/M13.
9) The DHW loading pump (M18) is connected to terminals X2/N and X2/M18.
10) The brine or well pump (M11) is connected to terminalsX2/N and X2/M11 and PE.
11) The return flow sensor is integrated into the heat pumps and is connected to the heat pump manager via the control line. The return flow sensor must be installed in the immersion sleeve in the manifold only when a dual differential pressureless manifold is used. The single-core wires are then connected to terminals X3/GND and X3/ R2.1. Bridge A-R2 (situated between X3/B2 and X3/1 when delivered) must then be moved to terminals X3/1 and X3/2.
12) The external sensor (R1) is connected to terminals X3/GND and X3/R1.
13) The domestic hot water sensor (R3) is included with the domestic hot water cylinder and is connected to terminals X3/GND and X3/R3.

7.5.3 Connecting an electronically regulated circulating pump

Electronically regulated circulating pumps have high starting currents, which may shorten the service life of the heat pump manager. For this reason, a coupling relay is installed or must be installed between the output of the heat pump manager and the electronically regulated circulating pump. This is not necessary if the permissible operating current of 2 A and a maximum starting current of 12 A are not exceeded in the electronically regulated circulating pump or if express approval has been issued by the pump manufacturer.

⚠ CAUTION!

It is not permitted to connect more than one electronically regulated circulating pump via a relay output.

7.5.4 Circulating pump connection with high performance

In many cases, the supply voltage of the pump is stuck on continuous current when using larger electronically controlled circulating pumps (the manufacturer's information on the pump being used should be taken into consideration). The pump is then generally actuated using the Start/Stop input. This input is operated with extra low voltage from the pump (a link cable is usually inserted in the factory default of the pump). In order to be able to actuate the input, a coupling relay with a floating contact is required. This must be controlled with the pump function of a 230 V relay output of the controller. Due to the extra low voltage to be switched, a suitable relay with the appropriate contact material (gilded) must be selected and integrated on-site.

7.5.5 Frost protection

Regardless of the settings for the heat circulating pumps, they always run in heating and frost protection mode. In systems with multiple heating circuits, the 2nd and 3rd heat circulating pump has the same function.

⚠ CAUTION!

To ensure that the frost protection function on the heat pump works properly, the heat pump manager must remain connected to the power supply and flow must be maintained through the heat pump at all times.

⚠ CAUTION!

The primary pump (M11 – responsible for the heat source flow rate) and the secondary pump (M16 – responsible for the warm/cold water flow rate) must always be clamped to the heat pump manager in all cases. This is the only way to ensure the pump flows and returns necessary for operation and to ensure that the necessary safety measures are in place.

8 Commissioning

8.1 General Information

To ensure that start-up is performed correctly, it should only be carried out by an after-sales service technician authorised by the manufacturer. These measures can also include an additional warranty under certain conditions (see Warranty).

8.2 Preparation

The following items need to be checked prior to start-up:

- The heat pump must be fully connected, as described in Chapter 7.
- The heat source system and the heating circuit must have been filled and checked.
- The dirt trap must be inserted in the brine inlet of the heat pump.
- All valves that could impair proper flow in the brine and heating circuits must be open.
- The heat pump manager must be adapted to the heating system in accordance with the controller's operating instructions.
- The hydraulic network must be flushed correctly before installing the heat pump. This includes the supply line to the heat pump. Only when flushing is complete can the heat pump be hydraulically integrated.
- The dirt traps present as standard or included for assembly must be inspected between 4 and 8 weeks after the heat pump is commissioned or changes made to the heating system and cleaned if necessary. Further maintenance intervals must be scheduled depending on the level of soiling, which must be defined and carried out by a suitably qualified person.

Special notes for the integration of heat pumps in existing systems (renovations):

The existing heat distribution network (pipe materials, connection types, etc.) and the existing heating systems (e.g. radiators, underfloor heating, etc.) can impact the quality of the water in existing systems. Particularly when welded steel pipes or pipes that are not oxygen diffusion-proof are used, deposits, scaling, silting or similar may be present that can cause damage in the heat pump system. This can result in a total failure of the heat pump The following measures must be observed to avoid this:

- Compliance with the water properties and water quality
- Flushing of the hydraulic system
- Maintenance interval of the dirt traps

If silting or ferromagnetic particles are to be expected in the hydraulic network, dirt separators or magnetite separators must be installed on-site before the medium enters the heat pump. The maintenance intervals must be defined by a suitably qualified person.

8.3 Start-up Procedure

The heat pump is started up via the heat pump manager.

⚠ CAUTION!

The heat pump must be started up in accordance with the installation and operating instructions of the heat pump manager.

If an overflow valve is fitted to assure the minimum heating water flow rate, the valve must be set in accordance with the requirements of the respective heating system. Incorrect adjustment can lead to faulty operation and increased energy consumption. We recommend carrying out the following procedure to correctly adjust the overflow valve:

Close all of the heating circuits that may also be closed during operation (depending on the type of heat pump usage) so that the most unfavourable operating state - with respect to the water flow rate - is achieved. This normally means the heating circuits of the rooms on the south and west sides of the building. At least one heating circuit must remain open (e.g. bathroom).

The overflow valve should be opened far enough to produce the maximum temperature spread between the heating flow and return flow listed in the table below for the current heat source temperature. The temperature spread should be measured as close as possible to the heat pump. The heating element of mono energy systems should be disconnected during start-up.

Heat source temperature		Max. temperature spread between heating flow and return flow
From	To	
-5 °C	0 °C	10 K
1 °C	5 °C	11 K
6 °C	9 °C	12 K
10 °C	14 °C	13 K
15 °C	20 °C	14 K
21 °C	25 °C	15 K

9 Maintenance and Cleaning

9.1 Maintenance

To prevent faults due to sediment in the heat exchangers, care must be taken to ensure that no impurities can enter either the heat source system or the heating system. In the event that operating malfunctions due to contamination occur nevertheless, the system should be cleaned as described below.

9.2 Cleaning the Heating System

The ingress of oxygen into the heating water circuit may result in the formation of oxidation products (rust), particularly if steel components are used. This oxygen enters the heating system via the valves, the circulating pumps and/or plastic pipes. It is therefore essential - in particular with respect to the piping of underfloor heating systems - that only diffusion-proof materials are used.

NOTE

We recommend the installation of a suitable corrosion protection system to prevent the formation of deposits (e.g. rust) in the condenser of the heat pump.

Residue from lubricants and sealants may also contaminate the heating water.

In the case of severe contamination leading to a reduction in the performance of the liquifier in the heat pump, the system must be cleaned by a heating technician.

Based on current information, we recommend using a 5 % phosphoric acid solution for cleaning purposes. However, if cleaning needs to be performed more frequently, a 5 % formic acid solution should be used.

In either case, the cleaning fluid should be at room temperature. We recommend flushing the heat exchanger in the direction opposite to the normal flow direction.

To prevent acidic cleaning agents from entering the heating system circuit, we recommend connecting the flushing device directly to the flow and return flow of the liquifier. It is important that the system be thoroughly flushed using appropriate neutralising agents to prevent any damage from being caused by cleaning agent residue remaining in the system.

Acids must be used with great care and all relevant regulations of the employers' liability insurance associations must be adhered to.

The manufacturer's instructions regarding cleaning agent must be complied with at all times.

9.3 Cleaning the Heat Source System

⚠ CAUTION!

The supplied dirt trap must be inserted in the heat source inlet of the heat pump to protect the evaporator against the ingress of impurities.

The filter sieve of the dirt trap should be cleaned one day after-start-up. Further checks must be set according to the level of dirt.If no more signs of contamination are evident, the filter can be removed to reduce pressure drops.

10 Faults / Trouble-Shooting

This heat pump is a quality product and is designed for trouble-free operation. In the event that a fault should occur, it will be indicated on the heat pump manager display. Simply consult the Faults and Trouble-Shooting page in the operating instructions of the heat pump manager.

If you cannot correct the fault yourself, please contact your after-sales service technician.

⚠ CAUTION!

Before opening the device, ensure that all circuits are disconnected from the power supply!

After disconnecting the power supply, always wait for at least 5 minutes to allow stored electric charges to dissipate.

⚠ CAUTION!

Any work on the heat pump may only be performed by authorised and qualified after-sales service technicians.

11 Decommissioning / Disposal

Before removing the heat pump, disconnect it from the power source and close all valves. The deinstallation of the heat pump must be performed by technical personnel. Observe all environmentally-relevant requirements regarding the recovery, recycling and disposal of materials and components in accordance with all applicable standards. Particular attention should be paid to the proper disposal of refrigerants and refrigeration oils.

12 Device Information

1	**Type and order code**		SI 6TU	SI 8TU	SI 11TU
2	**Design**				
2.1	**Model**		Universal	Universal	Universal
2.2	**controller**		Intern	Intern	Intern
2.3	**Thermal energy metering**		Integreated	Integreated	Integreated
2.4	**Installation location / degree of protection according to EN 60 529**		Indoors / IP 21	Indoors / IP 21	Indoors / IP 21
2.5	**Performance levels**		1	1	1
3	**Operating limits**				
3.1	**Heating water flow** [1]	**°C**	20 to 62 ±	20 to 62 ±2	20 to 62 ±2
3.2	**Brine (heat source)** **Antifreeze** **Minimum brine concentration (-13 °C freezing temperature)**[1]	**°C**		-5[1] to +25[2] Monoethyleneglycol 25 %[1]	
4	**Performance data / flow rate** [3]				
4.1	**Heating water flow rate at internal pressure differential** **max.** (EN14511) **minimal**	**m³/h / Pa** **m³/h / Pa**	1.05 / 5300 0.55 / 1500	1.4 / 7700 0.7 / 1900	1.8 / 10500 0.9 / 2400
4.2	**Heat output / COP**		EN 14511	EN 14511	EN 14511
	at B-5 / W45	**kW / ---**	5.0 / 3.1	6.5 / 3.2	8.6 / 3.2
	at B0 / W55	**kW / ---**	5.5 / 2.8	7.2 / 2.8	9.5 / 2.9
	at B0 / W45	**kW / ---**	5.8 / 3.6	7.5 / 3,6	9.9 / 3.6
	at B0 / W35	**kW / ---**	6.1 / 4.7	8.1 / 4.8	10.4 / 4.6
4.3	**Sound power level to EN 12102** [4]	**dB(A)**	46	46	47
4.4	**Sound pressure level at a distance of 1 m** [4 5]	**dB(A)**	34	34	35
4.5	**Brine flow with internal pressure differential heat source**	**m³/h / Pa**	1.45 / 8700	1.9 / 11000	2.6 / 14000
5	**Dimensions, connections and weight**				
5.1	**Device dimensions without connections**[6]	**H x W x L cm**	840 x 650 x 555	840 x 650 x 555	840 x 650 x 555
5.2	**Device connections for heating system**	**Inches**		G 1 1/4“ AG[7]	
5.3	**Device connections for heat source**	**Inches**		G 1 1/4“ AG[7]	
5.4	**Weight of the transportable unit(s) incl. packaging**	**kg**	119	128	134
5.5	**Refrigerant; total filling weight**	**type / kg**	R410A / 2.5	R410A / 2.9	R410A / 3.3
5.6	**GWP value / CO_2 equivalent**	**--- / t**	2088 / 5	2088 / 6	2088 / 7
5.7	**Refrigeration circuit hermetically sealed**		yes	yes	yes
5.8	**Lubricant; total filling quantity**	**type / litres**	Polyolester (POE) / 0.7	Polyolester (POE) / 1.2	Polyolester (POE) / 1.2
6	**Electrical connection**				
6.1	**Supply voltage / fuse protection**	**V / A**		3~ / PE 400V (50Hz) / C10A	
6.2	**Control voltage / fuse protection**	**V / A**		1~ / N / PE 230V (50Hz) / C13A	
6.3	**Nominal power consumption** **B0 / W35 / max. power consumption** [3]	**kW**	1.30 / 2.6	1.67 / 3.2	2.22 / 4.3
6.4	**Starting current with soft starter**	**A**	28 (without soft starter)	17	20
6.5	**Nominal current B0 / W35 / cos φ**	**A / ---**	2.35 / 0.8	3.01 / 0.8	4.01 / 0.8
7	**Complies with the European safety regulations**		[8]	[8]	[8]
8	**Additional model features**				
8.1	**Heating water in device protected against freezing**[9]		Yes	Yes	Yes
8.2	**Max. operating overpressure (heat source/heat sink)**	**bar**	3.0	3.0	3.0

1. If necessary, the operating range can be extended to a brine inlet temperature of -10 °C. In this case, the minimum brine concentration must be adjusted to 30%. (Freezing temperature -17 C°). At brine inlet temperatures of -10 °C to -5 °C, flow temperature rising from 55 °C to 62 °C.
2. Operation is possible at brine inlet temperatures of up to + 35 °C. At brine inlet temperatures of +25 °C to +35 °C, flow temperature falling from 62 °C to 55 °C.
3. These data indicate the size and capacity of the system according to EN 14511. For an analysis of the economic and energy efficiency of the system, the bivalence point and controller should be taken into consideration. The specified values have the following meaning, e.g. B0/W35: Heat source temperature 0 °C and heating water flow temperature 55 °C. These specifications can only be achieved with clean heat exchangers. Information on maintenance, start-up and operation can be found in the respective sections of the installation and operating instructions.
4. The specified sound levels apply if the supporting feet (available as an option) are not used. If the supporting feet are used, the level can increase by up to 3db (A).
5. The specified sound pressure level corresponds to the operating noise of the heat pump in heating operation with a flow temperature of 35°C. The specified sound pressure level represents the free sound area level. The measured value can deviate by up to 16 dB(A), depending on the installation location.
6. Note that additional space is required for pipe connections, operation and maintenance.
7. Flat-sealing
8. See CE declaration of conformity
9. The heat circulating pump and the heat pump manager must always be ready for operation.

				SI 14TU	SI 18TU
1	**Type and order code**				
2	**Design**				
2.1	**Model**			Universal	Universal
2.2	**controller**			Intern	Intern
2.3	**Thermal energy metering**			Integreated	Integreated
2.4	**Installation location / degree of protection according to EN 60 529**			Indoors / IP 21	Indoors / IP 21
2.5	**Performance levels**			1	1
3	**Operating limits**				
3.1	**Heating water flow** [1]		**°C**	20 to 62 ±2	20 bis 62 ±2
3.2	**Brine (heat source)** **Antifreeze** **Minimum brine concentration (-13 °C freezing temperature)**[1]		**°C**	-5[1] to +25[2] Monoethyleneglycol 25 %[1]	-5[1] to +25[2] Monoethylenglykol 25 %[1]
4	**Performance data / flow rate** [3]				
4.1	**Heating water flow rate at internal pressure differential**	**max. (EN14511)** **minimal**	**m³/h / Pa** **m³/h / Pa**	2.4 / 10700 1.2 / 2700	3.0 / 18000 1.5 / 4500
4.2	**Heat output / COP**			EN 14511	EN 14511
		at B-5 / W45	**kW / ---**	11.5 / 3.3	14.9 / 3.2
		at B0 / W55	**kW / ---**	12.8 / 3.0	16.5 / 2.9
		at B0 / W45	**kW / ---**	13.3 / 3.8	17.0 / 3.6
		at B0 / W35	**kW / ---**	13.9 / 5.0	17.5 / 4.7
4.3	**Sound power level to EN 12102** [4]		**dB(A)**	47	50
4.4	**Sound pressure level at a distance of 1 m** [4 5]		**dB(A)**	35	38
4.5	**Brine flow with internal pressure differential heat source**		**m³/h / Pa**	3.4 / 14000	4.3 / 21500
5	**Dimensions, connections and weight**				
5.1	**Device dimensions without connections**[6]		**H x W x L cm**	840 x 650 x 555	840 x 650 x 655
5.2	**Device connections for heating system**		**Inches**	G 1 1/4“ AG[7]	G 1 1/4“ AG[7]
5.3	**Device connections for heat source**		**Inches**	G 1 1/4“ AG[7]	G 1 1/2“ AG[7]
5.4	**Weight of the transportable unit(s) incl. packaging**		**kg**	140	163
5.5	**Refrigerant; total filling weight**		**type / kg**	R410A / 4.4	R410A / 5.2
5.6	**GWP value / CO_2 equivalent**		**--- / t**	2088 / 9	2088 / 11
5.7	**Refrigeration circuit hermetically sealed**			yes	yes
5.8	**Lubricant; total filling quantity**		**type / litres**	Polyolester (POE) / 1.2	Polyolester (POE)/ 1.9
6	**Electrical connection**				
6.1	**Supply voltage; fuse protection**		**V / A**	3~ / PE 400V (50Hz) / C13A	3~ / PE 400V (50Hz) / C16A
6.2	**Control voltage; fuse protection**		**V / A**	1~ / N / PE 230V (50Hz) / C13A	1~ / N / PE 230V (50Hz) / C13A
6.3	**Nominal power consumption** **B0 / W35 / max. power consumption** [3]		**kW**	2.78 / 5.4	3.72 / 7.2
6.4	**Starting current with soft starter**		**A**	23	28
6.5	**Nominal current B0 / W35 / cos φ**		**A / ---**	5.02 / 0.8	6.71 / 0.8
7	**Complies with the European safety regulations**			[8]	[8]
8	**Additional model features**				
8.1	**Heating water in device protected against freezing**[9]			Yes	ja
8.2	**Max. operating overpressure (heat source/heat sink)**		**bar**	3.0	3.0

1. If necessary, the operating range can be extended to a brine inlet temperature of -10 °C. In this case, the minimum brine concentration must be adjusted to 30%. (Freezing temperature -17 C°). At brine inlet temperatures of -10 °C to -5 °C, flow temperature rising from 55 °C to 62 °C.
2. Operation is possible at brine inlet temperatures of up to + 35 °C. At brine inlet temperatures of +25 °C to +35 °C, flow temperature falling from 62 °C to 55 °C.
3. These data indicate the size and capacity of the system according to EN 14511. For an analysis of the economic and energy efficiency of the system, the bivalence point and controller should be taken into consideration. The specified values have the following meaning, e.g. B0/W35: Heat source temperature 0 °C and heating water flow temperature 55 °C. These specifications can only be achieved with clean heat exchangers. Information on maintenance, start-up and operation can be found in the respective sections of the installation and operating instructions.
4. The specified sound levels apply if the supporting feet (available as an option) are not used. If the supporting feet are used, the level can increase by up to 3db (A).
5. The specified sound pressure level corresponds to the operating noise of the heat pump in heating operation with a flow temperature of 35°C. The specified sound pressure level represents the free sound area level. The measured value can deviate by up to 16 dB(A), depending on the installation location.
6. Note that additional space is required for pipe connections, operation and maintenance.
7. Flat-sealing
8. See CE declaration of conformity
9. The heat circulating pump and the heat pump manager must always be ready for operation.

13 Product information as per Regulation (EU) No 813/ 2013, Annex II, Table 2

Information requirements for heat pump space heaters and heat pump combination heaters

Model	SI 6TU
Air-to-water heat pump	no
Water-to-water heat pump	no
Brine-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low- temperature heat pumps, parameters shall be declared for low-temperature application.

Parameters shall be declared for average climate conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	6	kW	**Seasonal space heating energy efficiency**	η_s	134	%
Declared capacity for heating foer part load at indoor temperature 20°C and outdoor temperature T*j*				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T*j*			
Tj = - 7°C	P*dh*	5,6	kW	Tj = - 7°C	COP*d*	2,95	-
Tj = + 2°C	P*dh*	5,8	kW	Tj = + 2°C	COP*d*	3,58	-
Tj = + 7°C	P*dh*	6,0	kW	Tj = + 7°C	COP*d*	4,09	-
Tj = + 12°C	P*dh*	6,1	kW	Tj = + 12°C	COP*d*	4,72	-
Tj = bivalent temperature	P*dh*	5,5	kW	Tj = bivalent temperature	COP*d*	2,79	-
Tj = operation limit temperature	P*dh*	5,5	kW	Tj = operation limit temperature	COP*d*	2,79	-
For air-to-water heat pumps				For air-to-water heat pumps:			
Tj = -15°C (if TOL < -20°C)	P*dh*	5,5	kW	Tj = -15°C (if TOL < -20°C)	COP*d*	2,79	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P*cych*	-	kW	Cycling interval efficiency	COP*cyc*	-	-
Degradation co-efficient (**)	C*dh*	0,90	-	Heating water operating limit temperature	WTOL	62	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P*sup*	0	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input		eletrical	
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	0,000	kW				
Other items							
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³ /h
Sound power level, indoors/ outdoors	L_{WA}	46/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	1,5	m³ /h
Emissions of nitrogen oxides	NO_x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		**Water heating energy efficiency**	η_{wh}	-	%
Daily electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}	-	kWh
Contact details	Glen Dimplex Deutschland GmbH, Am Goldenen Feld 18, 95326 Kulmbach						

(*) For heat pump space heaters and heat pump combination heaters, the rated output P*rated* is equal to the design load for heating P*designh* , and the rated heat output of a supplementary capacity for heating sup(*Tj*).

(**) If C*dh* is not determined by measurement nthen the default degradation is C*dh* = 0,9
(--) not applicable

Information requirements for heat pump space heaters and heat pump combination heaters

Model	SI 8TU
Air-to-water heat pump	no
Water-to-water heat pump	no
Brine-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low- temperature heat pumps, parameters shall be declared for low-temperature application.

Parameters shall be declared for average climate conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	7	kW	**Seasonal space heating energy efficiency**	η_s	138	%
Declared capacity for heating foer part load at indoor temperature 20°C and outdoor temperature T*j*				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T*j*			
Tj = - 7°C	P*dh*	7,3	kW	Tj = - 7°C	COP*d*	2,99	-
Tj = + 2°C	P*dh*	7,7	kW	Tj = + 2°C	COP*d*	3,65	-
Tj = + 7°C	P*dh*	7,9	kW	Tj = + 7°C	COP*d*	4,17	-
Tj = + 12°C	P*dh*	8,1	kW	Tj = + 12°C	COP*d*	4,81	-
Tj = bivalent temperature	P*dh*	7,2	kW	Tj = bivalent temperature	COP*d*	2,83	-
Tj = operation limit temperature	P*dh*	7,2	kW	Tj = operation limit temperature	COP*d*	2,83	-
For air-to-water heat pumps				For air-to-water heat pumps:			
Tj = -15°C (if TOL < -20°C)	P*dh*	7,2	kW	Tj = -15°C (if TOL < -20°C)	COP*d*	2,83	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P*cych*	-	kW	Cycling interval efficiency	COP*cyc*	-	-
Degradation co-efficient (**)	C*dh*	0,90	-	Heating water operating limit temperature	WTOL	62	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P*sup*	0	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input		eletrical	
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	0,000	kW				
Other items							
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³ /h
Sound power level, indoors/ outdoors	L_{WA}	46/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	1,9	m³ /h
Emissions of nitrogen oxides	NO_x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		**Water heating energy efficiency**	η_{wh}	-	%
Daily electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}	-	kWh
Contact details	Glen Dimplex Deutschland GmbH, Am Goldenen Feld 18, 95326 Kulmbach						

(*) For heat pump space heaters and heat pump combination heaters, the rated output P*rated* is equal to the design load for heating P*designh* , and the rated heat output of a supplementary capacity for heating sup(*Tj*).

(**) If C*dh* is not determined by measurement nthen the default degradation is C*dh* = 0,9

(--) not applicable

Information requirements for heat pump space heaters and heat pump combination heaters

Model	SI 11TU
Air-to-water heat pump	no
Water-to-water heat pump	no
Brine-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low- temperature heat pumps, parameters shall be declared for low-temperature application.

Parameters shall be declared for average climate conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	10	kW	**Seasonal space heating energy efficiency**	η_s	140	%
Declared capacity for heating foer part load at indoor temperature 20°C and outdoor temperature T*j*				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T*j*			
Tj = - 7°C	P*dh*	9,6	kW	Tj = - 7°C	COP*d*	3,13	-
Tj = + 2°C	P*dh*	10,0	kW	Tj = + 2°C	COP*d*	3,72	-
Tj = + 7°C	P*dh*	10,1	kW	Tj = + 7°C	COP*d*	4,10	-
Tj = + 12°C	P*dh*	10,2	kW	Tj = + 12°C	COP*d*	4,55	-
Tj = bivalent temperature	P*dh*	9,5	kW	Tj = bivalent temperature	COP*d*	3,00	-
Tj = operation limit temperature	P*dh*	9,5	kW	Tj = operation limit temperature	COP*d*	3,00	-
For air-to-water heat pumps				For air-to-water heat pumps:			
Tj = -15°C (if TOL < -20°C)	P*dh*	9,5	kW	Tj = -15°C (if TOL < -20°C)	COP*d*	3,00	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P*cych*	-	kW	Cycling interval efficiency	COP*cyc*	-	-
Degradation co-efficient (**)	C*dh*	0,99	-	Heating water operating limit temperature	WTOL	62	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P*sup*	0	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input		eletrical	
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	0,000	kW				
Other items							
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³ /h
Sound power level, indoors/ outdoors	L_{WA}	47/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	2,6	m³ /h
Emissions of nitrogen oxides	NO_x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		**Water heating energy efficiency**	η_{wh}	-	%
Daily electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}	-	kWh
Contact details	Glen Dimplex Deutschland GmbH, Am Goldenen Feld 18, 95326 Kulmbach						

(*) For heat pump space heaters and heat pump combination heaters, the rated output P*rated* is equal to the design load for heating P*designh* , and the rated heat output of a supplementary capacity for heating sup(*Tj*).

(**) If C*dh* is not determined by measurement nthen the default degradation is C*dh* = 0,9

(--) not applicable

Information requirements for heat pump space heaters and heat pump combination heaters

Model	SI 14TU
Air-to-water heat pump	no
Water-to-water heat pump	no
Brine-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low- temperature heat pumps, parameters shall be declared for low-temperature application.

Parameters shall be declared for average climate conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	13	kW	**Seasonal space heating energy efficiency**	η_s	150	%
Declared capacity for heating foer part load at indoor temperature 20°C and outdoor temperature T*j*				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T*j*			
Tj = - 7°C	P*dh*	13,1	kW	Tj = - 7°C	COP*d*	3,29	-
Tj = + 2°C	P*dh*	13,5	kW	Tj = + 2°C	COP*d*	3,93	-
Tj = + 7°C	P*dh*	13,7	kW	Tj = + 7°C	COP*d*	4,43	-
Tj = + 12°C	P*dh*	13,9	kW	Tj = + 12°C	COP*d*	5,06	-
Tj = bivalent temperature	P*dh*	13,0	kW	Tj = bivalent temperature	COP*d*	3,13	-
Tj = operation limit temperature	P*dh*	13,0	kW	Tj = operation limit temperature	COP*d*	3,13	-
For air-to-water heat pumps				For air-to-water heat pumps:			
Tj = -15°C (if TOL < -20°C)	P*dh*	13,0	kW	Tj = -15°C (if TOL < -20°C)	COP*d*	3,13	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P*cych*	-	kW	Cycling interval efficiency	COP*cyc*	-	-
Degradation co-efficient (**)	C*dh*	0,90	-	Heating water operating limit temperature	WTOL	62	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P*sup*	0	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input		eletrical	
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	0,000	kW				
Other items							
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³ /h
Sound power level, indoors/ outdoors	L_{WA}	47/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	3,4	m³ /h
Emissions of nitrogen oxides	NO_x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		**Water heating energy efficiency**	η_{wh}	-	%
Daily electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}	-	kWh
Contact details	Glen Dimplex Deutschland GmbH, Am Goldenen Feld 18, 95326 Kulmbach						

(*) For heat pump space heaters and heat pump combination heaters, the rated output P*rated* is equal to the design load for heating P*designh* , and the rated heat output of a supplementary capacity for heating sup(*Tj*).

(**) If C*dh* is not determined by measurement nthen the default degradation is C*dh* = 0,9

(--) not applicable

Information requirements for heat pump space heaters and heat pump combination heaters

Model	SI 18TU
Air-to-water heat pump	no
Water-to-water heat pump	no
Brine-to-water heat pump	yes
Low-temperature heat pump	no
Equipped with a supplementary heater	no
Heat pump combination heater	no

Parameters shall be declared for medium-temperature application, except for low-temperature heat pumps. For low- temperature heat pumps, parameters shall be declared for low-temperature application.

Parameters shall be declared for average climate conditions:

Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heat output (*)	Prated	17	kW	**Seasonal space heating energy efficiency**	η_s	140	%
Declared capacity for heating foer part load at indoor temperature 20°C and outdoor temperature T*j*				Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T*j*			
Tj = - 7°C	P*dh*	16,6	kW	Tj = - 7°C	COP*d*	3,05	-
Tj = + 2°C	P*dh*	17,0	kW	Tj = + 2°C	COP*d*	3,66	-
Tj = + 7°C	P*dh*	17,3	kW	Tj = + 7°C	COP*d*	4,15	-
Tj = + 12°C	P*dh*	17,5	kW	Tj = + 12°C	COP*d*	4,77	-
Tj = bivalent temperature	P*dh*	16,5	kW	Tj = bivalent temperature	COP*d*	2,90	-
Tj = operation limit temperature	P*dh*	16,5	kW	Tj = operation limit temperature	COP*d*	2,90	-
For air-to-water heat pumps				For air-to-water heat pumps:			
Tj = -15°C (if TOL < -20°C)	P*dh*	16,5	kW	Tj = -15°C (if TOL < -20°C)	COP*d*	2,90	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	P*cych*	-	kW	Cycling interval efficiency	COP*cyc*	-	-
Degradation co-efficient (**)	C*dh*	0,90	-	Heating water operating limit temperature	WTOL	62	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,015	kW	Rated heat output (*)	P*sup*	0	kW
Thermostat-off mode	P_{TO}	0,020	kW	Type of energy input		eletrical	
Standby mode	P_{SB}	0,015	kW				
Crankcase heater mode	P_{CK}	0,000	kW				
Other items							
Capacity control		fixed		For air-to-water heat pumps: Rated air flow rate, outdoors	-	-	m³ /h
Sound power level, indoors/ outdoors	L_{WA}	50/-	dB	For water-/brine-to-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger	-	4,0	m³ /h
Emissions of nitrogen oxides	NO_x	-	mg/kWh				
For heat pump combination heater:							
Declared load profile		-		**Water heating energy efficiency**	η_{wh}	-	%
Daily electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}	-	kWh
Contact details	Glen Dimplex Deutschland GmbH, Am Goldenen Feld 18, 95326 Kulmbach						

(*) For heat pump space heaters and heat pump combination heaters, the rated output P*rated* is equal to the design load for heating P*designh* , and the rated heat output of a supplementary capacity for heating sup(*Tj*).

(**) If C*dh* is not determined by measurement nthen the default degradation is C*dh* = 0,9

(--) not applicable

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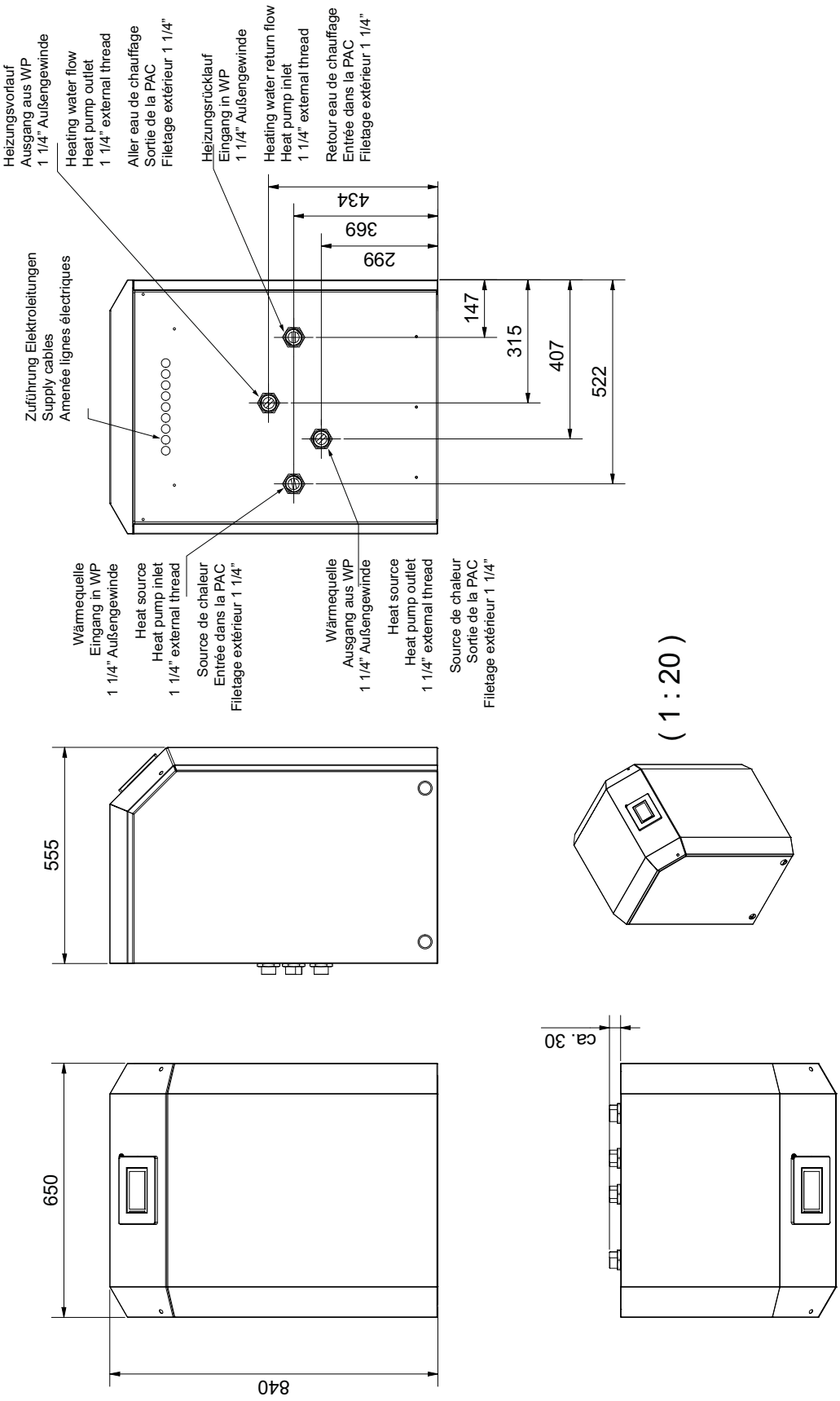
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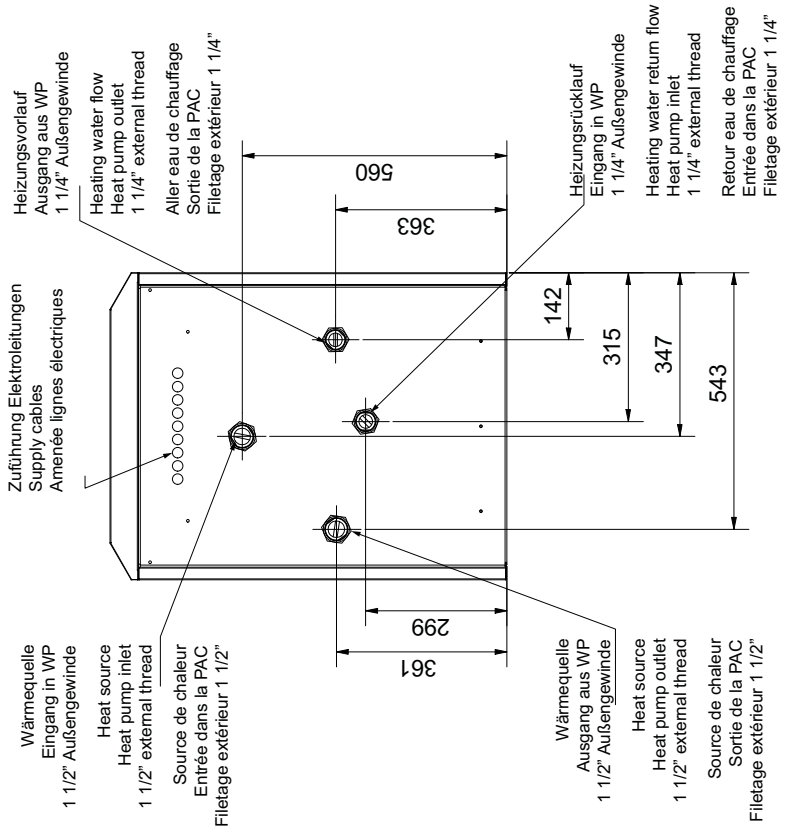
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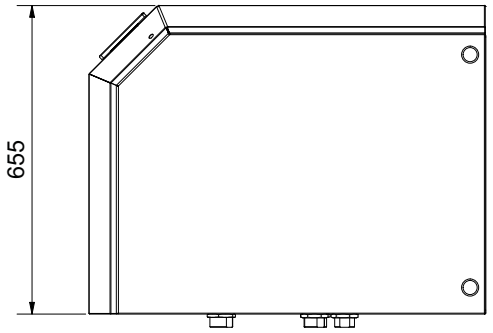
1 Maßbilder / Dimension Drawings / Schémas cotés

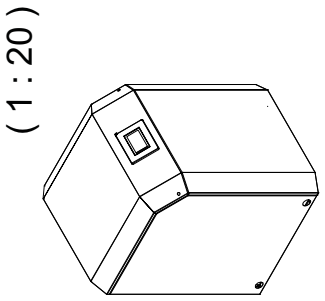
1.1 Maßbild / Dimension Drawing / Schéma coté SI 6TU - SI 14TU

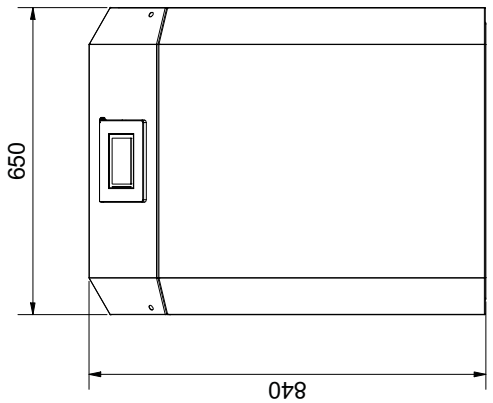


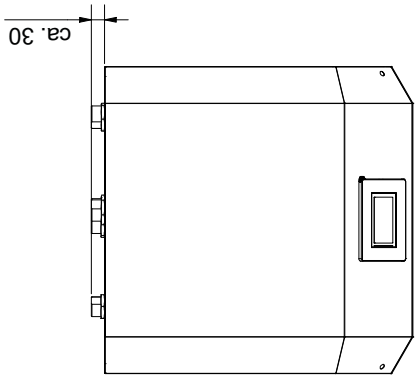
1.2 Maßbild / Dimension Drawing / Schéma coté SI 18TU





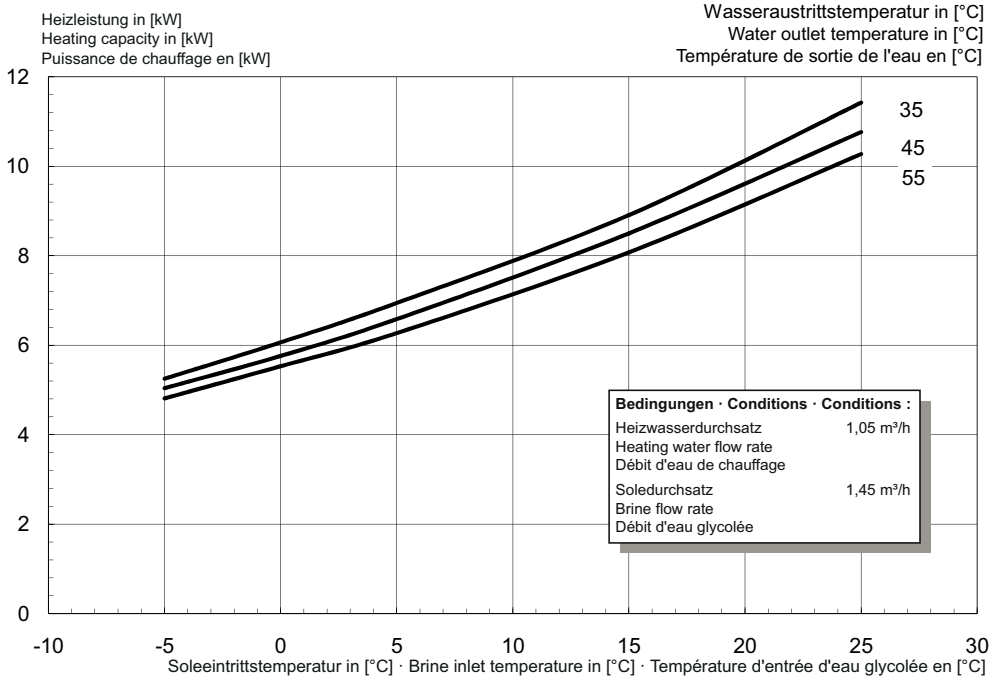


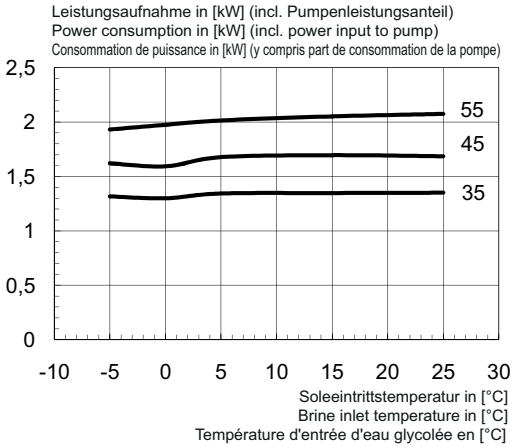


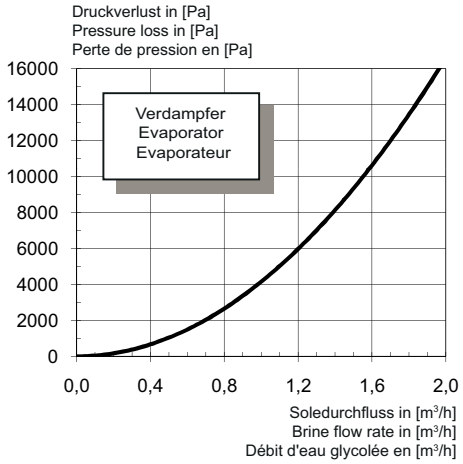


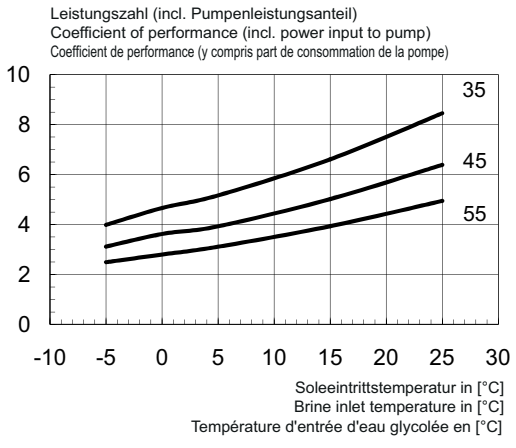
2 Diagramme / Diagrams / Diagrammes

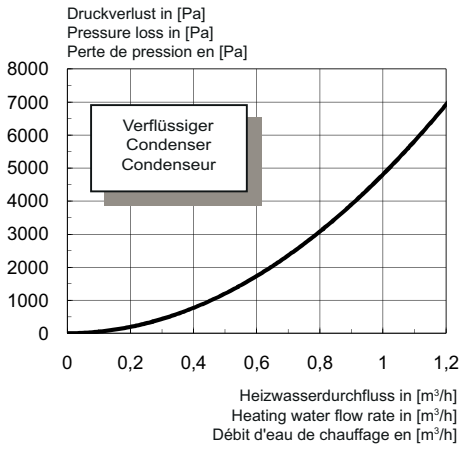
2.1 Kennlinien / Characteristic Curves / Courbes caractéristiques SI 6TU



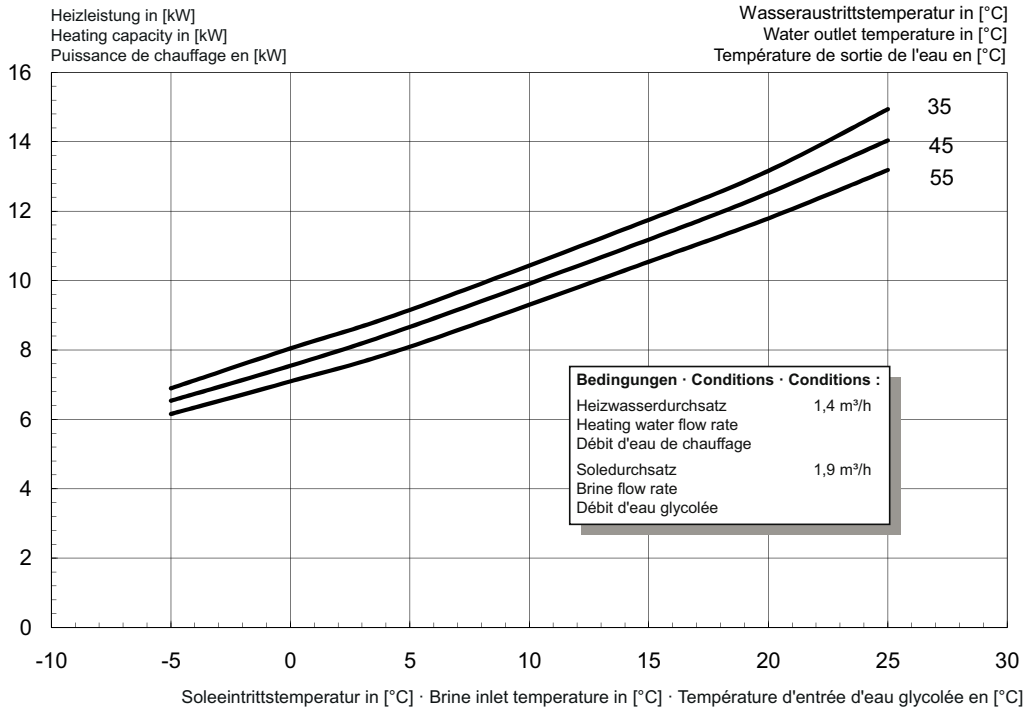


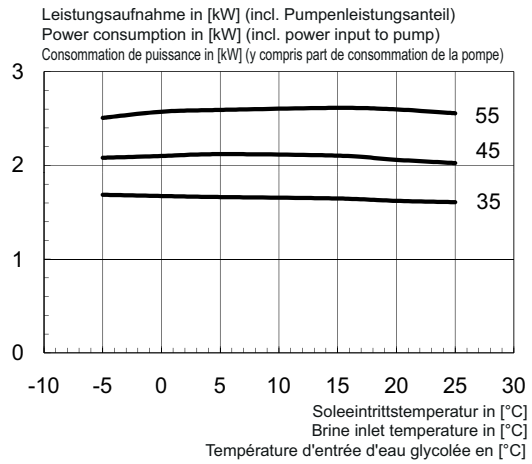


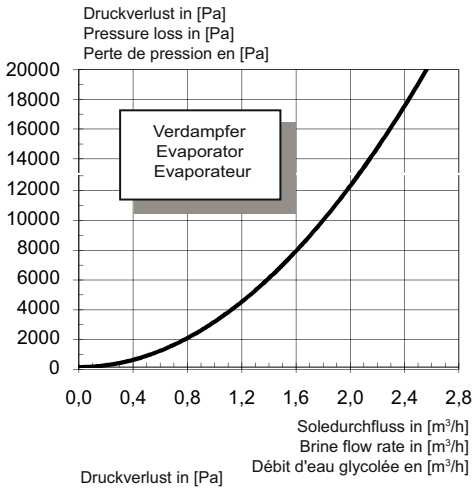


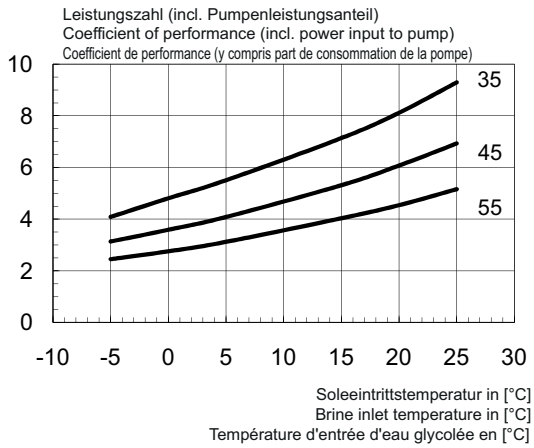


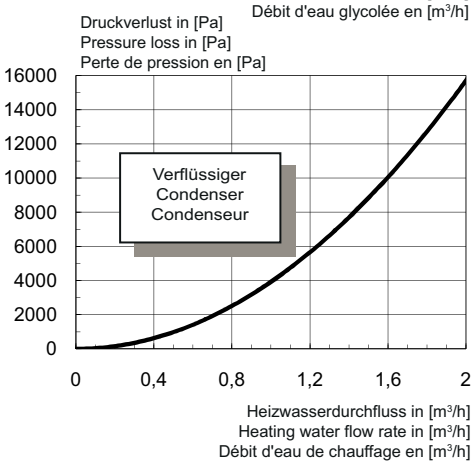
2.2 Kennlinien / Characteristic Curves / Courbes caractéristiques SI 8TU



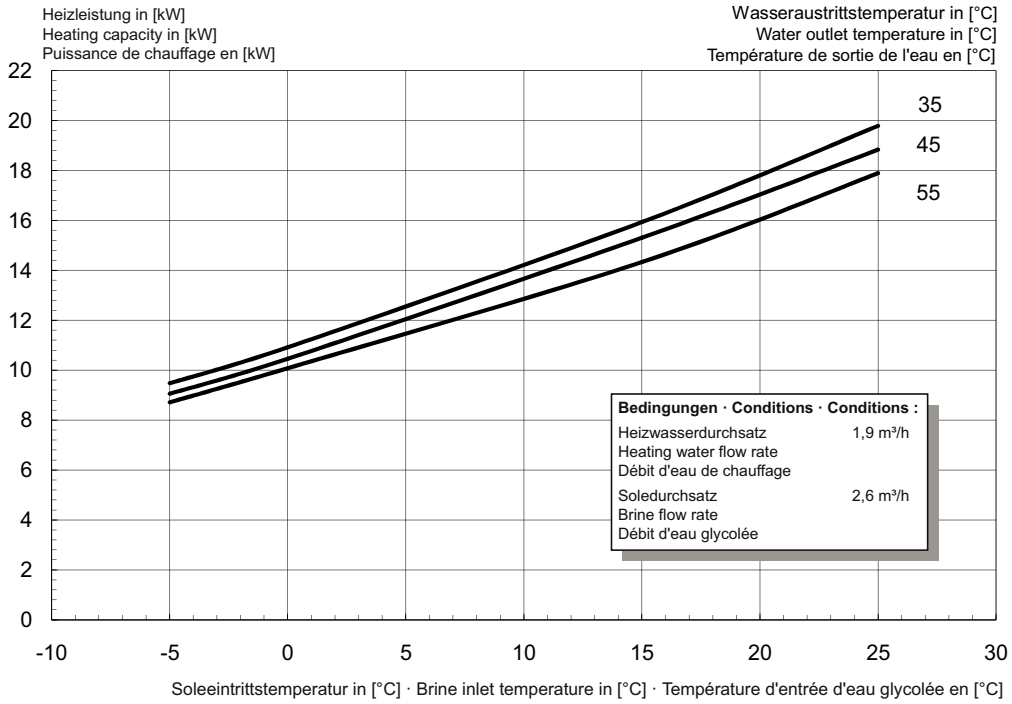


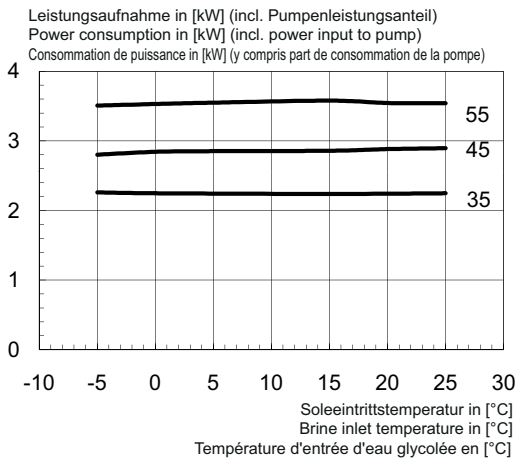


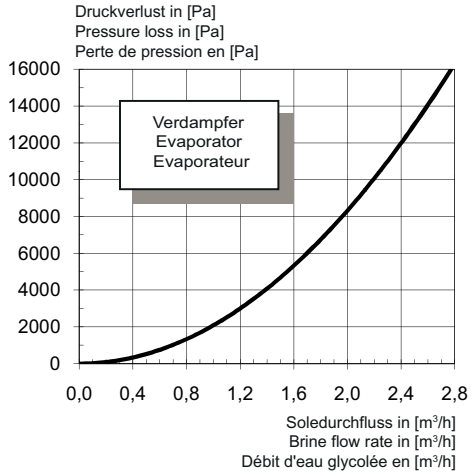


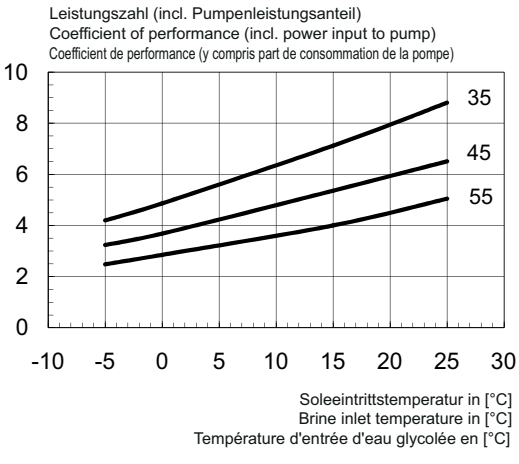


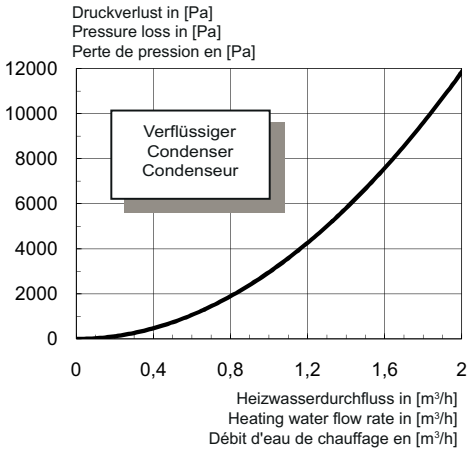
2.3 Kennlinien / Characteristic Curves / Courbes caractéristiques SI 11TU



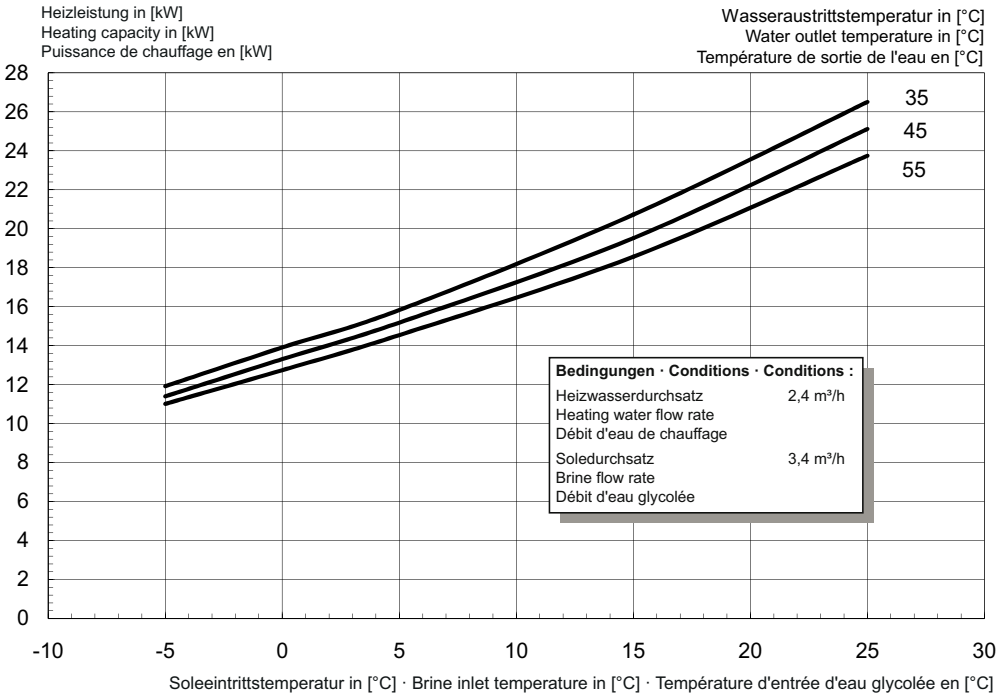


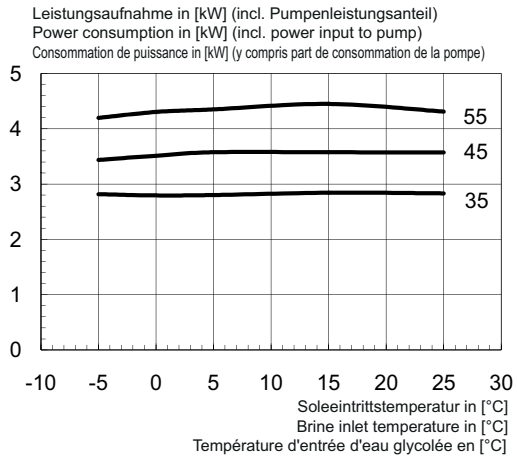


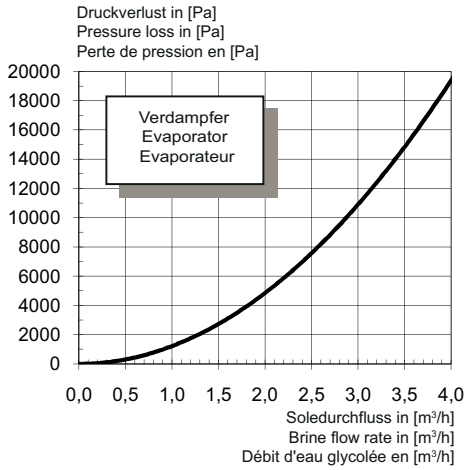


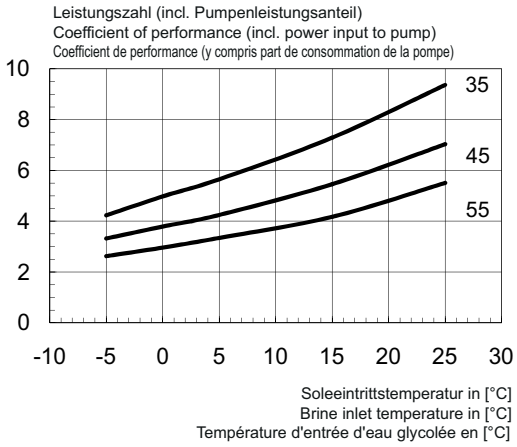


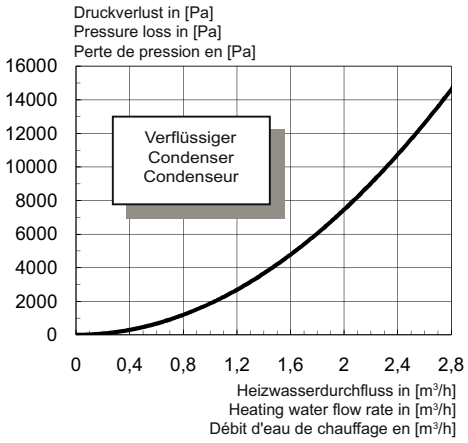
2.4 Kennlinien / Characteristic Curves / Courbes caractéristiques SI 14TU



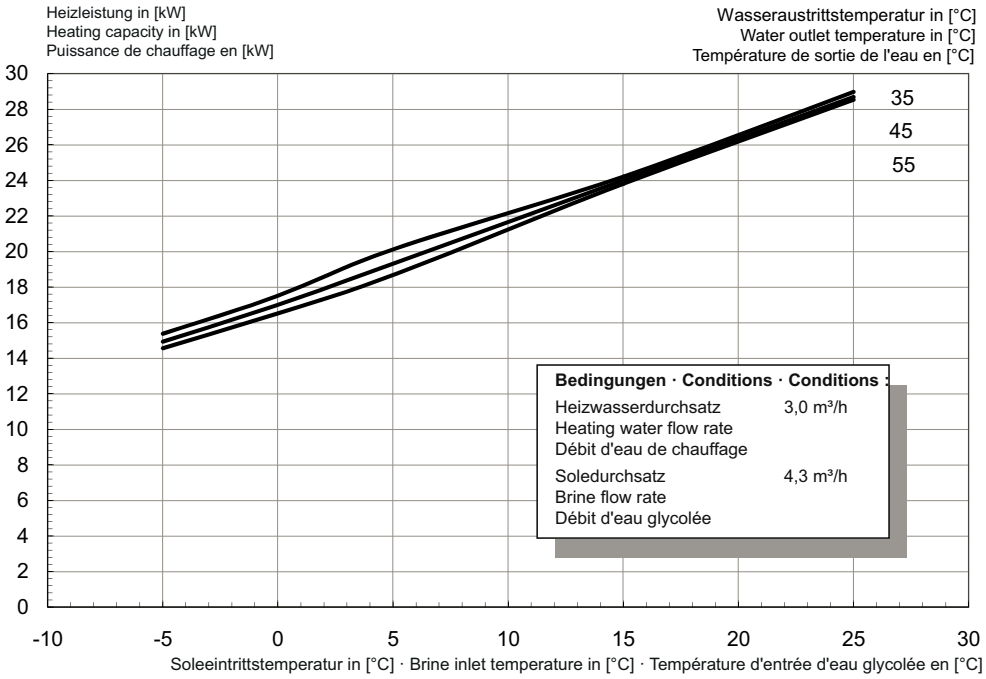


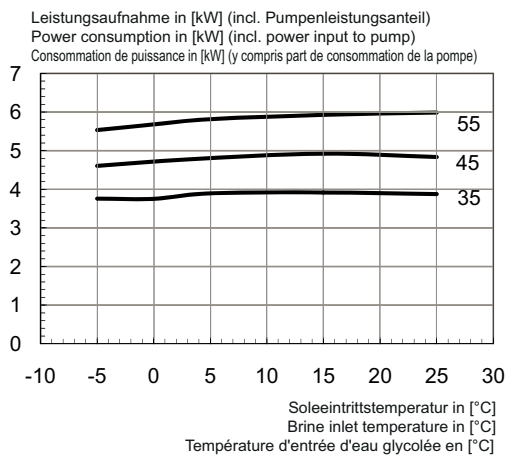


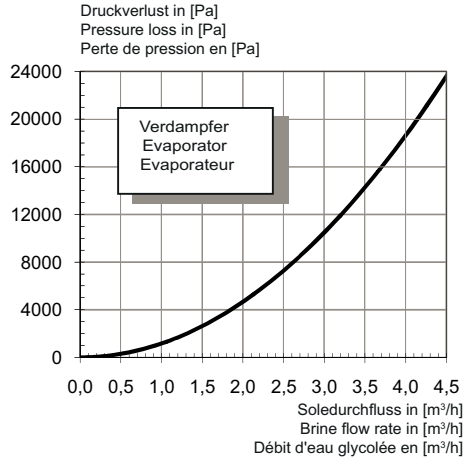


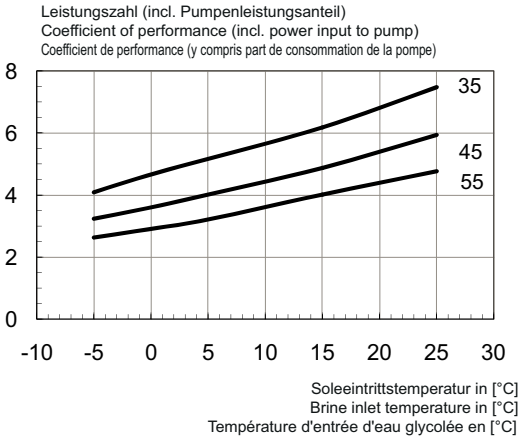


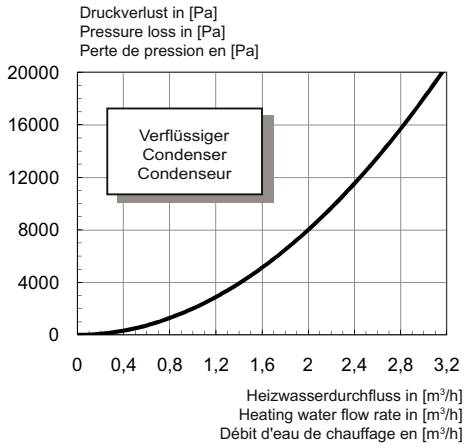
2.5 Kennlinien / Characteristic Curves / Courbes caractéristiques SI 18TU



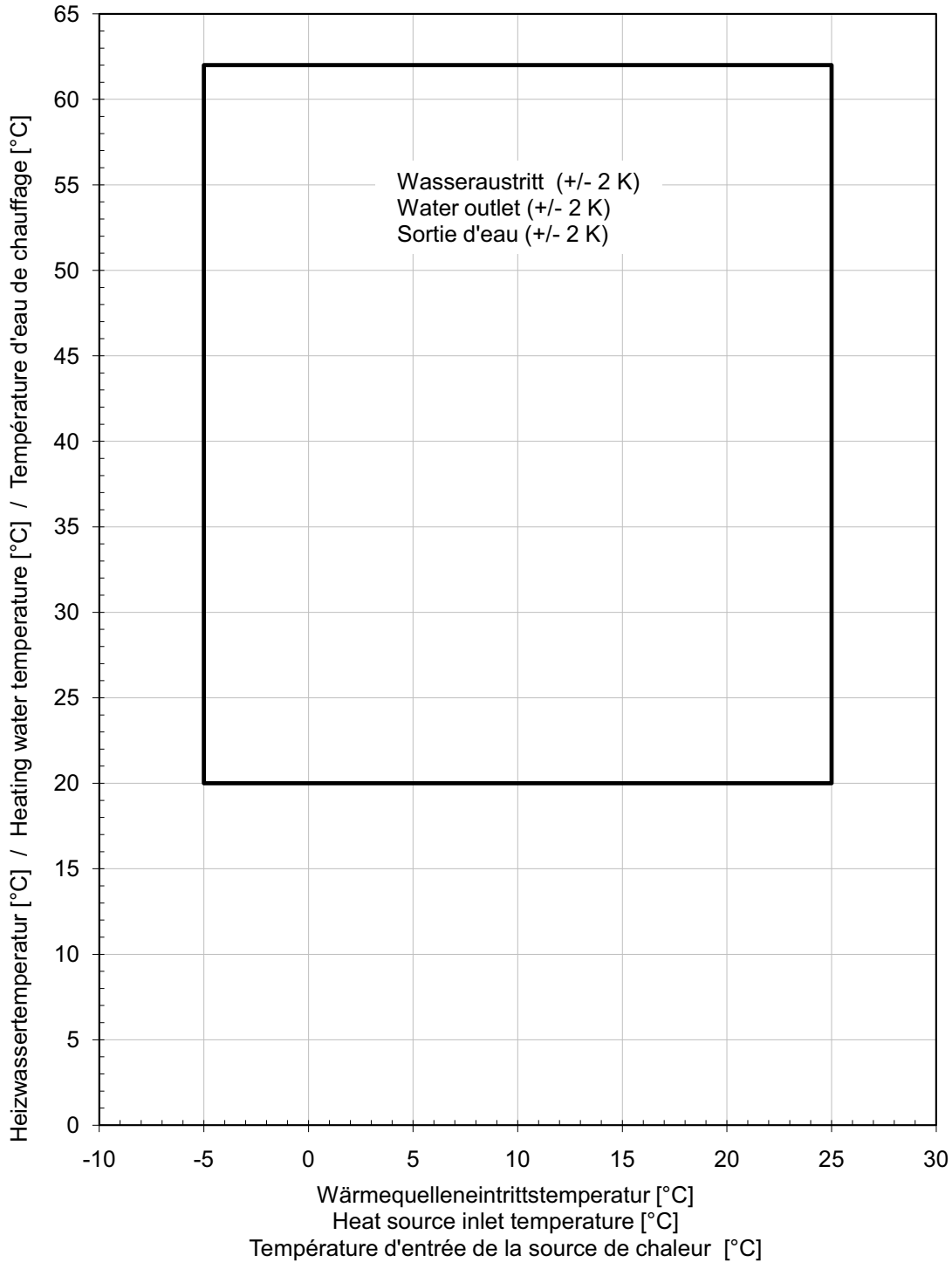






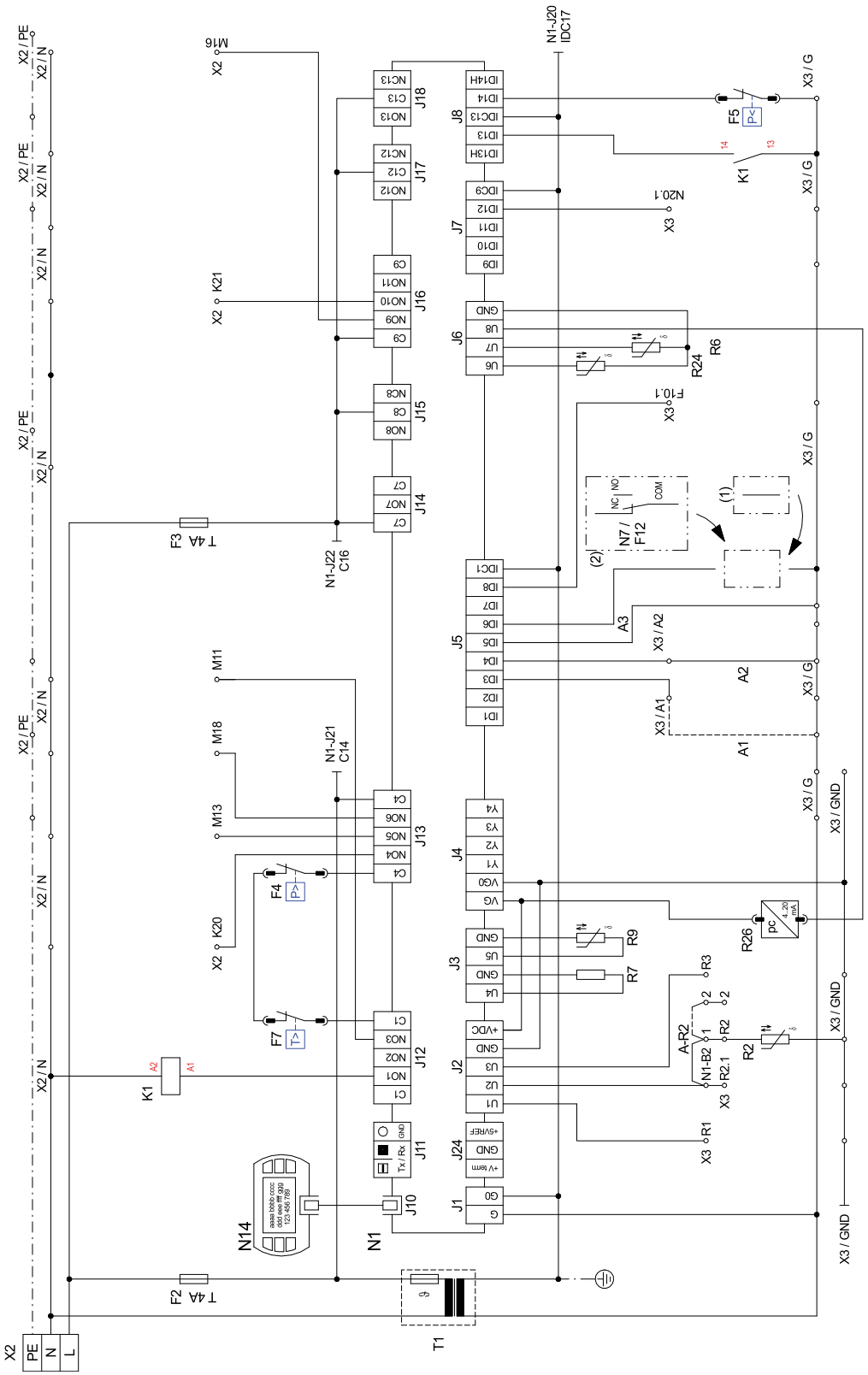


2.6 Einsatzgrenzendiagramm / Operating limits diagram / Diagramme des seuils d'utilisation SI 6TU - SI 18TU

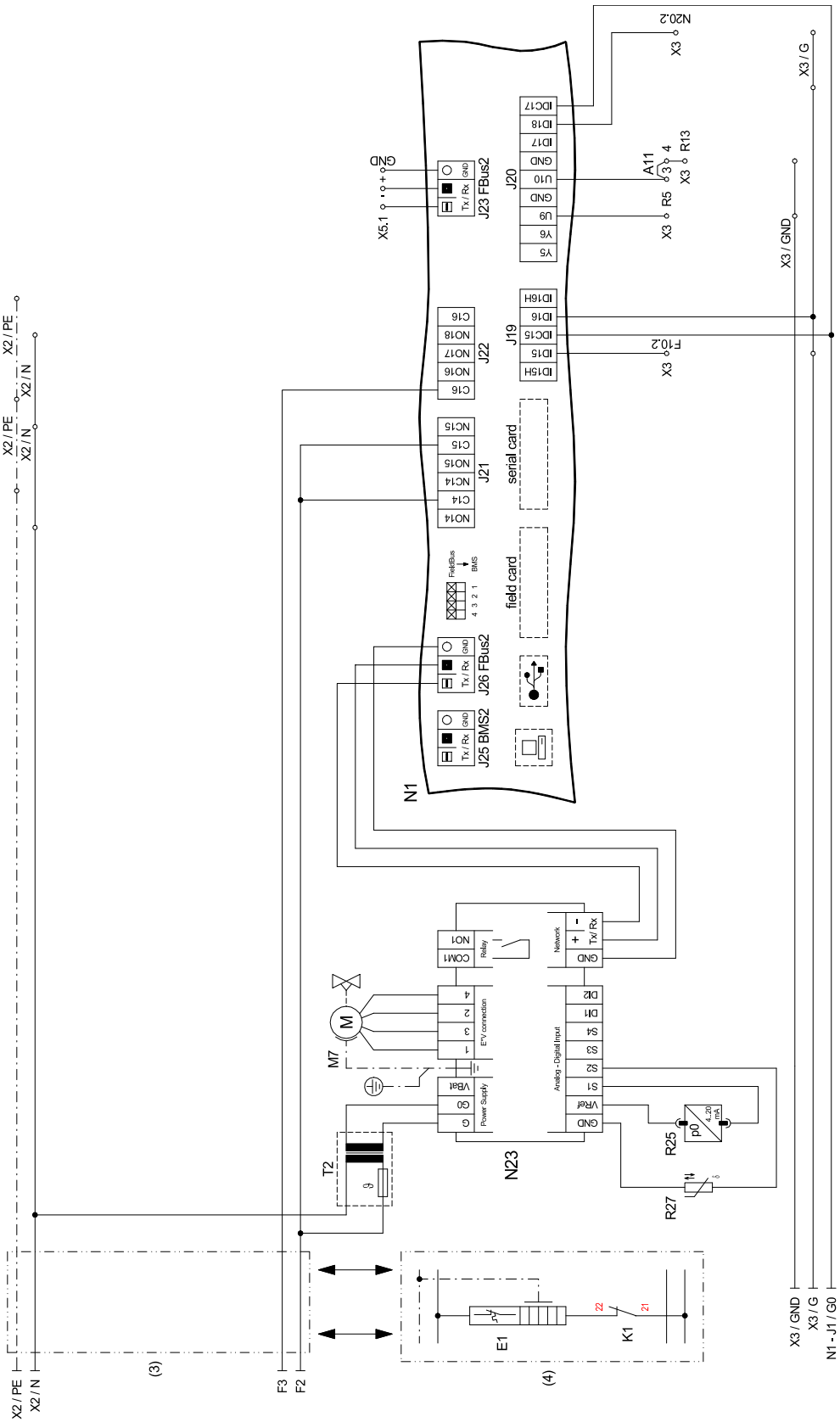


3 Stromlaufpläne / Circuit Diagrams / Schémas électriques

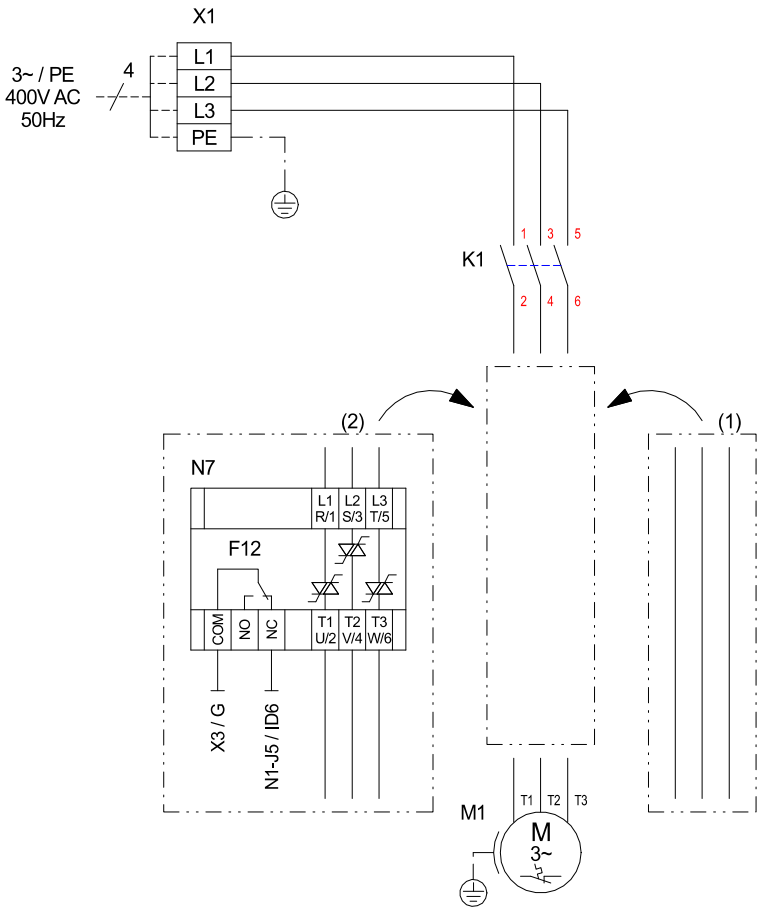
3.1 Steuerung / Control / Commande



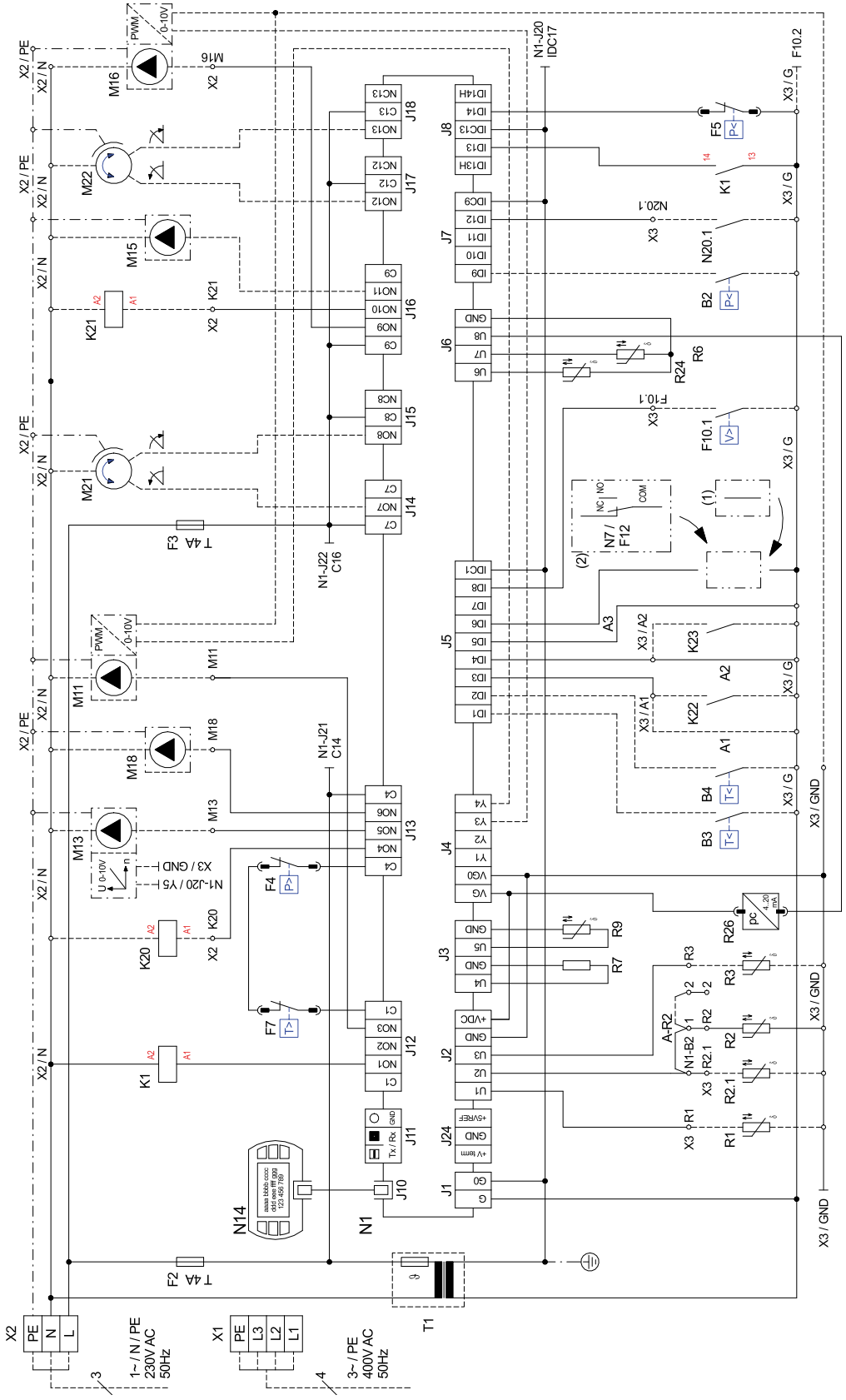
3.2 Steuerung / Control / Commande



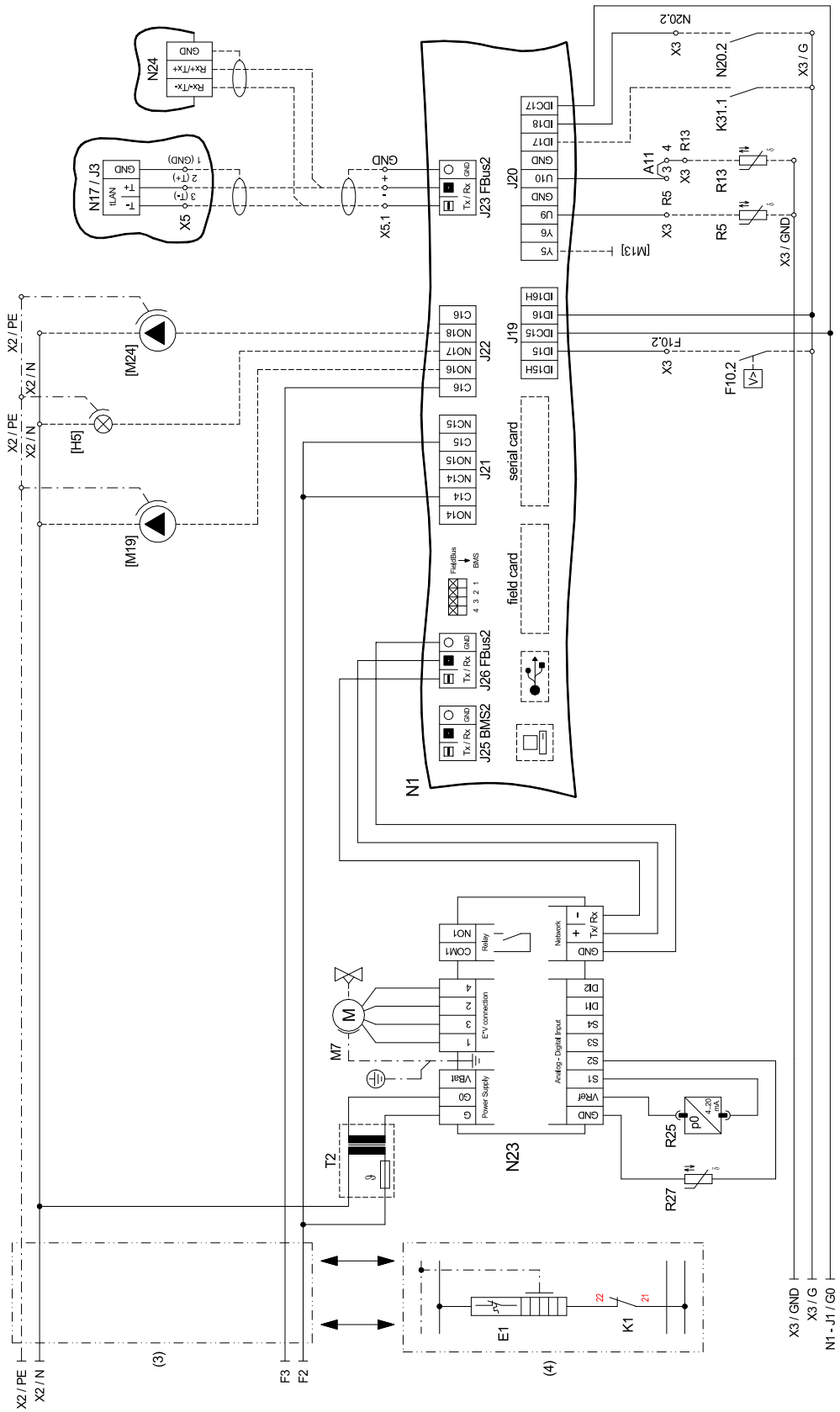
3.3 Last / Load / Charge



3.4 Anschlussplan / Connection Plan / Schéma de connexion



3.5 Anschlussplan / Connection Plan / Schéma de connexion



3.6 Legende / Legend / Légende

A1	Brücke EVU-Sperre, muss eingelegt werden, wenn kein EVU-Sperrschütz vorhanden ist (Kontakt offen = EVU-Sperre	Utility block (EVU) bridge must be inserted if no utility blocking contactor is present (contact open = utility block).	Pont de blocage de la société d'électricité, à insérer en absence de contacteur de blocage de la société d'électricité (contact ouvert = blocage de la société d'électricité)
A2	Brücke Sperre: muss entfernt werden, wenn der Eingang genutzt wird (Eingang offen = WP gesperrt)	Block bridge: Must be removed when the input is being used (input open = HP blocked).	Pont de blocage : à retirer si l'entrée est utilisée (entrée ouverte = pompe à chaleur bloquée)
A3	Brücke Störung M11: muß entfernt werden, wenn der Eingang gnutzt wird (Eingang offen = Störung M11)	M11 link cable fault: must be removed when the input is being used (input open = M11 fault)	Pont défaut M11 : à retirer si l'entrée est utilisée (entrée ouverte = défaut M11)
A11	Brücke Solar: bei Verwendung eines Solarmoduls muss die Brücke entfernt werden und die Klemmstellen mit dem Solar-Modul verbunden werden.	Solar bridge: When a solar energy module is used, the bridge must be removed and the solar energy module connected to the terminal connections.	Pont solaire : en cas d'utilisation d'un module solaire, retirer le pont et connecter les bornes au module solaire.
A - R2	Brücke Rücklauffühler: - muss versetzt werden, wenn doppelt differenzdruckloser Verteiler und „Heizkreisumkehrventil" verwendet wird. Neue Klemmstellen: X3 / 1 und X3 / 2	Return sensor bridge: - Must be moved when a dual differential pressureless manifold and a "heating circuit reversing valve" are used. New terminal connections: X3/1 and X3/2	Pont sonde sur circuit de retour : - à déplacer si le distributeur double sans pression différentielle et la « vanne d'inversion du circuit de chauffage » sont utilisés. Nouveaux emplacements de borne : X3 / 1 et X3 / 2
B2*	Pressostat Niederdruck Primärkreis	Low-pressure controller, primary circuit	Pressostat basse pression circuit primaire
B3*	Thermostat Warmwasser	Hot water thermostat	Thermostat eau chaude
B4*	Thermostat Schwimmbadwasser	Swimming pool water thermostat	Thermostat eau de piscine
E1	Ölsumpfheizung	Oil sump heater	Chauffage à carter d'huile
E9*	Tauchheizkörper Warmwasser)	Immersion heater for hot water	Résistance immergée eau chaude sanitaire
E10*	2. Wärmeerzeuger	2ndheat generator	2ème générateur de chaleur
F2	Sicherung für Steckklemmen J12; J13 und J21 5x20 / 4,0AT	Fuse for plug-in terminals J12; J13 and J21 5x20 / 4.0AT	Fusible pour bornes enfichables J12 ; J13 et J21 5x20 / 4,0AT
F3	Sicherung für Steckklemmen J15 bis J18 und J22 5x20 / 4,0AT	Fuse for plug-in terminals J15 to J18 and J22 5x20 / 4.0AT	Fusible pour bornes enfichables J15 à J18 et J22 5x20 / 4,0AT
F4	Hochdruckpressostat	High-pressure switch	Pressostat haute pression
F5	Niederdruckpressestat	Low-pressure switch	Pressostat basse pression
F7	Heißgasthermostat	Hot gas thermostat	Thermostat gaz chaud
F10.1*	Durchflussschalter Primärkreis	Flow rate switch for primary circuit	Commutateur de débit circuit primaire
F10.2*	Durchflussschalter Sekundärkreis	Flow rate switch for secondary circuit	Commutateur de débit circuit secondaire
F12	Störmeledekontakt N7	Fault signaling contact N7	Contact de signalisation de défauts N7
[H5]*	Leuchte Störfernanzeige	Remote fault indicator lamp	Témoin de télédétection de pannes
J1	Spannungsversorgung	Voltage supply	Alimentation en tension
J2-3	Analogeingänge	Analogue inputs	Entrées analogiques
J4	Analogausgänge	Analogue outputs	Sorties analogiques
J5	Digitaleingänge	Digital inputs	Entrées numériques
J6	Analogausgänge	Analogue outputs	Sorties analogiques
J7-8	Digitaleingänge	Digital inputs	Entrées numériques
J10	Bedienteil	Control panel	Unité de commande
J11	frei	free	libre
J12-J18	230 V AC - Ausgänge	230V AC outputs 230 V AC - outputs	Sorties 230 V AC
J19	Digitaleingänge	Digital inputs	Entrées numériques
J20	Analogausgänge; Analogeingänge, Digitaleingänge	Analogue outputs; Analogue inputs, Digital inputs	Sorties analogiques, entrées analogiques, entrées numériques
J21-22	Digitalausgänge	Digital outputs	Sorties numériques
J23	Bus-Verbindung zu Modulen	Bus connection to modules	Raccordement Bus aux modules
J24	Spannungsversorgung für Komponenten	Power supply for components	Alimentation en tension des composants
J25	Schnittstelle	Interface	Interface
J26	Bus - Verbindung intern	Bus connection internal	Raccordement interne au bus
K1	Schütz M1	Contactor M1	Contacteur M1
K20*	Schütz E10	Contactor E10	Contacteur E10
K21*	Schütz E9	Contactor E9	Contacteur E9
K22*	EVU-Sperrschütz	Utility blocking contactor	Contacteur de coupure du fournisseur d'énergie
K23*	Hilfsrelais für Sperreingang	Auxiliary relay for disable contactor	Relais auxiliaire pour entrée du contacteur de blocage
K31.1*	Anforderung Zirkulation Warmwasser	Domestic hot water circulation request	Demande circulation ECS
M1	Verdichter	Compressor	Compresseur
M7	Stellmotor für Expansionsventil	Actuator for expansion valve	Servomoteur pour détendeur
M11*	Primärkreispumpe	Primary circuit pump	Pompe circuit primaire
M13*	Heizungsumwälzpumpe	Heat circulating pump	Circulateur de chauffage
M15*	Heizungsumwälzpumpe 2. Heizkreis	Heat circulating pump for heating circuit 2	Circulateur de chauffage pour le 2e circuit de chauffage
M16*	Zusatzumwälzpumpe	Auxiliary circulating pump	Circulateur supplémentaire
M18*	Warmwasserladepumpe	Hot water loading pump	Pompe de charge eau chaude sanitaire
[M19]*	Schwimmbadwasserumwälzpumpe	Swimming pool circulating pump	Circulateur de la piscine
M21*	Mischer Hauptkreis oder 3. Heizkreis	Mixer for main circuit or heating circuit 3	Mélangeur circuit principal ou 3ème circuit de chauffage
M22*	Mischer 2. Heizkreis	Mixer for heating circuit 2	Mélangeur 2e circuit de chauffage
[M24]*	Zirkulationspumpe Warmwasser	Domestic hot water circulating pump	Pompe de circulation eau chaude sanitaire
N1	Regeleinheit	Control unit	Unité de régulation
N7	Sanftanlaufsteuerung M1	Soft start control M1	Commande de démarrage progressif M1
N14	Bedienteil	Control panel	Unité de commande
N17*	pCOe-Modul	pCOe module	Module pCOe
N20	Wärmemengenzähler	Thermal energy meter	Compteur de chaleur
N23	Ansteuerung elektronisches Expansionsventil E*V connection (1 = grün; 2 = gelb; 3 = braun; 4 = weiß)	Control for electronic expansion valve E*V connection (1=green; 2=yellow; 3=brown; 4=white)	Commande détendeur électronique connexion E*V (1=vert ; 2=jaune ; 3=marron ; 4=blanc)
N24*	Smart RTC	Smart RTC	Smart RTC
R1*	Außenfühler	External sensor	Sonde extérieure
R2	Rücklauffühler Heizkreis	Return sensor for heating circuit	Sonde de retour circuit de chauffage

R2.1*	Rücklauffühler Heizkreis im doppelt differenzdrucklosen-Verteiler	Return sensor for heating circuit in dual differential pressureless manifold	Sonde de retour circuit de chauffage dans le distributeur double sans pression différentielle
R3*	Warmwasserfühler	Hot water sensor	Sonde d'eau chaude
R5*	Fühler 2. Heizkreis	Sensor for heating circuit 2	Sonde pour 2e circuit de chauffage
R6	Vorlauffühler Primärkreis	Flow sensor for primary circuit	Sonde aller circuit primaire
R7	Codierwiderstand	Coding resistor	Résistance de codage
R9	Vorlauffühler Heizkreis	Flow sensor for heating circuit	Sonde aller circuit de chauffage
R13*	Fühler regenerativ, Raumfühler, Fühler 3. Heizkreis	Renewable sensor, room sensor, sensor for heating circuit 3	Sonde mode régénératif, sonde d'ambiance, sonde 3ème circuit de chauffage
R24	Rücklauffühler Primärkreis	Return sensor, primary circuit	Sonde retour circuit primaire
R25	Drucksensor Kältekreis - Niederdruck pO	Pressure sensor for refrigerating circuit - low pressure pO	Capteur de pression circuit réfrigérant - basse pression pO
R26	Drucksensor Kältekreis - Hochdruck pc	Pressure sensor for refrigerating circuit - high pressure pc	Capteur de pression circuit réfrigérant - haute pression pc
R27	Sauggasfühler	Suction gas sensor	Sonde de gaz d'aspiration
T1	Sicherheitstransformator 230 / 24 V AC - Regelung	Safety transformer 230 / 24 V AC - regulation	Transformateur de sécurité 230 / 24 V AC - Régulation
T2	Sicherheitstransformator 230 / 24 V AC - N23	Safety transformer 230 / 24 V AC - N23	Transformateur de sécurité 230 / 24 V AC - N23
X1	Klemmleiste Einspeisung Last	Terminal strip, infeed	Alimentation bornier
X2	Klemmleiste Spannung = 230 V AC	Terminal strip voltage = 230 V AC	Tension bornier = 230 V AC
X3	Klemmleiste Kleinspannung < 25 V AC	Terminal strip, extra-low voltage < 25 V AC	Faible tension bornier < 25 V AC
X5.1	Busverteilerklemme	Bus distribution board terminal	Réglettes Bus
*	Bauteile sind bauseits anzuschließen / beizustellen	Components must be connected / supplied by the customer	Les pièces sont à raccorder / à fournir par le client
[ ]	Flexible Beschaltung - siehe Vorkonfiguration (Änderung nur durch Kundendienst!)	Flexible switching - see pre-configuration (changes by after-sales service only!)	Commande flexible - voir pré-configuration (modification uniquement par le SAV !)
------	werksseitig verdrahtet	Wired ready for use	câblé en usine
- - - - - -	bauseits bei Bedarf anzuschließen	To be connected by the customer as required	À raccorder par le client au besoin
(1)	nur bei SI 6TU	only in case of SI 6TU	uniquement pour SI 6TU
(2)	nur bei SI 8TU, SI 11TU, SI 14TU, SI 18TU	only in case of SI 8TU, SI 11TU, SI 14TU, SI 18TU	uniquement pour SI 8TU, SI 11TU, SI 14TU, SI 18TU
(3)	nur bei SI 6TU, SI 8TU, SI 11TU, SI 14TU	only in case of SI 6TU, SI 8TU, SI 11TU, SI 14TU	uniquement pour SI 6TU, SI 8TU, SI 11TU, SI 14TU
(4)	nur bei SI 18TU	only in case of SI 18TU	uniquement pour SI 18TU

⚠ ACHTUNG!

An den Steckklemmen N1-J1 bis J11, J19, J20; J23 bis J26 und den Klemmleisten X3, X5.1 liegt Kleinspannung an. Auf keinen Fall darf hier eine höhere Spannung angelegt werden.

⚠ ATTENTION!

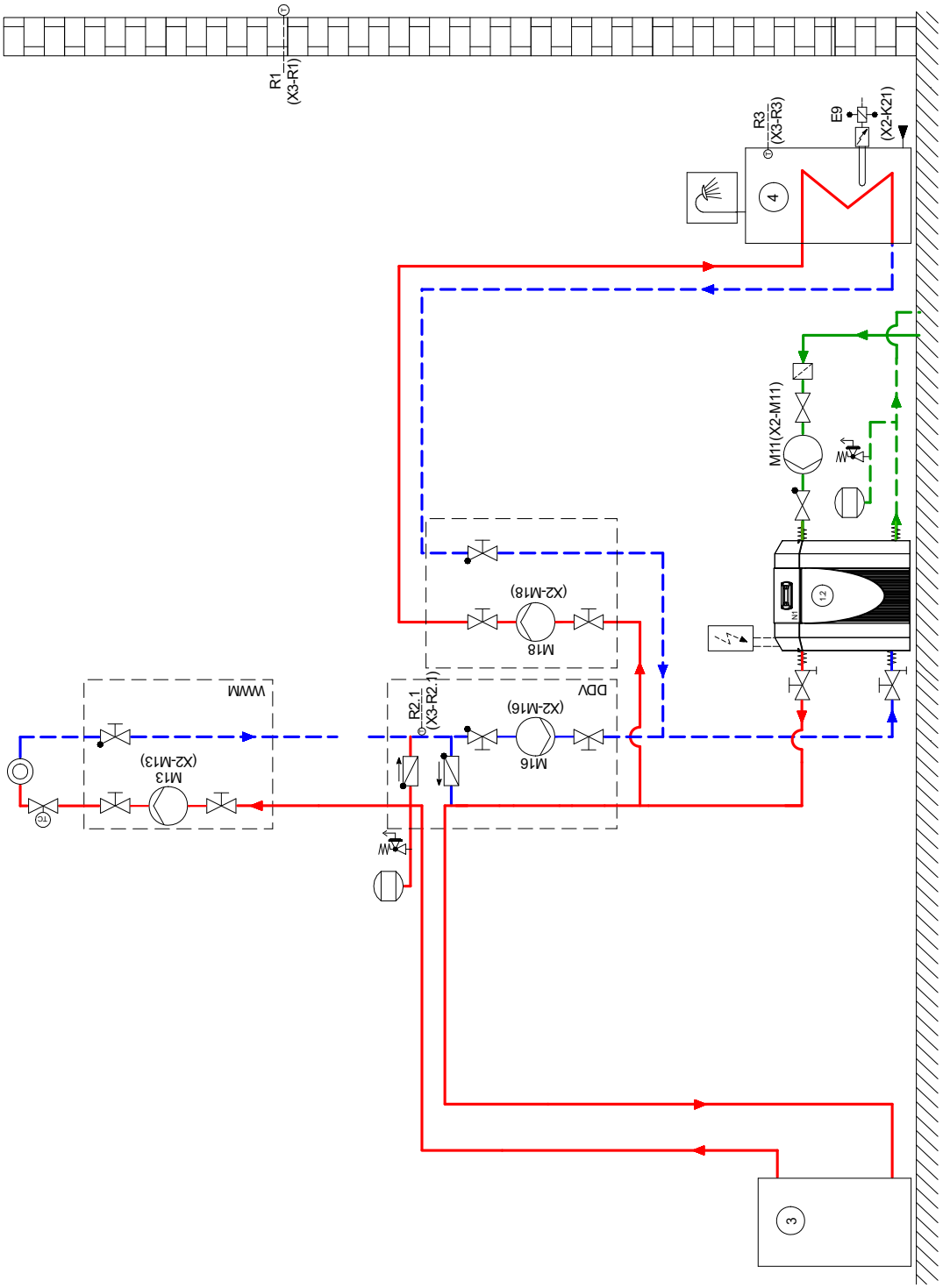
Plug-in terminals N1-J1 to J11, J19, J20, J23 to J26 and terminal strip X3, X5.1 are connected to extra-low voltage. A higher voltage must on no account be connected.

⚠ ATTENTION !

Une faible tension est appliquée aux bornes enfichables N1-J1 à J11, J19, J20, J23 à J24 et au bornier X3, X5.1. Ne jamais appliquer une tension plus élevée.

4 Hydraulisches Einbindungsschema / Hydraulic integration diagram / Schéma d'intégration hydraulique

4.1 Monovalente Wärmepumpenanlage mit einem Heizkreis und Warmwasserbereitung / Monovalent heat pump system with one heating circuits and domestic hot water preparation / Installation monovalente de pompe à chaleur avec une circuits de chauffage et production d'eau chaude sanitaire



4.2 Legende / Legend / Légende

	Rückschlagventil	Check valve	Clapet anti-retour
	Absperrventil	Shutoff valve	Robinet d’arrêt
	Schmutzfänger	Dirt trap	Filtre
	Umwälzpumpe	Circulating pump	Circulateur
	Ausdehnungsgefäß	Expansion vessel	Vase d´expansion
	Raumtemperaturgesteuertes Ventil	Room temperature-controlled valve	Vanne commandée par température ambiante
	Absperrventil mit Rückschlagventil	Shutoff valve with check valve	Robinet d’arrêt avec clapet anti-retour
	Absperrventil mit Entwässerung	Shutoff valve with drainage	Robinet d'arrêt avec écoulement
	Sicherheitsventilkombination	Safety valve combination	Groupe de valves de sécurité
	Wärmeverbraucher	Heat consumer	Consommateur de chaleur
	Temperaturfühler	Temperature sensor	Sonde de température
	Flexibler Anschlussschlauch	Flexible connection hose	Tuyau de raccord flexible
	Rückschlagklappe	Check valve	Clapet anti-retour
	Sole/Wasser-Wärmepumpe	Brine-to-water heat pump	Pompe à chaleur eau glycolée-eau
	Reihen-Pufferspeicher	Buffer tank connected in series	Ballon tampon en série
	Warmwasserspeicher	Hot water cylinder	Ballon d’eau chaude sanitaire
E9	Flanschheizung Warmwasser	Flange heater, hot water	Cartouche chauffante ECS
K21	Schütz Flanschheizung	Contactor for flange heater	Contacteur cartouche chauffante
M11	Primärumwälzpumpe	Primary circulating pump	Circulateur primaire
M13	Heizungsumwälzpumpe	Heat circulating pump	Circulateur de chauffage
M16	Zusatzumwälzpumpe	Auxiliary circulation pump	Circulateur supplémentaire
M18	Warmwasserladepumpe	Hot water loading pump	Pompe de charge eau chaude sanitaire
N1	Wärmepumpenmanager	Heat pump manager	Gestionnaire de pompe à chaleur
R1	Außenwandfühler	External wall sensor	Sonde sur mur extérieur
R2.1	Zusatzrücklauffühler	Additional return flow sensor	Sonde supplémentaire sur circuit de retour
R3	Warmwasserfühler	Hot water sensor	Sonde sur circuit d’eau chaude sanitaire

5 Konformitätserklärung / Declaration of Conformity / Déclaration de conformité

Die aktuelle CE-Konformitätserklärung finden sie als Download unter:
You can find and download the current CE conformity declaration at:
Vous pouvez télécharger la déclaration de conformité CE actuelle sous :

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