



Wärmepumpen- Regler

für Wärmepumpen mit vereinfachter Regelung (WPC) zum Heizen und Kühlen

Heat Pump Controller

for heat pumps with simplified regulation (HPC) for heating and cooling

Régulateur de pompe à chaleur

pour pompes à chaleur à régulation simplifiée (WPC) pour chauffage et rafraîchissement

Einstellung der Sprache

- Bei Netzwiederkehr ist in der Displayanzeige die Auswahl der Sprache möglich.
Dazu die Taste ENTER (↵) betätigen und
- Gewünschte Sprache mit Pfeiltasten (↑ und ↓) einstellen
- Gewählte Sprache mit Taste ENTER (↵) bestätigen
- Mit Pfeiltaste (↓) zur Betriebsanzeige

Setting the language

- When the network is available again, the language can be selected on the display. Proceed as follows:
Press the ENTER (↵) key and
- Set the required language using the arrow keys (↑ and ↓)
- Confirm the selected language with the ENTER (↵) key
- Press the arrow key (↓) to go to the operation display

Réglage de la langue

- Il est possible de choisir la langue désirée pour l'affichage à l'écran au retour du courant
Appuyez alors sur la touche ENTER (↵) et
- choisissez la langue que vous désirez avec les touches pourvues de flèches (↑ et ↓)
- Confirmez la langue choisie avec la touche ENTER (↵)
- Utilisez la touche (↓) pour revenir à l'affichage de fonctionnement

Nastavení jazyka

- Při návratu sítě je na zobrazení displeje možné si vybrat jazyk.
Pro výběr stiskněte tlačítko ENTER (↵) a
- Nastavte požadovaný jazyk šipkovými tlačítky (↑ a ↓)
- Zvolený jazyk potvrďte tlačítkem ENTER (↵)
- Šipkovým tlačítkem (↓) k ukazateli provozu

Impostazione della lingua

- Al ritorno della tensione di rete, è possibile selezionare la lingua sul display.
A tale scopo, premere il tasto ENTER (↵) e
- Selezionare la lingua desiderata utilizzando i tasti freccia (↑ e ↓)
- Confermare la lingua selezionata premendo il tasto ENTER (↵)
- Tornare alla visualizzazione di funzionamento con il tasto freccia (↓)

Instellen van de taal

- Wanneer het net weer ter beschikking staat, kan in het display de taal gekozen worden.
Druk hiervoor op de ENTER-toets (↵) en
- Stel de gewenste talen via de pijltoetsen (↑ en ↓) in
- Druk op de ENTER-toets (↵) om uw keuze te bevestigen
- Met de pijltoets (↓) komt u naar het weergavedisplay

Språkinställning

- När nätet återkommer kan man välja språk på bildskärmen.
Tryck på tangenten ENTER (↵) och ställ in
- önskat språk med piltangenterna (↑ och ↓).
- Bekräfta valt språk med tangenten ENTER (↵).
- Med piltangenten kommer man tillbaka till (↓) driftsindikeringen.

Nastavitev jezika

- Pri ponovnem delu na omrežju je prek prikaza na zaslonu mogoče izbrati jezik.
V ta namen pritisnite tipko ENTER (↵) in
- nastavite s tipkama s puščico (↑ in ↓) željen jezik.
- Izbran jezik nato s tipko ENTER (↵) potrdite.
- S tipko s puščico (↓) pridete k prikazu obratovalnega stanja.

Ustawienia języka

- Po włączeniu urządzenia możliwe jest dokonanie wyboru języka na wyświetlaczu.
W tym celu należy przycisnąć klawisz ENTER (↵) i
- ustawić przy pomocy klawiszy ze strzałkami (↑ i ↓) żądany język
- potwierdzić wybrany język za pomocą klawisza ENTER (↵)
- za pomocą klawisza ze strzałką (↓) przejść do wskazań roboczych

工作语言选择

- 当恢复供电时可在电子显示器上进行工作语言选择。
操作时请击回车键 ENTER (↵) 确认，然后
 - 按箭头键 (↑ 和 ↓) 选择想要的工作语言
 - 再次击回车键 ENTER (↵) 以对选定的语言进行确认
 - 按箭头键 (↓) 进入工作显示
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1 Important Information

- During start-up, observe the respective national safety regulations and the applicable VDE safety regulations, particularly VDE 0100 as well as the technical connection requirements of the utility companies and network operators!
- The heat pump controller should only be operated in dry rooms with temperatures ranging between 0 °C and 35 °C. Ensure that no condensation forms on the device.
- All sensor connecting leads with a conductor cross-section of 0.75 mm can be extended to a maximum of 30 m. Sensor leads should not be installed next to power cables.

- To ensure that the antifreeze function of the heat pump works properly, the heat pump controller 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 relays 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 supply voltage.
- The terminals J1 to J8, and the plug connectors X2 (GND, 0 V) are connected to extra-low voltage. If the supply voltage is connected to these terminals because of a wiring error, the heat pump controller will be destroyed.

2 Heat Pump Controller

The heat pump controller can optionally be used for operation of air or brine-to-water heat pumps. We plan to supplement the basic functions of the simplified heat pump control (HPC) with additional regulation functions (e.g. mixer regulation). It can be

used for heating and domestic hot water preparation, or for heating and cooling. It is delivered as a wall-mounted controller and regulates the heating system (radiators and circulation pump).

2.1 Heat pump controller: scope of supply

The heat pump controller can be integrated in two different types of systems.

- Wall-mounted heat pump controller for a heat pump heating system
- Wall-mounted heat pump controller for a heat pump system for heating and cooling (*Chap. 10 on p. 15*).

The scope of supply of the wall-mounted heat pump controller includes:

- Heat pump controller with casing
- 3 dowels (6 mm) with screws for wall mounting
- External temperature sensor
- Operating instructions for users
- Installation and start-up instructions for technicians

3 Installation

3.1 Attaching the wall-mounted heat pump controller

The controller is attached to the wall with the 3 screws and dowels (6 mm) included in the scope of supply. The following mounting procedure should be used to avoid soiling or damaging the controller:

- Mount the dowels for the upper fastening eye at operator level.
- Screw the screw into the dowel so that the controller can be hung up.
- Hang the controller on the upper fastening eye.
- Mark the position of the side fastening eyes.
- Remove the controller.
- Mount the dowels for the side fastening eyes.
- Re-hang the controller and tighten the screws.

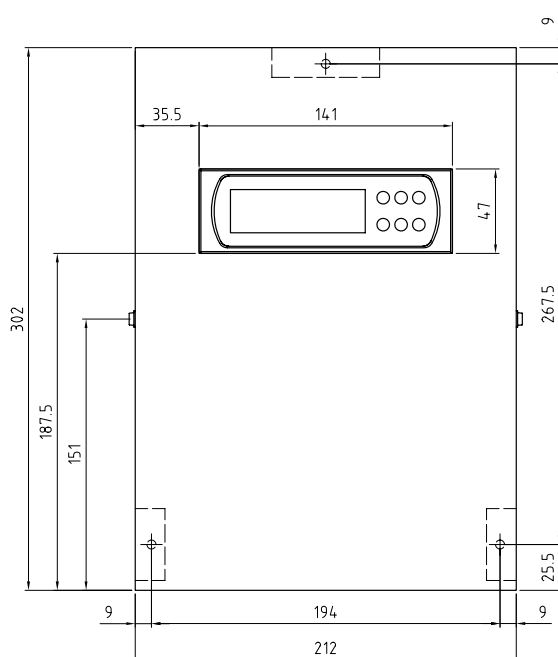


Fig. 3.1: Dimensions of the wall-mounted heat pump controller (heating)

3.2 Temperature sensor (heating controller N16)

All temperature sensors to be connected to the heat pump controller have the sensor characteristic curve illustrated in Fig. 3.3 on p. 3. The only exception is the external temperature sensor included in the scope of supply of the heat pump (see Chap. 3.2.1 on p. 3) It matches the NTC2 sensor characteristic curve.

Depending on the connection type, the following additional temperature sensors must be installed:

- External temperature sensor (Chap. 3.2.1 on p. 3)
- Regulation sensor for flow temperature (mixer circuit)
- Hot water temperature sensor
- Room climate control system for temperature and humidity measurement

	Temperature [°C]										
	-20	-15	-10	-5	0	5	10	15	20	25	
Standard NTC-2 in kΩ	14.62	11.8	8.94	7.07	5.63	4.52	3.65	2.92	2.43	2.00	
Standard NTC-10 in kΩ	67.74	53.39	42.29	33.89	27.28	22.05	17.96	14.86	12.09	10.00	



Fig. 3.2: Heat pump controller (HPC) with integrated display

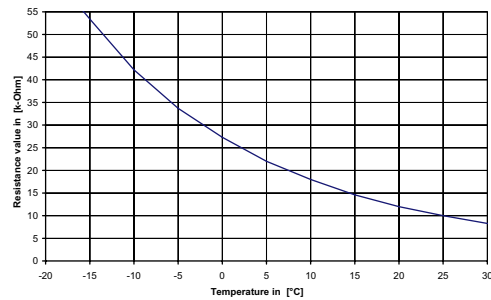


Fig. 3.3: Sensor characteristic curve NTC-10 for connecting to the heat pump controller (HPC)

3.2.1 Mounting the external temperature sensor

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

Installation:

- On the external wall of a heated room used as living space, if possible on the north or north-west side of the building
- Not in a "sheltered position" (e.g. in a wall recess 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

Sensor lead: Max. length 15 m; min. core cross section 0.75 mm²; outer diameter of the cable 4-8 mm.

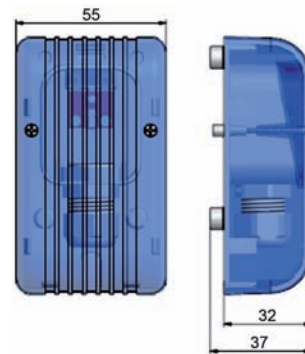


Fig. 3.4: External temperature sensor in a casing for housing for surface mounting

3.2.2 Mounting of the sensor for the mixed heating circuit

Mounting of the sensor for the mixed heating circuit is only required if a second heating circuit is operated with a mixer, or if the "silent cooling" cooling function is used.

The regulating sensor can be installed as pipe-mounted sensor.

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

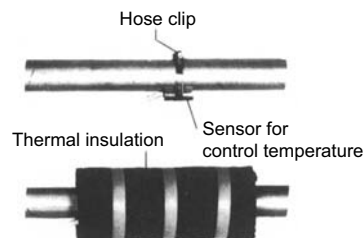


Fig. 3.5: Mounting a pipe-mounted sensor

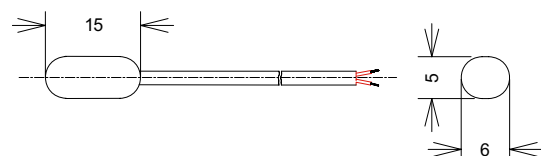


Fig. 3.6: Dimensions of the control temperature sensor in plastic casing

4 Electrical Connection of the Heat Pump Controller to the Heat Pump

- 1) The **supply cable** for the **output section of the heat pump** must be routed as specified in the heat pump installation instructions.
- 2) The three-core **supply cable** for the **heat pump controller** (N16) is routed to its intended mounting location. The supply cable (L/N/PE~230 V, 50 Hz) for the heat pump controller 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, because otherwise important protection functions could be lost during a utility block.
- 3) The **utility blocking contactor** with main contacts and an auxiliary contact should be dimensioned according to the heat pump output and must be supplied on site. The NC contact of the utility blocking contactor is looped from terminal strip **X2/0V** to the connector terminal **J4/ID3**. **CAUTION! Extra-low voltage!** The **A1** wire jumper must be inserted if a blocking contactor is not available.

4) Possible connection variants:

■ Operation: Heating / domestic hot water preparation with hot water sensor:

The **contactor** (K8) for the **flange heater** (E9) in the hot water cylinder should be dimensioned according to the radiator output and must be supplied **on site**.

It is controlled by the HPC via the **X1/N** and **J9/N02** terminals.

For domestic hot water preparation with sensor, the **hot water sensor** (R3) is installed in the hot water cylinder and connected to the terminals **X2/GND** and **J2/B2**. The bridge **A8** must be inserted between **N15/N06** and **X2/1**.

For systems with a second heating circuit, the **sensor for the mixed heating circuit** (R5) is mounted in the **flow**. The sensor is connected to the terminals **X2/GND** and **J2/B4**.

■ Operation: Heating/cooling:

If the cooling function (spec. silent cooling) is required, output **J9/N02** must be connected to terminal **N12-X2/6** (heating pump with HPC).

The **sensor for mixed heating circuit** (R5) must be mounted in the **flow**. The sensor is connected to the terminals **X2/GND** and **J2/B4**.

From the **room climate control station** (N3), the room humidity sensor (required for silent cooling) is connected to the HPC via the terminals **N3-OutH** and **J2/B2**. Furthermore, a connection between terminals **N3-NTC** and **J2/B3** must be established from the room climate control station (N3) for room temperature evaluation.

- 5) The contactors mentioned above in points 3 and 4 are installed in the distribution cabinet. The mains cables for the flange heater must be dimensioned and protected accordingly.
- 6) The **external temperature sensor** (R1) is connected to the terminals **X2/GND** and **J2/B1**.
- 7) The three-way reversing valve for **DHW preparation** (Y5) is connected to the terminal **K24/21**
- 8) The **heat circulating pumps** (M14/M15) are connected between the terminals **J11/NO5** and **X1/N**. They are used, for example, with two heating circuits or with a mixed heating circuit.

- 9) The **mixer** (M21) is connected to **X1/N**. The mixer is controlled by the HPC. For this purpose, the mixer for **Mixer Open** must be connected to terminal **J9/N03** and for **Mixer Closed** to terminal **J10/N04**
- 10) For the **signal exchange** between HPC (N16) and HPC (N12), the following connections must also be established:
 - **X2/2** to **N12-X2/Lout** (supply voltage for digital outputs on HPC)
 - **J9/N01** to **N12-X2/1** (request to heat pump with HPC)
 - **X2/GND** to **N12-X2/8** (input potential for signal exchange)
 - **N15/Y1'** to **N12-X2/9** (return flow temperature setpoint value for heat pump with HPC)
- 11) If the **thermostat** (B3) is used for domestic hot water preparation, bridge **A8** may not be inserted. The thermostat is connected to terminal **X2/1**.
- 12) Optionally, an additional **dew-point monitor** (N5) can be provided **by the customer**. If it is to be evaluated, its NC contact is connected to the terminals **J4/ID2** and **X2/0V** of the heat pump controller (HPC). Bridge **A2** must then be removed. **CAUTION! Extra-low voltage!**

i NOTE

If three-phase pumps are implemented, a power contactor can be controlled via the 230 V output signal of the heat pump controller. Sensor cables can be extended to up to 30 m with 2 x 0.75 mm cables.

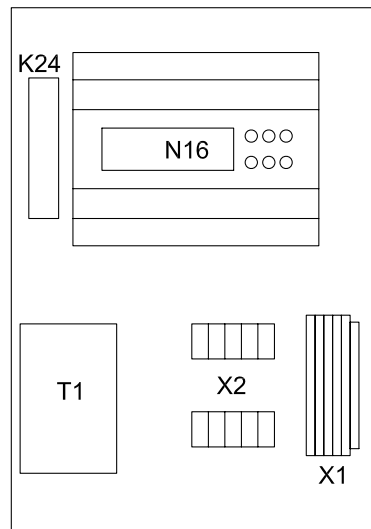


Fig. 4.1: Wall-mounted heat pump controller

K24	Relay, request for hot water
N16	Heat pump controller
T1	Transformer
X1	230 V AC terminal strip
X2	24 V AC terminal strip

5 Preconfiguring the Heat Pump Heating System

The preconfiguration informs the controller about which components are connected to the heat pump heating system. Preconfiguration must be carried out before the system-specific settings in order to show or hide menu items (dynamic menus).

The following table shows not only the menu structure and explanations in the right-hand column, but also the

corresponding setting ranges. Values in bold print indicate the factory settings.

The factory settings in the "Preconfiguration" menu correspond to the integration diagram for a mono energy heat pump (normally an air-to-water heat pump) with 1 compressor and a heating circuit, without DHW heating using the heat pump.

5.1 Menu

You can access the preconfiguration menu by:

- Simultaneously pressing (approx. 5 seconds) the button combination (ESC) and (MENU).
- Exit the preconfiguration via the (ESC) button.

Abbreviations:

HP	Heat pump
AW HP	Air-to-water heat pump
BW HP	Brine-to-water heat pump
WW HP	Water-to-water heat pump

The following presettings must be carried out:

Preconfiguration	Preconfiguration of all system components for dynamic menu structuring	Setting range	Display
Heating circuit 2	Has the system got a heating circuit 2 with a controllable mixer?	No Yes	Always
Cooling	Is active cooling implemented in the system?	No Yes	Always
Domestic hot water prep.	Is DHW heating carried out by the heat pump?	No Yes	Always
Domestic hot water prep. Request by Flange heater	Is a sensor or thermostat used to regulate DHW heating?	Sensor Thermostat	Domestic hot water preparation
	Is a flange heater used in the hot water cylinder for thermal disinfection?	No Yes	Domestic hot water preparation sensor

6 Configuring the Heat Pump Heating System

The menus for “Outputs”, “Inputs” and “Special functions” as well as the extended setting menu can be set at the configuration level. The extended menu level for technicians is called by

simultaneously pressing the button combination (MENUE) and (ENTER ↵) (for approx. 5 seconds)

Select the desired menu item with the arrow buttons and confirm with the ENTER button (↵).

6.1 Settings

Depending on the system configuration, the full “Settings” menu contains the following inquiries:

Settings	System-specific parameters	Setting range	Display
Time	Menu for setting the time.	International 24 h display	Always
Operation	Level for setting operating modes		Always
Operating mode	Selects the operating mode It is also possible to make changes directly using the modus button.	Cooling Summer Auto Party Vacation HG 2	Always
Party mode No. of hours	Duration of party mode in hours After the set period has elapsed, the system returns automatically back to automatic operation again.	0 ... 4 ... 72	Always
Vacation mode No. of days	Duration of vacation mode in days After the set period has elapsed, the system returns automatically to automatic operation again.	0 ... 15 ... 150	Always
Heating circuit 1	Settings for heating circuit 1		Always
Heating circuit 1 Control by	The following heating regulation options are available for heating circuit 1: * Return temperature regulation based on the external temperature and the set heating curve * Return temperature regulation via a fixed-setpoint (horizontal heating characteristic curve) * Return temperature regulation based on the room temperature in a reference room	External temperature Fixed-setpoint Room temperature	Always
Heating curve 1 End point (-20 °C)	The heating curve end point should be set according to the design of the heating system. This should be done by entering the maximum return temperature, which is the product of the maximum calculated flow temperature minus the temperature difference in the heating system (spread).	20 °C ... 30 °C ... 70 °C	External temperature
Heating circuit 1 Fixed-setpoint	Sets the desired return set temperature when fixed-setpoint regulation is selected	15 °C ... 40 °C ... 60 °C	Fixed-setpoint
Heating circuit 1 Room setpoint value	Sets the desired room set temperature when room temperature regulation is selected	15 °C ... 20 °C ... 30 °C	Room regulation
HC1 Return flow Min.	Sets the minimum return temperature when room temperature regulation is selected	15 °C ... 20 °C ... 30 °C	Always

Settings	System-specific parameters	Setting range	Display
HC1 Return flow Max	Different maximum temperatures are permissible for panel and radiator heating systems. The upper limit of the return set temperature can be set between 25 °C and 70 °C.	25 °C ... 50 °C ... 70 °C	Always
HC1 Return flow Hysteresis	The return set temperature hysteresis forms the neutral zone for operation of the heat pump. If the temperature "Return set temperature plus hysteresis" is reached, the heat pump switches itself off. If the temperature "Return set temperature minus hysteresis" is reached, the heat pump switches itself on.	0.5 K ... 2 K ... 5 K	Always
Heating circuit 1 Lower	Settings to lower the heating characteristic curve of heating circuit 1		Always
Heating circuit 1 Time 1 Time 2	Sets the time during which the temperature in heating circuit 1 is to be lowered	00:00 ... 23:59	Always
Heating circuit 1 Lower	Sets the temperature value by which the heating characteristic curve of heating circuit 1 is to be lowered when the temperature is lowered	0K ... 19 K	Always
Heating circuit 1 Mo... Su	For each day of the week, it is possible to select whether Time1, Time2, no time or both times are to be active when the temperature is lowered. Operations to lower the temperature that exceed a weekday are activated or deactivated at the end of each day accordingly.	N T1 T2 Y	Always
Heating circuit 1 Raise	Settings to raise the heating characteristic curve of heating circuit 1		Always
Heating circuit 1 Time 1 Time 2	Sets the time during which the temperature in heating circuit 1 is to be raised.	00:00 ... 23:59	Always
Heating circuit 1 Raise	Sets the temperature value by which the heating characteristic curve of heating circuit 1 is to be raised.	0K ... 19 K	Always
Heating circuit 1 Mo...Su	For each day of the week, it is possible to select whether Time1, Time2, no time or both times are to be active when the temperature is raised. Operations to raise the temperature that exceed a week day are activated or deactivated at the end of each day accordingly.	N T1 T2 Y	Always
Heating circuit 2	Settings for heating circuit 2		Heating circuit 2
Heating circuit 2 Control by	The following heating regulation options are available for heating circuit 2: * Return temperature regulation based on the external temperature and the set heating curve * Return temperature regulation via a fixed-setpoint (horizontal heating characteristic curve)	External temperature Fixed-setpoint	Heating circuit 2
Heating circuit 2 Temperature sensor	The sensor for heating circuit 2 must always be installed in the flow. The sensor for mixer control is used for this.	Flow	Always
Heating circuit 2 End point (-20 °C)	The heating curve end point should be set according to the design of the heating system. For this purpose, the maximum flow temperature must be entered.	20 °C ... 30 °C ... 70 °C	Heating circuit 2 External temperature

Settings	System-specific parameters	Setting range	Display
Heating circuit 2 Fixed-setpoint	Sets the desired return set temperature when fixed-setpoint regulation is selected	15 °C ... 40 °C ... 70 °C	Heating circuit 2 Fixed-setpoint
Heating circuit 2 Colder/Hotter	Parallel shift of the set heating curve for heating circuit 2. By pressing the arrow buttons once, the heating curve is shifted by 1 °C upwards (hotter) or downwards (colder).	Indicator bar	Heating circuit 2
Heating circuit 2 max	Different maximum temperatures are permissible for panel and radiator heating systems. The upper limit of the set temperature can be set to between 25 °C and 70 °C.	25 °C ... 50 °C ... 70 °C	Heating circuit 2
Heating circuit 2 Hysteresis	The return set temperature hysteresis forms the neutral zone for operation of the heat pump.	0.5 K ... 2 K ... 5 K	Heating circuit 2
Heating circuit 2 Runtime	The runtime between the OPEN and CLOSED end positions varies according to the mixer used. The mixer runtime should be adjusted to ensure optimal temperature regulation.	0.5 K ... 2 K ... 5 K	Heating circuit 2
Heating circuit 2 Lower	Settings to lower the heating characteristic curve of heating circuit 2		Heating circuit 2
Heating circuit 2 Time 1 Time 2	Sets the time during which the temperature in heating circuit 2 is to be lowered.	00:00 ... 23:59	Heating circuit 2
Heating circuit 2 Lower	Sets the temperature value by which the heating characteristic curve of heating circuit 2 is to be lowered when the temperature is lowered	0K ... 19 K	Heating circuit 2
Heating circuit 2 Mo... Su	For each day of the week, it is possible to select whether Time1, Time2, no time or both times are to be active when the temperature is lowered. Operations to lower the temperature that exceed a weekday are activated or deactivated at the end of each day accordingly.	N T1 T2 Y	Heating circuit 2
Heating circuit 2 Raise	Settings to raise the heating characteristic curve of heating circuit 2		Heating circuit 2
Heating circuit 2 Time 1 Time 2	Sets the time during which the temperature in heating circuit 2 is to be raised.	00:00 ... 23:59	Heating circuit 2
Heating circuit 2 Raise	Sets the temperature value by which the heating characteristic curve of heating circuit 2 is to be raised.	0K ... 19 K	Heating circuit 2
Heating circuit 2 Mo...Su	For each day of the week, it is possible to select whether Time1, Time2, no time or both times are to be active when the temperature is raised. Operations to raise the temperature that exceed a week day are activated or deactivated at the end of each day accordingly.	N T1 T2 Y	Heating circuit 2
Cooling	Settings for cooling operation		Cooling function
Cooling Dyn. cooling	Does the system have dynamic cooling (fixed return set temperature)?	No Yes	Cooling function
Dyn. cooling return set temp.	Sets the desired return set temperature when dynamic cooling is selected	10 °C ... 15 °C... 30 °C	Cooling function Dyn. cooling
Block Time 1: Time 2:	Two different shut-off times are set during which dynamic cooling is blocked	00:00 ... 23:59	Cooling function Dyn. cooling

Settings	System-specific parameters	Setting range	Display
Block Mo...Su	For each day of the week, it is possible to select whether Time1, Time2, no time or both times are to be active for a dynamic cooling block.	N T1 T2 Y	Cooling function Dyn. cooling
Cooling Silent cooling	Has the system got silent (dew point-controlled) cooling?	Yes No	Cooling function
Silent cooling Room setpoint temp.	Sets the room set temperature for silent cooling The actual value is measured by room climate control station 1	15 °C ... 20 °C ... 30 °C	Cooling function Silent cooling
Silent cooling Dew point distance	Rise in the minimum flow temperature calculated from the measured values from the room climate control station during silent cooling. A raised value reduces the risk that condensate will form.	1.5 K ... 2.0 K ... 5.0 K	Cooling function Silent cooling
Cooling Limit value	Setting of the external temperature below which the cooling operation is terminated in the case of reversible HPs.	-10.0 °C ... 15.0 °C ... 35.0 °C	Cooling function
Domestic hot water	Sets DHW preparation		Domestic hot water Sensor
Domestic hot water Hysteresis	The hysteresis of the hot water set temperature forms the neutral zone below which a request for domestic hot water will be issued.	2 K ... 15 K	Domestic hot water Sensor
Domestic hot water Set temp.	Sets the desired hot water temperature	30 °C ... 45 °C ... 85 °C	Domestic hot water Sensor
Domestic hot water Block	Sets the time programs for hot water blocks		Domestic hot water Sensor
Block Time 1: Time 2:	Sets the times in which DHW preparation is blocked	00:00 ... 23:59	Domestic hot water Sensor
Block Mo...Su	For each day of the week, it is possible to select whether Time1, Time2, no time or both times are to be active when the temperature is lowered. Operations to lower the temperature that exceed a weekday are activated or deactivated at the end of each day accordingly.	N T1 T2 Y	Domestic hot water Sensor
Domestic hot water Therm. disinfection	Thermal disinfection is executed via the flange heater at the set start time. The heating period is terminated automatically when the set temperature is reached or after 4 hours at the latest.		Domestic hot water Sensor Flange heater

Settings	System-specific parameters	Setting range	Display
Therm. disinfection Start time	Sets the start time for the thermal disinfection	00:00 ... 23:59	Domestic hot water Sensor Flange heater
Therm. disinfection Temperature	Sets the desired hot water temperature which is to be reached during thermal disinfection	60 °C ... 65 °C ... 85 °C	Domestic hot water Sensor Flange heater
Therm. disinfection Mo...Su	For each day of the week, it is possible to select whether thermal disinfection is desired at the set start time.	N Y	Domestic hot water Sensor Flange heater
Date Year Day Month	Sets the date, year, day, month and week day		Always
Language	The language for menu navigation can be selected from the available languages	DEUTSCH ENGLISH FRANCAIS ITALIANO CESKY	Always

6.2 Outputs

Depending on the system configuration, the “Outputs” menu displays the “OFF or ON” status display for the following outputs:

Outputs	Display
HP Req.	Always
Cooling	Cooling function
Flange heater	Hot water / sensor / flange heater
Mixer OPEN	Heating circuit 2 or silent cooling
Mixer CLOSED	Heating circuit 2 or silent cooling
Heat pump	Heating circuit 2 or silent cooling
Domestic hot water preparation	Hot water / sensor / flange heater

6.3 Inputs

Depending on the system configuration, the “Inputs” menu shows the “Open or Closed” status display for the following digital inputs:

Inputs	Display
Domestic hot water	Always
Ext. disable cont.	Always
Utility block	Always
1. Fault	Always
2. Fault	Always
3. Fault	Always

7 Energy-efficient Operation

If heating operation is carried out on the basis of the external temperature, the heating controller calculates a return set temperature from the set heating characteristic curve and the current external temperature.

The heating curve should be set to the maximum calculated return temperature of the heating system. By using the buttons Hotter (↑) and Colder (↓), the heating curve can be shifted upwards or downwards in parallel, according to customer requirements, to attain the desired room temperatures.

Regulation via return temperature

Regulating a heat pump heating system via the return temperature offers the following advantages:

- 1) Long runtimes for the heat pump, with all of the circulated heating volume heated according to need.
- 2) Measuring of disturbance variables in the heating system (e.g. passive solar gain).
- 3) A reduction in the temperature spread at a constant return temperature results in lower flow temperatures and thus in more efficient operation.
- 4) The heating curve should be set as high as necessary but as low as possible!

7.1 Setting a heating curve on the basis of the external temperature

The heating curve must be adjusted (separately for heating circuits 1 and 2) to suit the respective building and local conditions so that the desired room temperature is also attained when the external temperatures vary. If the external temperature rises, the return set temperature is lowered, thus ensuring energy-efficient operation of the heating system.

Make selections in the menu “Settings – Heating circuit 1/2 – Control by – External temperature”. The desired heating curve can be set in the following menu item “Heating curve – End point”.

- 1) In the menu “Settings - Heating curve end point”, enter the maximum required return temperature at an external temperature of -20 °C. The aim is to attain an average constant room temperature even if the external temperatures vary.

- 2) All heating characteristic curves intersect at an external temperature of +20 °C and a return temperature of +20 °C. This means that at this operating point no more heat output is required. The indicator bar (Hotter ↑ and Colder ↓) can be used to shift the operating point between 5 °C and 30 °C along the axis marked by a slope. This shifts the entire heating curve upwards or downwards in parallel, by a consistent amount of 1 K per indicator bar unit. The user can make this setting according to his/her individual temperature requirements.
- 3) Each heating curve is limited in an upward direction by the value set in “Settings – Heating circuit 1/2 – Heating curve maximum”. In the downward direction, each heating curve is limited by the value 15 °C (air HP) or 18 °C (brine or water HP).

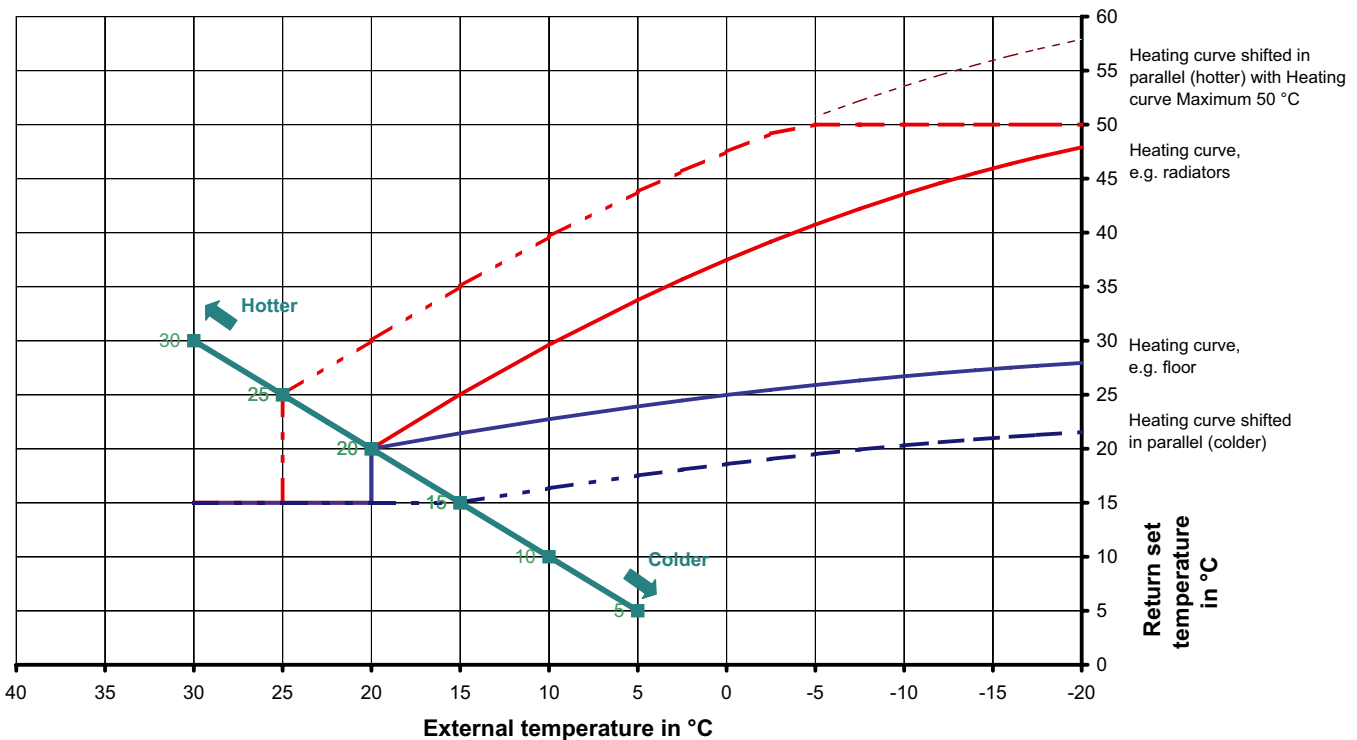


Fig. 7.1: Setting options for the heating curve

7.1.1 Setting examples

	Underfloor heating 35 °C/28 °C			Radiators 55 °C/45 °C		
	-12	-14	-16	-12	-14	-16
Standard external air temperature in °C	-12	-14	-16	-12	-14	-16
Required flow temperature (at standard design temperature)	35 °C	35 °C	35 °C	55 °C	55 °C	55 °C
Temperature spread flow/return-flow	7 °C	7 °C	7 °C	10 °C	10 °C	10 °C
Required return temperature (at standard design temperature)	28 °C	28 °C	28 °C	45 °C	45 °C	45 °C
Setting for end point of heating curve	30 °C	29 °C	29 °C	48 °C	47 °C	46 °C
	Example 1			Example 2		

A heat distribution system (e.g. underfloor heating) is dimensioned for a maximum flow temperature at a particular standard external temperature. This is dependent on the location of the heat pump and, in Germany, lies between -12 and -18 °C. The max. return temperature that is set on the heating controller must be entered for an external temperature of -20 °C. This is done by entering the maximum return temperature for the given standard external temperature in Fig. 7.2 on p. 13. The setting at -20 °C can be read using the curves.

NOTE

- Step 1: Adjust the heating curve to suit the respective building and local conditions by setting the gradient (heating curve end point).
- Step 2: Set the desired temperature level via a parallel shift of the heating curve upwards or downwards (indicator bar).

Heating curves

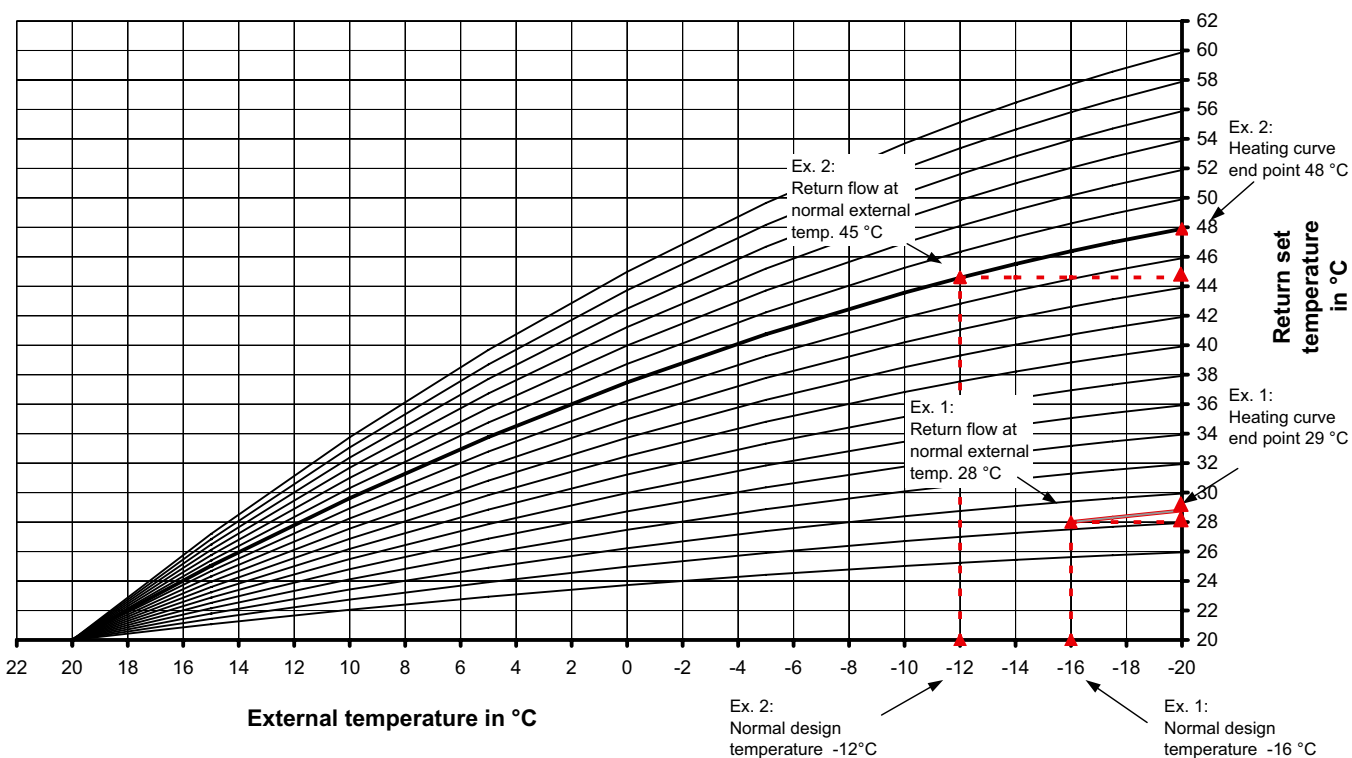


Fig. 7.2: Heating curves to calculate the max. return set temperature

7.1.2 Heating curve optimization

There are two setting options for optimizing the heating curve:

- Changing the gradient by means of a higher or lower "Heating curve end point"
- Raising or lowering the entire heating curve by means of the buttons Hotter (↑) and Colder (↓)

If	External temperature		
	below -7 °C	-7 to +7 °C	above +7 °C
Too cold	Raise "Heating curve end point" value by 2 °C to 3 °C	Raise Hotter (↑)/ Colder (↓) by 1 °C to 2 °C	Raise Hotter (↑)/ Colder (↓) by 1 °C to 2 °C and lower value "Heating curve end point" by 2 °C to 3 °C
Too hot	Lower "Heating curve end point" value by 2 °C to 3 °C	Lower Hotter (↑)/ Colder (↓) by 1 °C to 2 °C	Lower Hotter (↑)/ Colder (↓) by 1 °C to 2 °C and raise "Heating curve end point" value by 2 °C to 3 °C

7.2 Regulation via room temperature

For well-insulated houses, open-plan designs or when heating large individual rooms, the return set temperature can be calculated using the room temperature in a reference room.

Make selections in the menu "**Settings – Heating circuit 1 – Control by – Room temperature**".

Automatic controller action

The greater the deviation between the room temperature and the room set temperature, the faster the return set temperature is adjusted.

i NOTE

The response time can be changed by means of the adjustable interval value (I value) if required. The longer the response time, the slower the room set temperature is adjusted.

i NOTE

The entered room set temperature cannot be changed by pressing the buttons Hotter (↑) and Colder (↓).

Prerequisites:

- For systems with silent cooling, the room climate control station is used for room temperature measurement. For all other systems, an additional room sensor (R17) must be connected to the N16-B3 analogue input.
- Deactivation of individual room control, if installed, in the reference room.
- Entry of a minimum return set temperature to prevent the building from cooling down if there is internal heat recovery in the reference room.
- Entry of a maximum return set temperature to prevent the building from overheating if the windows are open
- Constant room set temperature with the elimination of as many raising and lowering operations as possible

i NOTE

Activating the room temperature regulation or changing the room set temperature can initially result in the room temperature being exceeded.

7.3 Fixed-setpoint regulation / setting a horizontal heating characteristic curve

In special cases (e.g. heating a buffer tank to a constant temperature), it is possible to set a characteristic curve which is independent of the external temperature. Make selections in the menu "**Settings – Heating circuit 1/2 – Control by – Fixed-setpoint**". The desired return set temperature can be set in the following menu item "**Fixed-setpoint Control – Return set temp.**".

i NOTE

The entered fixed-setpoint cannot be changed by pressing the buttons Hotter (↑) and Colder (↓).

8 Domestic Hot Water Preparation

Hot water cylinders with a sufficient heat exchanger area should be used for DHW preparation. These must be capable of permanently transferring the maximum heat output of the heat pump.

Regulation is carried out using a sensor installed in the hot water cylinder. The sensor is connected to the heat pump controller.

The temperatures attainable in heat-pump-only operation are below the maximum flow temperature of the heat pump.

Regulation can also be carried out using a thermostat.

8.1 Basic heating using the heat pump

A request for domestic hot water is recognised if the current hot water temperature < (is lower than) Set temperature – (minus) Hot water hysteresis.

A request for domestic hot water ends if

Hot water temperature > (is higher than) set temperature

If the set temperature is not reached within one hour, the hot water request is blocked and heating operation is enabled again. Heating operation is then interrupted again after one hour by a hot water request.

Menu	Submenu	Set value
Preconfiguration	Domestic hot water preparation	Yes

Tab. 8.1: Settings for basic heating of domestic hot water (user settings carried out in compliance with the operator's manual)

8.1.1 Attainable hot water temperatures

The maximum hot water temperature that can be attained with heat-pump-only operation is dependent on:

- The heat output of the heat pump
- The heat exchanger surface area installed in the cylinder and
- The volume flow in relation to the pressure drop and the capacity of the circulating pump.

8.2 Thermal disinfection

A start time must be specified for the thermal disinfection. By starting the thermal disinfection, the system will immediately attempt to reach the set temperature by means of the flange heater. Thermal disinfection is ended once the set temperature is reached. To enable the thermal disinfection settings menu, the flange heater must be set to "Yes" in the preconfiguration.

i NOTE

If the set temperature is not reached within 4 hours, the thermal disinfection is terminated. The set start time can be activated or deactivated separately for each day of the week.

9 Program Description

9.1 Utility block / heat pump operation block

Temporary disconnection of the heat pump may be required by utility companies (Energie-Versorgungs-Unternehmen (EVU)) as a condition for a favourable electricity tariff. During a utility block, the voltage on terminal N16-J4/ID3 is interrupted.

In the case of systems without a utility block, the enclosed bridge must be inserted at the relevant terminal connections.

i NOTE

If an additional dew-point monitor (N5) is installed, the heat pump request is reset in cooling mode when the dew-point monitor is activated.

10 Heat Pump Controller for Cooling

10.1 Cooling program description

10.1.1 Cooling operating mode

The cooling functions are manually activated as operating mode 6. There is no automatic switching between heating and cooling operation.

Switching-off the cooling.

The following limits are provided as safeguards:

- The flow temperature falls below a value of 7 °C
- The dew point is reached with silent cooling only

10.1.2 Activation of cooling functions

Special regulatory functions are performed when cooling operation is activated.

The cooling functions can fail to activate due to the following reasons:

- The external air temperature lies below the limit temperature set under "Settings - Cooling" (risk of frost)

10.1.3 Silent and dynamic cooling

Different system configurations can be implemented according to each integration diagram:

- **Dynamic cooling** (e.g. fan convectors)
Regulation according to a fixed setpoint. Adjust the return set temperature in the Settings menu item.
- **Silent cooling** (e.g. underfloor cooling, wall-panel cooling or cooled ceilings)
Regulation according to the room temperature. Regulation is based upon the temperature in the room where the room climate control station 1 is connected according to the circuit diagram. Set the desired room temperature in the Settings menu item.

- Neither silent nor dynamic cooling was selected with "Yes" in the settings

In all these cases, the cooling operating mode will remain active. However, the regulation system responds as in the summer operating mode.

- **Combination of dynamic and silent cooling**
Regulation is carried out separately in two separate control circuits.
The dynamic circuit is regulated according to a fixed setpoint (as described for dynamic cooling).
Silent cooling is regulated on the basis of the room temperature (as described for silent cooling) by controlling the mixer for heating circuit 2 (silent heating and cooling circuit).

Make selections in the menu item "**Settings – Cooling**".

10.2 Regulation of the room temperature

Heating systems are normally equipped with an automatic mechanism for separately regulating the room temperature in each room.

The room thermostats measure the current temperature in heating operation. If the current temperature undershoots the set temperature, the thermostats activate the regulating device (e.g. actuator).

In cooling operation, the room thermostats must be either deactivated or replaced with units that are suitable for both heating and cooling.

The room thermostat responds inversely when in cooling operation. If the set temperature exceeds the current temperature, the regulating device is activated.

11 Special accessories

11.1 Room climate control station

When cooling with panel heating/cooling systems, regulation is carried out according to the room temperature and humidity measured by the room climate control station.

This is done by setting the desired room temperature on the heat pump controller. The minimum possible cooling water temperature is calculated from the room temperature and humidity measured in the reference room. The control response of the cooling system is influenced by the current measured room temperature and the set room set temperature.



Fig. 11.1: Room climate control station

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1 Technische Geräteinformationen / Technical Device Information / Informations techniques sur les appareils

Netzspannung	Supply voltage	Tension secteur	230 V AC 50 Hz
Spannungsbereich	Voltage range	Plage de tension	195 bis/to/à 253 V AC
Leistungsaufnahme	Power consumption	Puissance absorbée	etwa/approx./env. 50 VA
Schutzart nach EN 60529	Degree of protection according to EN 60529	Degré de protection selon EN 60529	IP 20
Schaltvermögen der Ausgänge	Switching capacity of outputs	Pouvoir de coupure des sorties	max. 2 A (2 A) $\cos(\varphi) = 0,4$ bei/at/à 230 V
Betriebstemperatur	Operating temperature	Température de fonctionnement	0 °C bis/to/à +35 °C
Lagerungstemperatur	Storage temperature	Température d'entreposage	-15 °C bis/to/à +60 °C
Gewicht	Weight	Poids	4100 g
Wirkungsweise	Function	Mode de fonctionnement	Type 1
Zusätzliche Eigenschaften	Additional characteristics	Caractéristiques supplémentaires	Type 1.C
Verschmutzungsgrad	Degree of soiling	Degré d'encrassement	2
Wärme-/Feuerbeständigkeit	Heat/fire resistance	Résistance à la chaleur et au feu	Category D
Temperatur für Kugeldruckprüfung	Temperature for ball pressure test	Température pour l'essai de dureté à la bille	125 °C

2 Hydraulische Einbindung / Hydraulic Integration / Intégration hydraulique

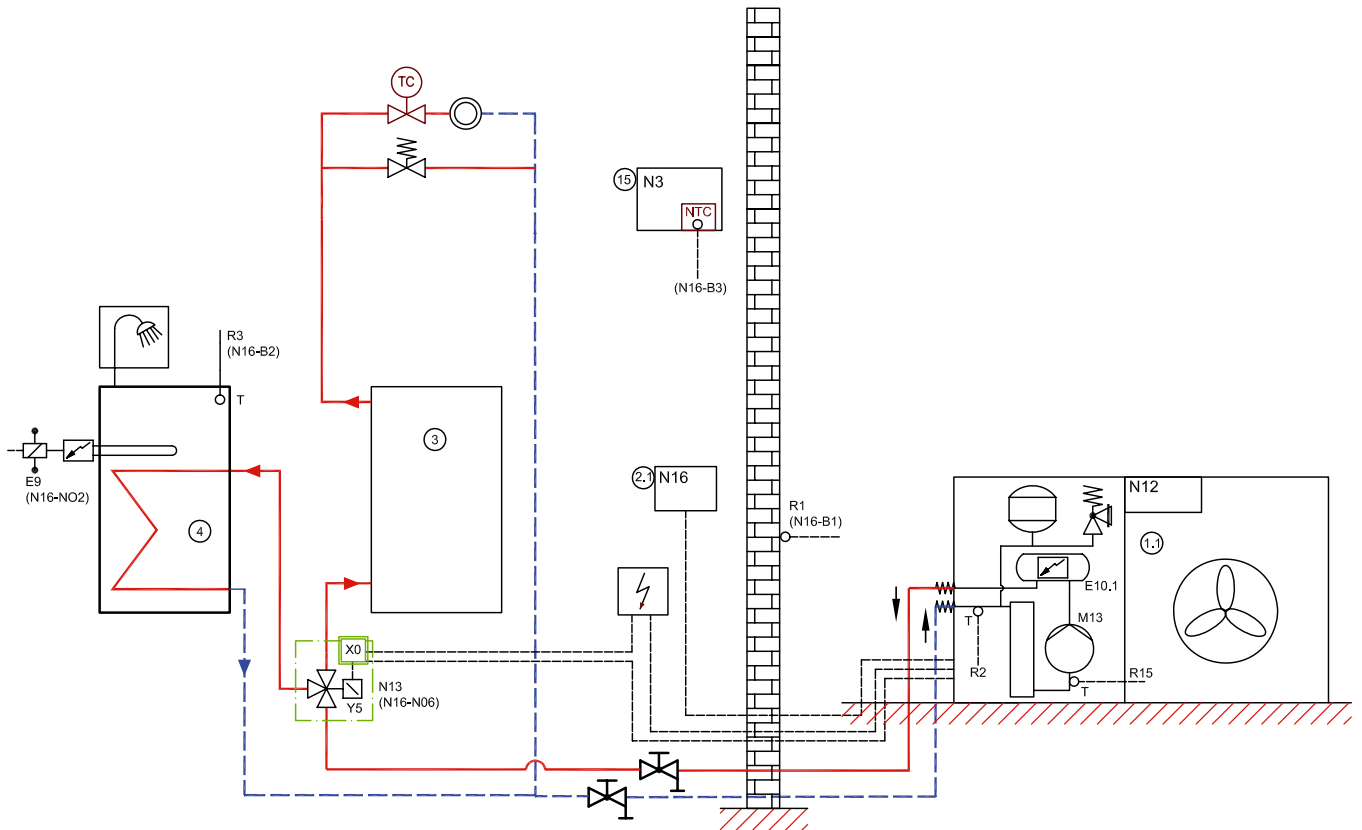
Die Anforderungen an die hydraulische Einbindung einer Wärmepumpen Heizungsanlage sind den Projektierungsunterlagen zu entnehmen. Im Folgenden sind in den Einbindungsschemen Luft/Wasser-Wärmepumpen dargestellt. Die Einbindungsschemen gelten auch für Sole/Wasser-Wärmepumpen.

The requirements for the hydraulic integration of a heat pump heating system can be found in the planning documentation. Air-to-water heat pumps are shown in the integration diagrams below. The integration diagrams also apply to brine-to-water heat pumps.

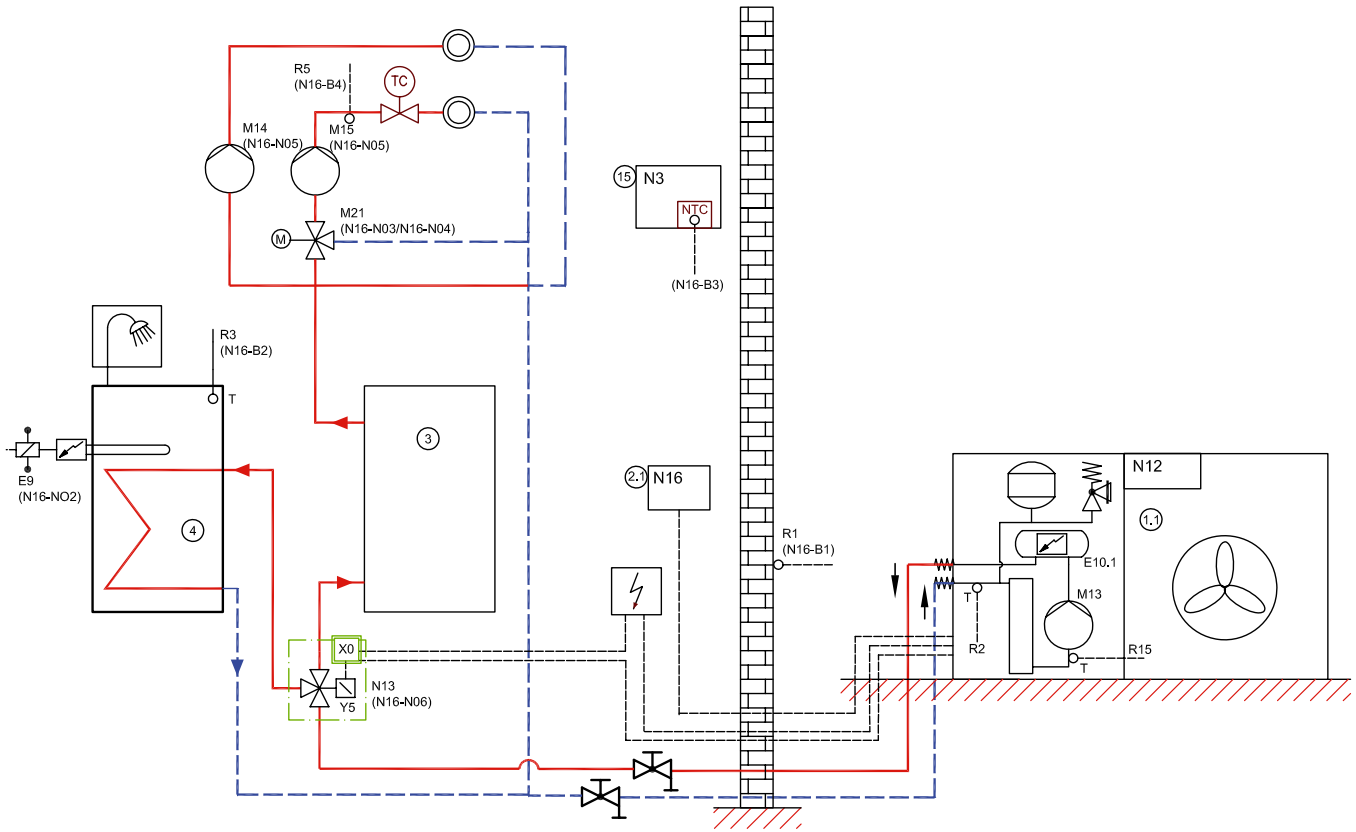
Pour les exigences en matière d'intégration hydraulique, se référer à la documentation d'études. Les pompes à chaleur représentées dans les schémas d'intégration suivants sont du type air/eau. Ces schémas d'intégration sont également valables pour des pompes à chaleur eau glycolée/eau.

2.1 Einbindungsschemen Heizen / Integration Diagrams for Heating / Schéma d'intégration chauffage

- 2.1.1 Ein Heizkreis (1.HK) Heizen (Außentemperatur-/Raumtemperaturregelung) und Warmwasserbereitung / One heating circuit (HC1) for heating (external temperature / room temperature regulation) and domestic hot water preparation / Un circuit de chauffage (1er CC) avec chauffage (régulation de la température ambiante par la température extérieure) et production d'eau chaude sanitaire

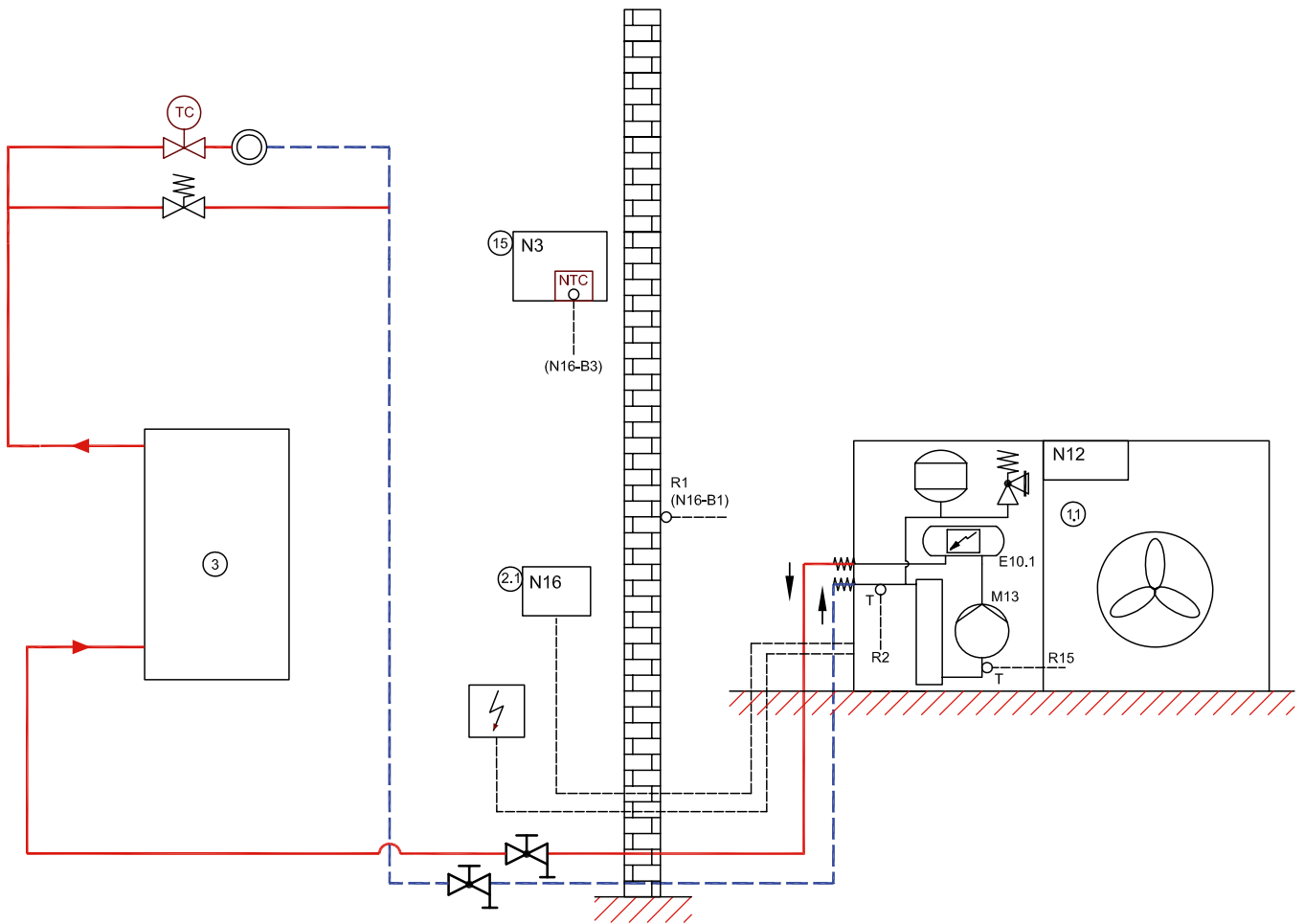


2.1.2 Zwei Heizkreise (1.HK/2.HK) Heizen (Außentemperatur-/Raumtemperaturregelung) und Warmwasserbereitung / Two heating circuits (HC1/HC2) for heating (external temperature / room temperature regulation) and domestic hot water preparation / Deux circuits de chauffage (1er et 2e CC) avec chauffage (régulation de la température ambiante par la température extérieure) et production d'eau chaude sanitaire

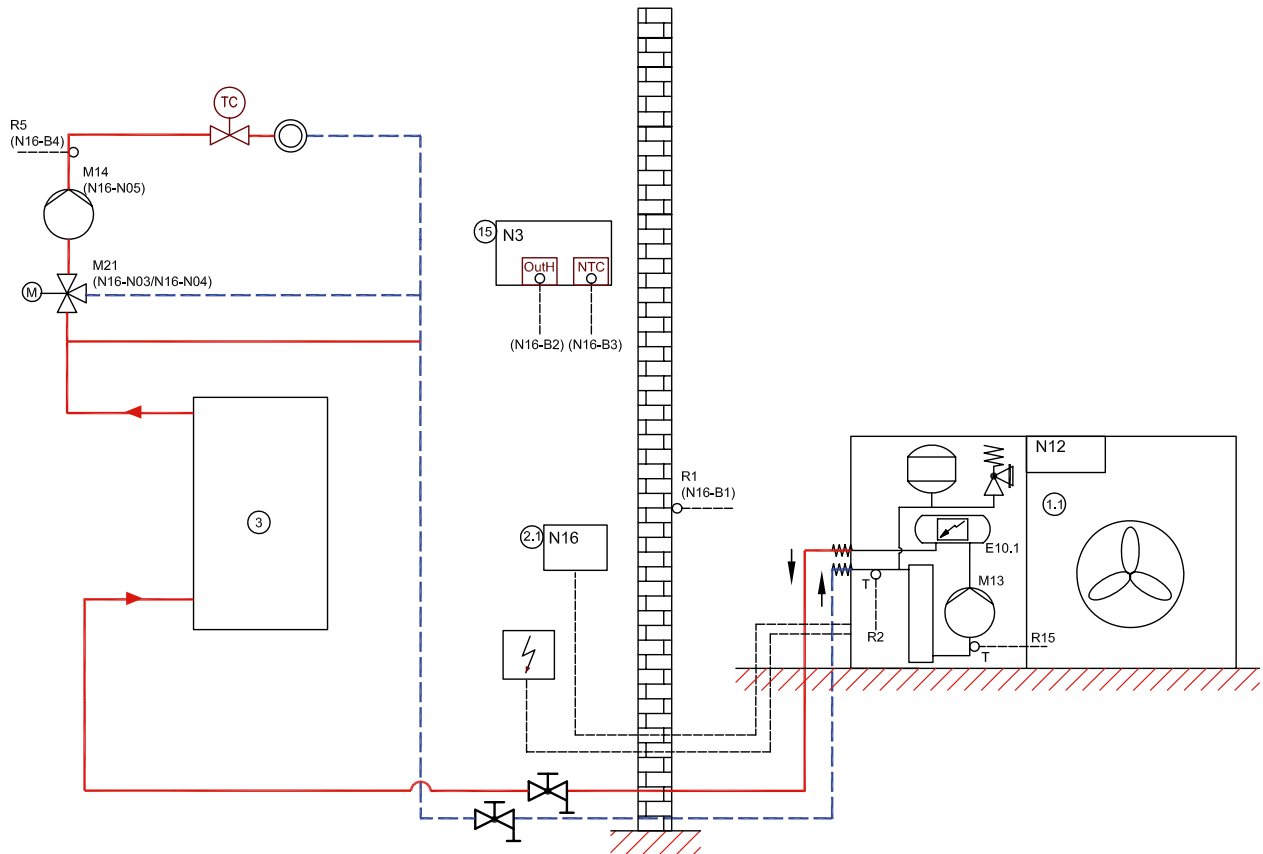


2.2 Einbindungsschemen Heizen/Kühlen / Integration Diagrams for Heating and Cooling / Schéma d'intégration chauffage/refroidissement

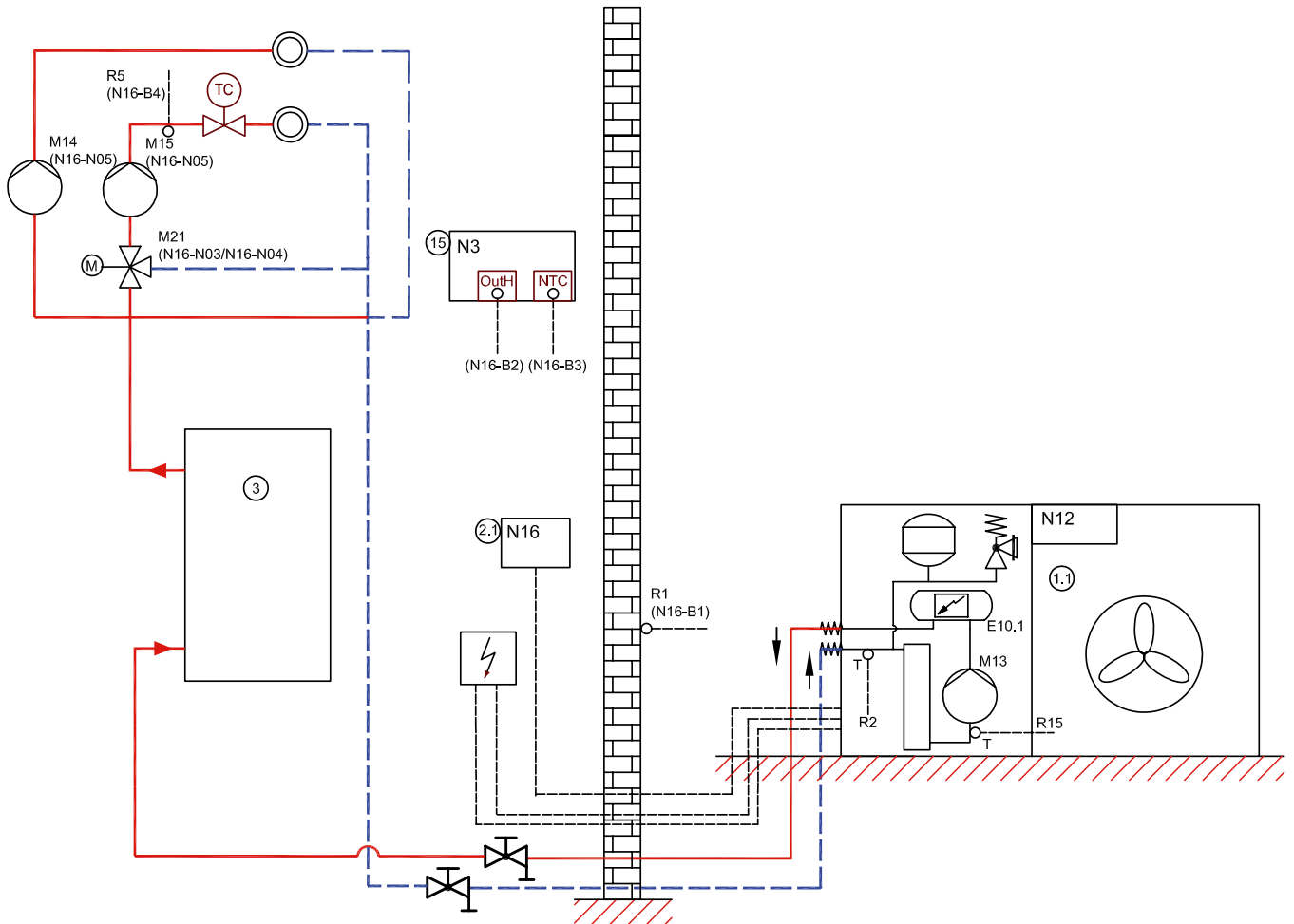
2.2.1 Ein Heizkreis (1.HK) Heizen (Außentemperatur-/Raumtemperaturregelung) und dynamisches Kühlen (Festwertregelung) / One heating circuit 1 (HC1) for heating (external temperature / room temperature regulation) and dynamic cooling (fixed setpoint regulation) / Un circuit de chauffage (1er CC) avec chauffage (régulation de la température ambiante par la température extérieure) et rafraîchissement dynamique (régulation à valeur fixe)



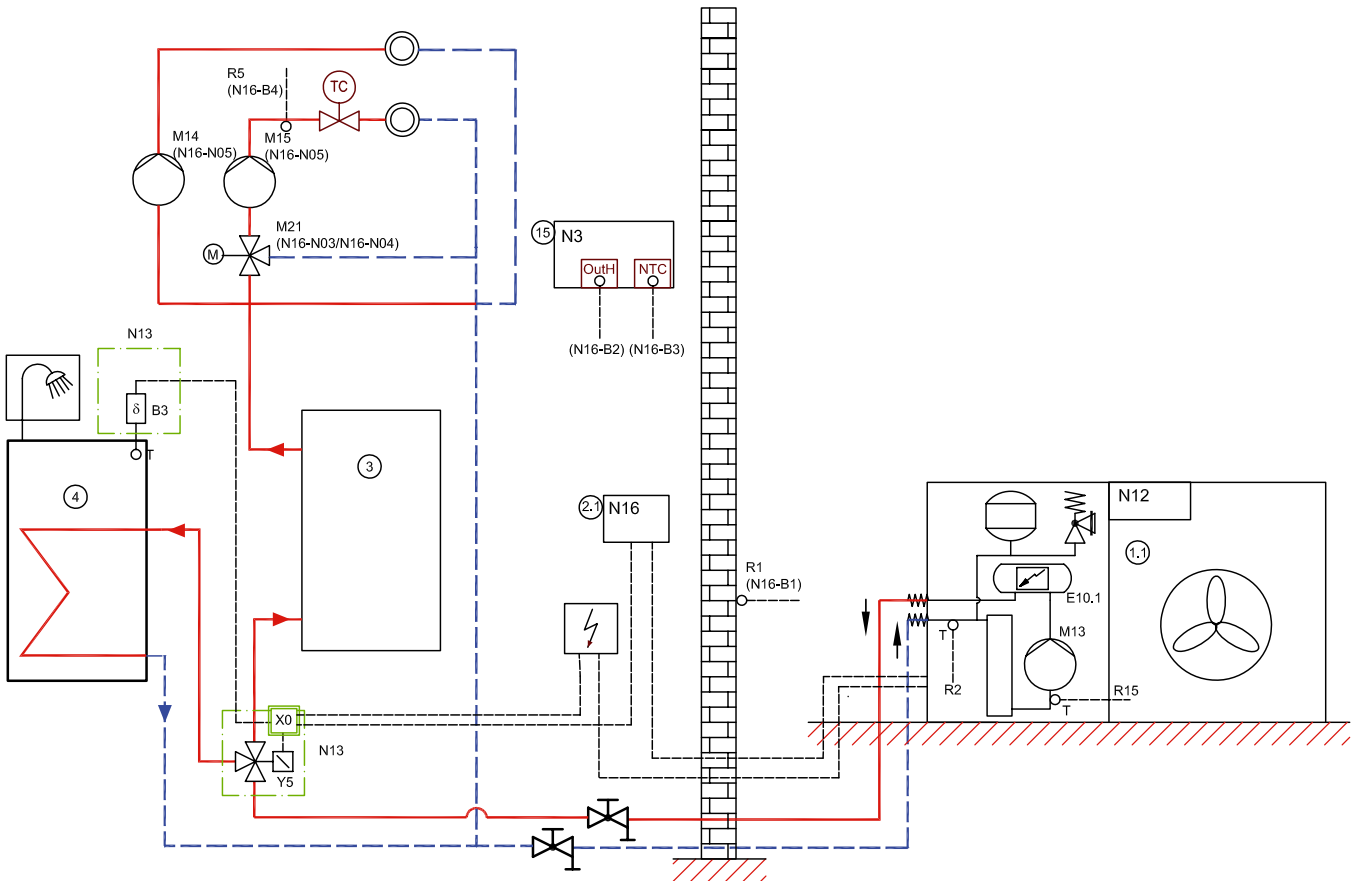
2.2.2 Ein Heizkreis (1.HK) Heizen (Außentemperatur-/Raumtemperaturregelung) und stilles Kühlen (taupunktgeführte Regelung) / One heating circuit 1 (HC1) for heating (external temperature / room temperature regulation) and silent cooling (dew-point controlled regulation) / Un circuit de chauffage (1er CC) avec chauffage (régulation de la température ambiante par la température extérieure) et rafraîchissement passif (régulation en fonction du point de rosée)



2.2.3 Zwei Heizkreise (1.HK/2.HK) Heizen (Außentemperatur-/Raumtemperaturregelung) und stilles oder dynamisches Kühlen (taupunktgeführte Regelung oder Festwertregelung) / Two heating circuits (HC1/HC2) for heating (external temperature / room temperature regulation) and silent or dynamic cooling (dew-point controlled regulation or fixed-setpoint regulation) / Deux circuits de chauffage (1er et 2e CC) avec chauffage (régulation de la température ambiante par la température extérieure) et rafraîchissement dynamique ou passif (régulation à valeur fixe ou en fonction du point de rosée)



2.2.4 Zwei Heizkreise (1.HK/2.HK) Heizen (Außentemperatur-/Raumtemperaturregelung) und stilles oder dynamisches Kühlen (taupunktgeführte Regelung oder Festwertregelung) und Warmwasserbereitung über Thermostat / Two heating circuits (HC1/HC2) for heating (external temperature / room temperature regulation) and silent or dynamic cooling (dew-point controlled regulation or fixed-setpoint regulation) and domestic hot water preparation via thermostat / Deux circuits de chauffage (1er et 2e CC) avec chauffage (régulation de la température ambiante par la température extérieure), rafraîchissement dynamique ou passif (régulation à valeur fixe ou en fonction du point de rosée) et production d'eau chaude sanitaire via thermostat



2.3 Legende / Legend / Légende

①	Wärmepumpen	Heat pumps	Pompes à chaleur
②	Wärmepumpenregler	Heat pump controller	Régulateur de pompe à chaleur
③	Pufferspeicher	Buffer tank	Ballon tampon
④	Warmwasserspeicher	Hot water cylinder	Préparateur d'eau chaude sanitaire
⑮	Raumklimastation	Room climate control station	Sonde d'ambiance climatique
B3	Warmwasserthermostat	Hot water thermostat	Thermostat d'eau chaude
E9	Flanschheizung	Flange heater	Résistance électrique chauffante
E10.1	Elektroheizstab	Electric heating element	Cartouche électrique chauffante
K24	Relais Warmwasseranforderung	Relay, request for hot water	Relais demande d'eau chaude
M13	Heizungsumwälzpumpe Hauptkreis	Heat circulating pump for main circuit	Circulateur de chauffage circuit principal
M14	Heizungsumwälzpumpe 1. Heizkreis	Heat circulating pump for heating circuit 1	Circulateur de chauffage 1er circuit de chauffage
M15	Heizungsumwälzpumpe 2. Heizkreis	Heat circulating pump for heating circuit 2	Circulateur de chauffage 2ème circuit de chauffage
M21	Mischer	Mixer	Vanne mélangeuse
N3	Raumklimastation	Room climate control station	Sonde d'ambiance climatique
N12	Wärmepumpensteuerung (WPC)	Heat pump control (HPC)	Commande de pompe à chaleur (WPC)
N13	Schaltgruppe Warmwasser	Switching assembly, hot water	Groupe commutateur eau chaude
N16	Wärmepumpenregler (WPR)	Heat pump controller (HPC)	Régulateur de pompe à chaleur (WPR)
R1	Außentemperaturfühler	External temperature sensor	Sonde de température extérieure
R2	Rücklauftemperaturfühler	Return flow temperature sensor	Sonde de température retour
R3	Warmwasserfühler	Hot water sensor	Sonde sur circuit d'eau chaude sanitaire
R5	Fühler gemischter Heizkreis	Sensor for mixed heating circuit	Sonde de circuit de chauffage mélangé
R15	Vorlauftemperaturfühler	Flow temperature sensor	Sonde de température départ
R17 / N3-NTC	Raumtemperaturfühler	Room temperature sensor	Sonde de température ambiante
N3- OutH	Raumfeuchtefühler	Room humidity sensor	Sonde d'humidité ambiante
Y5	3-Wege-Umschaltventil Warmwasser	Three-way reversing valve for hot water	Vanne d'inversion 3 voies pour eau chaude
X0	Abzweigdose	Junction box	Boîte de connexion

3.1.1 Anschluss externer Anlagenkomponenten / Connection of external system components / Branchement de composants d'installation externes

3.1.1.1 Eingänge / Inputs / Entrées

Anschluss der Temperaturfühler am WPR (2.1) / Connection of the temperature sensors to HPC (2.1) / Connexion de la sonde de température au WPR (2.1)				
Kommentar	Comment	Commentaire	WPR-Anschluss / HPC connection / Connexion WPR	Komponente / Components / Composants
Außentemperaturfühler	External temperature sensor	Sonde de température extérieure	N16-J2/B1 X2/GND	R1
Warmwassertemperaturfühler	Hot water temperature sensor	Sonde de température de l'eau chaude	N16-J2/B2 X2/GND	R3
Raumtemperaturfühler	Room temperature sensor	Sonde de température ambiante	N16-J2/B3 X2/GND	R17
Fühler gemischter Heizkreis	Sensor for mixed heating circuit	Sonde du circuit de chauffage mélangé	N16-J2/B4 X2/GND	R5

Anschluss RKS (15) am WPR (2.1) / Connection of RCC (15) to HPC (2.1) / Connexion de RKS (15) au WPR (2.1)				
Kommentar	Comment	Commentaire	WPR-Anschluss / HPC connection / Connexion WPR	RKS-Anschluss / RCC connection / Connexion RKS
Spannung +24V DC	Voltage +24 V DC	Tension +24 V DC	N16-J2/+24VDC	N3-G
Raumtemperaturfühler	Room temperature sensor	Sonde de température ambiante	N16-J2/B3	N3-NTC
Raumtemperaturfühler Masse	Room temperature sensor, ground	Masse de la sonde de température ambiante	X2/GND	N3-NTC
Raumfeuchtefühler Masse	Room humidity sensor, ground	Masse de la sonde d'humidité ambiante	X2/GND	N3-M
Raumfeuchtefühler	Room humidity sensor	Sonde d'humidité ambiante	N16-J2/B2	N3-OutH

Anschluss sonst. Eingänge am WPR (2.1) / Other connections HPC inputs (2.1) / Connexion d'autres entrées au WPR (2.1)				
Kommentar	Comment	Commentaire	WPR-Anschluss / HPC connection / Connexion WPR	Komponente / Components / Composants
Anforderung Warmwasser	Hot water request	Demande eau chaude	N16-J4/ID1 X2/0V	K24
Sperre extern	Ext. disable cont.	Blocage externe	N16-J4/ID2 X2/0V	A2
Sperre EVU	Utility block	Blocage du fournisseur d'électricité EJP	N16-J4/ID3 X2/0V	A1

3.1.1.2 Ausgänge / Outputs / Sorties

Anschluss der WPC (1.1) am WPR (2.1) / Connection of HPC (1.1) to HPC (2.1) / Connexion du WPC (1.1) au WPR (2.1)				
Kommentar	Comment	Commentaire	WPR-Anschluss / HPC connection / Connexion WPR	WPC-Anschluss / HPC connection / Connexion WPC
Spannung 230V AC	Voltage 230 V AC	Tension 230 V AC	X2/2	X2/Lout
Wärmepumpe Anforderung	Heat pump request	Demande pompe à chaleur	N16-J9/N01	X2/1
Wärmepumpe Kühlen	Heat pump, cooling	Pompe à chaleur rafraîchissement	N16-J9/N01	X2/6
Bezugspotential	Input potential	Potentiel de référence	X2/GND	X2/8
Sollwert-Rücklauftemperatur für WPC	Setpoint value of return flow temperature for HPC	Température de consigne retour pour WPC	N15-Y1'	X2/9

Anschluss sonst. Ausgänge am WPR (2.1) / Other connections - HPC outputs (2.1) / Connexion d'autres sorties au WPR (2.1)				
Kommentar	Comment	Commentaire	WPR-Anschluss / HPC connection / Connexion WPR	Komponente / Components / Composants
Flanschheizung	Flange heater	Résistance électrique chauffante	N16-J9/N02	K8
			X1/N	
Mischer Auf	Mixer OPEN	Vanne mélangeuse ouverte	N16-J9/N03	M21
			X1/N/PE	
Mischer Zu	Mixer CLOSED	Vanne mélangeuse fermée	N16-J9/N04	M21
			X1/N/PE	
Heizungsumwälzpumpe	Heat circulating pump	Circulateur de chauffage	N16-J9/N05	M14/M15
			X1/N/PE	
Warmwasserrelais für Warmwasserbereitung	Hot water relay for domestic hot water preparation	Relais pour la production d'eau chaude	N15-N06	K24
			X2/1	
3-Wege-Umschaltventil für Warmwasserbereitung	Three-way reversing valve for DHW preparation	Vanne d'inversion 3 voies pour production d'eau chaude	K24/24	Y5
			X1/N	

3.2 Legende zum Stromlaufplan Wärmepumpenregler Heizen/Kühlen / Legend for the heat pump heating/cooling controller circuit diagram / Légende du schéma électrique du régulateur de pompe à chaleur chauffage/rafraîchissement

A1	Brücke EVS (J4/ID3-EVS nach X2/0V) muss eingelegt werden, wenn kein EVU-Sperrschütz vorhanden ist (Kontakt offen = EVU-Sperre)	The utility bridge (J4/ID3-EVS to X2/0 V) must be inserted if there is no utility blocking contactor (contact open = utility block)	Pont de blocage du fournisseur d'électricité (J4/ID3-EVS avec X2/ 0 V) à insérer si aucun contacteur de blocage du fournisseur d'électricité n'est prévu (contact ouvert = blocage)
A2	Brücke SPR (J4/ID2-SPR nach X2/0V) einlegen bei dynamischer Kühlung, Taupunktwärter bei statischer Kühlung (Eingang offen = WP aus).	Insert SPR bridge (J4/ID2-SPR to X2/0 V) for dynamic cooling; dew-point monitor for static cooling (input open = HP off)	Pont de blocage (J4/ID2-SPR avec X2/ 0 V) à insérer pour un rafraîchissement dynamique, contrôleur du point de rosée pour un rafraîchissement statique (entrée ouverte = arrêt PAC).
A8	Brücke Warmwasseranforderung	Bridge, request for hot water	Pont demande d'eau chaude
B3*	Thermostat Warmwasser	Hot water thermostat	Thermostat d'eau chaude
E9*	Flanschheizung	Flange heater	Résistance électrique chauffante
F1	Steuersicherung	Control fuse	Fusible de commande
J1	Spannungsversorgung Regler	Supply voltage for controller	Alimentation en tension régulateur
J2	analoge Eingänge:	Analogue inputs:	Entrées analogiques :
	B1 Außentemperaturfühler	B1 External temperature sensor	B1 Sonde de température extérieure
	B2 Warmwassertemperatur/ Raumfeuchtefühler	B2 Hot water temperature / Room humidity sensor	B2 Sonde température eau chaude/ humidité ambiante
	B3 Raumtemperaturfühler	B3 Room temperature sensor	B3 Sonde de température ambiante
	B4 Fühler gemischter Heizkreis	B4 Sensor for mixed heating circuit	B4 Sonde du circuit de chauffage mélangé
J3	analoge Ausgänge	Analogue outputs	Sorties analogiques
J4	digitale Eingänge:	Digital inputs:	Entrées numériques :
	ID1 Anforderung Warmwasser	ID1 Hot water request	ID1 Demande eau chaude
	ID2 externe Sperre	ID2 External disable contact	ID2 Blocage externe
	ID3 EVU-Sperre	ID3 Utility block	ID3 Blocage fournisseur d'électricité non utilisé
J5-8	nicht belegt	Not used	
J9-11	Ausgänge:	Outputs:	Sorties :
	NO1 WP Anforderung	NO1 HP request	NO1 Demande PAC
	NO2 Kühlen / Flanschheizung	NO2 Cooling / flange heater	NO2 Rafraîchissement / résistance élec.chauf.
	NO3 Mischer Auf	NO3 Mixer open	NO3 Vanne mélangeuse ouverte
	NO4 Mischer Zu	NO4 Mixer closed	NO4 Vanne mélangeuse fermée
	NC5 Heizungsumwälzpumpe 1. und 2. Heizkreis	NC5 Heat circulating pump for heating circuits 1 and 2	NC5 Circulateur de chauffage 1er et 2e circuits de chauffage
K8*	Schütz Flanschheizung	Contactor for flange heater	Contacteur résistance électrique chauffante
K24	Relais Warmwasser-Anforderung	Relay for hot water request	Relais demande eau chaude
M14*	Heizungsumwälzpumpe (1. HK)	Heat circulating pump (HC 1)	Circulateur de chauffage (1er CC)
M15*	Heizungsumwälzpumpe (2. HK)	Heat circulating pump (HC 2)	Circulateur de chauffage (2e CC)
M21*	Mischer Hauptkreis	Mixer for main circuit	Vanne mélangeuse circuit principal
N3*	Raumklimastation	Room climate control station	Sonde d'ambiance climatique
N5*	Taupunktwärter	Dew-point monitor	Contrôleur du point de rosée
N12	Wärmepumpensteuerung (WPC)	Heat pump control (HPC)	Commande de pompe à chaleur (WPC)
N15	Platine Analogausgänge:	Analogue outputs:	Carte sorties analogiques :
	Y1' Sollwert Wärmepumpensteuerung	Y1' Set value for heat pump control	Y1' Valeur de consigne de la commande de pompe à chaleur
	Y2' frei	Y2' free	Y2' libre
	NO6 Anforderung Warmwasser	NO6 Hot water request	NO6 Demande eau chaude
N16	Wärmepumpenregler (WPR)	Heat pump controller (HPC)	Régulateur de pompe à chaleur (WPR)
R1*	Außentemperaturfühler	External temperature sensor	Sonde de température extérieure
R3*	Warmwassertemperaturfühler	Hot water temperature sensor	Sonde de température de l'eau chaude
R5*	Fühler gemischter Heizkreis	Sensor for mixed heating circuit	Sonde du circuit de chauffage mélangé

R17*	Raumtemperaturfühler	Room temperature sensor	Sonde de température ambiante
T1	Trafo	Transformer	Transfo
X1	Klemmenleiste Netz L/N/PE-230VAC/ 50Hz	Terminal strip for power supply L/N/PE- 230 V AC / 50 Hz	Bornier réseau L/N/PE-230 V AC/50 Hz
X2	Klemmenleiste interne Verdrahtung	Terminal strip for internal wiring	Bornier câblage interne
Y5*	3-Wege-Umschaltventil für Warmwasserbereitung	Three-way reversing valve for DHW preparation	Vanne d'inversion 3 voies pour production d'eau chaude
*	Bauteile sind extern beizustellen	Components to be supplied from external sources	Pièces à fournir par le client
—	werkseitig verdrahtet	Wired ready for use	Câblé en usine
- - - -	bauseits bei Bedarf anzuschließen	To be connected on site, as required	A raccorder côté bâtiment si besoin
①	Wärmepumpe	Heat pump	Pompe à chaleur
②	Wärmepumpenregler	Heat pump controller	Régulateur de pompe à chaleur
⑮	Raumklimastation	Room climate control station	Sonde d'ambiance climatique

4 Diagnose Störungen - Alarm / Troubleshooting - Alarm / Diagnostic défauts - alarmes

Display/Display/Ecran	Erklärung / Explanation / Explication	Maßnahmen / Measures / Mesures
Untere Einsatzgrenze	Die Wärmepumpe wurde durch Erreichen der unteren Einsatzgrenze ausgeschaltet	<ul style="list-style-type: none"> ■ Sieb im Schmutzfänger reinigen. ■ Wärmequellenanlage entlüften ■ Sole bzw. Wasserdurchsatz prüfen
Lower operating limit	The heat pump was switched off because the lower operating limit was reached	<ul style="list-style-type: none"> ■ Clean the dirt trap filter. ■ De-aerate the heat source system ■ Check brine or water flow
Limite inférieure d'utilisation	La pompe à chaleur a été mise hors service car la limite inférieure d'utilisation a été atteinte.	<ul style="list-style-type: none"> ■ Nettoyer le filtre dans le collecteur d'impuretés. ■ Purger l'installation source de chaleur ■ Contrôler le débit d'eau ou d'eau glycolée
WP gesperrt	Wärmepumpe ist gesperrt	<ul style="list-style-type: none"> ■ Betriebsmodus durch mehrmaliges Drücken der Modustaste auf Automatik stellen ■ Externe Sperre am Regler (ID3) freigeben
HP blocked	The heat pump is blocked	<ul style="list-style-type: none"> ■ Set the operating mode to automatic by repeatedly pressing the modus button. ■ Release external block on the controller (ID3)
PAC bloquée	La pompe à chaleur est bloquée	<ul style="list-style-type: none"> ■ Régler le mode de fonctionnement sur Automatique en appuyant plusieurs fois sur la touche Modus ■ Blocage externe sur régulateur (ID3) débloquent

Garantiebedingungen und Kundendienstadresse siehe
Montage- und Gebrauchsanweisung Wärmepumpe.

For the terms of the guarantee and after-sales service
addresses, please refer to the Installation and Operating
Instructions for Heat Pumps.

Pour les conditions de garantie et les adresses SAV, se référer
aux instructions de montage et d'utilisation de la pompe à
chaleur.

Irrtümer und Änderungen vorbehalten.
Subject to alterations and errors.
Sous réserve d'erreurs et modifications.