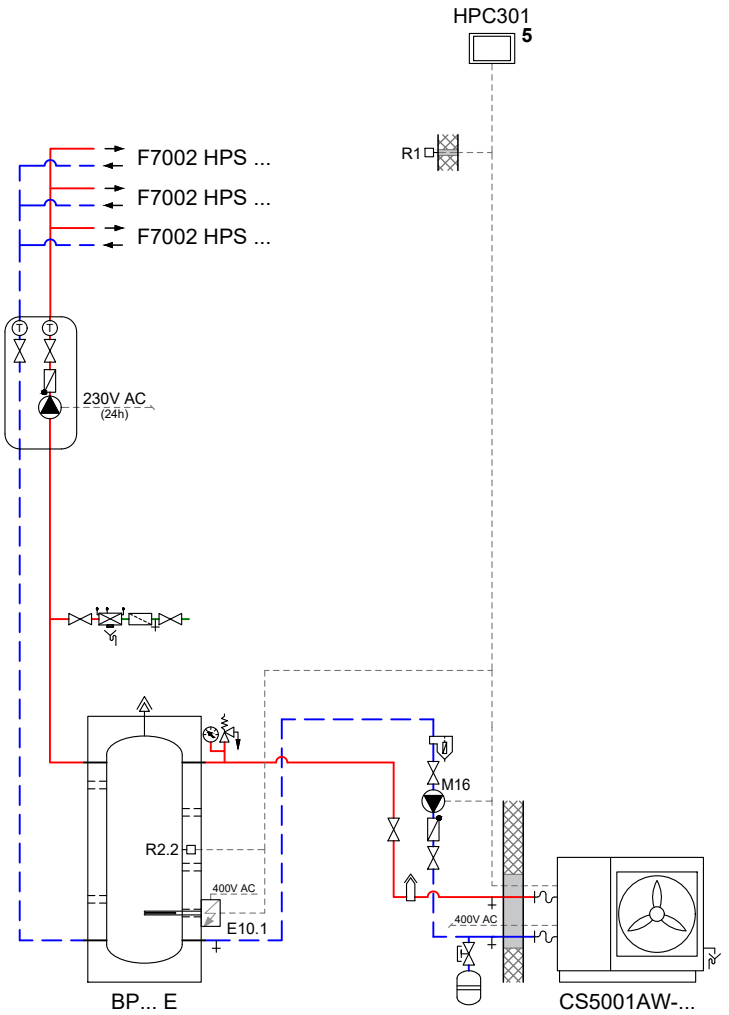
System schematic

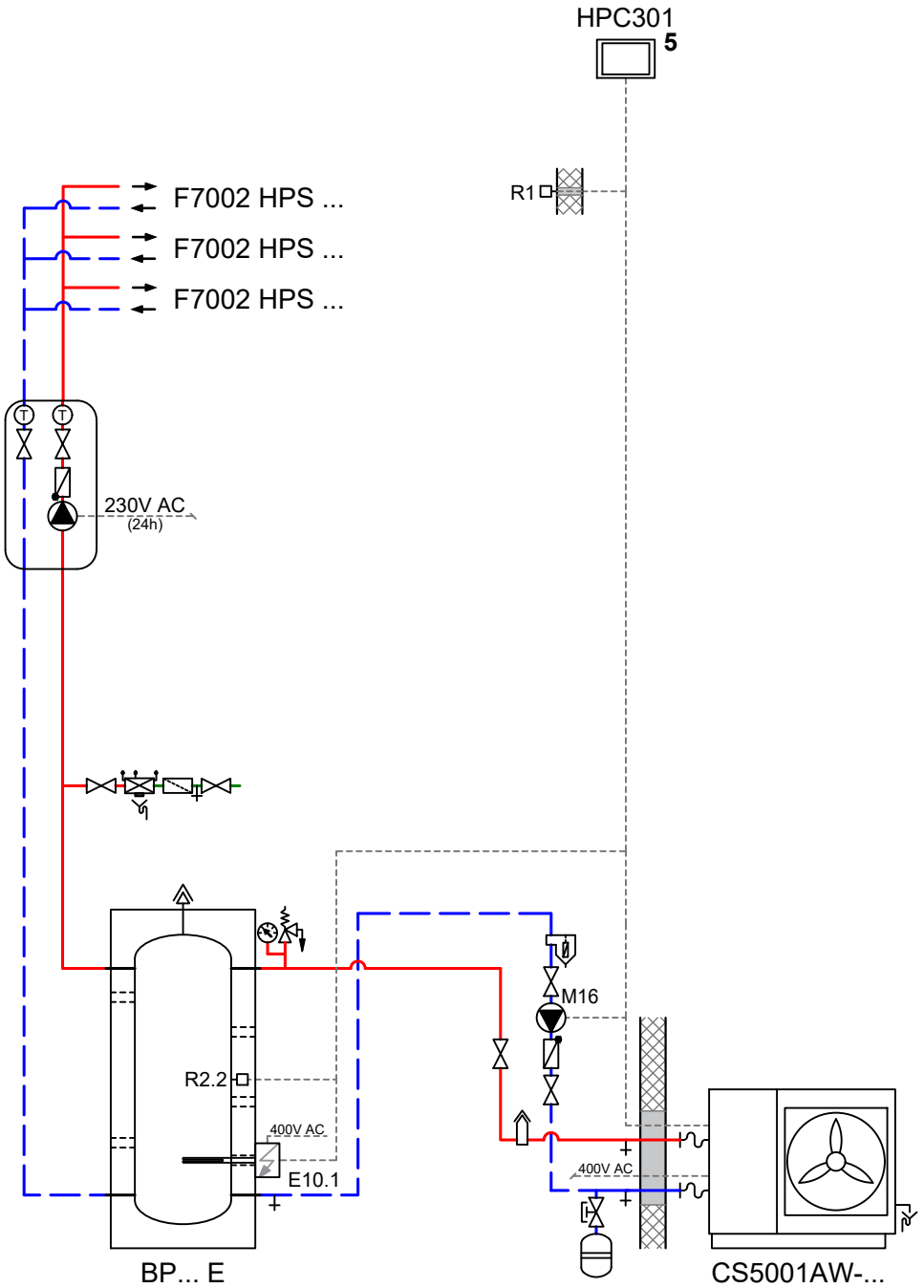
Compress CS5001 AW- ...

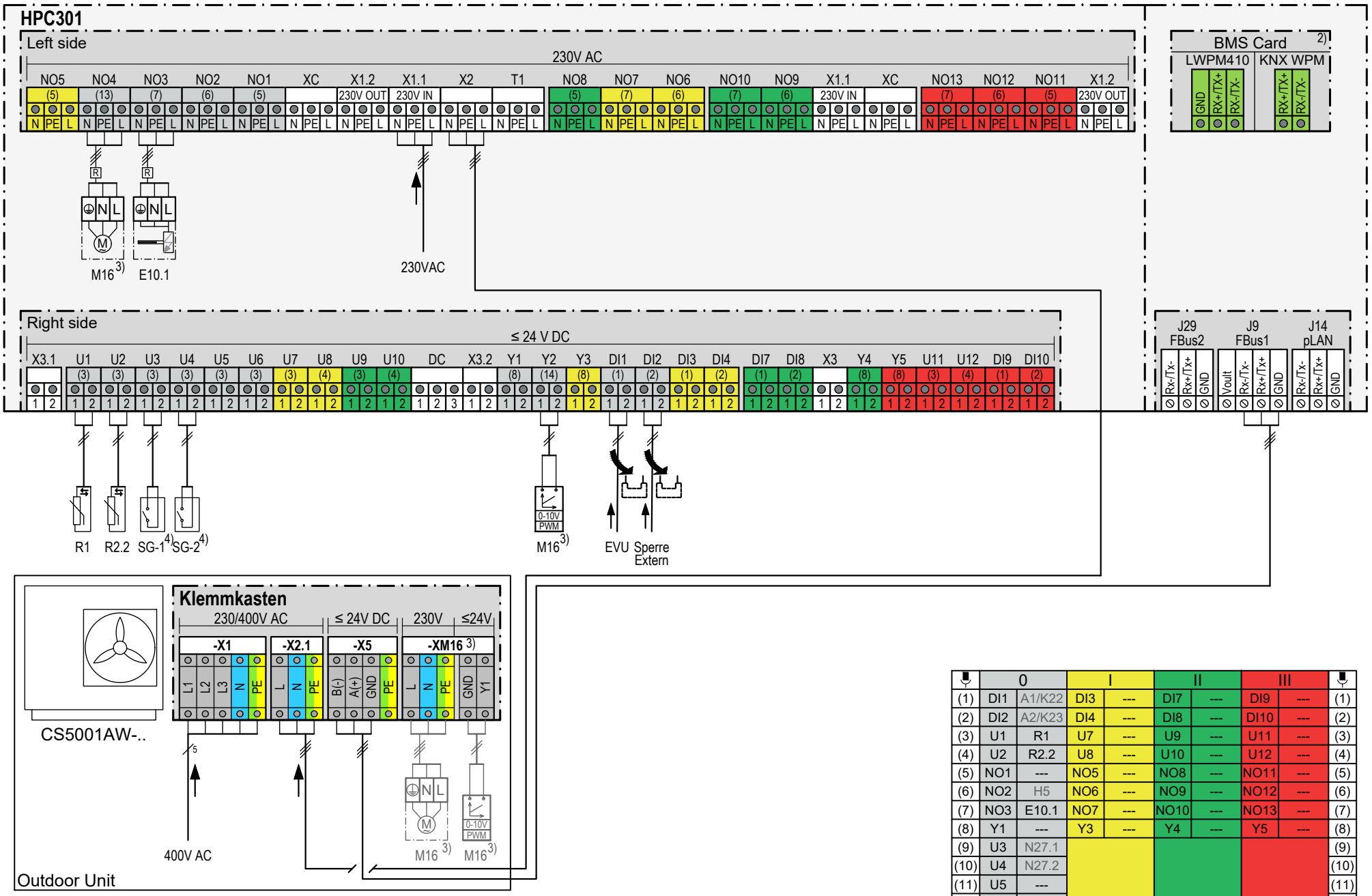
System example for qualified contractors



Hydraulic components:

- Air-to-water heat pump
- Buffer tank
- Apartment stations with instantaneous water heater (2-pipe system)


HPC301
5
R1
F7002 HPS ...
F7002 HPS ...
F7002 HPS ...
230V AC
(24h)
M16
R2.2
400V AC
E10.1
400V AC
BP... E
CS5001AW-...



	0		I		II		III		
(1)	DI1	A1/K22	DI3	---	DI7	---	DI9	---	(1)
(2)	DI2	A2/K23	DI4	---	DI8	---	DI10	---	(2)
(3)	U1	R1	U7	---	U9	---	U11	---	(3)
(4)	U2	R2.2	U8	---	U10	---	U12	---	(4)
(5)	NO1	---	NO5	---	NO8	---	NO11	---	(5)
(6)	NO2	H5	NO6	---	NO9	---	NO12	---	(6)
(7)	NO3	E10.1	NO7	---	NO10	---	NO13	---	(7)
(8)	Y1	---	Y3	---	Y4	---	Y5	---	(8)
(9)	U3	N27.1							(9)
(10)	U4	N27.2							(10)
(11)	U5	---							(11)
(12)	U6	---							(12)
(13)	NO4	M16 3)							(13)
(14)	Y2	M16 3)							(14)

1) Speed control optional
2) Additional equipment - only one card can be installed (LWPM410 or KNX WPM).
3) Alternative connection option for M16: to XM16 in the outdoor unit (voltage and speed control)
4) Optional

General information
- The combination of the heating system with buffer tank and apartment stations must be checked individually.
- An additional heat source must be provided in the hydraulics to ensure the frost protection of the heat pump in all operating conditions.

Area of application
- Multi-family house, up to approx. 10 residential units (depending on the average heat demand of the apartments).

System components
- Air-to-water heat pump CS5001AW-22...42 with HPC301 as central heat generator (monoenergetic).
- BP... E buffer tank for supplying the apartment stations.

System limits and important information
- To ensure the defrosting functionality, the E-heater E10.1 must be connected to the heat pump manager.
- The minimum temperature of the system is 18°C. If the temperature falls below the minimum temperature, the function of the defrosting process is restricted. The process is aborted and the electric heat generator is started (electric heating element E10.1). After 15 minutes, another defrosting process is started, which is aborted again if the temperature of 18°C in the return of the heat pump is not reached. This procedure is repeated a total of four times, after which the heat pump is locked out.
- The heat pump is controlled via the request sensor R2.2 and the return sensor R2 in the return of the heat pump. Additional hystereses are stored for this purpose to prevent the heat pump from constantly switching on and off.
- A temperature in the range of 35 – 45°C should be selected as the setpoint temperature for the BP... E buffer tank. It should be noted here that for an energy-efficient operation of the heat pump, the setpoint should be selected as low as possible.
- Avoid downtime periods on the drinking water side The intended use of the apartment stations provides for a regular exchange of drinking water in the appliance. In an occupied apartment building, this regular exchange is ensured through normal use. If the residential units are not or only irregularly inhabited (e.g. holiday apartments), the regular exchange of drinking water must be ensured by the operator (manual or automatic tapping). For hygienic reasons, this is particularly necessary with energy-efficient system flow temperatures of 30-45°C in heat pump systems.
- Domestic hot water circulation The connection of a domestic hot water circulation is not provided for in this system. For larger apartments with e.g. two bathrooms, a second apartment station should therefore be installed to cover the higher hot water demand.

Settings of the heat pump
- Commissioning is described in the installation instructions for the heat pump and the control unit.
- A fixed-value control can be selected for the control, e.g. with a constant temperature of 40°C.
- When operating the heat pump, it must be ensured that no automatic mode is activated, as this would lead to the heating function being switched off during the summer.

System limits and important information (Fortsetzung)

- Thermal disinfection not possible Due to the low system flow temperatures, thermal disinfection of the drinking water circuit is not possible under normal operating conditions with the heat pump. Under special operating conditions, e.g. via a heating element, higher temperatures can also be provided for a short time (Caution: heating circuits must be switched off).
- Inlet temperature at the instantaneous water heater The maximum inlet temperature at the instantaneous water heater must not exceed 55°C during operation.
- Ensure sufficient electrical capacity of the instantaneous water heaters (power demand). When planning the electrical installation, the connected loads and cable cross-sections of the instantaneous water heaters must be taken into account (see installation instructions).

Heat generator and control

- The CS5001AW-22...42 heat pump heats the BP... E buffer tank to e.g. 40°C.
- The heat pump is controlled via the request sensor R2.2 and the return sensor R2 in the return of the heat pump. Additional hystereses prevent the heat pump from constantly switching on and off.

Buffer loading

- The heating function of the heat pump is used to load the BP... E buffer tank. The tank heating begins when the temperature at the tank temperature sensor R2.2 has fallen below the specified setpoint. The loading process ends when the setpoint temperature is reached.
- The heating element E10 in the BP... E buffer tank is required to ensure the operating conditions of the heat pump (frost-free) and is activated by the HPC301 heat pump control system if the return temperature is too low.

Supply of the apartment stations

- The apartment stations are supplied all year round by a heating pump. The hydraulic balancing is carried out automatically via the differential pressure valves in the apartment stations.
- The pump characteristic curve must be set to constant pressure. The pump can also be connected directly to the mains supply and must be in operation all year round to ensure the supply to the apartment stations at all times.
- The flow temperature of the system corresponds to the set tank temperature for the buffer loading.

Heating circuit supply in the residential units

- The heating circuit supply in the residential units is provided via the heating circuit of the apartment stations.
- For underfloor heating, the maximum flow temperature must be taken into account in the heat pump settings (recommendation: max. flow temperature 45°C). The individual heating circuits are controlled individually via room thermostats.
- For safe operation, the installation of the protective valve for the underfloor heating (55°C) at the outlet of the direct heating circuit is recommended.

Hot water preparation in the residential units

- Hot water is prepared decentrally in the residential units in a two-stage instantaneous flow principle.
- The preheating takes place via the plate heat exchanger of the apartment station to approx. 30-40°C (depending on the supply temperature of the heat pump).
- The reheating takes place via the downstream instantaneous water heater.

Settings on the MHIU100 function module of the Flow 7002 HPS apartment stations

- The hot water temperature for preheating can be set at the coding switch of the MHIU100 function module (→ Table 1).
- In addition, a resistor for the summer bypass function can optionally be attached to the terminal TS3 on the board of the MHIU100 function module (→ Figure 1 [3] + Table 2). A number of different resistors are included in the scope of delivery.

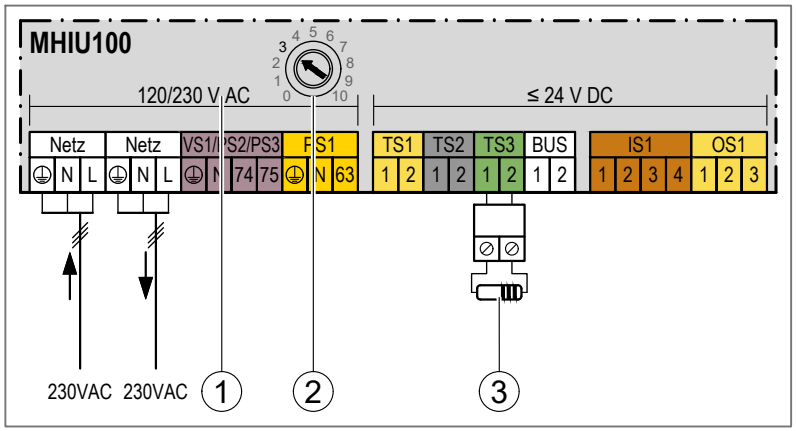


Figure 1: Schematic diagram of the MHIU100 board
[1] Board of the function module
[2] Coding switch
[3] Resistor for the summer bypass function (optional)

	0	1	2	3	**4***	5	6	7	8	9	10
	OFF	30°C	35°C	40°C	**45°C**	50°C	55°C	60°C	---	---	

Tabelle 1: Schalterstellungen zur Temperaturvorwahl * Empfohlene Einstellung

Keep-warm temperature (Summer bypass function)	Resistor color code				Resistance value
	1st Ring	2nd Ring	3rd Ring	4th Ring	
30°C	brown	black	red	gold	1 kΩ ± 5%
35°C	brown	green	red	gold	1.5 kΩ ± 5%
40°C	red	red	red	gold	2.2 kΩ ± 5%
45°C	orange	orange	red	gold	3.3 kΩ ± 5%
50°C	yellow	violet	red	gold	4.7 kΩ ± 5%
55°C	blue	grey	red	gold	6.8 kΩ ± 5%
60°C	brown	black	red	gold	10 kΩ ± 5%

Table 2: Resistance values and codes for the keep-warm temperature

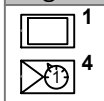
- Matrix of the maximum tapping quantity [l/min] depending on the buffer tank temperature, the desired tapping temperature and the settings on the electric instantaneous water heater TR5001H.

Buffer tank flow temperature	Hot water temperature at the apartment station	Desired hot water temperature at the tap	Domestic hot water temperature instantaneous water heater	Instantaneous water heater electrical output	Max. draw-off volume at 35 capacity	Max. draw-off volume at 45 capacity
[°C]	[°C]	[°C]	[°C]	[kW]	[l/min]	[l/min]
35	30	45	53	11	10.5	10.5
			53	13	12.0	12.0
		42	48	11	13.0	13.0
			53	13	14.0	16.0
40	35	50	60	11	10.0	10.5
			60	13	12.0	12.0
		45	53	11	14.0	15.0
			60	13	15.0	17.0
		42	53	11	15.0	15.0
			53	13	15.0	18.0
45	40	50	60	11	13.0	14.5
			60	13	14.0	15.5
		45	48	11	12.0	14.0
			53	11	15.0	17.0
		42	48	11	15.0	18.0
50[1)]	45[1)]	50	53	11	13.0	14.5
			60	11	14.0	15.5
		45	48	11	12.0	14.0

Table 3: Tapping volume-tapping temperature-flow temperature matrix

Weitere Hinweise

This schematic diagram is a non-binding representation of a possible hydraulic circuit.
The dimensions and the location of the connections can be found in the respective installation instructions.
The electrical wiring is shown in detail in the wiring diagrams.
Safety devices must be installed in accordance with currently applicable standards and local regulations.

Symbol	Description
Regulators and modules position	
	1 at the heat/cooling generator 2 at the heat/cooling generator or on the wall 3 in the station 4 in the station or on the wall 5 on the wall 6 in the control unit

Symbol	Description	Symbol	Description	Symbol	Description	Symbol	Description	Symbol	Description
Piping/Electrical wiring									
	Flow - Heating/Solar		Flow Brine		Domestic hot water		Domestic cold water		Electrical wiring
	Return - Heating/Solar		Return Brine		Domestic hot water circulation		Refrigeration system		Electrical wiring with a break
Actuators/Valves/Temperature Sensors/Pumps									
	Ventil		Revisionsbypass		Balancing valve		Overflow valve		Shout-off valve with dirt trap (with or without magnet)
	Kappenventil		Shut-off valve with actuator		Shut-off valve with therm. thermostatic actuator or anti-freeze valve		Absperrventil, magnetically controlled		Differential pressure regulator
	3-way valve with actuator (mixing)		3-way valve with actuator (distributing)		3-way valve with thermostatic actuator		Pumpe		Check valve
	3-way valve with actuator (switching)		3-way valve with actuator (switching, adjustable)		4-way valve with actuator		Safety valve		Safety group
	Temperature sensor		Safety temperature limiter		Flue gas temperature sensor		Flue gas temperature limiter		Outdoor temperature sensor
Miscellaneous									
	Radio (e.g., Controller, Sensor)		Thermometer		Manometer		Drain funnel with odor trap		Filling/draining valve
	Relay		Automatic/manual air vent		Air separator		Dirt trap		Magnetite/Sludge separator
	Compensator		Domestic hot water outlet		Heat meter		Volumetric flow meter		Collection tank
	Low loss header with sensor		Heat exchanger		System separation according to EN1717		Expansion vessel with cape valve		Immersion heater
	Heating circuit		Underfloor heating circuit		Ventilation heating circuit		Swimming pool heating circuit		Circuit function (Heating/Cooling)