



# monobloc heat pump system

VWZ AI heat pump appliance interface

# System installation instructions

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# 1 Safety

## 1.1 General safety information

### 1.1.1 Risk of death due to lack of safety devices

The basic diagrams included in this document do not show all safety devices required for correct installation.

- ▶ Install the necessary safety devices in the installation.
- ▶ Observe the applicable national and international laws, standards and directives.

### 1.1.2 Complying with the safety warnings

- ▶ Observe the safety warnings in the other applicable documents.

### 1.1.3 Using these instructions

These system installation instructions do not, under any circumstances, replace the instructions that are enclosed with the installation's system components.

- ▶ Carry out a complete and proper installation and start-up, as described in detail in the instructions for the system components.

### 1.1.4 Using the basic system diagrams

- ▶ The basic system diagrams are examples of how to set up systems.
- ▶ Choose the basic system diagram you want to use to set up your installation.
- ▶ Enter the number of your chosen basic system diagram into the control's **Basic system diagram configuration** function (→ Installation instructions for the **VRC 720** or **VRC 700**).

### 1.1.5 Using the wiring diagrams

Each basic system diagram has an associated wiring diagram that must be used. Using a different wiring diagram may result in system failure.

## 2 Notes on the documentation

### 2.1 Observing other applicable documents

- ▶ Always observe all the operating and installation instructions included with the system components.

### 2.2 Working with the system assistant



The system assistant is used to help with the system installation and start-up. The important steps are shown, depending on the selected basic system diagrams. All other necessary instructions and information are described in the instructions for the system components.

- ▶ Use the references to the instructions.
- ▶ Follow the information, directions and instructions that are described here.

The settings on the control for the indoor unit and/or the system control refer to the basic system diagram that was shown before.

- ▶ Configure the system in accordance with the end user's requirements.
- ▶ Adjust the system settings to the local conditions.



### 2.3 Key for the symbols

Symbol	Meaning
	Cooling
	Air heat source

### 2.4 Key for the system components

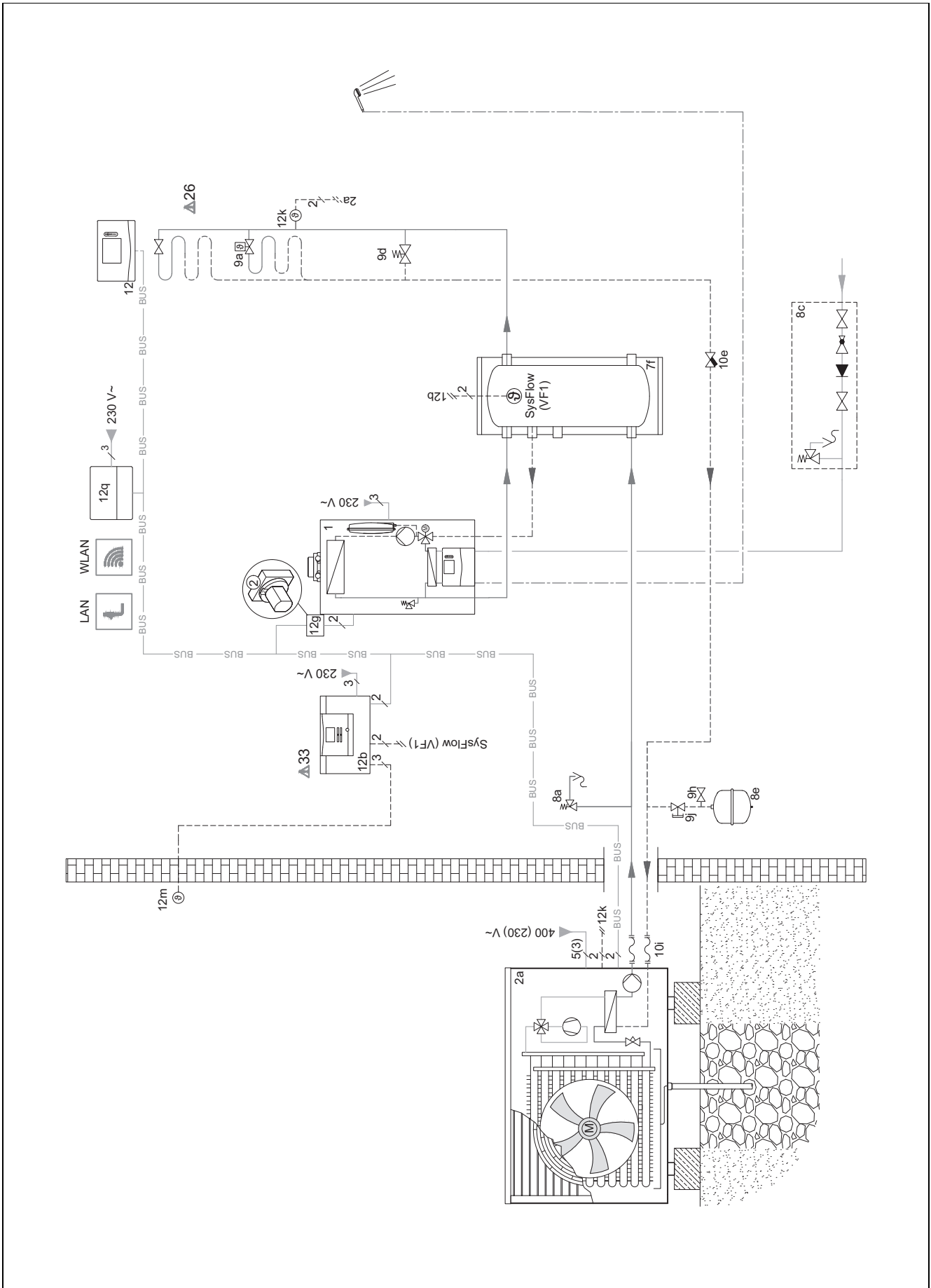
Component	Meaning
1	Heat generator
2a	Air-to-water heat pump
7f	Heat recovery module
8a	Expansion relief valve
8c	Safety assembly for the potable water connection
8e	Expansion vessel for heating
9a	Single-room temperature control valve (thermostatic/motorised)
9d	Bypass valve
9h	Filling/draining cock
9j	Tamper-proof capped valve
10e	Line strainer with magnetite separator
10 l	Flexible connections
12	System control
12b	Heat pump expansion module
12g	eBus coupler
12k	Limit thermostat
12m	Outdoor temperature sensor
12q	VR 921 communication unit
SysFlow	System temperature sensor

## 2.5 Mono heat pump systems

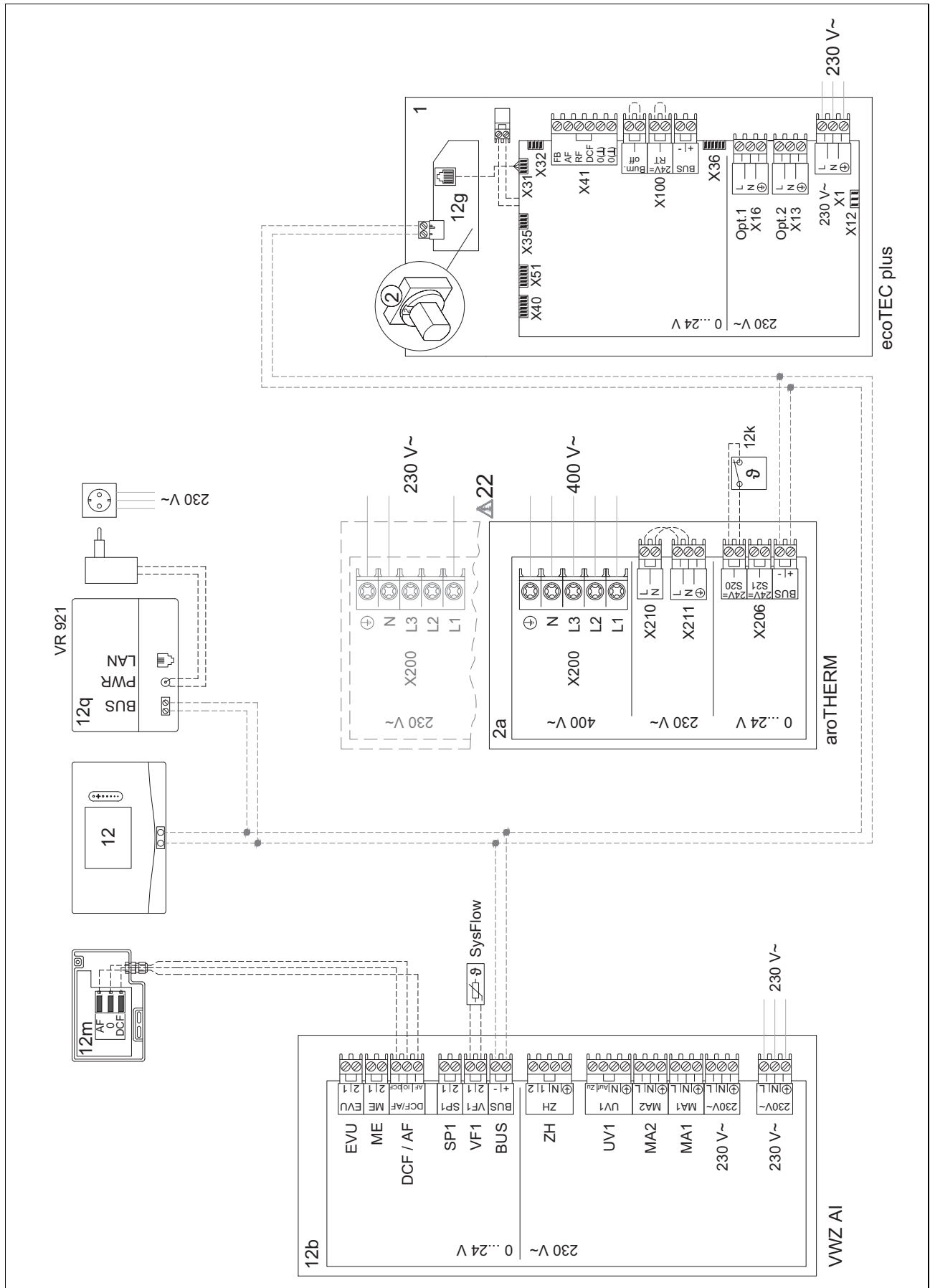
Basic system diagram	0020194193
Heat generator	aroTHERM VWL ... A ... S2 VWZ AI
Heat source 	X
Regulated heating circuits	–
Non-regulated heating circuits	1
Additional functions 	X
System control	X
Special equipment	From sensoCOMFORT VRC 720 or multiMATIC VRC 700 ecoTEC VCW combi wall-hung boiler VWZ MPS 40 heat recovery module As of the VR 920 communication unit Outdoor temperature sensor VR 32 bus coupler

### 3 System with system control (0020194193)

#### 3.1 Basic system diagram



### 3.1.1 Wiring diagram



### 3.2 Preparing for installation

- aroTHERM plus installation and maintenance instructions, from section 4.1 onwards
- VWZ AI installation instructions, from section 4.1 onwards
- Installation instructions for the heat recovery module
- Accessory set-up instructions

	Work step	Selected information/measures
1	<b>Building</b> ▶ Establishing a wall duct	
2	<b>Outdoor unit installation site, heat pump control module</b> ▶ Defining the installation site	<ul style="list-style-type: none"> <li>▶ Comply with the specific conditions for the installation site and the installation type.</li> <li><b>Important planning dimensions:</b> <ul style="list-style-type: none"> <li>– Maximum height difference between the outdoor unit and the heat recovery module: 15 m</li> <li>– Remaining feed head of the heat source circuit pump: <ul style="list-style-type: none"> <li>→ aroTHERM plus installation and maintenance instructions, from section 5.4 onwards</li> </ul> </li> <li>– Minimum clearances and installation clearances: <ul style="list-style-type: none"> <li>→ aroTHERM plus installation and maintenance instructions, from section 5.4 onwards</li> <li>→ Installation and maintenance instructions for the heat pump control module</li> </ul> </li> </ul> </li> </ul>
3	<b>Outdoor unit</b> <b>Condition:</b> Depending on the installation type/condition ▶ Establishing the strip foundations ▶ Mounting the unit mounting bracket ▶ Procuring and installing other accessories ▶ Setting up/installing the product	<ul style="list-style-type: none"> <li>▶ If required, use the transport belts that are supplied.</li> <li><b>Condition:</b> Establishing the strip foundations</li> <li>▶ Ensure that the condensate discharge can be positioned in the centre above the downpipe.</li> </ul>
4	<b>Outdoor unit</b> ▶ Installing the condensate discharge pipe	▶ Ensure that condensate does not reach paths (ice formation).
5	<b>Heat pump control module</b> ▶ Mounting the product	

### 3.3 Installing the heating and domestic hot water circuit

- aroTHERM plus installation and maintenance instructions, from section 6.1 onwards
- Installation instructions for the heat recovery module
- Accessory set-up instructions

	Work step	Selected information/measures
6	<b>Heating circuit</b> ▶ Connecting the heat recovery module ▶ Installing heating circuit connections ▶ Connecting the bypass valve ▶ Connecting the expansion vessel	<ul style="list-style-type: none"> <li>▶ Observe the connection symbols.</li> <li>▶ Adjust the bypass valve in such a way that the minimum volume flow.</li> <li>▶ Note the remaining feed head of the heat pump and the pressure losses in the system.</li> </ul>
7	<b>Safety devices</b> ▶ Installing the safety devices	▶ Ensure that all of the required safety device have been installed in the system.

### 3.4 Installing the electrical connections

- aroTHERM plus installation and maintenance instructions, from section 7.1 onwards
- ecoTEC VCW installation and maintenance instructions, from section 6.1 onwards
- sensoCOMFORT operating and installation instructions, from section 3 onwards
- VWZ AI installation instructions, from section 5.1 onwards
- Accessory set-up instructions

	Work step	Selected information/measures
8	<b>System control</b> ▶ Connecting the system control	▶ Ideally, install the system control in a living room.

	Work step	Selected information/measures
9	<b>Heat pump control module</b> ▶ Connecting the heat pump control module ▶ Establishing the power supply	▶ Install the heat pump control module. ▶ Route the cables through the strain reliefs from below and into the product.
10	<b>Outdoor temperature sensor</b> ▶ Connecting the outdoor temperature sensor	▶ Observe the installation conditions (wind-protected, no direct sunlight, no effect from heat sources, etc.) → sensoCOMFORT operating and installation instructions
11	<b>Bus coupler</b> ▶ Connecting the bus coupler	
12	<b>Outdoor unit</b> ▶ Connecting the outdoor unit	▶ Select a correct cable cross-section. ▶ Comply with the connection conditions for the energy supply company. ▶ Determine whether an electrical connection 1~/230 V or 3~/400 V (→ data plate) is required. ▶ Determine whether the power supply should be set up using a single-tariff meter or a dual-tariff meter. <b>Condition:</b> Depending on the installation site ▶ Install one or two type-B residual-current circuit breakers for the outdoor unit, depending on the connection type.
13	<b>Outdoor unit</b> ▶ Connecting a limit thermostat	▶ Observe the wiring diagram. → aroTHERM plus installation and maintenance instructions, appendix C
14	<b>Electrical house installation</b> ▶ Installing components for the energy supply company lockout function	<b>Condition:</b> Power supply via a dual-tariff meter Actuating the ESCO contact
15	<b>Heat pump control module</b> ▶ Connecting the system temperature sensor ▶ Connecting the contact for the energy supply company lockout on the heat pump control module	▶ Observe the wiring diagram. → VWZ AI installation instructions, appendix B
16	<b>Outdoor unit, heat pump control module, system control, communication unit, bus coupler</b> ▶ Installing the eBUS line ▶ Earthing connection pipes	▶ Check whether the existing conductor cross-sections for the eBUS line are sufficient for the planned line length. <b>Validity:</b> Indoor unit ▶ Do not connect more than two eBUS lines to the plug on the control PCB. <b>Condition:</b> Metallic connection pipes ▶ Earth the connection pipes.

### 3.5 Completing installation

→ aroTHERM plus installation and maintenance instructions, from section 7.13 onwards

	Work step	Selected information/measures
17	<b>Building</b> ▶ Sealing the wall duct	▶ Seal the wall duct using a suitable sealing compound.

### 3.6 Starting up the system

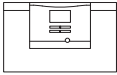
→ aroTHERM plus installation and maintenance instructions, from section 8.1 onwards

→ VWZ AI installation and maintenance instructions, from section 7.1 onwards

	Work step	Selected information/measures
1	<b>Heating circuit</b> ▶ Filling and purging the heating installation	▶ Observe the requirements for the heating/filling and supplementary water. ▶ Use the purge programme. Ensure that the purging valves on the heating manifold are open.
2	<b>Outdoor unit</b> ▶ Switching on the power supply	
3	<b>Heat pump control module</b> ▶ Switching on the power supply	



### 3.7 Configuring the settings on the heat pump control module

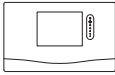


Explanation of the control elements and concept: → VWZ AI operating instructions, from section 3.2 onwards

Setting options in the installer level: → VWZ AI installation instructions, appendix C

	Menu path/entry	Comment
– As soon as the heat pump control module is supplied with power, the installation assistant starts up. –		
4	<b>To start the install. assistant, press OK</b>	<p><b>Condition:</b> Installation assistant not started</p> <ol style="list-style-type: none"> <li>1. Press <input type="checkbox"/> and <input type="checkbox"/> twice at the same time.</li> <li>2. Enter the competent person code <b>17</b>.</li> <li>3. Navigate to <b>Start inst. assistant</b>.</li> <li>4. Press <b>OK</b>.</li> </ol>
5	<b>Language</b>	▶ Set the required language.
6	<b>Syst. control avail.?</b>	▶ <b>Yes</b>
7	<b>Cooling technology</b>	<p><b>Condition:</b> Product with cooling mode</p> <p>▶ <b>Active cooling</b></p>
8	<b>Compr. current limit</b>	<p><b>Condition:</b> Reduced electrical fuse protection</p> <p>▶ Reduce the power supply accordingly.</p> <ul style="list-style-type: none"> <li>– Output 5–7 kW: 13–16 A</li> <li>– Output 12 kW: 20–25 A</li> </ul> <p>This reduction affects the output for the heating and domestic hot water at the same time.</p>
9	<b>Multi-function output relay</b>	▶ Set the connected component.
10	<b>Check prog.: Purge building circuit</b>	▶ <b>Yes</b> , duration: 60 minutes
11	<b>Contact details: Telephone number</b>	<p>▶ Enter your telephone number:</p> <ul style="list-style-type: none"> <li>– <input type="checkbox"/>/+: Insert numbers from 0 to 9 and blank spaces</li> <li>– <input type="checkbox"/>/◀: Navigate to the next/previous digit</li> </ul>
12	<b>End the installation assistant?</b>	▶ <b>Yes</b>
– The required system settings have been implemented. –		
13	<b>Menu → Installer level → Fault list →</b>	<p>▶ Check the system for faults.</p> <p><b>Condition:</b> Fault present</p> <p>▶ Troubleshooting: → VWZ AI installation and maintenance instructions, from section 9.3 onwards</p> <p>▶ If required, carry out any relevant sensor/actuator tests: <b>Menu → Installer level → Test menu → Sensor/actuator test →</b></p>
– All displayed faults have been eliminated. The heating installation is adapted. –		
14	<b>Menu → Installer level → Configuration</b>	▶ Configure the system in accordance with the end user's requirements.
15	<b>DHW mode</b>	<p><b>ECO:</b> Compressor output control that is as efficient as possible (longer cylinder charging time).</p> <p><b>Normal:</b> Balanced control (short cylinder charging time/maximum compressor output).</p> <p><b>Balance:</b> Rapid charging for a cooled cylinder in combination with efficient re-charging by controlling the compressor speed.</p>
16	<b>Compr. noise reduct.</b>	<p><b>Condition:</b> Time programmes for noise reduction mode planned</p> <p>▶ No reduction in the compressor output if no time period for noise reduction mode is selected in the system control.</p> <p>▶ <b>40 to 60:</b> Reduction in the compressor output in noise reduction mode by a set percentage value.</p> <p>Setting in the system control: <b>Noise reduction operation.</b></p>

### 3.8 Configuring the settings on the system control



Explanation of the operating and display functions: → sensoCOMFORT operating and installation instructions, from section 2.10 onwards

Overview of the setting options in the installer level: → sensoCOMFORT operating and installation instructions, section 2.11.4

	Menu path/entry	Comment
– The system control starts the installation assistant in the query <b>Language</b> –		
17	<b>Language</b>	<ul style="list-style-type: none"> <li>▶ Set the required language.</li> <li><b>Condition:</b> Installation assistant (query <b>Language</b>) not started</li> <li>1. Use the rotary knob to activate the system control.</li> <li>2. Press both selection buttons at the same time for at least 10 seconds (<b>Reset to default setting?</b> appears).</li> <li>3. Set <b>Everything</b> → <b>Yes</b>.</li> </ul>
18	<b>Date</b>	▶ Set the current date.
19	<b>Time</b>	▶ Set the current time.
20	<b>Have the installation assistants for all system components finished? Press OK to confirm</b>	▶ <b>OK</b>
– A search for all active eBUS connections is started – – The installation assistant automatically configures the system to the <b>Components found</b> . – ▶ Confirm each of the following configurations using <b>OK</b> :		
21	<b>Components found</b>	<b>Control:</b> System control <b>Heat pump 1:</b> Outdoor unit <b>Add. module heat pump:</b> Heat pump control module
22	<b>System diagram</b>	<b>8:</b> Heat pump without system separation
23	<b>Heating circuits and zones</b>	<b>1 direct HC:</b> 1 non-regulated heating circuit
– The required system settings have been implemented. – – The unit starts up –		
24	<b>Inst.assist. finished. Continue with:</b>	▶ <b>System configuration</b>
25	→ <b>Fault status</b>	▶ Check the system for faults. <b>Condition:</b> Fault present ▶ Troubleshooting: → multiMATIC installation instructions, appendix D.1
– All of the faults that are shown have been eliminated. The heating installation is adapted. –		
26	<b>Menu</b> → <b>Installer level</b> → <b>System configuration</b>	▶ Configure the system in accordance with the end user's requirements.
<b>System</b> ----		
27	<b>OT constant heating</b>	Recommendation: -5 °C
28	<b>Adaptive heat. curve</b>	<b>Condition:</b> Control installed in the living room ▶ <b>Yes</b>
29	<b>Automatic cooling</b>	<b>Condition:</b> Product with cooling mode ▶ <b>Yes</b>
30	<b>Heat. bivalence point</b>	▶ Setting in consultation with the end user
31	<b>DHW bivalence point</b>	▶ Setting in consultation with the end user
32	<b>Energy supplier</b>	▶ <b>HP&amp;BH off:</b> Energy supply company lockout function for the heat pump and back-up heater enabled
33	<b>Noise reduction operation</b> →	<b>Condition:</b> Time programmes for noise reduction mode planned ▶ Set the desired time programmes. ▶ Ensure that the compressor output in noise reduction mode is reduced. Setting in the indoor unit's control <b>Compr. noise reduct.</b> ..
<b>HEATING1</b> ----		
34	<b>Max limit outs.temp.</b>	Recommendation: 16 °C
35	<b>Heating curve</b>	▶ <b>0.2–0.5:</b> Underfloor heating ▶ <b>0.6–1.0:</b> Radiator heating
36	<b>Min. cool. fl. tgt temp.</b>	<b>Condition:</b> Underfloor heating ▶ Activate the dew point monitoring.

	<b>Menu path/entry</b>	<b>Comment</b>
<b>Domestic hot water ----</b>		
37	<b>Anti-legionella day</b>	► Set the desired day of the week.
38	<b>Ch. pump overrun time</b>	Recommendation: 1 min

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