Air Source Water Chiller and Heat Pump

Floor heating and air con unit (with super heater)

Installation and Instruction Manual

For: HOME-10A
    HOME-20A
    HOME-26A
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**1 Preface**

In order to provide our customers with a high quality, very reliable and versatile product, this heat pump has been produced adhering to strict designing and manufacturing standards. This manual includes all the necessary information about installation, troubleshooting, draining and maintenance. Please read this manual carefully before opening or servicing the unit. The manufacturer of this product will not be held responsible for injury or damage to the unit resulting from improper installation or unnecessary maintenance that are not in line with this manual. The unit must be installed by qualified personnel.

It is vital that the instructions mentioned below are followed at all times to preserve the validity of the warranty.

- The unit can only be opened or repaired by qualified installers or authorised dealers.
- Maintenance and operation must be carried out according to the recommendations featured in this manual.
- Use genuine standard spare parts only.

Failure to comply with these recommendations will invalidate the warranty.

The air source water chiller and heat pump is a high efficiency, energy saving and environmentally friendly piece of equipment, which is mainly used for domestic heating purposes. It can work with any kind of indoor unit, such as a fan coil, a radiator or floor heating pipes, by providing hot or cold water. One monoblock heat pump can also work with several indoor units. The air source water heat pump is designed to recover heat by using a super heater that is able to provide hot sanitary water.

This series of heat pump units has the following features:

1. **Advanced controlling**
   The microcomputer-based PC (programmable control panel) allows users to review or set the running parameters of the heat pump. The centralized controlling system can control several units via the PC.
2. **Nice look**
   The heat pump has been given a beautiful design. The monoblock model is equipped with an incorporated water pump, which allows for easy installation.
3. **Flexible installation**
   The unit’s structure has been well thought through and its body is compact. Only simple outdoor installation is required.
4. **Silent operation**
   The compressor, fan and water pump are high quality, efficient and insulated, which accounts for low noise levels when the unit is running.
5. **Good heat exchange rate**
   The heat pump units are equipped with especially designed heat exchangers that enhance their overall efficiency.
6. **Wide operating range**
   This series of heat pumps has been designed to provide heating under different operating conditions, ranging to temperatures as low as -15 °C.
To protect users and third parties from harm caused by this unit, to avoid damage to the unit or other property and to use the heat pump properly, please read this manual carefully and ascertain that you have understood the information included in it.

### 1 Message explanations

<table>
<thead>
<tr>
<th>Icon</th>
<th>Message</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Exclamation Mark" /></td>
<td><strong>WARNING</strong></td>
<td>Wrong operation may lead to death or serious injuries.</td>
</tr>
<tr>
<td><img src="image" alt="Exclamation Mark" /></td>
<td><strong>ATTENTION</strong></td>
<td>Wrong operation may lead to physical or material damage.</td>
</tr>
</tbody>
</table>

### 2 Icon explanations

<table>
<thead>
<tr>
<th>Icon</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Prohibition Symbol" /></td>
<td>Prohibited action. What is prohibited will be mentioned nearby this icon.</td>
</tr>
<tr>
<td><img src="image" alt="Prohibition Symbol" /></td>
<td>Compulsory implementation. The suggested action must be performed.</td>
</tr>
<tr>
<td><img src="image" alt="Attention (or Warning)" /></td>
<td>ATTENTION (or WARNING) Pay attention to what is indicated.</td>
</tr>
<tr>
<td><img src="image" alt="Shut off power" /></td>
<td>Shut off power</td>
</tr>
</tbody>
</table>

### 3 Warnings

#### Installation

**Explanations**

- **Moving and repairs**

  When the heat pump **needs to be moved or repaired**, please **entrust** these operations to the dealer or a qualified person. Improper installation may lead to water leakage, electrical shock, injuries or fire.

- **Operation**

  - **DO NOT** put fingers or objects into the fans and the evaporator of the unit. This can cause bodily harm or material damage.
  - **Switch off power** before cleaning or maintenance.
  - **Prohibition**

    - It is **forbidden** to use copper or iron-based fuses. The electrician must use the right fuse for the heat pump.
    - It is **forbidden** to spray flammable gas towards the heat pump, as this may cause fire.

- **Prohibition**

    - The unit **cannot** be installed near flammable gases. In case of a gas leak, fire or explosion may occur.

- **Checking requirements**

  Please ascertain that the unit and power connection are adequately earthed. Improper moving or repair of the unit may lead to water leakage, electrical shock, injuries or fire.

- **Earthing required**

  - Make sure that a circuit breaker is present for the unit. The absence of a circuit breaker can lead to electrical shock or fire.
  - Make sure that the pedestal of the pump is sufficiently strong in order to prevent the unit from tilting or falling.

- **ATTENTION**

  - The user is not authorized to repair the unit on his own device; doing this can cause electrical shock or fire.
  - The heat pump **cannot** be installed by untrained personnel only in order to prevent improper installation, which could lead to water leakage, electrical shock injuries or fire.
## 3 Specifications

### 1 Appearance and structure of the unit

![Diagram of unit](image)

The maximum cable length between the control panel and the heat pump is 200 metres.

### 2 Unit features

<table>
<thead>
<tr>
<th></th>
<th>HOME-10A</th>
<th>HOME-20A</th>
<th>HOME-26A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cooling capacity</strong></td>
<td>kW</td>
<td>BTU/h</td>
<td>BTU/h</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>35000</td>
<td>55000</td>
</tr>
<tr>
<td><strong>Cooling power input</strong></td>
<td>kW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Heating capacity</strong></td>
<td>kW</td>
<td>BTU/h</td>
<td>BTU/h</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>42000</td>
<td>60000</td>
</tr>
<tr>
<td><strong>Heating power input</strong></td>
<td>kW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operating current (Cooling/Heating)</strong></td>
<td>A</td>
<td>13.6/14.5</td>
<td>11.3/12.0</td>
</tr>
<tr>
<td><strong>Power supply</strong></td>
<td>V/Ph/Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>230/1/50</td>
<td>380/3/50</td>
<td>380/3/50</td>
</tr>
<tr>
<td><strong>Number of compressors</strong></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Compressor type</strong></td>
<td>Rotary</td>
<td>Rotary</td>
<td>Rotary</td>
</tr>
<tr>
<td><strong>Number of fans</strong></td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Fan power input</strong></td>
<td>W</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>240</td>
<td>400</td>
</tr>
<tr>
<td><strong>Fan rotation speed</strong></td>
<td>RPM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>850</td>
<td>850</td>
<td>830</td>
</tr>
<tr>
<td><strong>Noise</strong></td>
<td>dB(A)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>56</td>
<td>56</td>
<td>59</td>
</tr>
<tr>
<td><strong>Hot water volume</strong></td>
<td>l/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>47</td>
<td>57</td>
<td>57</td>
</tr>
<tr>
<td><strong>Water pump input</strong></td>
<td>kW</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.2</td>
<td>0.2</td>
<td>0.75</td>
</tr>
<tr>
<td><strong>Water head</strong></td>
<td>m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>10</td>
<td>24</td>
</tr>
<tr>
<td><strong>Water connection</strong></td>
<td>inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1.5</td>
</tr>
<tr>
<td><strong>Water flow-rate</strong></td>
<td>m³/h</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7</td>
<td>2.8</td>
<td>3.8</td>
</tr>
<tr>
<td><strong>Water pressure drop</strong></td>
<td>kPa</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>38</td>
<td>36</td>
</tr>
<tr>
<td><strong>Net unit dimensions (L/W/H)</strong></td>
<td>mm</td>
<td>See drawing of the units</td>
<td></td>
</tr>
<tr>
<td><strong>Unit shipping dimensions (L/W/H)</strong></td>
<td>mm</td>
<td>See package label</td>
<td></td>
</tr>
<tr>
<td><strong>Net weight</strong></td>
<td>kg</td>
<td>See unit label</td>
<td></td>
</tr>
<tr>
<td><strong>Shipping weight</strong></td>
<td>kg</td>
<td>See package label</td>
<td></td>
</tr>
</tbody>
</table>

Cooling: Ambient temperature: 35 °C/24 °C, Inlet/outlet water temperature: 12 °C/7 °C
Heating: Ambient temperature: 7 °C/6 °C, Inlet/outlet water temperature: 40 °C/45 °C
Specifications

3 Unit dimensions
Models: HOME-10A
HOME-20A

Super heater access
Water inlet
Water outlet

Model: HOME-26A

Water inlet

Installation

Floor heating
Radiators

Thermometer
Pressure gauge
Pump
Automated 3-way valve
Flexible connection
Valve
2 Choosing the right heat pump

2.1 Depending on the local climate conditions, construction features and insulation level, calculate the required cooling (heating) capacity per square metre.

2.2 Extrapolate the total capacity that will be needed by the construction.

2.3 Depending on the total capacity needed, choose the right model by consulting the heat pump features below:

- **Heat pump features**
  - Unit for cooling only: cold water outlet temp.: 5-15 °C, maximum ambient temp.: 43 °C.
  - Unit for heating and cooling: for cooling, cold water outlet temp.: 5-15 °C, maximum ambient temp.: 43 °C. For heating, hot water inlet temp.: 40-50 °C, minimum ambient temp.: -10 °C.

- **Unit usage**
  - The air source water chiller and heat pump can be used in a home, an office, etc. that needs separate heating and cooling, both of which controllable.

3 Location

- **Location**
  - The unit can be installed in any outdoor location able to carry heavy loads, such as a terrace, roof top, the ground, etc.
  - The unit must be well-ventilated.
  - The location must not undergo heat radiation and should not be exposed to flames.
  - A cover is needed during winter to protect the heat pump from the snow.
  - The air inlet and outlet of the heat pump must not be hindered by obstacles.
  - The location must be sheltered from the wind.
  - There must be a drainage area around the heat pump for condensing water.
  - There must be enough space around the unit for maintenance.

4 Installation method

- **Installation method**
  - The heat pump can be installed onto a concrete pedestal by means of expansion screws or onto a steel frame by means of rubber feet that can be placed on the ground or on the rooftop. See to it that the unit is placed horizontally.

5 Water loop connection

- **Water loop connection**
  - When connecting the pipes, you should pay attention to the following things:
    - Try to reduce the water resistance of the piping.
    - The minimum water pressure is 0.5 bar. A water leakage test should be carried out to ensure that there are no leaks. Subsequently, you can proceed with insulating.
    - An expansion tank must be present at the highest point of the water loop and the water level in the tank must be at least 0.5 metres higher than the highest point of the water loop.
    - The flow switch is installed inside the heat pump; check to ensure that the wiring and the switch action are normal and are controlled by the control panel.
    - Try to evacuate any residual air from the water pipe; there must be an air vent on the highest point of the water loop.
    - A thermometer and pressure meter must be present at the water inlet and outlet, which will allow for easy inspection when the pump is running.

6 Power supply connection

- **Power supply connection**
  - Open the front panel and open the power supply access.
  - The power supply must go through the wire access and must be connected to the power supply terminals in the control box. Subsequently, you connect the 3-wire plugs of the control panel and the main controller.
  - If an additional auxiliary heater that is controlled by the heat pump control panel is needed, the relay (or power source) of the auxiliary heater must be connected to the relevant output of the control panel.
  - There must be enough space around the unit for maintenance.

7 Position of the unit
8 Moving the unit

If the unit needs to be lifted during installation, an 8 metre cable is needed. Make sure to apply soft material between the cable and the unit to prevent damage to the heat pump casing (see Fig. 1).

![Fig. 1]

9 Trial run

Inspection before trial run
- Check the indoor unit and make sure that the pipe connection has been affixed correctly and that the relevant valves are open.
- Check the water loop in order to ascertain that there is enough water inside the expansion tank, that water is supplied correctly and that the water loop is full of water without air pockets. Also make sure that the water pipe has been insulated well.
- Check the electrical wiring. See to it that the power voltage is normal, that the screws are fastened, that the wiring has been installed in line with the diagram and that the system is earthed.
- Check the heat pump unit, including all of its screws and parts in order to see whether they are in good order. With the power on, check the screen of the control panel for any failure indication. The gas gauge can be connected to the check-valve to observe high (or low) pressure of the system during the trial run.

Trial run
- Start the heat pump by pressing the key on the control panel. Check whether the water pump is running; if it runs normally, the water pressure meter will indicate 0.2 MPa.
- After the water pump has been running for 1 minute, the compressor will start. Listen for any strange noises coming from the compressor. If an abnormal noise is produced, stop the unit and check the compressor. If the compressor runs well, check the pressure meter of the refrigerant.
- Subsequently, check whether the power input and running current are in line with what is mentioned in the manual. If not, stop the unit and check.
- Adjust the valves on the water loop to make sure that the hot/cold water supply to each feed-channel is adequate and meets the heating/cooling requirements.
- Examine if the water outlet temperature is stable.

The parameters of the control panel are factory-set; the user is not allowed to change them on his own device. Press the up/down keys to access the parameter menu; press the enter key to access the parameter list and modify the data.

3 Operating control panel symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>🌡️</td>
<td>Compressor</td>
<td>🌡️</td>
<td>Cooling</td>
</tr>
<tr>
<td>🛁</td>
<td>Pump</td>
<td>🌡️</td>
<td>Heating</td>
</tr>
<tr>
<td>⚡️</td>
<td>Fan</td>
<td>🎈</td>
<td>Esc</td>
</tr>
</tbody>
</table>

1 Switch Key
Press this key to switch on or off.

2 Up/Down Keys
Press these keys to read the parameters when in standby mode or switched off. Press these keys to modify the parameters in setup mode.

3 Menu Key
Press this key to access the menu screen when in standby mode or when the power is on.

4 Exit
Press this key to confirm the parameters in setup mode.
In other modes, press this key to return to the previous screen.

9. Warning
DO NOT touch the heat exchanger of the heat pump with fingers or objects.
3 Using the control panel

a) When the power is on, the screen displays the following text:

10 seconds later, the standby interface is displayed

b) Subsequently, press and the unit will start running. The screen displays the following text:

UNIT STATUS:
DEFROST / COOL / HEAT / OFF

While the unit is running, press the key to access the menu screen. Then, press the key to access the MAIN MENU. Finally, pressing the key will bring you back to the previous screen.
d) Parameters

With the unit in standby mode, press the Prg key to access the menu screen. Then, press the ▲ ▼ keys to select PARAMETER, subsequently press the ← key to select a parameter. You can use the ▲ ▼ keys to modify the parameter (modifying the timer parameters is done in exactly the same way). Press the ← key again to confirm your settings and use the Esc key to return to the previous screen.

e) Timer

With the unit in standby mode, press the Prg key to access the menu screen. Then, press the ▲ ▼ keys to select the timer setup mode and subsequently press the ← key to begin setting timer parameters. Next, you can use the ▲ ▼ keys to select a timer parameter. You modify timer parameters exactly in the same way as you do for the other parameters. Press the ← key again to confirm your modification and use the Esc key to return to the previous screen.

f) Curve

With the unit in standby mode, press the Prg key to access the menu screen. Then, press the ▲ ▼ keys to select the temperature curve option and subsequently press the ← key to confirm. Next, you can use the ▲ ▼ keys again to select a temperature sensor curve. Press the ← key to check it. Pressing the ← key will take you back to the previous screen.
6 Maintenance

1 General maintenance

- Check the water supply and air vent frequently in order to prevent water shortage or the apparition of air pockets in the water loop. Clean the water filter regularly to preserve water quality. Water shortage and using dirty water may cause damage to the unit. The heat pump will activate the water pump every 72 hours when it is not running in order to prevent the water from freezing.
- Keep the unit in a dry and clean place that is well ventilated. Clean the heat exchanger every 1 or 2 months in order to keep up an adequate heat exchange rate and to save energy.
- Check each part of the unit as well as the pressure of the system. Replace malfunctioning parts (if applicable) and add/replace refrigerant if necessary.
- Check the power supply and the electrical system; make sure the components and the wiring are fine. Should any part malfunction or produce an abnormal smell, make sure to replace it in time.
- If the heat pump will not be used for a long time, drain all the water from the unit and wrap the unit for safekeeping. Drain the water from the lowest point of the heat exchanger to prevent it from freezing in winter. Before restarting the heat pump, it will have to be refilled with water and fully inspected.
- Drain out the water in the super heater of the heat pump unit in winter if the super heater is not used.
- The water loop of the heat pump MUST be protected from freezing in winter. Follow the instructions below. Failure to observe these instructions will invalidate the heat pump’s warranty.

(1) Do not shut off the power supply to the heat pump in winter, because if the air temperature is lower than 0 °C and the inlet water temperature is higher than 2 °C and lower than 4 °C, the water pump will be activated to prevent the water from freezing. If the inlet water is colder than 2 °C, the heat pump will start to run in order to heat it.

(2) Use antifreeze (glycol water)
   1) refer to the table below for the glycol concentration
   2) the glycol-water mixture can be added into the system via the expansion tank of the water loop.

<table>
<thead>
<tr>
<th>Glycol percentage (%)</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temp. (°C)</td>
<td>-3</td>
<td>-8</td>
<td>-14</td>
<td>-22</td>
<td>-33</td>
</tr>
<tr>
<td>Cooling/heating capacity fluctuation</td>
<td>0.991</td>
<td>0.982</td>
<td>0.972</td>
<td>0.961</td>
<td>0.946</td>
</tr>
<tr>
<td>Power input fluctuation</td>
<td>0.996</td>
<td>0.992</td>
<td>0.986</td>
<td>0.976</td>
<td>0.966</td>
</tr>
<tr>
<td>Water flow fluctuation</td>
<td>1.013</td>
<td>1.040</td>
<td>1.074</td>
<td>1.121</td>
<td>1.178</td>
</tr>
<tr>
<td>Water pressure drop fluctuation</td>
<td>1.070</td>
<td>1.129</td>
<td>1.181</td>
<td>1.263</td>
<td>1.308</td>
</tr>
</tbody>
</table>

Note: if the glycol concentration is too high, the water flow and the water pump will be influenced and the heat exchange rate will decrease. This table is for reference; please use an antifreeze mixture that is adapted to the real climate conditions.

Maintenance

2 Common malfunctions and troubleshooting

1) Depending on the failure code indicated by the control panel, it is possible to identify and solve the problem.

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Indicator</th>
<th>Reason</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water inlet temp. sensor failure</td>
<td>1 flash</td>
<td>The sensor is open or short-circuited</td>
<td>Check or replace sensor</td>
</tr>
<tr>
<td>Water outlet temp. sensor failure</td>
<td>2 flashes</td>
<td>The sensor is open or short-circuited</td>
<td>Check or replace sensor</td>
</tr>
<tr>
<td>Coil 1 sensor failure</td>
<td>3 flashes</td>
<td>The sensor is open or short-circuited</td>
<td>Check or replace sensor</td>
</tr>
<tr>
<td>Coil 2 sensor failure</td>
<td>4 flashes</td>
<td>The sensor is open or short-circuited</td>
<td>Check or replace sensor</td>
</tr>
<tr>
<td>Ambient sensor failure</td>
<td>5 flashes</td>
<td>The sensor is open or short-circuited</td>
<td>Check or replace sensor</td>
</tr>
<tr>
<td>Temp. difference between inflowing and outflowing water is too great</td>
<td></td>
<td>Insufficient water flow volume, water pressure difference too small</td>
<td>Check water flow volume and check if water loop is blocked</td>
</tr>
<tr>
<td>Anti-freezing action in cooling mode</td>
<td></td>
<td>Insufficient water flow volume</td>
<td>Check water flow volume</td>
</tr>
<tr>
<td>First-time frost protection in winter</td>
<td></td>
<td>The ambient temp. is too low</td>
<td></td>
</tr>
<tr>
<td>Second-time frost protection in winter</td>
<td></td>
<td>The ambient temp. is too low</td>
<td></td>
</tr>
<tr>
<td>Flow switch failure</td>
<td>8 flashes</td>
<td>No or little water in the water loop.</td>
<td>Check water flow volume and check if water pump is malfunctioning</td>
</tr>
<tr>
<td>Wrong connection or missing connection (for 3 PH power)</td>
<td>9 flashes</td>
<td>The unit stops and the alarm goes off</td>
<td>Check connections</td>
</tr>
<tr>
<td>Pressure protection (for 1 PH current)</td>
<td>6 flashes</td>
<td>The unit stops and the alarm goes off</td>
<td>Check pressure switch and switch system</td>
</tr>
</tbody>
</table>
### Appendix 1: Installation diagrams

#### Standard installation
(For open and expandable water tank)

**Figure legend:**
- 1 main unit
- 2 fan coil
- 3 flexible rubber connection
- 4 thermometer
- 5 pressure meter
- 6 water pump
- 7 check valve
- 8 ball valve
- 9 flow meter
- 10 bypass valve
- 11 drain valve
- 12 water processor
- 13 Y-filter
- 14 three-way valve
- 15 automatic ventilation
- 16 two-way valve
- 17 open and expandable water tank
- 22 pressure meter
- 23 Y-way valve
- 24 3-way valve

#### Installation diagram for the automatic water feed valve
1. When the automatic water feed valve is installed, the arrowhead orientation of the water inlet must correspond to the orientation of the valve.
2. The automatic water feed valve has been preset to 1.5 bar.
3. If you wish to adjust the pressure of the incoming water, proceed as follows:
   - Unscrew the pressure set value (C).
   - Insert the pressure set value (C) and tighten the nuts (A) and (B).
   - Proceed as follows:
   1. Reduce the pressure of the incoming water, loosen the screw (A).
   2. Increase the pressure of the incoming water, tighten the screw (B).
4. The automatic water feed valve needs to be cleaned periodically. To do so, close the tap, unscrew the plug (D) and remove the filter mesh that is located inside the device. Reassemble the valve after cleaning it.

**Technical requirements:**
- The set pressure must be reset before use.
- Flow rate: 0.5 bar at 1.0 l/min.
- Flow time: Maximum 15 minutes.

**Appendix 3:**

#### Technical requirements:
- 1. Each connection must be fitted tightly to avoid leaks.
- 2. The automatic water feed valve automatically adjusts the pressure of the incoming water.
- 3. The pressure of the automatic water feed valve needs to be reset before use.
- 4. The automatic water feed valve automatically adjusts the pressure of the incoming water.

**Appendix 2:**

#### Installation requirements:
1. The factory only provides the main unit (0 and 1) in the figure; the other indispensable accessories are provided by the users or the installation company.
2. The unit of which the reference code contains the letter B has an internal water pump; therefore, one does not need to install an external water pump (6).
3. The automatic water feed valve needs to be cleaned periodically. To do so, close the tap, unscrew the plug (D) and remove the filter mesh that is located inside the device. Reassemble the valve after cleaning it.

**Appendix 3:**

#### Technical requirements:
- The set pressure must be reset before use.
- Flow rate: 0.5 bar at 1.0 l/min.
- Flow time: Maximum 15 minutes.
Appendices

Appendix 6:
Connection codes for the chiller (main PCB)

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HEAT</td>
<td>Auxiliary electrical heating (220 VAC)</td>
</tr>
<tr>
<td>2</td>
<td>PUMP</td>
<td>Water pump (220 VAC)</td>
</tr>
<tr>
<td>3</td>
<td>FAN</td>
<td>Fan motor (220 VAC)</td>
</tr>
<tr>
<td>4</td>
<td>VAL2</td>
<td>Solenoid valve (220 VAC)</td>
</tr>
<tr>
<td>5</td>
<td>COMP2</td>
<td>Compressor of system 2 (220 VAC)</td>
</tr>
<tr>
<td>6</td>
<td>VAL1</td>
<td>4-way valve of system 1 (220 VAC)</td>
</tr>
<tr>
<td>7</td>
<td>COMP1</td>
<td>Compressor of system 1 (220 VAC)</td>
</tr>
<tr>
<td>8</td>
<td>AC-L</td>
<td>Fire wire (220 VAC)</td>
</tr>
<tr>
<td>9</td>
<td>AC-N</td>
<td>Neutral wire (220 VAC)</td>
</tr>
<tr>
<td>10</td>
<td>KYIN</td>
<td>On/Off switch (input)</td>
</tr>
<tr>
<td>11</td>
<td>MDIN</td>
<td>Model (input)</td>
</tr>
<tr>
<td>12</td>
<td>NET GND</td>
<td>Control panel</td>
</tr>
<tr>
<td>13</td>
<td>KYOUT</td>
<td>On/Off switch (output)</td>
</tr>
<tr>
<td>14</td>
<td>MDOUT</td>
<td>Mode</td>
</tr>
<tr>
<td>15</td>
<td>WATER GND</td>
<td>Flow switch (input) (normally closed)</td>
</tr>
<tr>
<td>16</td>
<td>FROST GND</td>
<td>Defrosting signal</td>
</tr>
<tr>
<td>17</td>
<td>SYSGND</td>
<td>System protection (normally closed)</td>
</tr>
<tr>
<td>18</td>
<td>ROOMT</td>
<td>Ambient temp. (input)</td>
</tr>
<tr>
<td>19</td>
<td>PIPE2</td>
<td>Temp. of fan coil 2 (input)</td>
</tr>
<tr>
<td>20</td>
<td>PIPE1</td>
<td>Temp. of fan coil 1 (input)</td>
</tr>
<tr>
<td>21</td>
<td>OUTWT</td>
<td>Temp. of outflowing water (output)</td>
</tr>
<tr>
<td>22</td>
<td>INTWT</td>
<td>Temp. of inflowing water (output)</td>
</tr>
</tbody>
</table>

Appendix 7:
Connecting the control panel

Depending on the user's needs, the control panel can be connected in the following ways:

A. Simultaneous connection to control panel and parallel connections

1. This method allows to connect several air con terminals in parallel. The air con terminals must be installed on the same water loop. The live wire power (220 VAC) of the water valves of the air con terminals must be derived to a low voltage signal via relays; subsequently, the low voltage signals must be connected in parallel to the KYIN and GND terminal on the control panel.
2. When any water valve of an air con terminal is open, the control system can start or stop the unit. When all the air con terminals are closed, the control system can switch the unit either on or off.
3. When the heat pump is switched on, any signal that a water valve is open can start the unit. When the heat pump is switched off, none of the signals that a water valve is open can start the unit.
4. When the heat pump is switched on, any signal that a water valve is open can stop the unit. When the heat pump is switched off, none of the signals that a water valve is open can stop the unit.
5. Running mode and parameter settings can be reached via the control panel.

B. Connection to control panel only

Explanation:
If the KYIN and GND terminals on the PCB can be connected, the control panel can help control the status, the running mode and the parameter settings of the unit.