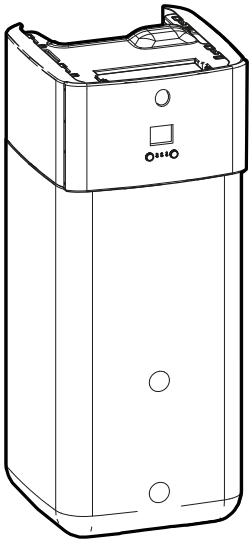
https://daikintechnicaldatahub.eu

# Installation manual


## Daikin Altherma 3 H HT ECH$_2$O



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**▲= 1, 2, 3, …, 9, A, B, C, …, Z**
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Installation manual
Daikin Altherma 3 H HT ECH$_2$O

**English**

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# 1 About the documentation

## 1.1 About this document

**Target audience**

Authorised installers

**Documentation set**

This document is part of a documentation set. The complete set consists of:

- **General safety precautions:**
  - Safety instructions that you must read before installing
  - Format: Paper (in the box of the indoor unit)
- **Operation manual:**
  - Quick guide for basic usage
  - Format: Paper (in the box of the indoor unit)
- **User reference guide:**
  - Detailed step-by-step instructions and background information for basic and advanced usage
  - Format: Digital files on https://www.daikin.eu. Use the search function 🔍 to find your model.
- **Installation manual – Outdoor unit:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor unit)
- **Installation manual – Indoor unit:**
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)
- **Installer reference guide:**
  - Preparation of the installation, good practices, reference data, …
  - Format: Digital files on https://www.daikin.eu. Use the search function 🔍 to find your model.
- **Addendum book for optional equipment:**
  - Additional info about how to install optional equipment
  - Format: Paper (in the box of the indoor unit) + Digital files on https://www.daikin.eu. Use the search function 🔍 to find your model.

The latest revision of the supplied documentation is published on the regional Daikin website and is available via your dealer.

The original instructions are written in English. All other languages are translations of the original instructions.

**Technical engineering data**

- A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible).
- The **full set** of the latest technical data is available on the Daikin Business Portal (authentication required).

**Online tools**

In addition to the documentation set, some online tools are available for installers:

- **Daikin Technical Data Hub**
  - Central hub for technical specifications of the unit, useful tools, digital resources, and more.
  - Publicly accessible via https://daikintechnicaldatahub.eu.
- **Heating Solutions Navigator**
  - Digital toolbox that offers a variety of tools to facilitate the installation and configuration of heating systems.
  - To access the Heating Solutions Navigator, registration to the Stand By Me platform is required. For more information, see https://professional.standbyme.daikin.eu.
- **Daikin e-Care**
  - Mobile app for installers and service technicians that allows you to register, configure and troubleshoot heating systems.
  - Use the QR codes below to download the mobile app for iOS and Android devices. Registration to the Stand By Me platform is required to access the app.

App Store Google Play

# 2 Specific installer safety instructions

Always observe the following safety instructions and regulations.

**Installation site (see "4.1 Preparing the installation site" [▶ 5])**

**WARNING**

Follow the service space dimensions in this manual to install the unit correctly. See "4.1.1 Installation site requirements of the indoor unit" [▶ 5].

**CAUTION**

Install the indoor unit at a minimum distance of 1 m from other heat sources (>80°C) (e.g. electrical heater, oil heater, chimney) and combustible materials. Otherwise the unit may be damaged or in extreme cases catch fire.

**Opening and closing the unit (see "4.2 Opening and closing the unit" [▶ 5])**

**DANGER: RISK OF ELECTROCUTION**

**DANGER: RISK OF BURNING/SCALDING**

**Mounting the indoor unit (see "4.3 Mounting the indoor unit" [▶ 7])**

**WARNING**

Fixing method of the indoor unit MUST be in accordance with the instructions from this manual. See "4.3 Mounting the indoor unit" [▶ 7].

**Piping installation (see "5 Piping installation" [▶ 8])**

**DANGER: RISK OF ELECTROCUTION**

During the filling process, water can escape from any leaking point and can cause an electrical shock if it comes into contact with live parts.

- Before the filling process, de-energise the unit.
- After the first filling and before switching on the unit with the mains switch, check whether all electric parts and connection points are dry.

**WARNING**

Field piping MUST be in accordance with the instructions from this manual. See "5 Piping installation" [▶ 8].

In case of freeze protection by glycol:

**WARNING**

Due to the presence of glycol, the system can corrode. Uninhibited glycol becomes acidic under the influence of oxygen. High temperatures and the presence of copper accelerate this process. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that cause severe damage to the system. It is therefore important to respect the following:

- A qualified water specialist has treated the water.
- Select glycol with corrosion inhibitors to prevent glycol oxidation and subsequent acid formation.
- Do NOT use automotive glycol because these contain corrosion inhibitors with only a limited lifetime. On top of that, they also contain silicates that can foul or plug the system.
- Do NOT use galvanised pipes in glycol systems because they provoke certain components in the glycol's corrosion inhibitor to precipitate.

**Electrical installation (see "6 Electrical installation" [▶ 13])**

**DANGER: RISK OF ELECTROCUTION**

**WARNING**

Electrical wiring MUST be in accordance with the instructions from this manual. See "6 Electrical installation" [▶ 13].

**WARNING**

- All wiring MUST be performed by an authorised electrician and MUST comply with the national wiring regulation.
- Make electrical connections to the fixed wiring.
- All components procured on-site and all electrical construction MUST comply with the applicable legislation.

**WARNING**

ALWAYS use multicore cable for power supply cables.

**WARNING**

- If the power supply has a missing or wrong N-phase, equipment might break down.
- Establish proper earthing. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shocks.
- Install the required fuses or circuit breakers.
- Secure the electrical wiring with cable ties so that the cables do NOT come in contact with sharp edges or piping, particularly on the high-pressure side.
- Do NOT use taped wires, extension cords, or connections from a star system. They can cause overheating, electrical shocks or fire.
- Do NOT install a phase advancing capacitor, because this unit is equipped with an inverter. A phase advancing capacitor will reduce performance and may cause accidents.

**WARNING**

The backup heater MUST have a dedicated power supply and MUST be protected by the safety devices required by the applicable legislation.

**WARNING**

If the supply cord is damaged, it MUST be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

**CAUTION**

Do NOT push or place redundant cable length into the unit.

**CAUTION**

To guarantee the unit is completely earthed, ALWAYS connect the backup heater power supply and the earth cable.

**INFORMATION**

For details on the fuse ratings, the fuse types and the circuit breaker ratings, see "6 Electrical installation" [▸ 13].

**Commissioning (see "8 Commissioning" [▸ 35])**

**WARNING**

Commissioning MUST be in accordance with the instructions from this manual. See "8 Commissioning" [▸ 35].

# 3 About the box

Keep the following in mind:

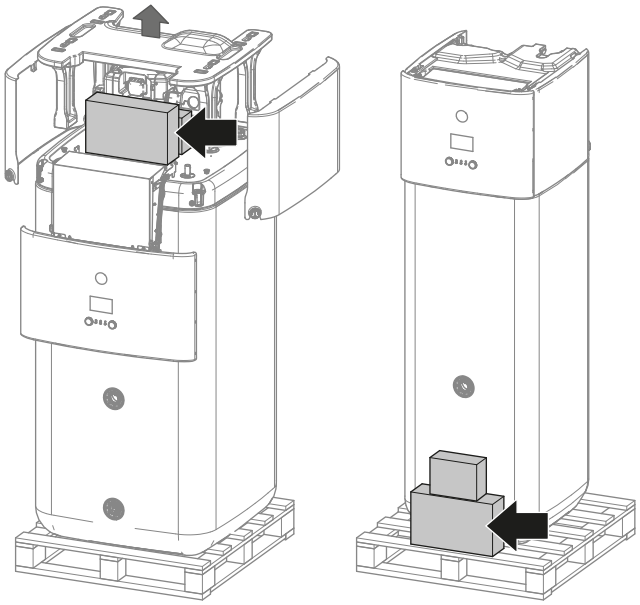
- At delivery, the unit MUST be checked for damage and completeness. Any damage or missing parts MUST be reported immediately to the claims agent of the carrier.
- Bring the packed unit as close as possible to its final installation position to prevent damage during transport.
- Prepare in advance the path along which you want to bring the unit to its final installation position.

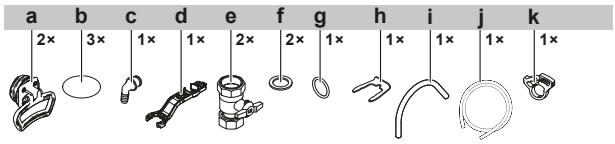
## 3.1 Indoor unit

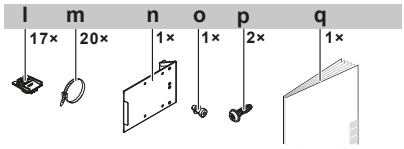
**INFORMATION**

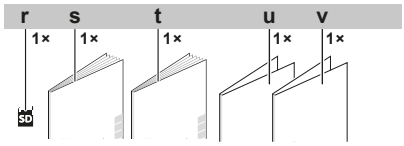
The indoor unit is delivered with closed locking parts. Open the locking parts before you start with the installation of the indoor unit. The rear locking parts are maybe no longer accessible when the indoor unit is at the final installation location. (see "4.2.1 To open the indoor unit" [▸ 5]).

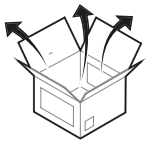
### 3.1.1 To remove the accessories from the indoor unit





| | |
|---|---|
| **a** | Handles (only required for transport) |
| **b** | Thread cover |
| **c** | Spillover connector |
| **d** | Assembly wrench |
| **e** | Shut-off valve |
| **f** | Flat gasket |
| **g** | O-ring |
| **h** | Securing clip |
| **i** | Venting hose |
| **j** | Drain pan hose |
| **k** | Drain pan hose clamp |
| **l** | Cable fixation for strain relief |
| **m** | Cable tie |
| **n** | Switch box metal insert |
| **o** | Screw for switch box metal insert |
| **p** | Top cover screws |
| **q** | General safety precautions |
| **r** | WLAN cartridge |
| **s** | Indoor unit installation manual |
| **t** | Operation manual |
| **u** | Addendum software changelog |
| **v** | Addendum commercial warranty |

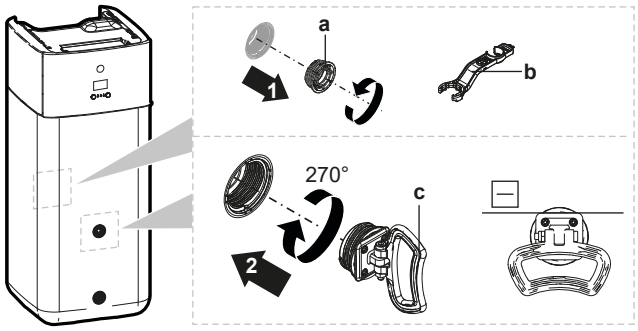
### 3.1.2 To handle the indoor unit

Use the handles at the back and at the front to carry the unit.

**NOTICE**

The indoor unit is top-heavy as long as the storage tank is empty. Secure the unit accordingly and only transport by using the handles.

If optional Backup Heater (EKECBU*) is installed, see the installation manual of the Backup Heater.




**a** Screw plug
**b** Assembly wrench
**c** Handle

1 Open the screw plugs on the front and back of the tank.
2 Attach the handles horizontally and turn by 270°.
3 Use the handles to carry the unit.
4 After carrying the unit remove the handles, add the screw plugs again and insert the thread covers on the plugs.

# 4 Unit installation

## 4.1 Preparing the installation site

### 4.1.1 Installation site requirements of the indoor unit

- The indoor unit is designed for indoor installation only and for the following ambient temperatures:
  - Space heating operation: 5~30°C
  - Space cooling operation: 5~35°C
  - Domestic hot water production: 5~35°C. If EKECBUAF6V is installed, ambient temperature is limited to 5~32°C.

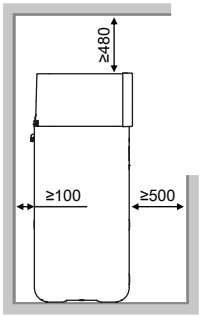
**INFORMATION**

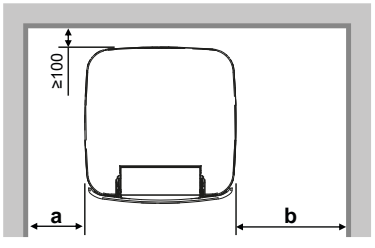
Cooling is only applicable in case of reversible models.

- Mind the following spacing installation guidelines:

**CAUTION**

Install the indoor unit at a minimum distance of 1 m from other heat sources (>80°C) (e.g. electrical heater, oil heater, chimney) and combustible materials. Otherwise the unit may be damaged or in extreme cases catch fire.




[mm]

| | | |
|---|---|---|
| **a** | ≥100 mm | For units with / without backup heater |
| **b** | ≥300 mm | For units with backup heater |
| | ≥100 mm | For units without backup heater |
| **a+b** | ≥600 mm | For units with / without backup heater |

**INFORMATION**

Serviceability may be impacted, if the indicated clearances cannot be maintained.

**INFORMATION**

If you have limited installation space, do the following before installing the unit in its final position: "4.3.2 To connect the drain hose to the drain" [▶ 7].

- Mind the measurement guidelines:

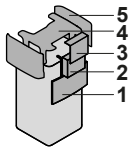
| | |
|---|---|
| Maximum height difference between the indoor unit and the outdoor unit | 10 m |
| Maximum total water piping length | 50 m[(a)] |

(a) The precise water piping length can be determined using the Hydronic Piping Calculation tool. The Hydronic Piping Calculation tool is part of the Heating Solutions Navigator which can be reached via https://professional.standbyme.daikin.eu. Contact your dealer if you have no access to the Heating Solutions Navigator.

## 4.2 Opening and closing the unit

### 4.2.1 To open the indoor unit

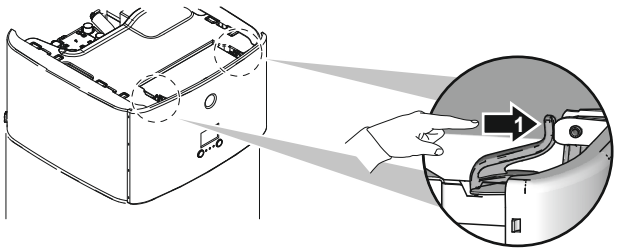
**Overview**

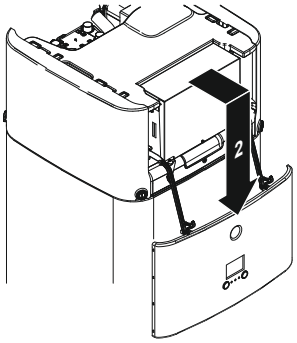



**1** User interface panel
**2** Switch box
**3** Switch box cover
**4** Top cover
**5** Side panel

**Lower the user interface panel**

1 Lower the user interface panel. Open the hinges at the top and slide the interface panel downwards.



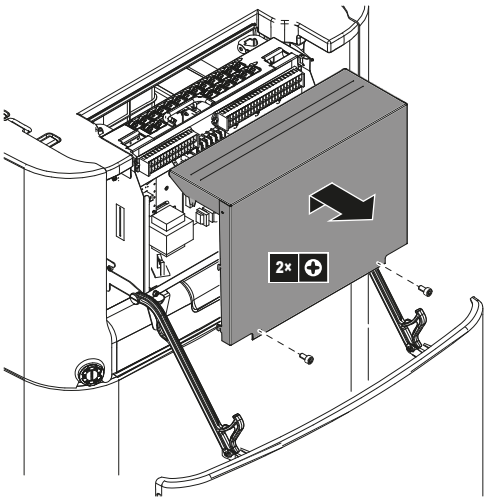
**Open the switchbox cover**

1 Remove the switch box cover.

**NOTICE**

Do NOT damage or remove the foam sealing of the switch box.

2 Disconnect the ground connection from the top cover of the switch box.



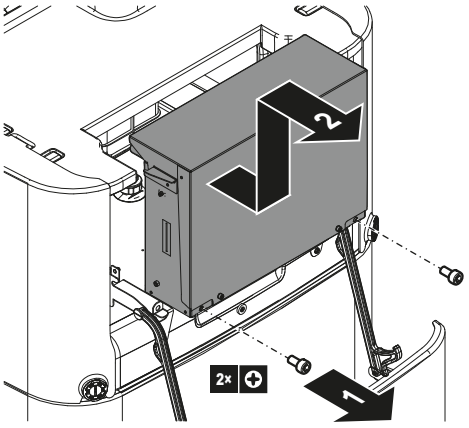

**To lower the switch box and open the switch box cover**

During the installation, you will need access to the inside of the indoor unit. To have easier front access, lower the switch box of the unit as follows:

**Prerequisite:** The user interface panel has been lowered.

1 Loosen the screws.

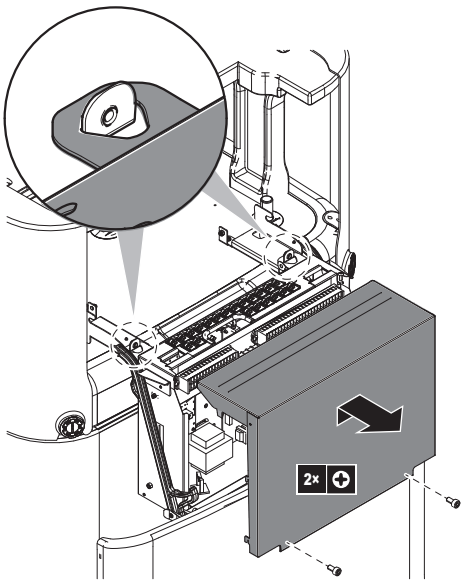
2 Lift up the switch box.




3 Lower the switch box.

4 Hang the switch box in the lugs.

5 Remove the switch box cover.



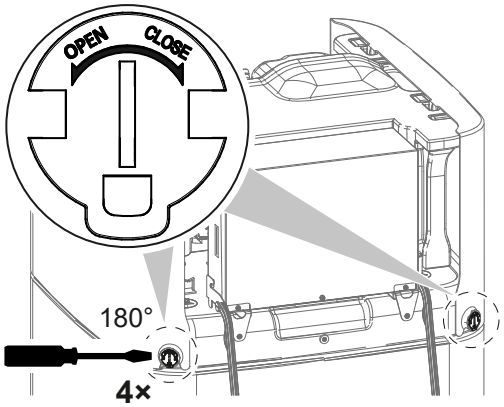

**Remove the top cover**

During the installation, you will need access to the inside of the indoor unit. To have easier top access, remove the top cover of the unit. This is necessary in the following cases:

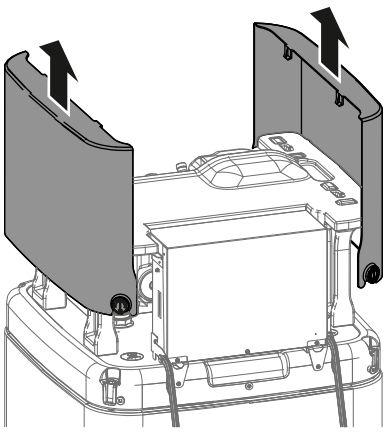
- Connecting water piping
- Connecting BIV or DB-kit
- Connecting backup heater

**Prerequisite:** The user interface panel has been opened and the switch box has been lowered.

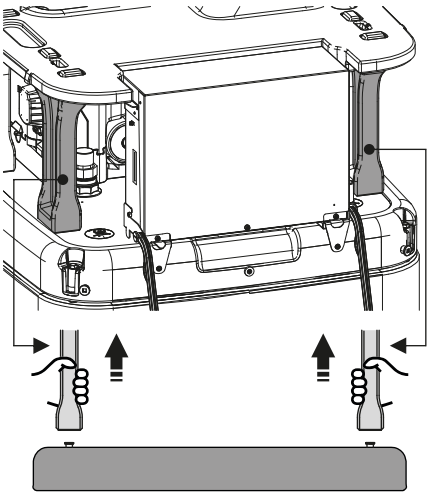
1 Open the locking parts of the side panels with a screw driver.



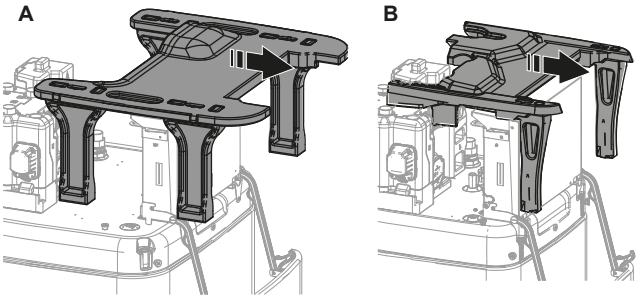

2 Lift up the side panels.



3 Lift the top cover out of its mounting using the two front legs.



4 Remove the top cover.




A For models with 500 l storage tank
B For models with 300 l storage tank

### 4.2.2 To close the indoor unit

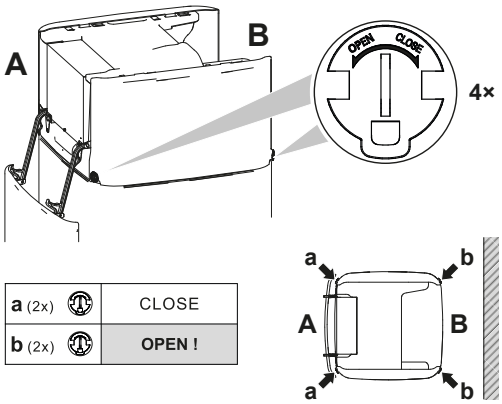
1 Close the cover of the switch box.
2 Place the top cover on the top of the unit.
3 Check that the front legs of the top cover are correctly fitted on the mounting.
4 Hang the side panels into the top cover.
5 Check that the hooks of the side panel slide correctly into the cut-outs in the top cover.
6 Check that the locking parts of the side panels slide onto the plugs of the tank.
7 Close the locking parts of the side panels.
8 Put the switch box back into place.
9 Close the user interface panel.

**NOTICE**

When closing the indoor unit, make sure that the tightening torque does NOT exceed 4.1 N•m.

**NOTICE**

Close at least one locking part per side panel. If you cannot reach the locking parts on the back of the indoor unit, it is sufficient to close only the locking parts on the front.




## 4.3 Mounting the indoor unit

### 4.3.1 To install the indoor unit

1 Lift the indoor unit from the pallet and place it on the floor. Also see "3.1.2 To handle the indoor unit" [▶ 4].
2 Connect the drain hose to the drain. See "4.3.2 To connect the drain hose to the drain" [▶ 7].
3 Slide the indoor unit into position.

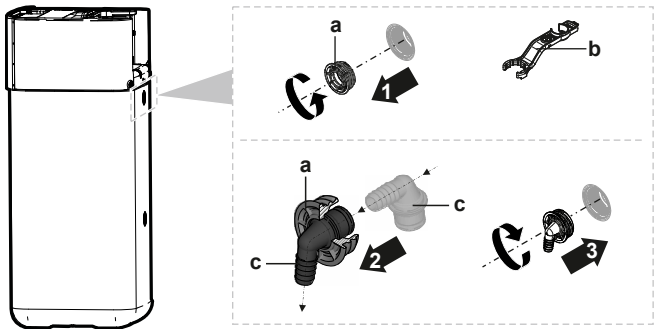
**NOTICE**

**Level.** Make sure the unit is level.

### 4.3.2 To connect the drain hose to the drain

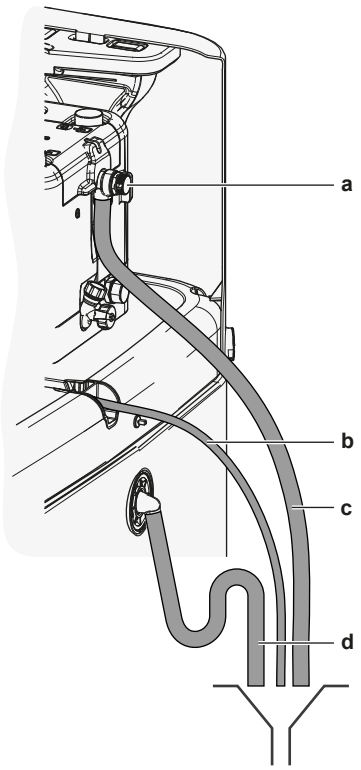
Spillover water from the water storage tank as well as water collecting in the drain pan must be drained. You must connect the drain hoses to an appropriate drain according to the applicable legislation.

1 Open the screw plug.




a Screw plug
b Assembly wrench
c Spillover connector

2 Insert the spillover connector into the screw plug.
3 Mount the spillover connector.




**a** Pressure relief valve
**b** Drain pan hose (delivered as accessory)
**c** Drain hose pressure relief valve (field supply)
**d** Drain hose tank (field supply)

4 Attach a drain hose to the spillover connector.

5 Connect the drain hose to an appropriate drain. Ensure the water can flow through the drain hose. Ensure that the water level cannot mount above the overspill.

6 Connect the drain pan hose to the drain pan connection and connect to an appropriate drain.

7 Connect the pressure relief valve to an appropriate drain in accordance with the applicable legislation. Ensure that any steam or water that may escape is drained in a frost-protected, safe and observable manner.

# 5 Piping installation

## 5.1 Preparing water piping

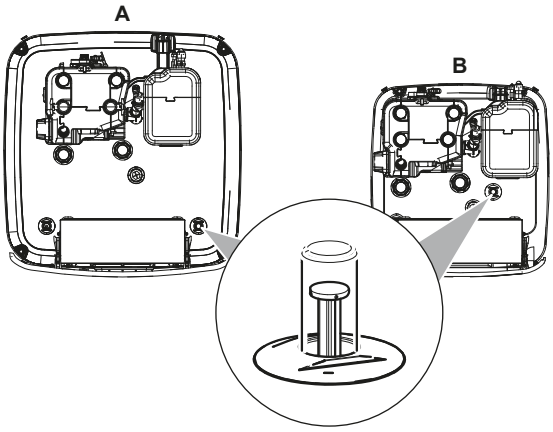
**NOTICE**

In case of plastic pipes, make sure they are fully oxygen diffusion tight according to DIN 4726. The diffusion of oxygen into the piping can lead to excessive corrosion.

**NOTICE**

**Water circuit requirements.** Make sure to comply with the water pressure and water temperature requirements below. For additional water circuit requirements, see the installer reference guide.

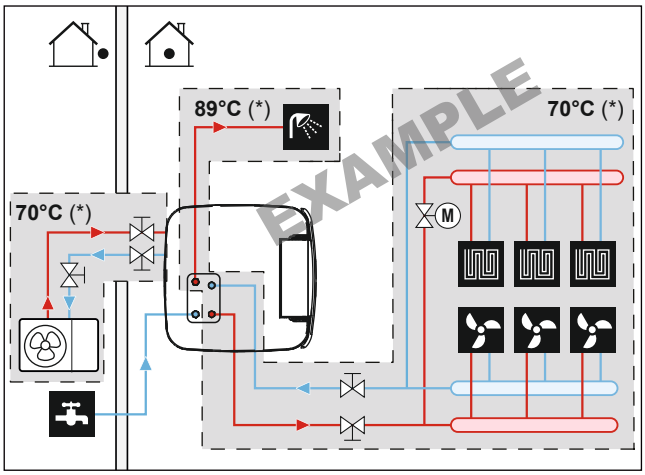
- **Water pressure – Domestic hot water.** The maximum water pressure is 10 bar. Provide adequate safeguards in the DHW circuit to ensure that the maximum pressure is NOT exceeded. The minimum water pressure to operate is 1 bar.
- **Water pressure – Space heating/cooling circuit.** The maximum water pressure is 3 bar (=0.3 MPa). Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded. The minimum water pressure to operate is 1 bar (=0.1 MPa).
- **Water pressure – Storage tank.** The water inside the storage tank is not pressurized. Therefore, a visual check via level indicator on the storage tank must be carried out annually.




- **Water temperature.** All installed piping and piping accessories (valve, connections,…) MUST withstand the following temperatures:

**INFORMATION**

The following figure is an example and may NOT completely match your system layout.




(*) Maximum temperature for piping and accessories

- **Magnetic filter/dirt separator**. If the indoor unit is connected to a heating system with radiators, steel pipes, or non-diffusion-proof floor heating pipes, it is necessary to install a magnetic filter/dirt separator into the return flow of the system. If the indoor unit is connected to a domestic cold water supply containing steel pipes, it is necessary to install a magnetic filter/dirt separator before the cold water connection.
- **Storage tank – Water quality**. Minimum requirements regarding the quality of water used to fill the storage tank:
  - Water hardness (calcium and magnesium, calculated as calcium carbonate): ≤3 mmol/l
  - Conductivity: ≤1500 (ideal: ≤100) µS/cm
  - Chloride: ≤250 mg/l
  - Sulphate: ≤250 mg/l
  - pH value: 6.5~8.5

  For properties deviating from the minimum requirements, suitable conditioning measures have to be taken.

### 5.1.1 To check the water volume and flow rate

To make sure that the unit operates properly:

- You MUST check the minimum water volume and the minimum flow rate.

**Minimum water volume**

The installation needs to be made in such a way that a minimum water volume (see table below) is always available in the space heating/cooling loop of the unit, even when the available volume towards the unit is reduced because of closure of valves (heat emitters, thermostatic valves, etc.) in the space heating/cooling circuit. The internal water volume of the indoor unit is NOT considered for this minimum water volume.

| If… | Then the minimum water volume is… |
|---|---|
| Cooling operation | 20 l |
| Heating operation | 0 l |

**Minimum flow rate**

Check that the minimum flow rate in the installation is guaranteed in all conditions.

| Minimum required flow rate |
|---|
| 22 l/min |

**NOTICE**

If glycol was added to the water circuit, and the temperature of the water circuit is low, the flow rate will NOT be displayed on the user interface. In this case, the minimum flow rate can be checked by way of the pump test (check that the user interface does NOT display error 7H).

**NOTICE**

When circulation in each or certain space heating loops is controlled by remotely controlled valves, it is important that the minimum flow rate is guaranteed, even if all valves are closed. In case the minimum flow rate cannot be reached, a flow error 7H will be generated (no heating or operation).

See the installer reference guide for more information.

See the recommended procedure as described in "8.2 Checklist during commissioning" [▸ 35].

## 5.2 Connecting water piping

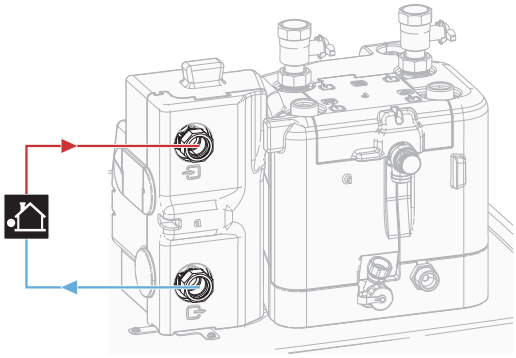
### 5.2.1 To connect the water piping

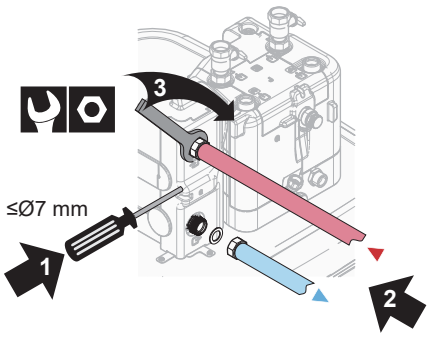
**NOTICE**

Do NOT use excessive force when connecting the field piping and make sure the piping is aligned properly. Deformed pipes can cause the unit to malfunction.

1 Connect the outdoor unit field piping to the water connection pipes of the indoor unit.

Do NOT exceed the maximum tightening torque (Thread size 1", 25-30 N•m). To avoid damage, apply the necessary countertorque with a suitable tool.



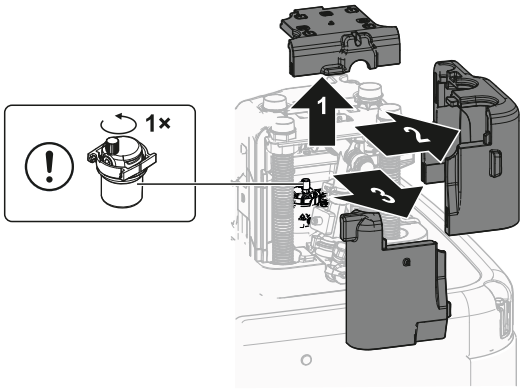



2 Remove the thermal insulation of the hydraulic block. Open the automatic air purge valve on the pump by one turn. Afterwards put the thermal insulation back on the hydraulic block.

**NOTICE**

The thermal insulation can easily be damaged if NOT handled correctly.

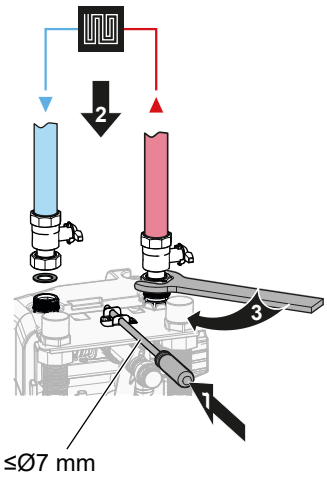
- ONLY remove parts in the order and direction as indicated here,
- do NOT use force,
- do NOT use tools,
- re-install the thermal insulation in reverse order.




3 Connect the shut-off valves using the flat gaskets (accessory bag) to the space heating/cooling water pipes of the indoor unit.

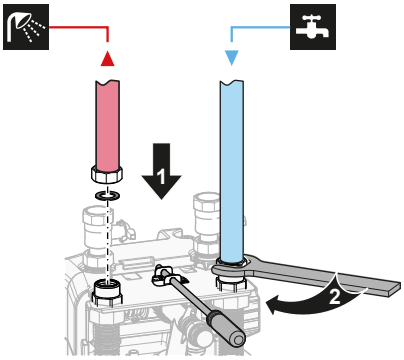
4 Connect the space heating/cooling field piping to the shut-off valves using a sealing.

Do NOT exceed the maximum tightening torque (Thread size 1", 25-30 N•m). To avoid damage, apply the necessary countertorque with a suitable tool.



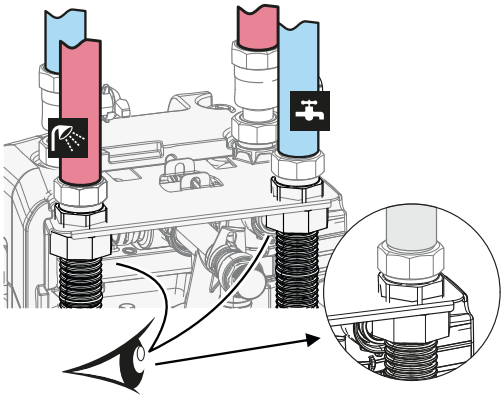

5 Connect the domestic hot water in and out pipes to the indoor unit.

Do NOT exceed the maximum tightening torque (Thread size 1", 25-30 N•m). To avoid damage, apply the necessary countertorque with a suitable tool.



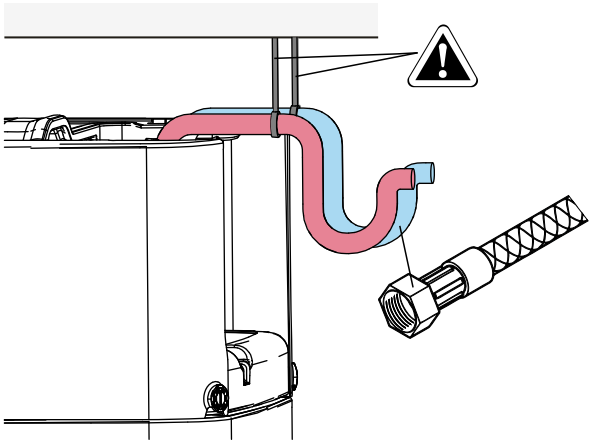

**NOTICE**

To avoid leaks, the entire screw connections of the domestic hot water in and out pipes must be checked again after installation (Maximum tightening torque 25-30 N•m).

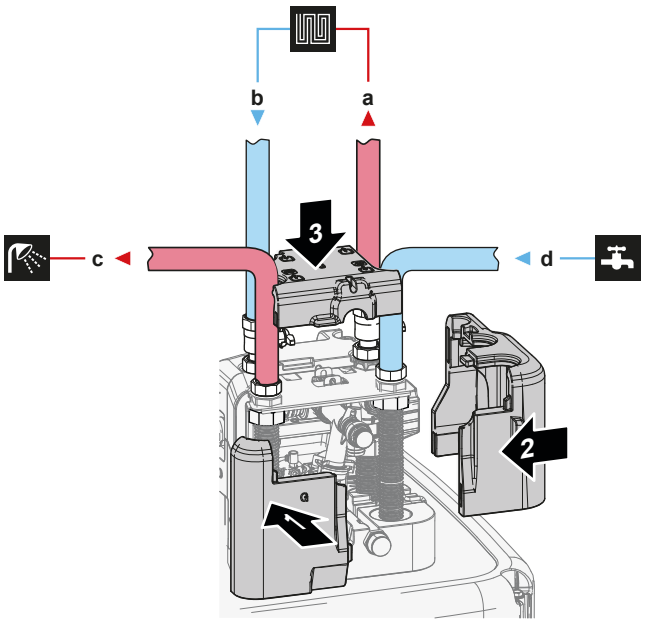


**6** Support the water piping.

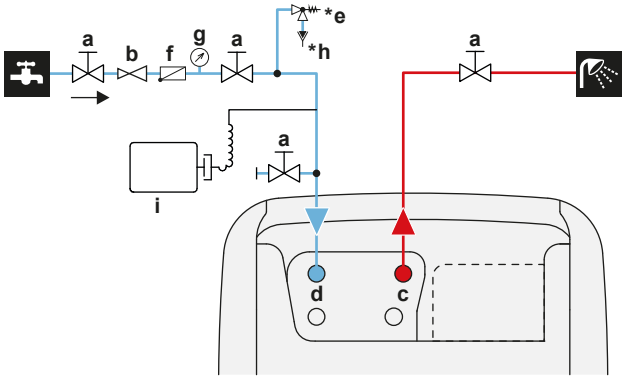
For rearward facing connections: Support hydraulic lines suitably according to the spatial conditions. This is valid for all water pipes.



**7** Install the thermal insulation of the hydraulic block.




**8** Install the following components (field supply) on the cold water inlet of the DHW tank:




| | |
|---|---|
| **a** | Shut-off valve (recommended) |
| **b** | Pressure reducing valve (recommended) |
| **c** | DHW – Hot water OUT (male, 1") |
| **d** | DHW – Cold water IN (male, 1") |
| ***e** | Pressure relief valve (max. 10 bar (=1.0 MPa)) (mandatory) |
| **f** | Non-return valve (recommended) |
| **g** | Pressure gauge (recommended) |
| ***h** | Tundish (mandatory) |
| **i** | Expansion vessel (recommended) |

**NOTICE**

Install air purge valves at all local high points.

**NOTICE**

A pressure relief valve (field supply) with an opening pressure of maximum 10 bar (=1 MPa) must be installed on the domestic cold water inlet connection in accordance with the applicable legislation.

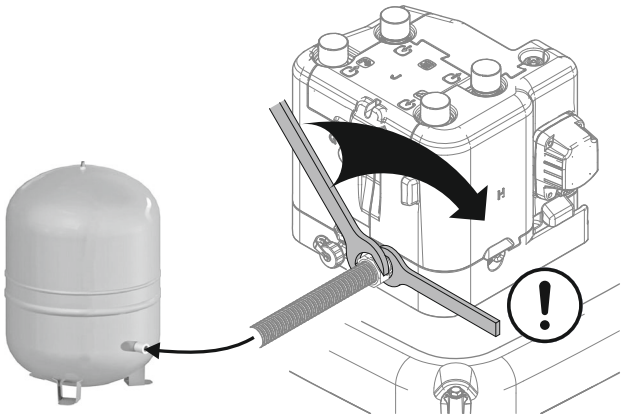
**NOTICE**

- A drain device and pressure relief device must be installed on the cold water inlet connection of the storage tank.
- To avoid back siphonage, it is recommended to install a non-return valve on the water inlet of the storage tank in accordance with the applicable legislation. Make sure it is NOT between the pressure relief valve and the storage tank.
- It is recommended to install a pressure reducing valve on the cold water inlet in accordance with the applicable legislation.
- It is recommended to install an expansion vessel on the cold water inlet in accordance with the applicable legislation.
- It is recommended to install the pressure relief valve on a higher position than the top of the storage tank. Heating of the storage tank causes water to expand and without pressure relief valve the water pressure of the domestic hot water heat exchanger inside the tank can rise above design pressure. Also the field installation (piping, tapping points, etc.) connected to the tank is subjected to this high pressure. To prevent this, a pressure relief valve needs to be installed. The overpressure prevention depends on the correct operation of the field installed pressure relief valve. If this is NOT working correctly, water leakage may occur. To confirm good operation, regular maintenance is required.

### 5.2.2 To connect the expansion vessel

1 Connect a suitably dimensioned and preset expansion vessel for the heating system. There may not be any hydraulic blocking elements between the heat generator and the safety valve.

2 Position the pressure vessel in an easily accessible place (maintenance, parts replacement).



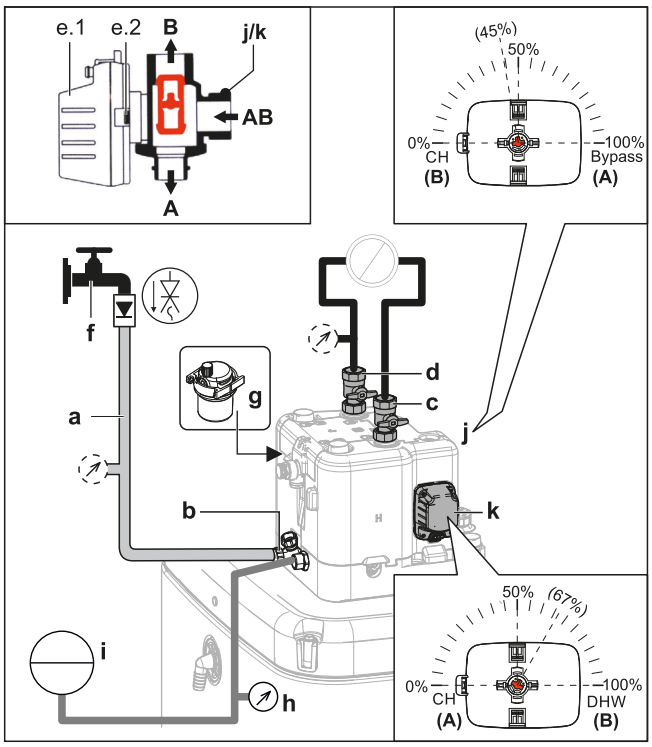
### 5.2.3 To fill the heating system

**DANGER: RISK OF ELECTROCUTION**

During the filling process, water can escape from any leaking point and can cause an electrical shock if it comes into contact with live parts.

- Before the filling process, de-energise the unit.
- After the first filling and before switching on the unit with the mains switch, check whether all electric parts and connection points are dry.

1 Connect a hose with a non-return valve (1/2") and an external manometer (field supply) to a water tap and the fill and drain valve. Secure the hose against slipping off.




**a** Hose with a non-return valve (1/2") and an external manometer (field supply)
**b** Fill and drain valve
**c** Space heating/cooling water OUT
**d** Space heating/cooling water IN
**e.1** Valve motor
**e.2** Valve motor latch
**f** Water tap
**g** Automatic air purge valve
**h** Pressure gauge (field supply)
**i** Pressure vessel (field supply)
**j** Bypass valve
**k** Tank valve

2 Prepare for air purging according to the instructions (see "To purge the air out of the unit with the manual air vent valves" [▶ 36]).

3 Open the water tap.

4 Open fill and drain valve and monitor the manometer.

5 Fill the system with water until the external manometer shows that the system target pressure is reached (system height +2 m; 1 m water column = 0.1 bar). Make sure that the pressure relief valve does not open.

6 Close the manual air vent valves as soon as water emerges free of bubbles (see "To purge the air out of the unit with the manual air vent valves" [▶ 36]).

7 Close the water tap. Keep the fill and drain valve open in case it is necessary to repeat the filling procedure after the air purging of the system. See "8.2.2 To perform an air purge" [▶ 36].

8 Close the fill and drain valve and remove the hose with non-return valve only after air purging is performed and the system is completely filled.

### 5.2.4 To protect the water circuit against freezing

#### About freeze protection

Frost can damage the system. To prevent the hydraulic components from freezing, the software is equipped with special frost protection functions such as water pipe freeze prevention and drain prevention (see the installer reference guide) that include the activation of a pump in case of low temperatures.

However, in case of a power failure, these functions cannot guarantee protection.

Do one of the following to protect the water circuit against freezing:

- Add glycol to the water. Glycol lowers the freezing point of the water.
- Install freeze protection valves. Freeze protection valves drain the water from the system before it can freeze. Insulate the freeze protection valves in a similar way as the water piping, but do NOT insulate the inlet and outlet (release) of these valves.

**WARNING**

Ethylene glycol is toxic. If you add glycol to the water, do NOT install freeze protection valves. The valves release the toxic glycol when they are activated. **Possible consequence:**

- Heart, kidney or liver damage in case of glycol swallowing or skin contact with glycol.
- Nausea, sickness and diarrhea in case of glycol inhalation.

## Freeze protection by glycol

### About freeze protection by glycol

Adding glycol to the water lowers the freezing point of water.

**WARNING**

Due to the presence of glycol, the system can corrode. Uninhibited glycol becomes acidic under the influence of oxygen. High temperatures and the presence of copper accelerate this process. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that cause severe damage to the system. It is therefore important to respect the following:

- A qualified water specialist has treated the water.
- Select glycol with corrosion inhibitors to prevent glycol oxidation and subsequent acid formation.
- Do NOT use automotive glycol because these contain corrosion inhibitors with only a limited lifetime. On top of that, they also contain silicates that can foul or plug the system.
- Do NOT use galvanised pipes in glycol systems because they provoke certain components in the glycol's corrosion inhibitor to precipitate.

**NOTICE**

Glycol absorbs water from its environment. Therefore do NOT add glycol that has been exposed to air. Leaving the cap off the glycol container causes the concentration of water to increase. The glycol concentration is then lower than assumed. As a result, the hydraulic components might freeze up after all. Take preventive actions to ensure a minimal exposure of the glycol to air.

**NOTICE**

Use ONLY propylene glycol including the required inhibitors, classified as category III as per EN1717.

### Required concentration of glycol

The required concentration of glycol depends on the lowest expected outdoor temperature, and on whether you want to protect the system from bursting or from freezing. To prevent the system from freezing, more glycol is required.

Add glycol according to the table below.

| Lowest expected outdoor temperature | Prevent from bursting | Prevent from freezing |
|---|---|---|
| –5°C | 10% | 15% |
| –10°C | 15% | 25% |
| –15°C | 20% | 35% |
| –20°C | 25% | — |
| –25°C | 30% | — |
| –30°C | 35% | — |

**INFORMATION**

- Protection against bursting: the glycol will prevent the piping from bursting, but NOT the liquid inside the piping from freezing.
- Protection against freezing: the glycol will prevent the liquid inside the piping from freezing.

**NOTICE**

- The required concentration might differ depending on the type of glycol. ALWAYS compare the requirements from the table above with the specifications provided by the glycol manufacturer. If necessary, meet the requirements set by the glycol manufacturer.
- The added concentration of glycol should NEVER exceed 35%.
- If the liquid in the system is frozen, the pump will NOT be able to start. Mind that if you only prevent the system from bursting, the liquid inside might still freeze.
- When water is at standstill inside the system, the system is very likely to freeze and get damaged.

### Glycol setting

**NOTICE**

If glycol is present in the system, setting [E-0D] must be set to 1. If the glycol setting is NOT set correctly, the liquid inside the piping can freeze.

## Freeze protection by freeze protection valves

### About freeze protection valves

When no glycol is added to the water, you can use freeze protection valves to drain the water from the system before it can freeze.

- Install freeze protection valves (field supply) at all lowest points of the field piping.
- Normally closed valves (located indoors near the piping entry/exit points) can prevent that all water from indoor piping is drained when the freeze protection valves open.

**NOTICE**

When freeze protection valves are installed, set the minimum cooling setpoint (default=7°C) at least 2°C higher than the maximum opening temperature of the freeze protection valve. If lower, freeze protection valves can open during cooling operation.

For more information, see the installer reference guide.

## 5.2.5 To fill the heat exchanger inside the storage tank

Following heat exchanger have to be filled with water before the storage tank can be filled:

- The domestic hot water heat exchanger

**NOTICE**

To fill the domestic hot water heat exchanger, use a field supply filling kit. Make sure you comply with the applicable legislation.

**1** Open the shut-off valve for the cold water supply.

2 Open all hot water taps in the system to make sure that the tapped water flow is as high as possible.

3 Keep the hot water taps open and the cold water supply running until no more air is vented from the taps.

4 Check for water leaks.

- The bivalent heat exchanger (only for some models)

5 Fill the bivalent heat exchanger with water by connecting the bivalent heating circuit. If the bivalent heating circuit will be installed on a later stage, fill the bivalent heat exchanger with a filling hose until water comes out of both connections.

6 Do air purge on the bivalent heating circuit.

7 Check for water leaks.

### 5.2.6 To fill the storage tank

**NOTICE**

Before the storage tank can be filled, the heat exchangers inside the storage tank have to be filled, see previous chapters.

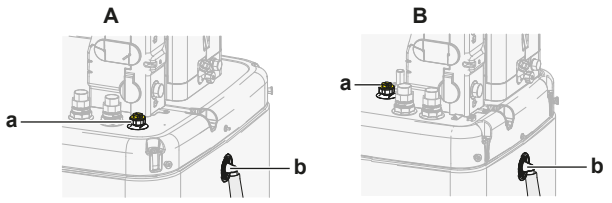
Fill the storage tank with a water pressure <6 bar and a flow speed <15 l/min.

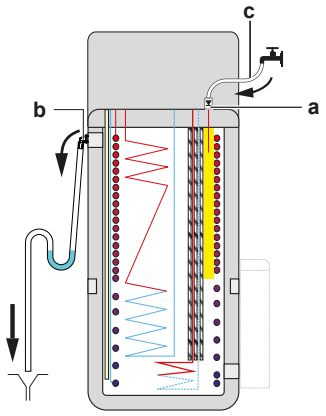
**Without installed drainback solar kit (option)**

1 Connect a hose with non-return valve (1/2") to the drainback connection.

2 Fill the storage tank until water spills from the spillover connection.

3 Remove the hose.




**A** For models with 500 l storage tank
**B** For models with 300 l storage tank
**a** Drainback connection
**b** Spillover connection
**c** Hose with non-return valve (1/2")

**With installed drainback solar kit (option)**

1 Combine the fill and drain kit (option) with the drainback solar kit (option) to fill the storage tank.

2 Connect the hose with non-return valve to the fill and drain kit.

Follow the steps described in the previous chapter.

### 5.2.7 To insulate the water piping

The piping in the complete water circuit MUST be insulated to prevent condensation during cooling operation and reduction of the heating and cooling capacity.

**Outdoor water piping insulation**

See the installation manual of the outdoor unit, or the installer reference guide.

# 6 Electrical installation

**DANGER: RISK OF ELECTROCUTION**

**WARNING**

ALWAYS use multicore cable for power supply cables.

**WARNING**

If the supply cord is damaged, it MUST be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

**CAUTION**

Do NOT push or place redundant cable length into the unit.

**NOTICE**

The distance between the high voltage and low voltage cables should be at least 50 mm.

## 6.1 About electrical compliance

**Only for the backup heater of the indoor unit**

See "6.3.3 To connect the backup heater power supply" [▸ 16].

## 6.2 Guidelines when connecting the electrical wiring

**Tightening torques**

Indoor unit:

| Item | Tightening torque (N•m) |
|---|---|
| M4 (X1M) | 1.2 |
| M4 (X12M, X15M) | 0.88 ±10% |

Indoor unit – BUH option:

| Item | Tightening torque (N•m) |
|---|---|
| M4 (X6M) *3V, *6V | 2.45 ±10% |
| M4 (X6M) *9W | 1.2 |

## 6.3 Connections to the indoor unit

| Item | Description |
|---|---|
| Power supply (main) | See "6.3.2 To connect the main power supply" [▸ 15]. |
| Power supply (backup heater) | See "6.3.3 To connect the backup heater power supply" [▸ 16]. |
| Backup heater | See "6.3.4 To connect the backup heater to the main unit" [▸ 18]. |
| Shut-off valve | See "6.3.5 To connect the shut-off valve" [▸ 18]. |
| Electricity meters | See "6.3.6 To connect the electricity meters" [▸ 19]. |
| Domestic hot water pump | See "6.3.7 To connect the domestic hot water pump" [▸ 19]. |

| Item | Description |
|---|---|
| Alarm output | See "6.3.8 To connect the alarm output" [▶ 20]. |
| Space cooling/heating operation control | See "6.3.9 To connect the space cooling/heating ON/OFF output" [▶ 20]. |
| Changeover to external heat source control | See "6.3.10 To connect the changeover to external heat source" [▶ 21]. |
| Power consumption digital inputs | See "6.3.11 To connect the power consumption digital inputs" [▶ 21]. |
| Safety thermostat | See "6.3.12 To connect the safety thermostat (normally closed contact)" [▶ 22]. |
| Smart Grid | See "6.3.13 Smart Grid" [▶ 23]. |
| WLAN cartridge | See "6.3.14 To connect the WLAN cartridge (delivered as accessory)" [▶ 25] . |
| Solar input | See "6.3.15 To connect the solar input" [▶ 25]. |
| DHW output | See "6.3.16 To connect the DHW output" [▶ 26]. |
| Room thermostat (wired or wireless) | See below table. |
| | Wires: 0.75 mm²<br>Maximum running current: 100 mA |
| | For the main zone:<br>▪ [2.9] `Control`<br>▪ [2.A] `Ext thermostat type`<br>For the additional zone:<br>▪ [3.A] `Ext thermostat type`<br>▪ [3.9] (read-only) `Control` |
| Heat pump convector | There are different controllers and setups possible for the heat pump convectors.<br>Depending on the setup, you also need option EKRELAY1.<br>For more information, see:<br>▪ Installation manual of the heat pump convectors<br>▪ Installation manual of the heat pump convector options<br>▪ Addendum book for optional equipment |
| | Wires: 0.75 mm²<br>Maximum running current: 100 mA |
| | For the main zone:<br>▪ [2.9] `Control`<br>▪ [2.A] `Ext thermostat type`<br>For the additional zone:<br>▪ [3.A] `Ext thermostat type`<br>▪ [3.9] (read-only) `Control` |

| Item | Description |
|---|---|
| Remote outdoor sensor | See:<br>▪ Installation manual of the remote outdoor sensor<br>▪ Addendum book for optional equipment |
| | Wires: 2×0.75 mm² |
| | [9.B.1]=1 (`External sensor = Outdoor`)<br>[9.B.2] `Ext. amb. sensor offset`<br>[9.B.3] `Averaging time` |
| Remote indoor sensor | See:<br>▪ Installation manual of the remote indoor sensor<br>▪ Addendum book for optional equipment |
| | Wires: 2×0.75 mm² |
| | [9.B.1]=2 (`External sensor = Room`)<br>[1.7] `Room sensor offset` |
| Human Comfort Interface | See:<br>▪ Installation and operation manual of the Human Comfort Interface<br>▪ Addendum book for optional equipment |
| | Wires: 2×(0.75~1.25 mm²)<br>Maximum length: 500 m |
| | [2.9] `Control`<br>[1.6] `Room sensor offset` |
| WLAN module | See:<br>▪ Installation manual of the WLAN module<br>▪ Addendum book for optional equipment |
| | Use the cable delivered with the WLAN module. |
| | [D] `Wireless gateway` |

for room thermostat (wired or wireless):

| In case of… | See… |
|---|---|
| Wireless room thermostat | ▪ Installation manual of the wireless room thermostat<br>▪ Addendum book for optional equipment |
| Wired room thermostat without multi-zoning base unit | ▪ Installation manual of the wired room thermostat<br>▪ Addendum book for optional equipment |

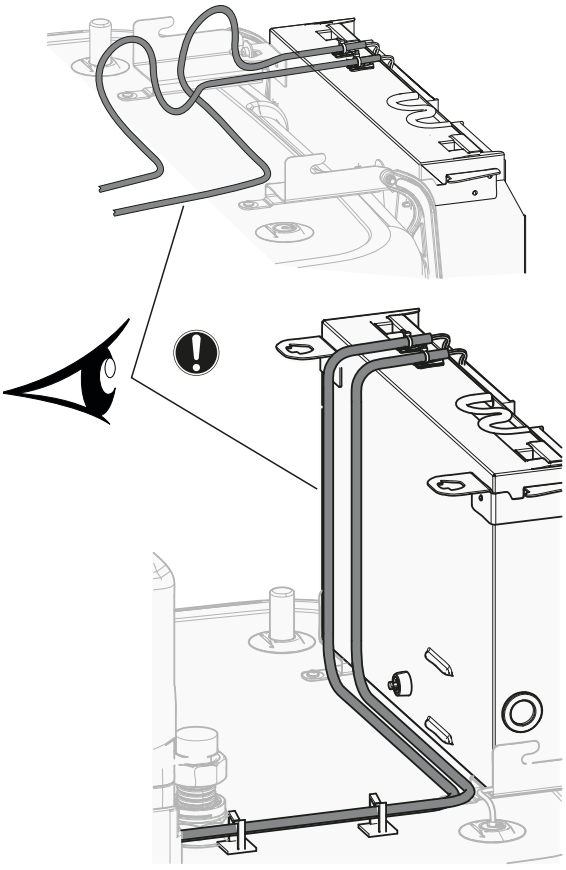
| In case of… | See… |
|---|---|
| Wired room thermostat with multi-zoning base unit | ▪ Installation manual of the wired room thermostat (digital or analogue) + multi-zoning base unit<br>▪ Addendum book for optional equipment<br>▪ In this case:<br>▪ You need to connect the wired room thermostat (digital or analogue) to the multi-zoning base unit<br>▪ You need to connect the multi-zoning base unit to the outdoor unit<br>▪ For cooling/heating operation, you also need to implement a relay (field supply, see addendum book for optional equipment) |

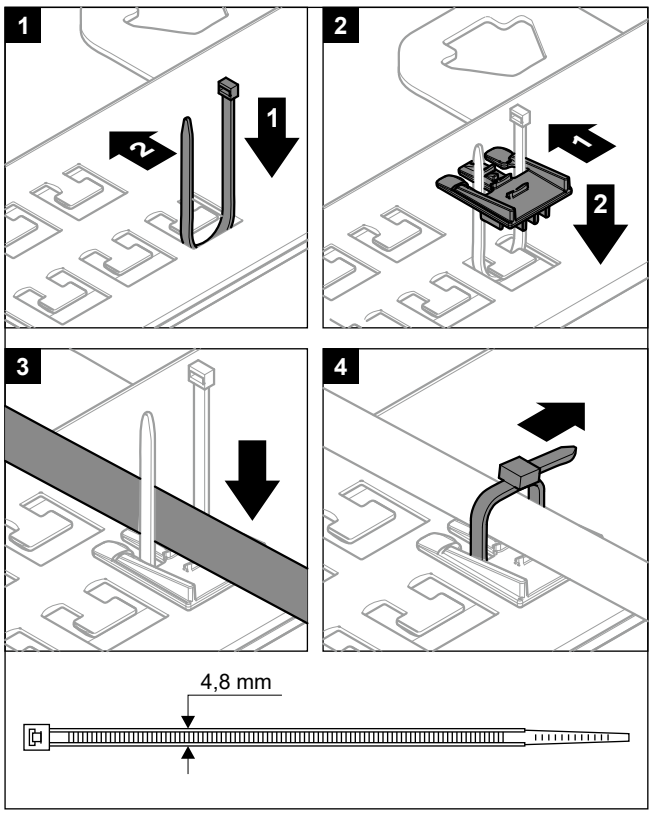
### 6.3.1 To connect the electrical wiring to the indoor unit

**Remark**: All cables which will be connected to the switch box of the $ECH_2O$ must be fixed by strain relief.

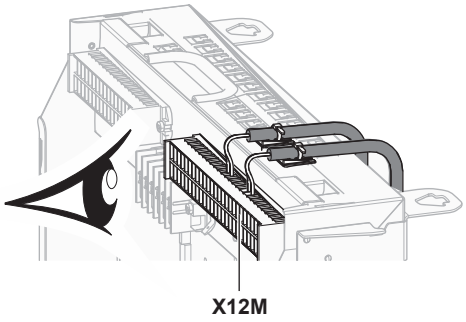
To have easier access to the switch box itself and the routing of cables the switch box can be lowered (see "4.2.1 To open the indoor unit" [▸ 5]).

If the switch box is lowered in service position while the electrical installation is done, additional cable length has to be taken into account adequately. The cable routing in normal position is longer than in service position.





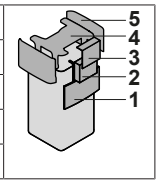

It is important that the fixing plate of terminals is NOT in service position, while cables are connected to one of the terminals. Otherwise the cables could be too short.




### 6.3.2 To connect the main power supply

**1** Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

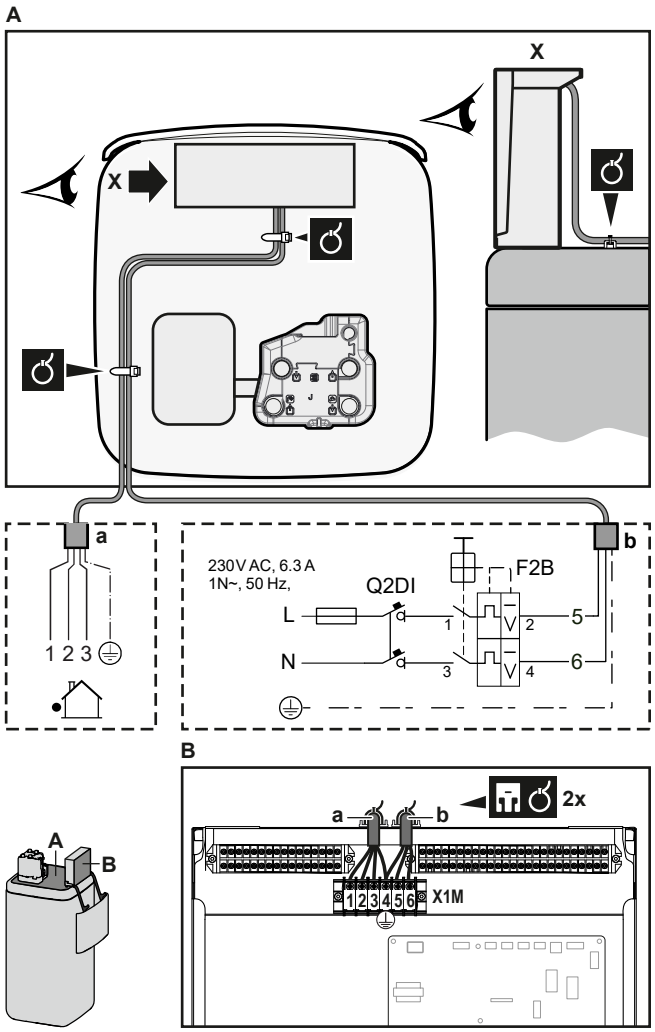
| | |
|---|---|
| **1** | User interface panel |
| **2** | Switch box |
| **3** | Switch box cover |
| **4** | Top cover |
| **5** | Side panel |




**2** Connect the main power supply.

**In case of normal kWh rate power supply**

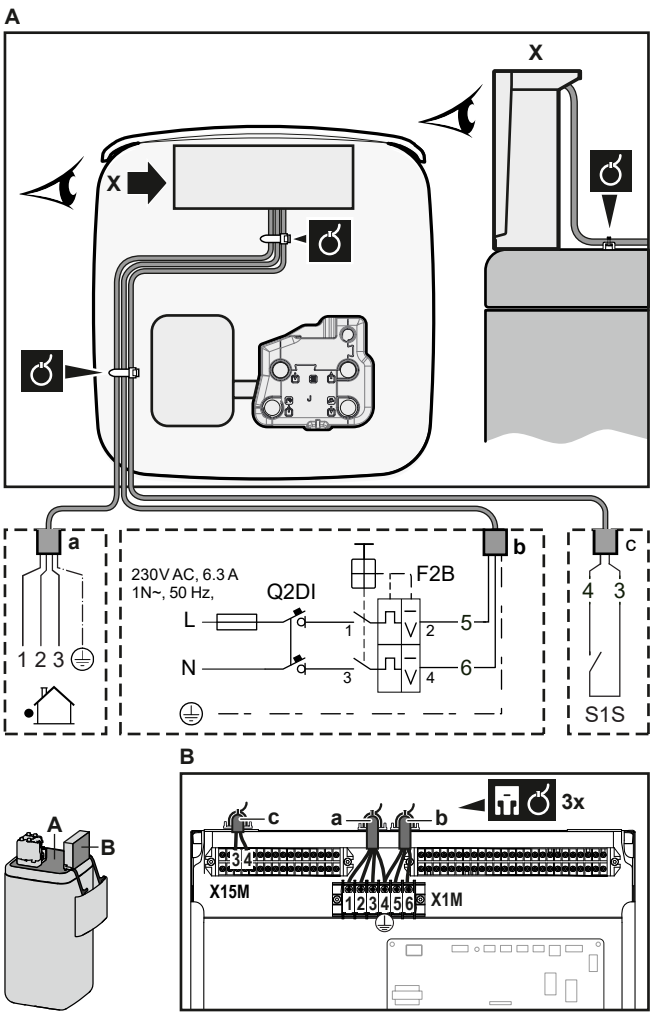
| | | |
|---|---|---|
| | Interconnection cable | Wires: (3+GND)×1.5 mm² |
| | Power supply indoor unit | Wires: 1N+GND<br>Maximum running current: 6.3 A |
| | — | |




**a** Interconnection cable
**b** Power supply indoor unit

**In case of preferential kWh rate power supply**

| | | |
|---|---|---|
| | Interconnection cable | Wires: (3+GND)×1.5 mm² |
| | Power supply indoor unit | Wires: 1N+GND<br>Maximum running current: 6.3 A |
| | Preferential kWh rate power supply contact | Wires: 2×(0.75~1.25 mm²)<br>Maximum length: 50 m.<br>Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB). The voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA. |
| | [9.8] `Benefit kWh power supply` | |




**a** Interconnection cable
**b** Power supply indoor unit
**c** Preferential power supply contact

3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

### 6.3.3 To connect the backup heater power supply

| | Backup heater type | Power supply | Wires |
|---|---|---|---|
| | EKECBU*3V | 1N~ 230 V | (2+GND)×2.5 mm² (minimum) |
| | EKECBU*6V | 1N~ 230 V | (2+GND)×4 mm² (minimum); ONLY flexible cords |
| | EKECBU*9W | 3N~ 400 V | (4+GND)×2.5 mm² (minimum) |
| | [9.3] `Backup heater` | | |

**WARNING**
The backup heater MUST have a dedicated power supply and MUST be protected by the safety devices required by the applicable legislation.

**CAUTION**
To guarantee the unit is completely earthed, ALWAYS connect the backup heater power supply and the earth cable.

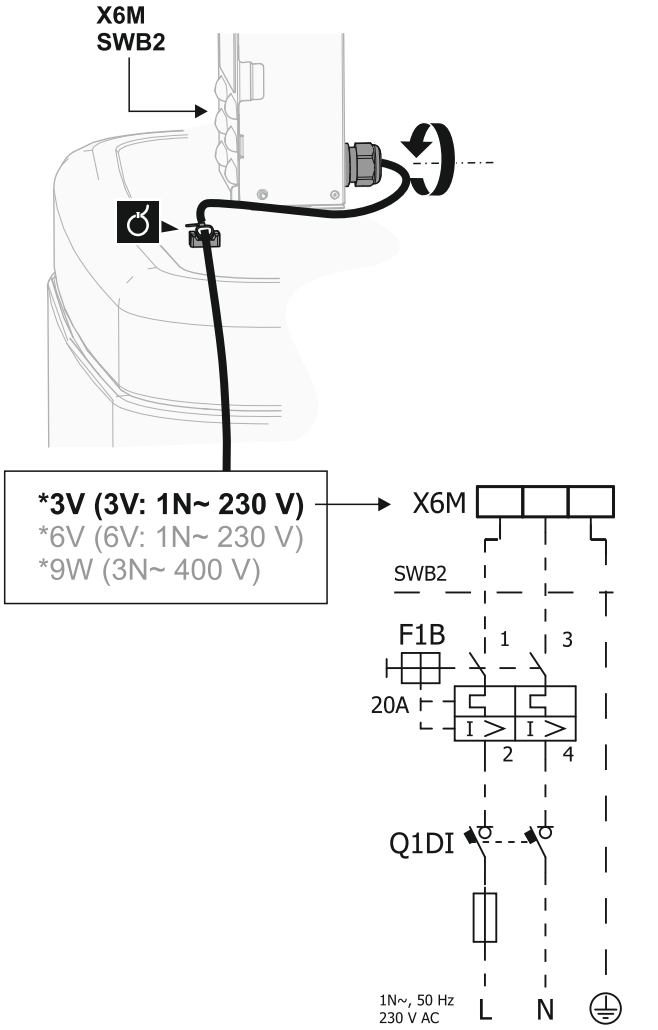
The backup heater capacity is depending on the chosen BUH option kit. Make sure that the power supply is in accordance with the backup heater capacity, as listed in the table below.

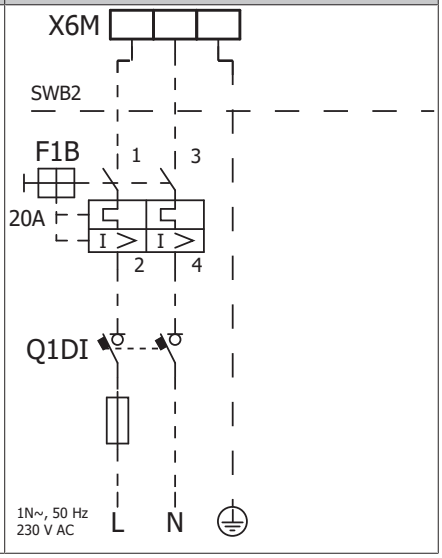
| Backup heater type | Backup heater capacity | Power supply | Maximum running current | $Z_{max}$ |
|---|---|---|---|---|
| *3V | 1 kW | 1N~ 230 V | 4.4 A | — |
| | 2 kW | 1N~ 230 V | 8.7 A | — |
| | 3 kW | 1N~ 230 V | 13.1 A | — |
| *6V | 2 kW | 1N~ 230 V | 8.7 A | — |
| | 4 kW | 1N~ 230 V | 17.4 A[(a)(b)] | 0.22 Ω |
| | 6 kW | 1N~ 230 V | 26.1 A[(a)(b)] | 0.22 Ω |
| *9W | 3 kW | 3N~ 400 V | 4.4 A | — |
| | 6 kW | 3N~ 400 V | 8.7 A | — |
| | 9 kW | 3N~ 400 V | 13.1 A | — |

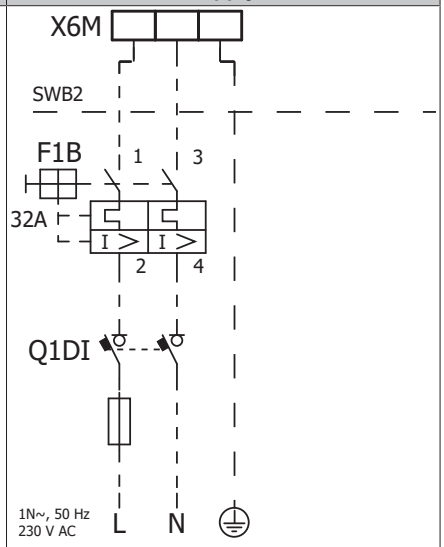
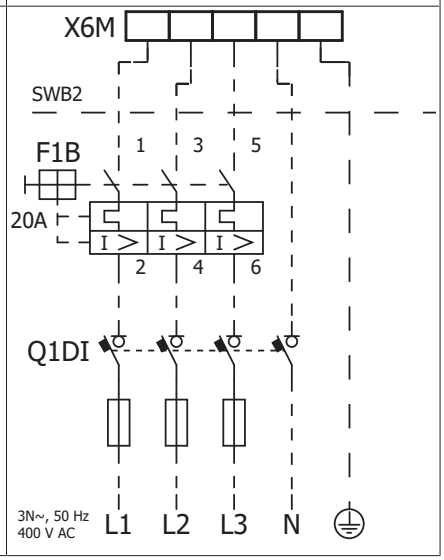
[(a)] Electrical equipment complying with EN/IEC 61000-3-12 (European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase).

[(b)] This equipment complies with EN/IEC 61000-3-11 (European/International Technical Standard setting the limits for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤75 A) provided that the system impedance $Z_{sys}$ is less than or equal to $Z_{max}$ at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a system impedance $Z_{sys}$ less than or equal to $Z_{max}$.

Connect the backup heater power supply as follows:




| Model (power supply) | Connections to backup heater power supply |
|---|---|
| *3V (3V: 1N~ 230 V) |  |

| Model (power supply) | Connections to backup heater power supply |
|---|---|
| *6V (6V: 1N~ 230 V) |  |
| *9W (3N~ 400 V) |  |

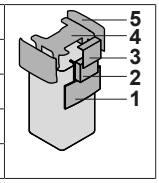
**F1B** Overcurrent fuse (field supply). Recommended fuse: tripping class C.
**Q1DI** Earth leakage circuit breaker (field supply)
**SWB** Switch box
**X6M** Terminal (field supply)

### 6.3.4 To connect the backup heater to the main unit

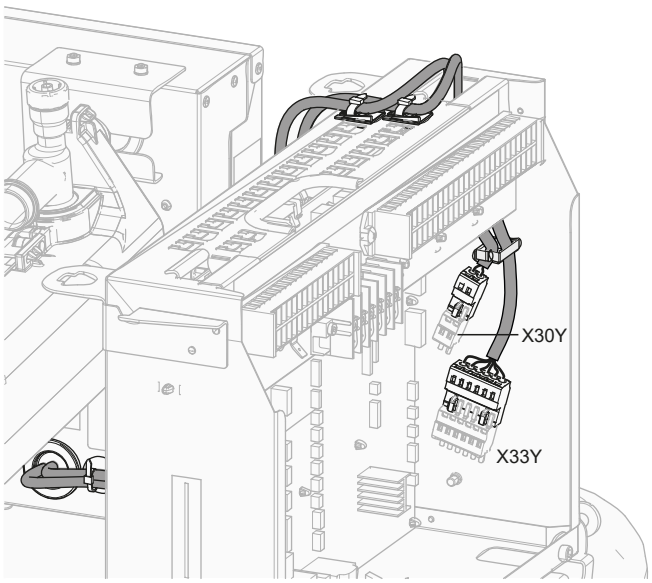
| | |
|---|---|
| | Wires: The connection cables are already connected to the option backup heater EKECBU*. |
| | [9.3] `Backup heater` |

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect both connection cables from the backup heater EKECBU* to the appropriate connectors as shown in the illustration below.




3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 15].

### 6.3.5 To connect the shut-off valve

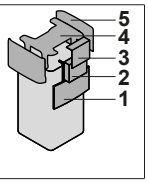
**INFORMATION**

**Shut-off valve usage example.** In case of one LWT zone, and a combination of underfloor heating and heat pump convectors, install a shut-off valve before the underfloor heating to prevent condensation on the floor during cooling operation.

| | |
|---|---|
| | Wires: 2×0.75 mm²<br>Maximum running current: 100 mA<br>230 V AC supplied by PCB |
| | [2.D] `Shut off valve` |

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

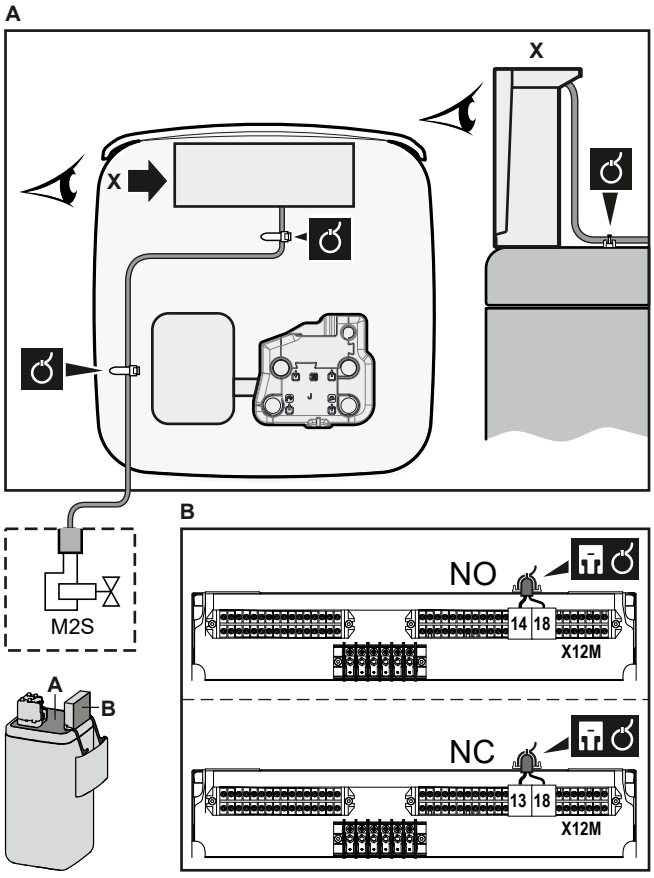
| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the valve control cable to the appropriate terminals as shown in the illustration below.

**NOTICE**

Wiring is different for a NC (normally closed) valve and a NO (normally open) valve.




3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

### 6.3.6 To connect the electricity meters

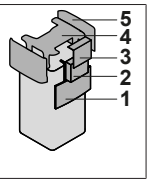
| | |
|---|---|
| | Wires: 2 (per meter)×0.75 mm²<br>Electricity meters: 12 V DC pulse detection (voltage supplied by PCB) |
| | [9.A] `Energy metering` |

**INFORMATION**

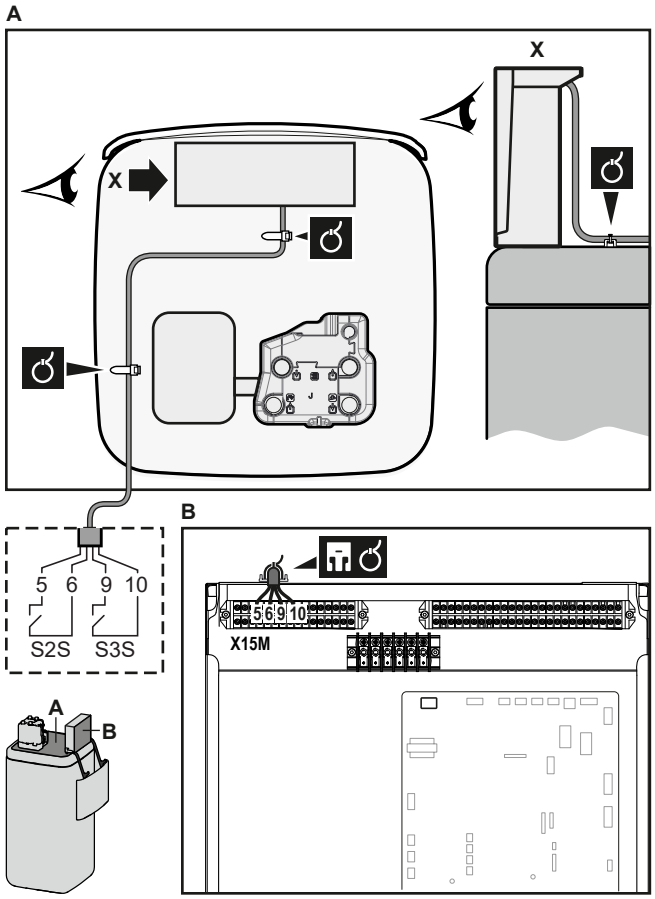
In case of an electricity meter with transistor output, check the polarity. The positive polarity MUST be connected to X15M/5 and X15M/9; the negative polarity to X15M/6 and X15M/10.

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the electricity meters cable to the appropriate terminals as shown in the illustration below.



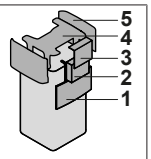

3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

### 6.3.7 To connect the domestic hot water pump

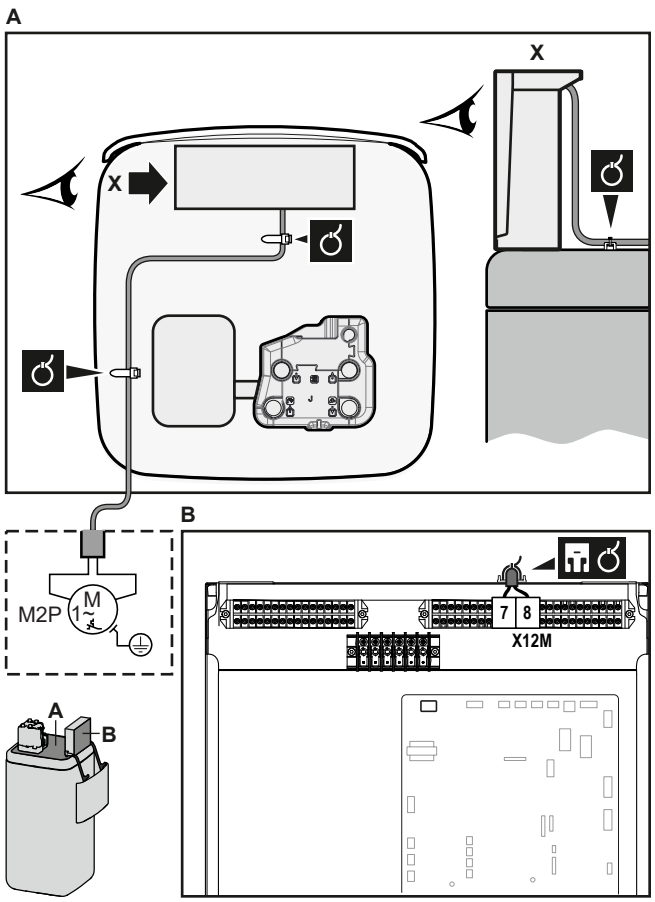
| | |
|---|---|
| | Wires: (2+GND)×0.75 mm²<br>DHW pump output. Maximum load: 2 A (inrush), 230 V AC, 1 A (continuous) |
| | [9.2.2] `DHW pump`<br>[9.2.3] `DHW pump schedule` |

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the domestic hot water pump cable to the appropriate terminals as shown in the illustration below.



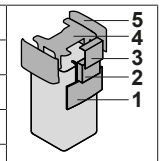

3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 15].

### 6.3.8 To connect the alarm output

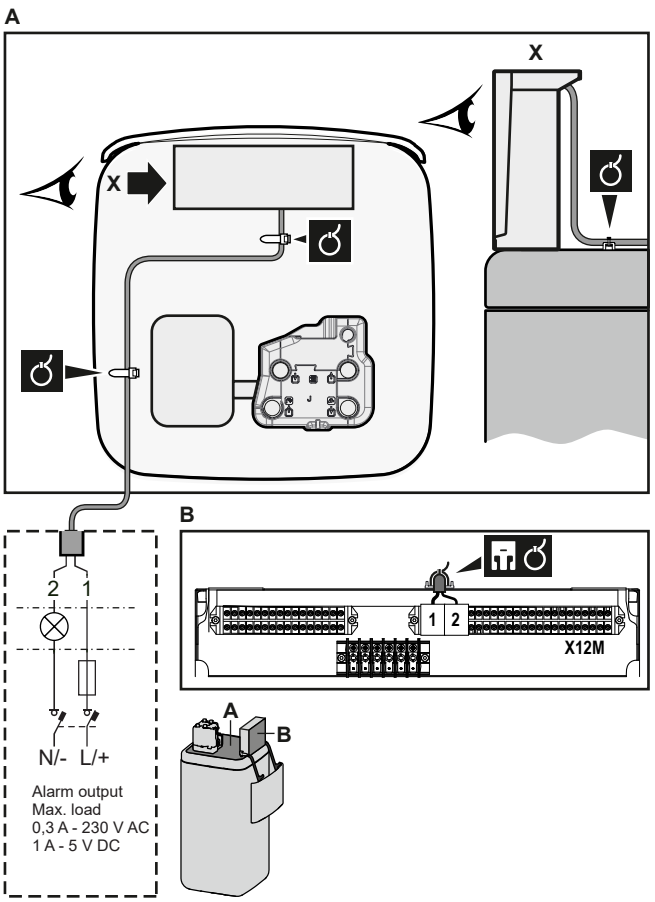
| | |
|---|---|
| | Wires: (2)×0.75 mm²<br>Maximum load: 0.3 A, 230 V AC<br>Maximum load: 1 A, 5 V DC |
| | [9.D] `Alarm output` |

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the alarm output cable to the appropriate terminals as shown in the illustration below.




3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 15].

### 6.3.9 To connect the space cooling/heating ON/OFF output

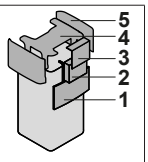
**INFORMATION**

Cooling is only applicable in case of reversible models.

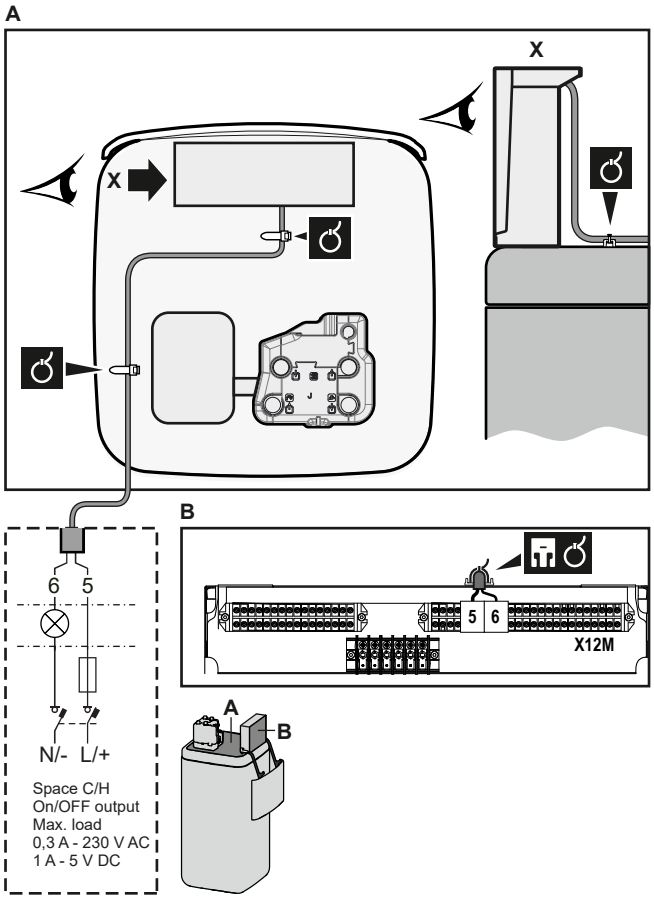
| | |
|---|---|
| | Wires: (2)×0.75 mm²<br>Maximum load: 0.3 A, 230 V AC<br>Maximum load: 1 A, 5 V DC |
| | — |

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the space cooling/heating ON/OFF output cable to the appropriate terminals as shown in the illustration below.




3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

### 6.3.10 To connect the changeover to external heat source

**INFORMATION**

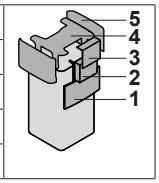
Bivalent is only possible in case of 1 leaving water temperature zone with:

- room thermostat control, OR
- external room thermostat control.

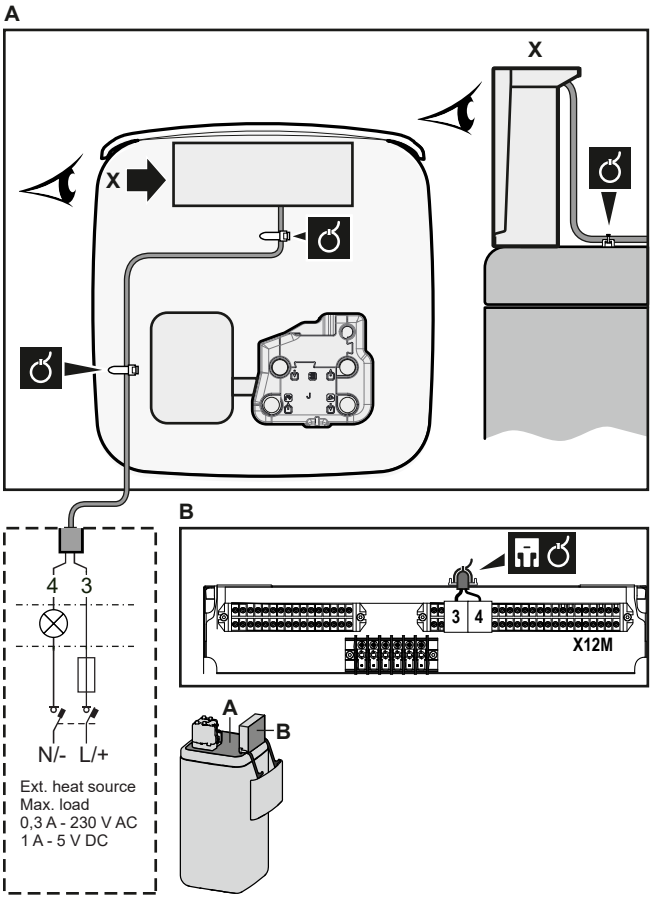
| | |
|---|---|
| | Wires: 2×0.75 mm²<br>Maximum load: 0.3 A, 230 V AC<br>Maximum load: 1 A, 5 V DC |
| | [9.C] `Bivalent` |

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the changeover to external heat source cable to the appropriate terminals as shown in the illustration below.



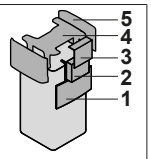

3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

### 6.3.11 To connect the power consumption digital inputs

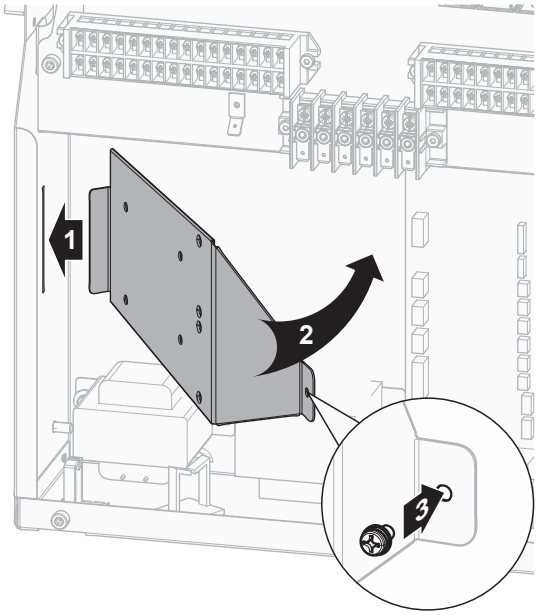
| | |
|---|---|
| | Wires: 2 (per input signal)×0.75 mm²<br>Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB) |
| | [9.9] `Power consumption control`. |

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

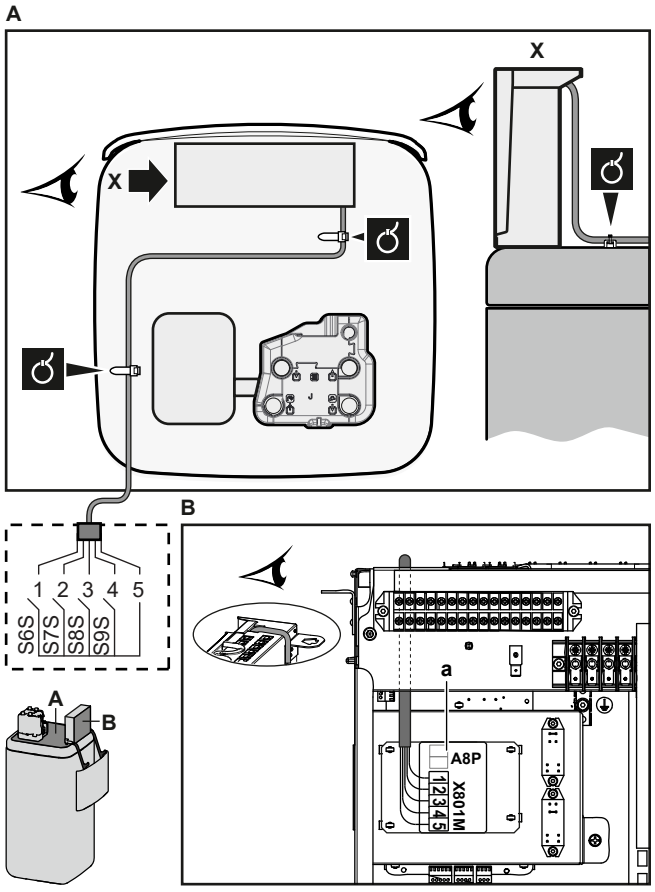
| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Install the switch box metal insert.




3 Connect the power consumption digital inputs cable to the appropriate terminals as shown in the illustration below.



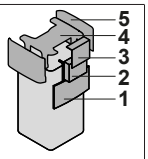

4 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

### 6.3.12 To connect the safety thermostat (normally closed contact)

| | |
|---|---|
| | Wires: 2×0.75 mm²<br>Maximum length: 50 m<br>Safety thermostat contact: 16 V DC detection (voltage supplied by PCB). The voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA. |
| | [9.8.1]=3 (`Benefit kWh power supply` = `Safety thermostat`) |

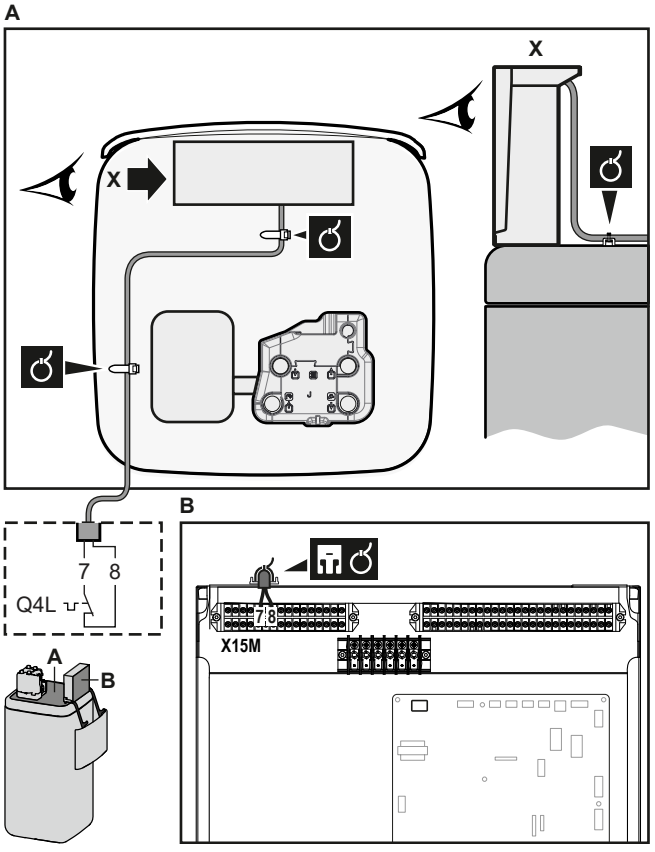
1 Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the safety thermostat (normally closed) cable to the appropriate terminals as shown in the illustration below.

**Note:** The jumper wire (factory-mounted) must be removed from the respective terminals.




3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 15].

**NOTICE**

Make sure to select and install the safety thermostat according to the applicable legislation.

In any case, to prevent unnecessary tripping of the safety thermostat, we recommend the following:

- The safety thermostat is automatically resettable.
- The safety thermostat has a maximum temperature variation rate of 2°C/min.
- There is a minimum distance of 2 m between the safety thermostat and the 3-way valve.

**NOTICE**

**Error.** If you remove the jumper (open circuit) but do NOT connect the safety thermostat, stop error 8H-03 will occur.

**INFORMATION**

ALWAYS configure the safety thermostat after it is installed. Without configuration, the unit will ignore the safety thermostat contact.

### 6.3.13 Smart Grid

This topic describes 2 possible ways to connect the indoor unit to a Smart Grid:

- In case of low voltage Smart Grid contacts
- In case of high voltage Smart Grid contacts. This requires the installation of the Smart Grid relay kit (EKRELSG).

The 2 incoming Smart Grid contacts can activate the following Smart Grid modes:

| Smart Grid contact | | Smart Grid operation mode |
|---|---|---|
| ❶ | ❷ | |
| 0 | 0 | Free running |
| 0 | 1 | Forced off |
| 1 | 0 | Recommended on |
| 1 | 1 | Forced on |

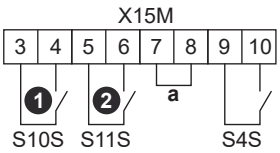
The use of a Smart Grid pulse meter is not mandatory:

| If Smart Grid pulse meter is… | Then [9.8.8] Limit setting kW is… |
|---|---|
| Used<br>([9.A.2] Electricity meter 2 ≠ None) | Not applicable |
| Not used<br>([9.A.2] Electricity meter 2 = None) | Applicable |

**In case of low voltage Smart Grid contacts**

| | |
|---|---|
| | Wires (Smart Grid pulse meter): 0.5 mm²<br>Wires (low voltage Smart Grid contacts): 0.5 mm² |
| | [9.8.4]=3 (Benefit kWh power supply = Smart Grid)<br>[9.8.5] Smart Grid operation mode<br>[9.8.6] Allow electrical heaters<br>[9.8.7] Enable room buffering<br>[9.8.8] Limit setting kW |

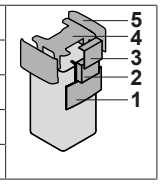
The wiring of the Smart Grid in case of low voltage contacts is as follows:



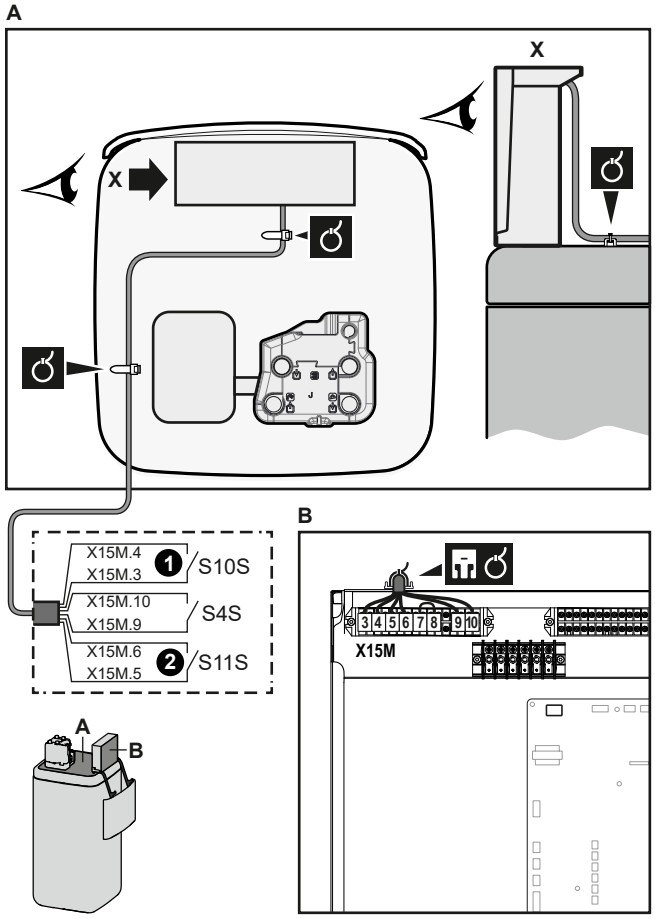

**a** Jumper (factory-mounted). If you also connect a safety thermostat (Q4L), replace the jumper with the safety thermostat wires.
**S4S** Smart Grid pulse meter
❶**/S10S** Low voltage Smart Grid contact 1
❷**/S11S** Low voltage Smart Grid contact 2

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the wiring as follows:

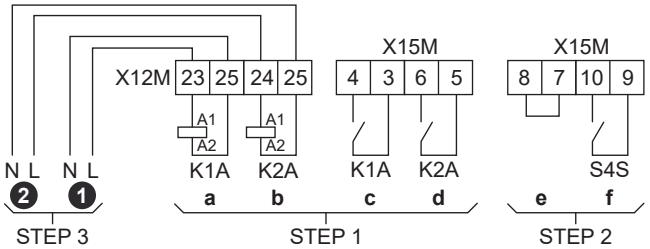



3 Fix the cables with cable ties to the cable tie mountings.

**In case of high voltage Smart Grid contacts**

| | |
|---|---|
| | Wires (Smart Grid pulse meter): 0.5 mm²<br>Wires (high voltage Smart Grid contacts): 1 mm² |
| | [9.8.4]=3 (Benefit kWh power supply = Smart Grid)<br>[9.8.5] Smart Grid operation mode<br>[9.8.6] Allow electrical heaters<br>[9.8.7] Enable room buffering<br>[9.8.8] Limit setting kW |

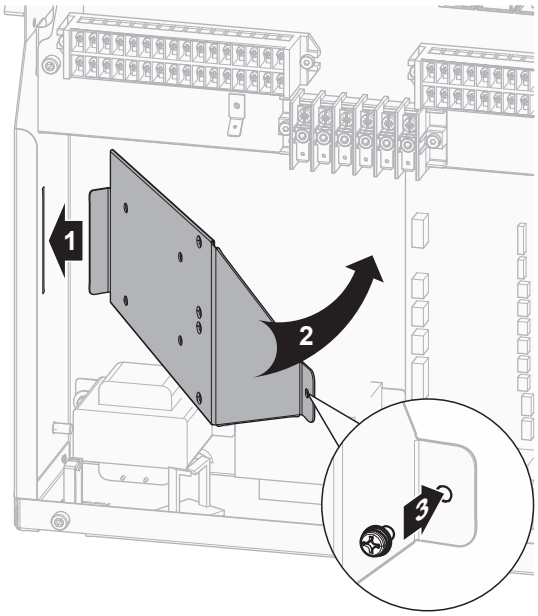
The wiring of the Smart Grid in case of high voltage contacts is as follows:



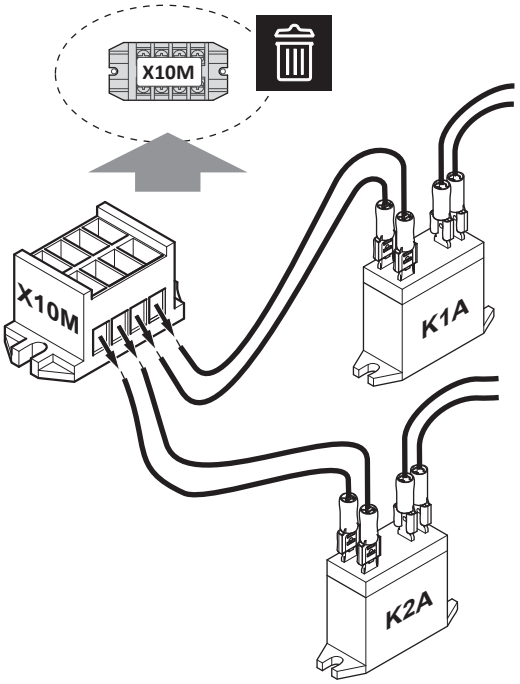

**STEP 1** Smart Grid relay kit installation
**STEP 2** Low voltage connections
**STEP 3** High voltage connections
❶ High voltage Smart Grid contact 1

❷ High voltage Smart Grid contact 2
**a, b** Coil sides of relays
**c, d** Contact sides of relays
**e** Jumper (factory-mounted). If you also connect a safety thermostat (Q4L), replace the jumper with the safety thermostat wires.
**f** Smart Grid pulse meter

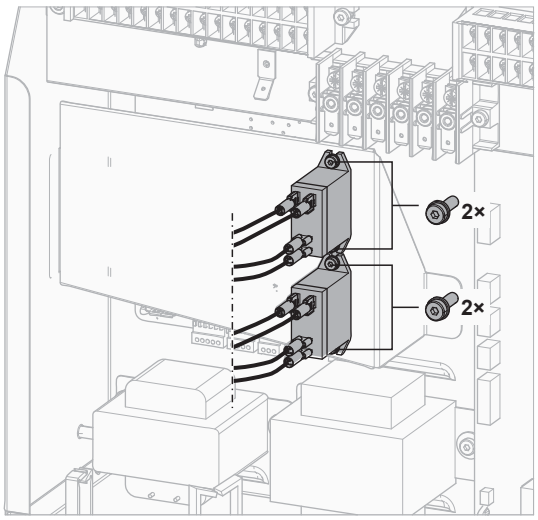
**1** Install the switch box metal insert.

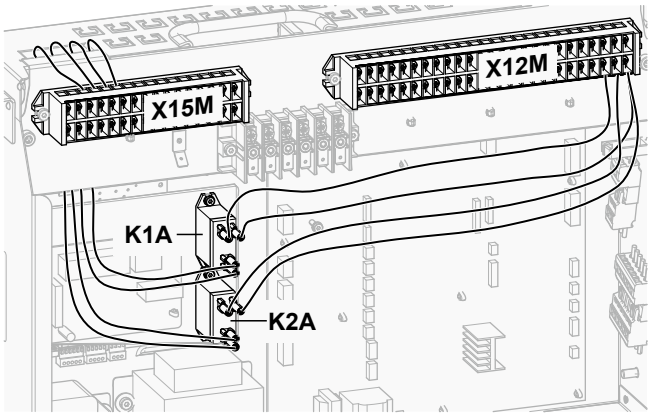


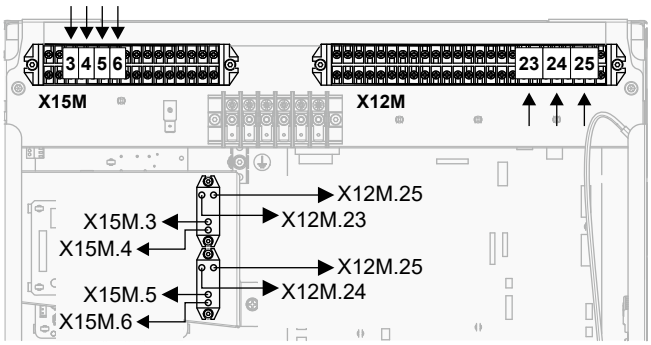

**2** Loosen the cables connected to the terminal of the Smart Grid relay kit (EKRELSG) and remove the terminal.



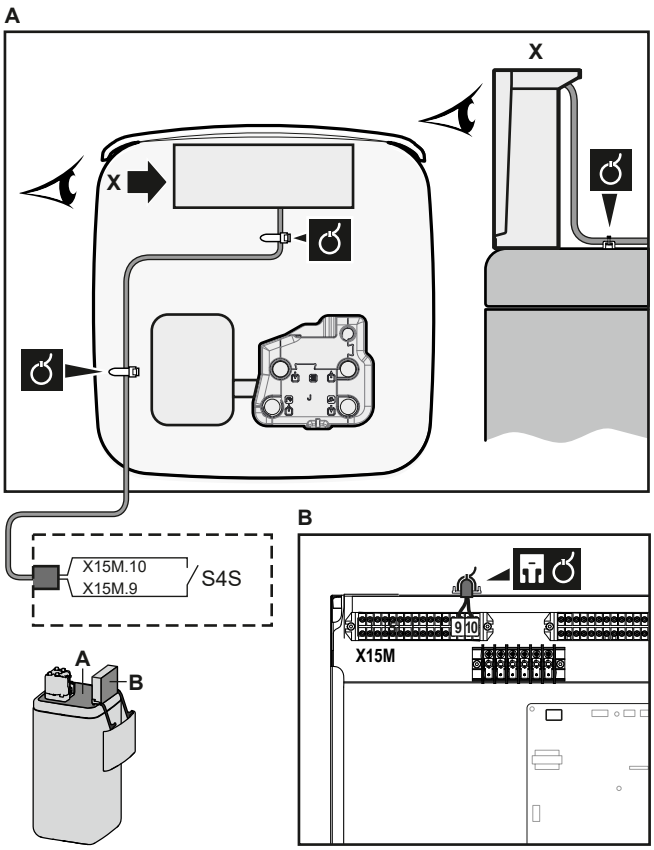

**3** Install the components of the Smart Grid relay kit as follows:



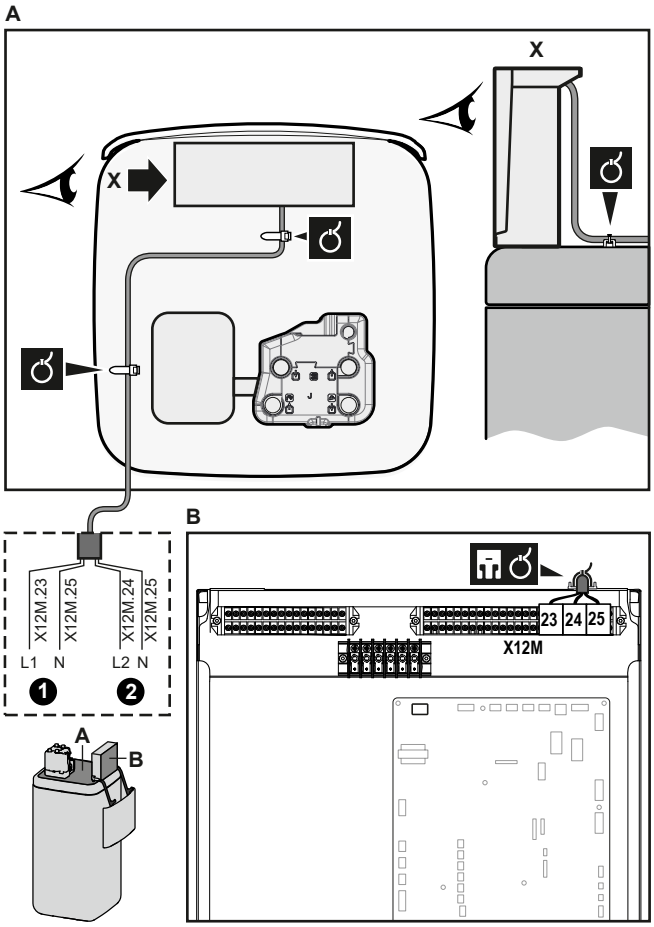




**4** Connect the low voltage wiring as follows:




5 Connect the high voltage wiring as follows:

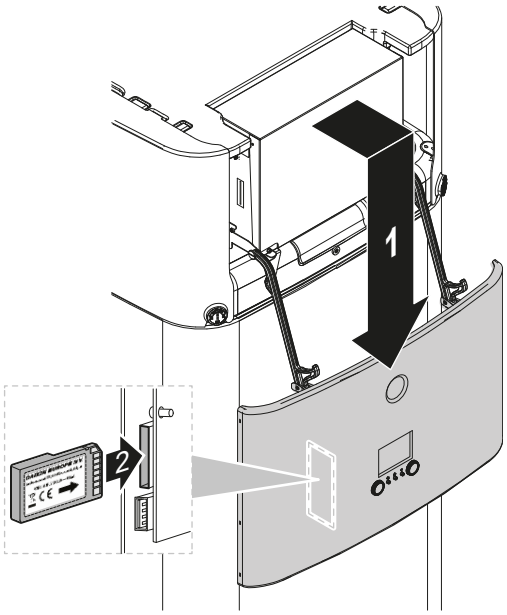



6 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 15].

### 6.3.14 To connect the WLAN cartridge (delivered as accessory)

| | |
|---|---|
| | [D] `Wireless gateway` |

1 Insert the WLAN cartridge into the cartridge slot on the user interface of the indoor unit.

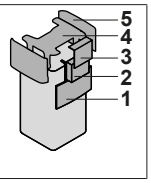



### 6.3.15 To connect the solar input

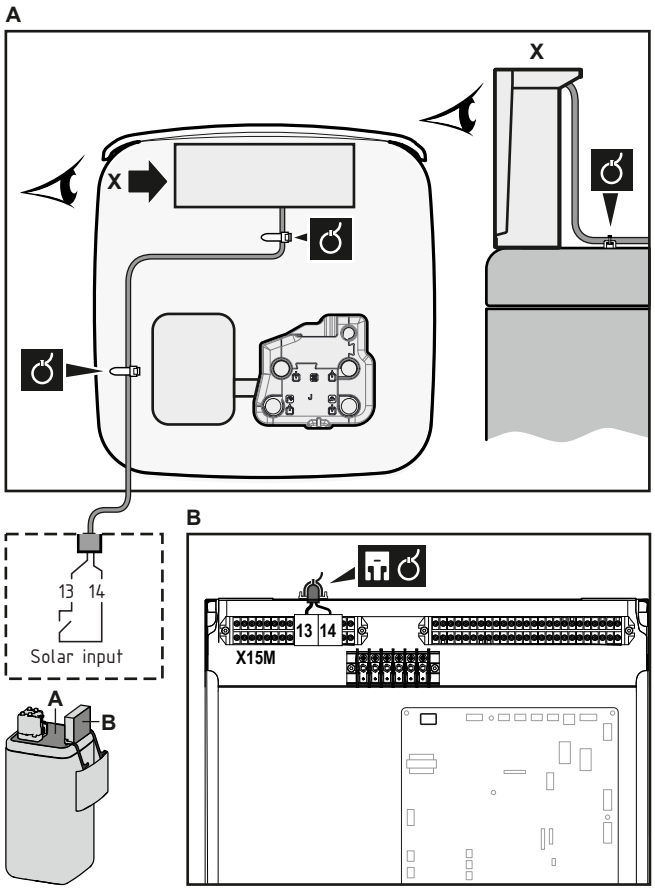
| | |
|---|---|
| | Wires: 0.5 mm²<br>Solar input contact: 5 V DC (voltage supplied by PCB) |
| | — |

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the solar input cable as shown in the illustration below.



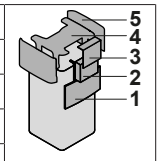

3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 15].

### 6.3.16 To connect the DHW output

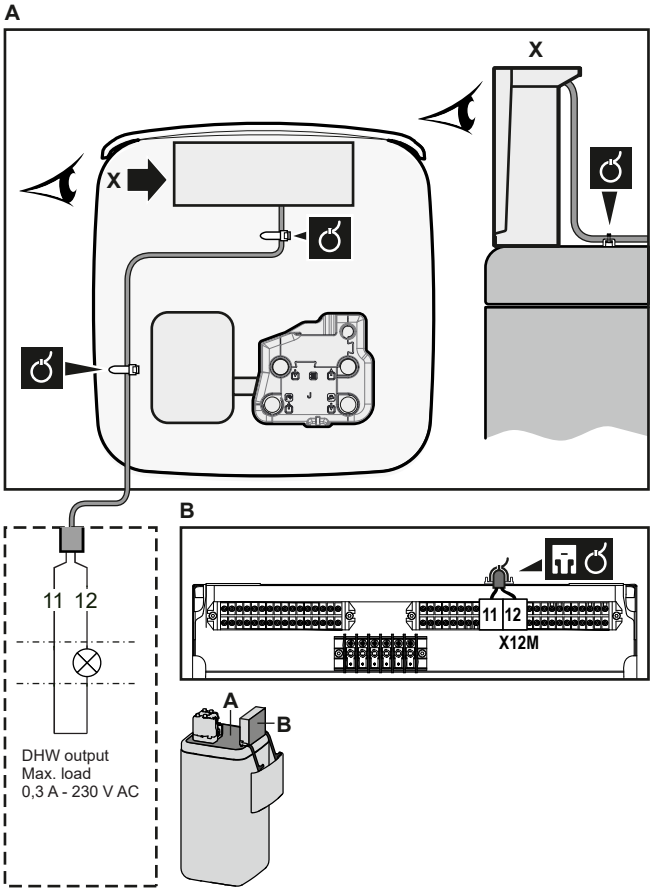
| | |
|---|---|
| | Wires: 2×0.75 mm²<br>Maximum running current: 0.3 A, 230 V AC |
| | — |

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

| | |
|---|---|
| 1 | User interface panel |
| 2 | Switch box |
| 3 | Switch box cover |
| 4 | Top cover |
| 5 | Side panel |




2 Connect the DHW signal cable as shown in the illustration below.




3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 15].

# 7 Configuration

**INFORMATION**

Cooling is only applicable in case of reversible models.

## 7.1 Overview: Configuration

This chapter describes what you have to do and know to configure the system after it is installed.

**NOTICE**

This chapter explains only the basic configuration. For more detailed explanation and background information, see the installer reference guide.

**Why**

If you do NOT configure the system correctly, it might NOT work as expected. The configuration influences the following:

- The calculations of the software
- What you can see on and do with the user interface

**How**

You can configure the system via the user interface.

- **First time – Configuration wizard.** When you turn ON the user interface for the first time (via the unit), the configuration wizard starts to help you configure the system.
- **Restart the configuration wizard.** If the system is already configured, you can restart the configuration wizard. To restart the configuration wizard, go to `Installer settings > Configuration wizard`. To access `Installer settings`, see "7.1.1 To access the most used commands" [▶ 27].

- **Afterwards.** If necessary, you can make changes to the configuration in the menu structure or the overview settings.

**INFORMATION**

When the configuration wizard is finished, the user interface will show an overview screen and request to confirm. When confirmed, the system will restart and the home screen will be displayed.

**Accessing settings – Legend for tables**

You can access the installer settings using two different methods. However, NOT all settings are accessible via both methods. If so, the corresponding table columns in this chapter are set to N/A (not applicable).

| Method | Column in tables |
|---|---|
| Accessing settings via the breadcrumb in the **home menu screen** or the **menu structure**. To enable breadcrumbs, press the **?** button in the home screen. | **#**<br>For example: [2.9] |
| Accessing settings via the code in the **overview field settings**. | **Code**<br>For example: [C-07] |

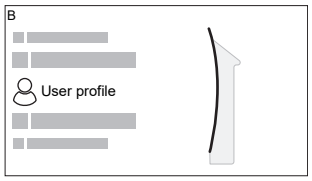
See also:

- "To access the installer settings" [▶ 27]
- "7.5 Menu structure: Overview installer settings" [▶ 34]

### 7.1.1 To access the most used commands

**To change the user permission level**

You can change the user permission level as follows:

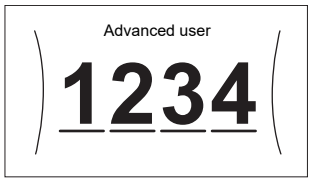
| | | |
|---|---|---|
| 1 | Go to [B]: `User profile`.<br>  | |
| 2 | Enter the applicable pin code for the user permission level. | — |
| | ▪ Browse through the list of digits and change the selected digit. | |
| | ▪ Move the cursor from left to right. | |
| | ▪ Confirm the pin code and proceed. | |

**Installer pin code**

The `Installer` pin code is **5678**. Additional menu items and installer settings are now available.

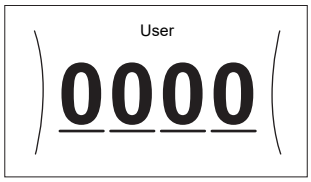

**Advanced user pin code**

The `Advanced user` pin code is **1234**. Additional menu items for the user are now visible.




**User pin code**

The `User` pin code is **0000**.




**To access the installer settings**

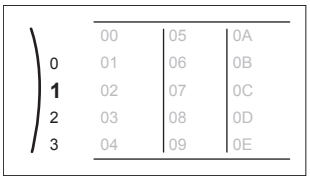
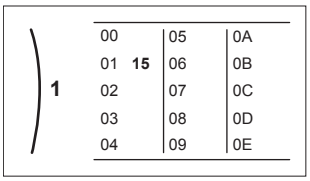
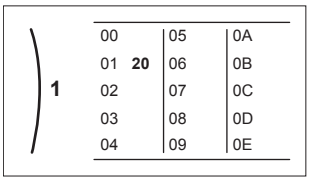
1 Set the user permission level to `Installer`.

2 Go to [9]: `Installer settings`.

**To modify an overview setting**

**Example:** Modify [1-01] from 15 to 20.

Most settings can be configured via the menu structure. If for any reason it is required to change a setting using the overview settings, then the overview settings can be accessed as follows:

| | | |
|---|---|---|
| 1 | Set the user permission level to `Installer`. See "To change the user permission level" [▶ 27]. | — |
| 2 | Go to [9.I]: `Installer settings` > `Overview field settings`. | |
| 3 | Turn the left dial to select the first part of the setting and confirm by pressing the dial.<br>  | |
| 4 | Turn the left dial to select the second part of the setting<br>  | |
| 5 | Turn the right dial to modify the value from 15 to 20.<br>  | |
| 6 | Press the left dial to confirm the new setting. | |
| 7 | Press the center button to go back to the home screen. | |

**INFORMATION**

When you change the overview settings and you go back to the home screen, the user interface will show a popup screen and request to restart the system.

When confirmed, the system will restart and recent changes will be applied.

## 7.2 Configuration wizard

After first power ON of the system, the user interface starts a configuration wizard. Use this wizard to set the most important initial settings for the unit to run properly. If required, you can afterwards configure more settings. You can change all these settings via the menu structure.

### 7.2.1 Configuration wizard: Language

| # | Code | Description |
|---|---|---|
| [7.1] | N/A | Language |

### 7.2.2 Configuration wizard: Time and date

| # | Code | Description |
|---|---|---|
| [7.2] | N/A | Set the local time and date |

**INFORMATION**

By default, daylight savings time is enabled and clock format is set to 24 hours. If you want to change these settings, you can do this in the menu structure (`User settings` > `Time/date`) once the unit is initialised.

### 7.2.3 Configuration wizard: System

**Indoor unit type**

The indoor unit type is displayed, but cannot be adjusted.

**Backup heater type**

| # | Code | Description |
|---|---|---|
| [9.3.1] | [E-03] | ▪ 0: `None`<br>▪ 2: `3V`<br>▪ 3: `6V`<br>▪ 4: `9W` |

**Domestic hot water**

The system includes an energy storage tank and can prepare domestic hot water. This setting is read only.

| # | Code | Description |
|---|---|---|
| [9.2.1] | [E-05]<br>[E-06]<br>[E-07] | ▪ `Integrated`<br>The backup heater will also be used for domestic hot water heating. |

**Emergency**

When the heat pump fails to operate, the backup heater or boiler can serve as an emergency heater. It then takes over the heat load either automatically or by manual interaction.

- When `Emergency` is set to `Automatic` and a heat pump failure occurs, the backup heater or boiler automatically takes over the domestic hot water production and space heating.
- When `Emergency` is set to `Manual` and a heat pump failure occurs, the domestic hot water heating and space heating stops.

  To manually recover it via the user interface, go to the `Malfunctioning` main menu screen and confirm whether the backup heater can take over the heat load or not.
- Alternatively, when `Emergency` is set to:
  - `auto SH reduced/DHW on`, space heating is reduced but domestic hot water is still available.
  - `auto SH reduced/DHW off`, space heating is reduced and domestic hot water is NOT available.
  - `auto SH normal/DHW off`, space heating operates as normally but domestic hot water is NOT available.

  Similarly as in `Manual` mode, the unit can take the full load with the backup heater or boiler if the user activates this via the `Malfunctioning` main menu screen.

To keep energy consumption low, we recommend to set `Emergency` to `auto SH reduced/DHW off` if the house is unattended for longer periods.

| # | Code | Description |
|---|---|---|
| [9.5.1] | [4-06] | ▪ **0: Manual**<br>▪ 1: `Automatic`<br>▪ 2: `auto SH reduced/DHW on`<br>▪ 3: `auto SH reduced/DHW off`<br>▪ 4: `auto SH normal/DHW off` |

**INFORMATION**

The auto emergency setting can be set in the menu structure of the user interface only.

**INFORMATION**

If a heat pump failure occurs and `Emergency` is set to `Manual`, the following functions will remain active even if the user does NOT confirm emergency operation:

- Room frost protection
- Underfloor heating screed dryout
- Water pipe freeze prevention

However, the disinfection function will be activated ONLY if the user confirms emergency operation via the user interface.

**INFORMATION**

If the boiler is connected as auxiliary heat source to the tank (via bivalent coil or via drain back connection), the boiler and NOT the backup heater operates as emergency heater, independent of the boiler capacity. For small capacity boilers this may lead to capacity shortages in case of emergency.

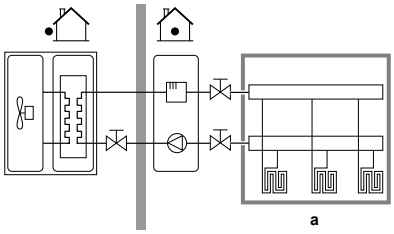
If the boiler is directly connected to the space heating circuit, it does NOT act as emergency heater.

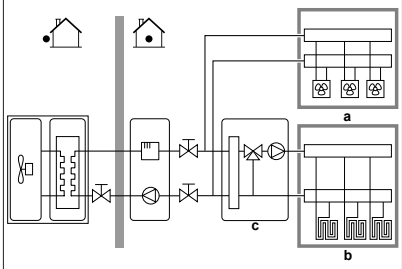
**Number of zones**

The system can supply leaving water to up to 2 water temperature zones. During configuration, the number of water zones must be set.

**INFORMATION**

**Mixing station.** If your system layout contains 2 LWT zones, you need to install a mixing station in front of the main LWT zone.

| # | Code | Description |
|---|---|---|
| [4.4] | [7-02] | ▪ 0: `Single zone`<br>Only one leaving water temperature zone:<br>  <br><br>**a** Main LWT zone |

| # | Code | Description |
|---|---|---|
| [4.4] | [7-02] | ▪ 1: Dual zone<br>Two leaving water temperature zones. The main leaving water temperature zone consists of the higher load heat emitters and a mixing station to achieve the desired leaving water temperature. In heating:<br>  <br>**a** Additional LWT zone: Highest temperature<br>**b** Main LWT zone: Lowest temperature<br>**c** Mixing station |

**NOTICE**

NOT configuring the system in the following way can cause damage to the heat emitters. If there are 2 zones, it is important that in heating:

- the zone with the lowest water temperature is configured as the main zone, and
- the zone with the highest water temperature is configured as the additional zone.

**NOTICE**

If there are 2 zones and the emitter types are wrongly configured, water of high temperature can be sent towards a low temperature emitter (underfloor heating). To avoid this:

- Install an aquastat/thermostatic valve to avoid too high temperatures towards a low temperature emitter.
- Make sure you set the emitter types for the main zone [2.7] and for the additional zone [3.7] correctly in accordance with the connected emitter.

**NOTICE**

A differential pressure bypass valve can be integrated in the system. Keep in mind that this valve might not be shown on the illustrations.

**Glycol Filled system**

This setting gives the installer the possibility to indicate whether the system is filled with glycol or water. This is important in case glycol is used to protect the water circuit against freezing. If NOT set correctly, the liquid in the piping can freeze.

| # | Code | Description |
|---|---|---|
| N/A | [E-0D] | Glycol Filled system: Is the system filled with glycol?<br>▪ 0: No<br>▪ 1: Yes |

## 7.2.4 Configuration wizard: Backup heater

The capacities for the different steps of the backup heater must be set for the energy metering and/or power consumption control feature to work properly. When measuring the resistance value of each heater, you can set the exact heater capacity and this will lead to more accurate energy data.

**Backup heater type**

| # | Code | Description |
|---|---|---|
| [9.3.1] | [E-03] | ▪ 0: None<br>▪ 2: 3V<br>▪ 3: 6V<br>▪ 4: 9W |

**Voltage**

- For a 3V and 6V model, this is fixed to 230V, 1ph.
- For a 9W model, this is fixed to 400V, 3ph.

| # | Code | Description |
|---|---|---|
| [9.3.2] | [5-0D] | ▪ 0: 230V, 1ph<br>▪ 2: 400V, 3ph |

**Configuration**

The backup heater can be configured in different ways. For the 3V model, the system variably choses from 3 available capacity steps the adequate capacity for the given operating conditions. For the 6V and 9W model, it can be chosen to have a 1-step only backup heater or a backup heater with 2 steps. If 2 steps, the capacity of the second step depends on this setting. It can also be chosen to have a higher capacity of the second step in emergency.

| # | Code | Description |
|---|---|---|
| [9.3.3] | [4-0A] | ▪ 0: Relay 1<br>▪ 1: Relay 1 / Relay 1+2<br>▪ 2: Relay 1 / Relay 2<br>▪ 3: Relay 1 / Relay 2 Emergency Relay 1+2 |

**INFORMATION**

Settings [9.3.3] and [9.3.5] are linked. Changing one setting influences the other. If you change one, check if the other is still as expected.

**INFORMATION**

During normal operation when [4-0A]=1, the capacity of the second step of the backup heater at nominal voltage is equal to [6-03]+[6-04].

**INFORMATION**

If [4-0A]=3 and emergency mode is active, the power usage of the second step of the backup heater at nominal voltage is equal to [6-03]+[6-04].

**INFORMATION**

If the storage temperature setpoint is higher than 50°C and no auxiliary boiler is installed, Daikin recommends NOT to disable the backup heater second step because it will have a big impact on the required time for the unit to heat up the storage tank.

**INFORMATION**

The capacities displayed in the selection menu for [4-0A] are only correctly displayed for correct selection of the capacity steps [6-03] and [6-04].

**INFORMATION**

Energy data calculations of the unit will only be correct for settings of [6-03] and [6-04] which fit the actually installed backup heater capacity. Example: For a backup heater with nominal capacity of 6 kW, the first step (2kW) and the second step (4kW) correctly sum up to 6 kW.

**Capacity step 1**

| # | Code | Description |
|---|---|---|
| [9.3.4] | [6-03] | ▪ The capacity of the first step of the backup heater at nominal voltage. |

**Additional capacity step 2**

| # | Code | Description |
|---|---|---|
| [9.3.5] | [6-04] | ▪ The capacity difference between the second and first step of the backup heater at nominal voltage. Nominal value depends on backup heater configuration. |

**Maximum capacity**

| # | Code | Description |
|---|---|---|
| [9.3.9] | [4-07] | ▪ Maximum capacity that should be delivered by the backup heater.<br>▪ Range: 1 kW~3 kW, Step 1 kW |

## 7.2.5 Configuration wizard: Main zone

The most important settings for the main leaving water zone can be set here.

**Emitter type**

Heating up or cooling down the main zone can take longer. This depends on:

- The water volume of the system
- The heater emitter type of the main zone

The setting `Emitter type` can compensate for a slow or a quick heating/cooling system during the heat up/cool down cycle. In room thermostat control, `Emitter type` influences the maximum modulation of the desired leaving water temperature, and the possibility for usage of the automatic cooling/heating changeover based on the indoor ambient temperature.

It is important to set `Emitter type` correctly and in accordance with your system layout. The target delta T for the main zone depends on it.

| # | Code | Description |
|---|---|---|
| [2.7] | [2-0C] | ▪ 0: `Underfloor heating`<br>▪ 1: `Fancoil unit`<br>▪ 2: `Radiator` |

The setting of the emitter type has an influence on the space heating setpoint range and the target delta T in heating as follows:

| Description | Space heating setpoint range | Target delta T in heating |
|---|---|---|
| 0: `Underfloor heating` | Maximum 55°C | Variable |
| 1: `Fancoil unit` | Maximum 55°C | Variable |
| 2: `Radiator` | Maximum 70°C | Fixed 10°C |

**NOTICE**

**Average emitter temperature** = Leaving water temperature – (Delta T)/2

This means that for a same leaving water temperature setpoint, the average emitter temperature of radiators is lower than that of underfloor heating because of a bigger delta T.

Example radiators: 40–10/2=**35°C**

Example underfloor heating: 40–5/2=**37.5°C**

To compensate, you can:

- Increase the weather-dependent curve desired temperatures [2.5].
- Enable leaving water temperature modulation and increase the maximum modulation [2.C].

**Control**

Define how the operation of the unit is controlled.

| Control | In this control... |
|---|---|
| `Leaving water` | Unit operation is decided based on the leaving water temperature regardless the actual room temperature and/or heating or cooling demand of the room. |
| `External room thermostat` | Unit operation is decided by the external thermostat or equivalent (e.g. heat pump convector). |
| `Room thermostat` | Unit operation is decided based on the ambient temperature of the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat). |

| # | Code | Description |
|---|---|---|
| [2.9] | [C-07] | ▪ 0: `Leaving water`<br>▪ 1: `External room thermostat`<br>▪ 2: `Room thermostat` |

**Setpoint mode**

Define the setpoint mode:

- `Fixed`: the desired leaving water temperature does not depend on the outdoor ambient temperature.
- In `WD heating, fixed cooling` mode, the desired leaving water temperature:
  - depends on the outdoor ambient temperature for heating
  - does NOT depend on the outdoor ambient temperature for cooling
- In `Weather dependent` mode, the desired leaving water temperature depends on the outdoor ambient temperature.

| # | Code | Description |
|---|---|---|
| [2.4] | N/A | `Setpoint mode`:<br>▪ `Fixed`<br>▪ `WD heating, fixed cooling`<br>▪ `Weather dependent` |

When weather dependent operation is active, low outdoor temperatures will result in warmer water and vice versa. During weather dependent operation, the user can shift the water temperature up or down by a maximum of 10°C.

**Schedule**

Indicates if the desired leaving water temperature is according to a schedule. Influence of the LWT setpoint mode [2.4] is as follows:

- In `Fixed` LWT setpoint mode, the scheduled actions consist of desired leaving water temperatures, either preset or custom.
- In `Weather dependent` LWT setpoint mode, the scheduled actions consist of desired shift actions, either preset or custom.

| # | Code | Description |
|---|---|---|
| [2.1] | N/A | ▪ 0: `No`<br>▪ 1: `Yes` |

## 7.2.6 Configuration wizard: Additional zone

The most important settings for the additional leaving water zone can be set here.

**Emitter type**

For more info about this functionality, see "7.2.5 Configuration wizard: Main zone" [▸ 30].

| # | Code | Description |
|---|---|---|
| [3.7] | [2-0D] | ▪ 0: `Underfloor heating`<br>▪ 1: `Fancoil unit`<br>▪ 2: `Radiator` |

**Control**

The control type is displayed here, but cannot be adjusted. It is determined by the control type of the main zone. For more info about the functionality, see "7.2.5 Configuration wizard: Main zone" [▶ 30].

| # | Code | Description |
|---|---|---|
| [3.9] | N/A | ▪ 0: `Leaving water` if the control type of the main zone is `Leaving water`.<br>▪ 1: `External room thermostat` if the control type of the main zone is `External room thermostat` or `Room thermostat`. |

**Setpoint mode**

For more info about this functionality, see "7.2.5 Configuration wizard: Main zone" [▶ 30].

| # | Code | Description |
|---|---|---|
| [3.4] | N/A | ▪ 0: `Fixed`<br>▪ 1: `WD heating, fixed cooling`<br>▪ 2: `Weather dependent` |

**Schedule**

Indicates if the desired leaving water temperature is according to a schedule. Also see "7.2.5 Configuration wizard: Main zone" [▶ 30].

| # | Code | Description |
|---|---|---|
| [3.1] | N/A | ▪ 0: `No`<br>▪ 1: `Yes` |

### 7.2.7 Configuration wizard: Tank

**INFORMATION**

To make tank defrost possible, we recommend a minimum tank temperature of 35°C.

**Heat up mode**

The domestic hot water can be prepared in 2 different ways. They differ from each other by the way the desired tank temperature is set and how the unit acts upon it.

| # | Code | Description |
|---|---|---|
| [5.6] | [6-0D] | `Heat up mode`:<br>▪ 0: `Reheat only`: The storage tank temperature is always kept at the setpoint selected in the tank setpoint screen.<br>▪ 3: `Scheduled reheat`: The storage tank temperature varies according to the tank temperature schedule. |

See the operation manual for more details.

**Settings for Reheat only mode**

During Reheat only mode, the tank setpoint can be set on the user interface. The maximum allowed temperature is determined by the following setting:

| # | Code | Description |
|---|---|---|
| [5.8] | [6-0E] | `Maximum`:<br>The maximum temperature that users can select for the domestic hot water. You can use this setting to limit the temperature at the hot water taps.<br>The maximum temperature is NOT applicable during disinfection function. See disinfection function. |

To set the heat pump ON hysteresis:

| # | Code | Description |
|---|---|---|
| [5.9] | [6-00] | Heat pump ON hysteresis<br>▪ 2°C~40°C |

## 7.3 Weather-dependent curve

### 7.3.1 What is a weather-dependent curve?

**Weather-dependent operation**

The unit operates 'weather-dependent' if the desired leaving water or tank temperature is determined automatically by the outdoor temperature. It therefore is connected to a temperature sensor on the North wall of the building. If the outdoor temperature drops or rises, the unit compensates instantly. Thus, the unit does not have to wait for feedback by the thermostat to increase or decrease the temperature of the leaving water or tank. Because it reacts more quickly, it prevents high rises and drops of the indoor temperature and water temperature at tap points.

**Advantage**

Weather-dependent operation reduces energy consumption.

**Weather-dependent curve**

To be able to compensate for differences in temperature, the unit relies on its weather-dependent curve. This curve defines how much the temperature of the tank or leaving water must be at different outdoor temperatures. Because the slope of the curve depends on local circumstances such as climate and the insulation of the building, the curve can be adjusted by an installer or user.

**Types of weather-dependent curve**

There are 2 types of weather-dependent curves:

- 2-points curve
- Slope-offset curve

Which type of curve you use to make adjustments, depends on your personal preference. See "7.3.4 Using weather-dependent curves" [▶ 32].

**Availability**

The weather-dependent curve is available for:

- Main zone - Heating
- Main zone - Cooling
- Additional zone - Heating
- Additional zone - Cooling
- Tank (only available to installers)

**INFORMATION**

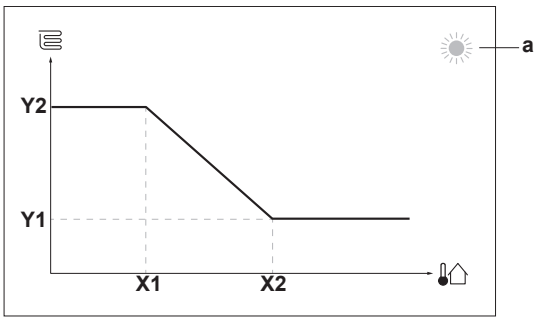
To operate weather-dependent, correctly configure the setpoint of the main zone, additional zone or tank. See "7.3.4 Using weather-dependent curves" [▶ 32].

### 7.3.2 2-points curve

Define the weather-dependent curve with these two setpoints:

- Setpoint (X1, Y2)
- Setpoint (X2, Y1)

**Example**




| Item | Description |
|---|---|
| a | Selected weather-dependent zone:<br>▪ : Main zone or additional zone heating<br>▪ : Main zone or additional zone cooling<br>▪ : Domestic hot water |
| X1, X2 | Examples of outdoor ambient temperature |
| Y1, Y2 | Examples of desired tank temperature or leaving water temperature. The icon corresponds to the heat emitter for that zone:<br>▪ : Underfloor heating<br>▪ : Fan coil unit<br>▪ : Radiator<br>▪ : Storage tank |

| Possible actions on this screen | |
|---|---|
| | Go through the temperatures. |
| | Change the temperature. |
| | Go to the next temperature. |
| | Confirm changes and proceed. |

## 7.3.3 Slope-offset curve

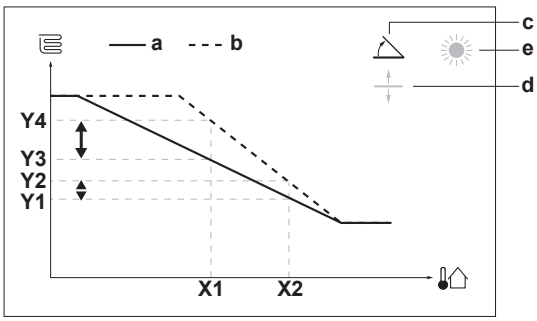
**Slope and offset**

Define the weather-dependent curve by its slope and offset:

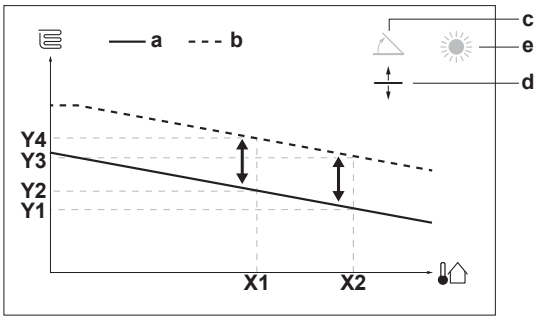
- Change the **slope** to differently increase or decrease the temperature of the leaving water for different ambient temperatures. For example, if leaving water temperature is in general fine but at low ambient temperatures too cold, raise the slope so that leaving water temperature is heated increasingly more at decreasingly lower ambient temperatures.
- Change the **offset** to equally increase or decrease the temperature of the leaving water for different ambient temperatures. For example, if leaving water temperature is always a bit too cold at different ambient temperatures, shift the offset up to equally increase the leaving water temperature for all ambient temperatures.

**Examples**

Weather-dependent curve when slope is selected:




Weather-dependent curve when offset is selected:




| Item | Description |
|---|---|
| a | WD curve before changes. |
| b | WD curve after changes (as example):<br>▪ When slope is changed, the new preferred temperature at X1 is unequally higher than the preferred temperature at X2.<br>▪ When offset is changed, the new preferred temperature at X1 is equally higher as the preferred temperature at X2. |
| c | Slope |
| d | Offset |
| e | Selected weather-dependent zone:<br>▪ : Main zone or additional zone heating<br>▪ : Main zone or additional zone cooling<br>▪ : Domestic hot water |
| X1, X2 | Examples of outdoor ambient temperature |
| Y1, Y2, Y3, Y4 | Examples of desired tank temperature or leaving water temperature. The icon corresponds to the heat emitter for that zone:<br>▪ : Underfloor heating<br>▪ : Fan coil unit<br>▪ : Radiator<br>▪ : Storage tank |

| Possible actions on this screen | |
|---|---|
| | Select slope or offset. |
| | Increase or decrease the slope/offset. |
| | When slope is selected: set slope and go to offset.<br>When offset is selected: set offset. |
| | Confirm changes and return to the submenu. |

## 7.3.4 Using weather-dependent curves

Configure weather-dependent curves as following:

**To define the setpoint mode**

To use the weather-dependent curve, you need to define the correct setpoint mode:

| Go to setpoint mode … | Set the setpoint mode to … |
|---|---|
| **Main zone – Heating** | |
| [2.4] `Main zone` > `Setpoint mode` | `WD heating, fixed cooling` OR `Weather dependent` |
| **Main zone – Cooling** | |
| [2.4] `Main zone` > `Setpoint mode` | `Weather dependent` |
| **Additional zone – Heating** | |
| [3.4] `Additional zone` > `Setpoint mode` | `WD heating, fixed cooling` OR `Weather dependent` |

| Go to setpoint mode … | Set the setpoint mode to … |
|---|---|
| **Additional zone – Cooling** | |
| [3.4] `Additional zone` > `Setpoint mode` | `Weather dependent` |
| **Tank** | |
| [5.B] `Tank` > `Setpoint mode` | **Restriction:** Only available to installers.<br>`Weather dependent` |

**To change the type of weather-dependent curve**

To change the type for all zones (main + additional) and for the tank, go to [2.E] `Main zone` > `WD curve type`.

Viewing which type is selected is also possible via:

- [3.C] `Additional zone` > `WD curve type`
- [5.E] `Tank` > `WD curve type`

  **Restriction:** Only available to installers.

**To change the weather-dependent curve**

| Zone | Go to … |
|---|---|
| **Main zone – Heating** | [2.5] `Main zone` > `Heating WD curve` |
| **Main zone – Cooling** | [2.6] `Main zone` > `Cooling WD curve` |
| **Additional zone – Heating** | [3.5] `Additional zone` > `Heating WD curve` |
| **Additional zone – Cooling** | [3.6] `Additional zone` > `Cooling WD curve` |
| **Tank** | **Restriction:** Only available to installers.<br>[5.C] `Tank` > `WD curve` |

**INFORMATION**

**Maximum and minimum setpoints**

You cannot configure the curve with temperatures that are higher or lower than the set maximum and minimum setpoints for that zone or for the tank. When the maximum or minimum setpoint is reached, the curve flattens out.

**To fine-tune the weather-dependent curve: slope-offset curve**

The following table describes how to fine-tune the weather-dependent curve of a zone or tank:

| You feel … | | Fine-tune with slope and offset: | |
|---|---|---|---|
| **At regular outdoor temperatures …** | **At cold outdoor temperatures …** | **Slope** | **Offset** |
| OK | Cold | ↑ | — |
| OK | Hot | ↓ | — |
| Cold | OK | ↓ | ↑ |
| Cold | Cold | — | ↑ |
| Cold | Hot | ↓ | ↑ |
| Hot | OK | ↑ | ↓ |
| Hot | Cold | ↑ | ↓ |
| Hot | Hot | — | ↓ |

**To fine-tune the weather-dependent curve: 2-points curve**

The following table describes how to fine-tune the weather-dependent curve of a zone or tank:

| You feel … | | Fine-tune with setpoints: | | | |
|---|---|---|---|---|---|
| **At regular outdoor temperatures …** | **At cold outdoor temperatures …** | **Y2[a]** | **Y1[a]** | **X1[a]** | **X2[a]** |
| OK | Cold | ↑ | — | ↑ | — |
| OK | Hot | ↓ | — | ↓ | — |
| Cold | OK | — | ↑ | — | ↑ |
| Cold | Cold | ↑ | ↑ | ↑ | ↑ |
| Cold | Hot | ↓ | ↑ | ↓ | ↑ |
| Hot | OK | — | ↓ | — | ↓ |
| Hot | Cold | ↑ | ↓ | ↑ | ↓ |
| Hot | Hot | ↓ | ↓ | ↓ | ↓ |

[a] See "7.3.2 2-points curve" [▶ 31].

## 7.4 Settings menu

You can set additional settings using the main menu screen and its submenus. The most important settings are presented here.

### 7.4.1 Main zone

**Ext thermostat type**

Only applicable in external room thermostat control.

**NOTICE**

If an external room thermostat is used, the external room thermostat will control the room frost protection. However, the room frost protection is only possible if [C.2] `Space heating/cooling=On`.

| # | Code | Description |
|---|---|---|
| [2.A] | [C–05] | External room thermostat type for the main zone:<br>▪ 1: `1 contact`: The used external room thermostat can only send a thermo ON/OFF condition. There is no separation between heating or cooling demand.<br>▪ 2: `2 contacts`: The used external room thermostat can send a separate heating/cooling thermo ON/OFF condition. |

### 7.4.2 Additional zone

**Ext thermostat type**

Only applicable in external room thermostat control. For more info about the functionality, see "7.4.1 Main zone" [▶ 33].

| # | Code | Description |
|---|---|---|
| [3.A] | [C–06] | External room thermostat type for the additional zone:<br>▪ 1: `1 contact`<br>▪ 2: `2 contacts` |

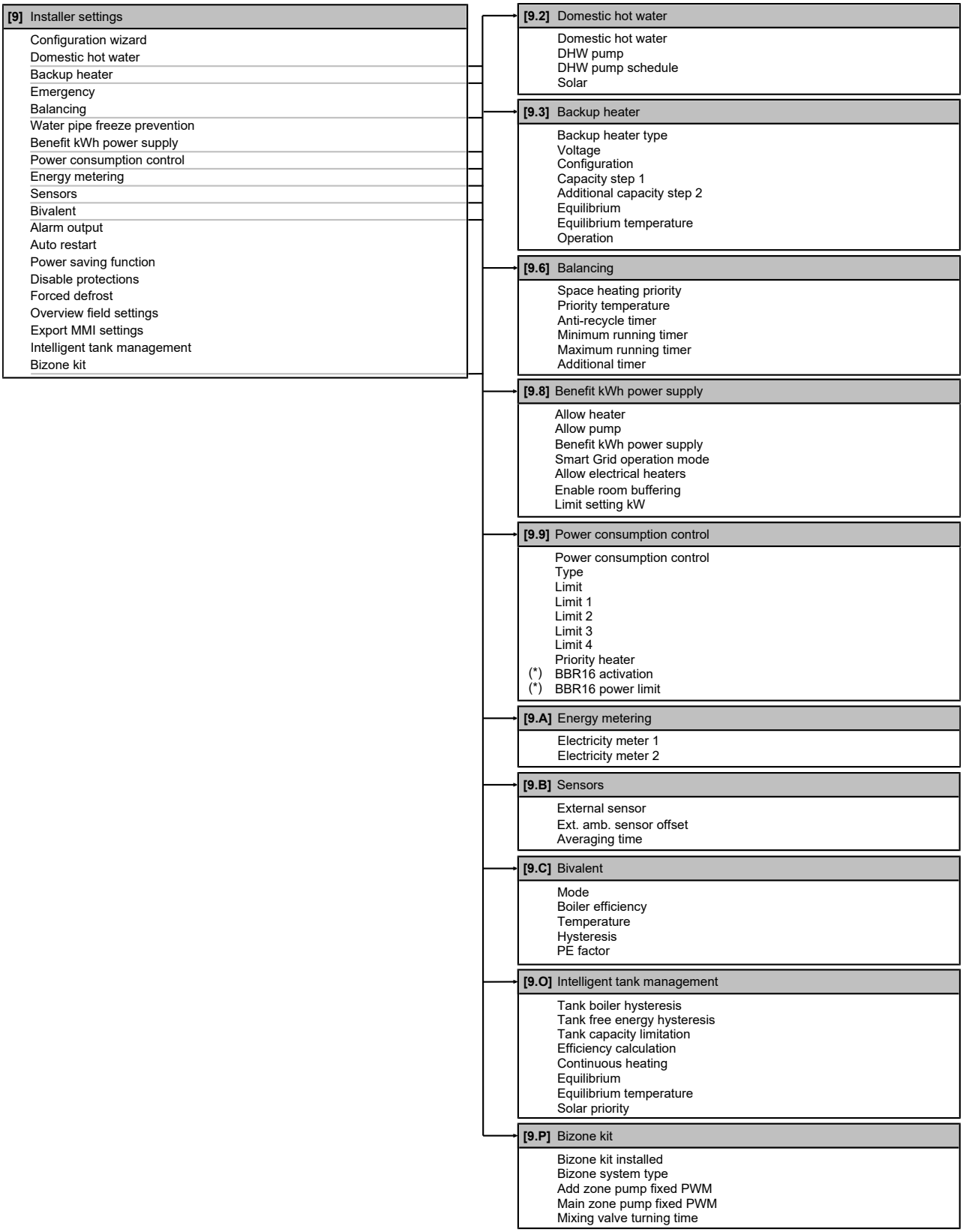
### 7.4.3 Information

**Dealer information**

The installer can fill in his contact number here.

| # | Code | Description |
|---|---|---|
| [8.3] | N/A | Number that users can call in case of problems. |

## 7.5 Menu structure: Overview installer settings




**(*)** Only applicable in Swedish language.

**INFORMATION**

Depending on the selected installer settings and unit type, settings will be visible/invisible.

# 8 Commissioning

**NOTICE**

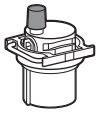
**General commissioning checklist.** Next to the commissioning instructions in this chapter, a general commissioning checklist is also available on the Daikin Business Portal (authentication required).

The general commissioning checklist is complementary to the instructions in this chapter and can be used as a guideline and reporting template during commissioning and hand-over to the user.

**NOTICE**

ALWAYS operate the unit with thermistors and/or pressure sensors/switches. If NOT, burning of the compressor might be the result.

**NOTICE**



Make sure the automatic air purge valve in the hydraulic block is open.

All automatic air purge valves must remain open after commissioning.

**INFORMATION**

**Protective functions – "Installer-on-site mode"**. The software is equipped with protective functions, such as room antifrost. The unit automatically runs these functions when necessary.

During installation or service this behaviour is undesired. Therefore, the protective functions can be disabled:

- **At first power-on:** The protective functions are disabled by default. After 12 hours they will be automatically enabled.
- **Afterwards:** An installer can manually disable the protective functions by setting [9.G]: `Disable protections=Yes`. After his work is done, he can enable the protective functions by setting [9.G]: `Disable protections=No`.

## 8.1 Checklist before commissioning

1 After the installation of the unit, check the items listed below.

2 Close the unit.

3 Power up the unit.

| | |
|---|---|
| ☐ | You read the complete installation instructions, as described in the **installer reference guide**. |
| ☐ | The **indoor unit** is properly mounted.<br>▪ Check that all parts of the hood fitted correctly.<br>▪ Check that the locking parts are closed. |
| ☐ | The **outdoor unit** is properly mounted. |
| ☐ | The following **field wiring** has been carried out according to this document and the applicable legislation:<br>▪ Between the local supply panel and the outdoor unit<br>▪ Between indoor unit and outdoor unit<br>▪ Between the local supply panel and the indoor unit<br>▪ Between the indoor unit and the valves (if applicable)<br>▪ Between the indoor unit and the room thermostat (if applicable) |
| ☐ | The system is properly **earthed** and the earth terminals are tightened. |
| ☐ | The **fuses** or locally installed protection devices are installed according to this document, and have NOT been bypassed. |
| ☐ | The **power supply voltage** matches the voltage on the identification label of the unit. |
| ☐ | There are NO **loose connections** or damaged electrical components in the switch box. |
| ☐ | There are NO **damaged components** or **squeezed pipes** on the inside of the indoor and outdoor units. |
| ☐ | **Backup heater circuit breaker** F1B (field supply) is turned ON. |
| ☐ | The correct pipe size is installed and the **pipes** are properly insulated. |
| ☐ | There is NO **water leak** inside the indoor unit. All electric components and connections are dry. |
| ☐ | The **shut-off valves** are properly installed and fully open. |
| ☐ | The **automatic air purge** valves are open. |
| ☐ | The **pressure relief valve** (space heating circuit) purges water when opened. Clean water MUST come out. |
| ☐ | The **minimum water volume** is guaranteed in all conditions. See "To check the water volume and flow rate" in "5.1 Preparing water piping" [▸ 8]. |
| ☐ | The **storage tank** is filled completely. |

## 8.2 Checklist during commissioning

| | |
|---|---|
| ☐ | To check that the **minimum flow rate** during backup heater/defrost operation is guaranteed in all conditions. See "To check the water volume and flow rate" in "5.1 Preparing water piping" [▸ 8]. |
| ☐ | To perform an **air purge**. |
| ☐ | To perform a **test run**. |
| ☐ | To perform an **actuator test run**. |
| ☐ | To perform (start) an **underfloor screed dryout** (if necessary). |
| ☐ | To set up a **bivalent heat source**. |

### 8.2.1 To check the minimum flow rate

| | | |
|---|---|---|
| **1** | Check the hydraulic configuration to find out which space heating loops can be closed by mechanical, electronic, or other valves. | — |
| **2** | Close all space heating loops that can be closed. | — |
| **3** | Start the pump test run (see "8.2.4 To perform an actuator test run" [▸ 36]). | — |
| **4** | Read out the flow rate[a]. If the flow rate is too low:<br>▪ Do air purge.<br>▪ Check the function of the valve motor of M1S and M2S. Replace the valve motor if necessary. | — |

[a] During pump test run, the unit can operate below the minimum required flow rate.

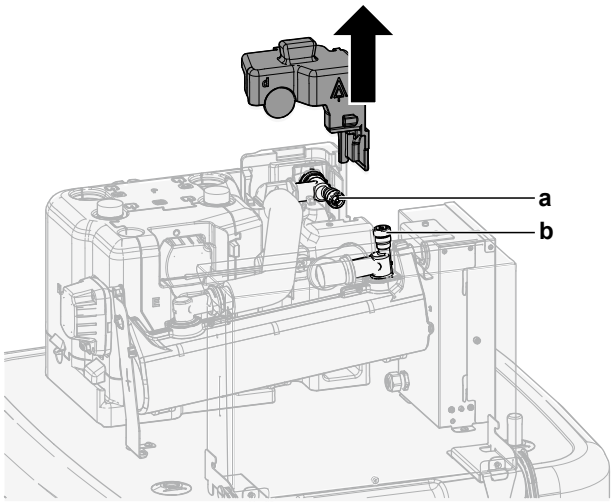
| Minimum required flow rate |
|---|
| 22 l/min |

### 8.2.2 To perform an air purge

**Conditions:** Make sure all operation is disabled. Go to [C]: `Operation` and turn off `Space heating/cooling` and `Tank` operation.

| | | |
|---|---|---|
| **1** | Set the user permission level to Installer. See "To change the user permission level" [▶ 27]. | — |
| **2** | Go to [A.3]: `Commissioning` > `Air purge`. | |
| **3** | Select `OK` to confirm.<br>**Result:** The air purge starts. It stops automatically when air purge cycle is finished. | |
| | To stop the air purge manually: | — |
| | **1** Go to `Stop air purge`. | |
| | **2** Select `OK` to confirm. | |

**To purge the air out of the unit with the manual air vent valves**




**a, b** Manual air vent valve

1 Connect a hose to the manual air vent valve **a**. Direct the free end away from the unit.

2 Open the valve by turning until no more air escapes, then close it again.

3 In case that an option backup heater is installed, repeat step 1 and 2 for valve **b**.

### 8.2.3 To perform an operation test run

**Conditions:** Make sure all operation is disabled. Go to [C]: `Operation` and turn off `Space heating/cooling` and `Tank` operation.

| | | |
|---|---|---|
| **1** | Set the user permission level to `Installer`. See "To change the user permission level" [▶ 27]. | — |
| **2** | Go to [A.1]: `Commissioning` > `Operation test run`. | |
| **3** | Select a test from the list. **Example:** `Heating`. | |
| **4** | Select `OK` to confirm.<br>**Result:** The test run starts. It stops automatically when ready (±30 min). | |
| | To stop the test run manually: | — |
| | **1** In the menu, go to `Stop test run`. | |
| | **2** Select `OK` to confirm. | |

**INFORMATION**

If the outdoor temperature is outside the range of operation, the unit may NOT operate or may NOT deliver the required capacity.

**To monitor leaving water and tank temperatures**

During test run, the correct operation of the unit can be checked by monitoring its leaving water temperature (heating/cooling mode) and tank temperature (domestic hot water mode).

To monitor the temperatures:

| | | |
|---|---|---|
| **1** | In the menu, go to `Sensors`. | |
| **2** | Select the temperature information. | |

### 8.2.4 To perform an actuator test run

**Purpose**

Perform an actuator test run to confirm the operation of the different actuators. For example, when you select `Pump`, a test run of the pump will start.

**Conditions:** Make sure all operation is disabled. Go to [C]: `Operation` and turn off `Space heating/cooling` and `Tank` operation.

| | | |
|---|---|---|
| **1** | Set the user permission level to Installer. See "To change the user permission level" [▶ 27]. | — |
| **2** | Go to [A.2]: `Commissioning` > `Actuator test run`. | |
| **3** | Select a test from the list. **Example:** `Pump`. | |
| **4** | Select `OK` to confirm.<br>**Result:** The actuator test run starts. It stops automatically when ready (±30 min). | |
| | To stop the test run manually: | — |
| | **1** In the menu, go to `Stop test run`. | |
| | **2** Select `OK` to confirm. | |

### Possible actuator test runs

**NOTICE**

For the backup heater test run, make sure that at least one of the two mixing valves of the unit is open during the test. Otherwise the thermal cut-out of the backup heater may be triggered.

**INFORMATION**

Make sure that the water outlet temperature of the backup heater is not higher than 40°C, otherwise the backup heater test will not start.

- `Backup heater 1` test
- `Backup heater 2` test
- `Pump` test

**INFORMATION**

Make sure that all air is purged before executing the test run. Also avoid disturbances in the water circuit during the test run.

- `Shut off valve` test
- `DHW signal` test
- `Bivalent signal` test
- `Alarm output` test
- `C/H signal` test
- `DHW pump` test
- `Tank valve` test
- `Bypass valve` test
- `Bizone kit direct pump` test (bizone kit EKMIKPOA or EKMIKPHA)
- `Bizone kit mixed pump` test (bizone kit EKMIKPOA or EKMIKPHA)
- `Bizone kit mixing valve` test (bizone kit EKMIKPOA or EKMIKPHA)

### 8.2.5 To perform an underfloor heating screed dryout

**Conditions:** Make sure all operation is disabled. Go to [C]: `Operation` and turn off `Space heating/cooling` and `Tank` operation.

| | | |
|---|---|---|
| **1** | Set the user permission level to Installer. See "To change the user permission level" [▶ 27]. | — |
| **2** | Go to [A.4]: `Commissioning` > `UFH screed dryout`. | |
| **3** | Set a dryout program: go to `Program` and use the UFH screed dryout programming screen. | |
| 4 | Select `OK` to confirm.<br>**Result:** The underfloor heating screed dryout starts. It stops automatically when done. | |
| | To stop the test run manually: | — |
| | **1** Go to `Stop UFH screed dryout`. | |
| | **2** Select `OK` to confirm. | |

**NOTICE**

To perform an underfloor heating screed dryout, room frost protection needs to be disabled ([2-06]=0). By default, it is enabled ([2-06]=1). However, due to the "installer-on-site" mode (see "Commissioning"), room frost protection will be automatically disabled for 12 hours after the first power-on.

If the screed dryout still needs to be performed after the first 12 hours of power-on, manually disable room frost protection by setting [2-06] to "0", and KEEP it disabled until the screed dryout has finished. Ignoring this notice will result in cracking of the screed.

**NOTICE**

For the underfloor heating screed dryout to be able to start, make sure the following settings are met:

- [4-00]=1
- [C-02]=0
- [D-01]=0
- [4-08]=0
- [4-01]≠1

### 8.2.6 To set up bivalent heat sources

For systems without indirect auxiliary boiler connected to the storage tank, it is mandatory to install an electric backup heater to ensure safe operation for all conditions.

**Drain back models**

For drain back models, a backup heater (EKECBUA*) must always be installed.

For drain back models, the factory setting of field code [C-02] is set to 0.

**Bivalent models**

For bivalent models, the factory setting of the field code [C-02] is set to 2. It is assumed that a controllable bivalent external heat source is connected (see the installer reference guide for more information).

Without a controllable bivalent external heat source, a backup heater (EKECBUA*) must be installed and the field code [C-02] set to 0.

**HINT:** If field code [C-02] is set to 0 and no backup heater is connected, error UA 17 is output at AL 3 * ECH2O.

# 9 Hand-over to the user

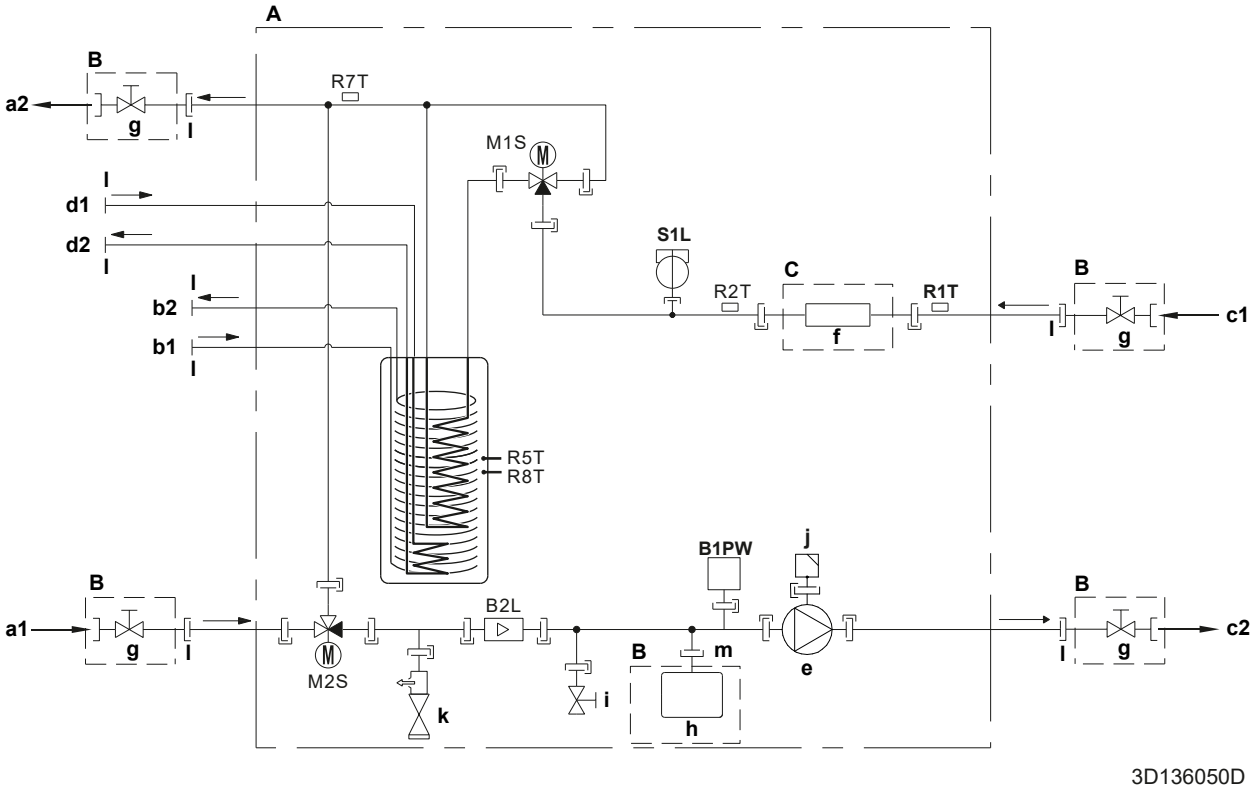
Once the test run is finished and the unit operates properly, make sure the following is clear for the user:

- Fill in the installer setting table (in the operation manual) with the actual settings.
- Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he/she can find the complete documentation at the URL mentioned earlier in this manual.
- Explain to the user how to properly operate the system and what to do in case of problems.
- Show the user what to do for the maintenance of the unit.
- Explain about energy saving tips to the user as described in the operation manual.

# 10 Technical data

A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible). The **full set** of the latest technical data is available on the Daikin Business Portal (authentication required).

## 10.1 Piping diagram: Indoor unit




3D136050D

**A** Indoor unit
**B** Field installed
**C** Optional
**a1** Space heating/cooling – Water IN (screw connection, 1")
**a2** Space heating/cooling – Water OUT (screw connection, 1")
**b1** DHW – Cold water IN (screw connection, 1")
**b2** DHW – Hot water OUT (screw connection, 1")
**c1** Water IN from outdoor unit (screw connection, 1")
**c2** Water OUT to outdoor unit (screw connection, 1")
**d1** Water IN from bivalent heat source (screw connection, 1")
**d2** Water OUT to bivalent heat source (screw connection, 1")
**e** Pump
**f** Backup heater
**g** Shut-off valve, female-female 1"
**h** Expansion vessel
**i** Drain valve
**j** Automatic air purge valve
**k** Safety valve
**l** External thread 1"
**m** External thread 3/4"
**B2L** Flow sensor
**B1PW** Space heating water pressure sensor
**M1S** Tank valve
**M2S** Bypass valve
**R1T** Thermistor (water IN)
**R2T** Thermistor (backup heater – water OUT)
**R5T, R8T** Thermistor (tank)
**R7T** Thermistor (tank - water OUT)
**S1L** Flow switch
Screw connection
Flare connection
Quick coupling
Brazed connection

## 10.2 Wiring diagram: Indoor unit

See the internal wiring diagram supplied with the unit (on the inside of the indoor unit switch box cover). The abbreviations used are listed below.

**Notes to go through before starting the unit**

| English | Translation |
|---|---|
| Notes to go through before starting the unit | Notes to go through before starting the unit |
| X1M | Main terminal |
| X12M | Field wiring terminal for AC |
| X15M | Field wiring terminal for DC |
| X6M | Backup heater power supply terminal |
| ⏚ | Earth wiring |
| – – – – – – – | Field supply |
| ① | Several wiring possibilities |
| ▭ | Option |
| ▭ | Not mounted in switch box |
| ▭ | Wiring depending on model |
| ▭ | PCB |
| Backup heater power supply | Backup heater power supply |
| ☐ 3V (1N~, 230 V, 3 kW) | ☐ 3V (1N~, 230 V, 3 kW) |
| ☐ 6V (1N~, 230 V, 6 kW) | ☐ 6V (1N~, 230 V, 6 kW) |
| ☐ 6WN/9WN (3N~, 400 V, 6/9 kW) | ☐ 6WN/9WN (3N~, 400 V, 6/9 kW) |
| User installed options | User installed options |
| ☐ Backup heater | ☐ Backup heater |
| ☐ Remote user interface | ☐ Dedicated Human Comfort Interface (BRC1HHDA used as room thermostat) |
| ☐ Ext. indoor thermistor | ☐ External indoor thermistor |
| ☐ Ext outdoor thermistor | ☐ External outdoor thermistor |
| ☐ Demand PCB | ☐ Demand PCB |
| ☐ Smart Grid kit | ☐ Smart grid kit |
| ☐ WLAN adapter module | ☐ WLAN adapter module |
| ☐ WLAN cartridge | ☐ WLAN cartridge |
| ☐ Bizone mixing kit | ☐ Bizone mixing kit |
| ☐ Safety thermostat | ☐ Safety thermostat |
| Main LWT | Main leaving water temperature |
| ☐ On/OFF thermostat (wired) | ☐ On/OFF thermostat (wired) |
| ☐ On/OFF thermostat (wireless) | ☐ On/OFF thermostat (wireless) |
| ☐ Ext. thermistor | ☐ External thermistor |
| ☐ Heat pump convector | ☐ Heat pump convector |
| Add LWT | Additional leaving water temperature |
| ☐ On/OFF thermostat (wired) | ☐ On/OFF thermostat (wired) |
| ☐ On/OFF thermostat (wireless) | ☐ On/OFF thermostat (wireless) |
| ☐ Ext. thermistor | ☐ External thermistor |
| ☐ Heat pump convector | ☐ Heat pump convector |

**Position in switch box**

| English | Translation |
|---|---|
| Position in switch box | Position in switch box |
| SWB1 | Main switch box |
| SWB2 | Backup heater switch box |

**Legend**

| | | |
|---|---|---|
| A1P | | Main PCB |
| A2P | * | On/OFF thermostat (PC=power circuit) |
| A3P | * | Heat pump convector |
| A8P | * | Demand PCB |
| A11P | | MMI (= user interface of the indoor unit) – Main PCB |
| A14P | * | PCB of the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat) |
| A15P | * | Receiver PCB (wireless On/OFF thermostat) |
| A20P | * | WLAN module |
| A23P | | Hydro extension PCB |
| A30P | | Bizone mixing kit PCB |
| DS1(A8P) | * | DIP switch |
| F1B | # | Overcurrent fuse backup heater |
| F2B | # | Overcurrent fuse main |
| FU1 (A1P) | | Fuse (T 5 A 250 V for PCB) |
| FU1 (A23P) | | Fuse (3.15 A 250 V for PCB) |
| K1A, K2A | * | High voltage smartgrid relay |
| K1M, K2M | | Contactor backup heater |
| K5M | | Safety contactor backup heater |
| M2P | # | Domestic hot water pump |
| M4S | # | 2-way valve for cooling mode |
| PC (A15P) | * | Power circuit |
| Q1L | | Thermal protector backup heater |
| Q4L | # | Safety thermostat |
| Q*DI | # | Earth leakage circuit breaker |
| R1H (A2P) | * | Humidity sensor |
| R1T (A2P) | * | Ambient sensor On/OFF thermostat |
| R2T (A2P) | * | External sensor (floor or ambient) |
| R6T | * | External indoor or outdoor ambient thermistor |
| S1S | # | Preferential kWh rate power supply contact |
| S2S | # | Electricity meter pulse input 1 |
| S3S | # | Electricity meter pulse input 2 |
| S4S | # | Smart grid feed-in |
| S6S~S9S | * | Digital power limitation inputs |
| S10S~S11S | # | Low voltage Smart grid contact |
| S12S | | Gas meter input |
| S13S | | Solar input |
| TR1 | | Power supply transformer |
| X*, X*A, X*Y, Y* | | Connector |
| X*M | | Terminal strip |

* Optional
\# Field supply

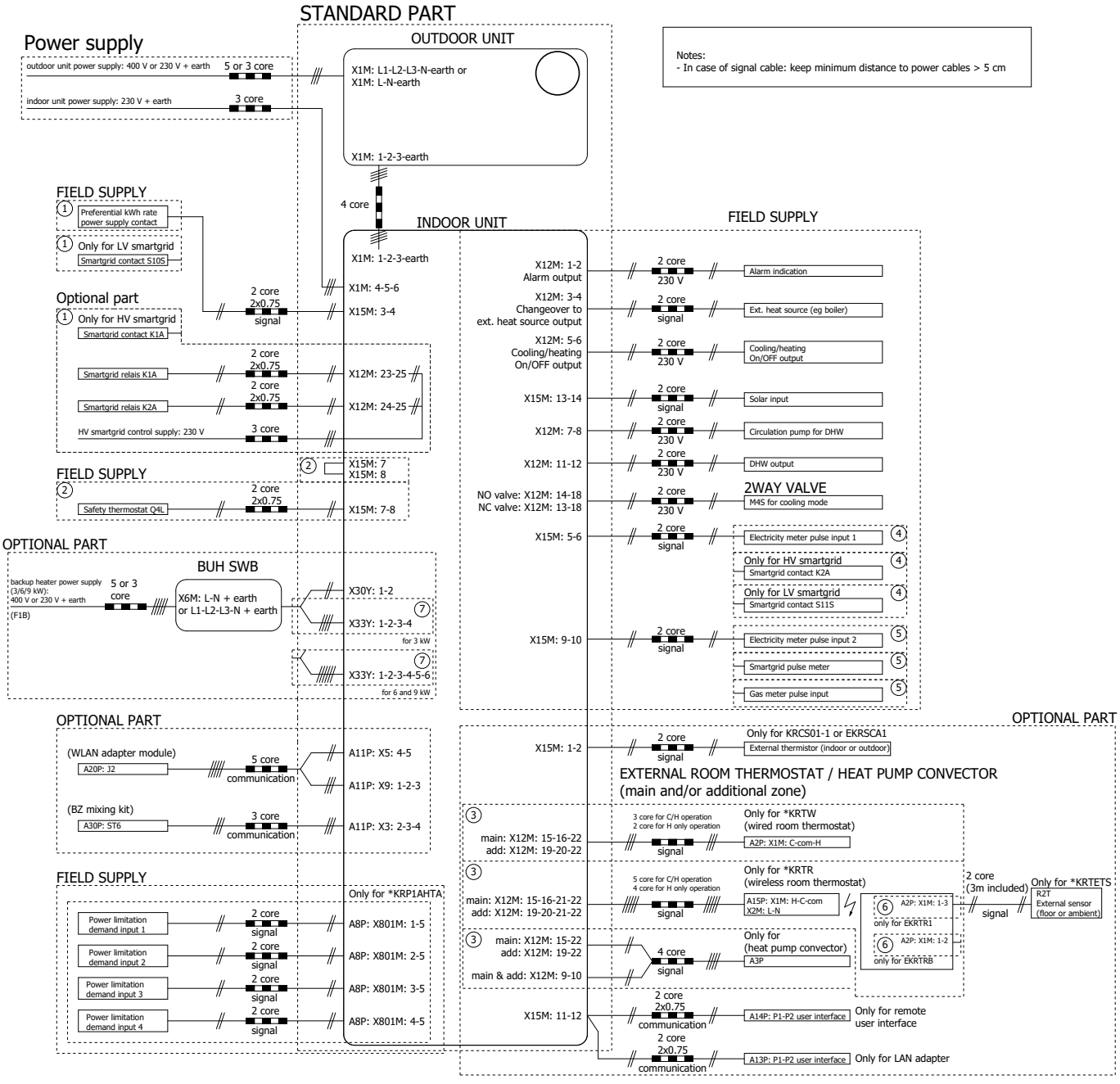
**Translation of text on wiring diagram**

| English | Translation |
|---|---|
| (1) Main power connection | (1) Main power connection |
| Outdoor unit | Outdoor unit |
| SWB1 | Switch box |
| (2) User interface | (2) User interface |

| English | Translation |
|---|---|
| Only for remote user interface | Only for the user interface used as room thermostat |
| SD card | Card slot for WLAN cartridge |
| SWB1 | Switch box |
| WLAN cartridge | WLAN cartridge |
| WLAN cartridge option | WLAN cartridge option |
| WLAN adapter module option | WLAN adapter module option |
| (3) Field supplied options | (3) Field supplied options |
| 12 V DC pulse detection (voltage supplied by PCB) | 12 V DC pulse detection (voltage supplied by PCB) |
| 230 V AC Control Device | 230 V AC Control Device |
| 230 V AC supplied by PCB | 230 V AC supplied by PCB |
| Alarm output | Alarm output |
| BUH option | Backup heater option |
| BUH option only for * | Backup heater option only for * |
| Bizone mixing kit | Bizone mixing kit |
| Continuous | Continuous current |
| DHW Output | Domestic hot water output |
| DHW pump | Domestic hot water pump |
| DHW pump output | Domestic hot water pump output |
| Electrical meters | Electricity meters |
| Ext. ambient sensor option (indoor or outdoor) | External ambient sensor option (indoor or outdoor) |
| Ext. heat source | External heat source |
| For external power supply | For external power supply |
| For HP tariff | For heat pump tariff |
| For internal power supply | For internal power supply |
| For HV Smart Grid | For high voltage Smart Grid |
| For LV Smart Grid | For low voltage Smart Grid |
| For safety thermostat | For safety thermostat |
| For Smart Grid | For Smart Grid |
| Gas meter | Gas meter |
| Inrush | Inrush current |
| Max. load | Maximum load |
| Normally closed | Normally closed |
| Normally open | Normally open |
| Note: outputs can be taken from terminal positions X12M.17(L)-18(N) and X12M.17(L)-11(N).<br>Max. 2 outputs at once are possible this way. | Note: outputs can be taken from terminal positions X12M.17(L)-18(N) and X12M.17(L)-11(N).<br>Max. 2 outputs at once are possible this way. |
| Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB) | Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB). |
| Safety thermostat contact: 16 V DC detection (voltage supplied by PCB) | Safety thermostat contact: 16 V DC detection (voltage supplied by PCB) |
| Shut-off valve | Shut-off valve |
| Smart Grid contacts | Smart Grid contacts |
| Smart Grid feed-in | Smart Grid feed-in |
| Solar input | Solar input |
| Space C/H On/OFF output | Space cooling/heating On/OFF output |
| SWB1 | Switch box |
| (4) Option PCBs | (4) Option PCBs |
| Only for demand PCB option | Only for demand PCB option |
| Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB) | Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB) |
| SWB | Switch box |
| (5) External On/OFF thermostats and heat pump convector | (5) External On/OFF thermostats and heat pump convector |
| Additional LWT zone | Additional leaving water temperature zone |
| Main LWT zone | Main leaving water temperature zone |
| Only for external sensor (floor/ ambient) | Only for external sensor (floor or ambient) |
| Only for heat pump convector | Only for heat pump convector |
| Only for wired On/OFF thermostat | Only for wired On/OFF thermostat |
| Only for wireless On/OFF thermostat | Only for wireless On/OFF thermostat |
| (6) Backup heater power supply | (6) Backup heater power supply |
| Only for *** | Only for *** |
| SWB2 | Switch box |

**Electrical connection diagram**

For more details, please check the unit wiring.

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