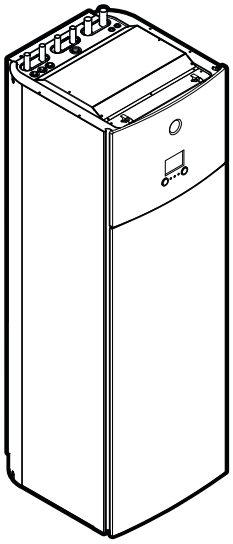
Installation manual

Daikin Altherma 3 GEO



EGSAH06D▲9W▼
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▲= 1, 2, 3, …, 9, A, B, C, …, Z
▼= , , 1, 2, 3, …, 9

Installation manual
Daikin Altherma 3 GEO

English

Table of contents

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 unit)
- **Operation manual:**
  - Quick guide for basic usage
  - Format: Paper (in the box of the 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:**
  - Installation instructions
  - Format: Paper (in the box of the 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 unit) + Digital files on https://www.daikin.eu. Use the search function to find your model.

Latest revisions of the supplied documentation may be available on the regional Daikin website or via your dealer.

The original documentation is written in English. All other languages are translations.

Technical engineering data

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

- **Heating Solutions Navigator**
  - Digital toolbox that offers a variety of tools to facilitate the installation and configuration of heating systems.
  - To access 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.
  - The mobile app can be downloaded for iOS and Android devices using the QR codes below. 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 for correct installation of the unit. See "4.1.1 Installation site requirements of the indoor unit" [▶ 5].

WARNING

The appliance shall be stored in a room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).

Special requirements for R32 (see "Special requirements for R32" [▶ 5])

WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Be aware that the refrigerant inside the system is odourless.

WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation and are executed ONLY by authorised persons.

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

DANGER: RISK OF ELECTROCUTION

Do NOT leave the unit unattended when the service cover is removed.

DANGER: RISK OF BURNING/SCALDING

CAUTION

The hydro module is heavy. It requires at least two persons to carry it.

Mounting the indoor unit (see "4.3 Mounting the indoor unit" [▶ 8])

WARNING

Fixing method of the indoor unit MUST be in accordance with the instructions from this manual. See "4.3 Mounting the indoor unit" [▶ 8].

Piping installation (see "5 Piping installation" [▶ 9])

WARNING

The field piping method MUST be in accordance with the instructions from this manual. See "5 Piping installation" [▶ 9].

DANGER: RISK OF BURNING/SCALDING

WARNING

It is the responsibility of the installer to ensure the compatibility of field piping with the used anti-freeze fluid in the brine circuit. Do NOT use Zn-coated piping, as this may lead to excessive corrosion. See also "5.2.4 To fill the brine circuit" [▶ 10].

WARNING

Before, during and after filling carefully check the brine circuit for leakage.

WARNING

Temperature of the fluid running through the evaporator can become negative. It MUST be protected against freezing. For more information, see setting [A-04] in "7.4.4 Brine freezing temperature" [▶ 33].

Electrical installation (see "6 Electrical installation" [▶ 12])

DANGER: RISK OF ELECTROCUTION

WARNING

Electrical wiring connection method MUST be in accordance with the instructions from:

- This manual. See "6 Electrical installation" [▸ 12].
- The wiring diagram, which is delivered with the unit, located on the inside of the indoor unit front panel. For a translation of its legend, see "10.2 Wiring diagram: Indoor unit" [▸ 39].

WARNING

- All wiring MUST be performed by an authorised electrician and MUST comply with the applicable 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 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.

INFORMATION

Details of type and rating of fuses, or rating of circuit breakers are described in "6 Electrical installation" [▸ 12].

LAN adapter (see "6.16 LAN adapter" [▸ 22])

WARNING

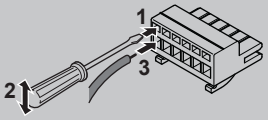
Make sure to connect the electricity meter in the correct direction, so that it measures the total energy injected INTO the grid.

WARNING

Make sure X1A/N+L are protected by a fast acting circuit breaker (rated current 100 mA~6 A, type B).

WARNING

When connecting the wiring to LAN adapter terminal X1A, make sure each wire is securely fastened to the appropriate terminal. Use a screwdriver to open the wire clamps. Make sure the bare copper wire is fully inserted into the terminal (bare copper wire CANNOT be visible).



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

WARNING

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

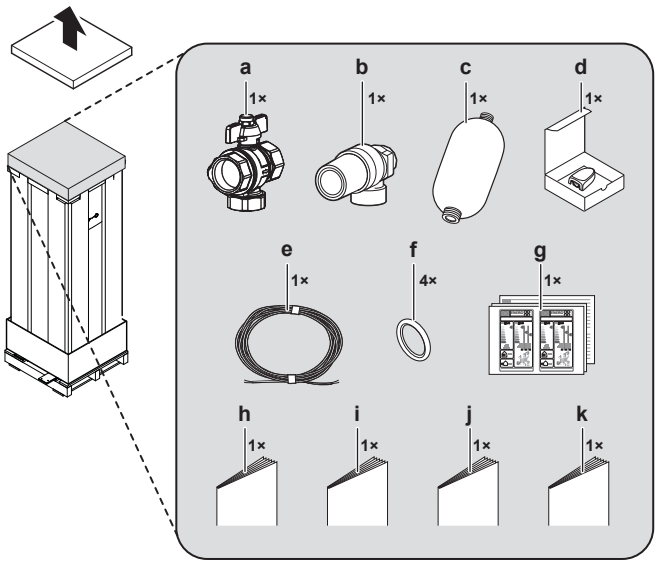
3 About the box

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

3.1.1 To remove the accessories from the indoor unit

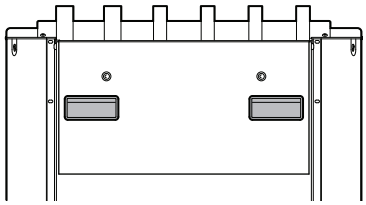


a Shut-off valve with integrated filter
b Safety valve (connection parts for mounting on top of brine level vessel included)
c Brine level vessel
d Remote outdoor sensor (with installation manual)
e Cable for remote outdoor sensor (40 m)
f O-rings (spares for hydro module shut-off valves)
g Energy label
h General safety precautions
i Addendum book for optional equipment
j Installation manual
k Operation manual

3.1.2 To handle the indoor unit

Mind the following guidelines when handling the unit:

- Use a trolley to transport the unit. Make sure to use a trolley with a sufficiently long horizontal ledge, suitable for transportation of heavy appliances.
- When transporting the unit, keep the unit upright.
- Use the handles at the back to carry the unit.



- Remove the hydro module before you carry the unit up or down staircases. See "4.2.2 To remove the hydro module from the unit" [▶ 6].
- It is recommended to use lifting straps to carry the unit up or down staircases.

4 Unit installation

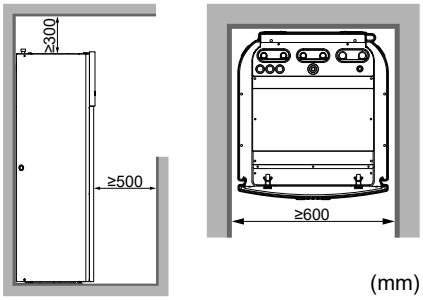
4.1 Preparing the installation site

WARNING

The appliance shall be stored in a room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).

4.1.1 Installation site requirements of the indoor unit

- Mind the following spacing installation guidelines:



(mm)

INFORMATION

If you have limited installation space and need to install the option kit EKGSPOWCAB (= power cable for split power supply), remove the left side panel before installing the unit in its final position. See "4.2.1 To open the indoor unit" [▶ 5].

- The indoor unit is designed for indoor installation only and for ambient temperatures ranging from 5~35°C.

Special requirements for R32

The indoor unit contains an internal refrigerant circuit (R32), but you do NOT have to do any refrigerant field piping or refrigerant charging.

The total refrigerant charge in the system is ≤1.842 kg, so the system is NOT subjected to any requirements to the installation room. However, mind the following requirements and precautions:

WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Be aware that the refrigerant inside the system is odourless.

WARNING

The appliance shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).

WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation and are executed ONLY by authorised persons.

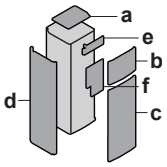
4.2 Opening and closing the unit

4.2.1 To open the indoor unit

NOTICE

For a standard installation, it is usually NOT required to open the unit. Opening the unit or any of the switch boxes is ONLY required when you want to install extra option kits. For more information, see the installation manual of the specific option kit, or below.

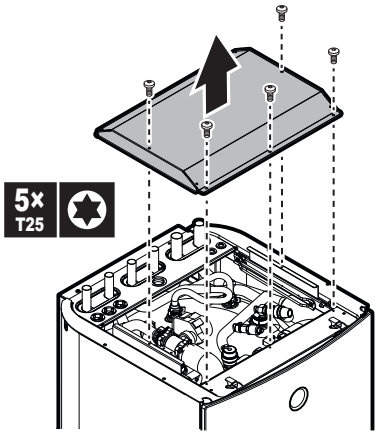
Overview



a	Top panel
b	User interface panel
c	Front panel
d	Left side panel
e	Installer switch box cover
f	Main switch box cover

Open

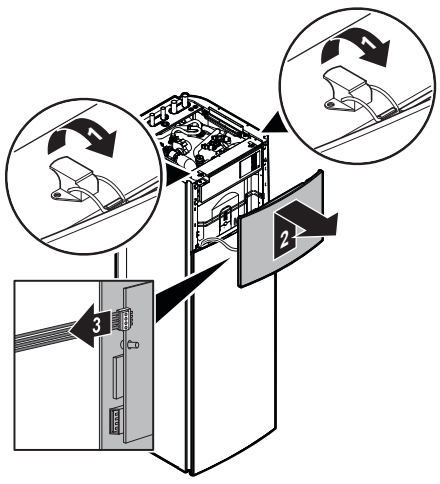
1 Remove the top panel.



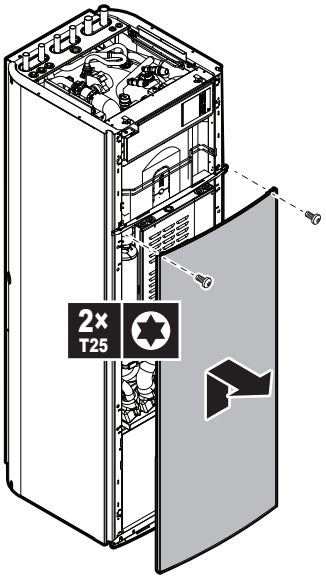
2 Remove the user interface panel. Open the hinges at the top and slide the user interface panel upwards.

NOTICE

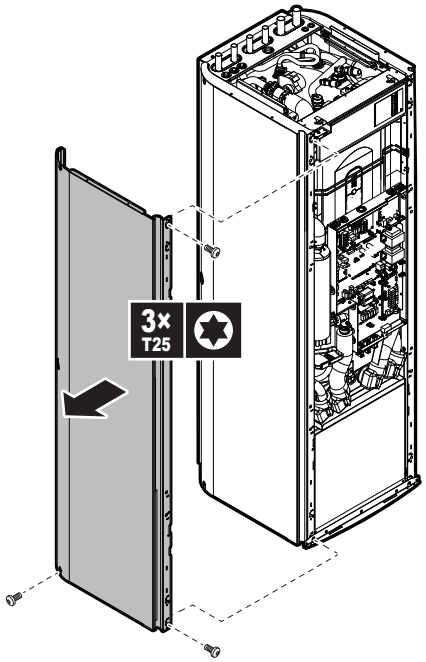
If you remove the user interface panel, also disconnect the cables from the back of the user interface panel to prevent damage.



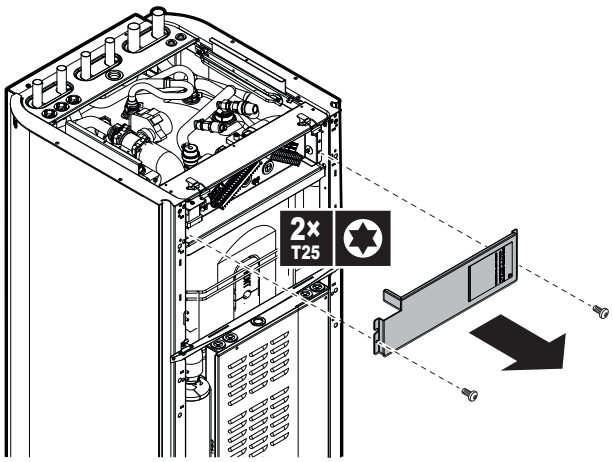
3 If necessary, remove the front panel. This is, for example, necessary when you want to remove the hydro module from the unit. See "4.2.2 To remove the hydro module from the unit" [▶ 6] for more information.



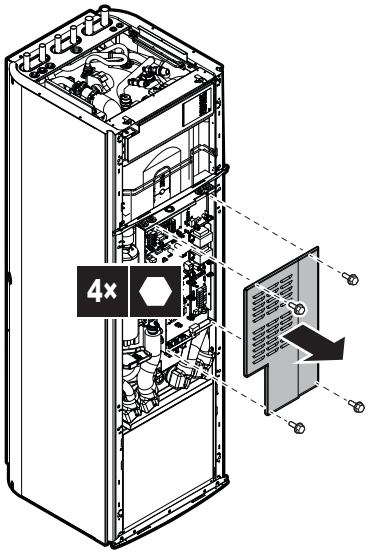
4 In case you want to install the option kit EKGSPOWCAB (= power cable for split power supply), also remove the left side panel. Also see "6.4 To connect the main power supply" [▶ 14].



5 Open the installer switch box as follows:



6 In case you have to install additional options that require access to the main switch box, remove the main switch box cover as follows:

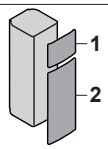


4.2.2 To remove the hydro module from the unit

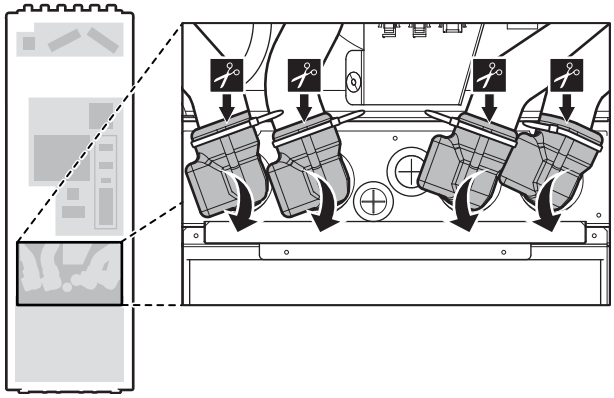
Removing the hydro module is only required for easier transportation of the unit or for servicing. The removal of the module will significantly reduce the weight of the unit. This makes the unit easier to handle and carry.

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

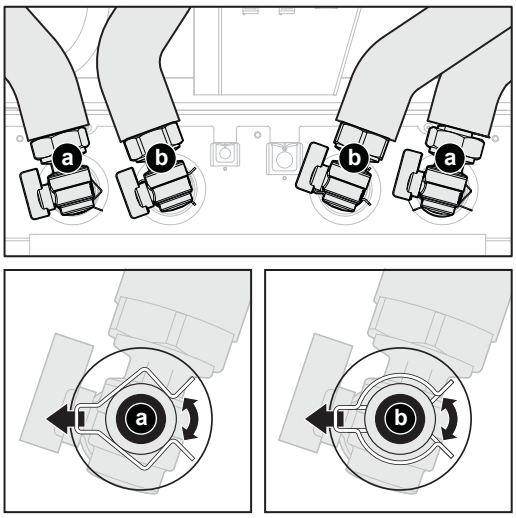
1	User interface panel
2	Front panel



2 Remove the insulation from the shut-off valves by cutting the cable ties.

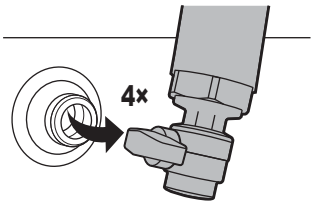


3 Remove the clips that lock the valves in place.

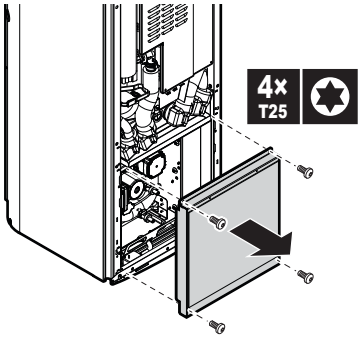


a Pipes for brine circuit
b Pipes for space heating/cooling circuit

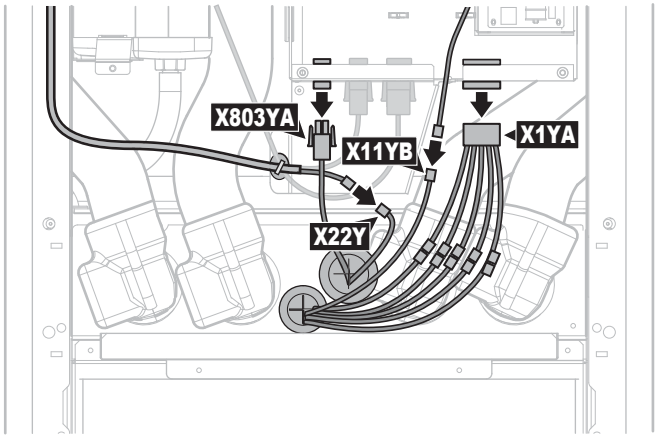
4 Uncouple the piping.



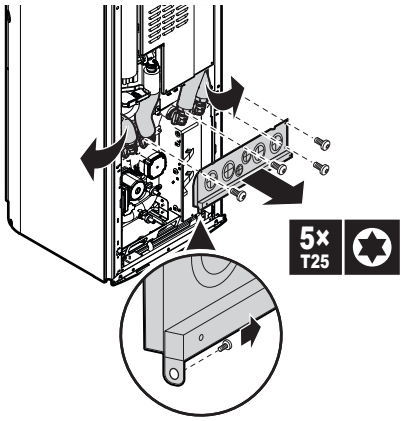
5 Remove the lower hydro module cover.



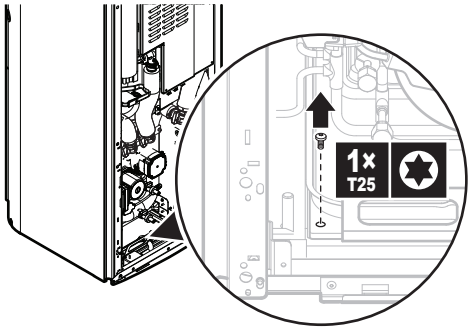
6 Unlink the connectors that run from the hydro module to the main switch box or other locations. Route the wires through the grommets of the upper hydro module cover.



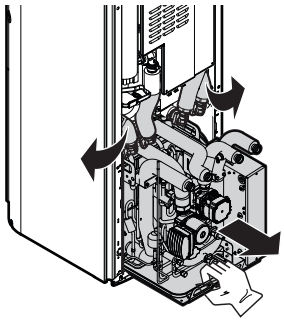
7 Remove the upper hydro module cover. You can lift up the uncoupled piping to access the screws more easily, and to take off the cover itself.

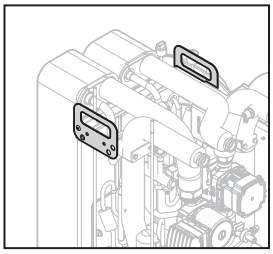


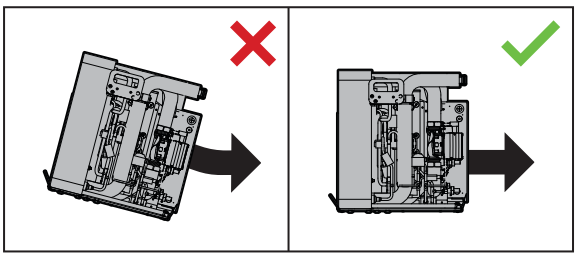
8 Remove the screw that fixes the hydro module to the bottom plate.



9 Lift the uncoupled piping and use the handle on the front of the module to carefully slide the module out of the unit. Make sure the module remains level and does not tilt forward.







CAUTION

The hydro module is heavy. It requires at least two persons to carry it.

NOTICE

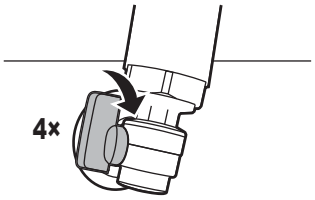
Make sure not to damage any insulation during the removal process.

Removal after first installation

If the water and brine circuits have been filled before, remaining water and brine need to be drained from the hydro module before removal. In this case, perform the following actions:

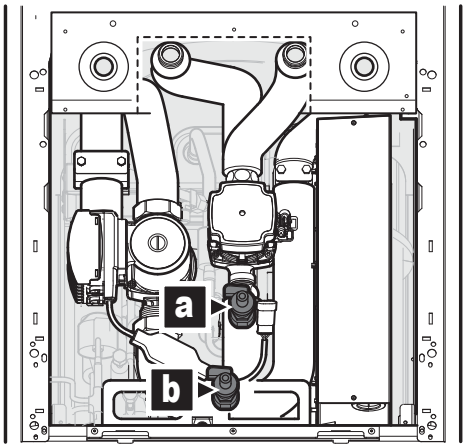
1 Remove the insulation from the shut-off valves. (See step 2 in "4.2.2 To remove the hydro module from the unit" [▶ 6].)

2 Close the shut-off valves by turning the lever handles.



3 Remove the lower hydro module cover. (See step 5 in "4.2.2 To remove the hydro module from the unit" [▶ 6].)

4 Drain remaining water and brine from the hydro module.



a Water drain valve
b Brine drain valve

NOTICE

Ensure that no brine or water can fall into the switch box of the hydro module.

5 Perform the remaining steps as described in "4.2.2 To remove the hydro module from the unit" [▶ 6].

4.2.3 To close the indoor unit

1 If applicable, reinstall the left side panel.

2 If applicable, reinsert the hydro module.

3 If applicable, close the cover of the main switch box and reinstall the front panel.

4 Close the cover of the installer switch box.

5 Reconnect the cables to the user interface panel.

6 Reinstall the user interface panel.

7 Reinstall the top panel.

NOTICE

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

4.3 Mounting the indoor unit

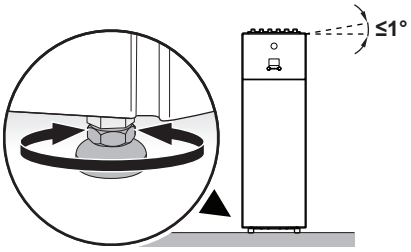
4.3.1 To install the indoor unit

1 Lift the indoor unit from the pallet and place it on the floor. 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" [▶ 9].

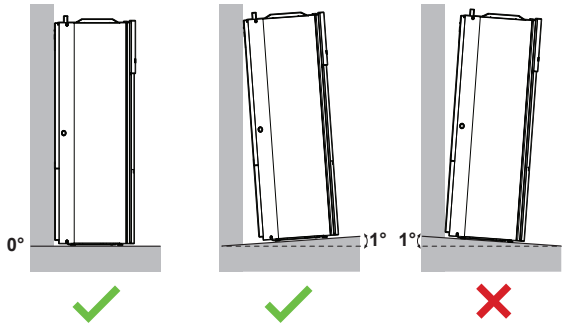
3 Slide the unit into position.

4 Adjust the height of the 4 levelling feet of the outer frame to compensate for floor irregularities. The maximum allowed deviation is 1°.



NOTICE

Do NOT tilt the unit forwards:



NOTICE

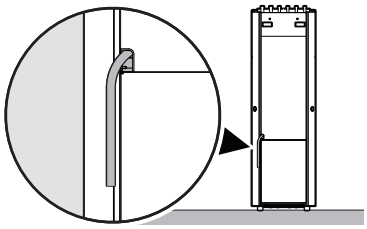
To avoid structural damage on unit, ONLY move the unit when levelling feet are at their lowest position.

NOTICE

For optimum sound reduction, carefully check if there is no gap between the bottom frame and the floor.

4.3.2 To connect the drain hose to the drain

Condensate can form inside the unit during cooling operation or with low brine temperatures. The top and backup heater drain pans are connected to a drain hose inside the unit. You must connect the drain hose to an appropriate drain according to the applicable legislation. The drain hose is routed through the rear panel, towards the right side of the unit.



5 Piping installation

5.1 Preparing piping

WARNING

It is the responsibility of the installer to ensure the compatibility of field piping with the used anti-freeze fluid in the brine circuit. Do NOT use Zn-coated piping, as this may lead to excessive corrosion. See also "5.2.4 To fill the brine circuit" [▶ 10].

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.

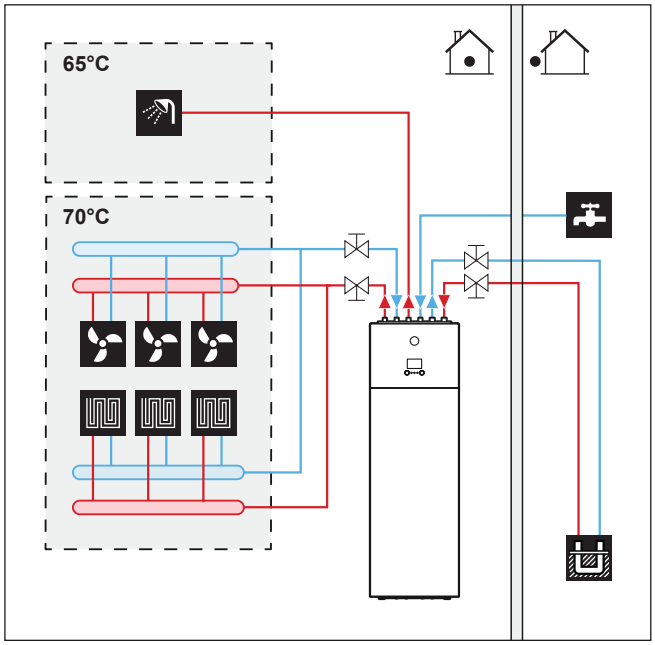
NOTICE

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

- **Fluid pressure – Domestic hot water tank.** The maximum fluid pressure of the domestic hot water tank is 10 bar (=1.0 MPa), and must be in accordance with the applicable legislation. Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded (see "5.3.1 To connect the water piping" [▶ 11]). The minimum fluid pressure to operate is 1 bar (=0.1 MPa).
- **Fluid pressure – Space heating and brine circuit.** The maximum fluid pressure of the space heating and brine circuit is 3 bar (0.3 MPa).
- **Fluid 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



5.1.1 To check the water volume and flow rate of the space heating circuit and brine circuit

Minimum water volume

Check that the total water volume per circuit in the installation is minimum 20 litre, the internal water volume of the indoor unit NOT included.

INFORMATION

If a minimum heating load of 1 kW can be guaranteed and setting [4.B] `Space heating/cooling > Overshoot` (overview field setting [9-04]) is 4°C, the minimum water volume can be lowered to 10 litre.

INFORMATION

In critical processes, or in rooms with a high heat load, extra water might be required.

NOTICE

When circulation in each space heating/cooling loop is controlled by remotely controlled valves, it is important that the minimum water volume is guaranteed, even if all of the valves are closed.

Minimum flow rate

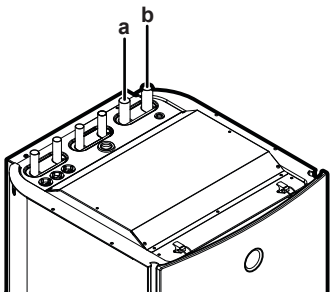
Minimum required flow rate	
Heat pump operation	No minimum required flow
Cooling operation	10 l/min
Backup heater operation	No minimum required flow during heating

5.2 Connecting the brine piping

5.2.1 To connect the brine piping

NOTICE

Do NOT use excessive force when connecting the field piping and make sure the piping is aligned properly. Deformation of the piping can cause malfunctioning of the unit.



a Brine OUT (Ø28 mm)
b Brine IN (Ø28 mm)

NOTICE

To facilitate service and maintenance, it is recommended to install shut-off valves as close as possible to the inlet and outlet of the unit.

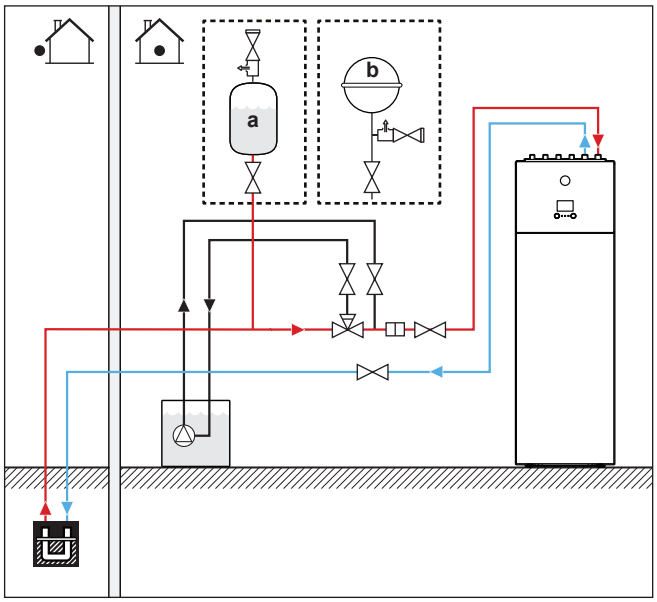
5.2.2 To connect the brine level vessel

The brine level vessel (delivered as accessory) must be installed on the brine side of the heat pump system. A safety valve is included with the vessel. The vessel serves as a visual indicator of the brine level of the system. Air trapped in the system is collected by the vessel, causing the level of brine in the vessel to decrease.

1 Install the brine level vessel as the highest point in the brine circuit on the entering brine piping.
2 Mount the included safety valve on top of the vessel.
3 Install a shut-off valve (field supplied) below the vessel.

NOTICE

If it is not possible to install the brine level vessel as the highest point in the circuit, install an expansion vessel (field supply) and install the safety valve in front of the expansion vessel. Failure to observe this instruction may result in malfunctioning of the unit.



a Brine level vessel (accessory)
b Expansion vessel (field supply, in case brine level vessel cannot be installed as the highest point)

If the level of brine in the vessel is lower than 1/3, fill the vessel with brine:

4 Close the shut-off valve below the vessel.
5 Remove the safety valve on top of the vessel.
6 Top up the vessel with brine until it is approximately 2/3 filled.
7 Reconnect the safety valve.
8 Open the shut-off valve below the vessel.

5.2.3 To connect the brine filling kit

A brine filling kit (field supply or option kit KGSFILL2) can be used to flush, fill and drain the brine circuit of the system.

For installation instructions, see the installation manual of the brine filling kit.

5.2.4 To fill the brine circuit

WARNING

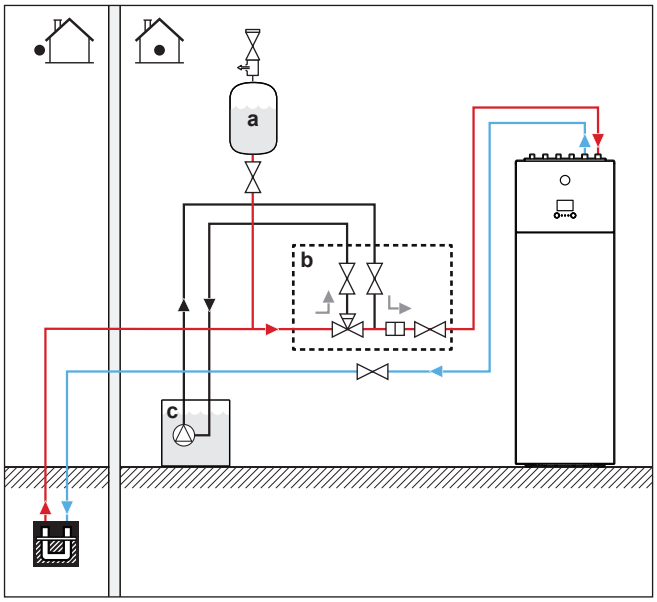
Before, during and after filling carefully check the brine circuit for leakage.

INFORMATION

The materials used in the brine circuit of the unit are chemically resistant to the following anti-freeze fluids:

- 40 mass% propylene glycol
- 29 mass% ethanol
- 35 mass% ethylene glycol

1 Install the brine filling kit. See "5.2.3 To connect the brine filling kit" [▸ 10].
2 Connect a field supplied brine filling system to the 3-way valve.
3 Position the 3-way valve correctly.



a Brine level vessel (accessory)
b Brine filling kit (field supply or option kit KGSFILL2)
c Brine filling system (field supply)

4 Fill the circuit with brine until a pressure of ±2.0 bar (= 200 kPa).
5 Return the 3-way valve to its original position.

NOTICE

A field supplied filling kit may come without a filter that protects components in the brine circuit. In this case, it is the responsibility of the installer to install a filter on the brine side of the system.

WARNING

Temperature of the fluid running through the evaporator can become negative. It MUST be protected against freezing. For more information, see setting [A-04] in "7.4.4 Brine freezing temperature" [▸ 33].

5.2.5 To insulate the brine piping

The piping in the complete brine circuit MUST be insulated to prevent reduction of the heating capacity.

Consider that the brine circuit piping inside the house can/will condensate. Foresee adequate insulation for these pipes.

5.3 Connecting water piping

5.3.1 To connect the water piping

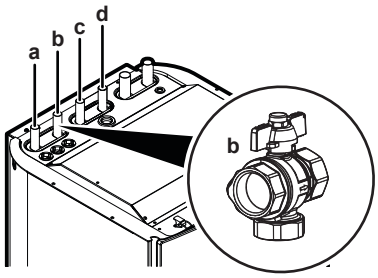
NOTICE

Do NOT use excessive force when connecting the field piping and make sure the piping is aligned properly. Deformation of the piping can cause malfunctioning of the unit.

1 Install the shut off-valve with integrated filter (delivered as accessory) at the space heating/cooling water inlet.

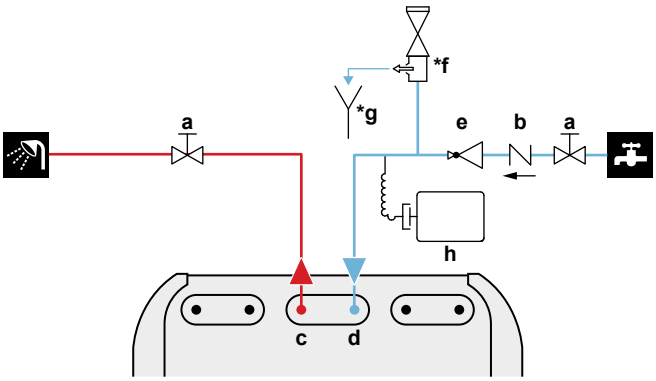
2 Connect the space heating/cooling IN pipe to the shut-off valve and the space heating/cooling OUT pipe to the unit.

3 Connect the domestic hot water IN and OUT pipes to the indoor unit.



a Space heating/cooling water OUT (Ø22 mm)
b Space heating/cooling water IN (Ø22 mm) and shut-off valve with integrated filter (accessory)
c Domestic hot water: hot water OUT (Ø22 mm)
d Domestic hot water: cold water IN (Ø22 mm)

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



a Shut-off valve (recommended)
b Non-return valve (recommended)
c Domestic hot water: hot water OUT (Ø22 mm)
d Domestic hot water: cold water IN (Ø22 mm)
e Pressure reducing valve (recommended)
***f** Pressure relief valve (max. 10 bar (=1.0 MPa)) (mandatory)
***g** Tundish (mandatory)
h Expansion vessel (recommended)

NOTICE

It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic particles from foul heating piping, it is recommended to use a magnetic or cyclone filter, which can remove small particles. Small particles may damage the unit and will NOT be removed by the standard filter of the heat pump system.

NOTICE

About the shut-off valve with integrated filter (delivered as accessory):

- The installation of the valve at the water inlet is mandatory.
- Mind the flow direction of the valve.

NOTICE

Expansion vessel. An expansion vessel (field supply) MUST be installed on the entering piping before the water pump within 10 m of the unit.

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 domestic hot water cylinder.
- To avoid back siphonage, it is recommended to install a non-return valve on the water inlet of the domestic hot water tank in accordance with the applicable legislation. Make sure it is NOT between the pressure relief valve and the DHW 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 domestic hot water tank. Heating of the domestic hot water tank causes water to expand and without pressure relief valve the water pressure inside the tank can rise above the tank 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, overpressure will deform the tank and water leakage may occur. To confirm good operation, regular maintenance is required.

NOTICE

- It is recommended to install shut-off valves to cold water IN and hot water OUT connections. Shut-off valves are field supplied.
- **However, make sure there is no valve between the pressure relief valve (field supply) and the DHW tank.**

NOTICE

Install air purge valves at all local high points.

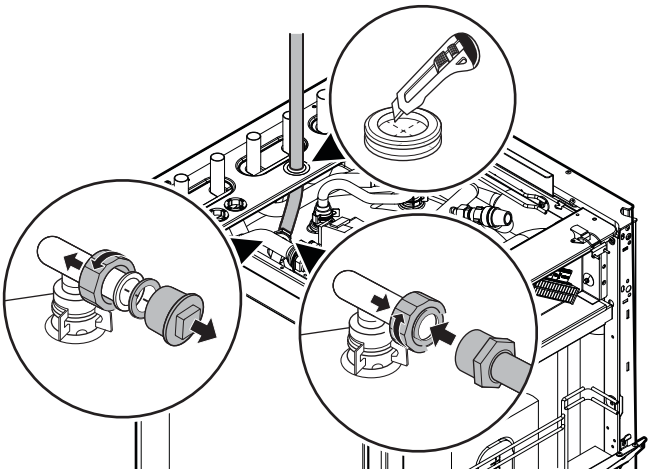
5.3.2 To connect the recirculation piping

Prerequisite: Only required if you need recirculation in your system.

1 Remove the top panel from the unit, see "4.2.1 To open the indoor unit" [▶ 5].

2 Cut out the rubber grommet on top of the unit, and remove the stop. The recirculation connector is located below the space heating/cooling water outlet pipe.

3 Route the recirculation piping through the grommet and connect it to the recirculation connector.



4 Reattach the top panel.

5.3.3 To fill the space heating circuit

To fill the space heating circuit, use a field supply filling kit. Make sure you comply with the applicable legislation.

NOTICE

- Air in the water circuit can cause malfunctioning of the backup heater. During filling, it may not be possible to remove all the air from the circuit. Remaining air will be removed through the automatic air purge valves during the initial operating hours of the system. Additional filling with water afterwards may be required.
- To purge the system, use the special function as described in the chapter "8 Commissioning" [▶ 35]. This function should be used to purge the heat exchanger coil of the domestic hot water tank.

5.3.4 To fill the domestic hot water tank

1 Open every hot water tap in turn to purge air from the system pipe work.

2 Open the cold water supply valve.

3 Close all water taps after all air is purged.

4 Check for water leaks.

5 Manually operate the field-installed pressure relief valve to ensure a free water flow through the discharge pipe.

5.3.5 To check for water leaks

Before insulating the water piping, it is important to detect water leaks, in particular small leaks. Small leaks can easily be overseen, but can cause damage to the unit and surroundings over a longer period of time.

NOTICE

After water piping installation, check all connections for leaks.

5.3.6 To insulate the water piping

The piping in the complete water circuit MUST be insulated to prevent reduction of the heating capacity.

Consider that the space heating piping can condensate during cooling operation. Foresee adequate insulation for these pipes.

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

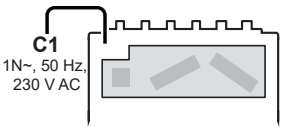
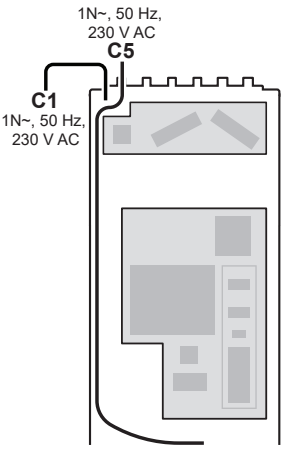
The distance between the high voltage and low voltage cables should be at least 50 mm.

6.1 About electrical compliance

For the models EGSAH/X06+10(U)D▲9W▼(G), the following statement…

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.).

…is valid in the following cases:

#	Power supply[a]	Operation[b]
1	Combined power supply (1N~, 50 Hz, 230 V AC) 	Normal or emergency
2	Split power supply (2×(1N~, 50 Hz, 230 V AC)) 	Emergency

[a] For details of C1 and C5, see "6.4 To connect the main power supply" [▶ 14].

[b] **Normal operation:** backup heater = maximum 3 kW
Emergency operation: backup heater = maximum 6 kW

6.2 Safety device requirements

Power supply

The power supply must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage protector in accordance with the applicable legislation.

Selection and sizing of the wiring should be done in accordance with the applicable legislation based on the information mentioned in the table below.

Make sure that a separate power supply circuit is provided for this unit and that all electrical work is carried out by qualified personnel according to local laws and regulations and this manual. An insufficient power supply capacity or improper electrical construction may lead to electric shocks or fire.

For EGSAH/X06+10(U)D▲9W▼(G):

Power supply	Minimum circuit ampacity	Recommended fuses
1N~ 50 Hz 230 V	29 A	32 A
3N~ 50 Hz 380-415 V	15.5 A	16 A

6.3 Overview of electrical connections for external and internal actuators

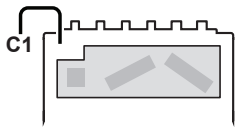
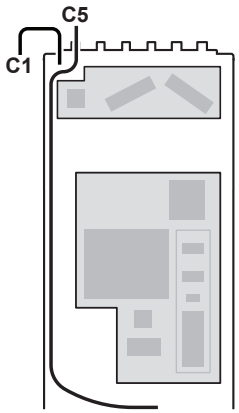
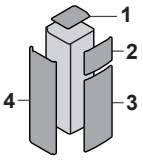
Item	Description
Power supply	See "6.4 To connect the main power supply" [▶ 14].
Remote outdoor sensor	See "6.5 To connect the remote outdoor sensor" [▶ 16].
Shut-off valve	See "6.6 To connect the shut-off valve" [▶ 17].
Electricity meter	See "6.7 To connect the electricity meters" [▶ 17].
Domestic hot water pump	See "6.8 To connect the domestic hot water pump" [▶ 17].
Alarm output	See "6.9 To connect the alarm output" [▶ 18].
Space cooling/heating operation control	See "6.10 To connect the space cooling/heating ON/OFF output" [▶ 18].
Changeover to external heat source control	See "6.11 To connect the changeover to external heat source" [▶ 19].
Power consumption digital inputs	See "6.12 To connect the power consumption digital inputs" [▶ 20].
Safety thermostat	See "6.13 To connect the safety thermostat (normally closed contact)" [▶ 20].
Brine low pressure switch	See "6.14 To connect the brine low pressure switch" [▶ 21].
Thermostat for passive cooling	See "6.15 To connect the thermostat for passive cooling" [▶ 22].
LAN adapter connections	See "6.16 LAN adapter" [▶ 22].

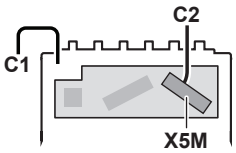
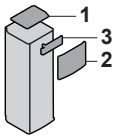
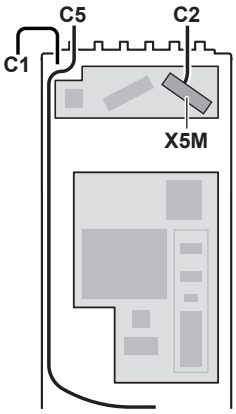
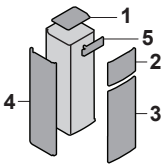
Item	Description
Room thermostat (wired or wireless)	See: ▪ Installation manual of the room thermostat (wired or wireless) ▪ Addendum book for optional equipment
	Wires for wired room thermostat: (3 for cooling/heating operation; 2 for heating only operation)×0.75 mm² Wires for wireless room thermostat: (5 for cooling/heating operation; 4 for heating only operation)×0.75 mm² Maximum running current: 100 mA
	For the main zone: ▪ [2.9] `Control` ▪ [2.A] `Ext thermostat type` For the additional zone: ▪ [3.A] `Ext thermostat type` ▪ [3.9] (read-only) `Control`
Heat pump convector	See: ▪ Installation manual of the heat pump convectors ▪ Addendum book for optional equipment
	Wires: 4×0.75 mm² Maximum running current: 100 mA
	For the main zone: ▪ [2.9] `Control` ▪ [2.A] `Ext thermostat type` For the additional zone: ▪ [3.A] `Ext thermostat type` ▪ [3.9] (read-only) `Control`
Remote indoor sensor	See: ▪ Installation manual of the remote indoor sensor ▪ Addendum book for optional equipment
	Wires: 2×0.75 mm²
	[9.B.1]=2 (`External sensor` = `Room`) [1.7] `Room sensor offset`
Current sensors	See the installation manual of the current sensors.
	Wires: 3×2. Use part of the cable (40 m) delivered as accessory.
	[9.9.1]=3 (`Power consumption control` = `Current sensor`) [9.9.E] `Current sensor offset`

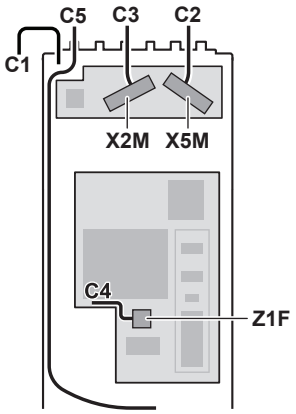
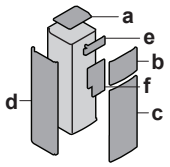
Item	Description
Human Comfort Interface	See: ▪ Installation and operation manual of the Human Comfort Interface ▪ Addendum book for optional equipment
	Wires: 2×(0.75~1.25 mm²) Maximum length: 500 m
	[2.9] `Control` [1.6] `Room sensor offset`

6.4 To connect the main power supply

Use one of the following layouts to connect the power supply (for details of C1~C5, see below the table):

#	Layout	Open the unit[a]
1	Single cable power supply (= combined power supply)  **C1**: Power supply for the backup heater, and the rest of the unit (1N~ or 3N~)	Not necessary (connection to factory-mounted cable outside of the unit)
2	Dual cable power supply (= split power supply) **Note:** This is for example needed for installations in Germany.  **C1**: Power supply for the backup heater (1N~ or 3N~) **C5**: Power supply for the rest of the unit (1N~)	

#	Layout	Open the unit[a]
3	Single cable power supply (= combined power supply) + Preferential kWh rate power supply without separate normal kWh rate power supply[b]  **C1**: Preferential kWh rate power supply (1N~ or 3N~) **C2**: Preferential kWh rate power supply contact	
4	Dual cable power supply (= split power supply) + Preferential kWh rate power supply without separate normal kWh rate power supply[b]  **C1**: Preferential kWh rate power supply for the backup heater (1N~ or 3N~) **C2**: Preferential kWh rate power supply contact **C5**: Preferential kWh rate power supply for the rest of the unit (1N~)	
5	Single cable power supply (= combined power supply) + Preferential kWh rate power supply with separate normal kWh rate power supply[b] **NOT ALLOWED**	—

#	Layout	Open the unit[a]
6	Dual cable power supply (= split power supply) + Preferential kWh rate power supply with separate normal kWh rate power supply[b]  **C1**: Normal kWh rate power supply for the backup heater (1N~ or 3N~) **C2**: Preferential kWh rate power supply contact **C3**: Separate normal kWh rate power supply for the hydro (1N~) **C4**: Connection of X11Y **C5**: Preferential kWh rate power supply for the compressor (1N~)	

[a] See "4.2.1 To open the indoor unit" [▶ 5].
[b] Types of preferential kWh rate power supply:

INFORMATION

Some types of preferential kWh rate power supply require a separate normal kWh rate power supply to the indoor unit. This is required in the following cases:

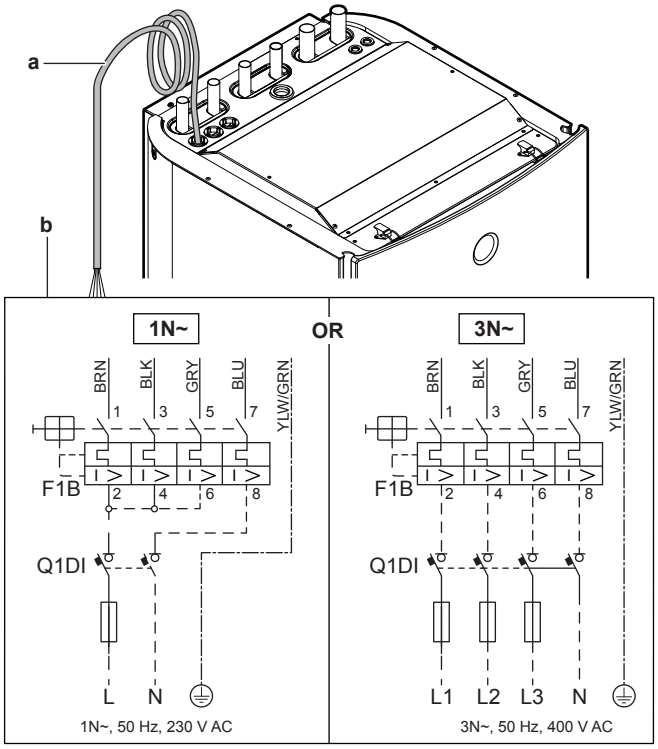
- if the preferential kWh rate power supply is interrupted when active, OR
- if no power consumption of the indoor unit is allowed at the preferential kWh rate power supply when active.

Detail C1: Factory-mounted power supply cable

Wires: 3N+GND, OR 1N+GND

Maximum running current: Refer to name plate on unit.

Connect the factory-mounted power supply cable to a 1N~ or 3N~ power supply.



a Factory-mounted power supply cable
b Field wiring
F1B Overcurrent fuse (field supply). Recommended fuse for 1N~: 4-pole, 32 A fuse, C curve. Recommended fuse for 3N~: 4-pole, 16 A fuse, C curve.
Q1DI Earth leakage circuit breaker (field supply)

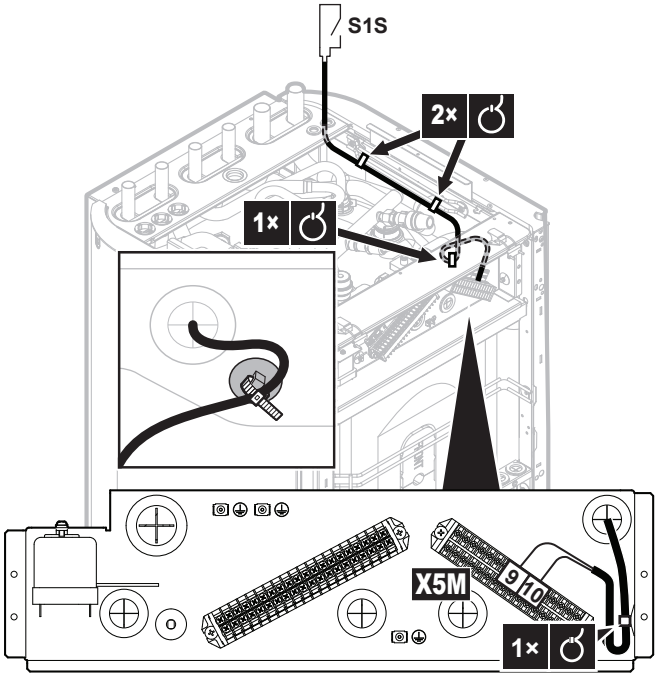
Detail C2: Preferential kWh rate power supply contact

Wires: 2×(0.75~1.25 mm²)

Maximum length: 50 m.

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.

Connect the preferential kWh rate power supply contact (S1S) as follows.



INFORMATION

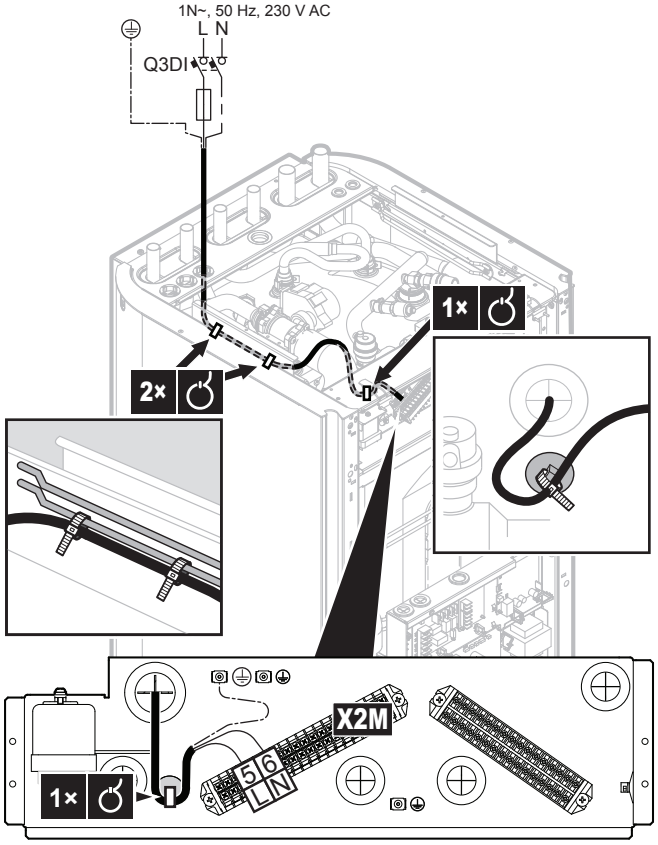
The preferential kWh rate power supply contact is connected to the same terminals (X5M/9+10) as the safety thermostat. Thus, the system can have EITHER preferential kWh rate power supply OR a safety thermostat.

Detail C3: Separate normal kWh rate power supply

Wires: 1N+GND

Maximum running current: 6.3 A

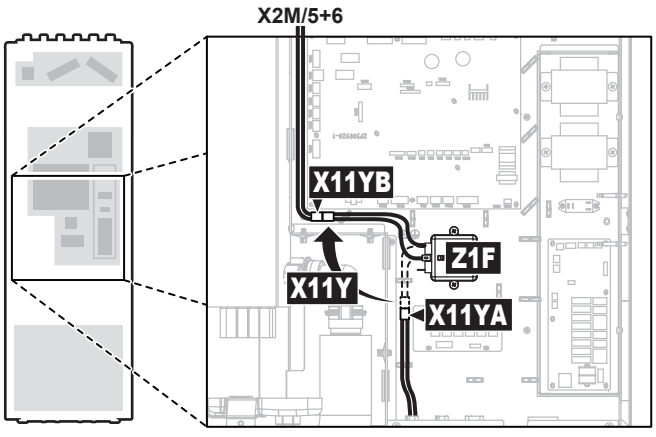
Connect the separate normal kWh rate power supply as follows:



Detail C4: Connection of X11Y

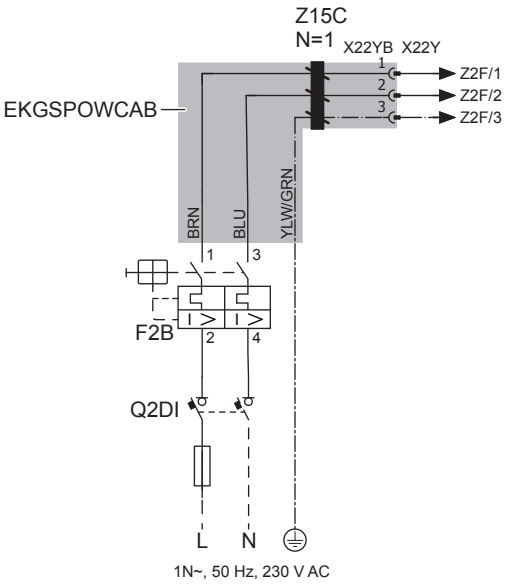
Factory-mounted cables.

Disconnect X11Y from X11YA, and connect it to X11YB.



Detail C5: Option kit EKGSPOWCAB

Install the option kit EKGSPOWCAB (= power cable for split power supply). For installation instructions, see the installation manual of the option kit.



F2B Overcurrent fuse (field supply). Recommended fuse: 2-pole, 16 A fuse, C curve.

Q2DI Earth leakage circuit breaker (field supply)

Configuration power supply

[9.3] `Backup heater`

[9.8] `Benefit kWh power supply`

6.5 To connect the remote outdoor sensor

The remote outdoor sensor (delivered as accessory) measures the outdoor ambient temperature.

INFORMATION

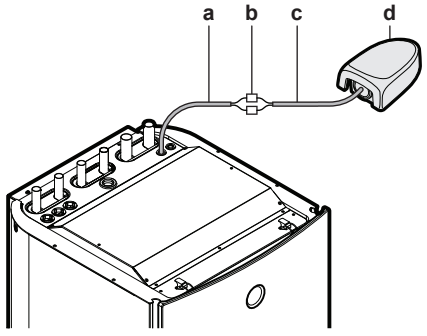
If the desired leaving water temperature is weather dependent, the full time outdoor temperature measurement is important.

Remote outdoor sensor + cable (40 m) delivered as accessory

[9.B.2] `Ext. amb. sensor offset` (= overview field setting [2-0B])

[9.B.3] `Averaging time` (= overview field setting [1-0A])

1 Connect the external temperature sensor cable to the indoor unit.



a Factory-mounted cable

b Splicing connectors (field supply)

c Remote outdoor sensor cable (40 m)(delivered as accessory)
d Remote outdoor sensor (delivered as accessory)

2 Fix the cable with cable ties to the cable tie mountings.

3 Install the remote outdoor sensor outside as described in the installation manual of the sensor (delivered as accessory).

6.6 To connect the shut-off valve

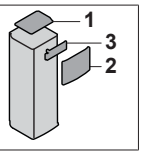
INFORMATION

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 Maximum running current: 100 mA 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]):

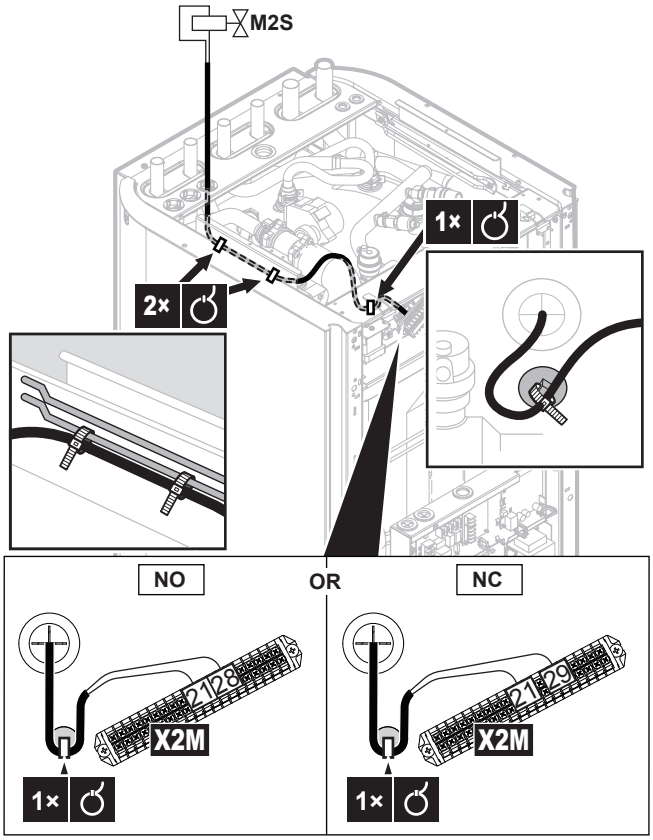
1	Top panel
2	User interface panel
3	Installer switch box cover



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.

6.7 To connect the electricity meters

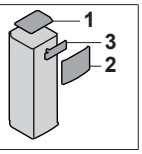
	Wires: 2 (per meter)×0.75 mm² Electricity meters: 12 V DC pulse detection (voltage supplied by PCB)
	[9.A] `Energy metering`

INFORMATION

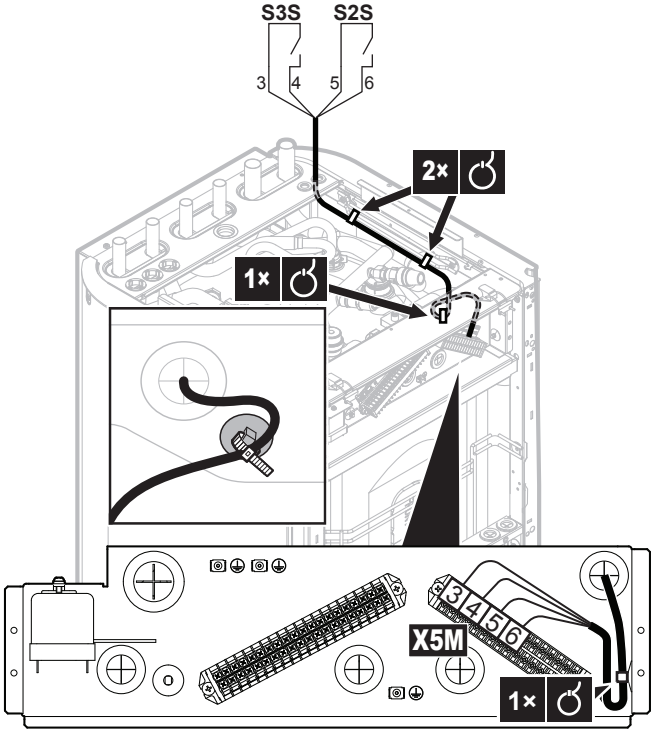
In case of an electricity meter with transistor output, check the polarity. The positive polarity MUST be connected to X5M/6 and X5M/4; the negative polarity to X5M/5 and X5M/3.

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

1	Top panel
2	User interface panel
3	Installer switch box cover



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



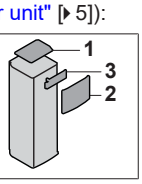
3 Fix the cable with cable ties to the cable tie mountings.

6.8 To connect the domestic hot water pump

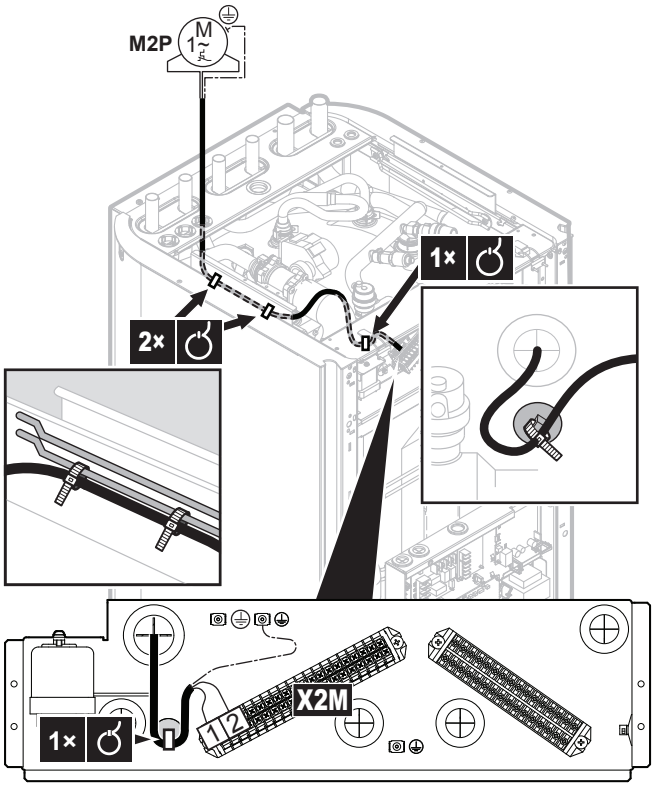
	Wires: (2+GND)×0.75 mm² DHW pump output. Maximum load: 2 A (inrush), 230 V AC, 1 A (continuous)
	[9.2.2] `DHW pump` [9.2.3] `DHW pump schedule`

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

1	Top panel
2	User interface panel
3	Installer switch box cover



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



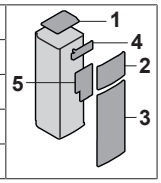
3 Fix the cable with cable ties to the cable tie mountings.

6.9 To connect the alarm output

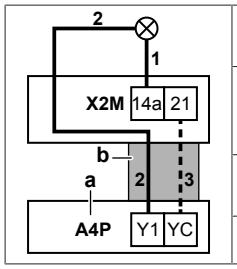
	Wires: (2+1)×0.75 mm² Maximum load: 0.3 A, 250 V AC
	[9.D] `Alarm output`

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

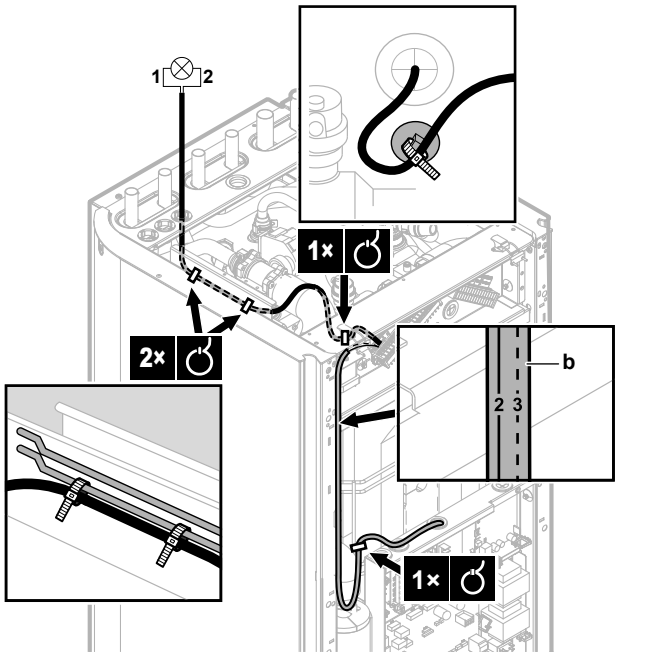
1	Top panel
2	User interface panel
3	Front panel
4	Installer switch box cover
5	Main switch box cover

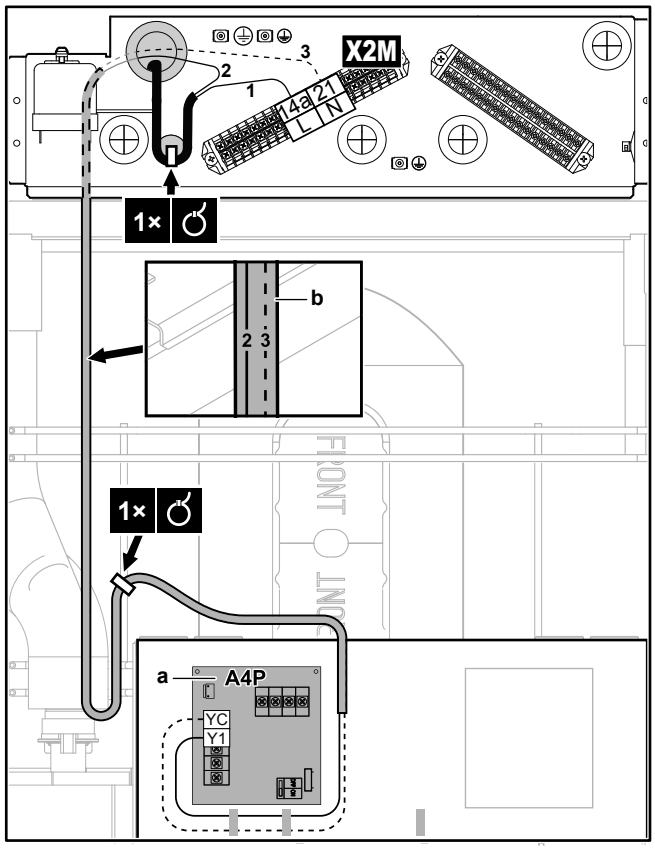


2 Connect the alarm output cable to the appropriate terminals as shown in the illustration below. Make sure to put wires 2 and 3 between the installer switch box and main switch box in a cable sleeve (field supply) so that they are double insulated.



1+2	Wires connected to the alarm output
3	Wire between the installer switch box and main switch box
a	Installation of EKRP1HBAA is required.
b	Cable sleeve (field supply)





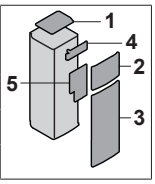
3 Fix the cable with cable ties to the cable tie mountings.

6.10 To connect the space cooling/ heating ON/OFF output

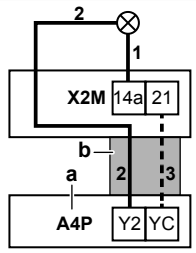
	Wires: (2+1)×0.75 mm² Maximum load: 3.5 A, 250 V AC
	—

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

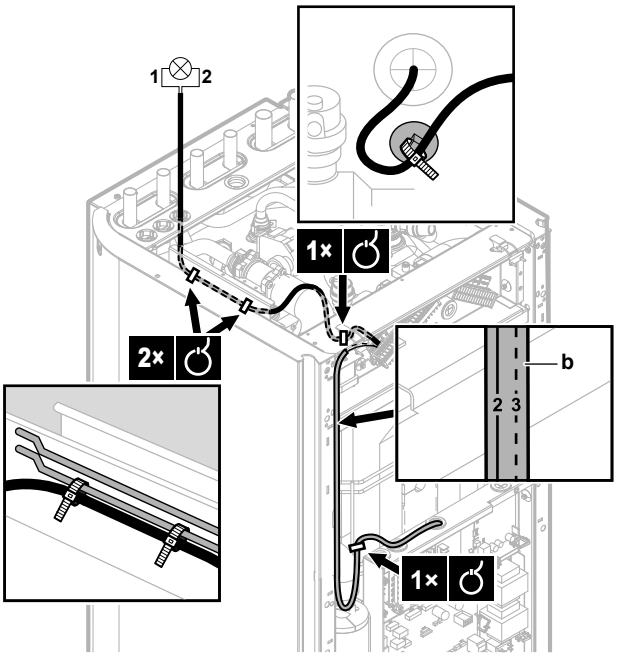
1	Top panel
2	User interface panel
3	Front panel
4	Installer switch box cover
5	Main switch box cover

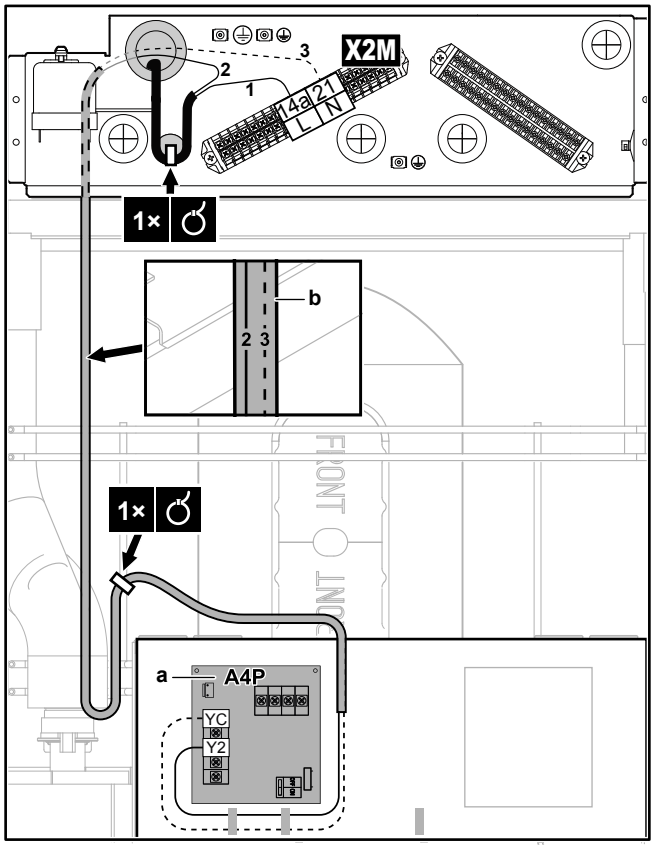


2 Connect the alarm output cable to the appropriate terminals as shown in the illustration below. Make sure to put wires 2 and 3 between the installer switch box and main switch box in a cable sleeve (field supply) so that they are double insulated.



1+2	Wires connected to the alarm output
3	Wire between the installer switch box and main switch box
a	Installation of EKRP1HBAA is required.
b	Cable sleeve (field supply)





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

6.11 To connect the changeover to external heat source

INFORMATION

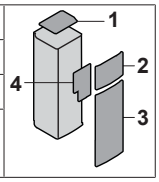
Bivalent is only possible in case of 1 leaving water temperature zone with:

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

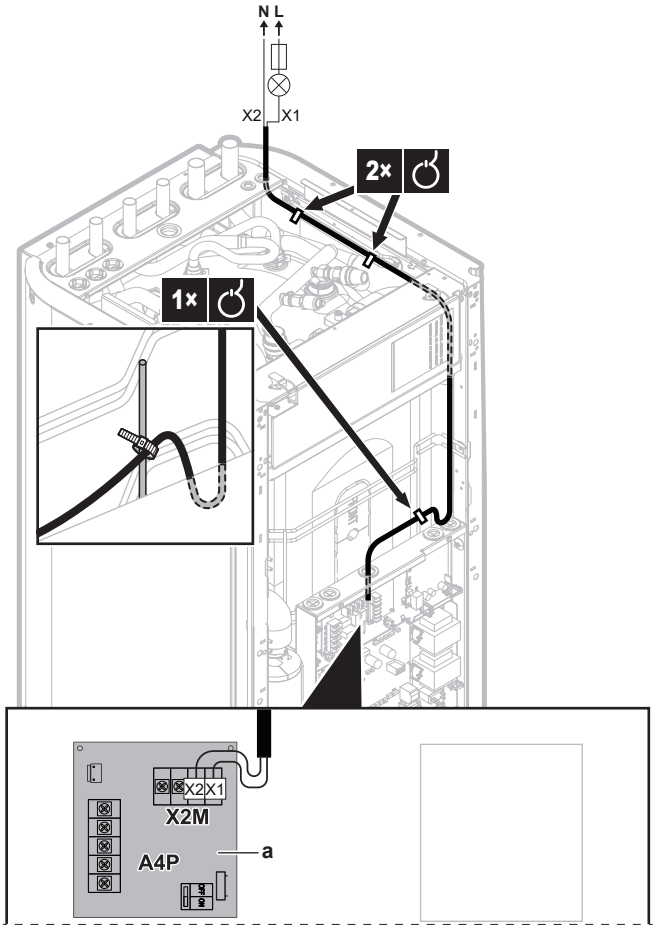
	Wires: 2×0.75 mm² Maximum load: 0.3 A, 250 V AC Minimum load: 20 mA, 5 V DC
	[9.C] `Bivalent`

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

1	Top panel
2	User interface panel
3	Front panel
4	Main switch box cover



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



a Installation of EKRP1HBAA is required.

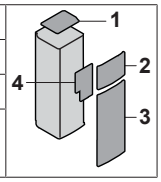
3 Fix the cable with cable ties to the cable tie mountings.

6.12 To connect the power consumption digital inputs

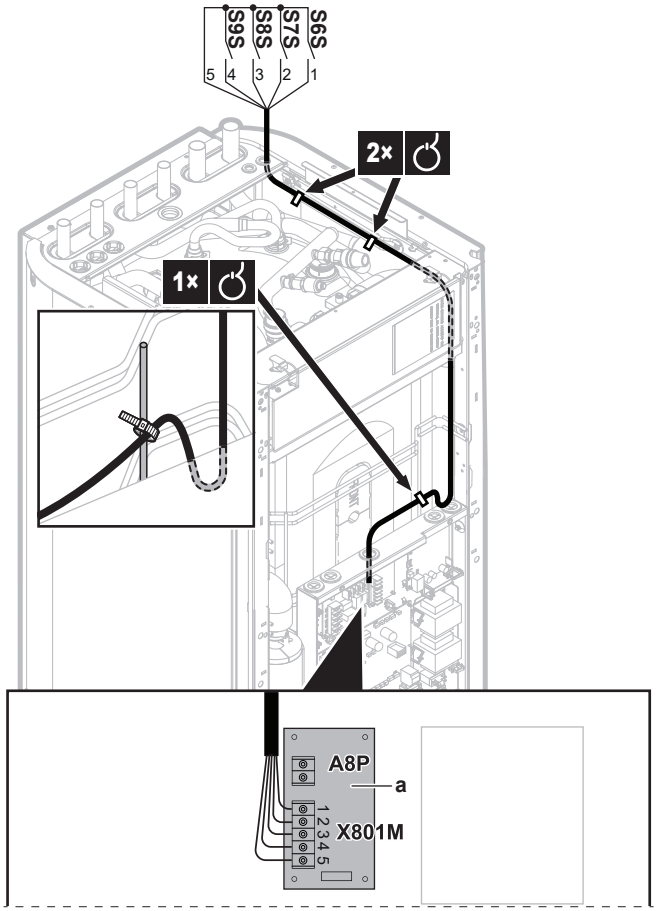
	Wires: 2 (per input signal)×0.75 mm² Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)
	[9.9] `Power consumption control`.

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

1	Top panel
2	User interface panel
3	Front panel
4	Main switch box cover



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



a Installation of EKRP1AHTA is required.

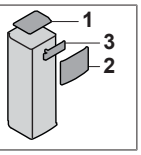
3 Fix the cable with cable ties to the cable tie mountings.

6.13 To connect the safety thermostat (normally closed contact)

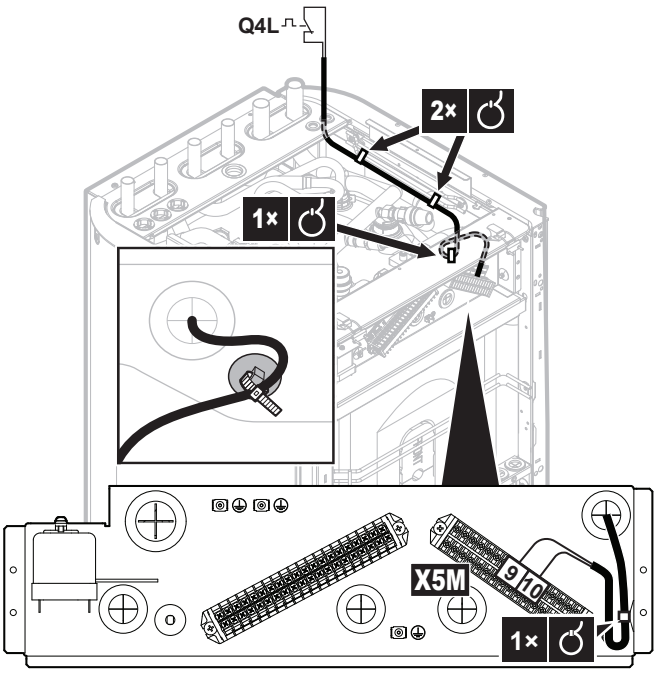
	Wires: 2×0.75 mm² Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)
	[9.8.1]=3 (`Benefit kWh power supply` = `Safety thermostat`)

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

1	Top panel
2	User interface panel
3	Installer switch box cover



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



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

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.

INFORMATION

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

INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/9+10) as the safety thermostat. Thus, the system can have EITHER preferential kWh rate power supply OR a safety thermostat.

6.14 To connect the brine low pressure switch

Depending on the applicable legislation, you might have to install a brine low pressure switch (field supply).

NOTICE

Mechanical. We recommend to use a mechanical brine low pressure switch. If an electrical brine low pressure switch is used, capacitive currents might disturb the flow switch operation causing an error on the unit.

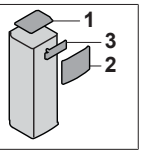
NOTICE

Before disconnecting. If you want to remove or disconnect the brine low pressure switch, first set [C-0B]=0 (brine low pressure switch not installed). If not, this causes an error.

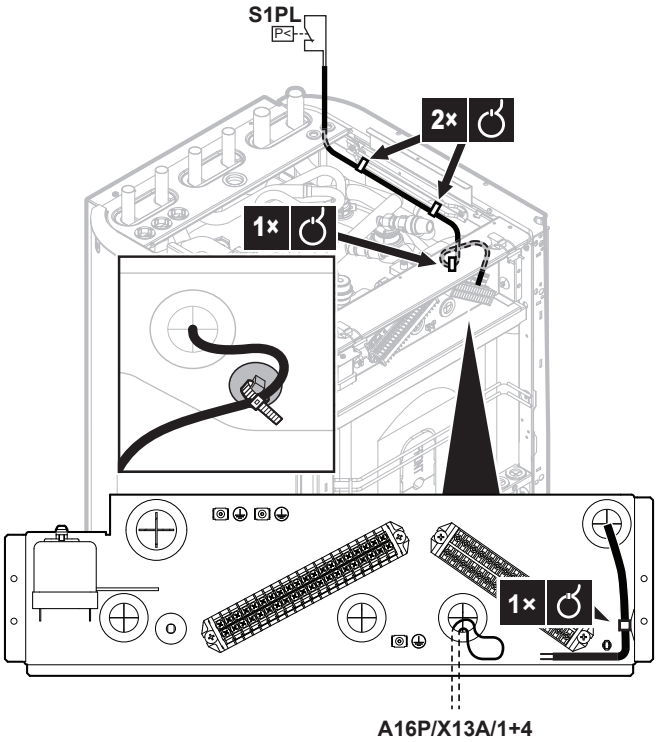
	Wires: 2×0.75 mm²
	Set overview field setting [C-0B]=1. ▪ If [C-0B]=0 (brine low pressure switch not installed), the unit does not check the input. ▪ If [C-0B]=1 (brine low pressure switch installed), the unit checks the input. If the input is "open", error EJ-01 occurs.

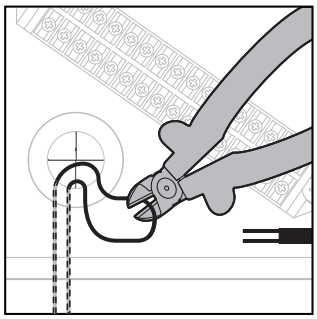
1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

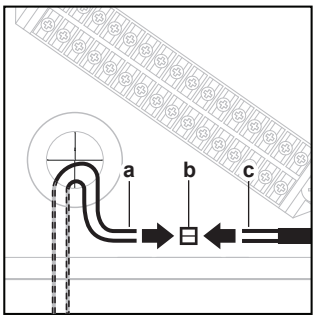
1	Top panel
2	User interface panel
3	Installer switch box cover



2 Connect the brine low pressure switch cable as shown in the illustration below.







a Cut loop wires coming from A16P/X13A/1+4 (factory mounted)
b Splicing connectors (field supply)
c Wires from the brine low pressure switch cable (field supply)

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

6.15 To connect the thermostat for passive cooling

INFORMATION

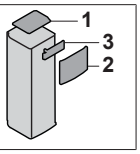
Restriction: Passive cooling is only possible for:

- Heating only models
- Brine temperatures between 0 and 20°C

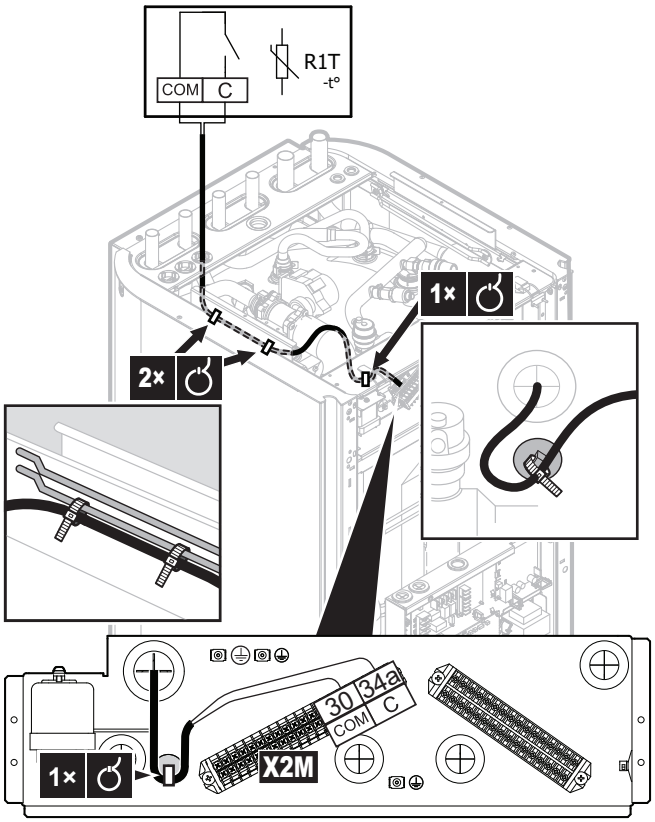
	Wires: 2×0.75 mm²
	—

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

1	Top panel
2	User interface panel
3	Installer switch box cover



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



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

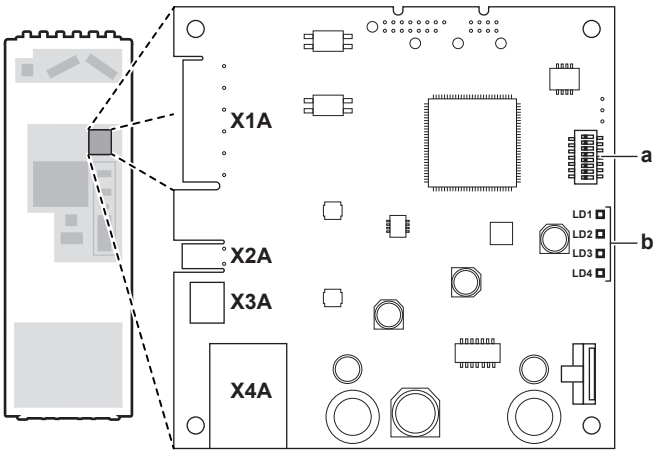
6.16 LAN adapter

6.16.1 About the LAN adapter

The indoor unit contains an integrated LAN adapter (model: BRP069A61), which allows for:

- App control of the heat pump system
- Integration of the heat pump system in a Smart Grid application

Components: PCB



X1A~X4A Connectors
a DIP switch
b Status LEDs

Status LEDs

LED	Description	Behaviour
LD1 ♡	Indication of power to the adapter, and of normal operation.	▪ LED flashing: normal operation. ▪ LED NOT flashing: no operation.
LD2 品	Indication of TCP/IP communication with the router.	▪ LED ON: normal communication. ▪ LED flashing: communication problem.
LD3 **P1P2**	Indication of communication with the indoor unit.	▪ LED ON: normal communication. ▪ LED flashing: communication problem.
LD4	Indication of Smart Grid activity.	▪ LED ON: Smart Grid functionality of the indoor unit is controlled by the LAN adapter. ▪ LED OFF: system operating in normal operation conditions (space heating/cooling, production of domestic hot water), or running in the "Normal operation"/"Free running" Smart Grid operation mode.

System requirements

The requirements posed on the heat pump system depend on the LAN adapter application/system layout.

App control

Item	Requirement
LAN adapter software	It is recommended to ALWAYS keep the LAN adapter software up-to-date.
Unit control method	On the user interface, make sure to set [2.9]=2 (`Control = Room thermostat`)

Smart Grid application

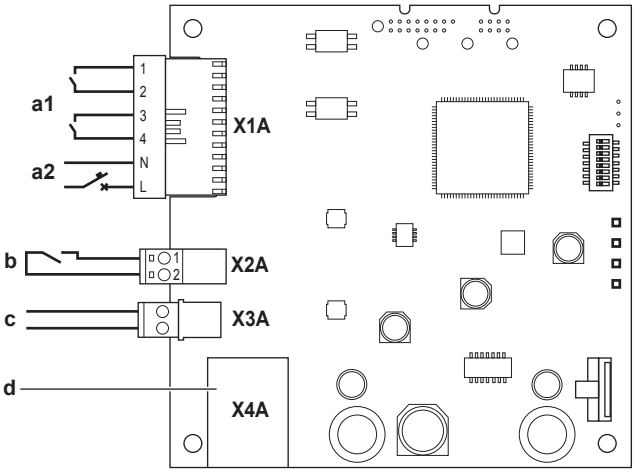
Item	Requirement
LAN adapter software	It is recommended to ALWAYS keep the LAN adapter software up-to-date.
Unit control method	On the user interface, make sure to set [2.9]=2 (`Control = Room thermostat`)
Domestic hot water settings	To allow for energy buffering in the domestic hot water tank, on the user interface, make sure to set [9.2.1]=4 (`Domestic hot water = Integrated`).
Power consumption control settings	On the user interface, make sure to set: ▪ [9.9.1]=1 (`Power consumption control = Continuous`) ▪ [9.9.2]=1 (`Type = kW`)

INFORMATION

For instructions on how to perform a software update, see the installer reference guide.

6.16.2 Overview of electrical connections

Connectors



a1 To solar inverter/energy management system
a2 230 V AC detection voltage
b To electricity meter
c Factory-mounted cable to indoor unit (P1/P2)
d To router (via the factory-mounted Ethernet cable outside of the unit)

Connections

Field-supplied cables:

Connection	Cable section	Wires	Maximum cable length
Router (via the factory-mounted Ethernet cable outside of the unit, which is coming from X4A)	—	—	50/100 m[(a)]
Electricity meter (X2A)	0.75~1.25 mm²	2[(b)]	100 m
Solar inverter/ energy management system + 230 V AC detection voltage (X1A)	0.75~1.5 mm²	Depends on application[(c)]	100 m

[(a)] Ethernet cable: respect the maximum allowed distance between LAN adapter and router, which is 50 m in case of Cat5e cables, and 100 m in case of Cat6 cables.
[(b)] These wires MUST be sheathed. Recommended strip length: 6 mm.
[(c)] All wiring to X1A MUST be H05VV. Required strip length: 7 mm. For more information, see "6.16.5 Solar inverter/energy management system" [▶24].

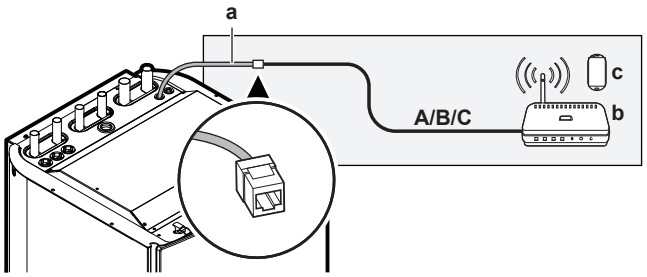
6.16.3 Router

Make sure the LAN adapter can be connected via a LAN connection.

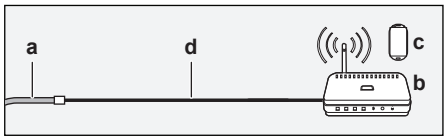
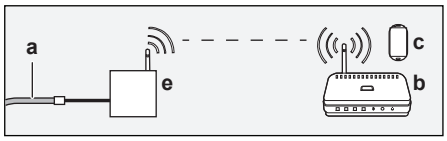
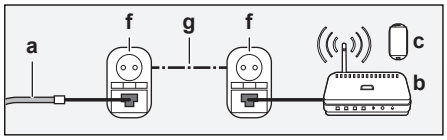
The minimum category for the Ethernet cable is Cat5e.

To connect the router

Use one of the following ways (A, B or C) to connect the router:



a Factory-mounted Ethernet cable
b Router (field supply)
c Smartphone with app control (field supply)

#	Router connection
A	**Wired**  **d** Field-supplied Ethernet cable: ▪ Minimum category: Cat5e ▪ Maximum length: ▪ 50 m in case of Cat5e cables ▪ 100 m in case of Cat6 cables
B	**Wireless**  **e** Wireless bridge (field supply)
C	**Power line**  **f** Power line adapter (field supply) **g** Power line (field supply)

INFORMATION

It is recommended to connect the LAN adapter to the router directly. Depending on the wireless bridge or power line adapter model, the system might not function properly.

NOTICE

To prevent communication problems due to cable breakdown, do NOT exceed the minimum bend radius of the Ethernet cable.

6.16.4 Electricity meter

If the LAN adapter is connected to an electricity meter, make sure it is an **electrical pulse meter**.

Requirements:

Item		Specification
Type		Pulse meter (5 V DC pulse detection)
Possible number of pulses		▪ 100 pulse/kWh ▪ 1000 pulse/kWh
Pulse duration	Minimum On time	10 ms
	Minimum OFF time	100 ms
Measurement type		Depends on the installation: ▪ 1N~ AC meter ▪ 3N~ AC meter (balanced loads) ▪ 3N~ AC meter (unbalanced loads)

INFORMATION

It is required that the electricity meter has a pulse output that can measure the total energy injected INTO the grid.

Suggested electricity meters

Phase	ABB reference
1N~	2CMA100152R1000 B21 212-100
3N~	2CMA100166R1000 B23 212-100

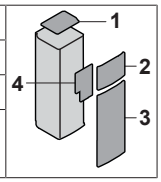
To connect the electricity meter

NOTICE

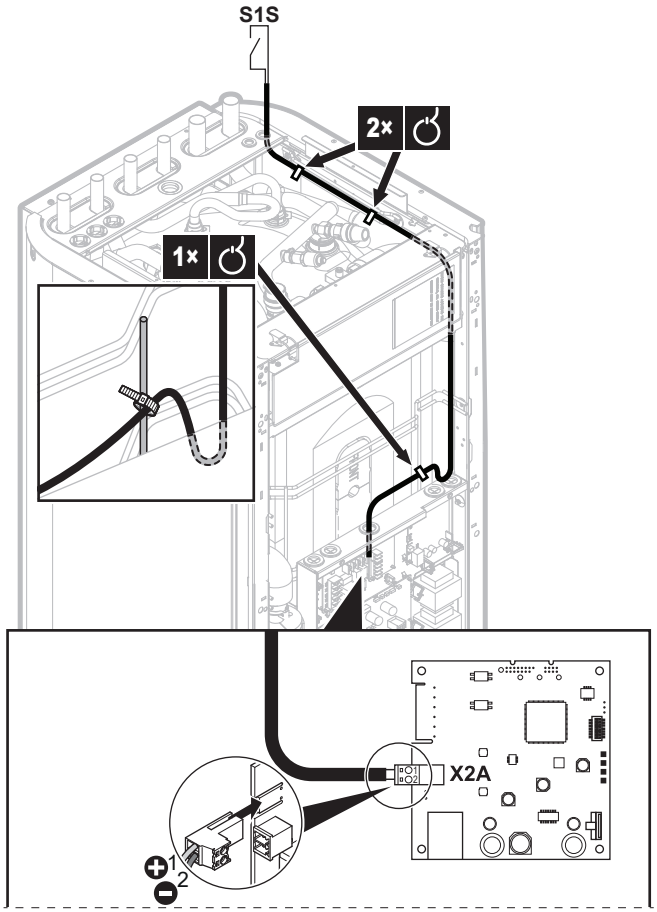
To prevent damage to the PCB, it is NOT allowed to connect the electrical wiring with the connectors already connected to the PCB. First connect the wiring to the connectors, then connect the connectors to the PCB.

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

1	Top panel
2	User interface panel
3	Front panel
4	Main switch box cover



2 Connect the electricity meter to LAN adapter terminals X2A/1+2.



INFORMATION

Mind the polarity of the cable. The positive wire MUST be connected to X2A/1; the negative wire to X2A/2.

WARNING

Make sure to connect the electricity meter in the correct direction, so that it measures the total energy injected INTO the grid.

6.16.5 Solar inverter/energy management system

INFORMATION

Before installation, confirm that the solar inverter/energy management system is equipped with the digital outputs required to connect it to the LAN adapter. For more information, see the installer reference guide.

Connector X1A is for the connection of the LAN adapter to the digital outputs of a solar inverter/energy management system, and allows for the integration of the heat pump system in a Smart Grid application.

X1A/N+L supply a 230 V AC detection voltage to the input contact of X1A. The 230 V AC detection voltage enables the detection of the state (open or close) of the digital inputs and does NOT supply power to the rest of the LAN adapter PCB.

Make sure X1A/N+L are protected by a fast acting circuit breaker (rated current 100 mA~6 A, type B).

The rest of the wiring to X1A differs depending on the digital outputs available on the solar inverter/energy management system and/or on the Smart Grid operation modes that you want the system to run in.

Smart Grid operation mode	SG0 (X1A/1+2)	SG1 (X1A/3+4)
Normal operation/Free running NO Smart Grid application	Open	Open
Recommended ON Energy buffering in the domestic hot water tank and/or the room, WITH power limitation.	Closed	Open
Forced OFF Deactivation of unit and electrical heater operation in case of high energy tariffs.	Open	Closed
Forced ON Energy buffering in the domestic hot water tank and/or the room, WITHOUT power limitation.	Closed	Closed

For more information, see the installer reference guide.

To connect the solar inverter/energy management system

NOTICE

To prevent damage to the PCB, it is NOT allowed to connect the electrical wiring with the connectors already connected to the PCB. First connect the wiring to the connectors, then connect the connectors to the PCB.

INFORMATION

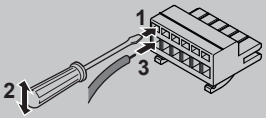
How the digital inputs are connected to X1A depends on the Smart Grid application. The connection described in the instructions below is for the system to run in the "Recommended ON" operation mode. For more information, see the installer reference guide.

WARNING

Make sure X1A/N+L are protected by a fast acting circuit breaker (rated current 100 mA~6 A, type B).

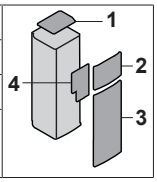
WARNING

When connecting the wiring to LAN adapter terminal X1A, make sure each wire is securely fastened to the appropriate terminal. Use a screwdriver to open the wire clamps. Make sure the bare copper wire is fully inserted into the terminal (bare copper wire CANNOT be visible).



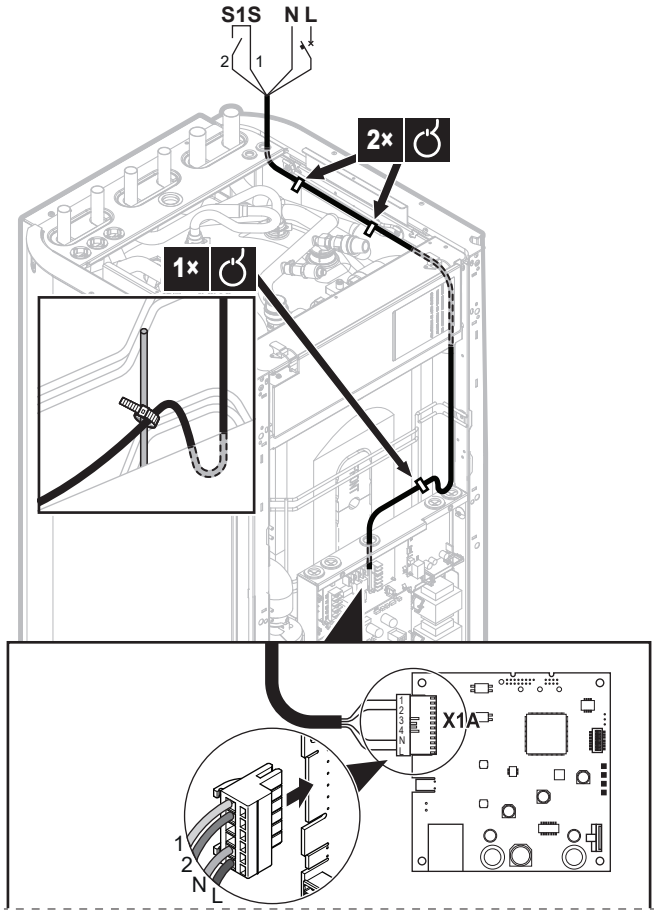
1 Open the following (see "4.2.1 To open the indoor unit" [▶ 5]):

1	Top panel
2	User interface panel
3	Front panel
4	Main switch box cover



2 Provide a detection voltage to X1A/N+L. Make sure X1A/N+L are protected by a fast acting circuit breaker (100 mA~6 A, type B).

3 For the system to run in the "Recommended ON" operation mode (Smart Grid application), connect the digital outputs of the solar inverter/energy management system to LAN adapter digital inputs X1A/1+2 LAN.



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" [▶ 26].

- **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.	**#** For example: [2.9]
Accessing settings via the code in the **overview field settings**.	**Code** For example: [C-07]

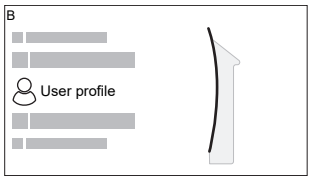
See also:

- "To access the installer settings" [▸ 26]
- "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:

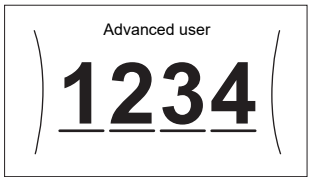
1	Go to [B]: `User profile`. 	
2	Enter the applicable pin code for the user permission level.	—
	▪ Browse through the list of digits and change the selected digit.	
	▪ Move the cursor from left to right.	
	▪ Confirm the pin code and proceed.	

Installer pin code

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

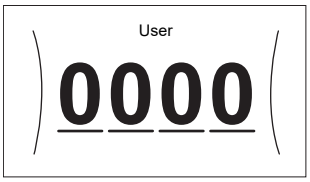
Advanced user pin code

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**.



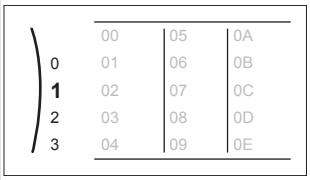
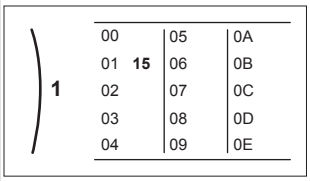
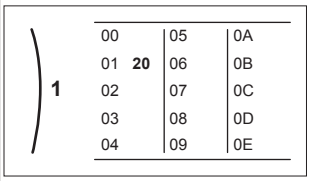
To access the installer settings

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" [▸ 26].	—
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. 	
4	Turn the left dial to select the second part of the setting 	
5	Turn the right dial to modify the value from 15 to 20. 	
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.

Protective functions

The unit is equipped with the following protective functions:

- Room antifrost [2-06]
- Tank disinfection [2-01]

The unit automatically runs the protective functions when necessary. During installation or service, this behaviour is undesired. Therefore, the protective functions can be disabled. For more information, see the Installer reference guide, chapter Configuration.

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. These settings can be changed during initial configuration or via the menu structure [7.2]: `User settings` > `Time/date`.

7.2.3 Configuration wizard: System

Indoor unit type

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

Backup heater type

The backup heater is adapted to be connected to most common European electricity grids. The type of backup heater can be viewed but not changed.

#	Code	Description
[9.3.1]	[E-03]	▪ 4: `9W`

Domestic hot water

The following setting determines if the system can prepare domestic hot water or not, and which tank is used. This setting is read only.

#	Code	Description
[9.2.1]	[E-05][(a)]	▪ `No DHW` (domestic hot water)
	[E-06][(a)]	▪ `Integrated`
	[E-07][(a)]	The backup heater will also be used for domestic hot water heating.

(a) Use the menu structure instead of the overview settings. Menu structure setting [9.2.1] replaces the following 3 overview settings:
- [E-05]: Can the system prepare domestic hot water?
- [E-06]: Is a domestic hot water tank installed in the system?
- [E-07]: What kind of domestic hot water tank is installed?

Emergency

When the heat pump fails to operate, the backup heater 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 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 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]	N/A	▪ 0: `Manual` ▪ 1: `Automatic` ▪ 2: `auto SH reduced/DHW on` ▪ 3: `auto SH reduced/DHW off` ▪ 4: `auto SH normal/DHW off`

INFORMATION

If a heat pump failure occurs and `Emergency` is not set to `Automatic` (setting 1), the following functions will remain active even if the user does NOT confirm emergency operation:

- Room frost protection
- Underfloor heating screed dryout

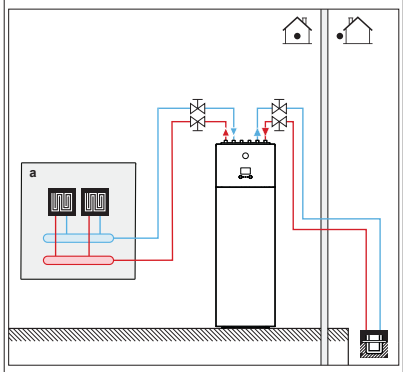
However, the disinfection function will be activated ONLY if the user confirms emergency operation via the user interface.

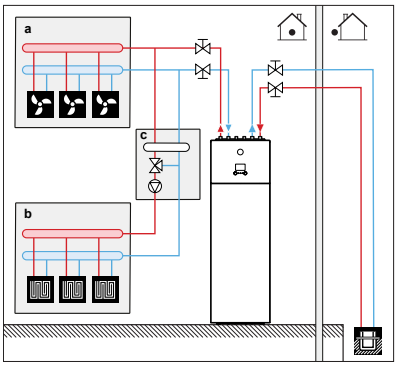
Number of zones

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` Only one leaving water temperature zone:  **a** Main LWT zone

#	Code	Description
[4.4]	[7-02]	▪ 1: Dual zone 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:  **a** Additional LWT zone: Highest temperature **b** Main LWT zone: Lowest temperature **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.

7.2.4 Configuration wizard: Backup heater

The backup heater is adapted to be connected to most common European electricity grids. If the backup heater is available, the voltage and maximum capacity must be set on the user interface.

Backup heater type

The backup heater is adapted to be connected to most common European electricity grids. The type of backup heater can be viewed but not changed.

#	Code	Description
[9.3.1]	[E-03]	▪ 4: 9W

Voltage

Depending on how the backup heater is connected to the grid and what voltage is supplied, the correct value needs to be set. In either configuration, the backup heater will operate in steps of 1 kW.

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

Maximum capacity

During normal operation the maximum capacity is:

- 3 kW for a 230 V, 1N~ unit
- 6 kW for a 400 V, 3N~ unit

The maximum capacity of the backup heater can be limited. The set value depends on the used voltage (see table below) and is then the maximum capacity during emergency operation.

#	Code	Description
[9.3.5]	[4-07][(a)]	0~6 kW when voltage is set to 230 V, 1N~ 0~9 kW when voltage is set to 400 V, 3N~

[(a)] If the value [4-07] is set lower, then the lowest value will be used in all operation modes.

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 ▪ 1: Fancoil unit ▪ 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
0: Underfloor heating	Maximum 55°C
1: Fancoil unit	Maximum 65°C
2: Radiator	Maximum 65°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 ▪ 1: External room thermostat ▪ 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: ▪ Fixed ▪ WD heating, fixed cooling ▪ 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 ▪ 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" [▶ 28].

#	Code	Description
[3.7]	[2-0D]	▪ 0: Underfloor heating ▪ 1: Fancoil unit ▪ 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" [▶ 28].

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

Schedule

Indicates if the desired leaving water temperature is according to a schedule. Also see "7.2.5 Configuration wizard: Main zone" [▶ 28].

#	Code	Description
[3.1]	N/A	▪ 0: No ▪ 1: Yes

7.2.7 Configuration wizard: Tank

Heat up mode

The domestic hot water can be prepared in 3 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: ▪ 0: Reheat only: Only reheat operation is allowed. ▪ 1: Schedule + reheat: The domestic hot water tank is heated according to a schedule and between the scheduled heat up cycles, reheat operation is allowed. ▪ 2: Schedule only: The domestic hot water tank can ONLY be heated according to a 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: 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. 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 ▪ 2°C~40°C

Settings for Schedule only mode and Schedule + reheat mode

Comfort setpoint

Only applicable when domestic hot water preparation is `Schedule only` or `Schedule + reheat`. When programming the schedule, you can make use of the comfort setpoint as a preset value. When you later want to change the storage setpoint, you only have to do it in one place.

The tank will heat up until the **storage comfort temperature** has been reached. It is the higher desired temperature when a storage comfort action is scheduled.

Additionally, a storage stop can be programmed. This feature puts a stop to tank heating even if the setpoint has NOT been reached. Only program a storage stop when tank heating is absolutely undesirable.

#	Code	Description
[5.2]	[6-0A]	`Comfort setpoint`: ▪ 30°C~[6-0E]°C

Eco setpoint

The **storage economic temperature** denotes the lower desired tank temperature. It is the desired temperature when a storage economic action is scheduled (preferably during day).

#	Code	Description
[5.3]	[6-0B]	`Eco setpoint`: ▪ 30°C~min(50,[6-0E])°C

Reheat setpoint

Desired reheat tank temperature, used:

- in `Schedule + reheat` mode, during reheat mode: the guaranteed minimum tank temperature is set by the `Reheat setpoint` minus the reheat hysteresis. If the tank temperature drops below this value, the tank is heated up.
- during storage comfort, to prioritize the domestic hot water preparation. When the tank temperature rises above this value, domestic hot water preparation and space heating/cooling are executed sequentially.

#	Code	Description
[5.4]	[6-0C]	`Reheat setpoint`: ▪ 30°C~min(50,[6-0E])°C

Hysteresis (reheat hysteresis)

Applicable when domestic hot water preparation is scheduled +reheat. When the tank temperature drops below the reheat temperature minus the reheat hysteresis temperature, the tank heats up to the reheat temperature.

#	Code	Description
[5.A]	[6-08]	Reheat hysteresis ▪ 2°C~20°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" [▸ 31].

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

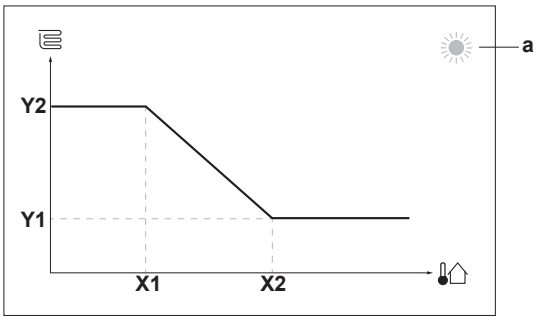
To operate weather-dependent, correctly configure the setpoint of the main zone, additional zone or tank. See "7.3.4 Using weather-dependent curves" [▸ 31].

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: ▪ : Main zone or additional zone heating ▪ : Main zone or additional zone cooling ▪ : 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: ▪ : Underfloor heating ▪ : Fan coil unit ▪ : Radiator ▪ : Domestic hot water 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

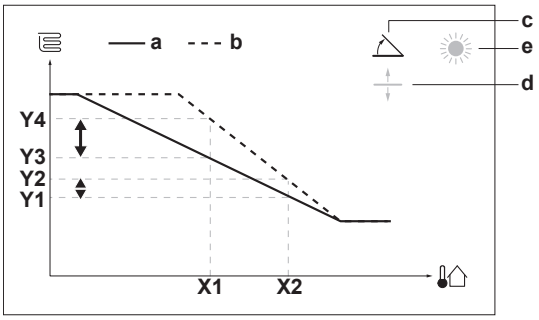
Slope and offset

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

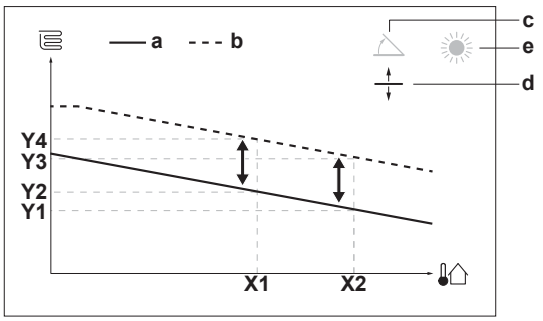
- Change the **slope** to differently increase or decrease the temperature of the leaving water for different ambient temperatures. For example, if leaving water temperature is in general fine but at low ambient temperatures too cold, raise the slope so that leaving water temperature is heated increasingly 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): ▪ When slope is changed, the new preferred temperature at X1 is unequally higher than the preferred temperature at X2. ▪ 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: ▪ : Main zone or additional zone heating ▪ : Main zone or additional zone cooling ▪ : 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: ▪ : Underfloor heating ▪ : Fan coil unit ▪ : Radiator ▪ : Domestic hot water 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. 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	

Go to setpoint mode …	Set the setpoint mode to …
[3.4] Additional zone > Setpoint mode	WD heating, fixed cooling OR Weather dependent
Additional zone – Cooling	
[3.4] Additional zone > Setpoint mode	Weather dependent
Tank	
[5.B] Tank > Setpoint mode	**Restriction:** Only available to installers. 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. [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" [▶ 30].

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: ▪ 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. ▪ 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" [▶ 32].

#	Code	Description
[3.A]	[C–06]	External room thermostat type for the additional zone: ▪ 1: 1 contact ▪ 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.

7.4.4 Brine freezing temperature

Brine freezing temperature

Depending on the type and concentration of the anti-freeze in the brine system, the freezing temperature will differ. The following parameters set the units freeze up prevention limit temperature. To allow for temperature measurement tolerances, the brine concentration MUST resist to a lower temperature than the defined setting.

General rule: the units freeze up prevention limit temperature MUST be 10°C lower than the minimum possible brine inlet temperature for the unit.

Example: When the minimum possible brine inlet temperature in a certain application is –2°C, then the unit freeze up prevention limit temperature MUST be set to –12°C or lower. Result will be that the brine mixture may NOT freeze above that temperature. To prevent freezing of the unit, check the type and concentration of the brine carefully.

#	Code	Description
[9.M]	[A-04]	`Brine freezing temperature`: ▪ 0: 2°C ▪ 1: –2°C ▪ 2: –4°C ▪ 3: –6°C ▪ 4: –9°C ▪ 5: –12°C ▪ 6: –15°C ▪ 7: –18°C

NOTICE

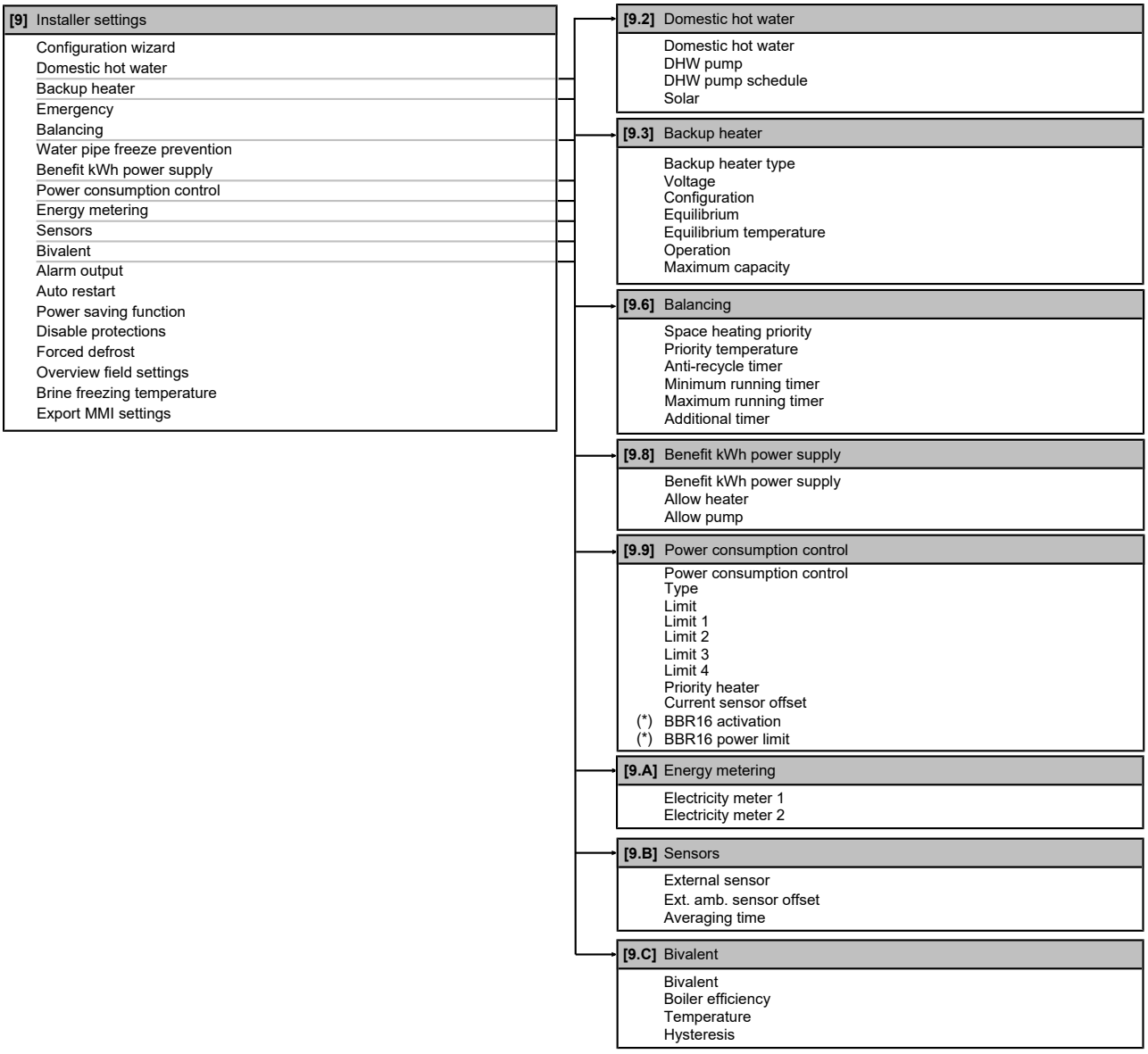
The `Brine freezing temperature` setting can be modified and read out in [9.M].

After changing the setting in [9.M] or in the field settings overview [9.I], wait 10 seconds before restarting the unit via the user interface to ensure that the setting is correctly saved in the memory.

This setting can ONLY be modified if the communication between hydro module and compressor module is present. The communication between hydro module and compressor module is NOT guaranteed and/or applicable if:

- error "U4" appears on the user interface,
- the heat pump module is connected to preferential kWh rate power supply where power supply is interrupted and preferential kWh rate power supply is activated.

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.

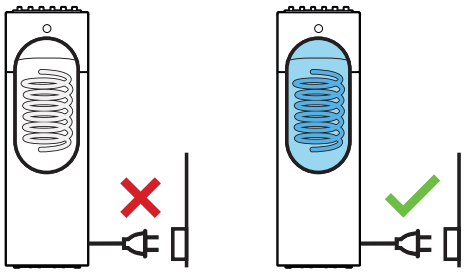
8 Commissioning

NOTICE

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

NOTICE

Make sure that both the domestic hot water tank and the space heating circuit are filled before turning on the power of the unit.



If not filled before turning on power, and in case `Emergency` is active, the backup heater thermal fuse may blow. To avoid breakdown of the backup heater, fill the unit before turning on power.

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 36 h 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`.

Also see "Protective functions" [▸ 27].

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.
☐	The following **field wiring** has been carried out according to this document and the applicable legislation: ▪ Between the local supply panel and the indoor unit ▪ Between the indoor unit and the valves (if applicable) ▪ 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 unit.
☐	**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 and/or brine leak** inside the indoor unit.
☐	There are no **odour traces** noticeable of the used brine.
☐	The **air purge** valve is open (at least 2 turns).
☐	The following **field piping** on the cold water inlet of the DHW tank has been carried out according to this document and the applicable legislation: ▪ Non-return valve ▪ Pressure reducing valve ▪ Pressure relief valve (and it purges clean water when opened) ▪ Tundish ▪ Expansion vessel
☐	The **pressure relief valve** (space heating circuit) purges water when opened. Clean water MUST come out.
☐	The **shut-off valves** are properly installed and fully open.
☐	The **domestic hot water tank** is filled completely.
☐	The **brine circuit** and **water circuit** are filled correctly.

NOTICE

When the brine circuit is not ready to be used, the system can be set to `Compressor forced off` mode. To do this, set [9.5.2]=1 (`Compressor forced off` = `enabled`).

Space heating and domestic hot water are then provided by the backup heater. Cooling is NOT possible when this mode is active. All commissioning related to or making use of the brine circuit should NOT be performed until the brine circuit is filled and `Compressor forced off` is deactivated.

8.2 Checklist during commissioning

☐	To perform an **air purge** on the water circuit.
☐	To perform an **air purge on the brine circuit** via brine pump test run or 10-day brine operation function.
☐	To perform a **test run**.
☐	To perform an **actuator test run**.
☐	**Underfloor screed dryout function** The underfloor screed dryout function is started (if necessary).
☐	To start **10-day brine pump operation.**

8.2.1 To perform an air purge on the water circuit

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" [▶ 26].	—
2	Go to [A.3]: `Commissioning` > `Air purge`.	
3	Select `OK` to confirm. **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.	

8.2.2 To perform an air purge on the brine circuit

There are two ways to perform an air purge on the brine circuit:

- with a brine filling station (field supply)
- with a brine filling station (field supply) in combination with the unit's own brine pump

In both cases, follow the instructions included with the brine filling station. The second method should only be used when the air purge on the brine circuit was NOT successful using only a brine filling station. See "To perform an air purge with a brine filling station" in the installer reference guide for more information.

In case a brine buffer vessel is present in the brine circuit, or if the brine circuit consists of a horizontal loop instead of a vertical borehole, further air purging may be required. You can make use of the `10 day brine pump operation`. See "8.2.6 To start or stop 10-day brine pump operation" [▶ 37] for more information.

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" [▶ 26].	—
2	Go to [A.1]: `Commissioning` > `Operation test run`.	
3	Select a test from the list. **Example:** `Heating`.	
4	Select `OK` to confirm. **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" [▶ 26].	—
2	Go to [A.2]: `Commissioning` > `Actuator test run`.	
3	Select a test from the list. **Example:** `Pump`.	
4	Select `OK` to confirm. **Result:** The actuator test run starts. It stops automatically when done (±30 min for `Pump`, ±120 min for `Brine pump`, ±10 min for other test runs).	
	To stop the test run manually:	—
	1 Go to `Stop test run`.	
	2 Select `OK` to confirm.	

Possible actuator test runs

- `Backup heater 1` test (3 kW capacity, only available when no current sensors are used)
- `Backup heater 2` test (6 kW capacity, only available when no current sensors are used)
- `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
- `Diverter valve` test (3-way valve for switching between space heating and tank heating)
- `Bivalent signal` test
- `Alarm output` test
- `C/H signal` test
- `DHW pump` test
- `Backup heater phase 1` test (3 kW capacity, only available when current sensors are used)
- `Backup heater phase 2` test (3 kW capacity, only available when current sensors are used)
- `Backup heater phase 3` test (3 kW capacity, only available when current sensors are used)
- `Brine pump` test

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.

Conditions: Make sure [2.7] and [3.7] `Emitter type` is set to `Underfloor heating`.

1	Set the user permission level to Installer. See "To change the user permission level" [▶ 26].	—
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. **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 36 hours after the first power-on.

If the screed dryout still needs to be performed after the first 36 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

Resume after power failure

If power is restored after a power failure, underfloor heating screed dryout automatically resumes its operation.

8.2.6 To start or stop 10-day brine pump operation

If a brine buffer vessel is part of the brine circuit, or in case a horizontal brine loop is used, it may be required to let the brine pump run continuously for 10 days after the system is commissioned. If `10 day brine pump operation` is:

- ON: The unit operates as normal, except that the brine pump operates continuously for 10 days, independent of compressor status.
- OFF: Brine pump operation is linked to compressor status.

Conditions: All other commissioning tasks have been completed before starting the `10 day brine pump operation`. After you have done this, `10 day brine pump operation` can be activated in the commissioning menu.

1	Set the user permission level to Installer. See "To change the user permission level" [▶ 26].	—
2	Go to [A.6]: `Commissioning` > `10 day brine pump operation`.	
3	Select `On` to start the `10 day brine pump operation`. **Result:** The `10 day brine pump operation` starts.	

During the `10 day brine pump operation`, the setting will be displayed as ON in the menu. Once the procedure has been completed, it will change to OFF automatically.

NOTICE

The 10-day brine pump operation will only start if there are no errors present on the main menu screen and the timer will only count down if either an underfloor heating screed dryout is started, or if Space heating/cooling or Tank operation is enabled.

9 Hand-over to the user

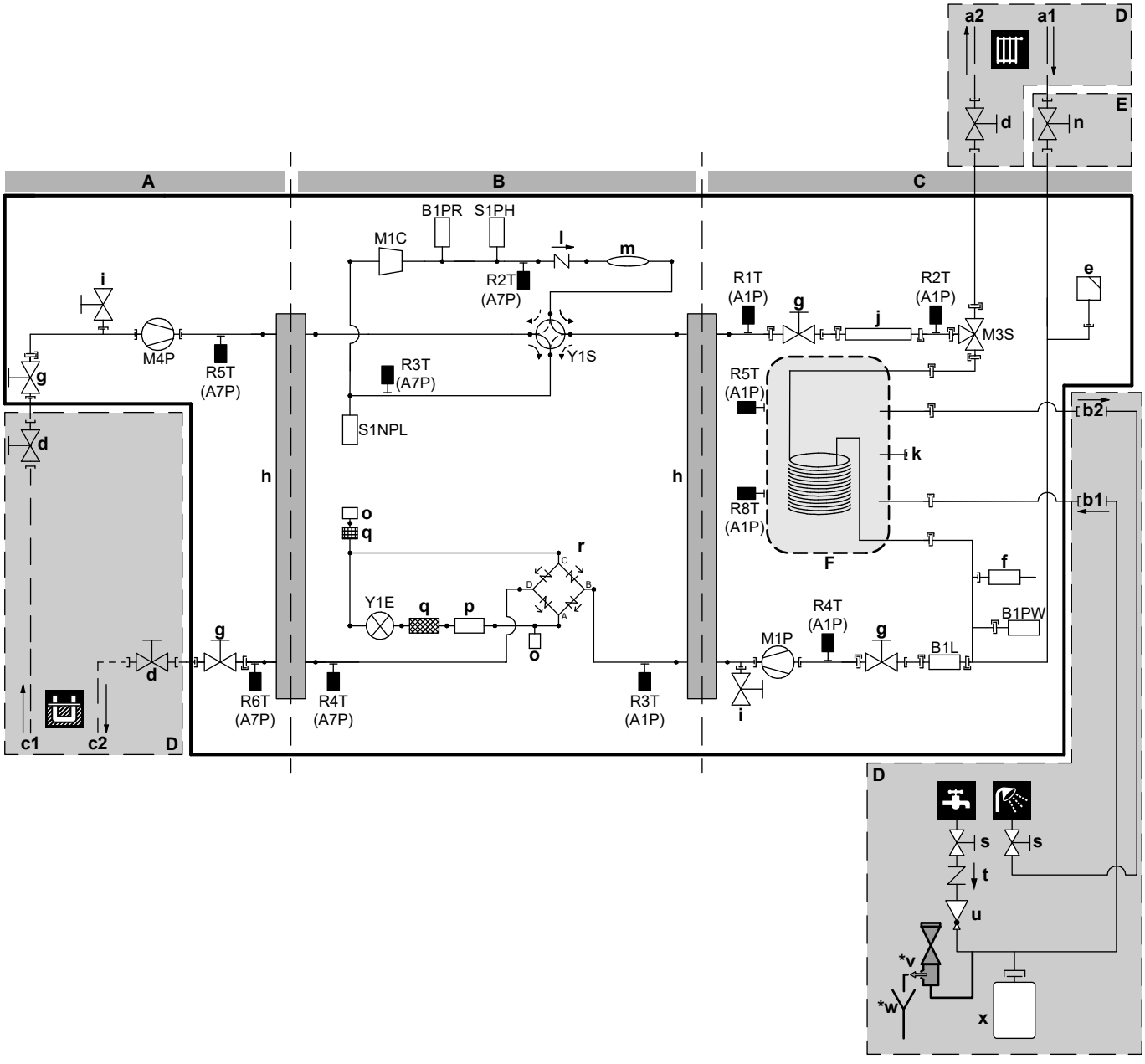
Once the test run is finished and the unit operates properly, make sure the following is clear for the user:

- 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 can find the complete documentation at the URL mentioned earlier in this manual.
- Explain 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 the user about energy saving tips 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 latest technical data is available on the Daikin Business Portal (authentication required).

10.1 Piping diagram: Indoor unit



3D121963B

A Brine side
B Refrigerant side
C Water side
D Field supplied
E Field installed (delivered with the unit)
F DHW tank

a1 Space heating water IN (Ø22 mm)
a2 Space heating water OUT (Ø22 mm)
b1 Domestic hot water: cold water IN (Ø22 mm)
b2 Domestic hot water: hot water OUT (Ø22 mm)
c1 Brine IN (Ø28 mm)
c2 Brine OUT (Ø28 mm)
d Shut-off valve
e Automatic air purge valve
f Safety valve
g Shut-off valve
h Plate heat exchanger
i Drain valve

j Backup heater
k Recirculation connection (3/4" G female)
l Check valve
m Muffler
n Shut-off valve with integrated filter (delivered with the unit)
o Service port (5/16" flare)
p Heat sink
q Filter
r Rectifier
s Shut-off valve (recommended)
t Non-return valve (recommended)
u Pressure reducing valve (recommended)
***v** Pressure relief valve (max. 10 bar (=1.0 MPa))(mandatory)
***w** Tundish (mandatory)
x Expansion vessel (recommended)

B1L Flow sensor
B1PR Refrigerant high pressure sensor
B1PW Space heating water pressure sensor
M1C Compressor
M1P Water pump
M3S 3-way valve (space heating/domestic hot water)
M4P Brine pump
S1NPL Low pressure sensor
S1PH High pressure switch
Y1E Electronic expansion valve
Y1S Solenoid valve (4-way valve)

Thermistors:
R2T (A7P) Compressor discharge
R3T (A7P) Compressor suction
R4T (A7P) 2 phase
R5T (A7P) Brine IN
R6T (A7P) Brine OUT
R1T (A1P) Heat exchanger – water OUT
R2T (A1P) Backup heater – water OUT
R3T (A1P) Liquid refrigerant
R4T (A1P) Heat exchanger – water IN
R5T (A1P) Tank
R8T (A1P) Tank

Connections:
Screw connection
Quick coupling
Brazed connection

Refrigerant flow:
Heating
Cooling

10.2 Wiring diagram: Indoor unit

See the internal wiring diagram supplied with the unit (on the inside of the front panel). 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
X2M	Field wiring terminal for AC
X5M	Field wiring terminal for DC
—·—·—·—	Earth wiring
15	Wire number 15
– – – – – – –	Field supply
—> **/12.2	Connection ** continues on page 12 column 2
①	Several wiring possibilities
	Option
	Mounted in switch box
	Wiring depending on model
	PCB
Backup heater power supply	Backup heater power supply
☐ 1N~, 230 V, 3/6 kW	☐ 1N~, 230 V, 3/6 kW
☐ 3N~, 400 V, 6/9 kW	☐ 3N~, 400 V, 6/9 kW
User installed options	User installed options

English	Translation
☐ Remote user interface	☐ Remote user interface (Human Comfort Interface)
☐ Ext. indoor thermistor	☐ External indoor thermistor
☐ Digital I/O PCB	☐ Digital I/O PCB
☐ Demand PCB	☐ Demand PCB
☐ Brine low pressure switch	☐ Brine low pressure switch
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

10 Technical data

Legend

A1P		Main PCB (hydro)
A2P	*	User interface PCB
A3P	*	On/OFF thermostat
A3P	*	Heat pump convector
A4P	*	Digital I/O PCB
A4P	*	Receiver PCB (Wireless On/OFF thermostat, PC=power circuit)
A6P		Backup heater control PCB
A7P		Inverter PCB
A8P	*	Demand PCB
A15P		LAN adapter
A16P		ACS digital I/O PCB
CN* (A4P)	*	Connector
CT*	*	Current sensor
DS1 (A8P)	*	DIP switch
F1B	#	Overcurrent fuse
F1U~F2U(A4P)	*	Fuse (5 A, 250 V)
F2B	#	Overcurrent fuse compressor
K*R (A4P)		Relay on PCB
K9M		Thermal protector backup heater relay
M2P	#	Domestic hot water pump
M2S	#	Shut-off valve
M3P	#	Drain pump
PC (A4P)	*	Power circuit
PHC1 (A4P)	*	Optocoupler input circuit
Q*DI	#	Earth leakage circuit breaker
Q1L		Thermal protector backup heater
Q4L	#	Safety thermostat
R1T (A2P)	*	Thermistor (ambient temperature of the user interface (Human Comfort Interface))
R1T (A3P)	*	Thermistor (ambient temperature of the On/OFF thermostat)
R1T (A7P)		Thermistor (outdoor ambient temperature)
R2T (A3P)	*	Thermistor (floor temperature or indoor ambient temperature) (in case of wireless On/OFF thermostat)
R6T (A1P)	*	Thermistor (indoor ambient temperature) (in case of external indoor ambient thermistor)
R1H (A3P)	*	Humidity sensor
S1L	#	Low level switch
S1PL	#	Brine low pressure switch
S1S	#	Preferential kWh rate power supply contact
S2S	#	Electricity meter pulse input 1
S3S	#	Electricity meter pulse input 2
S6S~S9S	#	Digital power limitation inputs
SS1 (A4P)	*	Selector switch
TR1, TR2		Power supply transformer
X*A		Connector
X*M		Terminal strip
X*Y		Connector
Z*C		Noise filter (ferrite core)

* Optional
\# Field supply

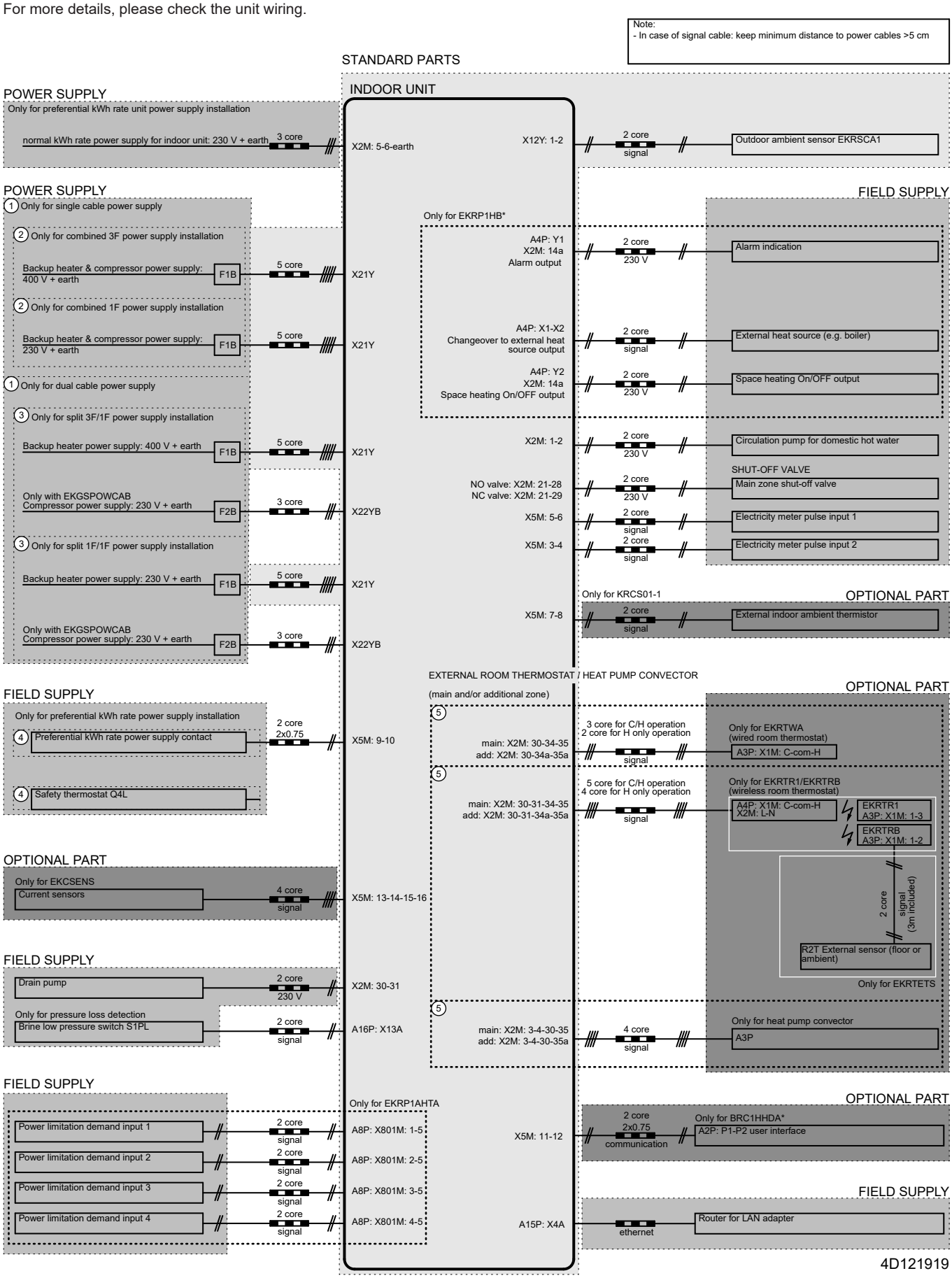
Translation of text on wiring diagram

English	Translation
(1) Main power connection	(1) Main power connection
For preferential kWh rate power supply	For preferential kWh rate power supply
Normal kWh rate power supply	Normal kWh rate power supply
Only for preferential kWh rate power supply with separate normal kWh rate power supply	Only for preferential kWh rate power supply with separate normal kWh rate power supply
Only for preferential kWh rate power supply without separate normal kWh rate power supply	Only for preferential kWh rate power supply without separate normal kWh rate power supply
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)
SWB	Switch box
(2) Power supply BUH	(2) Backup heater power supply
BLK	Black
BLU	Blue
BRN	Brown
GRY	Grey
Only for combined 1F BUH/ compressor power supply (3/6 kW)	Only for combined 1F backup heater/compressor power supply (3/6 kW)
Only for combined 3F BUH/ compressor power supply (6/9 kW)	Only for combined 3F backup heater/compressor power supply (6/9 kW)
Only for dual cable power supply	Only for dual cable power supply
Only for single cable power supply	Only for single cable power supply
Only for split 1F BUH/1F compressor power supply (3/6 kW)	Only for split 1F backup heater/1F compressor power supply (3/6 kW)
Only for split 3F BUH/1F compressor power supply (6/9 kW)	Only for split 3F backup heater/1F compressor power supply (6/9 kW)
SWB	Switch box
YLW/GRN	Yellow/green
(3) User interface	(3) User interface
Only for remote user interface	Only for remote user interface
SWB	Switch box
(4) Drain pump	(4) Drain pump
SWB	Switch box
(5) Ext. indoor ambient thermistor	(5) External indoor ambient thermistor
SWB	Switch box
(6) Field supplied options	(6) Field supplied options
12 V DC pulse detection (voltage supplied by PCB)	12 V DC pulse detection (voltage supplied by PCB)
230 V AC supplied by PCB	230 V AC supplied by PCB
Continuous	Continuous current
DHW pump	Domestic hot water pump
DHW pump output	Domestic hot water pump output
Electrical meters	Electricity meters
For safety thermostat	For safety thermostat
Inrush	Inrush current
Max. load	Maximum load
Normally closed	Normally closed
Normally open	Normally open

English	Translation
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
SWB	Switch box
(7) Option PCBs	(7) Option PCBs
Alarm output	Alarm output
Changeover to ext. heat source	Changeover to external heat source
Max. load	Maximum load
Min. load	Minimum load
Only for demand PCB option	Only for demand PCB option
Only for digital I/O PCB option	Only for digital I/O PCB option
Options: ext. heat source output, alarm output	Options: external heat source output, alarm output
Options: On/OFF output	Options: On/OFF output
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)
Space C/H On/OFF output	Space cooling/heating On/OFF output
SWB	Switch box
(8) External On/OFF thermostats and heat pump convector	(8) 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
(9) Current sensors	(9) Current sensors
SWB	Switch box
(10) Brine pressure loss detection	(10) Brine pressure loss detection
SWB	Switch box
With pressure loss detection	With pressure loss detection
Without pressure loss detection	Without pressure loss detection
(11) Ext. outdoor ambient thermistor	(11) External outdoor ambient thermistor
SWB	Switch box
(12) LAN adapter connection	(12) LAN adapter connection
Ethernet	Ethernet
LAN adapter	LAN adapter
SWB	Switch box

Electrical connection diagram

For more details, please check the unit wiring.



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