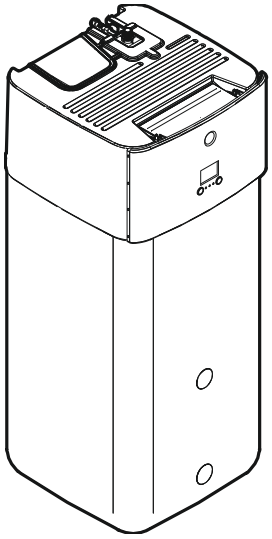
Installation manual

Daikin Altherma 3 R ECH$_2$O



https://daikintechnicaldatahub.eu

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1 About the documentation

1.1 About this document

Target audience

Authorised installers

Documentation set

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

- **General safety precautions:**
  - Safety instructions that you must read before installing
  - Format: Paper (in the box of the indoor unit)
- **Operation manual:**
  - Quick guide for basic usage
  - Format: Paper (in the box of the indoor unit)
- **User reference guide:**
  - Detailed step-by-step instructions and background information for basic and advanced usage
  - Format: Digital files on https://www.daikin.eu. Use the search function 🔍 to find your model.
- **Installation manual – Outdoor unit:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor unit)
- **Installation manual – Indoor unit:**
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)

- **Installer reference guide:**
  - Preparation of the installation, good practices, reference data, …
  - Format: Digital files on https://www.daikin.eu. Use the search function to find your model.
- **Addendum book for optional equipment:**
  - Additional info about how to install optional equipment
  - Format: Paper (in the box of the indoor unit) + Digital files on https://www.daikin.eu. Use the search function to find your model.

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

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

Technical engineering data

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

Online tools

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

- **Daikin Technical Data Hub**
  - Central hub for technical specifications of the unit, useful tools, digital resources, and more.
  - Publicly accessible via https://daikintechnicaldatahub.eu.
- **Heating Solutions Navigator**
  - Digital toolbox that offers a variety of tools to facilitate the installation and configuration of heating systems.
  - To access 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).

WARNING

DO NOT reuse refrigerant piping that has been used with any other refrigerant. Replace the refrigerant pipes or clean thoroughly.

CAUTION

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

Special requirements for R32 (see "4.1.2 Special requirements for R32 units" [▶ 5])

WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Do NOT use means to accelerate the defrosting process or to clean the equipment, other than those recommended by the manufacturer.
- Be aware that R32 refrigerant does NOT contain an odour.

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.

Opening and closing the unit (see "4.2 Opening and closing the unit" [▶ 13])

DANGER: RISK OF ELECTROCUTION

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

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING/SCALDING

Mounting the indoor unit (see "4.3 Mounting the indoor unit" [▶ 15])

WARNING

Fixing method of the indoor unit MUST be in accordance with the instructions from this manual. See "4.3 Mounting the indoor unit" [▶ 15].

Piping installation (see "5 Piping installation" [▶ 15])

WARNING

The field piping method MUST be in accordance with the instructions from this manual. See "5 Piping installation" [▶ 15].

DANGER: RISK OF ELECTROCUTION

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

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

Electrical installation (see "6 Electrical installation" [▶ 20])

WARNING

Electrical wiring connection method MUST be in accordance with the instructions from this manual. See "6 Electrical installation" [▶ 20].

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

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

WARNING

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.

INFORMATION

Details of type and rating of fuses, or rating of circuit breakers are described in "6 Electrical installation" [▶ 20].

DANGER: RISK OF ELECTROCUTION

WARNING

ALWAYS use multicore cable for power supply cables.

CAUTION

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

WARNING

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

CAUTION

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

Commissioning (see "8 Commissioning" [▶ 42])

WARNING

Commissioning method MUST be in accordance with the instructions from this manual. See "8 Commissioning" [▶ 42].

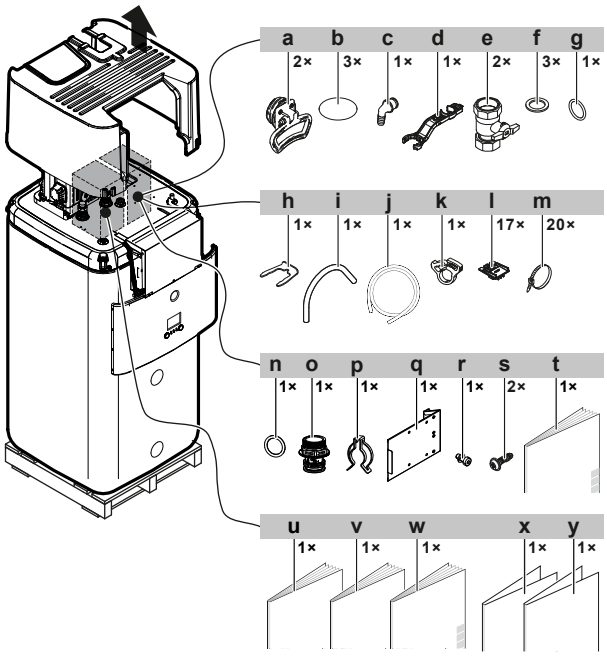
3 About the box

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 Handles (only required for transport)
b Thread cover
c Spillover connector
d Assembly wrench
e Shut-off valve
f Flat gasket
g O-ring
h Securing clip
i Venting hose
j Drain pan hose
k Drain pan hose clamp
l Cable fixation for strain relief
m Cable tie
n O-ring
o Chimney socket
p Securing clip
q Switch box metal insert

r Screw for switch box metal insert
s Top cover screws
t General safety precautions
u Addendum book for optional equipment
v Indoor unit installation manual
x Operation manual
x Addendum software changelog
y Addendum commercial warranty

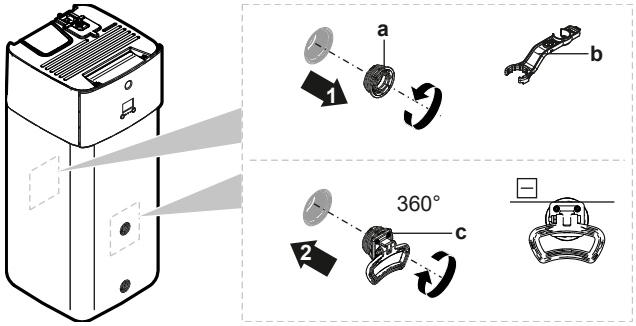
3.1.2 To handle the indoor unit

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

NOTICE

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

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



a Screw plug
b Assembly wrench
c Handle

1 Open the screw plugs on the front and back of the tank.
2 Attach the handles horizontally and turn by 360°.
3 Use the handles to carry the unit.
4 After carrying the unit remove the handles, add the screw plugs again and insert the thread covers on the plugs.

4 Unit installation

4.1 Preparing the installation site

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).

WARNING

DO NOT reuse refrigerant piping that has been used with any other refrigerant. Replace the refrigerant pipes or clean thoroughly.

4.1.1 Installation site requirements of the indoor unit

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

INFORMATION

Cooling is only applicable in case of reversible models.

- Mind the following measurements guidelines:

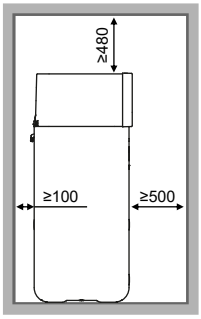
Maximum refrigerant piping length[(a)] between indoor unit and outdoor unit	50 m
Minimum refrigerant piping length[(a)] between indoor unit and outdoor unit	3 m
Maximum height difference between indoor unit and outdoor unit	30 m

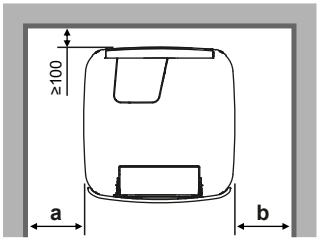
[(a)] Refrigerant piping length is the one-way length of liquid piping.

- Mind the following spacing installation guidelines:

CAUTION

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





[mm]

a	≥100 mm	
b	For 300 l units with backup heater	≥300 mm
	For 300 l units without backup heater	≥100 mm
	For 500 l units (with/without backup heater)	≥100 mm
a+b	≥600 mm	

INFORMATION

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

INFORMATION

If you have limited installation space, do the following before installing the unit in its final position: "4.3.2 To connect the drain hose to the drain" [▸ 15].

4.1.2 Special requirements for R32 units

Additionally to the spacing guidelines: Because the total refrigerant charge in the system is ≥1.84 kg, the room where you install the indoor unit must also comply with the conditions described in "4.1.3 Installation patterns" [▸ 7].

WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Do NOT use means to accelerate the defrosting process or to clean the equipment, other than those recommended by the manufacturer.
- Be aware that R32 refrigerant does NOT contain an odour.

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) and have a room size as specified below.

NOTICE

- Do NOT re-use joints and copper gaskets which have been used already.
- Joints made in installation between parts of refrigerant system shall be accessible for maintenance purposes.

WARNING

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

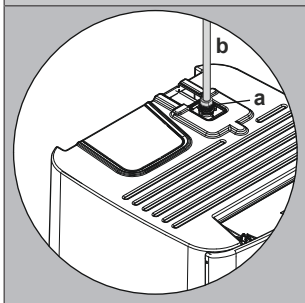
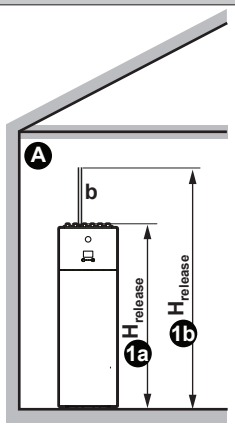
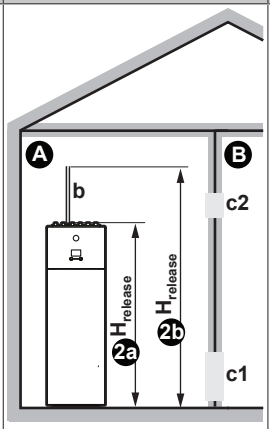
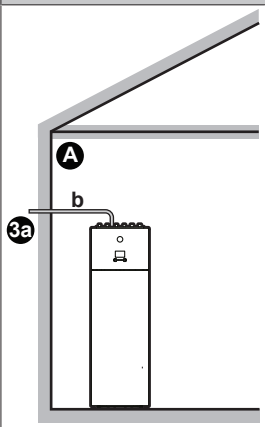
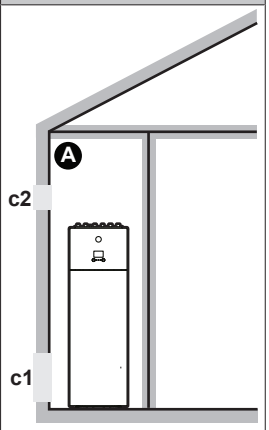
NOTICE

- Protect pipework from physical damage.
- Keep the pipework installation to a minimum.

4.1.3 Installation patterns

Depending on the type of room in which you install the indoor unit, different installation patterns are allowed:

Room type	Allowed patterns
Living room, kitchen, garage, attic, basement, storage room	1, 2, 3
Technical room (i.e. room that is NEVER occupied by persons)	1, 2, 3, 4

	PATTERN 1	PATTERN 2	PATTERN 3	PATTERN 4
					
Ventilation openings	N/A	Between room A and B	N/A	Between room A and outside
Minimum floor area	Room A	Room A + Room B	N/A	N/A
Chimney	Might be needed	Might be needed	Connected to outside	N/A
Release in case of refrigerant leakage	Inside room A	Inside room A	Outside	Inside room A
Restrictions	See "PATTERN 1" [▶ 9], "PATTERN 2" [▶ 9], "PATTERN 3" [▶ 11], and "Tables for PATTERN 1, 2 and 3" [▶ 11]			See "PATTERN 4" [▶ 13]

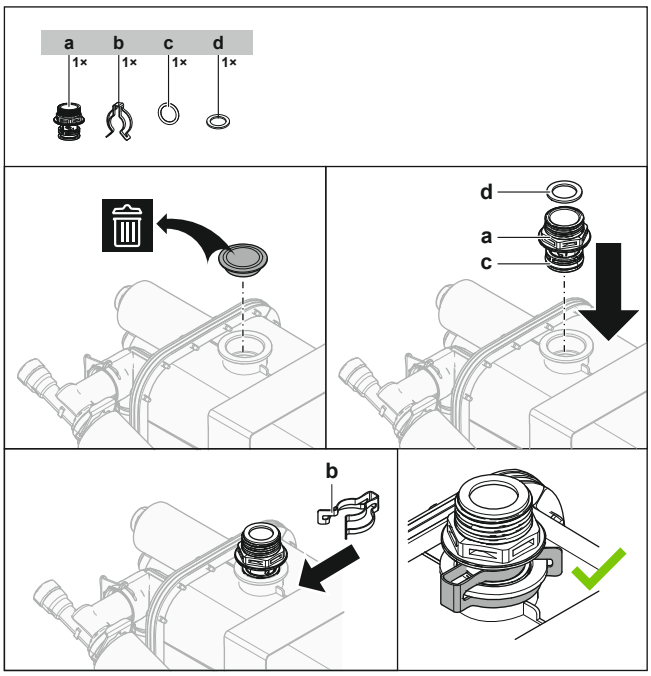
A	Room A (= room where indoor unit is installed)
B	Room B (= adjacent room)
a	If no chimney is installed, this is the default point of release in case of refrigerant leakage. If needed, you can connect a chimney here: ▪ Unit's connection point for the chimney = 1" male thread. Use a compatible counterpart for the chimney. ▪ Make sure the connection is airtight.
b	Chimney
c1	Bottom opening for natural ventilation
c2	Top opening for natural ventilation
$H_{release}$	Actual release height: 1a 2a: Without chimney. From floor to top of the unit. ▪ For 300 l units => $H_{release}$=1.89 m ▪ For 500 l units => $H_{release}$=1.90 m 1b 2b: With chimney. From floor to top of the chimney. ▪ For 300 l units => $H_{release}$=1.89 m + Chimney height ▪ For 500 l units => $H_{release}$=1.90 m + Chimney height
3a	Installation with chimney connected to the outside. The release height is not relevant. There are no requirements to the minimum floor area.
N/A	Not applicable

Minimum floor area / Release height:

- The minimum floor area requirements depend on the release height of the refrigerant in case of a leakage. The higher the release height, the lower the minimum floor area requirements.
- The default point of release (without chimney) is at the top of the unit. To decrease the minimum floor area requirements, you can increase the release height by installing a chimney. If the chimney leads outside of the building, there are no requirements anymore to the minimum floor area.
- You can also take advantage of the floor area of the adjacent room (= room B) by providing ventilation openings between the two rooms.
- For installations in technical rooms (i.e. room that is NEVER occupied by persons), additionally to patterns 1, 2 and 3, you can also use **PATTERN 4**. For this pattern there are no requirements to the minimum floor area if you provide 2 openings (one at the bottom, one at the top) between the room and the outside to ensure natural ventilation. The room must be protected from frost.

When connecting a chimney

- Install the chimney socket (delivered as accessory) to the plate heat exchanger box.



a Chimney socket
b Securing clip
c O-ring
d Flat gasket

- Socket's connection point for the chimney = 1" male thread. Use a compatible counterpart for the chimney.
- Make sure the connection is airtight.

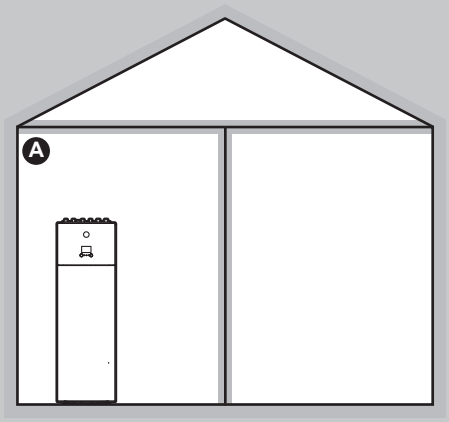
PATTERN 1

START PATTERN 1

See table 1:
Is the floor area of room A (A_{roomA}) large enough for the given refrigerant charge and the given release height without chimney?

Yes

1a You can install the unit in room A. You do not need a chimney.



No

H0, ΔH0

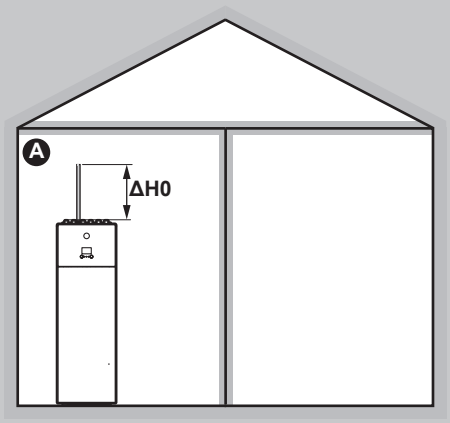
See table 2: Look up the minimum release height (**H0**) for the given floor area (A_{roomA}) and the given refrigerant charge.

Calculate **ΔH0:** difference between the minimum release height required (**H0**) and the release height without chimney.

See table 3:
For ΔH0: Can the maximum chimney length be respected, and is the chimney practically feasible?

Yes

1b You can install the unit in room A if you install a chimney.
Chimney height = **ΔH0**



No

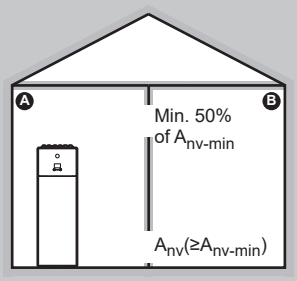
Go to PATTERN 2

PATTERN 2

PATTERN 2: Conditions ventilation openings

If you want to take advantage of the floor area of the adjacent room, you must provide 2 openings (one at the bottom, one at the top) between the rooms to ensure natural ventilation. The openings must comply with the following conditions:

- **Bottom opening (A_{nv}):**
  - Must be a permanent opening that cannot be closed.
  - Must be completely located between 0 and 300 mm from the floor.
  - Must be ≥$A_{nv\text{-}min}$ (minimum bottom opening area).
  - ≥50% of the required opening area $A_{nv\text{-}min}$ must be ≤200 mm from the floor.
  - The bottom of the opening must be ≤100 mm from the floor.
  - If the opening starts from the floor, the height of the opening must be ≥20 mm.
- **Top opening:**
  - Must be a permanent opening that cannot be closed.
  - Must be ≥50% of $A_{nv\text{-}min}$ (minimum bottom opening area).
  - Must be ≥1.5 m from the floor.



Start PATTERN 2

H1, ΔH1

Calculate the total floor area.
($A_{total}=A_{roomA}+A_{roomB}$)

See table 2: Look up the minimum release height (**H1**) for the given floor area (A_{total}) and the given refrigerant charge.

Calculate **ΔH1:** difference between the minimum release height required (**H1**) and the release height without chimney.

See table 3:
For ΔH1: Can the maximum chimney length be respected, and is the chimney practically feasible?

Yes

No

Go to PATTERN 3

A_{nv}, A_{nv-min}

See table 4: Look up the minimum bottom opening area for natural ventilation with the adjacent room (A_{nv-min}) for the given refrigerant charge, the given floor area of room A (A_{roomA}) **[! NOT room A + room B !]** and the given release height (**H1**).

Is it practically feasible to create ventilation openings that comply with A_{nv-min} and with the **"Conditions ventilation openings"** on previous page)?

No

Yes

See table 2: Do you need a chimney or not?
(i.e. does table 2 result in a value or "**(*)**"?)

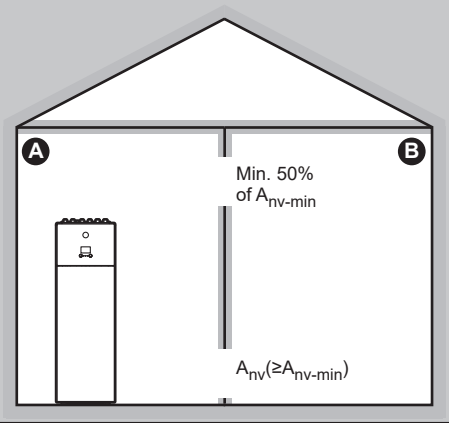
Not needed
(i.e. table 2 results in "**(*)**")

Needed
(i.e. table 2 results in a value)

2a

You can install the unit in room A if you create ventilation openings. You do not need a chimney.

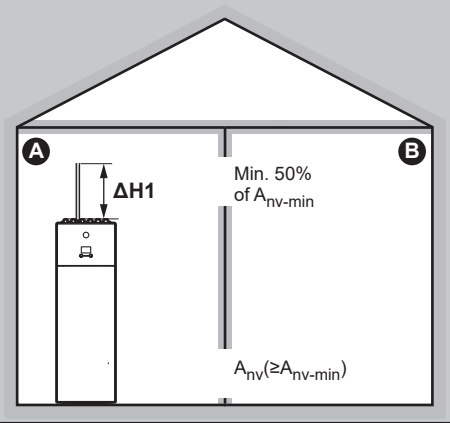
Ventilation openings must comply with A_{nv-min} and with **"Conditions ventilation openings"** on previous page).



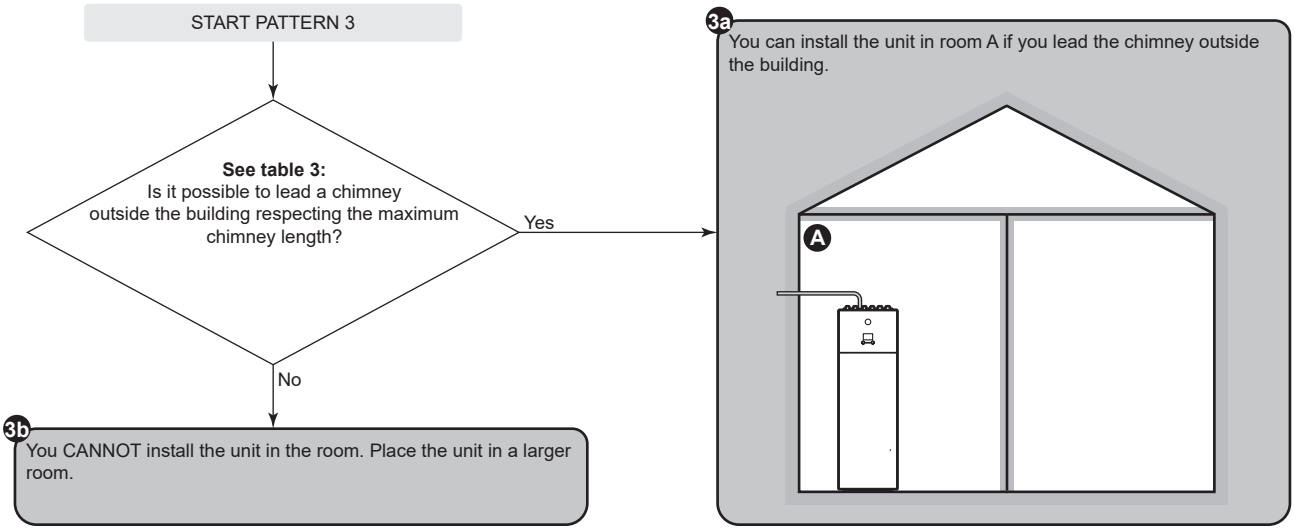
2b

You can install the unit in room A if you install a chimney, and create ventilation openings.

Chimney height = **ΔH1**.
Ventilation openings must comply with A_{nv-min} and with **"Conditions ventilation openings"** on previous page).



PATTERN 3



Tables for PATTERN 1, 2 and 3

Table 1: Minimum floor area

For intermediate refrigerant charges, use the row with the higher value. **Example:** If the refrigerant charge is 4.3 kg, use the row of 4.5 kg.

Minimum floor area (m²)		
Charge (kg)	Release height without chimney (m)	
	1.89 m (Unit=300 l)	1.90 m (Unit=500 l)
3.8 kg	12.37 m^2	12.18 m^2
4 kg	13.71 m^2	13.49 m^2
4.5 kg	17.35 m^2	17.08 m^2
5 kg	21.42 m^2	21.08 m^2
5.5 kg	25.92 m^2	25.51 m^2
5.8 kg	28.82 m^2	28.37 m^2

Table 2: Minimum release height

Take the following into account:
- For intermediate floor areas, use the column with the lower value. **Example:** If the floor area is 22.50 m², use the column of 20.00 m².
- For intermediate refrigerant charges, use the row with the higher value. **Example:** If the refrigerant charge is 4.3 kg, use the row of 4.5 kg.
- (*): The release height of the unit without chimney (for 300 l units: 1.89 m; for 500 l units: 1.90 m) is already higher than the minimum required release height. => OK (no chimney needed).

Minimum release height (m)					
Charge (kg)	Floor area (m²)				
	5.00 m^2	10.00 m^2	15.00 m^2	20.00 m^2	25.00 m^2
3.8 kg	3.30 m	2.10 m	(*)	(*)	(*)
4 kg	3.47 m	2.21 m	(*)	(*)	(*)
4.5 kg	3.91 m	2.49 m	2.03 m	(*)	(*)
5 kg	4.34 m	2.77 m	2.26 m	1.96 m	(*)
5.5 kg	4.78 m	3.04 m	2.49 m	2.15 m	1.93 m
5.8 kg	5.04 m	3.21 m	2.62 m	2.27 m	2.03 m

Table 3: Maximum chimney length

When installing a chimney, the chimney length must be less than the maximum chimney length.

- Use the columns with the correct refrigerant charge. For intermediate refrigerant charges, use the columns with the higher value. **Example:** If the refrigerant charge is 4.0 kg, use the columns of 5.8 kg.
- For intermediate diameters, use the column with the lower value. **Example:** If the diameter is 23 mm, use the column of 22 mm.
- X: Not allowed

Maximum chimney length (m) – In case of Refrigerant charge=3.8 kg (and T=60°C)							In case of Refrigerant charge=5.8 kg (and T=60°C)				
Chimney	Inside diameter of chimney (mm)						Inside diameter of chimney (mm)				
	20 mm	22 mm	24 mm	26 mm	28 mm		20 mm	22 mm	24 mm	26 mm	28 mm
Straight pipe	19.03 m	33.90 m	55.16 m	84.54 m	124.06 m		3.37 m	9.47 m	18.40 m	30.91 m	47.91 m
1× 90° elbow	17.23 m	31.92 m	53.00 m	82.20 m	121.54 m		1.57 m	7.49 m	16.24 m	28.57 m	45.39 m
2× 90° elbow	15.43 m	29.94 m	50.84 m	79.86 m	119.02 m		X	5.51 m	14.08 m	26.23 m	42.87 m
3× 90° elbow	13.63 m	27.96 m	48.68 m	77.52 m	116.50 m		X	3.53 m	11.92 m	23.89 m	40.35 m

Table 4: Minimum bottom opening area for natural ventilation

Take the following into account:

- Use the correct table. For intermediate refrigerant charges, use the table with the higher value. **Example:** If the refrigerant charge is 4.3 kg, use the table of 4.8 kg.
- For intermediate floor areas, use the column with the lower value. **Example:** If the floor area is 12.50 m², use the column of 10.00 m².
- For intermediate release height values, use the row with the lower value. **Example:** If the release height is 1.95 m, use the row of 1.90 m.
- A_{nv}: Bottom opening area for natural ventilation.
- $A_{nv\text{-}min}$: Minimum bottom opening area for natural ventilation.
- (*): Already OK (no ventilation openings needed).

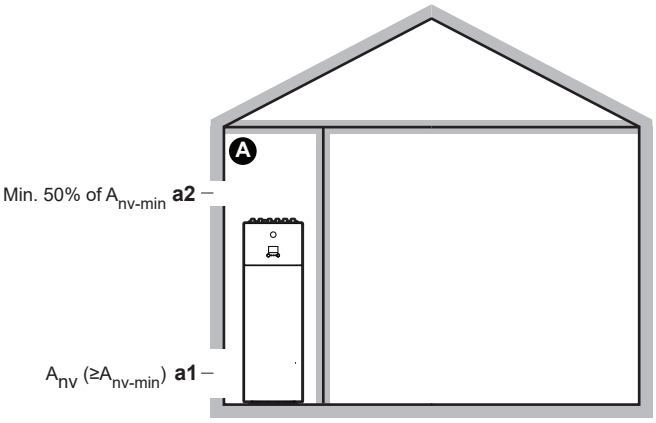
$A_{nv\text{-}min}$ (dm²) – In case of Refrigerant charge=3.8 kg					
Release height (m)	Floor area of room A (m²) [! NOT room A + room B !]				
	5.00 m²	10.00 m²	15.00 m²	20.00 m²	25.00 m²
1.89 m	3.698 dm²	0.987 dm²	(*)	(*)	(*)
1.90 m	3.645 dm²	0.914 dm²	(*)	(*)	(*)
2.00 m	3.318 dm²	0.467 dm²	(*)	(*)	(*)
2.20 m	2.677 dm²	(*)	(*)	(*)	(*)
2.40 m	2.098 dm²	(*)	(*)	(*)	(*)
2.60 m	1.568 dm²	(*)	(*)	(*)	(*)
2.80 m	1.080 dm²	(*)	(*)	(*)	(*)
3.00 m	0.626 dm²	(*)	(*)	(*)	(*)

$A_{nv\text{-}min}$ (dm²) – In case of Refrigerant charge=4.8 kg					
Release height (m)	Floor area of room A (m²) [! NOT room A + room B !]				
	5.00 m²	10.00 m²	15.00 m²	20.00 m²	25.00 m²
1.89 m	5.977 dm²	3.560 dm²	1.753 dm²	(*)	(*)
1.90 m	5.914 dm²	3.476 dm²	1.652 dm²	(*)	(*)
2.00 m	5.534 dm²	2.969 dm²	1.037 dm²	(*)	(*)
2.20 m	4.790 dm²	1.969 dm²	(*)	(*)	(*)
2.40 m	4.120 dm²	1.060 dm²	(*)	(*)	(*)
2.60 m	3.511 dm²	0.226 dm²	(*)	(*)	(*)
2.80 m	2.952 dm²	(*)	(*)	(*)	(*)
3.00 m	2.436 dm²	(*)	(*)	(*)	(*)

$A_{nv\text{-}min}$ (dm²) – In case of Refrigerant charge=5.8 kg					
Release height (m)	Floor area of room A (m²) [! NOT room A + room B !]				
	5.00 m²	10.00 m²	15.00 m²	20.00 m²	25.00 m²
1.89 m	8.256 dm²	6.132 dm²	4.600 dm²	2.963 dm²	1.289 dm²
1.90 m	8.184 dm²	6.038 dm²	4.488 dm²	2.835 dm²	1.146 dm²
2.00 m	7.750 dm²	5.470 dm²	3.806 dm²	2.053 dm²	0.274 dm²
2.20 m	6.902 dm²	4.354 dm²	2.461 dm²	0.508 dm²	(*)
2.40 m	6.143 dm²	3.343 dm²	1.237 dm²	(*)	(*)
2.60 m	5.454 dm²	2.419 dm²	0.115 dm²	(*)	(*)
2.80 m	4.825 dm²	1.568 dm²	(*)	(*)	(*)
3.00 m	4.245 dm²	0.776 dm²	(*)	(*)	(*)

PATTERN 4

PATTERN 4 is only allowed for installations in technical rooms (i.e. room that is NEVER occupied by persons). For this pattern there are no requirements to the minimum floor area if you provide 2 openings (one at the bottom, one at the top) between the room and the outside to ensure natural ventilation. The room must be protected from frost.



Ⓐ	Unoccupied room where the indoor unit is installed. Must be protected from frost.
a1	A_{nv}: **Bottom opening** for natural ventilation between the unoccupied room and the outside. ▪ Must be a permanent opening that cannot be closed. ▪ Must be above ground level. ▪ Must be completely located between 0 and 300 mm from the floor of the unoccupied room. ▪ Must be ≥A_{nv-min} (minimum bottom opening area as specified in the table below). ▪ ≥50% of the required opening area A_{nv-min} must be ≤200 mm from the floor of the unoccupied room. ▪ The bottom of the opening must be ≤100 mm from the floor of the unoccupied room. ▪ If the opening starts from the floor, the height of the opening must be ≥20 mm.
a2	**Top opening** for natural ventilation between room A and the outside. ▪ Must be a permanent opening that cannot be closed. ▪ Must be ≥50% of A_{nv-min} (minimum bottom opening area as specified in the table below). ▪ Must be ≥1.5 m from the floor of the unoccupied room.

A_{nv-min} (minimum bottom opening area for natural ventilation)

The minimum bottom opening area for natural ventilation between the unoccupied room and the outside depends on the total refrigerant in the system. For intermediate refrigerant charges, use the row with the higher value. **Example:** If the refrigerant charge is 4.3 kg, use the row of 4.4 kg.

Total refrigerant charge (kg)	A_{nv-min} (dm²)
3.8 kg	9.9 dm²
4 kg	10.1 dm²
4.2 kg	10.4 dm²
4.4 kg	10.6 dm²
4.6 kg	10.9 dm²
4.8 kg	11.1 dm²
5 kg	11.3 dm²
5.2 kg	11.5 dm²
5.4 kg	11.8 dm²
5.6 kg	12.0 dm²
5.8 kg	12.2 dm²

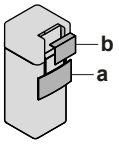
4.2 Opening and closing the unit

4.2.1 To open the indoor unit

NOTICE

The top cover can only be removed if the switch box is lowered.

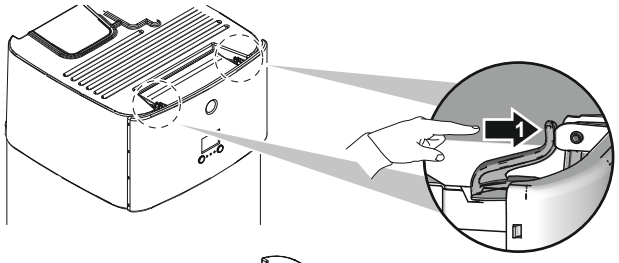
Overview

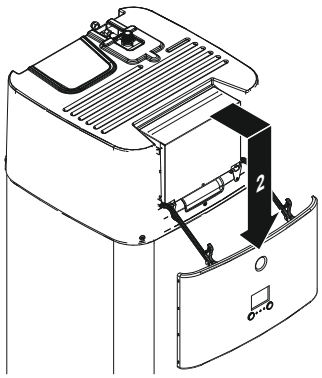


a User interface panel
b Switch box cover

Open

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



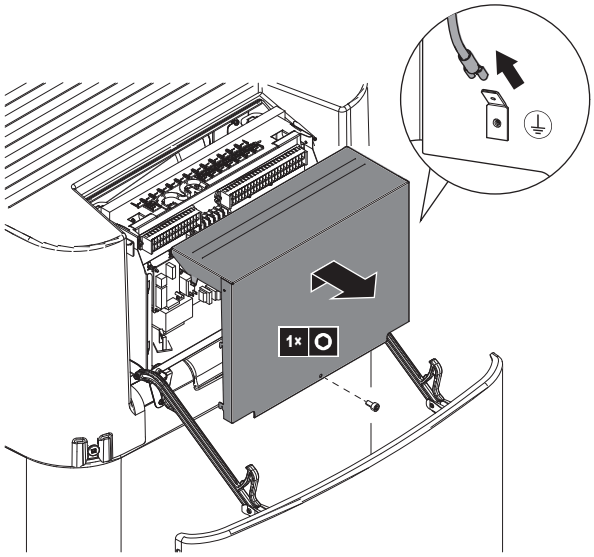


2 Remove the switch box cover.

NOTICE

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

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



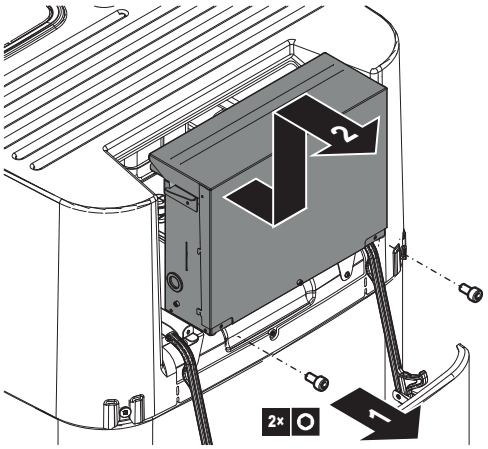
4.2.2 To lower the switch box of the indoor unit and remove the top cover

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

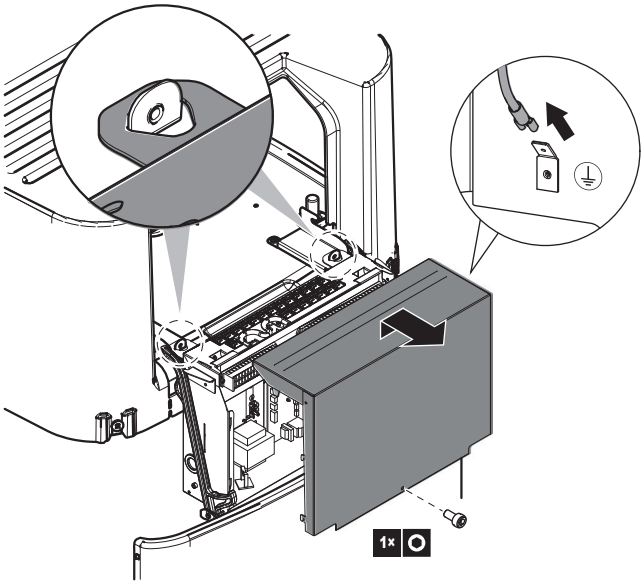
Prerequisite: The user interface panel has been removed.

1 Loosen the screws.

2 Lift up the switch box.



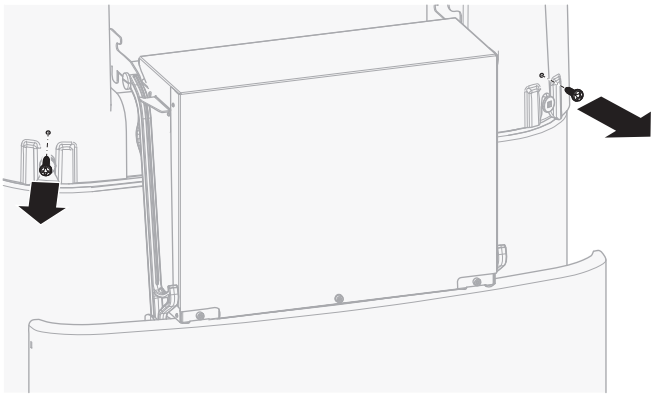
3 Lower the switch box.

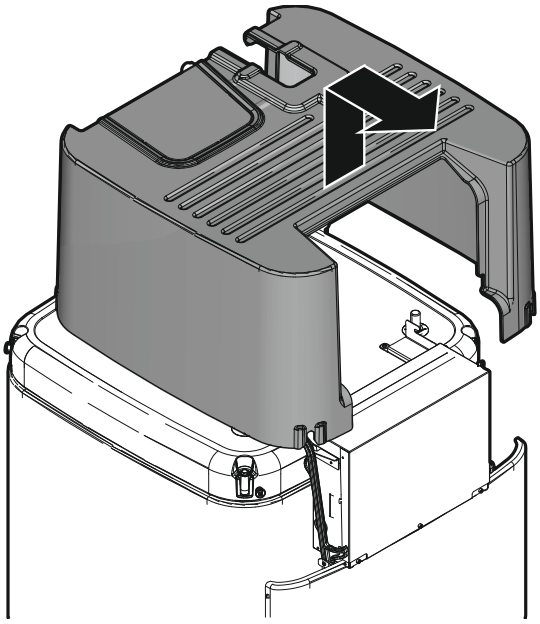


4 If switch box is opened: Disconnect the ground connection from the top cover of the switch box.

5 If necessary, remove the top cover. This is necessary in the following cases:

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





4.2.3 To close the indoor unit

1 Reconnect the ground connection to the top cover of the switch box.
2 Close the cover of the switch box.
3 Reinstall the top cover.
4 Check that the top cover is correctly fitted.
5 Screw in the top cover screws to secure it.
6 Put the switch box back into place.
7 Reinstall the user interface panel.

NOTICE

When closing the indoor unit, 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. Also see "3.1.2 To handle the indoor unit" [▸ 5].
2 Connect the drain hose to the drain. See "4.3.2 To connect the drain hose to the drain" [▸ 15].
3 Slide the indoor unit into position.

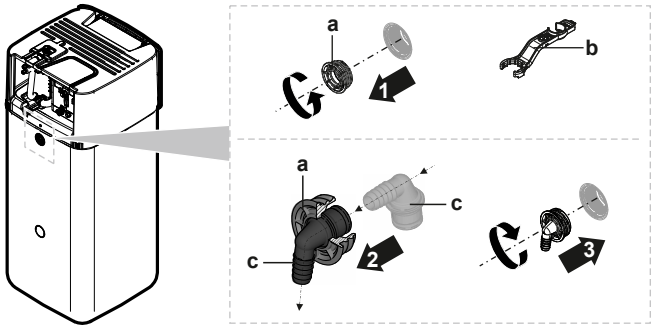
NOTICE

Level. Make sure the unit is level.

4.3.2 To connect the drain hose to the drain

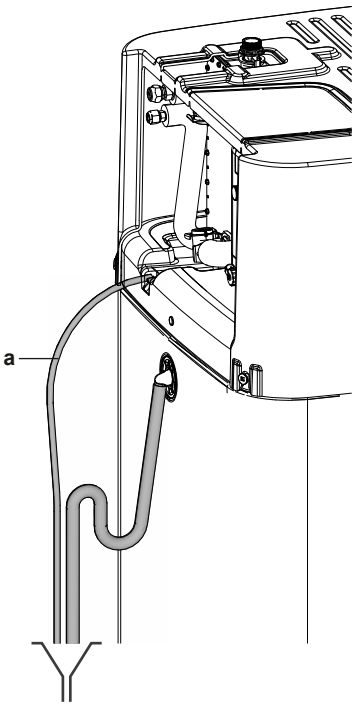
Spillover water from the water storage tank as well as water collecting in the drain pan must be drained. You must connect the drain hoses to an appropriate drain according to the applicable legislation.

1 Open the screw plug.



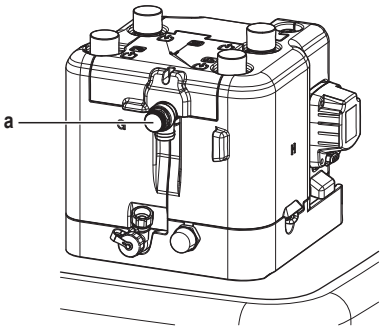
a Screw plug
b Assembly wrench
c Spillover connector

2 Insert the spillover connector into the screw plug.
3 Mount the spillover connector.
4 Attach a drain hose to the spillover connector.
5 Connect the drain hose to an appropriate drain. Ensure the water can flow through the drain hose. Ensure that the water level cannot mount above the overspill.
6 Connect the drain pan hose to the drain pan connection and connect to an appropriate drain.



a Drain pan hose

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



a Pressure relief valve

5 Piping installation

5.1 Preparing refrigerant piping

5.1.1 Refrigerant piping requirements

Also see "4.1.2 Special requirements for R32 units" [▸ 5] for additional requirements.

- **Piping length:** See "4.1.1 Installation site requirements of the indoor unit" [▸ 5].
- **Piping material:** phosphoric acid deoxidised seamless copper
- **Piping connections:** Only flare and brazed connections are allowed. The indoor and outdoor units have flare connections. Connect both ends without brazing. If brazing should be needed, take the guidelines in the installer reference guide into account.
- **Flare connections:** Only use annealed material.
- **Piping diameter:**

Liquid piping	Ø9.5 mm (3/8")
Gas piping	Ø15.9 mm (5/8")

- **Piping temper grade and thickness:**

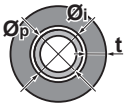
Outer diameter (Ø)	Temper grade	Thickness (t)[a]	
9.5 mm (3/8")	Annealed (O)	≥0.8 mm	
15.9 mm (5/8")	Annealed (O)	≥1.0 mm	

[a] Depending on the applicable legislation and the maximum working pressure of the unit (see "PS High" on the unit name plate), larger piping thickness might be required.

5.1.2 Refrigerant piping insulation

- Use polyethylene foam as insulation material:
  - with a heat transfer rate between 0.041 and 0.052 W/mK (0.035 and 0.045 kcal/mh°C)
  - with a heat resistance of at least 120°C
- Insulation thickness

Pipe outer diameter ($Ø_p$)	Insulation inner diameter ($Ø_i$)	Insulation thickness (t)
9.5 mm (3/8")	12~15 mm	≥13 mm
15.9 mm (5/8")	17~20 mm	≥13 mm



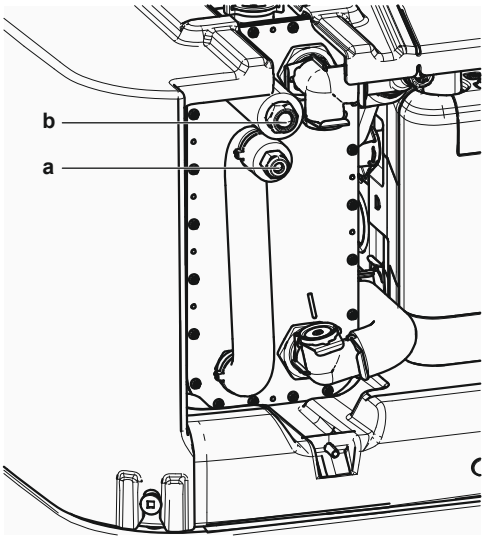
If the temperature is higher than 30°C and the humidity is higher than RH 80%, the thickness of the insulation materials should be at least 20 mm to prevent condensation on the surface of the insulation.

5.2 Connecting refrigerant piping

See the installation manual of the outdoor unit for all guidelines, specifications and installation instructions.

5.2.1 To connect the refrigerant piping to the indoor unit

1 Connect the liquid stop valve from the outdoor unit to the refrigerant liquid connection of the indoor unit.



a Refrigerant liquid connection
b Refrigerant gas connection

2 Connect the gas stop valve from the outdoor unit to the refrigerant gas connection of the indoor unit.

5.3 Preparing water piping

NOTICE

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

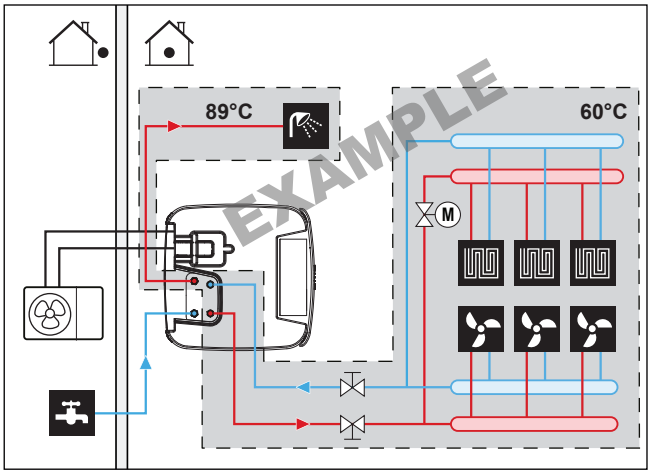
NOTICE

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

- **Water pressure – Domestic hot water.** The maximum water pressure is 10 bar. Provide adequate safeguards in the DHW circuit to ensure that the maximum pressure is NOT exceeded. The minimum water pressure to operate is 1 bar.
- **Water pressure – Space heating/cooling circuit.** The maximum water pressure is 3 bar (=0.3 MPa). Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded. The minimum water pressure to operate is 1 bar (=0.1 MPa).
- **Water pressure – Storage tank.** The water inside the storage tank is not pressurized. Therefore a visual check of the water level in the storage tank has to be carried out annually.
- **Water temperature.** All installed piping and piping accessories (valve, connections,…) MUST withstand the following temperatures:

INFORMATION

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



- **Storage tank – Water quality**. Minimum requirements regarding the quality of water used to fill the storage tank:
  - Water hardness (calcium and magnesium, calculated as calcium carbonate): ≤3 mmol/l
  - Conductivity: ≤1500 (ideal: ≤100) µS/cm
  - Chloride: ≤250 mg/l
  - Sulphate: ≤250 mg/l
  - pH value: 6.5~8.5

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

5.3.1 To check the water volume and flow rate

To make sure that the unit operates properly:

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

Minimum water volume

Check that the total water volume in the installation is higher than the minimum water volume, the internal water volume of the indoor unit NOT included:

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

Maximum water volume

INFORMATION

The defrost cycle can be interrupted to prevent freeze-up of the heat exchanger when the following 3 conditions are fulfilled.

- The water volume in the installation exceeds 300 litre.
- The ambient temperature is below –10°C.
- The water temperature is below 25°C.

⇨ When a stop error occurs due to consecutive interruptions, a power reset of the unit will be required to clear the error.

Minimum flow rate

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

If operation is…	Then the minimum required flow rate is…
Cooling	16 l/min
Heating/defrost	22 l/min

NOTICE

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

See the installer reference guide for more information.

See the recommended procedure as described in "8.2 Checklist during commissioning" [▸ 42].

5.4 Connecting water piping

5.4.1 To connect the water piping

NOTICE

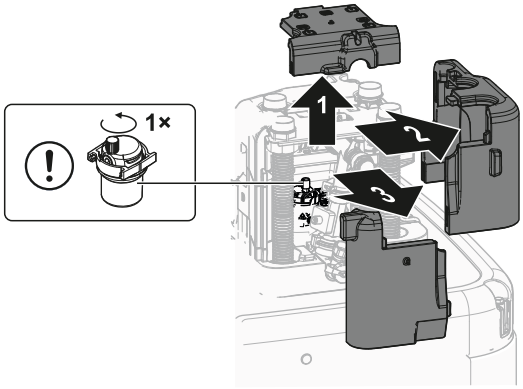
Do NOT use excessive force when connecting the field piping and make sure the piping is aligned properly. Deformation of the piping can cause malfunctioning of the unit.

1 Remove the thermal insulation of the hydraulic block. Open the vent valve on the pump by one turn. Afterwards put the thermal insulation back on the hydraulic block.

NOTICE

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

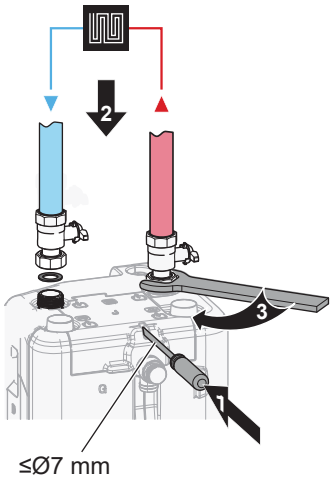
- ONLY remove parts in the order and direction as indicated here,
- do NOT use force,
- do NOT use tools,
- re-install the thermal insulation in reverse order.



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

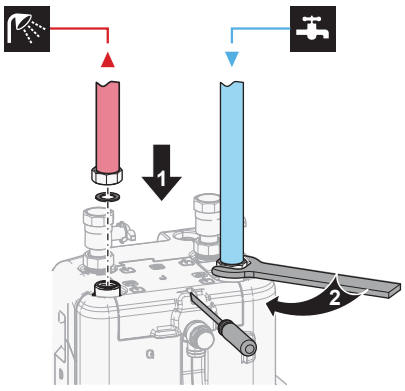
3 Connect the space heating/cooling field piping to the shut-off valves using a sealing.

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



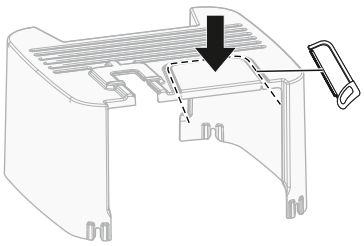
4 Connect the domestic hot water in and out pipes to the indoor unit.

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



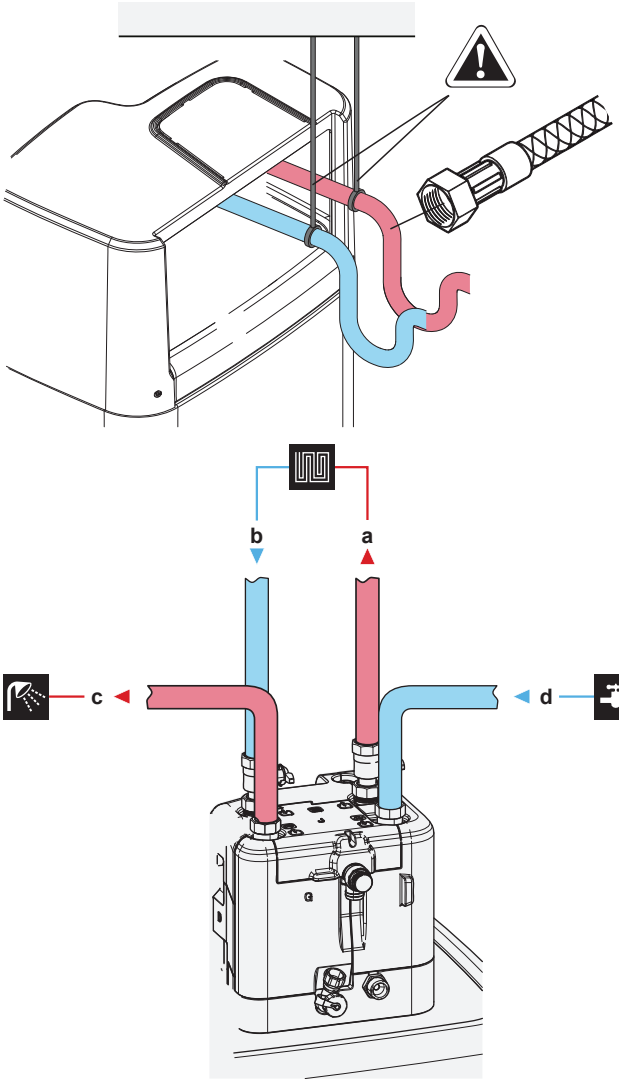
5 Cut open the top cover.

If the space heating/cooling or the domestic hot water pipes are directed upwards, the top cover must be cut along the perforation with a suitable tool.



6 Support the water piping.

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



a Space heating/cooling water OUT (screw connection, 1")
b Space heating/cooling water IN (screw connection, 1")
c Domestic hot water OUT (screw connection, 1")
d Domestic cold water IN (cold water supply)(screw connection, 1")

NOTICE

- It is recommended to install shut-off valves on the space heating/cooling water in and out connections, as well as on the domestic cold water in and domestic hot water out connections. These 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.

NOTICE

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

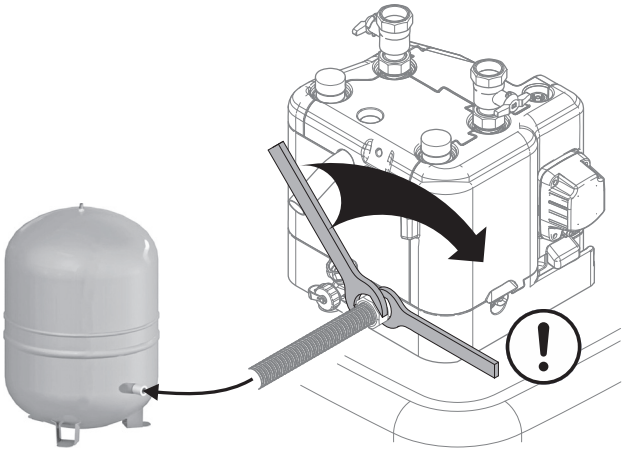
NOTICE

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

5.4.2 To connect a pressure vessel

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

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



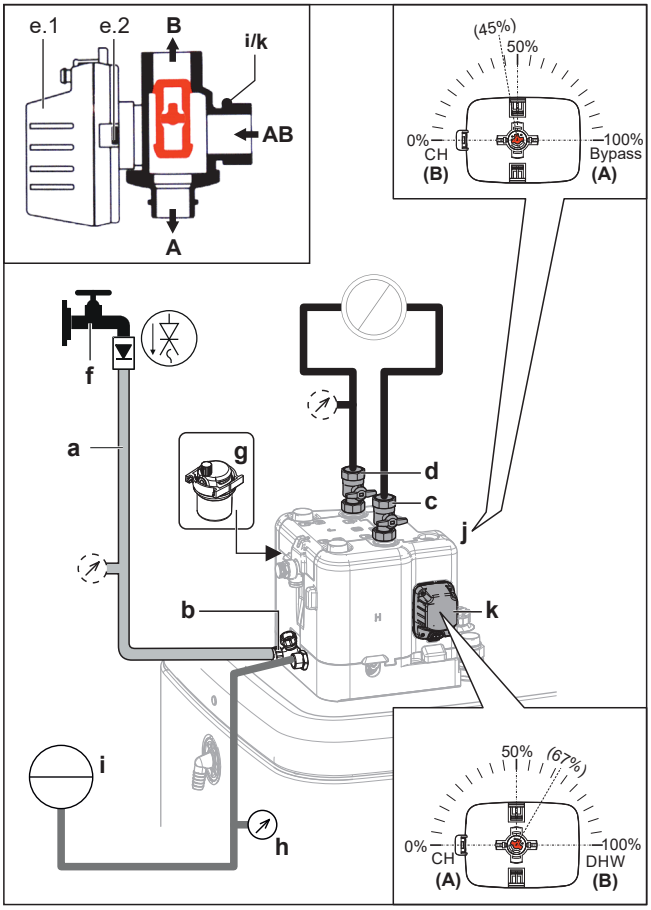
5.4.3 To fill the heating system

DANGER: RISK OF ELECTROCUTION

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

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

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



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

2 Prepare for air purging according to the instructions (see "8.2.2 To perform an air purge" [▸ 43]).

3 Open the water tap.

4 Open fill and drain valve and monitor the manometer.

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

6 Close the manual air vent valves as soon as water emerges free of bubbles.

7 Close the water tap. Keep the fill and drain valve open in case it is necessary to repeat the filling procedure after the air purging of the system. See "8.2.2 To perform an air purge" [▸ 43].

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

5.4.4 To fill the heat exchanger inside the storage tank

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

- The domestic hot water heat exchanger

NOTICE

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

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

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

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

4 Check for water leaks.

- The bivalent heat exchanger (only for some models)

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

6 Do air purge on the bivalent heating circuit.

7 Check for water leaks.

5.4.5 To fill the storage tank

NOTICE

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

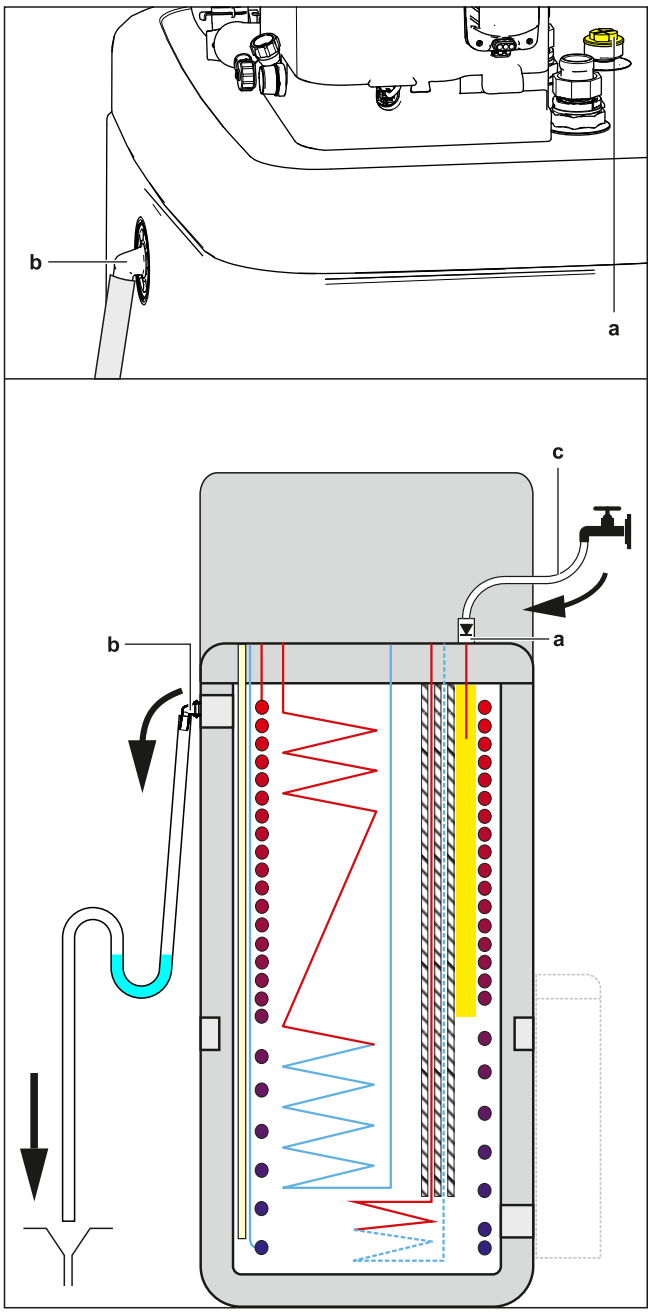
Fill the storage tank with a water pressure <6 bar and a flow speed <15 l/min.

Without installed drainback solar kit (option)

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

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

3 Remove the hose.



a Drainback connection
b Spillover connection
c Hose with non-return valve (1/2")

With installed drainback solar kit (option)

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

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

Follow the steps described in the previous chapter.

5.4.6 To insulate the water piping

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

If the temperature is higher than 30°C and the humidity is higher than RH 80%, the thickness of the insulation materials should be at least 20 mm to prevent condensation on the surface of the insulation.

6 Electrical installation

DANGER: RISK OF ELECTROCUTION

WARNING

ALWAYS use multicore cable for power supply cables.

CAUTION

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

NOTICE

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

6.1 About electrical compliance

Only for the backup heater of the indoor unit

See "6.3.3 To connect the backup heater power supply" [▸ 23].

6.2 Guidelines when connecting the electrical wiring

Tightening torques

Indoor unit:

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

Indoor unit – BUH option:

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

6.3 Connections to the indoor unit

Item	Description
Power supply (main)	See "6.3.2 To connect the main power supply" [▸ 22].
Power supply (backup heater)	See "6.3.3 To connect the backup heater power supply" [▸ 23].
Backup heater	See "6.3.4 To connect the backup heater to the main unit" [▸ 25].
Shut-off valve	See "6.3.5 To connect the shut-off valve" [▸ 25].
Electricity meters	See "6.3.6 To connect the electricity meters" [▸ 26].
Domestic hot water pump	See "6.3.7 To connect the domestic hot water pump" [▸ 26].
Alarm output	See "6.3.8 To connect the alarm output" [▸ 27].
Space cooling/heating operation control	See "6.3.9 To connect the space cooling/heating ON/OFF output" [▸ 27].
Changeover to external heat source control	See "6.3.10 To connect the changeover to external heat source" [▸ 28].
Power consumption digital inputs	See "6.3.11 To connect the power consumption digital inputs" [▸ 28].
Safety thermostat	See "6.3.12 To connect the safety thermostat (normally closed contact)" [▸ 29].
Smart Grid	See "6.3.13 To connect a Smart Grid" [▸ 30].

Item	Description
WLAN cartridge	See "6.3.14 To connect the WLAN cartridge" [▶ 32].
Solar input	See "6.3.15 To connect the solar input" [▶ 32].
DHW output	See "6.3.16 To connect the DHW output" [▶ 32].
Room thermostat (wired or wireless)	See below table.
	Wires: 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	There are different controllers and setups possible for the heat pump convectors. Depending on the setup, you also need option EKRELAY1. For more information, see: ▪ Installation manual of the heat pump convectors ▪ Installation manual of the heat pump convector options ▪ Addendum book for optional equipment
	Wires: 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 outdoor sensor	See: ▪ Installation manual of the remote outdoor sensor ▪ Addendum book for optional equipment
	Wires: 2×0.75 mm²
	[9.B.1]=1 (`External sensor` = `Outdoor`) [9.B.2] `Ext. amb. sensor offset` [9.B.3] `Averaging time`
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`

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`
WLAN module	See: ▪ Installation manual of the WLAN module ▪ Addendum book for optional equipment
	Use the cable delivered with the WLAN module.
	[D] `Wireless gateway`

for room thermostat (wired or wireless):

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

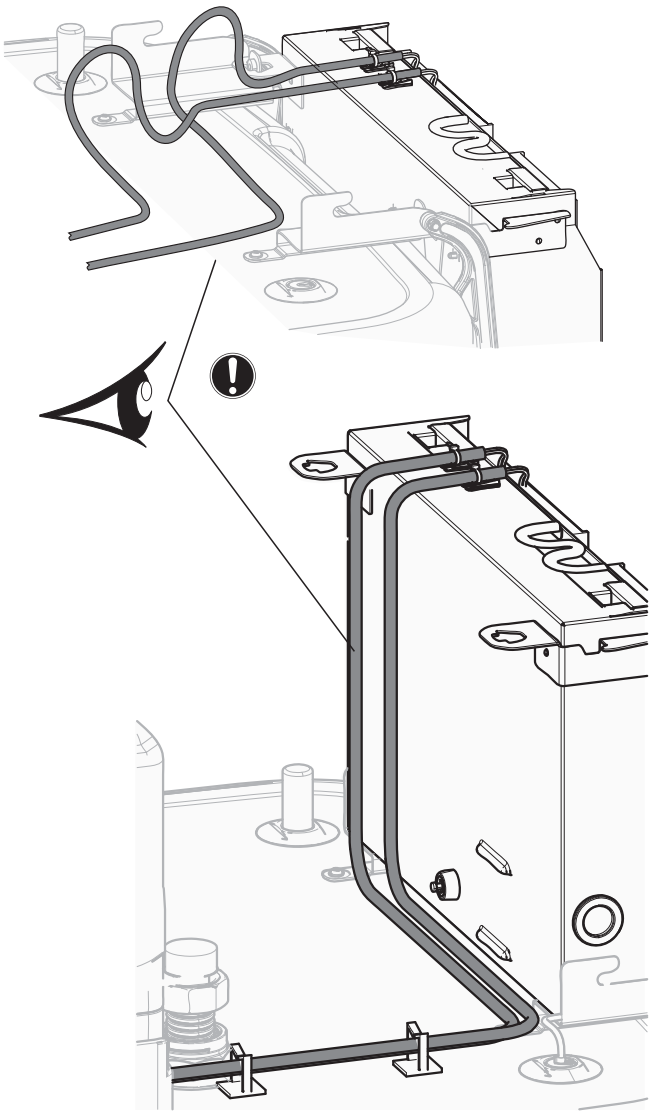
Wired room thermostat with multi-zoning base unit	▪ Installation manual of the wired room thermostat (digital or analogue) + multi-zoning base unit
	▪ Addendum book for optional equipment
	▪ In this case:
	  ▪ You need to connect the wired room thermostat (digital or analogue) to the multi-zoning base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

6.3.1 To connect the electrical wiring to the indoor unit

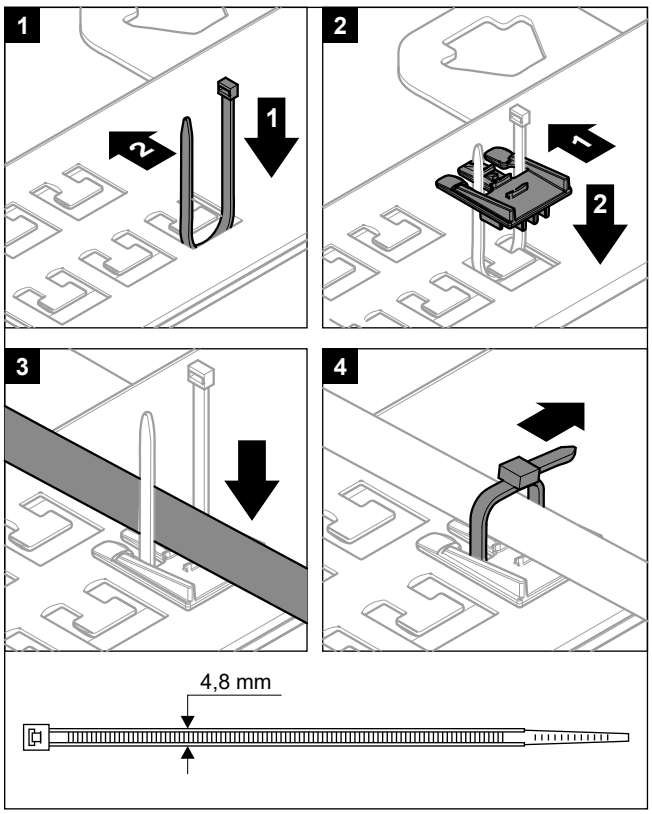
Remark: All cables which will be connected to the switch box of the ECH_2O must be fixed by strain relief.

To have easier access to the switch box itself and the routing of cables the switch box can be lowered (see "4.2.1 To open the indoor unit" [▶ 13]).

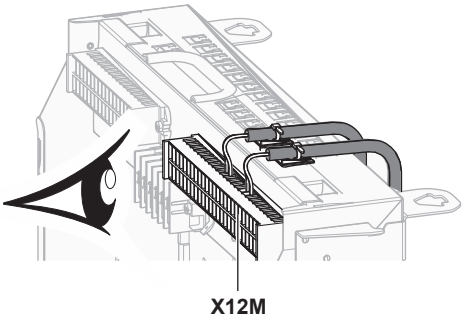
If the switch box is lowered in service position while the electrical installation is done, additional cable length has to be taken into account adequately. The cable routing in normal position is longer than in service position.



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



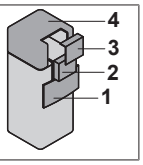
It is important that the fixing plate of terminals is NOT in service position, while cables are connected to one of the terminals. Otherwise the cables could be too short.



6.3.2 To connect the main power supply

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 13]):

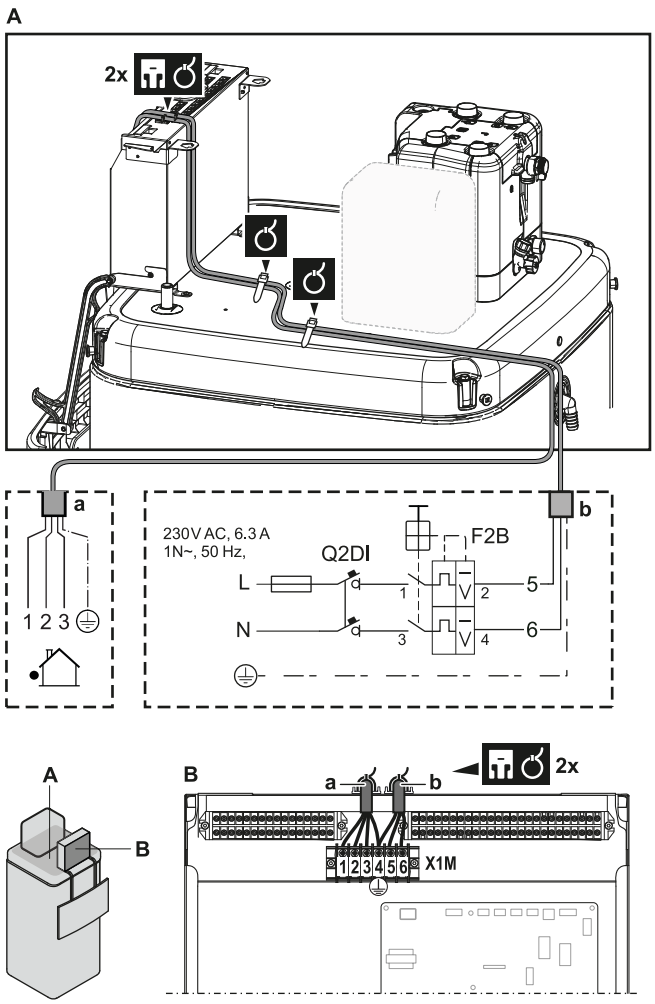
1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



2 Connect the main power supply.

In case of normal kWh rate power supply

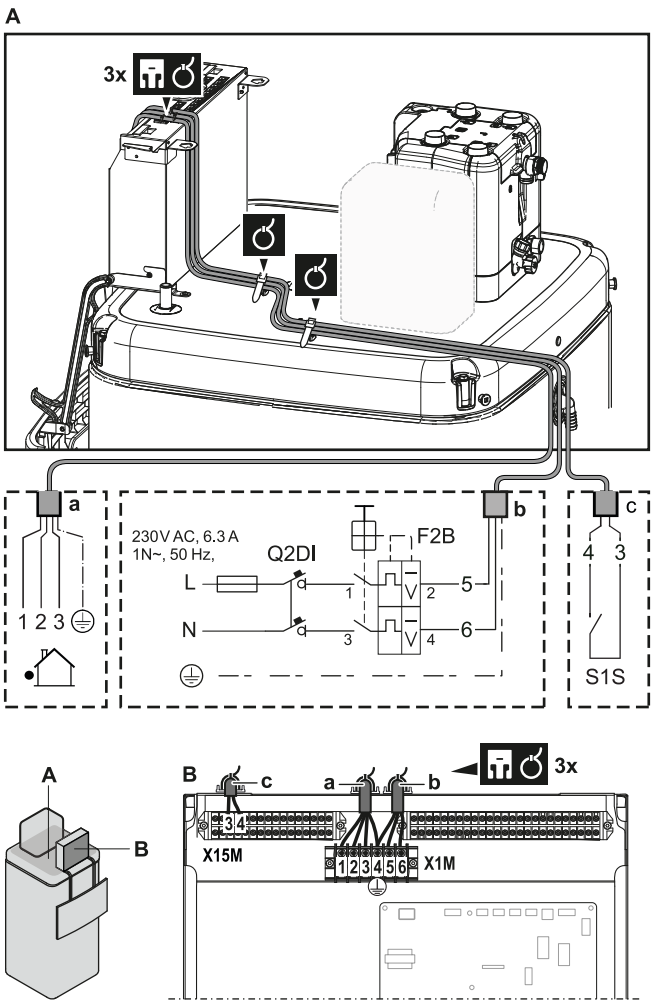
	Interconnection cable	Wires: (3+GND)×1.5 mm²
	Power supply indoor unit	Wires: 1N+GND Maximum running current: 6.3 A
	—	



a Interconnection cable
b Power supply indoor unit

In case of preferential kWh rate power supply

	Interconnection cable	Wires: (3+GND)×1.5 mm²
	Power supply indoor unit	Wires: 1N+GND Maximum running current: 6.3 A
	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.
	[9.8] `Benefit kWh power supply`	



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

3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

6.3.3 To connect the backup heater power supply

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

WARNING

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

CAUTION

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

6 Electrical installation

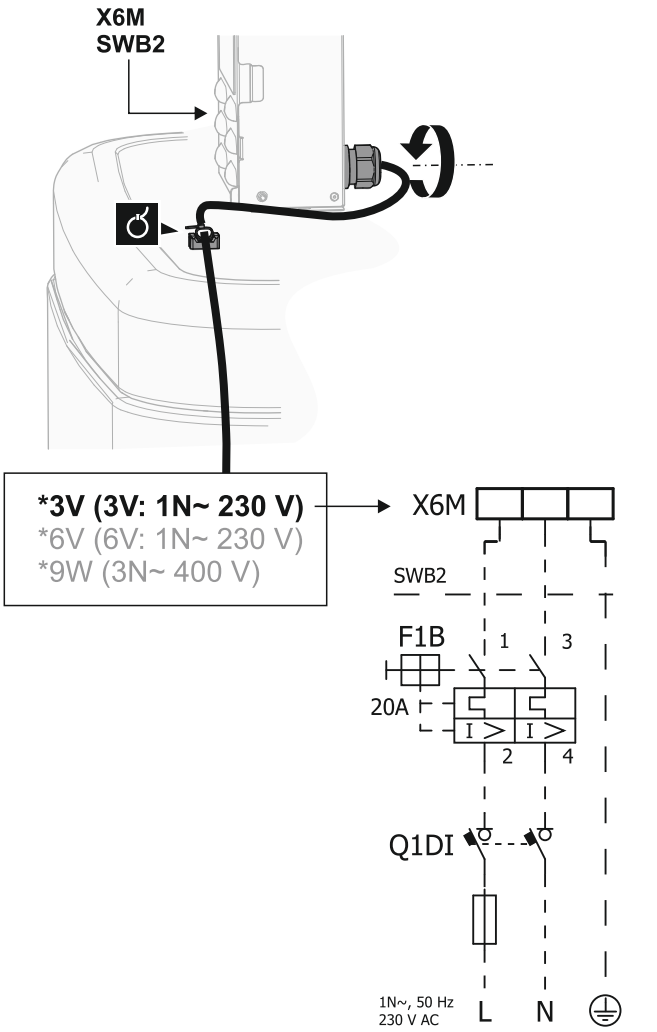
The backup heater capacity is depending on the chosen BUH option kit. Make sure that the power supply is in accordance with the backup heater capacity, as listed in the table below.

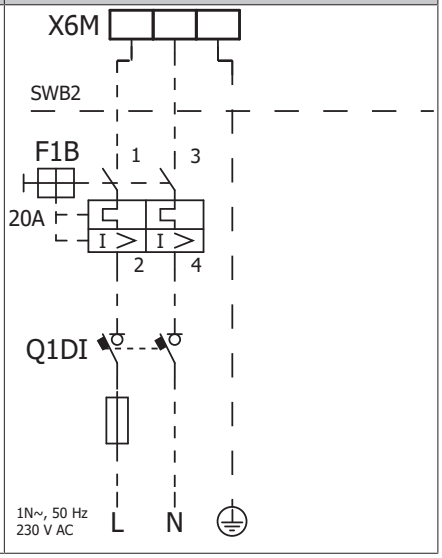
Backup heater type	Backup heater capacity	Power supply	Maximum running current	Z_{max}
*3V	1 kW	1N~ 230 V	4.4 A	—
	2 kW	1N~ 230 V	8.7 A	—
	3 kW	1N~ 230 V	13.1 A	—
*6V	2 kW	1N~ 230 V	8.7 A	—
	4 kW	1N~ 230 V	17.4 A[(a)(b)]	0.22 Ω
	6 kW	1N~ 230 V	26.1 A[(a)(b)]	0.22 Ω
*9W	3 kW	3N~ 400 V	4 A	—
	6 kW	3N~ 400 V	9 A	—
	9 kW	3N~ 400 V	13 A	—

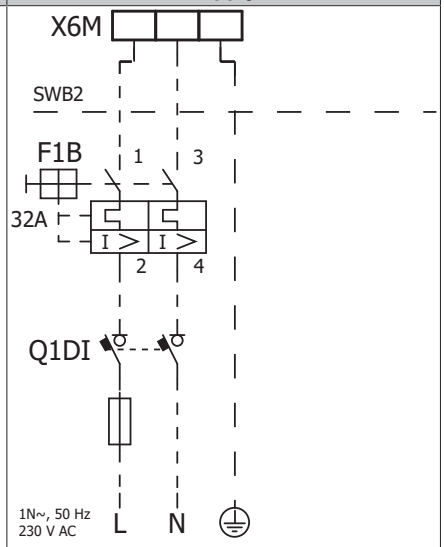
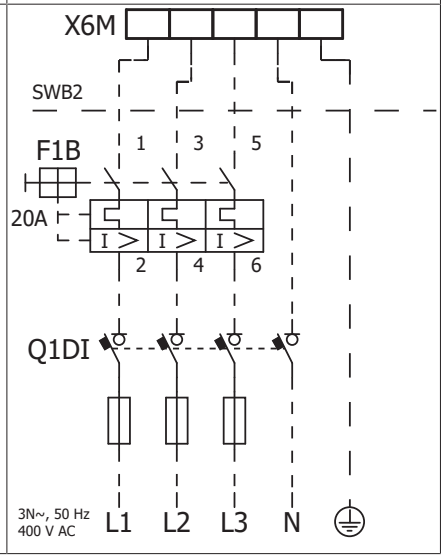
[(a)] Electrical equipment complying with EN/IEC 61000-3-12 (European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase).

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

Connect the backup heater power supply as follows:



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

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

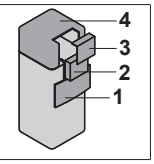
F1B Overcurrent fuse (field supply). Recommended fuse: tripping class C.
Q1DI Earth leakage circuit breaker (field supply)
SWB Switch box
X6M Terminal (field supply)

6.3.4 To connect the backup heater to the main unit

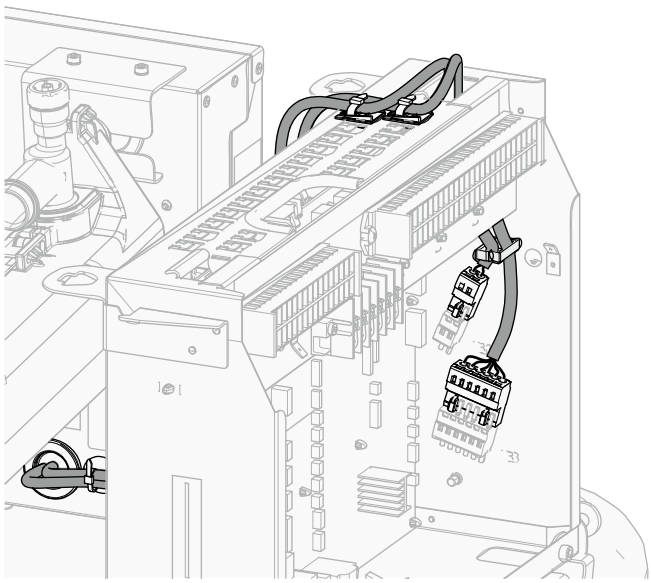
	Wires: The connection cables are already connected to the option backup heater EKECBU*.
	[9.3] `Backup heater`

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 21].

6.3.5 To connect the shut-off valve

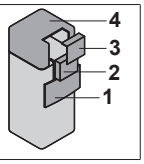
INFORMATION

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

	Wires: 2×0.75 mm² 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" [▶ 13]):

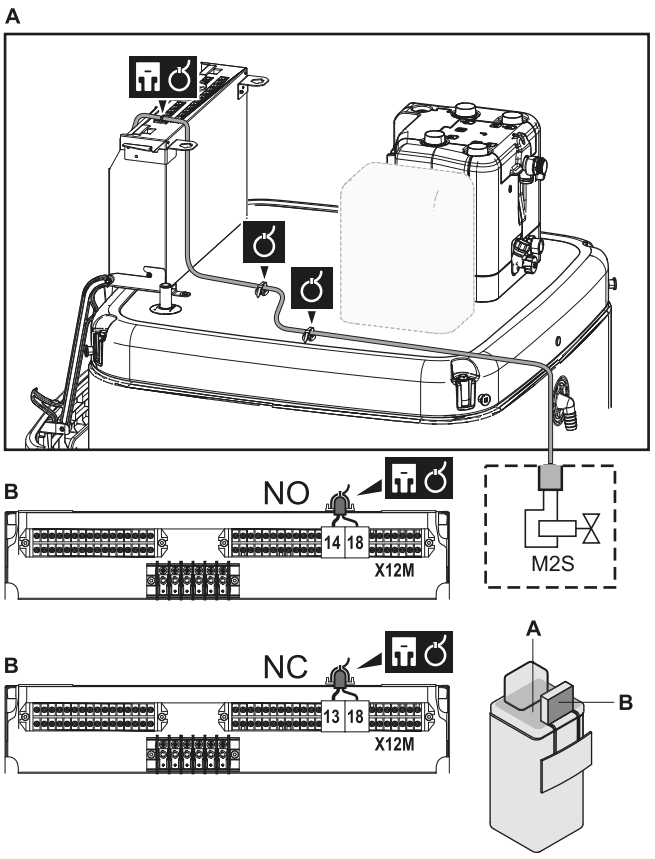
1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

6.3.6 To connect the electricity meters

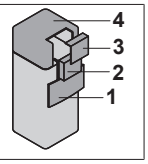
	Wires: 2 (per meter)×0.75 mm² Electricity meters: 12 V DC pulse detection (voltage supplied by PCB)
	[9.A] `Energy metering`

INFORMATION

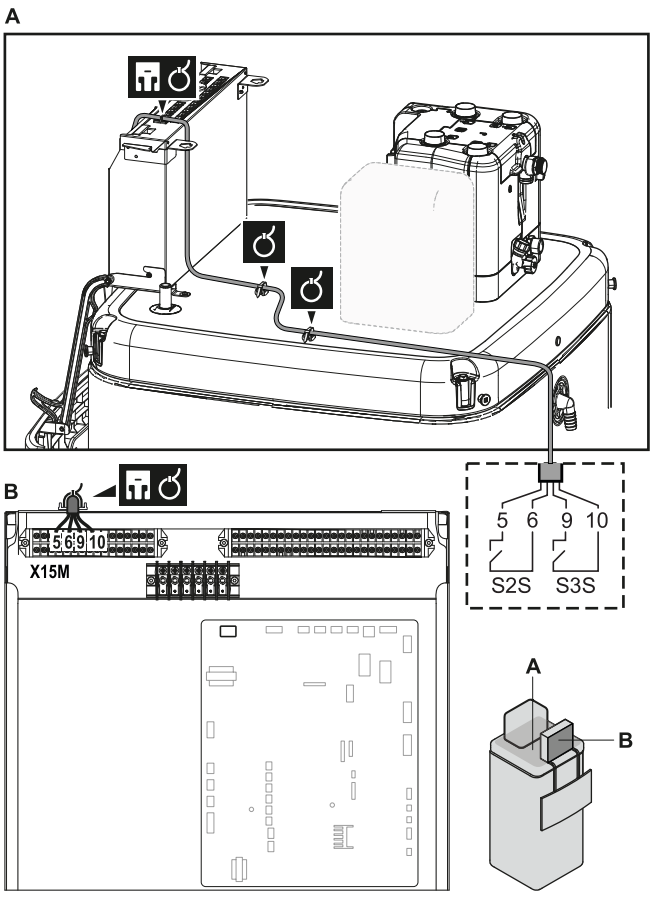
In case of an electricity meter with transistor output, check the polarity. The positive polarity MUST be connected to X15M/5 and X15M/9; the negative polarity to X5M/5 and X5M/3.

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



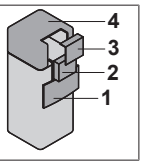
3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

6.3.7 To connect the domestic hot water pump

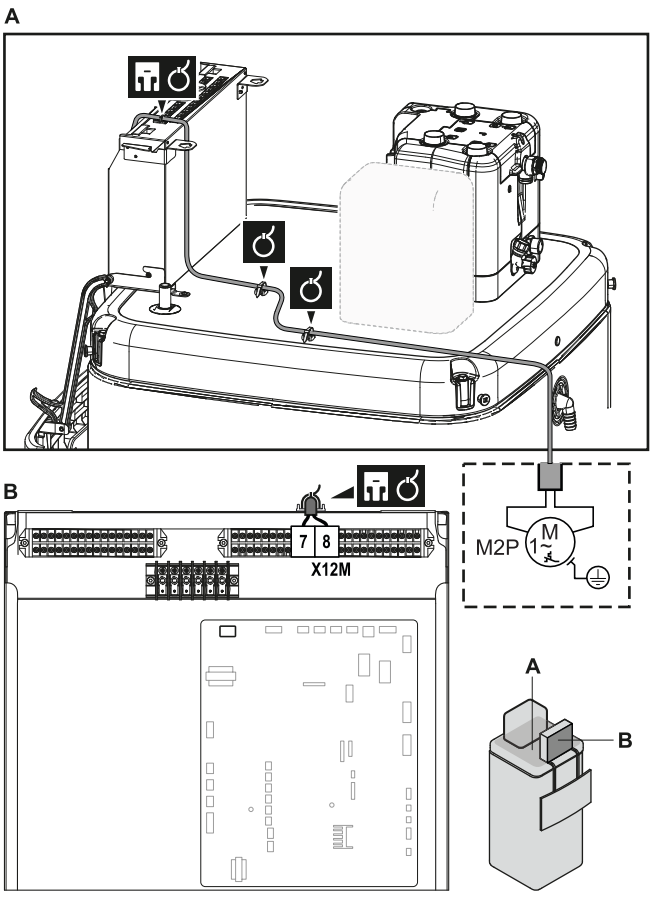
	Wires: (2+GND)×0.75 mm² DHW pump output. Maximum load: 2 A (inrush), 230 V AC, 1 A (continuous)
	[9.2.2] `DHW pump` [9.2.3] `DHW pump schedule`

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



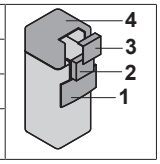
3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

6.3.8 To connect the alarm output

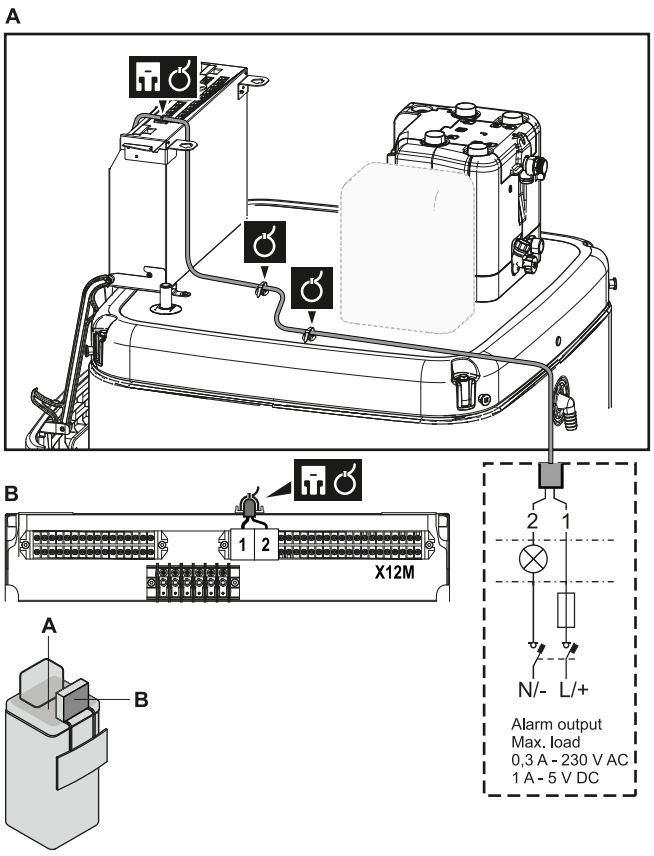
	Wires: (2)×0.75 mm² Maximum load: 0.3 A, 230 V AC Maximum load: 1 A, 5 V DC
	[9.D] `Alarm output`

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

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

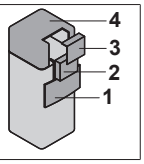
INFORMATION

Cooling is only applicable in case of reversible models.

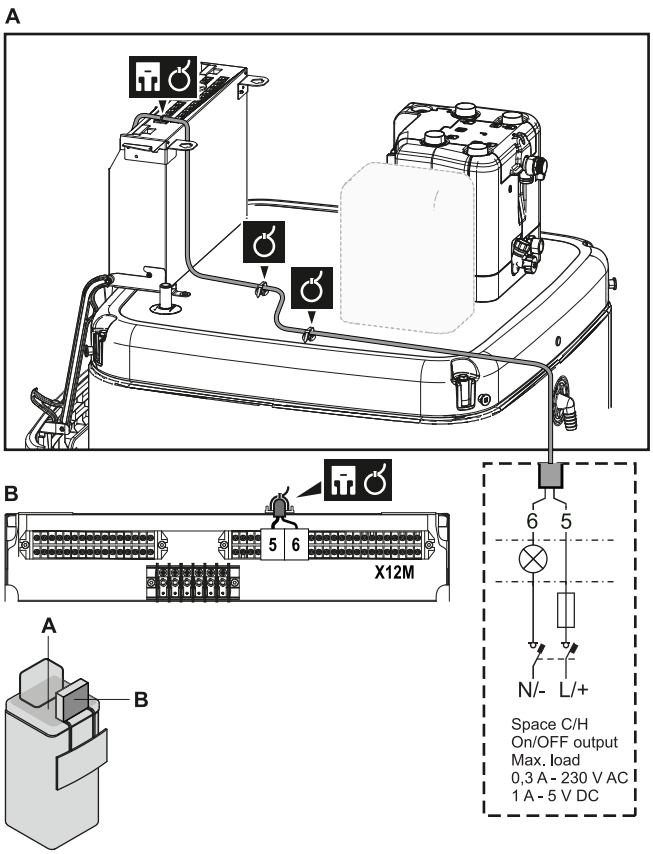
	Wires: (2)×0.75 mm² Maximum load: 0.3 A, 230 V AC Maximum load: 1 A, 5 V DC
	—

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

6.3.10 To connect the changeover to external heat source

INFORMATION

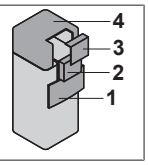
Bivalent is only possible in case of 1 leaving water temperature zone with:

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

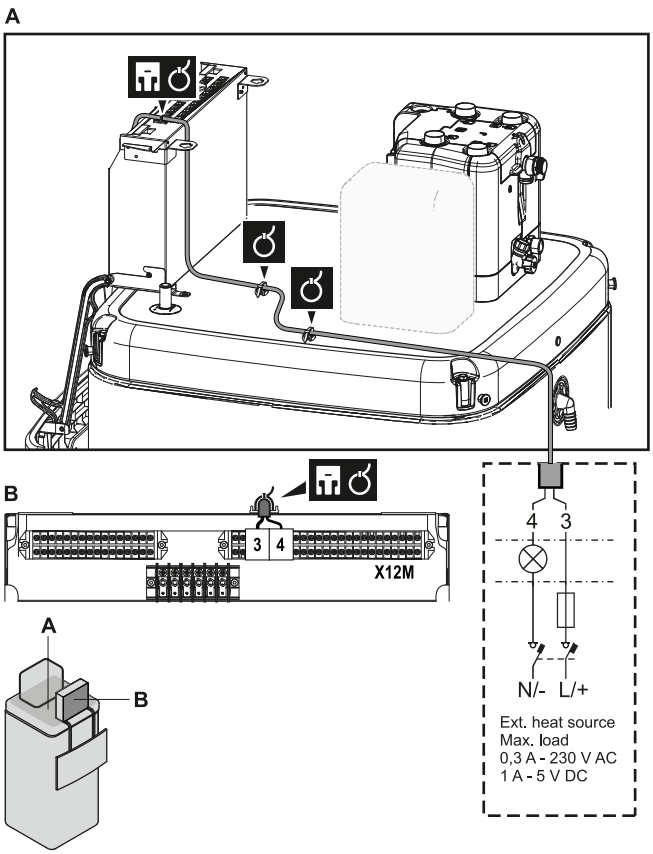
	Wires: 2×0.75 mm² Maximum load: 0.3 A, 230 V AC Maximum load: 1 A, 5 V DC
	[9.C] `Bivalent`

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



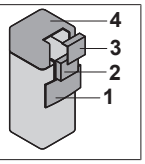
3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

6.3.11 To connect the power consumption digital inputs

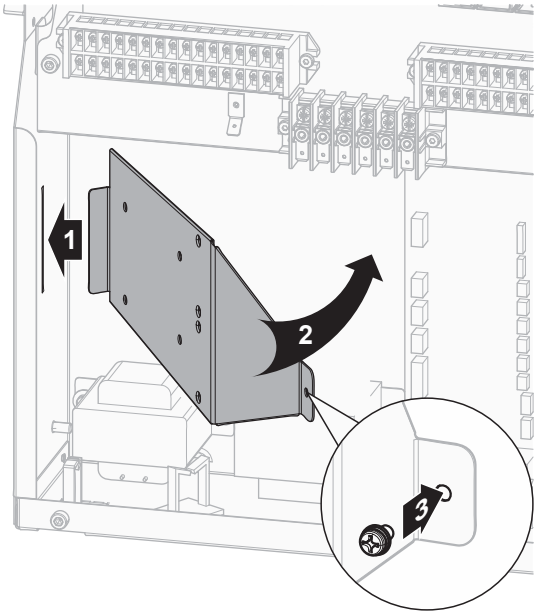
	Wires: 2 (per input signal)×0.75 mm² Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)
	[9.9] `Power consumption control`.

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover

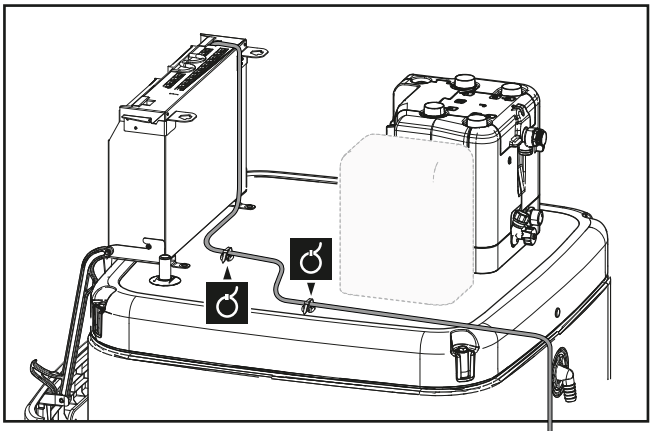


2 Install the switch box metal insert.

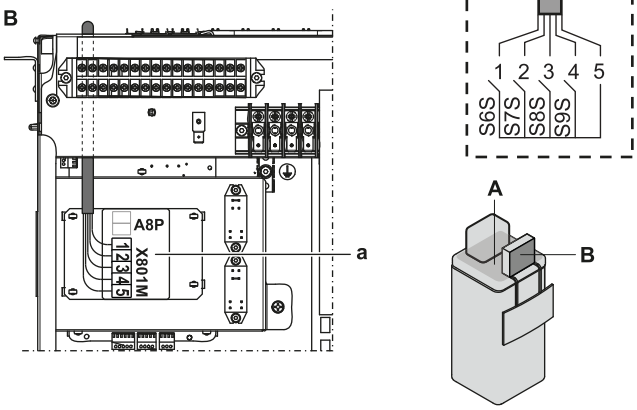


3 Connect the power consumption digital inputs cable to the appropriate terminals as shown in the illustration below.

A



B



4 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

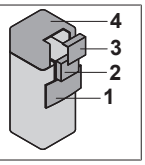
6.3.12 To connect the safety thermostat (normally closed contact)

	Wires: 2×0.75 mm² Maximum length: 50 m Safety thermostat contact: 16 V DC detection (voltage supplied by PCB). The voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.

	[9.8.1]=3 (`Benefit kWh power supply = Safety thermostat`)

1 Open the following (see "4.2.1 To open the indoor unit" [▸ 13]):

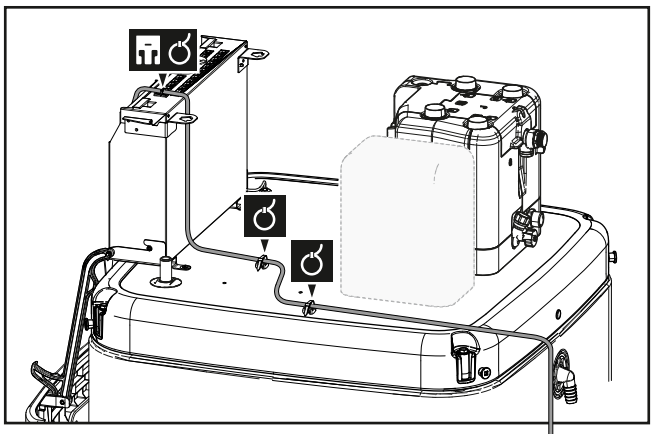
1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



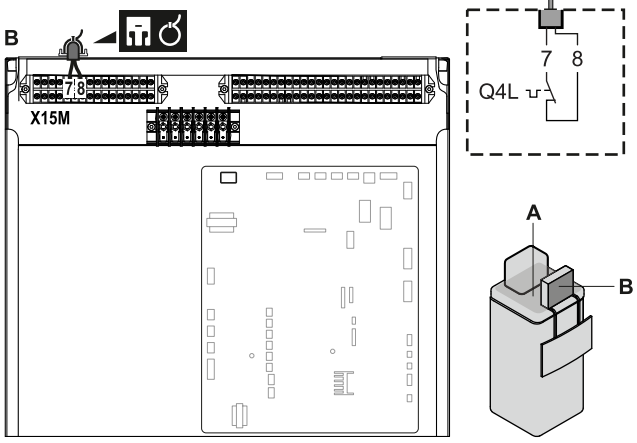
2 Connect the safety thermostat (normally closed) cable to the appropriate terminals as shown in the illustration below.

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

A



B



3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

NOTICE

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

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

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

NOTICE

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

INFORMATION

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

6.3.13 To connect a Smart Grid

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

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

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

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

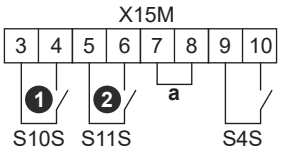
The use of a Smart Grid pulse meter is not mandatory:

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

In case of low voltage Smart Grid contacts

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

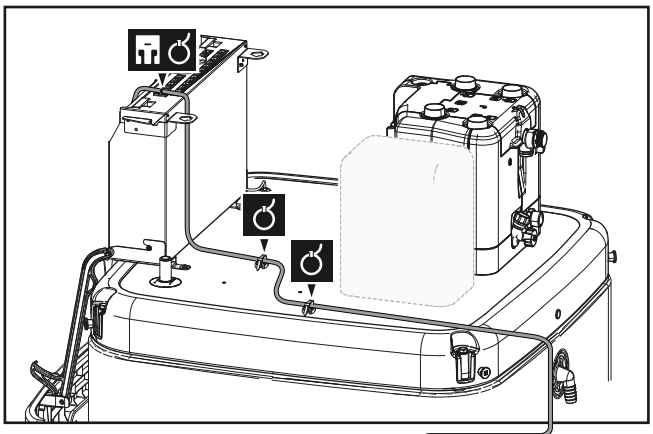
The wiring of the Smart Grid in case of low voltage contacts is as follows:



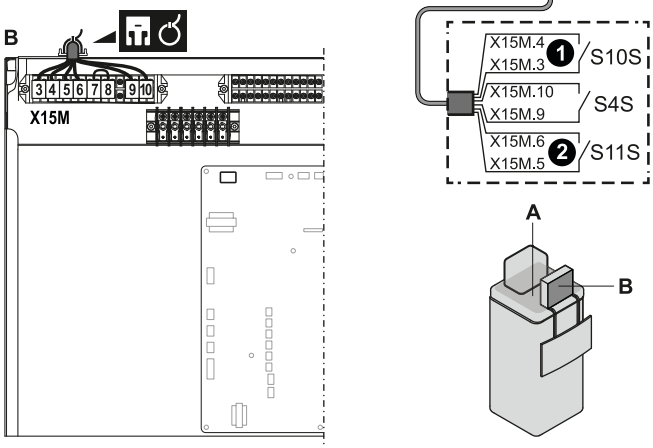
a Jumper (factory-mounted). If you also connect a safety thermostat (Q4L), replace the jumper with the safety thermostat wires.
S4S Smart Grid pulse meter
❶**/S10S** Low voltage Smart Grid contact 1
❷**/S11S** Low voltage Smart Grid contact 2

1 Connect the wiring as follows:

A



B

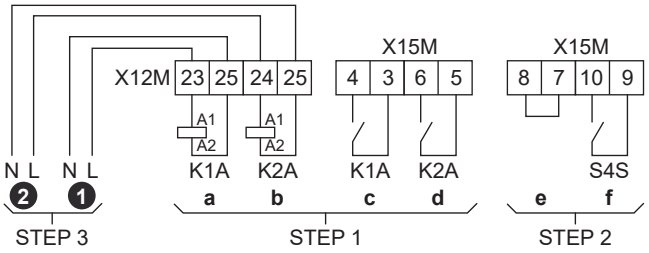


2 Fix the cables with cable ties to the cable tie mountings.

In case of high voltage Smart Grid contacts

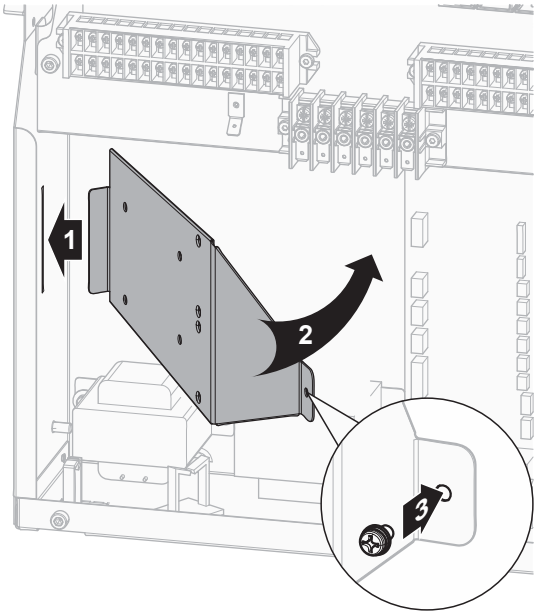
	Wires (Smart Grid pulse meter): 0.5 mm² Wires (high voltage Smart Grid contacts): 1 mm²
	[9.8.4]=3 (Benefit kWh power supply = Smart Grid) [9.8.5] Smart Grid operation mode [9.8.6] Allow electrical heaters [9.8.7] Enable room buffering [9.8.8] Limit setting kW

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

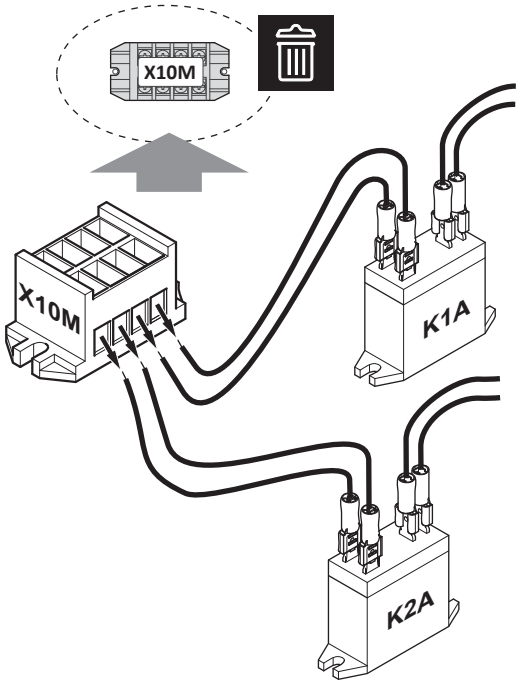


STEP 1 Smart Grid relay kit installation
STEP 2 Low voltage connections
STEP 3 High voltage connections
❶ High voltage Smart Grid contact 1
❷ High voltage Smart Grid contact 2
a, b Coil sides of relays
c, d Contact sides of relays
e Jumper (factory-mounted). If you also connect a safety thermostat (Q4L), replace the jumper with the safety thermostat wires.
f Smart Grid pulse meter

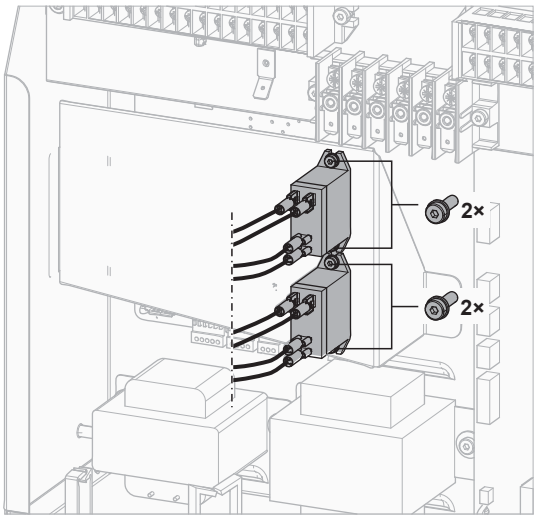
1 Install the switch box metal insert.

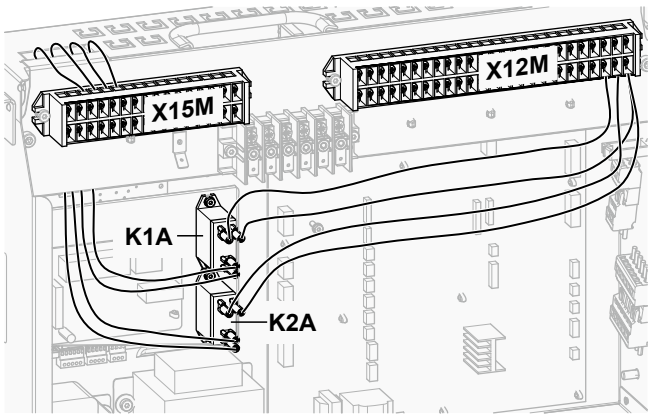


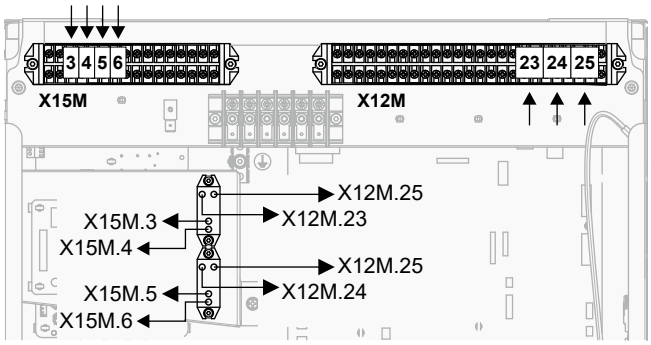
2 Loosen the cables connected to the terminal of the Smart Grid relay kit (EKRELSG) and remove the terminal.



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

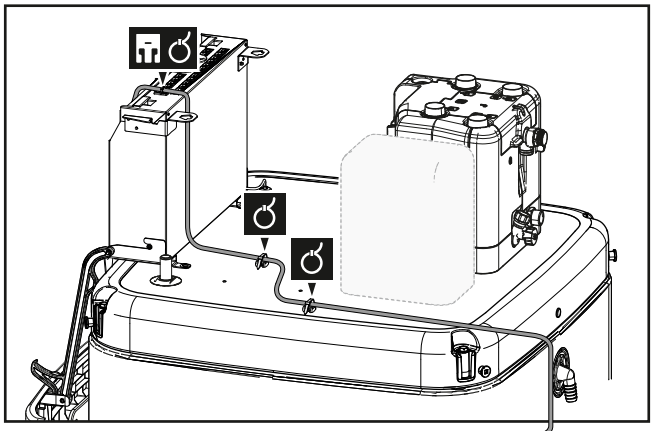




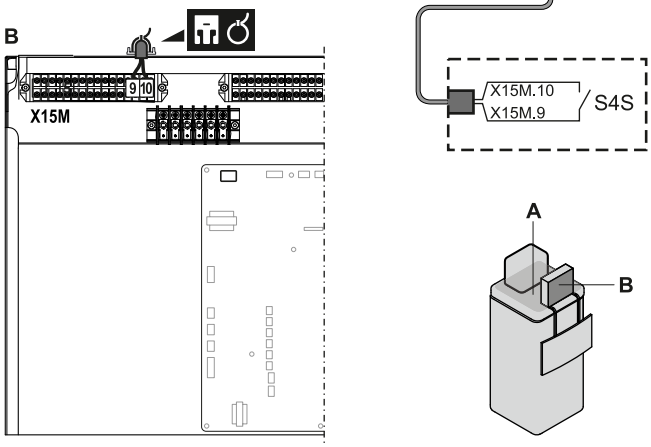


4 Connect the low voltage wiring as follows:

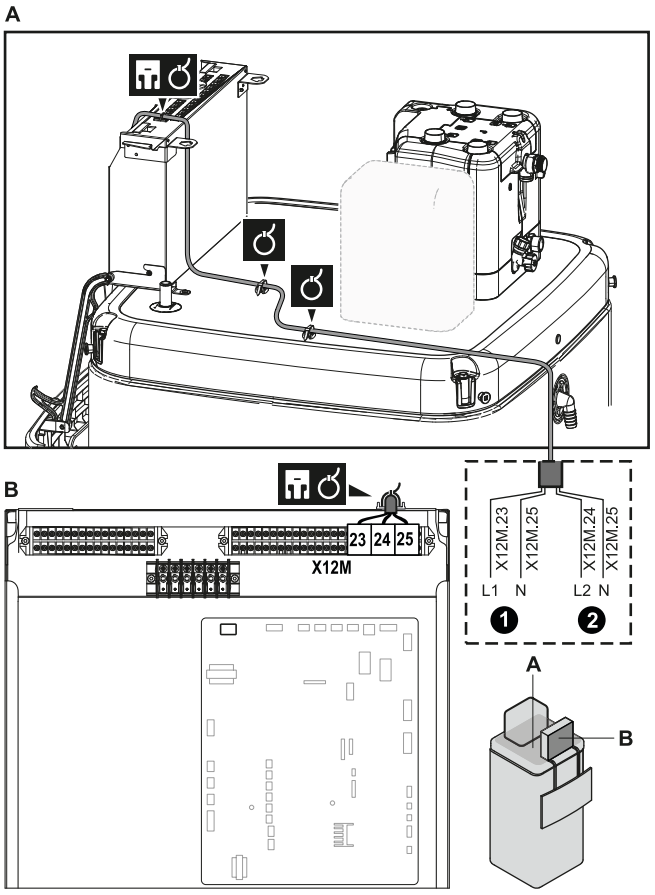
A



B



5 Connect the high voltage wiring as follows:

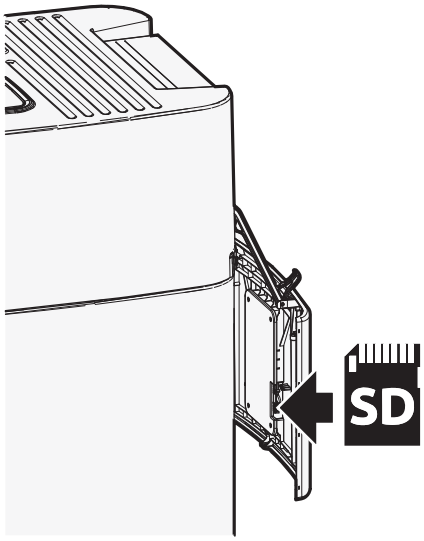


6 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 21].

6.3.14 To connect the WLAN cartridge

	[D] `Wireless gateway`

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

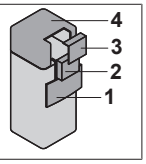


6.3.15 To connect the solar input

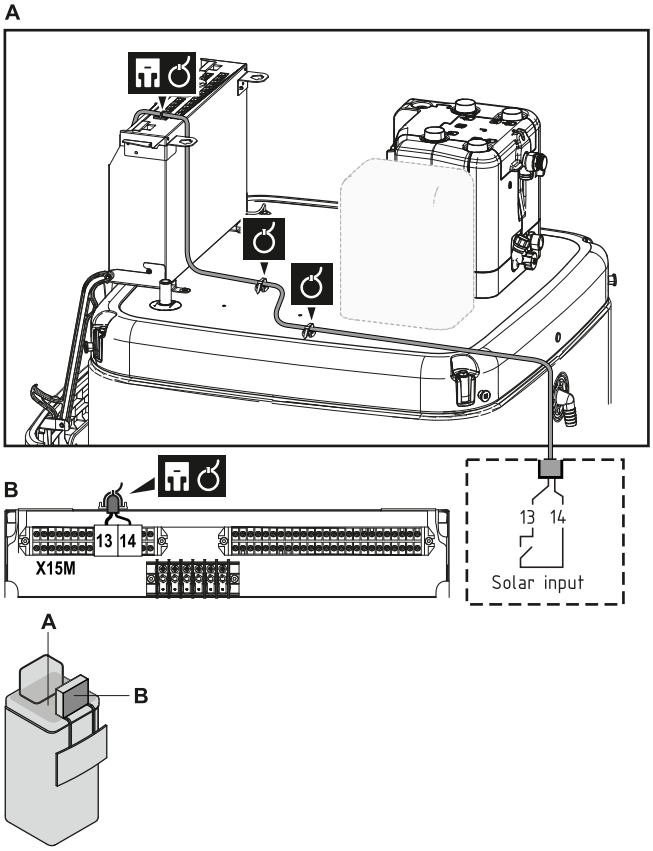
	Wires: 0.5 mm² Solar input contact: 5 V DC (voltage supplied by PCB)
	—

1 Open the following (see "4.2.1 To open the indoor unit" [▶ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



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



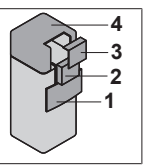
3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▶ 21].

6.3.16 To connect the DHW output

	Wires: 2×0.75 mm² Maximum running current: 0.3 A, 230 V AC
	—

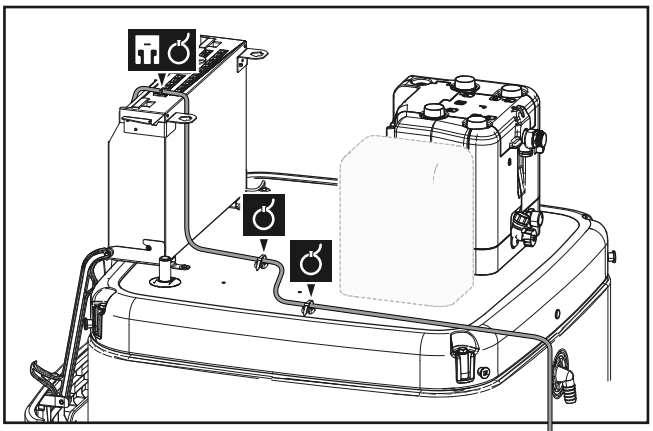
1 Open the following (see "4.2.1 To open the indoor unit" [▶ 13]):

1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover

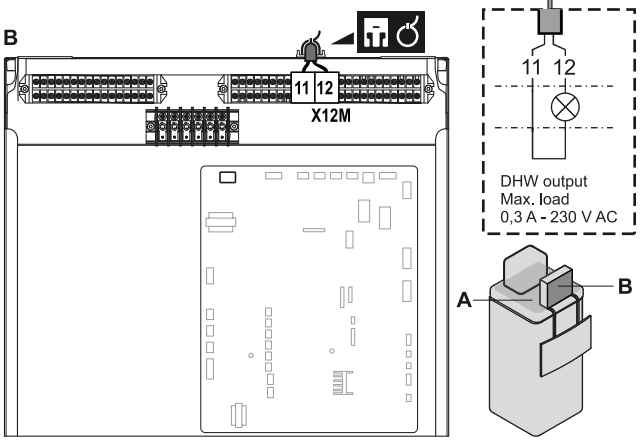


2 Connect the DHW signal cable as shown in the illustration below.

A



B



3 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [▸ 21].

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" [▸ 33].
- **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]

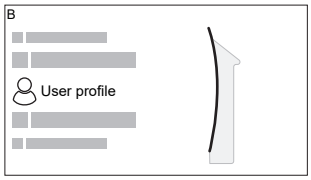
See also:

- "To access the installer settings" [▸ 34]
- "7.5 Menu structure: Overview installer settings" [▸ 41]

7.1.1 To access the most used commands

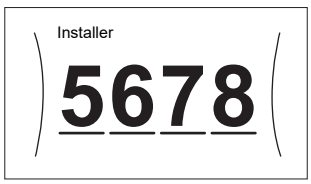
To change the user permission level

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.	

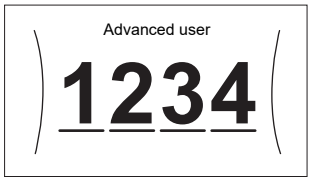
Installer pin code

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



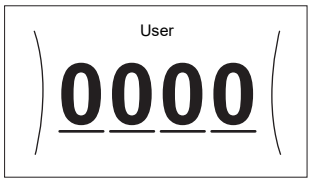
Advanced user pin code

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

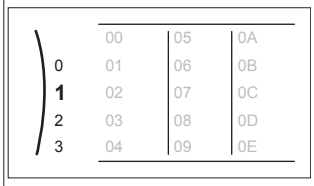
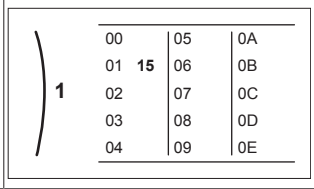
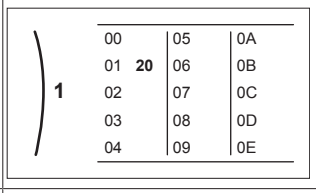
1 Set the user permission level to `Installer`.

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" [▶ 33].	—
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.

7.2.1 Configuration wizard: Language

#	Code	Description
[7.1]	N/A	Language

7.2.2 Configuration wizard: Time and date

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

INFORMATION

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

7.2.3 Configuration wizard: System

Indoor unit type

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

Backup heater type

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

Domestic hot water

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

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

Emergency

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

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

  To manually recover it via the user interface, go to the `Malfunctioning` main menu screen and confirm whether the backup heater can take over the heat load or not.

- Alternatively, when Emergency is set to:
  - auto SH reduced/DHW on, space heating is reduced but domestic hot water is still available.
  - auto SH reduced/DHW off, space heating is reduced and domestic hot water is NOT available.
  - auto SH normal/DHW off, space heating operates as normally but domestic hot water is NOT available.

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

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

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

INFORMATION

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

INFORMATION

If a heat pump failure occurs and Emergency is 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.

INFORMATION

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

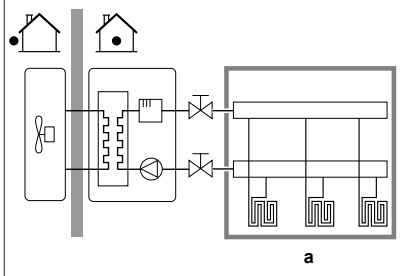
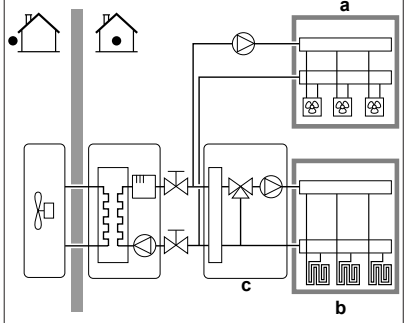
If the boiler is directly connected to the space heating circuit, it does NOT act as emergency heater.

Number of zones

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

INFORMATION

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

#	Code	Description
[4.4]	[7-02]	▪ 0: Single zone Only one leaving water temperature zone:  **a** Main LWT zone
[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 capacities for the different steps of the backup heater must be set for the energy metering and/or power consumption control feature to work properly. When measuring the resistance value of each heater, you can set the exact heater capacity and this will lead to more accurate energy data.

Backup heater type

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

Voltage

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

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

Configuration

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

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

INFORMATION

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

INFORMATION

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

INFORMATION

If [4-0A]=3 and emergency mode is active, the power usage of the backup heater is maximal and equal to 2×[6-03]+[6-04].

INFORMATION

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

INFORMATION

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

INFORMATION

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

Capacity step 1

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

Additional capacity step 2

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

Maximum capacity

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

7.2.5 Configuration wizard: Main zone

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

Emitter type

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

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

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

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

#	Code	Description
[2.7]	[2-0C]	▪ 0: Underfloor heating ▪ 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	Target delta T in heating
0: Underfloor heating	Maximum 55°C	Variable
1: Fancoil unit	Maximum 55°C	Variable
2: Radiator	Maximum 60°C	Fixed 8°C

NOTICE

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

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

Example radiators: 40–10/2=**35°C**

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

To compensate, you can:

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

Control

Define how the operation of the unit is controlled.

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

#	Code	Description
[2.9]	[C-07]	▪ 0: `Leaving water` ▪ 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" [▶ 36].

#	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" [▶ 36].

#	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`.

Setpoint mode

For more info about this functionality, see "7.2.5 Configuration wizard: Main zone" [▶ 36].

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

Schedule

Indicates if the desired leaving water temperature is according to a schedule. Also see "7.2.5 Configuration wizard: Main zone" [▶ 36].

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

7.2.7 Configuration wizard: Tank

INFORMATION

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

Heat up mode

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

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

See the operation manual for more details.

Settings for Reheat only mode

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

To set the heat pump ON hysteresis:

Settings for Schedule only mode and Schedule + reheat mode

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" [▶ 39].

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

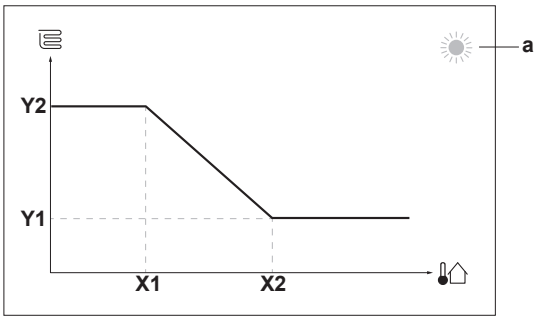
To operate weather-dependent, correctly configure the setpoint of the main zone, additional zone or tank. See "7.3.4 Using weather-dependent curves" [▶ 39].

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 ▪ : Storage tank

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

7.3.3 Slope-offset curve

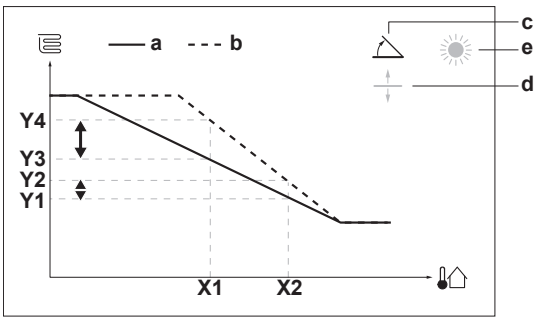
Slope and offset

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

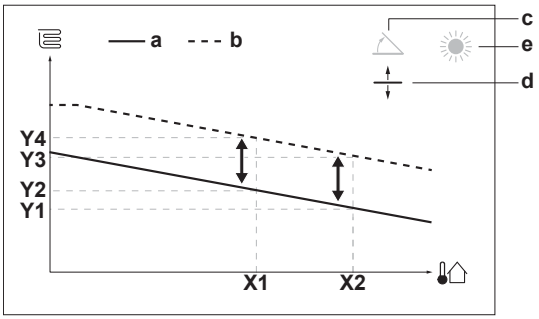
- Change the **slope** to differently increase or decrease the temperature of the leaving water for different ambient temperatures. For example, if leaving water temperature is in general fine but at low ambient temperatures too cold, raise the slope so that leaving water temperature is heated increasingly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

Examples

Weather-dependent curve when slope is selected:



Weather-dependent curve when offset is selected:



Item	Description
a	WD curve before changes.
b	WD curve after changes (as example): ▪ 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 ▪ : Storage tank

Possible actions on this screen	
···○	Select slope or offset.
○···	Increase or decrease the slope/offset.
○···	When slope is selected: set slope and go to offset. When offset is selected: set offset.
···○	Confirm changes and return to the submenu.

7.3.4 Using weather-dependent curves

Configure weather-dependent curves as following:

To define the setpoint mode

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

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

You feel …		Fine-tune with slope and offset:	
At regular outdoor temperatures …	At cold outdoor temperatures …	Slope	Offset
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" [▶ 38].

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" [▶ 40].

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

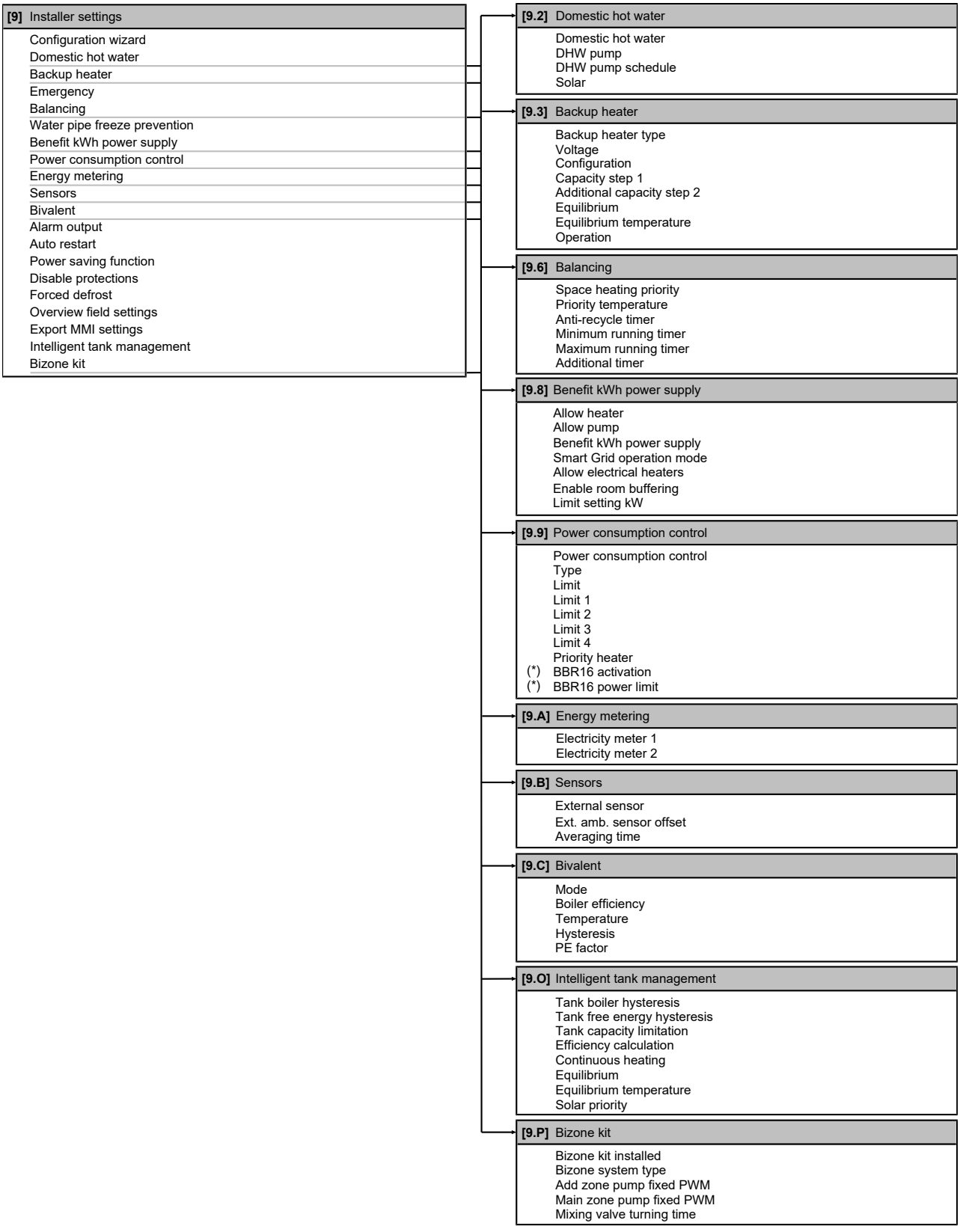
7.4.3 Information

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.

7.5 Menu structure: Overview installer settings



(*) Only applicable in Swedish language.

INFORMATION

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

8 Commissioning

NOTICE

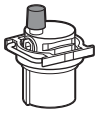
General commissioning checklist. Next to the commissioning instructions in this chapter, a general commissioning checklist is also available on the Daikin Business Portal (authentication required).

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

NOTICE

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

NOTICE



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

All automatic air purge valves must remain open after commissioning.

INFORMATION

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

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

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

8.1 Checklist before commissioning

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

2 Close the unit.

3 Power up the unit.

☐	You read the complete installation instructions, as described in the **installer reference guide**.
☐	The **indoor unit** is properly mounted. ▪ Check that the top cover is correctly fitted. ▪ Check that the top cover is secured with the screws (Top cover screws).
☐	The **outdoor 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 outdoor unit ▪ Between indoor unit and outdoor unit ▪ 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 and outdoor units.
☐	**Backup heater circuit breaker** F1B (field supply) is turned ON.
☐	There are NO **refrigerant leaks**.
☐	The **refrigerant pipes** (gas and liquid) are thermally insulated.
☐	The correct pipe size is installed and the **pipes** are properly insulated.
☐	There is NO **water leak** inside the indoor unit. All electric components and connections are dry.
☐	The **shut-off valves** are properly installed and fully open.
☐	The **automatic air purge** valves are open.
☐	The **pressure relief valve** (space heating circuit) purges water when opened. Clean water MUST come out.
☐	The **minimum water volume** is guaranteed in all conditions. See "To check the water volume and flow rate" in "5.3 Preparing water piping" [▸ 16].
☐	The **storage tank** is filled completely.

8.2 Checklist during commissioning

☐	The **minimum flow rate** during backup heater/defrost operation is guaranteed in all conditions. See "To check the water volume and flow rate" in "5.3 Preparing water piping" [▸ 16].
☐	To perform an **air purge**.
☐	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 set up a **bivalent heat source**.

8.2.1 To check the minimum flow rate

1	Check the hydraulic configuration to find out which space heating loops can be closed by mechanical, electronic, or other valves.	—
2	Close all space heating loops that can be closed.	—
3	Start the pump test run (see "8.2.4 To perform an actuator test run" [▶ 43]).	—
4	Read out the flow rate[a] and modify the bypass valve setting to reach the minimum required flow rate + 2 l/min.	—

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

If operation is…	Then the minimum required flow rate is…
Cooling	16 l/min
Heating/defrost	22 l/min

1	Check the hydraulic configuration to find out which space heating loops can be closed by mechanical, electronic, or other valves.	—
2	Close all space heating loops that can be closed.	—
3	Start the pump test run (see "8.2.4 To perform an actuator test run" [▶ 43]).	—
4	Read out the flow rate[a]. If the flow rate is too low: ▪ Do air purge. ▪ Check the function of the valve motor of M1S and M2S. Replace the valve motor if necessary.	—

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

If operation is…	Then the minimum required flow rate is…
Cooling	16 l/min
Heating/defrost	22 l/min

8.2.2 To perform an air purge

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

1	Set the user permission level to Installer. See "To change the user permission level" [▶ 33].	—
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.	

8.2.3 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" [▶ 33].	—
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" [▶ 33].	—
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 ready (±30 min).	
	To stop the test run manually:	—
	1 In the menu, go to `Stop test run`.	
	2 Select `OK` to confirm.	

Possible actuator test runs

NOTICE

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

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

INFORMATION

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

- `Shut off valve` test
- `DHW signal` test
- `Bivalent signal` test
- `Alarm output` test
- `C/H signal` test

- DHW pump test
- Tank valve test
- Bypass valve test
- Bizone kit direct pump test (bizone kit EKMIKPOA or EKMIKPHA)
- Bizone kit mixed pump test (bizone kit EKMIKPOA or EKMIKPHA)
- Bizone kit mixing valve test (bizone kit EKMIKPOA or EKMIKPHA)

8.2.5 To perform an underfloor heating screed dryout

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

1	Set the user permission level to Installer. See "To change the user permission level" [▶ 33].	—
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 12 hours after the first power-on.

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

NOTICE

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

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

8.2.6 To set up bivalent heat sources

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

Drain back models

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

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

Bivalent models

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

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

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

9 Hand-over to the user

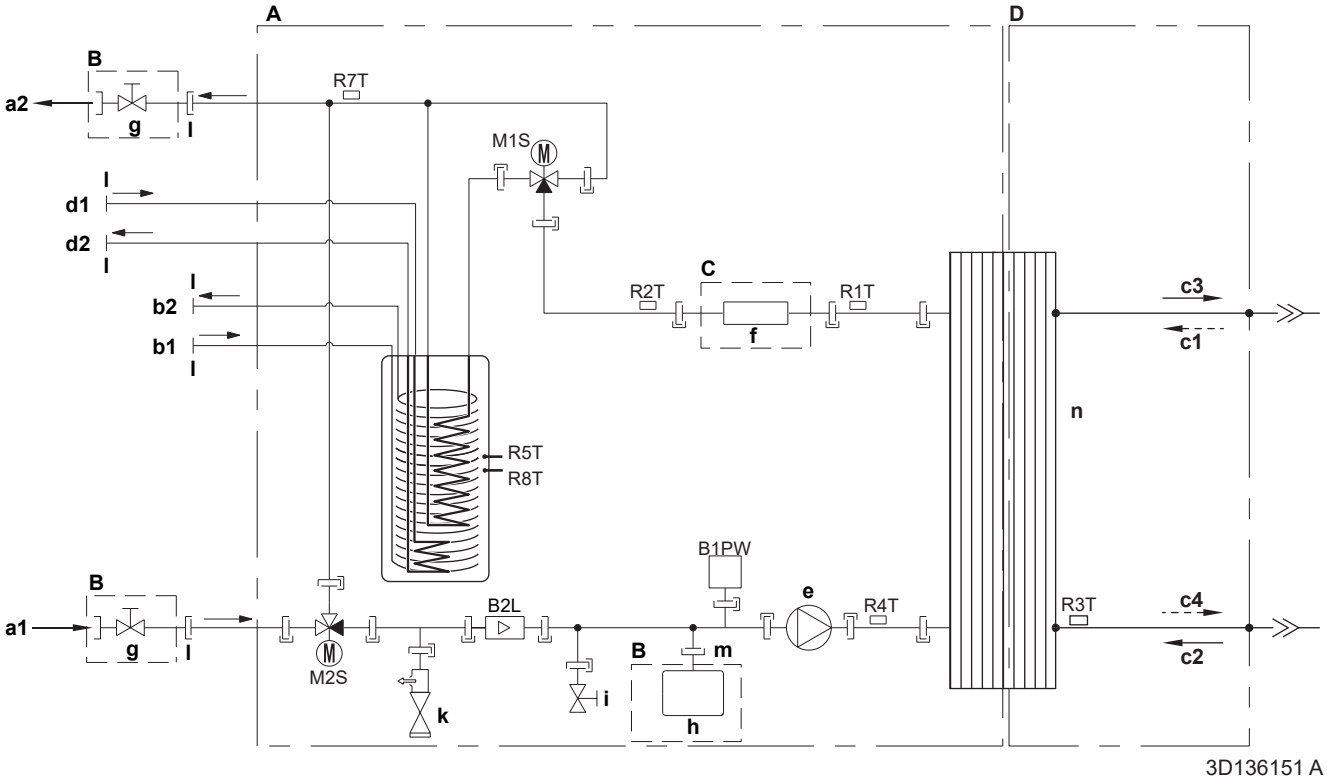
Once the test run is finished and the unit operates properly, make sure the following is clear for the user:

- Fill in the installer setting table (in the operation manual) with the actual settings.
- Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he 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 about energy saving tips to the user as described in the operation manual.

10 Technical data

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

10.1 Piping diagram: Indoor unit

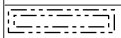
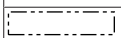
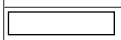


A	Indoor unit
B	Field installed
C	Optional
D	Refrigerant side
a1	Space heating/cooling – Water IN (screw connection, 1")
a2	Space heating/cooling – Water OUT (screw connection, 1")
b1	DHW – Cold water IN (screw connection, 1")
b2	DHW – Hot water OUT (screw connection, 1")
c1	Gas refrigerant IN (heating mode; condenser)
c2	Liquid refrigerant IN (cooling mode; evaporator)
c3	Gas refrigerant OUT (cooling mode; evaporator)
c4	Liquid refrigerant OUT (heating mode; condenser)
d1	Water IN from bivalent heat source (screw connection, 1")
d2	Water OUT to bivalent heat source (screw connection, 1")
e	Pump
f	Backup heater
g	Shut-off valve, female-female 1"
h	Expansion vessel
i	Drain valve
k	Safety valve
l	External thread 1"
m	External thread 3/4"
n	Plate heat exchanger
B2L	Flow sensor
B1PW	Space heating water pressure sensor
M1S	Tank valve
M2S	Bypass valve
R1T	Thermistor (plate heat exchanger - water OUT)
R2T	Thermistor (backup heater – water OUT)
R3T	Thermistor (Refrigerant liquid side)
R4T	Thermistor (Inlet water)
R5T, R8T	Thermistor (tank)
R7T	Thermistor (tank - water OUT)
	Screw connection
	Flare connection
	Quick coupling
	Brazed connection

10.2 Wiring diagram: Indoor unit

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

Notes to go through before starting the unit

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

Position in switch box

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

Legend

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

* Optional
\# Field supply

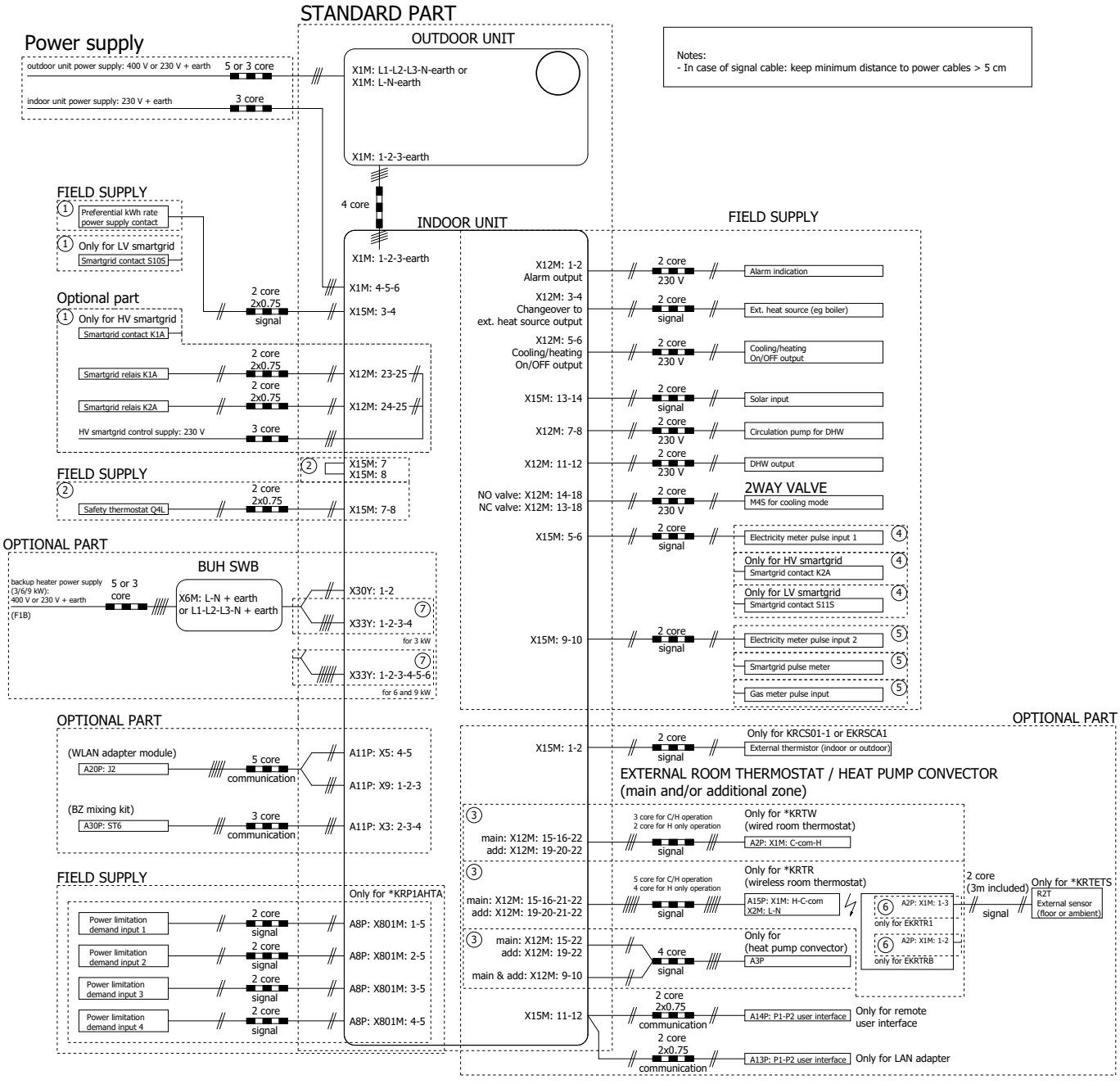
Translation of text on wiring diagram

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

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

Electrical connection diagram

For more details, please check the unit wiring.



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