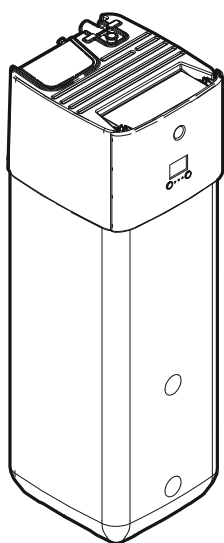


Installation manual

Daikin Altherma 3 R MT ECH₂O



<https://daikintechdatahub.eu>



ELSH12P30E▲▼
ELSHB12P30E▲▼
ELSX12P30E▲▼
ELSXB12P30E▲▼

ELSH12P50EF
ELSHB12P50EF
ELSX12P50EF
ELSXB12P50EF

▲ = 1, 2, 3, ..., 9, A, B, C, ..., Z
▼ = , , 1, 2, 3, ..., 9

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1	About the documentation			
1.1	About this document			
	Target audience			
	Authorised installers			
	Documentation set			
	This document is part of a documentation set. The complete set consists of:			
	▪ General safety precautions:			
	▪ Safety instructions that you must read before installing			
	▪ Format: Paper (in the box of the indoor unit)			
	▪ Operation manual:			
	▪ Quick guide for basic usage			
	▪ Format: Paper (in the box of the indoor unit)			
	▪ User reference guide:			
	▪ Detailed step-by-step instructions and background information for basic and advanced usage			
	▪ Format: Digital files on https://www.daikin.eu . Use the search function 🔍 to find your model.			
	▪ Installation manual – Outdoor unit:			
	▪ Installation instructions			
	▪ Format: Paper (in the box of the outdoor unit)			
	▪ Installation manual – Indoor unit:			
	▪ Installation instructions			
	▪ Format: Paper (in the box of the indoor unit)			
	▪ Installer reference guide:			
	▪ Preparation of the installation, good practices, reference data, ...			
	▪ Format: Digital files on https://www.daikin.eu . Use the search function 🔍 to find your model.			

• Addendum book for optional equipment:

- Additional info about how to install optional equipment
- Format: Paper (in the box of the indoor unit) + Digital files on <https://www.daikin.eu>. Use the search function 🔍 to find your model.

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

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

Technical engineering data

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

Online tools

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

• Daikin Technical Data Hub

- Central hub for technical specifications of the unit, useful tools, digital resources, and more.
- Publicly accessible via <https://daikintechdatahub.eu>.

• Heating Solutions Navigator

- Digital toolbox that offers a variety of tools to facilitate the installation and configuration of heating systems.
- To access the Heating Solutions Navigator, registration to the Stand By Me platform is required. For more information, see <https://professional.standbyme.daikin.eu>.

• Daikin e-Care

- Mobile app for installers and service technicians that allows you to register, configure and troubleshoot heating systems.
- Use the QR codes below to download the mobile app for iOS and Android devices. Registration to the Stand By Me platform is required to access the app.

App Store

Google Play



2 Specific installer safety instructions

Always observe the following safety instructions and regulations.

Unit installation (see "4 Unit installation" ▶ 5)



WARNING

Installation shall be done by an installer, the choice of materials and installation shall comply with the applicable legislation. In Europe, EN378 is the applicable standard.

Installation site (see "4.1 Preparing the installation site" ▶ 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.



WARNING

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



CAUTION

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

Special requirements for R32 (see "4.1.2 Special requirements for R32 units" ▶ 6)



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.



WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation (for example national gas regulation) 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



DANGER: RISK OF BURNING/SCALDING

Mounting the indoor unit (see "4.3 Mounting the indoor unit" ▶ 14)



WARNING

Fixing method of the indoor unit MUST be in accordance with the instructions from this manual. See "4.3 Mounting the indoor unit" ▶ 14].

Piping installation (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.



WARNING

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



WARNING

Install the tundish away from any electrical device.
Possible consequence: Electrical shock or fire.

3 About the box

Electrical installation (see ["6 Electrical installation" \[p 20\]](#))



DANGER: RISK OF ELECTROCUTION



DANGER: RISK OF ELECTROCUTION

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

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



WARNING

Electrical wiring **MUST** be in accordance with the instructions from:

- This manual. See ["6 Electrical installation" \[p 20\]](#).
- The wiring diagram, which is delivered with the unit, located on the inside of the indoor unit switch box cover. For a translation of its legend, see ["10.2 Wiring diagram: Indoor unit" \[p 46\]](#).



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



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.



INFORMATION

For details on the fuse ratings, the fuse types and the circuit breaker ratings, see ["6 Electrical installation" \[p 20\]](#).

Configuration (see ["7 Configuration" \[p 33\]](#))



WARNING

Be aware that the domestic hot water temperature at the hot water tap will be equal to the value selected in field setting [2-03] after a disinfection operation.

When the high domestic hot water temperature can be a potential risk for human injuries, a mixing valve (field supply) shall be installed at the domestic hot water out connection of the storage tank. This mixing valve shall secure that the hot water temperature at the hot water tap never rise above a set maximum value. This maximum allowable hot water temperature shall be selected according to the applicable legislation.



CAUTION

The disinfection function settings **MUST** be configured by the installer according to the applicable legislation.



CAUTION

Make sure that the disinfection function start time [5.7.3] with defined duration [5.7.5] is **NOT** interrupted by possible domestic hot water demand.

Commissioning (see ["8 Commissioning" \[p 42\]](#))





WARNING

Commissioning **MUST** be in accordance with the instructions from this manual. See ["8 Commissioning" \[p 42\]](#).



WARNING

Air purging heat emitters or collectors. Before you purge air from heat emitters or collectors, check if  or  is displayed on the home screen of the user interface.

- If not, you can purge air immediately.
- If yes, make sure that the room where you want to purge air is sufficiently ventilated. **Reason:** Refrigerant might leak into the water circuit, and subsequently into the room when you purge air from the heat emitters or collectors.

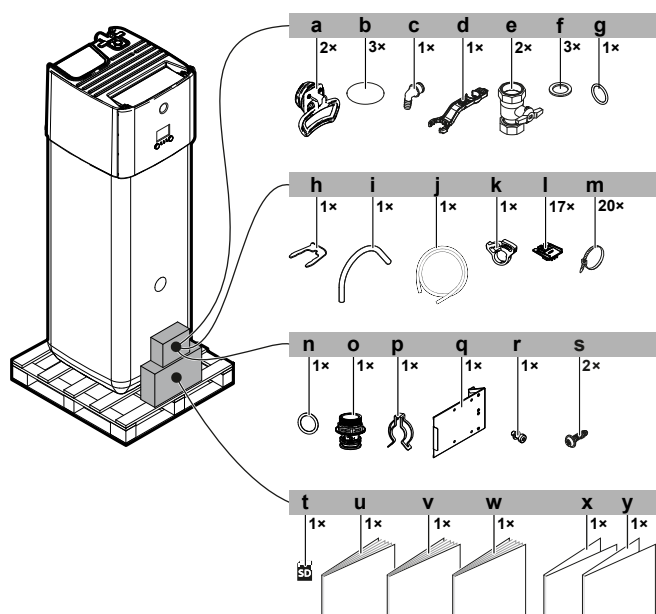
3 About the box

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 Handle (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 screw
- t WLAN cartridge
- u General safety precautions
- v Indoor unit installation manual
- w Operation manual
- x Addendum software changelog
- y Addendum commercial warranty

3.1.2 To handle the indoor unit

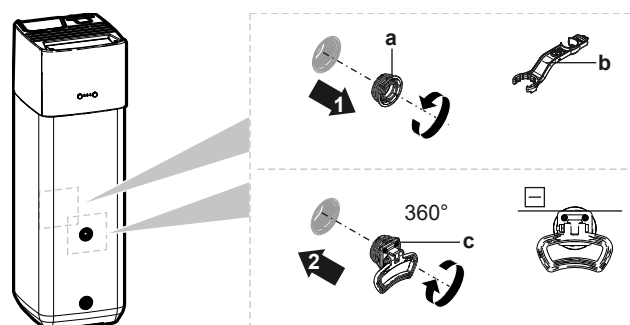
Use the handles at the back and at the front to carry the unit.



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



WARNING

Installation shall be done by an installer, the choice of materials and installation shall comply with the applicable legislation. In Europe, EN378 is the applicable standard.

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:

4 Unit installation



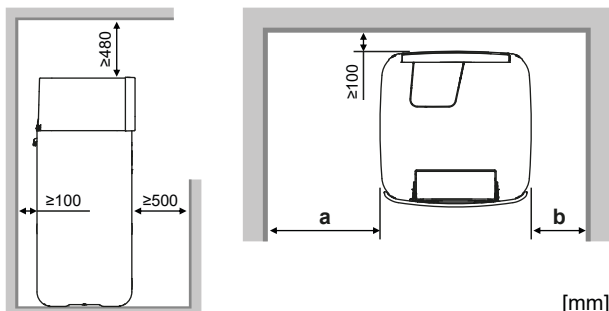
CAUTION

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



NOTICE

- The pipework shall be securely mounted and guarded protected from physical damage.
- Keep the pipework installation to a minimum.



[mm]

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



INFORMATION

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



INFORMATION

If you have limited installation space, do the following before installing the unit in its final position: ["4.3.2 To connect the drain hose to the drain"](#) [p 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"](#) [p 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 the installation between parts of the 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 (for example national gas regulation) and are executed ONLY by authorised persons.

4.1.3 Installation patterns


WARNING

For units using the R32 refrigerant it is necessary to keep any required ventilation openings and chimneys clear of obstructions.

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]			

A	Room A (= room where indoor unit is installed)
B	Room B (= adjacent room)
a	<p>If no chimney is installed, this is the default point of release in case of refrigerant leakage.</p> <p>If needed, you can connect a chimney here:</p> <ul style="list-style-type: none"> 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}	<p>Actual release height:</p> <p>1a/2a: Without chimney. From floor to top of the unit.</p> <ul style="list-style-type: none"> For 300 l units => H_{release}=1.89 m <p>1b/2b: With chimney. From floor to top of the chimney.</p> <ul style="list-style-type: none"> For 300 l units => H_{release}=1.89 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

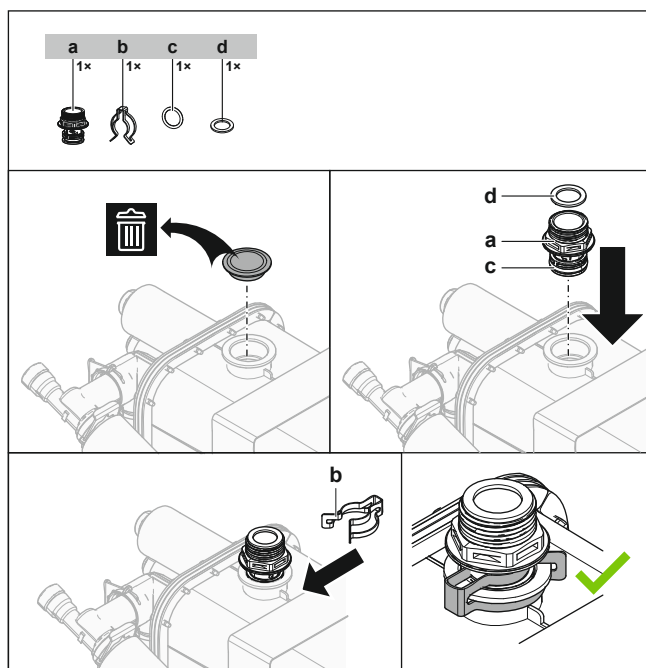
Minimum floor area / Release height:

- 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.

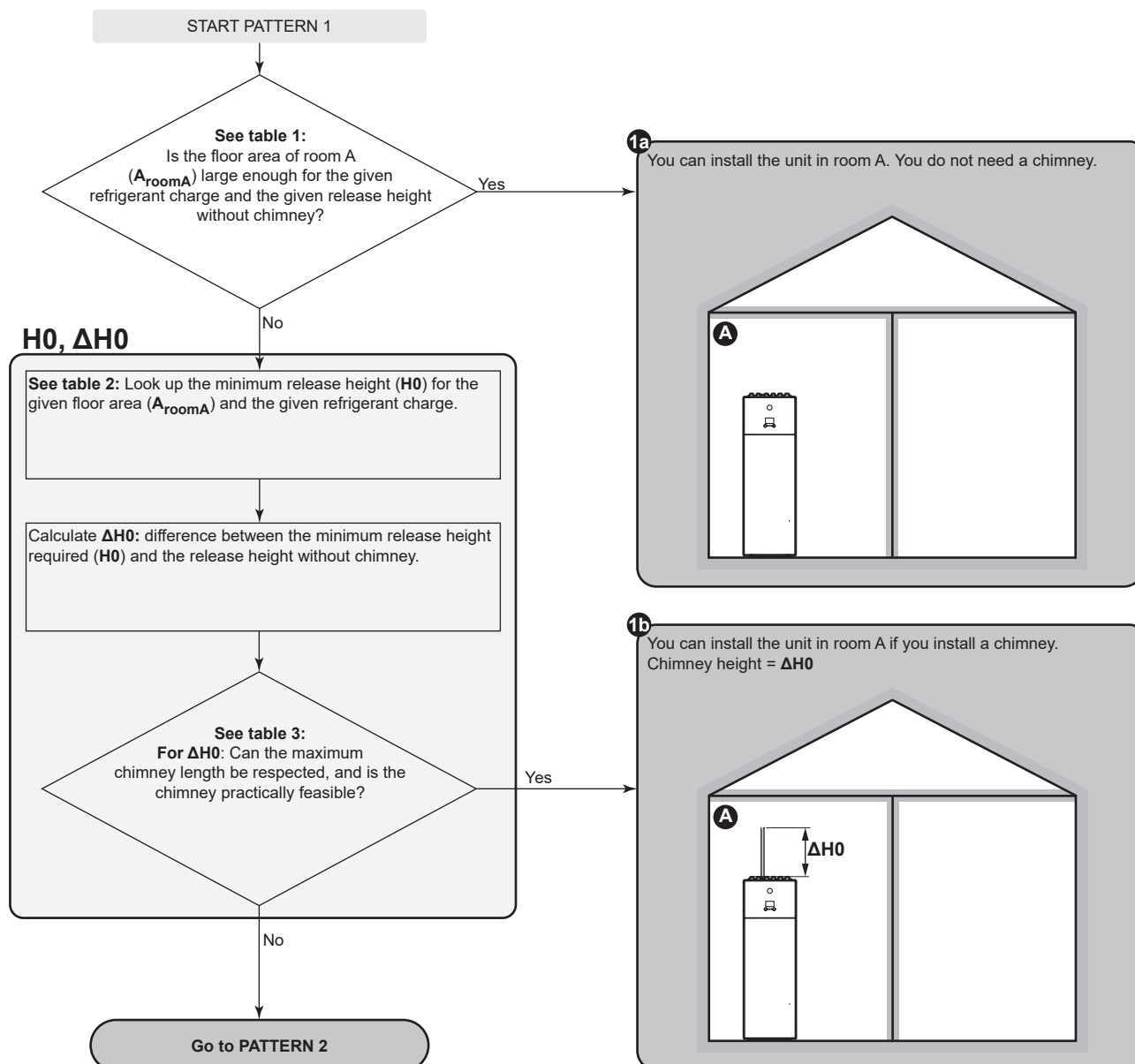
4 Unit installation



- 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

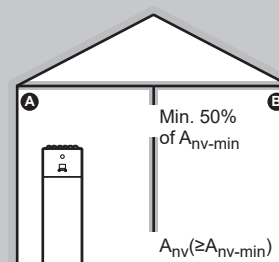


PATTERN 2

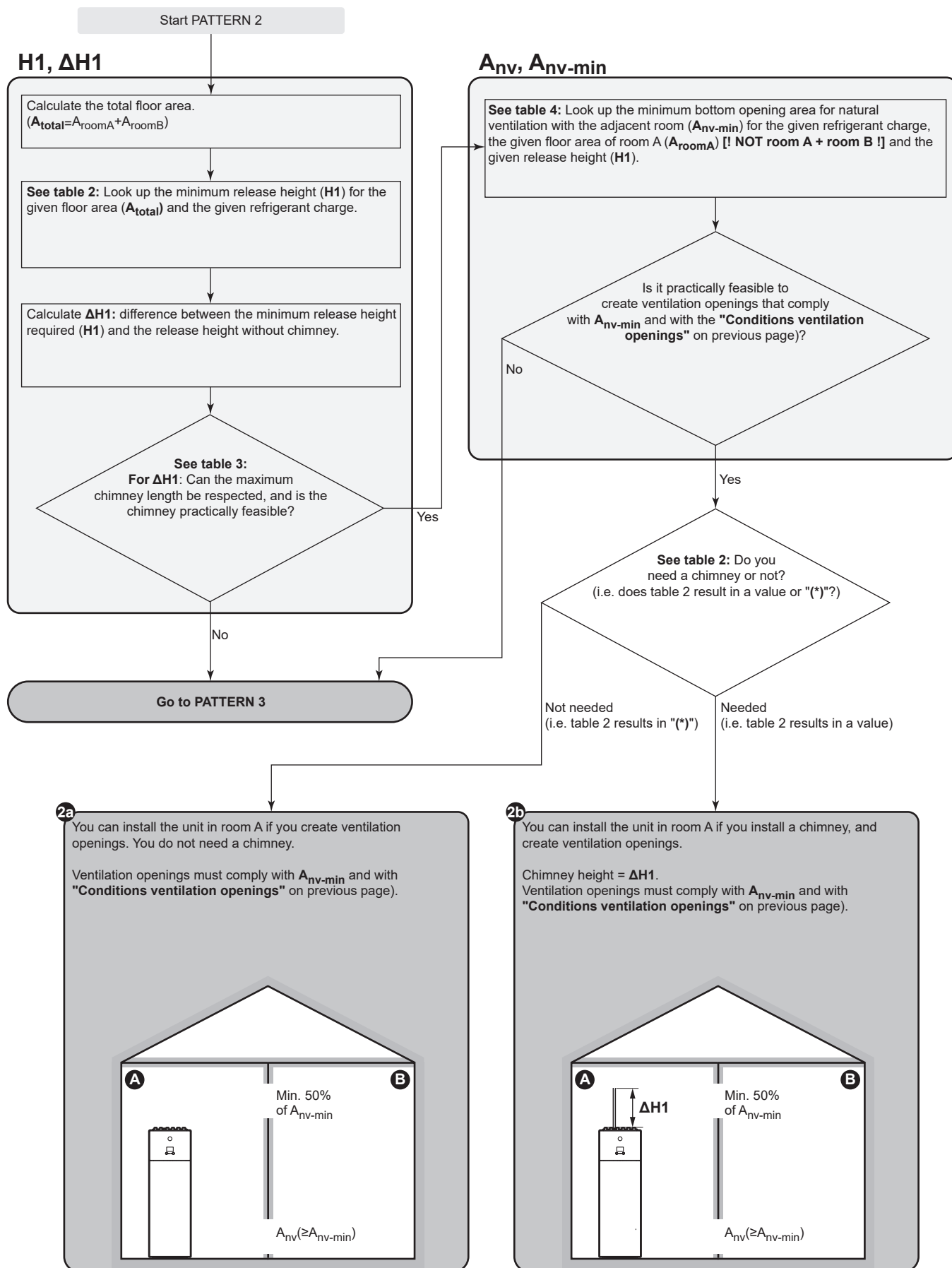
PATTERN 2: Conditions ventilation openings

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:

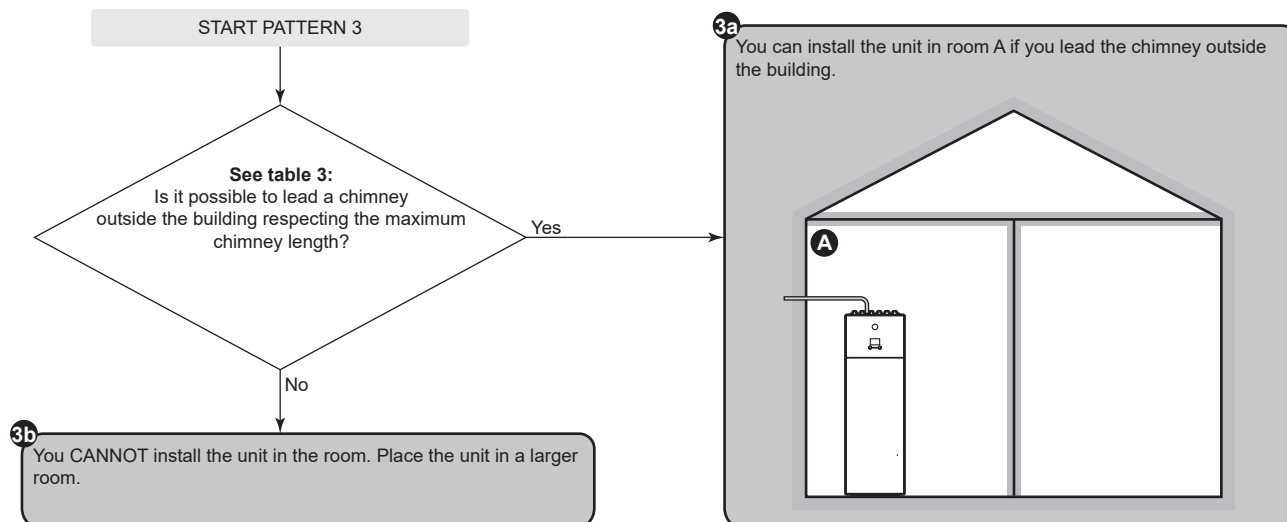
- **Bottom opening (A_{nv}):**
 - Must be a permanent opening that cannot be closed.
 - Must be completely located between 0 and 300 mm from the floor.
 - Must be $\geq A_{nv-min}$ (minimum bottom opening area).
 - $\geq 50\%$ of the required opening area A_{nv-min} must be ≤ 200 mm from the floor.
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



4 Unit installation



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 3.5 kg, use the row of 3.65 kg.

Charge (kg)	Minimum floor area (m ²)	
	Release height without chimney (m)	
	1.89 m (Unit=300 l)	1.90 m (Unit=500 l)
3.25 kg	9.05 m ²	8.91 m ²
3.45 kg	10.20 m ²	10.04 m ²
3.65 kg	11.42 m ²	11.24 m ²
3.85 kg	12.70 m ²	12.50 m ²
4.05 kg	14.05 m ²	13.83 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 7.25 m², use the column of 6.00 m².
- For intermediate refrigerant charges, use the row with the higher value. **Example:** If the refrigerant charge is 3.5 kg, use the row of 3.65 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).

Charge (kg)	Minimum release height (m)						
	Floor area (m ²)						
	4.00 m ²	6.00 m ²	8.00 m ²	10.00 m ²	12.00 m ²	14.00 m ²	16.00 m ²
3.25 kg	3.53 m	2.35 m	2.01 m	(*)	(*)	(*)	(*)
3.45 kg	3.75 m	2.50 m	2.14 m	1.91 m	(*)	(*)	(*)
3.65 kg	3.96 m	2.64 m	2.26 m	2.02 m	(*)	(*)	(*)
3.85 kg	4.18 m	2.79 m	2.38 m	2.13 m	1.95 m	(*)	(*)
4.05 kg	4.40 m	2.93 m	2.51 m	2.24 m	2.05 m	1.89 m	(*)

4 Unit installation

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 3.5 kg, use the columns of 4.05 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=3.25 kg (and T=60°C)						In case of Refrigerant charge=4.05 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	24.41 m	42.18 m	67.50 m	102.40 m	149.26 m	13.28 m	24.78 m	41.27 m	64.11 m	94.87 m
1× 90° elbow	22.61 m	40.20 m	65.34 m	100.06 m	146.74 m	11.48 m	22.80 m	39.11 m	61.77 m	92.35 m
2× 90° elbow	20.81 m	38.22 m	63.18 m	97.72 m	144.22 m	9.68 m	20.82 m	36.95 m	59.43 m	89.83 m
3× 90° elbow	19.01 m	36.24 m	61.02 m	95.38 m	141.70 m	7.88 m	18.84 m	34.79 m	57.09 m	87.31 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 3.5 kg, use the table of 3.65 kg.
- For intermediate floor areas, use the column with the lower value. **Example:** If the floor area is 7.25 m², use the column of 6.00 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-min}: Minimum bottom opening area for natural ventilation.
- (*): Already OK (no ventilation openings needed).

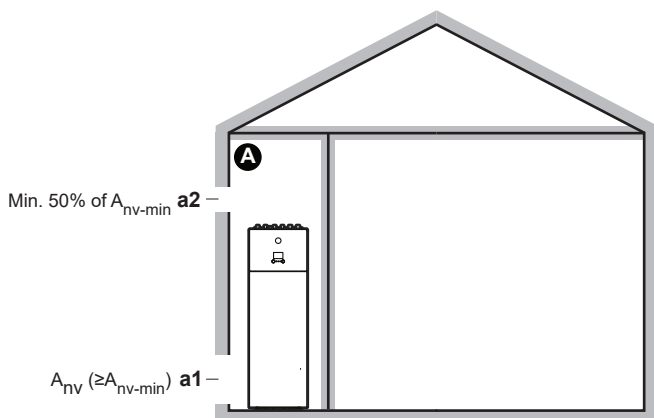
A _{nv-min} (dm ²) – In case of Refrigerant charge=3.25 kg							
Release height (m)	Floor area of room A (m ²) [! NOT room A + room B !]						
	4.00 m ²	6.00 m ²	8.00 m ²	10.00 m ²	12.00 m ²	14.00 m ²	16.00 m ²
1.89 m	3.437 dm ²	1.453 dm ²	0.473 dm ²	(*)	(*)	(*)	(*)
1.90 m	3.410 dm ²	1.421 dm ²	0.436 dm ²	(*)	(*)	(*)	(*)
2.00 m	3.120 dm ²	1.079 dm ²	0.043 dm ²	(*)	(*)	(*)	(*)
2.20 m	2.585 dm ²	0.445 dm ²	(*)	(*)	(*)	(*)	(*)
2.40 m	2.103 dm ²	(*)	(*)	(*)	(*)	(*)	(*)
2.60 m	1.662 dm ²	(*)	(*)	(*)	(*)	(*)	(*)
2.80 m	1.257 dm ²	(*)	(*)	(*)	(*)	(*)	(*)
3.00 m	0.881 dm ²	(*)	(*)	(*)	(*)	(*)	(*)

A _{nv-min} (dm ²) – In case of Refrigerant charge=3.65 kg							
Release height (m)	Floor area of room A (m ²) [! NOT room A + room B !]						
	4.00 m ²	6.00 m ²	8.00 m ²	10.00 m ²	12.00 m ²	14.00 m ²	16.00 m ²
1.89 m	4.349 dm ²	2.364 dm ²	1.446 dm ²	0.601 dm ²	(*)	(*)	(*)
1.90 m	4.319 dm ²	2.330 dm ²	1.407 dm ²	0.558 dm ²	(*)	(*)	(*)
2.00 m	4.006 dm ²	1.965 dm ²	0.989 dm ²	0.092 dm ²	(*)	(*)	(*)
2.20 m	3.430 dm ²	1.290 dm ²	0.214 dm ²	(*)	(*)	(*)	(*)
2.40 m	2.912 dm ²	0.676 dm ²	(*)	(*)	(*)	(*)	(*)
2.60 m	2.440 dm ²	0.113 dm ²	(*)	(*)	(*)	(*)	(*)
2.80 m	2.006 dm ²	(*)	(*)	(*)	(*)	(*)	(*)
3.00 m	1.605 dm ²	(*)	(*)	(*)	(*)	(*)	(*)

A _{nv-min} (dm ²) – In case of Refrigerant charge=4.05 kg							
Release height (m)	Floor area of room A (m ²) [! NOT room A + room B !]						
	4.00 m ²	6.00 m ²	8.00 m ²	10.00 m ²	12.00 m ²	14.00 m ²	16.00 m ²
1.89 m	5.260 dm ²	3.276 dm ²	2.419 dm ²	1.630 dm ²	0.828 dm ²	0.022 dm ²	(*)
1.90 m	5.229 dm ²	3.240 dm ²	2.378 dm ²	1.585 dm ²	0.779 dm ²	(*)	(*)
2.00 m	4.892 dm ²	2.852 dm ²	1.936 dm ²	1.093 dm ²	0.241 dm ²	(*)	(*)
2.20 m	4.276 dm ²	2.135 dm ²	1.117 dm ²	0.180 dm ²	(*)	(*)	(*)
2.40 m	3.721 dm ²	1.485 dm ²	0.371 dm ²	(*)	(*)	(*)	(*)
2.60 m	3.217 dm ²	0.890 dm ²	(*)	(*)	(*)	(*)	(*)
2.80 m	2.755 dm ²	0.340 dm ²	(*)	(*)	(*)	(*)	(*)
3.00 m	2.328 dm ²	(*)	(*)	(*)	(*)	(*)	(*)

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.



A	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. <ul style="list-style-type: none"> 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 $\geq A_{nv-min}$ (minimum bottom opening area as specified in the table below). $\geq 50\%$ 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. <ul style="list-style-type: none"> Must be a permanent opening that cannot be closed. Must be $\geq 50\%$ 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 3.5 kg, use the row of 3.55 kg.

Total refrigerant charge (kg)	A_{nv-min} (dm ²)
3.25 kg	9.1 dm ²
3.35 kg	9.2 dm ²
3.45 kg	9.4 dm ²
3.55 kg	9.5 dm ²
3.65 kg	9.7 dm ²
3.75 kg	9.8 dm ²
3.85 kg	9.9 dm ²
3.95 kg	10.0 dm ²
4.05 kg	10.2 dm ²

4.2 Opening and closing the unit

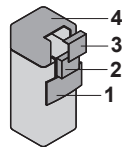
4.2.1 To open the indoor unit



NOTICE

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

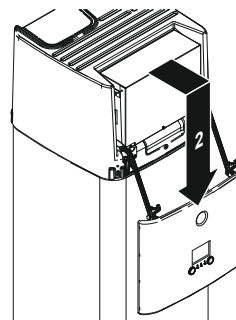
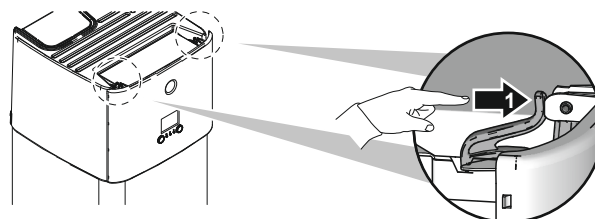
Overview



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

Open the user interface panel

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



Open the switchbox cover

- 1 Remove the switch box cover.

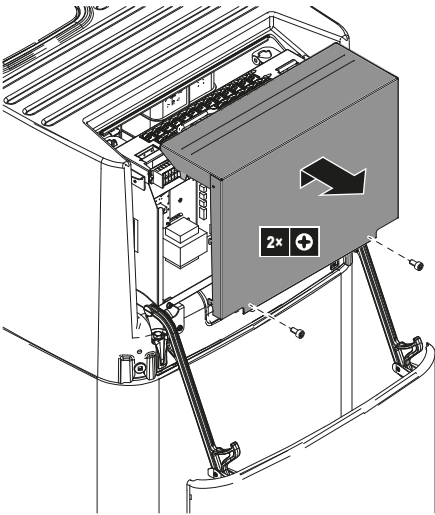


NOTICE

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

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

4 Unit installation

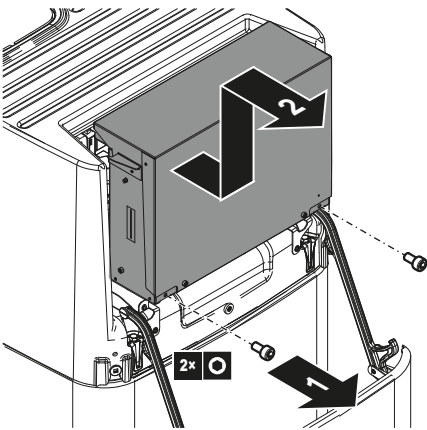


To lower the switch box and open the switch box cover

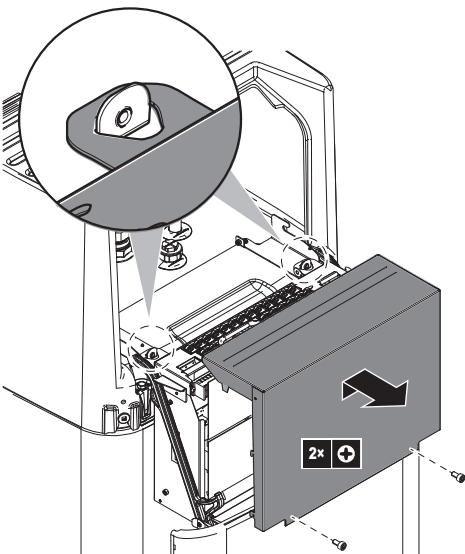
During the installation, you will need access to the inside of the indoor unit. To have easier front access, lower the switch box of the unit as follows:

Prerequisite: The user interface panel has been opened.

- 1 Loosen the screws.
- 2 Lift up the switch box.



- 3 Lower the switch box.
- 4 Remove the switch box cover.



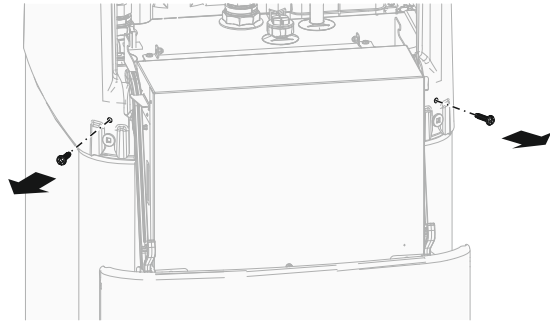
Remove the top cover

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

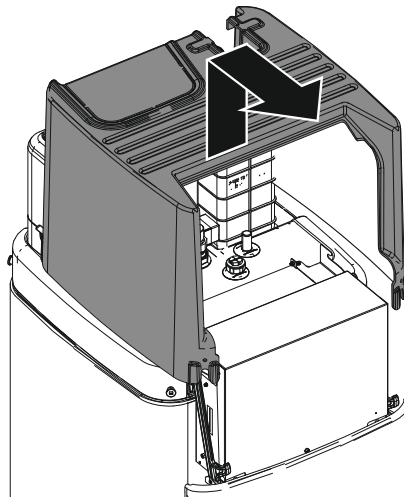
- Connecting water piping
- Connecting BIV or DB-kit
- Connecting backup heater

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

- 1 Loosen the top cover screws.



- 2 Lift up the top cover.



4.2.2 To close the indoor unit

- 1 Close the cover of the switch box.
- 2 Reinstall the top cover.
- 3 Check that the top cover is correctly fitted.
- 4 Screw in the top cover screws to secure it.
- 5 Put the switch box back into place.
- 6 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" \[p 5\]](#).
- 2 Connect the drain hose to the drain. See ["4.3.2 To connect the drain hose to the drain" \[p 15\]](#).
- 3 Slide the indoor unit into position.



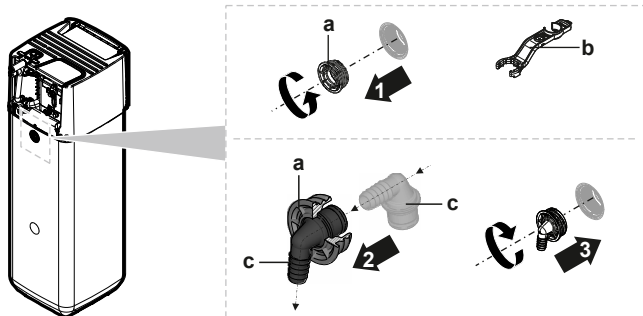
NOTICE

Level. Make sure the unit is level.

4.3.2 To connect the drain hose to the drain

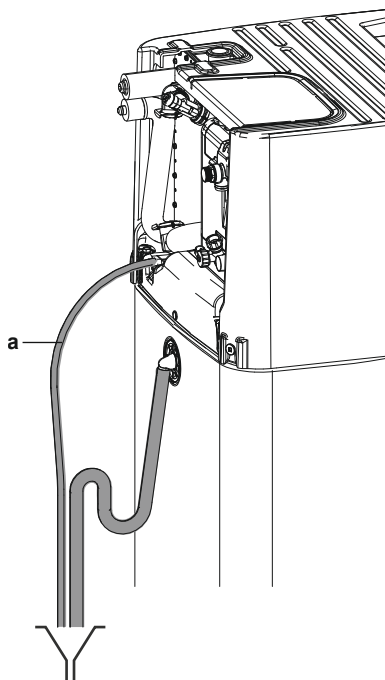
Spillover water from the water storage tank as well as water collecting in the drain pan must be drained. You must connect the drain hoses to an appropriate drain according to the applicable legislation.

- 1 Open the screw plug.



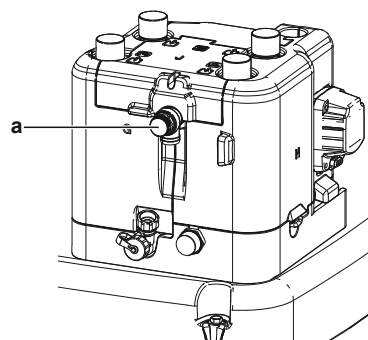
- a Screw plug
- b Assembly wrench
- c Spillover connector

- 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" [p. 6] for additional requirements.

- **Piping length:** See "4.1.1 Installation site requirements of the indoor unit" [p. 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	Ø6.4 mm (1/4")
Gas piping	Ø15.9 mm (5/8")

- **Piping temper grade and thickness:**

Outer diameter (Ø)	Temper grade	Thickness (t) ^(a)	
6.4 mm (1/4")	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)
6.4 mm (1/4")	8~10 mm	10 mm
15.9 mm (5/8")	16~20 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.

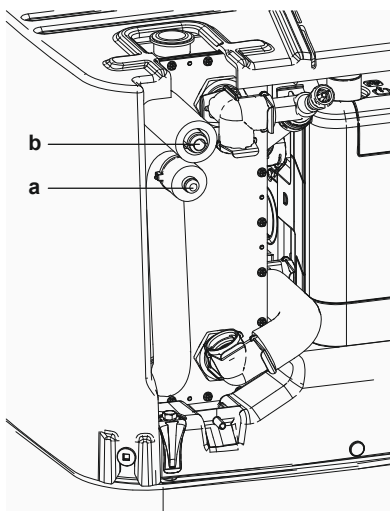
5 Piping installation

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.



- 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

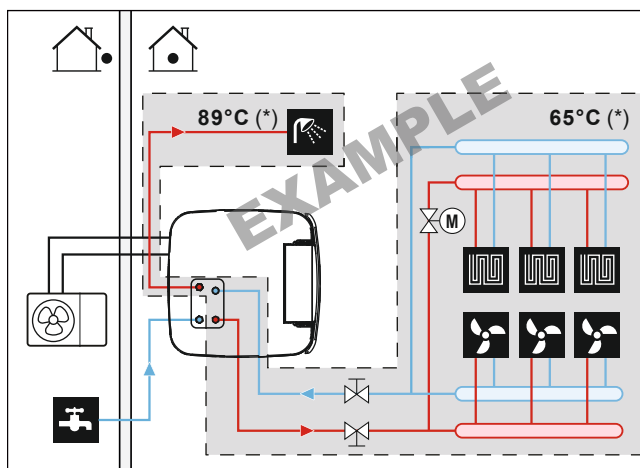
Water circuit requirements. Make sure to comply with the water pressure and water temperature requirements below. For additional water circuit requirements, see the installer reference guide.

- **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.



(*) Maximum temperature for piping and accessories

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

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	10 l/min
Heating/defrost	20 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" [p 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. Deformed pipes can cause the unit to malfunction.

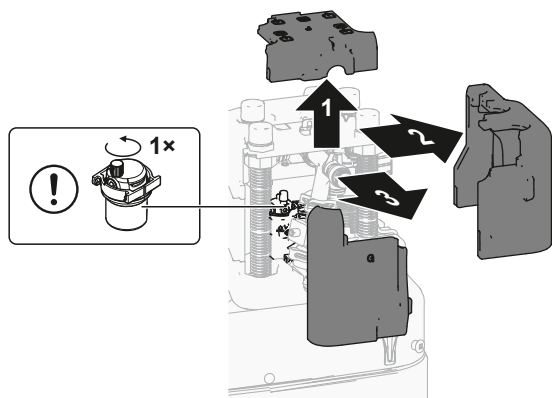
- 1 Remove the thermal insulation of the hydraulic block. Open the automatic air purge valve on the pump by one turn. Afterwards put the thermal insulation back on the hydraulic block.



NOTICE

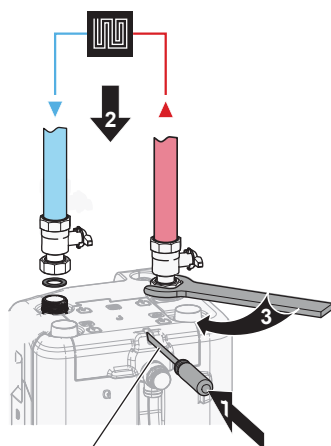
The thermal insulation can easily be damaged if NOT handled correctly.

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



- 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.

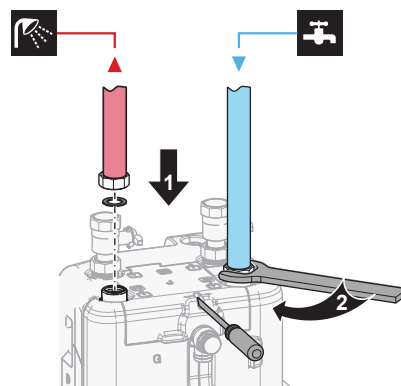
Do NOT exceed the maximum tightening torque (Thread size 1", 25-30 N•m). To avoid damage, apply the necessary counter torque with a suitable tool.



≤Ø7 mm

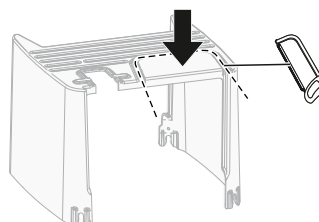
- 4 Connect the domestic hot water in and out pipes to the indoor unit.

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



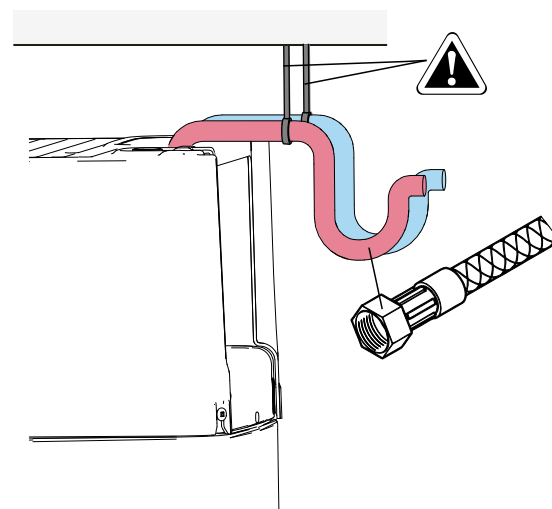
- 5 Cut open the top cover.

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.

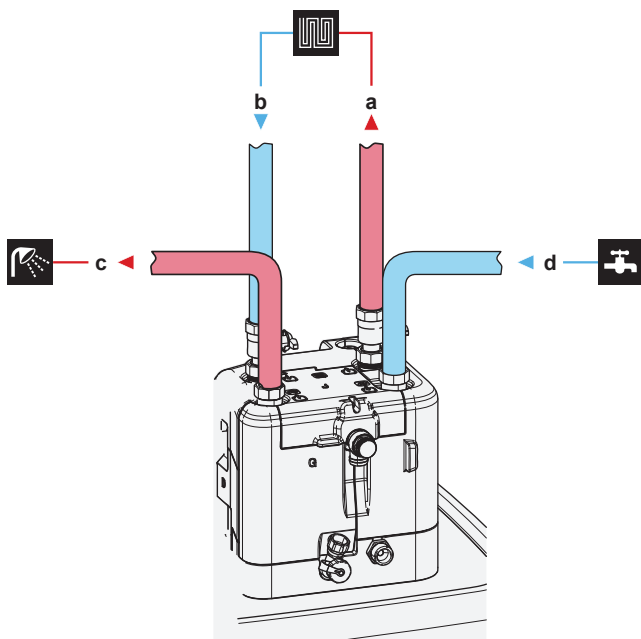


- 6 Support the water piping.

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



5 Piping installation



- 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

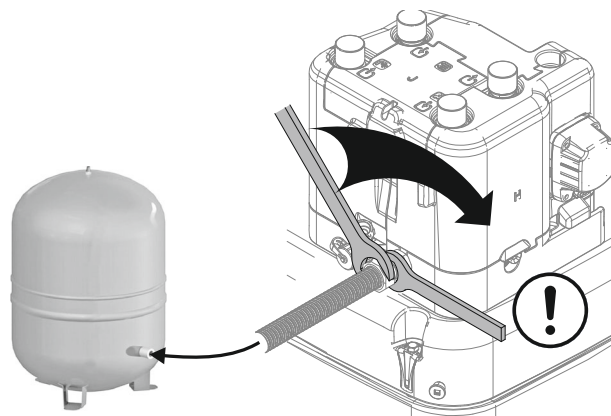
A pressure relief valve (field supply) with an opening pressure of maximum 10 bar (=1 MPa) must be installed on the domestic cold water inlet connection in accordance with the applicable legislation.

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 the expansion vessel

- 1 Connect a suitably dimensioned and preset expansion vessel for the heating system. There may not be any hydraulic blocking elements between the heat generator and the safety valve.
- 2 Position the pressure vessel in an easily accessible place (maintenance, parts replacement).



5.4.3 To fill the heating system

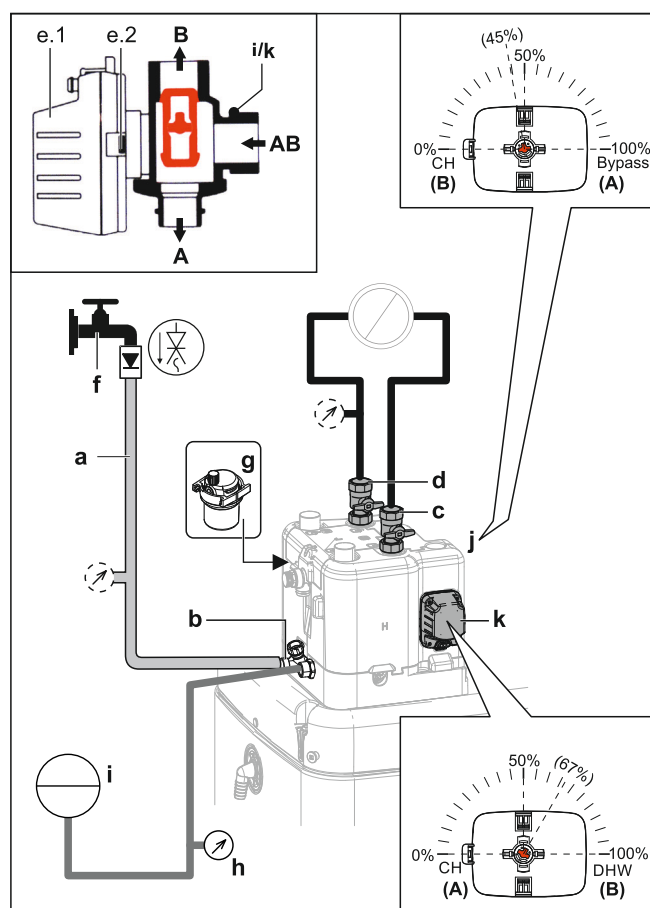


DANGER: RISK OF ELECTROCUTION

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 ["To purge the air out of the unit with the manual air vent valves"](#) [p 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 (see ["To purge the air out of the unit with the manual air vent valves"](#) [p 43]).
- 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"](#) [p 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

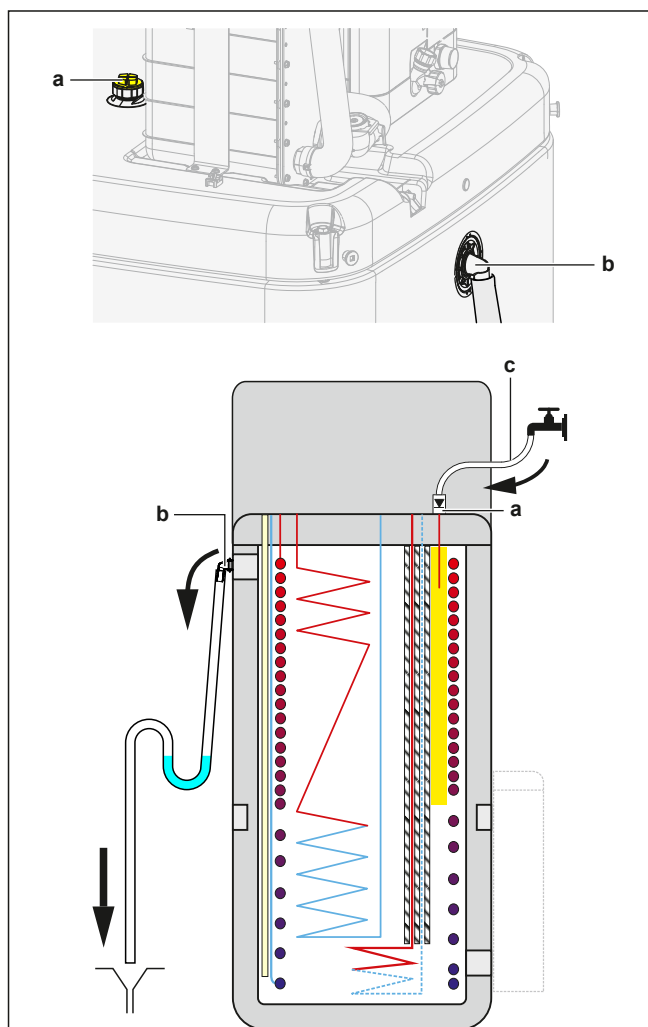
Before the storage tank can be filled, the heat exchangers inside the storage tank have to be filled, see previous chapters.

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.

6 Electrical installation



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

With installed drainback solar kit (option)

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

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



WARNING

ALWAYS use multicore cable for power supply cables.



WARNING

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



CAUTION

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



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" [p 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" [p 22].
Power supply (backup heater)	See "6.3.3 To connect the backup heater power supply" [p 23].
Backup heater	See "6.3.4 To connect the backup heater to the main unit" [p 25].
Shut-off valve	See "6.3.5 To connect the shut-off valve" [p 25].
Electricity meters	See "6.3.6 To connect the electricity meters" [p 26].
Domestic hot water pump	See "6.3.7 To connect the domestic hot water pump" [p 26].
Alarm output	See "6.3.8 To connect the alarm output" [p 27].
Space cooling/heating operation control	See "6.3.9 To connect the space cooling/heating ON/OFF output" [p 27].

Item	Description
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].
WLAN cartridge	See "6.3.14 To connect the WLAN cartridge (delivered as accessory)" [▶ 32].
Solar input	See "6.3.15 To connect the solar input" [▶ 32].
DHW output	See "6.3.16 To connect the DHW output" [▶ 33].
Room thermostat (wired or wireless)	 See below table.
	 Wires: 0.75 mm ² 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
	 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
Heat pump convector	 Wires: 0.75 mm ² 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
	 See: ▪ Installation manual of the remote outdoor sensor ▪ Addendum book for optional equipment
	 Wires: 2×0.75 mm ²
Remote outdoor sensor	 [9.B.1]=1 (External sensor = Outdoor) [9.B.2] Ext. amb. sensor offset [9.B.3] Averaging time

Item	Description
Remote indoor sensor	 See: ▪ Installation manual of the remote indoor sensor ▪ Addendum book for optional equipment
	 Wires: 2×0.75 mm ²
	 [9.B.1]=2 (External sensor = Room) [1.7] Room sensor offset
	 See: ▪ Installation and operation manual of the Human Comfort Interface ▪ Addendum book for optional equipment
Human Comfort Interface	 Wires: 2×(0.75~1.25 mm ²) Maximum length: 500 m
	 [2.9] Control [1.6] Room sensor offset
	 See: ▪ Installation manual of the WLAN module ▪ Addendum book for optional equipment
	 Use the cable delivered with the WLAN module.
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)

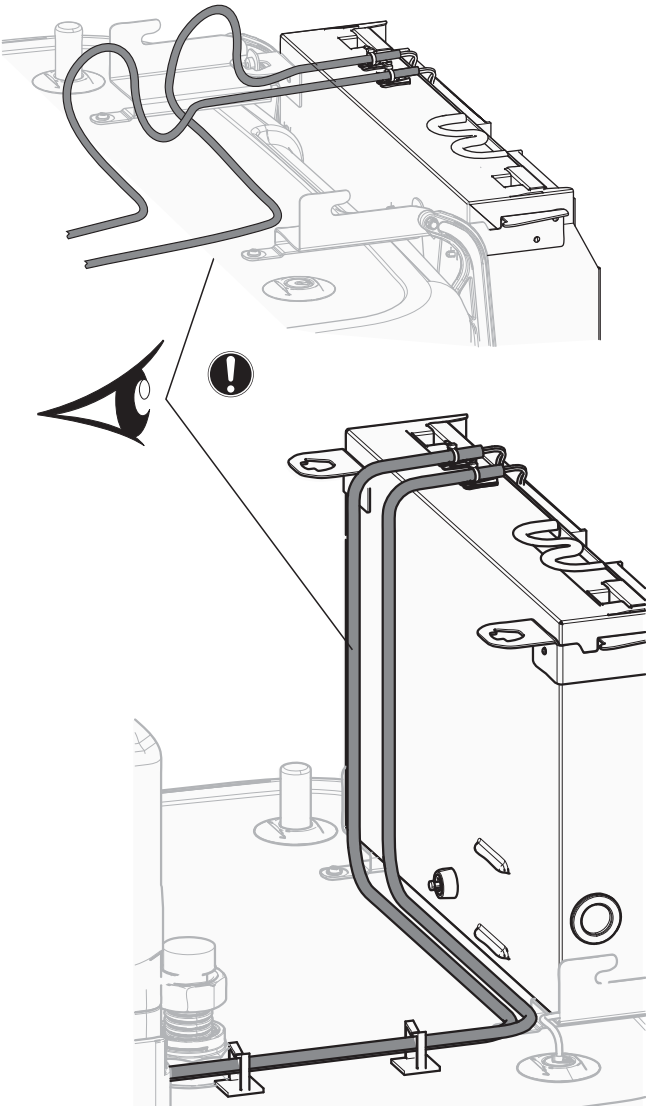
6.3.1 To connect the electrical wiring to the indoor unit

Remark: All cables which will be connected to the switch box of the ECH₂O must be fixed by strain relief.

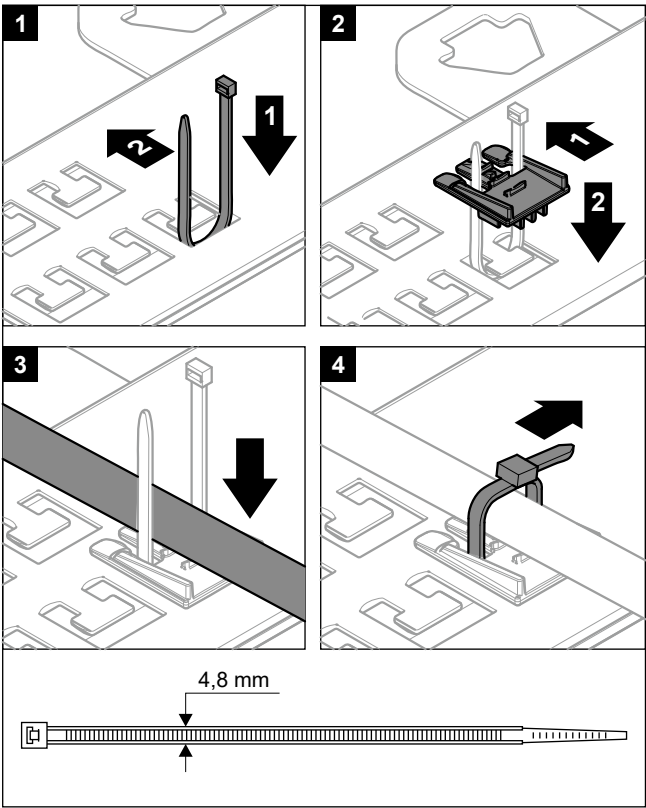
6 Electrical installation

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" [p 13]).

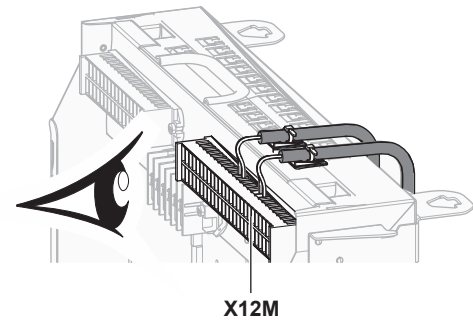
If the switch box is lowered in service position while the electrical installation is done, additional cable length has to be taken into account adequately. The cable routing in normal position is longer than in service position.



All cables which will be connected to the switch box of the ECH₂O 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

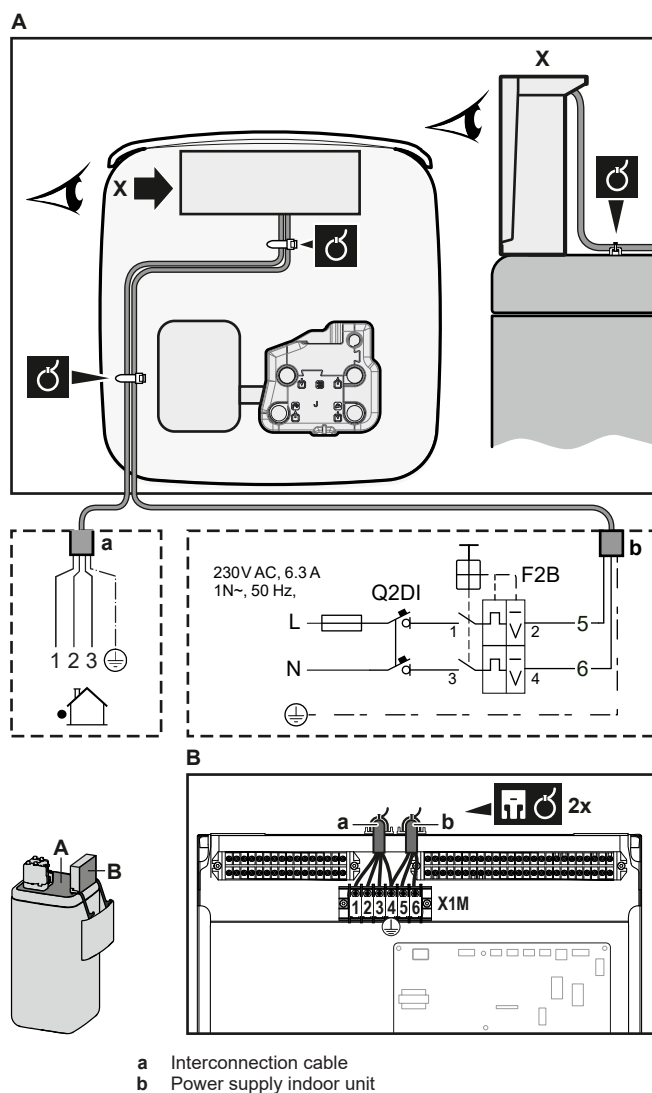
1 Open the following (see "4.2.1 To open the indoor unit" [p 13]):

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

2 Connect the main power supply.

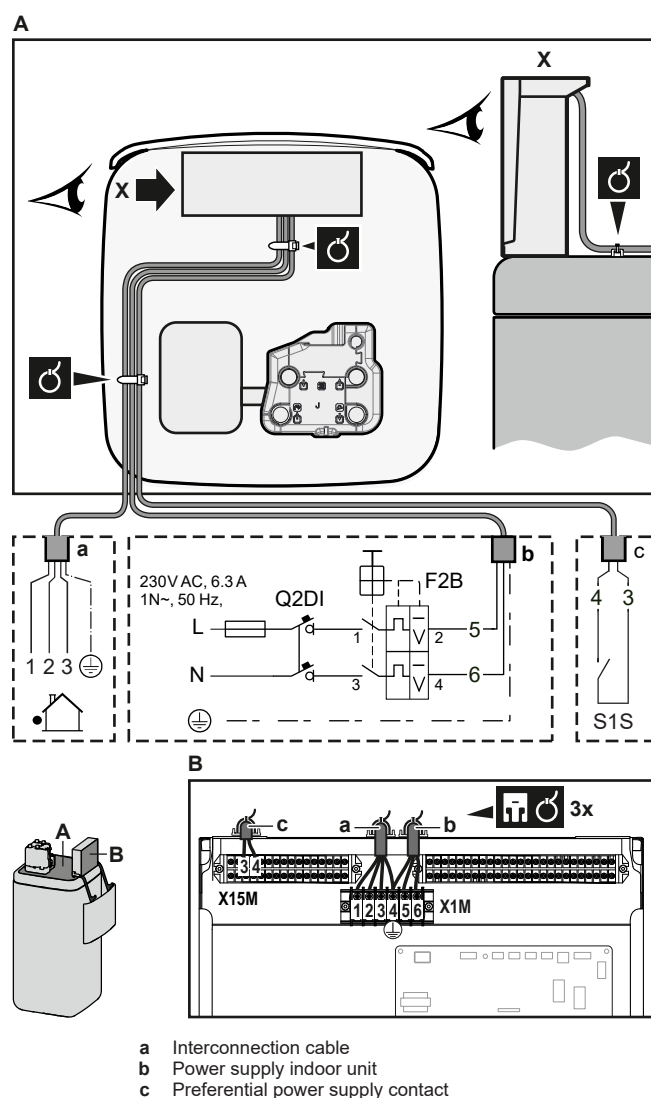
In case of normal kWh rate power supply

	Interconnection cable	Wires: (3+GND)×1.5 mm ²
	Power supply indoor unit	Wires: 1N+GND Maximum running current: 6.3 A
	—	—



In case of preferential kWh rate power supply

	Interconnection cable	Wires: (3+GND)×1.5 mm ²
	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 mm ²) 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	



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" [p 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 mm ² (minimum)
	EKECBU*6V	1N~ 230 V	(2+GND)×4 mm ² (minimum); ONLY flexible cords
	EKECBU*9W	3N~ 400 V	(4+GND)×2.5 mm ² (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

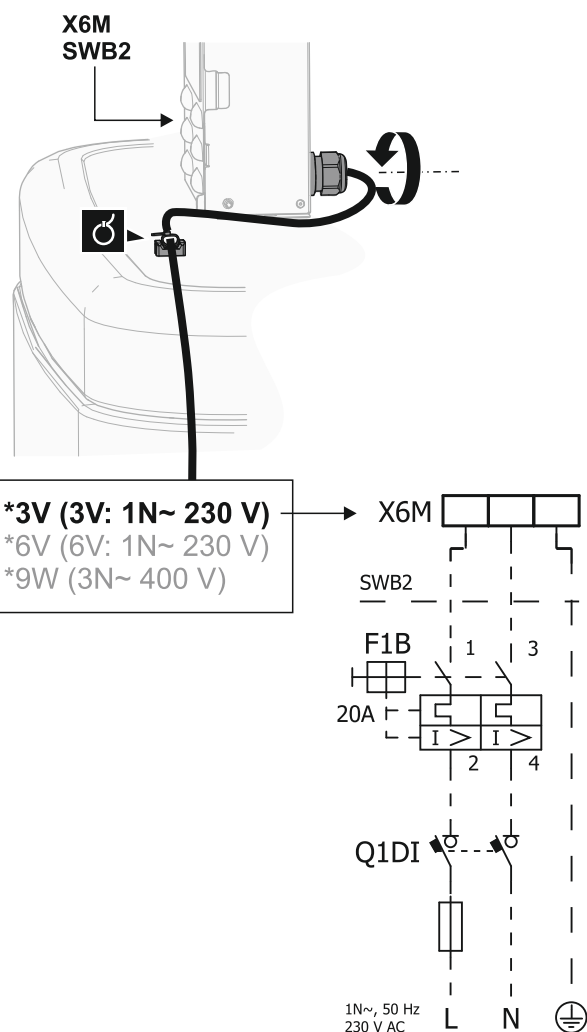
The backup heater capacity is depending on the chosen BUH option kit. Make sure that the power supply is in accordance with the backup heater capacity, as listed in the table below.

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	—

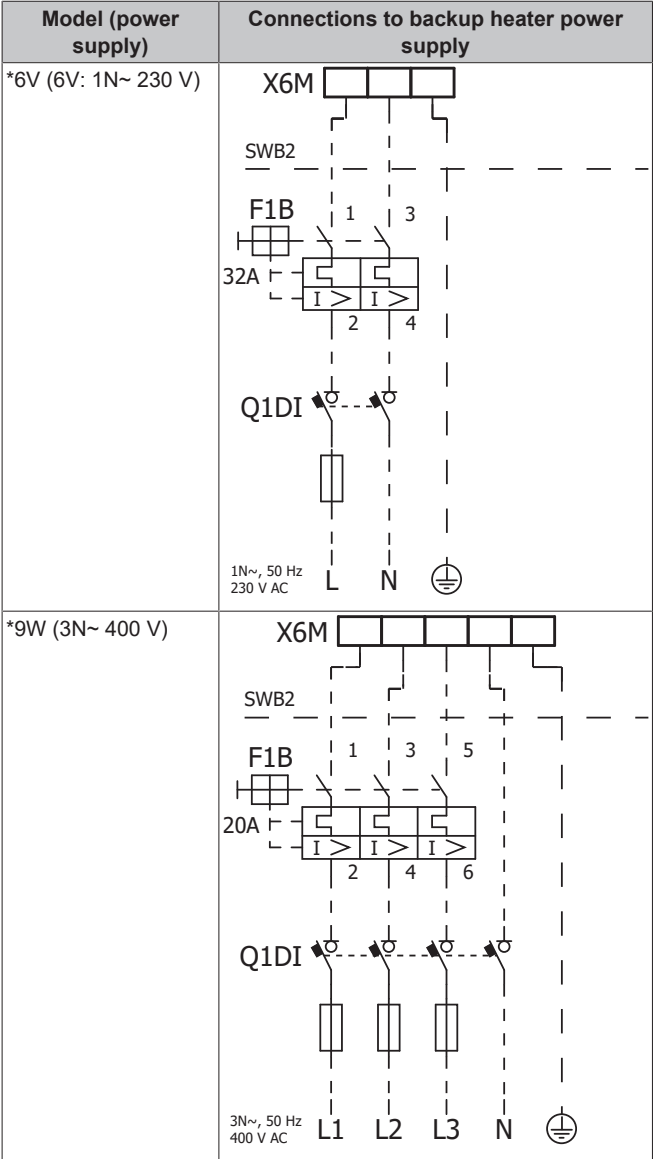
^(a) Electrical equipment complying with EN/IEC 61000-3-12 (European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase).

^(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)	



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

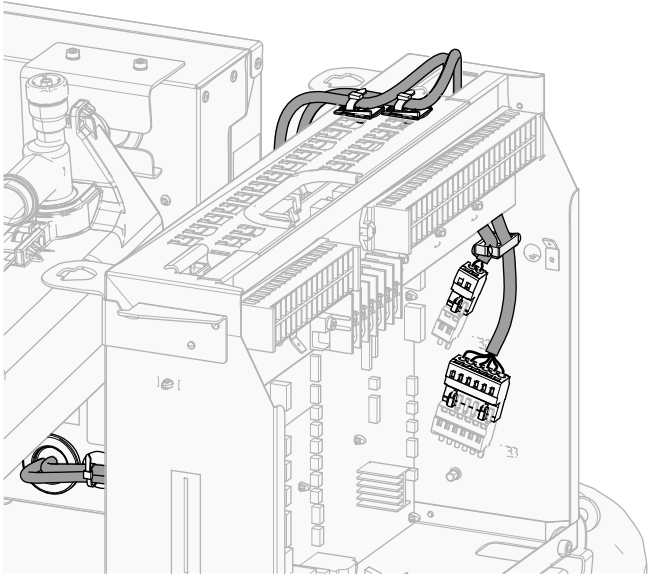
Wires: The connection cables are already connected to the option backup heater EKECBU*.

[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

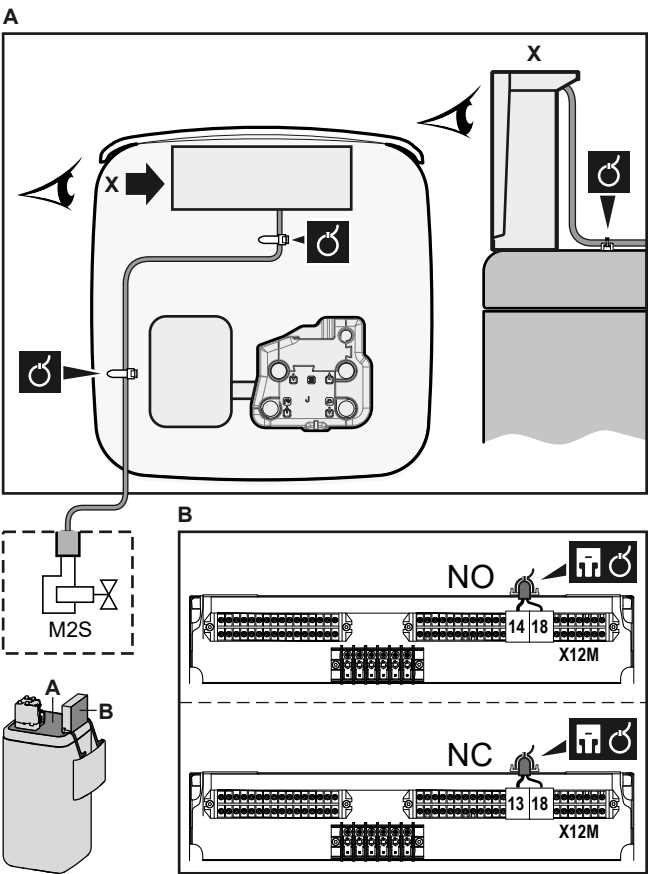
1 Open the following (see "4.2.1 To open the indoor unit" ▶ 13):

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.

6 Electrical installation



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" [p 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



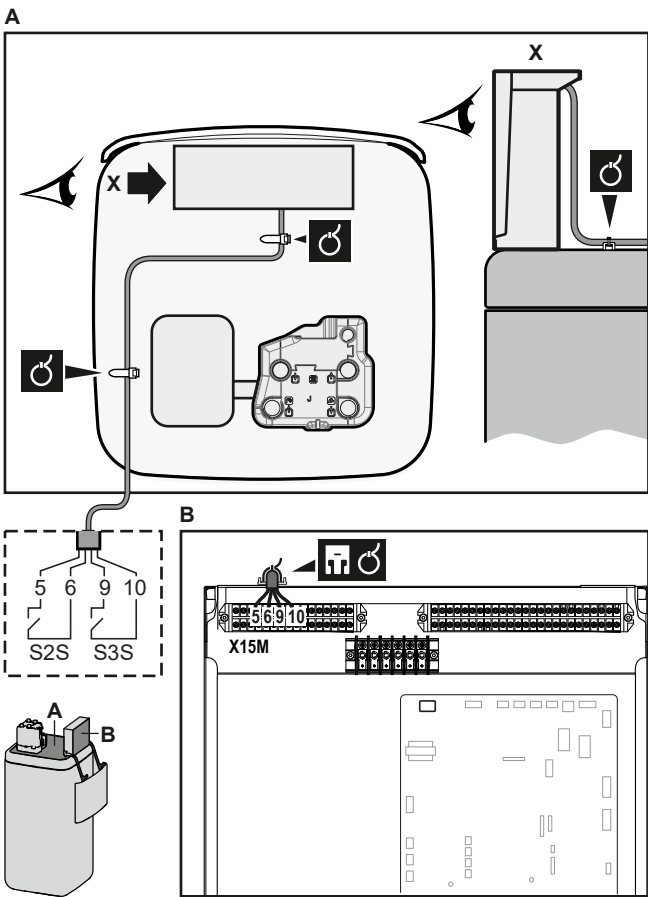
INFORMATION

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 X15M/6 and X15M/10.

1 Open the following (see "4.2.1 To open the indoor unit" [p 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" [p 21].

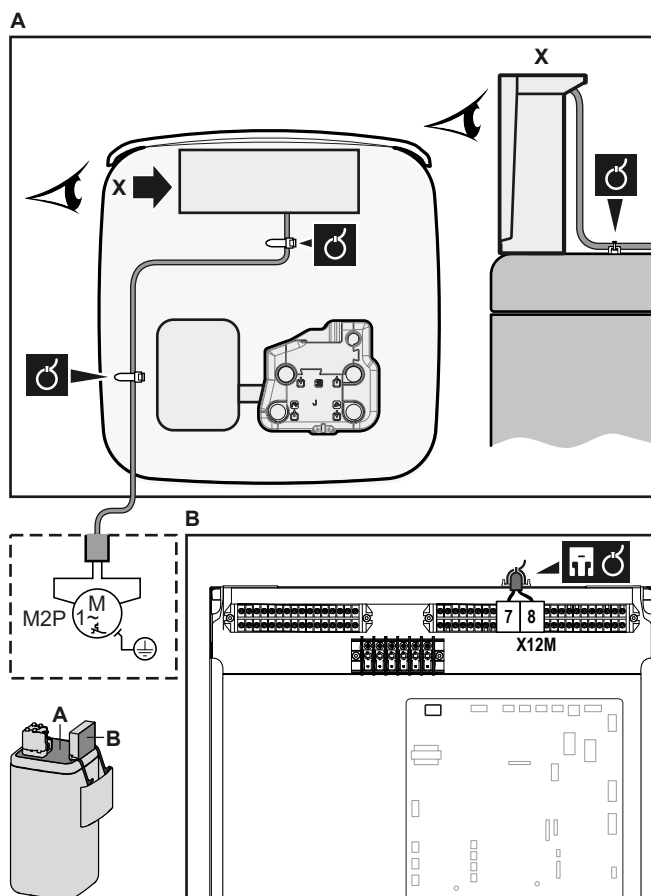
6.3.7 To connect the domestic hot water pump

	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" [p 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" [p 21].

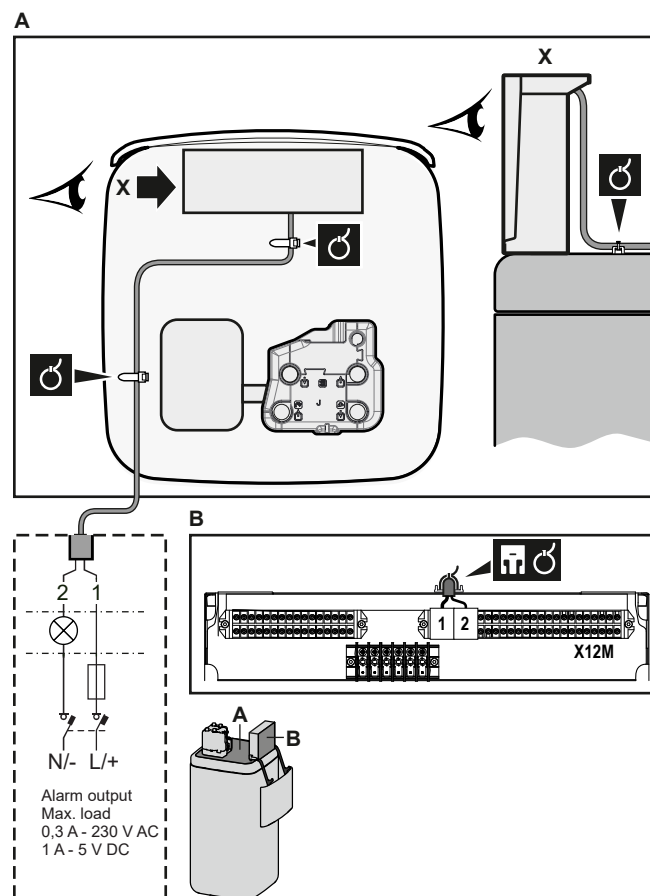
6.3.8 To connect the alarm output

	Wires: (2)×0.75 mm ²
	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" [p 13]):

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

- 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" [p 21].

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



INFORMATION

Cooling is only applicable in case of reversible models.

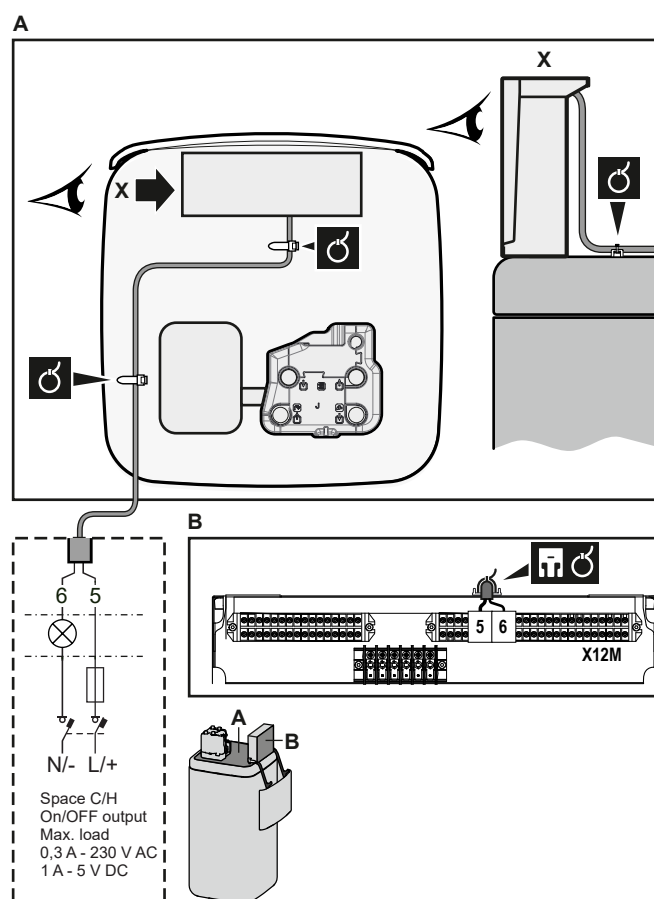
	Wires: (2)×0.75 mm ²
	Maximum load: 0.3 A, 230 V AC
	Maximum load: 1 A, 5 V DC
	—

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

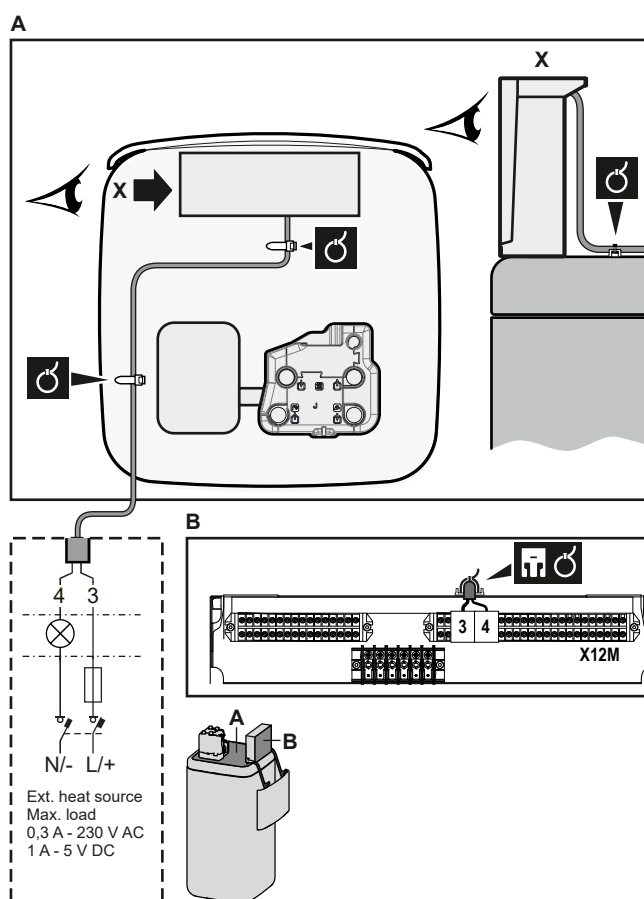
1	User interface panel	4
2	Switch box	3
3	Switch box cover	2
4	Top cover	1

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

6 Electrical installation



- 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" [p 21].



- 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" [p 21].

6.3.10 To connect the changeover to external heat source



INFORMATION

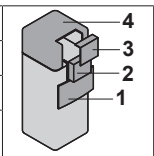
Bivalent is only possible in case of 1 leaving water temperature zone with:

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

	Wires: 2×0.75 mm ² 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" [p 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.

6.3.11 To connect the power consumption digital inputs



Wires: 2 (per input signal)×0.75 mm²

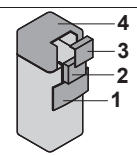
Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)



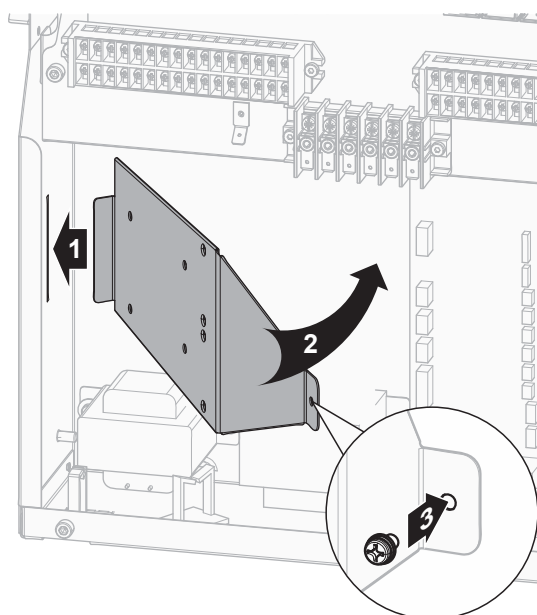
[9.9] Power consumption control.

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

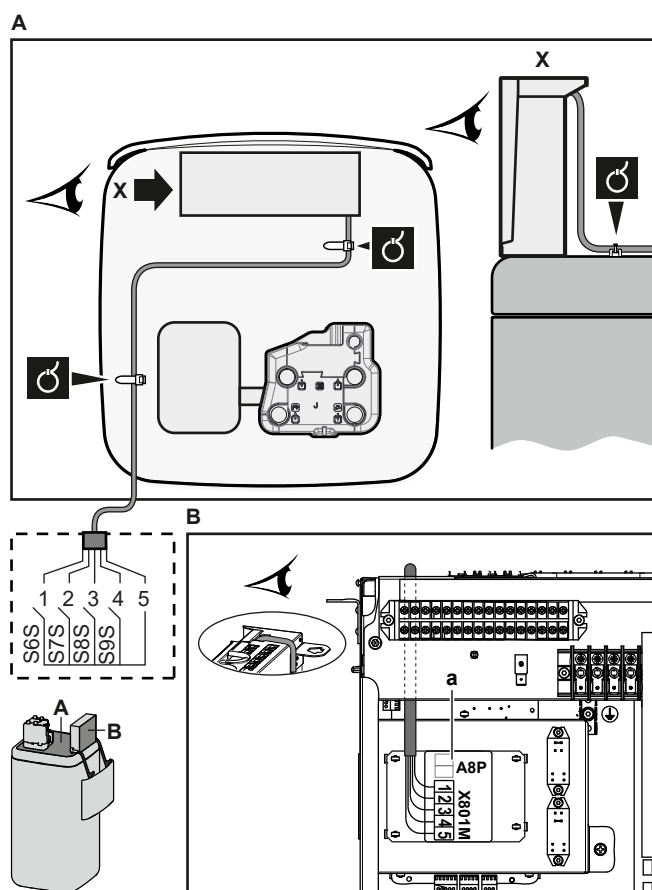
1	User interface panel
2	Switch box
3	Switch box cover
4	Top cover



- 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.



- 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" [p 21].

6.3.12 To connect the safety thermostat (normally closed contact)



Wires: 2×0.75 mm²

Maximum length: 50 m

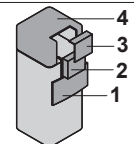
Safety thermostat contact: 16 V DC detection (voltage supplied by PCB). The voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.



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

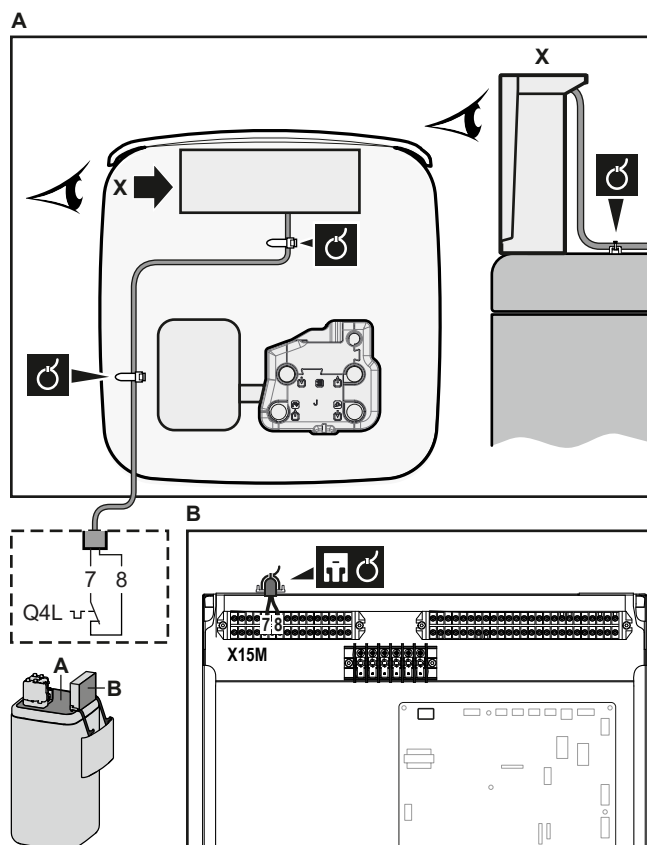
- 1 Open the following (see "4.2.1 To open the indoor unit" [p 13]):

- | | |
|---|----------------------|
| 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.



- 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" [p 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.

6 Electrical installation



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
1	2	
0	0	Free running
0	1	Forced off
1	0	Recommended on
1	1	Forced on

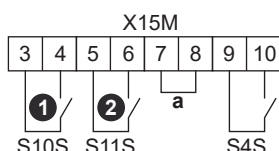
The use of a Smart Grid pulse meter is not mandatory:

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 mm ²
	Wires (low voltage Smart Grid contacts): 0.5 mm ²
	[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:

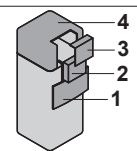


a Jumper (factory-mounted). If you also connect a safety thermostat (Q4L), replace the jumper with the safety thermostat wires.

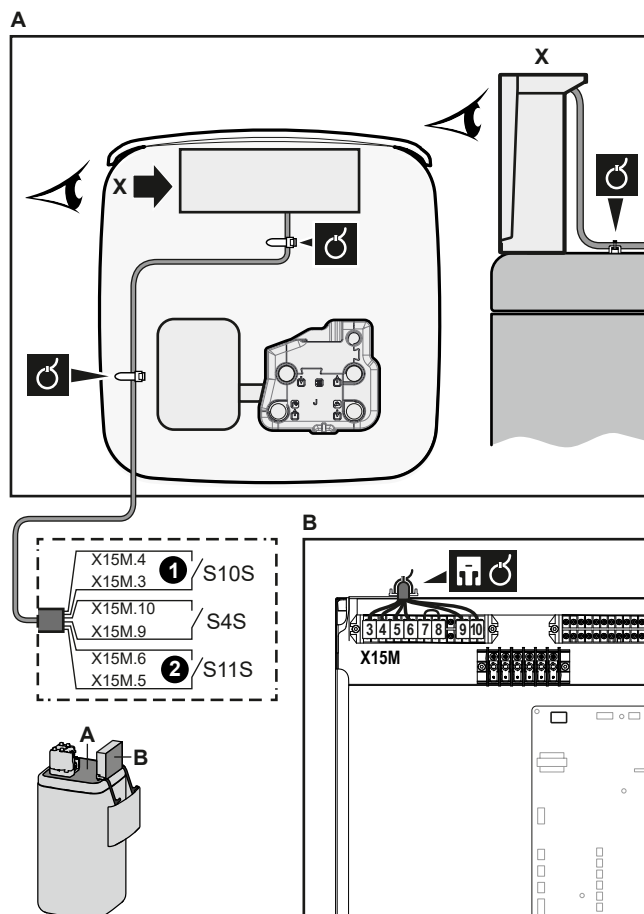
- S4S Smart Grid pulse meter
- ①/S10S Low voltage Smart Grid contact 1
- ②/S11S Low voltage Smart Grid contact 2

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 wiring as follows:

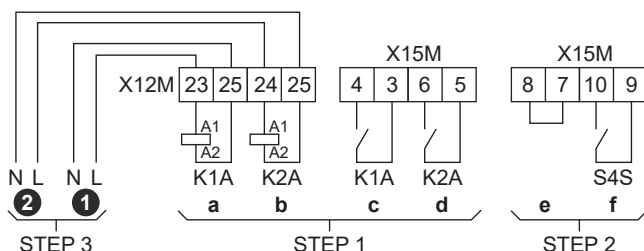


3 Fix the cables with cable ties to the cable tie mountings.

In case of high voltage Smart Grid contacts

	Wires (Smart Grid pulse meter): 0.5 mm ²
	Wires (high voltage Smart Grid contacts): 1 mm ²
	[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

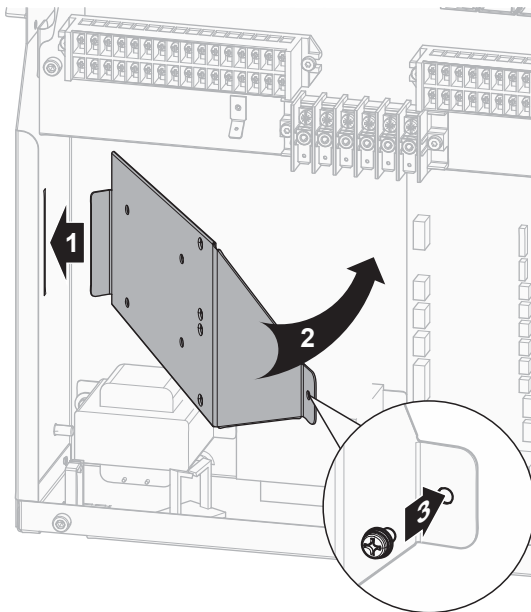
The wiring of the Smart Grid in case of high voltage contacts is as follows:



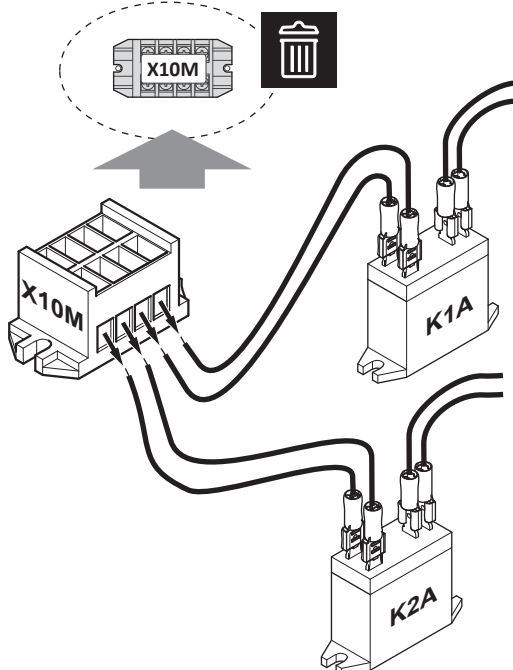
- STEP 1 Smart Grid relay kit installation
- STEP 2 Low voltage connections
- STEP 3 High voltage connections
 - ① High voltage Smart Grid contact 1
 - ② High voltage Smart Grid contact 2

- 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

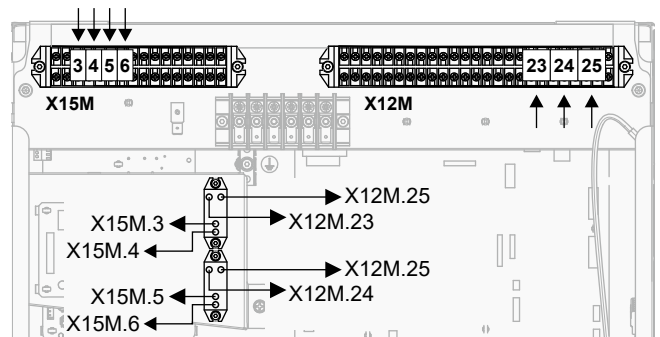
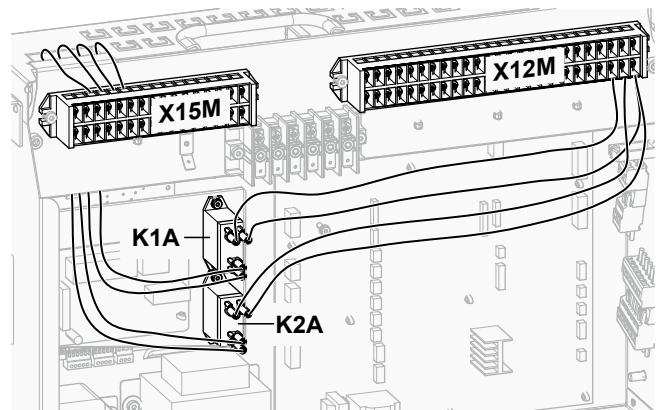
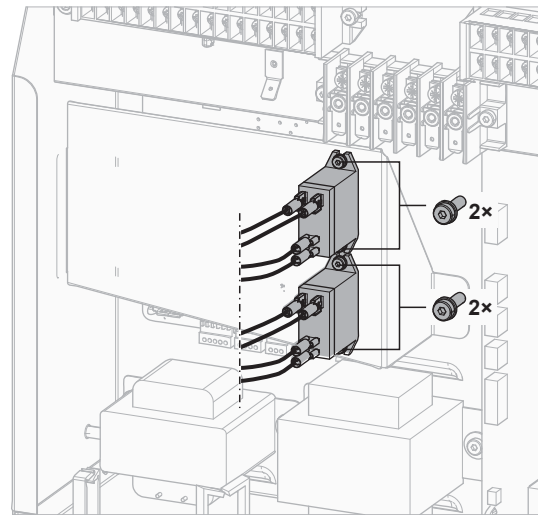
1 Install the switch box metal insert.



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

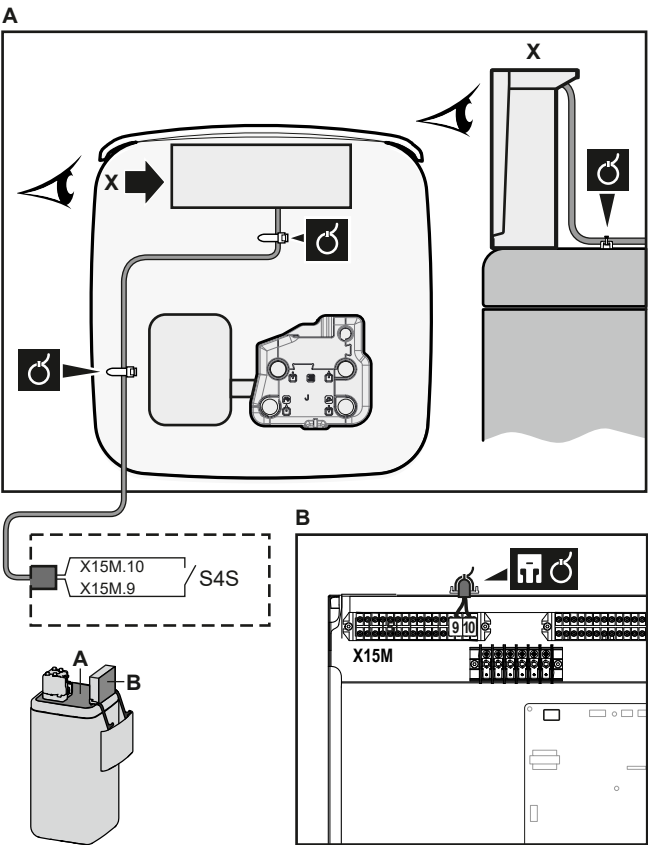


3 Install the components of the Smart Grid relay kit as follows:

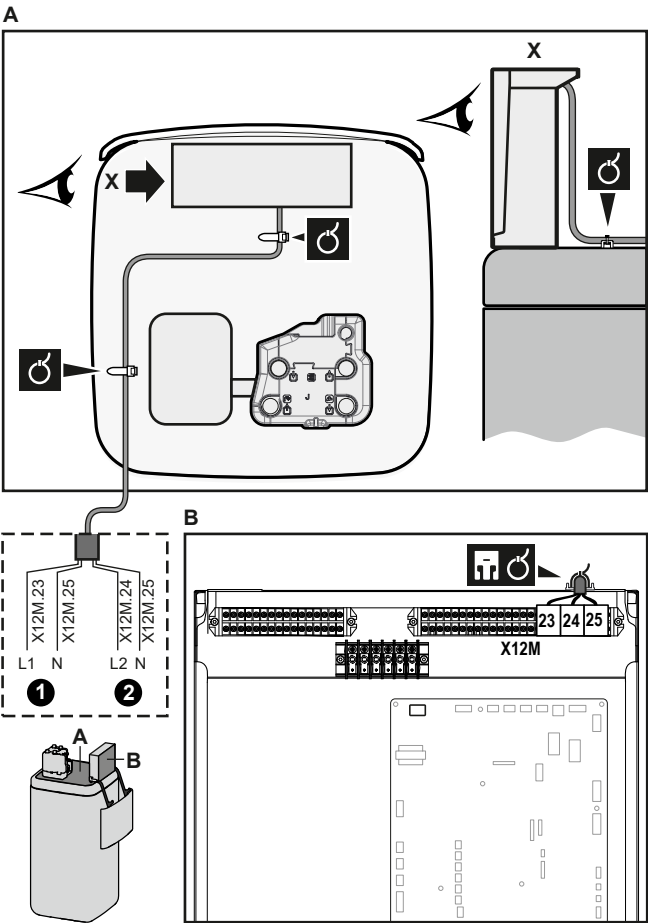


4 Connect the low voltage wiring as follows:

6 Electrical installation



5 Connect the high voltage wiring as follows:

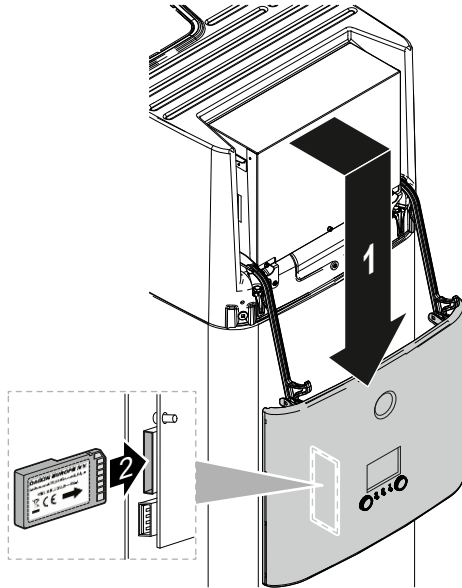


6 Fix the cable with cable ties to the cable tie mountings. General information, see "6.3.1 To connect the electrical wiring to the indoor unit" [p 21].


6.3.14 To connect the WLAN cartridge (delivered as accessory)


 [D] Wireless gateway

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

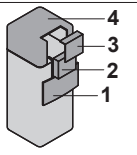


6.3.15 To connect the solar input

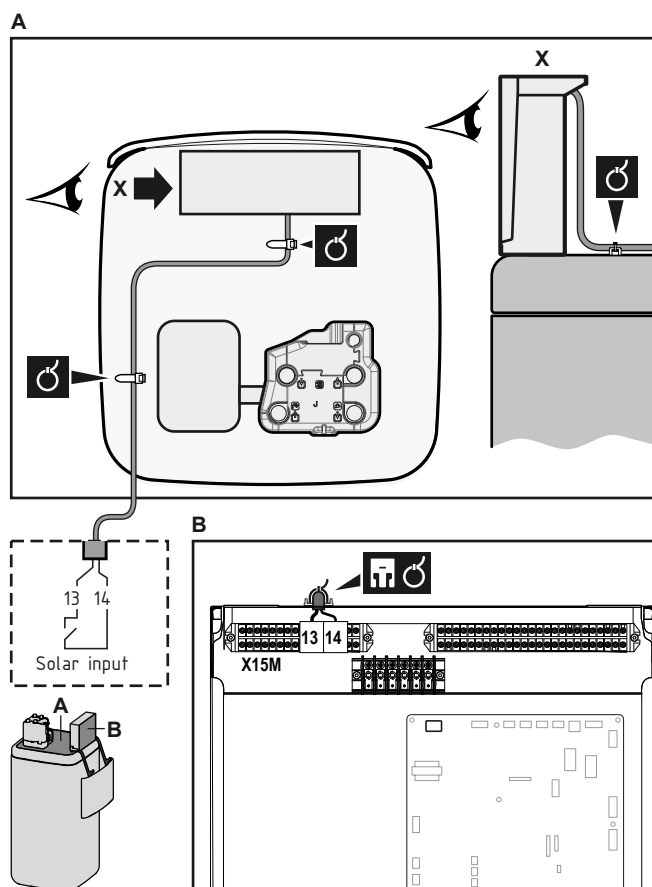
 Wires: 0.5 mm²
Solar input contact: 5 V DC (voltage supplied by PCB)

 —

- 1 Open the following (see "4.2.1 To open the indoor unit" [p 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"](#) [p 21].

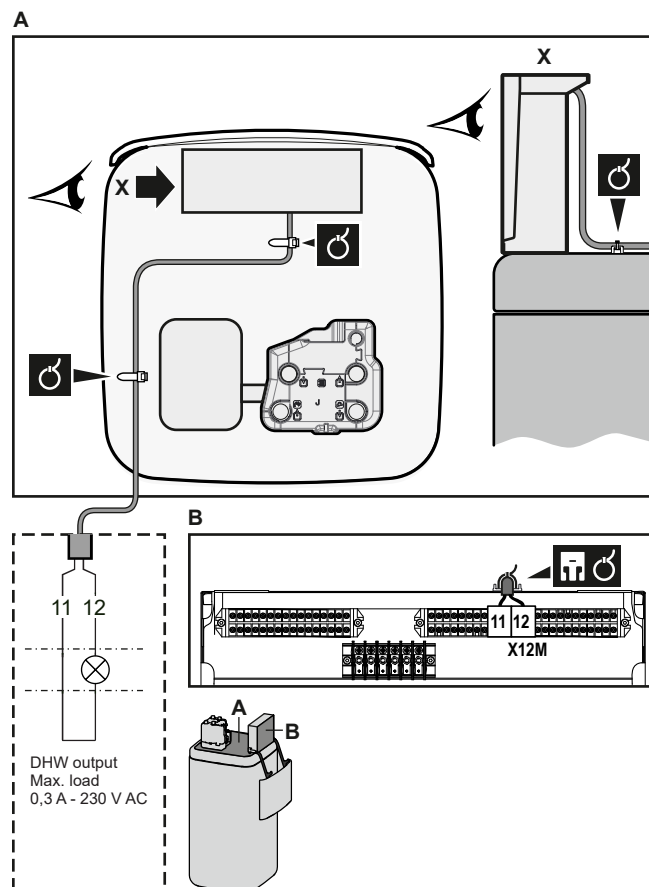
6.3.16 To connect the DHW output

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

- 1 Open the following (see ["4.2.1 To open the indoor unit"](#) [p 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.



- 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"](#) [p 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"](#) [p 34].

7 Configuration

- **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

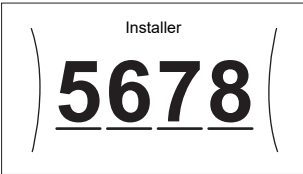
To change the user permission level

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.	⏮····○

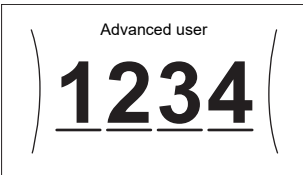
Installer pin code

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



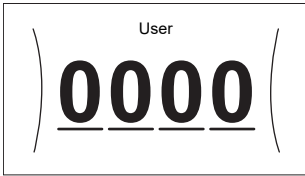
Advanced user pin code

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" ▶ 34].	—
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]	<ul style="list-style-type: none"> 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]	<ul style="list-style-type: none"> Integrated <p>The backup heater will also be used for domestic hot water heating.</p>

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]	<ul style="list-style-type: none"> 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 set to Manual, the following functions will remain active even if the user does NOT confirm emergency operation:

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

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



INFORMATION

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

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

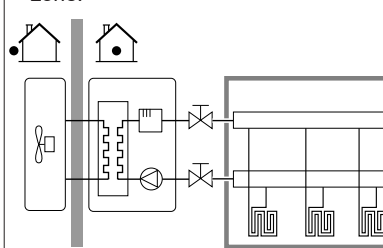
Number of zones

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

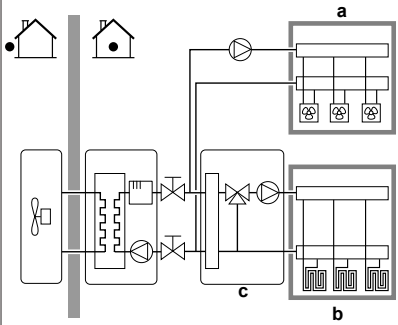


INFORMATION

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

#	Code	Description
[4.4]	[7-02]	<ul style="list-style-type: none"> 0: Single zone <p>Only one leaving water temperature zone:</p>  <p>a Main LWT zone</p>

7 Configuration

#	Code	Description
[4.4]	[7-02]	<ul style="list-style-type: none"> 1: Dual zone <p>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:</p>  <p>a Additional LWT zone: Highest temperature b Main LWT zone: Lowest temperature c Mixing station</p>



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]	<ul style="list-style-type: none"> 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]	<ul style="list-style-type: none"> 0: 230V, 1ph 2: 400V, 3ph

Configuration

The backup heater can be configured in different ways. For the 3V model, the system variably chooses 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]	<ul style="list-style-type: none"> 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 $2 \times [6-03] + [6-04]$.



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]	<ul style="list-style-type: none"> The capacity of the first step of the backup heater at nominal voltage.

Additional capacity step 2

#	Code	Description
[9.3.5]	[6-04]	<ul style="list-style-type: none"> 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]	<ul style="list-style-type: none"> 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]	<ul style="list-style-type: none"> 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 (see [2.B.1])
1: Fancoil unit	Maximum 55°C	Variable (see [2.B.1])
2: Radiator	Maximum 65°C	Variable (see [2.B.1])



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: $40 - 10/2 = 35^{\circ}\text{C}$

Example underfloor heating: $40 - 5/2 = 37.5^{\circ}\text{C}$

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]	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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"](#) ▶ 37].

#	Code	Description
[3.7]	[2-0D]	<ul style="list-style-type: none"> 0: Underfloor heating 1: Fancoil unit 2: Radiator

7 Configuration

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"](#) [p 37].

#	Code	Description
[3.9]	N/A	<ul style="list-style-type: none">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"](#) [p 37].

#	Code	Description
[3.4]	N/A	<ul style="list-style-type: none">0: Fixed1: WD heating, fixed cooling2: Weather dependent

Schedule

Indicates if the desired leaving water temperature is according to a schedule. Also see ["7.2.5 Configuration wizard: Main zone"](#) [p 37].

#	Code	Description
[3.1]	N/A	<ul style="list-style-type: none">0: No1: 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: <ul style="list-style-type: none">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:

#	Code	Description
[5.9]	[6-00]	Heat pump ON hysteresis <ul style="list-style-type: none">2°C~40°C

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"](#) [p 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

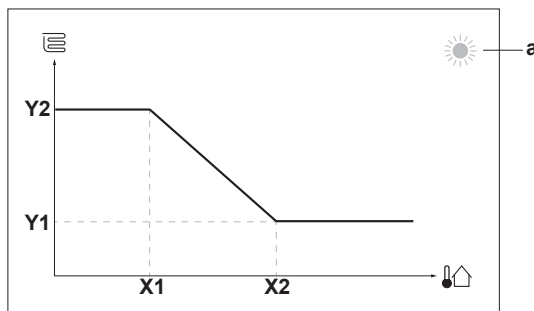
To operate weather-dependent, correctly configure the setpoint of the main zone, additional zone or tank. See ["7.3.4 Using weather-dependent curves"](#) [p 39].








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	<p>Selected weather-dependent zone:</p> <ul style="list-style-type: none"> : Main zone or additional zone heating : Main zone or additional zone cooling : Domestic hot water
X1, X2	Examples of outdoor ambient temperature
Y1, Y2	<p>Examples of desired tank temperature or leaving water temperature. The icon corresponds to the heat emitter for that zone:</p> <ul style="list-style-type: none"> : 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

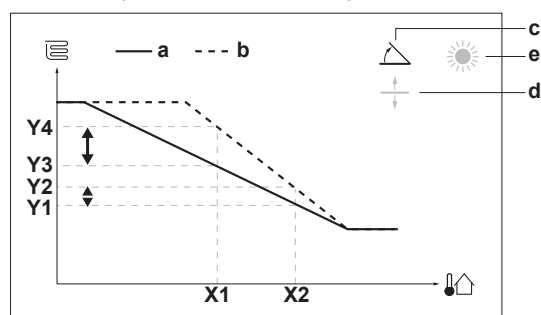
Slope and offset

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

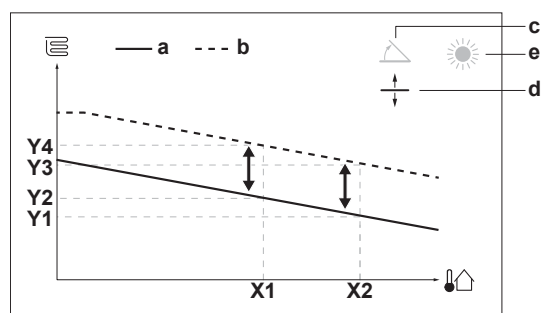
- Change the **slope** to differentially increase or decrease the temperature of the leaving water for different ambient temperatures. For example, if leaving water temperature is in general fine but at low ambient temperatures too cold, raise the slope so that leaving water temperature is heated increasingly 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): <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ : 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: <ul style="list-style-type: none"> ▪ : 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.

7 Configuration

Viewing which type is selected is also possible via:

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

Restriction: Only available to installers.

To change the weather-dependent curve

Zone	Go to ...
Main zone – Heating	[2.5] Main zone > Heating WD curve
Main zone – Cooling	[2.6] Main zone > Cooling WD curve
Additional zone – Heating	[3.5] Additional zone > Heating WD curve
Additional zone – Cooling	[3.6] Additional zone > Cooling WD curve
Tank	Restriction: Only available to installers. [5.C] Tank > WD curve



INFORMATION

Maximum and minimum setpoints

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

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

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

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

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

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

You feel ...		Fine-tune with setpoints:			
At regular outdoor temperatures ...	At cold outdoor temperatures ...	Y2 ^(a)	Y1 ^(a)	X1 ^(a)	X2 ^(a)
OK	Cold	↑	—	↑	—
OK	Hot	↓	—	↓	—
Cold	OK	—	↑	—	↑
Cold	Cold	↑	↑	↑	↑
Cold	Hot	↓	↑	↓	↑
Hot	OK	—	↓	—	↓
Hot	Cold	↑	↓	↑	↓
Hot	Hot	↓	↓	↓	↓

^(a) See "7.3.2 2-points curve" ▶ 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: <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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

[9] Installer settings	[9.2] Domestic hot water
Configuration wizard	Domestic hot water
Domestic hot water	DHW pump
Backup heater	DHW pump schedule
Emergency	Solar
Balancing	[9.3] Backup heater
Water pipe freeze prevention	Backup heater type
Benefit kWh power supply	Voltage
Power consumption control	Configuration
Energy metering	Capacity step 1
Sensors	Additional capacity step 2
Bivalent	Equilibrium
Alarm output	Equilibrium temperature
Auto restart	Operation
Power saving function	[9.6] Balancing
Disable protections	Space heating priority
Forced defrost	Priority temperature
Overview field settings	Anti-recycle timer
Export MMI settings	Minimum running timer
Intelligent tank management	Maximum running timer
Bizone kit	Additional timer
	[9.8] Benefit kWh power supply
	Allow heater
	Allow pump
	Benefit kWh power supply
	Smart Grid operation mode
	Allow electrical heaters
	Enable room buffering
	Limit setting kW
	[9.9] Power consumption control
	Power consumption control
	Type
	Limit
	Limit 1
	Limit 2
	Limit 3
	Limit 4
	Priority heater
	(*) BBR16 activation
	(*) BBR16 power limit
	[9.A] Energy metering
	Electricity meter 1
	Electricity meter 2
	[9.B] Sensors
	External sensor
	Ext. amb. sensor offset
	Averaging time
	[9.C] Bivalent
	Mode
	Boiler efficiency
	Temperature
	Hysteresis
	PE factor
	[9.O] Intelligent tank management
	Tank boiler hysteresis
	Tank free energy hysteresis
	Tank capacity limitation
	Efficiency calculation
	Continuous heating
	Equilibrium
	Equilibrium temperature
	Solar priority
	[9.P] Bizone kit
	Bizone kit installed
	Bizone system type
	Add zone pump fixed PWM
	Main zone pump fixed PWM
	Mixing valve turning time

(*) 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.

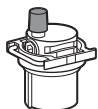


NOTICE

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.

<input type="checkbox"/>	You read the complete installation instructions, as described in the installer reference guide .
<input type="checkbox"/>	The indoor unit is properly mounted. <ul style="list-style-type: none"> ▪ Check that the top cover is fitted correctly. ▪ Check that the top cover is secured with the screws (Top cover screws).
<input type="checkbox"/>	The outdoor unit is properly mounted.
<input type="checkbox"/>	The following field wiring has been carried out according to this document and the applicable legislation: <ul style="list-style-type: none"> ▪ 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)

<input type="checkbox"/>	The system is properly earthed and the earth terminals are tightened.
<input type="checkbox"/>	The fuses or locally installed protection devices are installed according to this document, and have NOT been bypassed.
<input type="checkbox"/>	The power supply voltage matches the voltage on the identification label of the unit.
<input type="checkbox"/>	There are NO loose connections or damaged electrical components in the switch box.
<input type="checkbox"/>	There are NO damaged components or squeezed pipes on the inside of the indoor and outdoor units.
<input type="checkbox"/>	Backup heater circuit breaker F1B (field supply) is turned ON.
<input type="checkbox"/>	There are NO refrigerant leaks .
<input type="checkbox"/>	The refrigerant pipes (gas and liquid) are thermally insulated.
<input type="checkbox"/>	The correct pipe size is installed and the pipes are properly insulated.
<input type="checkbox"/>	There is NO water leak inside the indoor unit. All electric components and connections are dry.
<input type="checkbox"/>	The shut-off valves are properly installed and fully open.
<input type="checkbox"/>	The automatic air purge valves are open.
<input type="checkbox"/>	The pressure relief valve (space heating circuit) purges water when opened. Clean water MUST come out.
<input type="checkbox"/>	The minimum water volume is guaranteed in all conditions. See "To check the water volume and flow rate" in "5.3 Preparing water piping" [p 16] .
<input type="checkbox"/>	The storage tank is filled completely.

8.2 Checklist during commissioning

<input type="checkbox"/>	To check that the minimum flow rate during backup heater/defrost operation is guaranteed in all conditions. See "To check the water volume and flow rate" in "5.3 Preparing water piping" [p 16] .
<input type="checkbox"/>	To perform an air purge .
<input type="checkbox"/>	To perform a test run .
<input type="checkbox"/>	To perform an actuator test run .
<input type="checkbox"/>	To perform (start) an underfloor screed dryout (if necessary).
<input type="checkbox"/>	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" [p 43]).	—
4	Read out the flow rate ^(a) . If the flow rate is too low: <ul style="list-style-type: none"> ▪ 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	10 l/min
Heating/defrost	20 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 " [p 34].	—
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.	

Air purging heat emitters or collectors

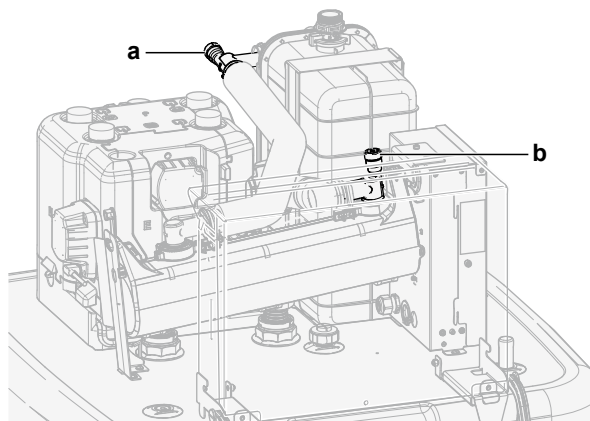
We recommend to purge air with the unit's air purge function (see above). However, if you purge air from the heat emitters or collectors, mind the following:

WARNING

Air purging heat emitters or collectors. Before you purge air from heat emitters or collectors, check if or is displayed on the home screen of the user interface.

- If not, you can purge air immediately.
- If yes, make sure that the room where you want to purge air is sufficiently ventilated. **Reason:** Refrigerant might leak into the water circuit, and subsequently into the room when you purge air from the heat emitters or collectors.

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



a, b Manual air vent valve

- 1 Connect a hose to the manual air vent valve **a**. Direct the free end away from the unit.
- 2 Open the valve by turning until no more air escapes, then close it again.
- 3 In case that an option backup heater is installed, repeat step 1 and 2 for valve **b**.

8.2.3 To perform an operation test run

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

1	Set the user permission level to Installer. See " To change the user permission level " [p 34].	—
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 " [p 34].	—
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.



INFORMATION

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

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

9 Hand-over to the user



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 " [p. 34].	—
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

Drain back models

For drain back models, a backup heater (EKECBLUA*) 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 (EKECBLUA*) 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.

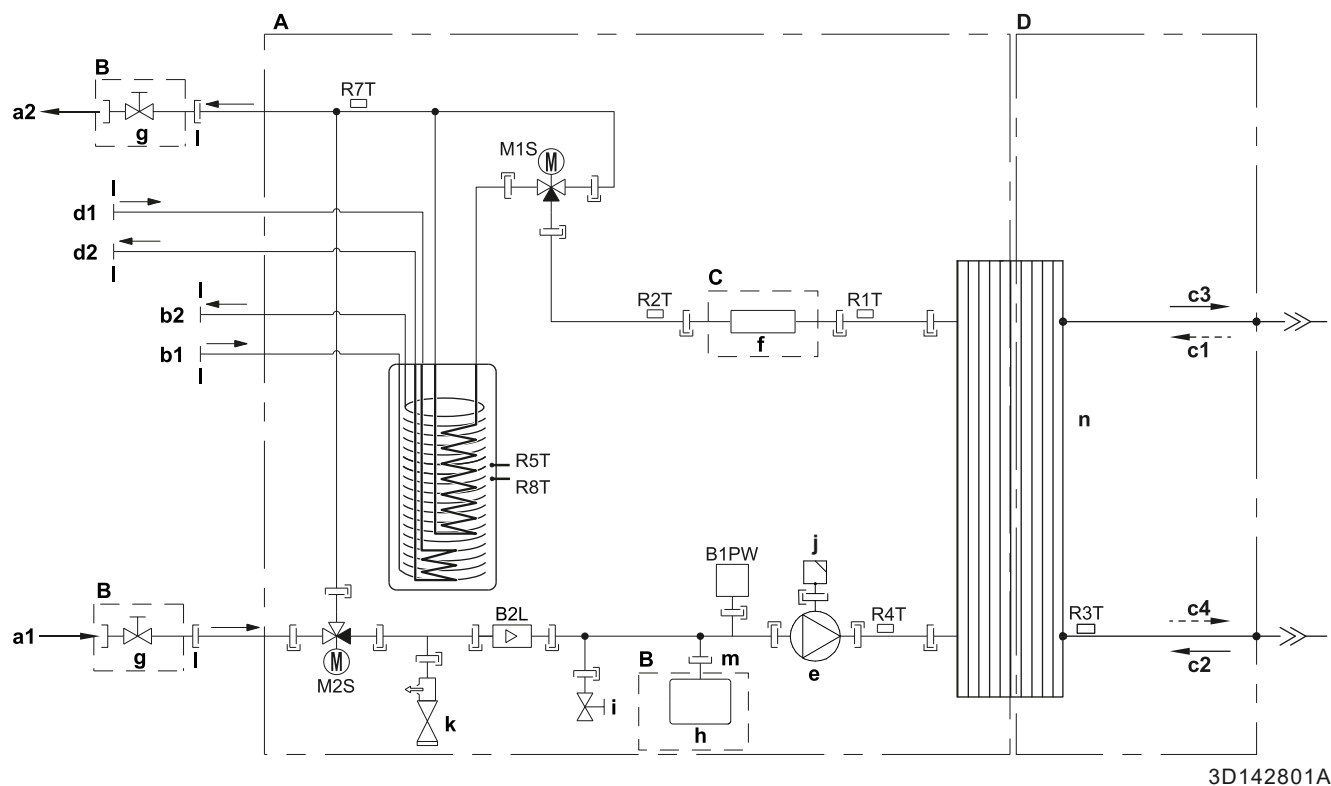
8.2.6 To set up bivalent heat sources

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.

10 Technical data

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

10.1 Piping diagram: Indoor unit



- 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
- j** Automatic air purge 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 Technical data

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
<input type="checkbox"/> 3V (1N~, 230 V, 3 kW)	<input type="checkbox"/> 3V (1N~, 230 V, 3 kW)
<input type="checkbox"/> 6V (1N~, 230 V, 6 kW)	<input type="checkbox"/> 6V (1N~, 230 V, 6 kW)
<input type="checkbox"/> 6WN/9WN (3N~, 400 V, 6/9 kW)	<input type="checkbox"/> 6WN/9WN (3N~, 400 V, 6/9 kW)
User installed options	User installed options
<input type="checkbox"/> Backup heater	<input type="checkbox"/> Backup heater
<input type="checkbox"/> Remote user interface	<input type="checkbox"/> Dedicated Human Comfort Interface (BRC1HHDA used as room thermostat)
<input type="checkbox"/> Ext. indoor thermistor	<input type="checkbox"/> External indoor thermistor
<input type="checkbox"/> Ext outdoor thermistor	<input type="checkbox"/> External outdoor thermistor
<input type="checkbox"/> Demand PCB	<input type="checkbox"/> Demand PCB
<input type="checkbox"/> Smart Grid kit	<input type="checkbox"/> Smart grid kit
<input type="checkbox"/> WLAN adapter module	<input type="checkbox"/> WLAN adapter module
<input type="checkbox"/> WLAN cartridge	<input type="checkbox"/> WLAN cartridge
<input type="checkbox"/> Bizone mixing kit	<input type="checkbox"/> Bizone mixing kit
<input type="checkbox"/> Safety thermostat	<input type="checkbox"/> Safety thermostat
Main LWT	Main leaving water temperature
<input type="checkbox"/> On/OFF thermostat (wired)	<input type="checkbox"/> On/OFF thermostat (wired)
<input type="checkbox"/> On/OFF thermostat (wireless)	<input type="checkbox"/> On/OFF thermostat (wireless)
<input type="checkbox"/> Ext. thermistor	<input type="checkbox"/> External thermistor
<input type="checkbox"/> Heat pump convactor	<input type="checkbox"/> Heat pump convactor
Add LWT	Additional leaving water temperature
<input type="checkbox"/> On/OFF thermostat (wired)	<input type="checkbox"/> On/OFF thermostat (wired)
<input type="checkbox"/> On/OFF thermostat (wireless)	<input type="checkbox"/> On/OFF thermostat (wireless)
<input type="checkbox"/> Ext. thermistor	<input type="checkbox"/> External thermistor
<input type="checkbox"/> Heat pump convactor	<input type="checkbox"/> Heat pump convactor

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 convactor
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	Contacteur backup heater
K5M	Safety contacteur 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

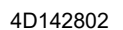
Translation of text on wiring diagram

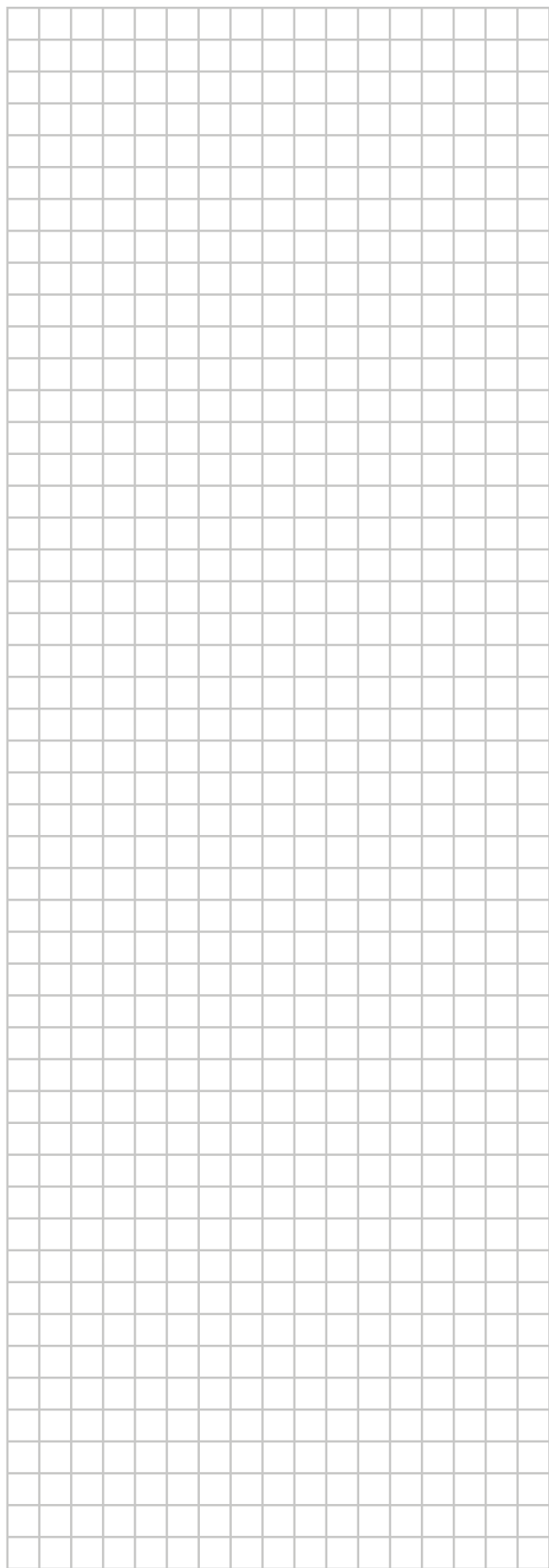
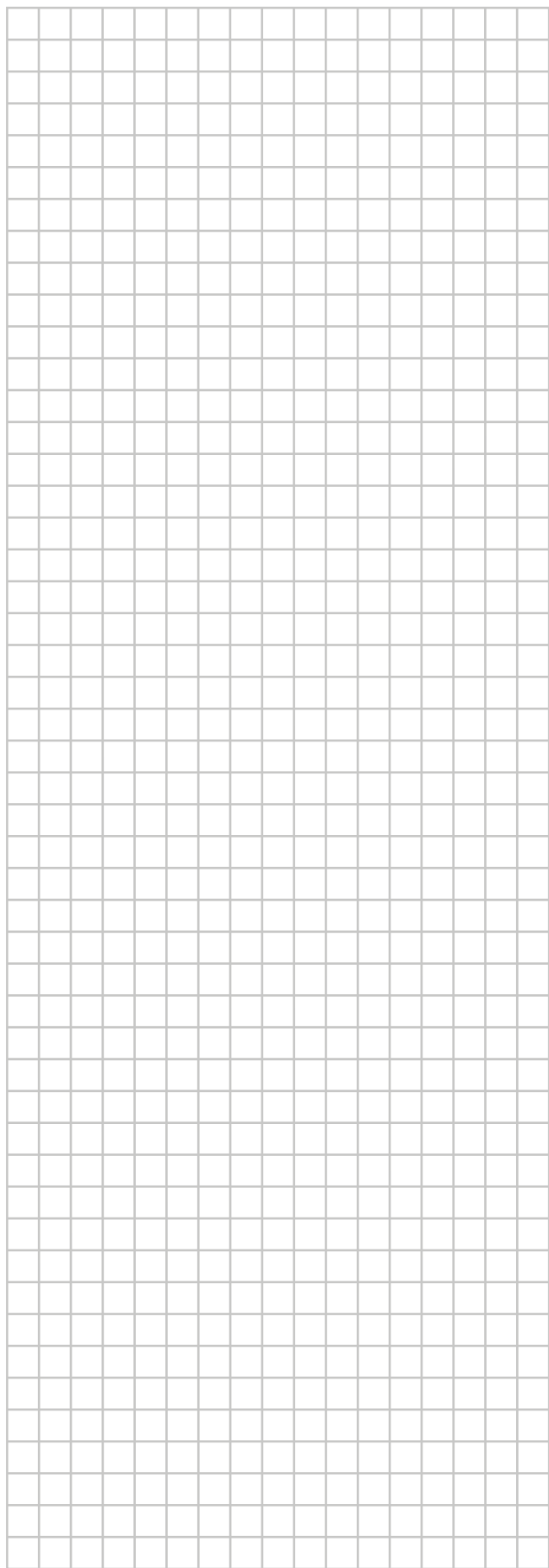
English	Translation
(1) Main power connection	(1) Main power connection
Outdoor unit	Outdoor unit
SWB1	Switch box
(2) User interface	(2) User interface

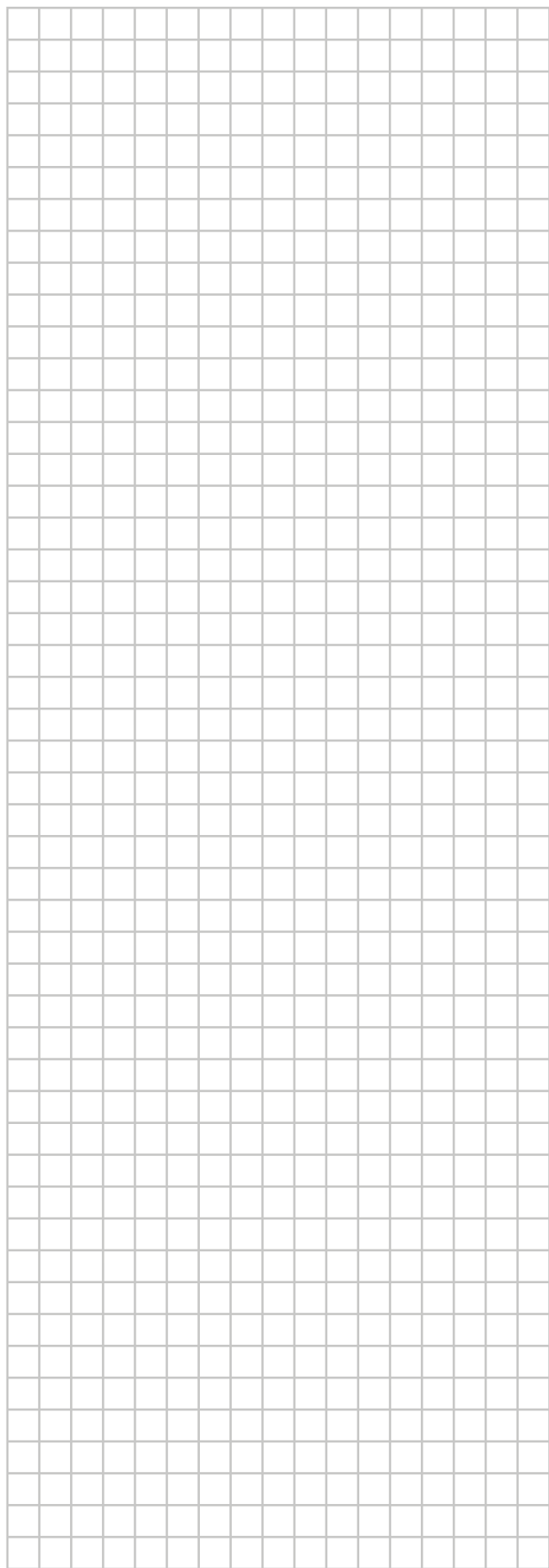
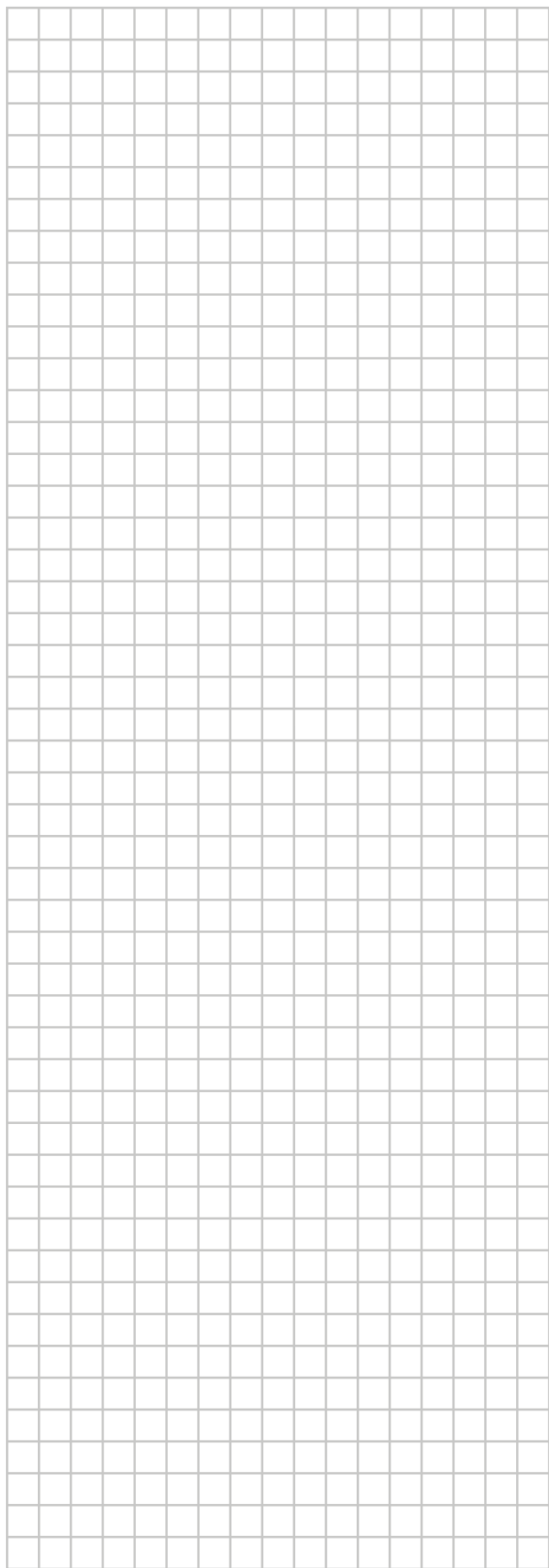
English	Translation
Only for remote user interface	Only for the user interface used as room thermostat
SD card	Card slot for WLAN cartridge
SWB1	Switch box
WLAN cartridge	WLAN cartridge
WLAN adapter module option	WLAN adapter module option
(3) Field supplied options	(3) Field supplied options
12 V DC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

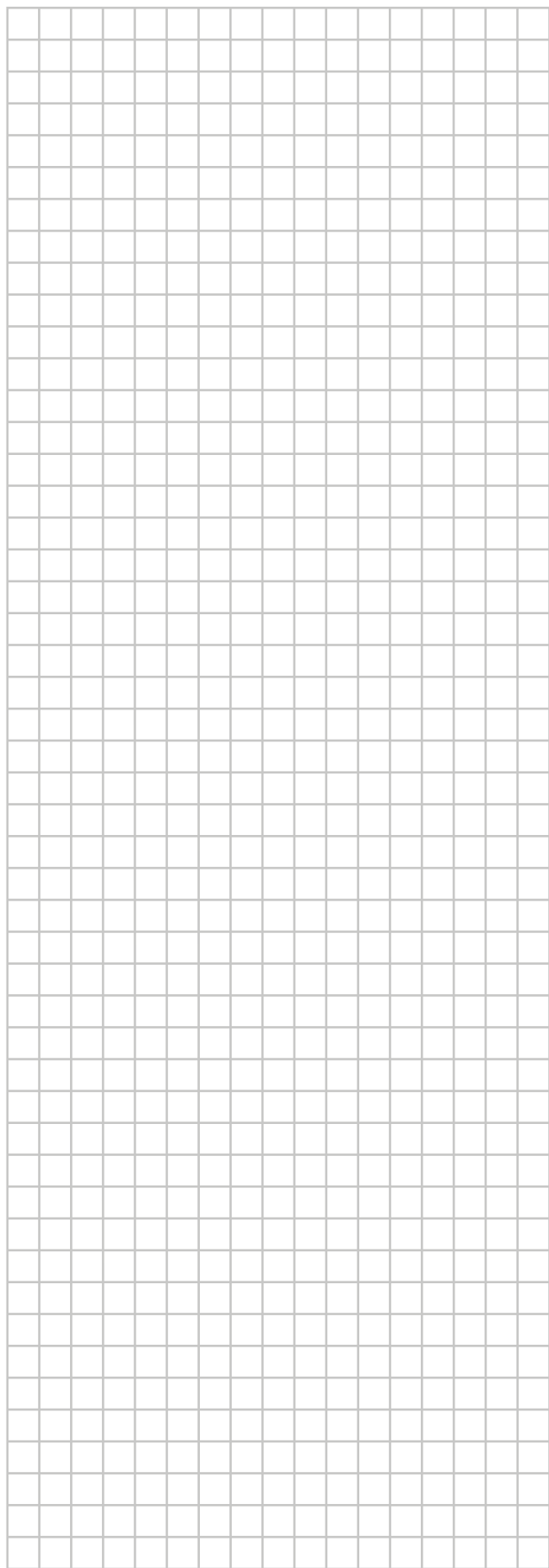
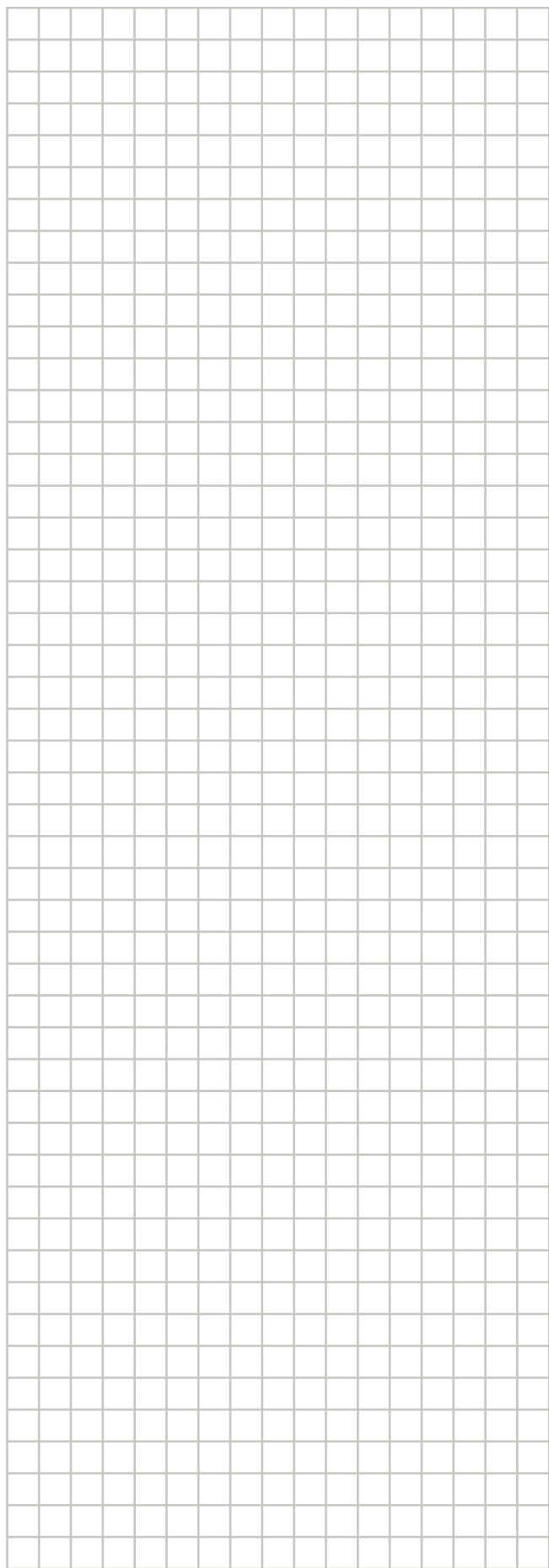
English	Translation
Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)	Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)
SWB	Switch box
(5) External On/OFF thermostats and heat pump convector	(5) External On/OFF thermostats and heat 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

For more details, please check the unit wiring.









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