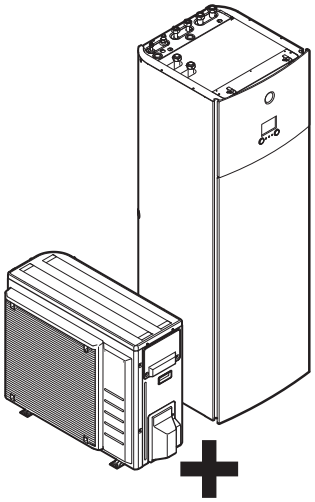
Installer reference guide

Daikin Altherma 3 R F



ERGA04DAV3(A)
ERGA06DAV3(A)
ERGA08DAV3(A)

EHVZ04S18DA6V(G)

EHVZ08S18DA6V(G)
EHVZ08S23DA6V(G)

EHVZ08S18DA9W(G)
EHVZ08S23DA9W(G)

EHVZ04S18DJ6V(G)

EHVZ08S18DJ6V(G)
EHVZ08S23DJ6V(G)

EHVZ08S18DJ9W(G)
EHVZ08S23DJ9W(G)

Installer reference guide
Daikin Altherma 3 R F

English

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1 General safety precautions

1.1 About the documentation

- The original documentation is written in English. All other languages are translations.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual and in the installer reference guide MUST be performed by an authorised installer.

1.1.1 Meaning of warnings and symbols

DANGER
Indicates a situation that results in death or serious injury.

DANGER: RISK OF ELECTROCUTION
Indicates a situation that could result in electrocution.

DANGER: RISK OF BURNING
Indicates a situation that could result in burning because of extreme hot or cold temperatures.

DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.

WARNING

Indicates a situation that could result in death or serious injury.

WARNING: FLAMMABLE MATERIAL

CAUTION

Indicates a situation that could result in minor or moderate injury.

NOTICE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

Symbol	Explanation
	Before installation, read the installation and operation manual, and the wiring instruction sheet.
	Before performing maintenance and service tasks, read the service manual.
	For more information, see the installer and user reference guide.

1.2 For the installer

1.2.1 General

If you are NOT sure how to install or operate the unit, contact your dealer.

NOTICE

Improper installation or attachment of equipment or accessories could result in electric shock, short-circuit, leaks, fire or other damage to the equipment. Only use accessories, optional equipment and spare parts made or approved by Daikin.

WARNING

Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).

CAUTION

Wear adequate personal protective equipment (protective gloves, safety glasses,…) when installing, maintaining or servicing the system.

WARNING

Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. Possible risk: suffocation.

DANGER: RISK OF BURNING

- Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you must touch it, wear protective gloves.
- Do NOT touch any accidental leaking refrigerant.

WARNING

Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.

CAUTION

Do NOT touch the air inlet or aluminium fins of the unit.

NOTICE

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

NOTICE

Works executed on the outdoor unit are best done under dry weather conditions to avoid water ingress.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least: information on maintenance, repair work, results of tests, stand-by periods,…

Also, at least, following information MUST be provided at an accessible place at the product:

- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN378 provides the necessary guidance for this logbook.

1.2.2 Installation site

- Provide sufficient space around the unit for servicing and air circulation.
- Make sure the installation site withstands the weight and vibration of the unit.
- Make sure the area is well ventilated. Do NOT block any ventilation openings.
- Make sure the unit is level.

Do NOT install the unit in the following places:

- In potentially explosive atmospheres.
- In places where there is machinery that emits electromagnetic waves. Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
- In places where there is a risk of fire due to the leakage of flammable gases (example: thinner or gasoline), carbon fibre, ignitable dust.
- In places where corrosive gas (example: sulphurous acid gas) is produced. Corrosion of copper pipes or soldered parts may cause the refrigerant to leak.

1.2.3 Refrigerant

If applicable. See the installation manual or installer reference guide of your application for more information.

NOTICE

Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.

NOTICE

Make sure the field piping and connections are NOT subjected to stress.

WARNING

During tests, NEVER pressurize the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).

WARNING

Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.
- Toxic gas may be produced if refrigerant gas comes into contact with fire.

DANGER: RISK OF EXPLOSION

Pump down – Refrigerant leakage. If you want to pump down the system, and there is a leak in the refrigerant circuit:

- Do NOT use the unit's automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit. **Possible consequence:** Self-combustion and explosion of the compressor because of air going into the operating compressor.
- Use a separate recovery system so that the unit's compressor does NOT have to operate.

WARNING

ALWAYS recover the refrigerant. Do NOT release them directly into the environment. Use a vacuum pump to evacuate the installation.

NOTICE

After all the piping has been connected, make sure there is no gas leak. Use nitrogen to perform a gas leak detection.

NOTICE

- To avoid compressor breakdown, do NOT charge more than the specified amount of refrigerant.
- When the refrigerant system is to be opened, refrigerant MUST be treated according to the applicable legislation.

WARNING

Make sure there is no oxygen in the system. Refrigerant may only be charged after performing the leak test and the vacuum drying.

- In case recharge is required, see the nameplate of the unit. It states the type of refrigerant and necessary amount.
- The unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Only use tools exclusively for the refrigerant type used in the system, this to ensure pressure resistance and prevent foreign materials from entering into the system.
- Charge the liquid refrigerant as follows:

If	Then
A siphon tube is present (i.e., the cylinder is marked with "Liquid filling siphon attached")	Charge with the cylinder upright. 
A siphon tube is NOT present	Charge with the cylinder upside down. 

- Open refrigerant cylinders slowly.
- Charge the refrigerant in liquid form. Adding it in gas form may prevent normal operation.

CAUTION

When the refrigerant charging procedure is done or when pausing, close the valve of the refrigerant tank immediately. If the valve is NOT closed immediately, remaining pressure might charge additional refrigerant. **Possible consequence:** Incorrect refrigerant amount.

1.2.4 Brine

If applicable. See the installation manual or installer reference guide of your application for more information.

WARNING

The selection of the brine MUST be in accordance with the applicable legislation.

WARNING

Take sufficient precautions in case of brine leakage. If brine leaks, ventilate the area immediately and contact your local dealer.

WARNING

The ambient temperature inside the unit can get much higher than that of the room, e.g. 70°C. In case of a brine leak, hot parts inside the unit can create a hazardous situation.

WARNING

The use and installation of the application MUST comply with the safety and environmental precautions specified in the applicable legislation.

1.2.5 Water

If applicable. See the installation manual or installer reference guide of your application for more information.

NOTICE

Make sure water quality complies with EU directive 98/83 EC.

1.2.6 Electrical

DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Disconnect the power supply for more than 1 minute, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.

WARNING

If NOT factory installed, a main switch or other means for disconnection, having a contact separation in all poles providing full disconnection under overvoltage category III condition, MUST be installed in the fixed wiring.

WARNING

- ONLY use copper wires.
- Make sure the field wiring complies with the applicable legislation.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electric shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

CAUTION

When connecting the power supply, the earth connection must be made before the current-carrying connections are established. When disconnecting the power supply, the current-carrying connections must be separated before the earth connection is. The length of the conductors between the power supply stress relief and the terminal block itself must be as such that the current-carrying wires are tautened before the earth wire is in case the power supply is pulled loose from the stress relief.

NOTICE

Precautions when laying power wiring:



- Do NOT connect wiring of different thicknesses to the power terminal block (slack in the power wiring may cause abnormal heat).
- When connecting wiring which is the same thickness, do as shown in the figure above.
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will damage the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.

Install power cables at least 1 metre away from televisions or radios to prevent interference. Depending on the radio waves, a distance of 1 metre may not be sufficient.

WARNING

- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.

NOTICE

Only applicable if the power supply is three-phase, and the compressor has an ON/OFF starting method.

If there exists the possibility of reversed phase after a momentary black out and the power goes on and off while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase can break the compressor and other parts.

2 About the documentation

2.1 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)
- **Indoor unit installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)
- **Outdoor unit installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor unit)

- **Installer reference guide:**
  - Preparation of the installation, good practices, reference data,…
  - Format: Digital files on http://www.daikineurope.com/support-and-manuals/product-information/
- **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 http://www.daikineurope.com/support-and-manuals/product-information/

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

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

Technical engineering data

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

2.2 Installer reference guide at a glance

Chapter	Description
General safety precautions	Safety instructions that you must read before installing
About the documentation	What documentation exists for the installer
About the box	How to unpack the units and remove their accessories
About the units and options	▪ How to identify the units ▪ Possible combinations of units and options
Application guidelines	Various installation setups of the system
Preparation	What to do and know before going on-site
Installation	What to do and know to install the system
Configuration	What to do and know to configure the system after it is installed
Commissioning	What to do and know to commission the system after it is configured
Hand-over to the user	What to give and explain to the user
Maintenance and service	How to maintain and service the units
Troubleshooting	What to do in case of problems
Disposal	How to dispose of the system
Technical data	Specifications of the system
Glossary	Definition of terms
Field settings table	Table to be filled in by the installer, and kept for future reference **Note:** There is also an installer settings table in the user reference guide. This table has to be filled in by the installer and handed over to the user.

3 About the box

3.1 Overview: About the box

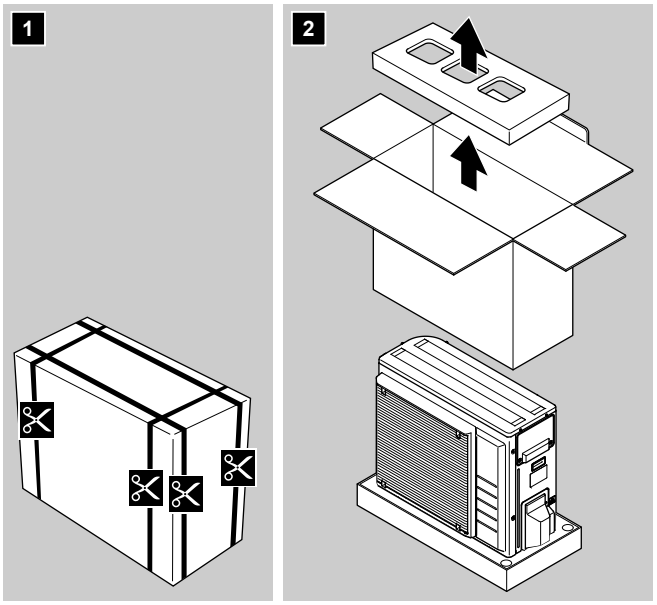
This chapter describes what you have to do after the boxes with the outdoor and indoor unit are delivered on-site.

Keep the following in mind:

- At delivery, the unit MUST be checked for damage. Any damage 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 the path along which you want to bring the unit inside in advance.

3.2 Outdoor unit

3.2.1 To unpack the outdoor unit

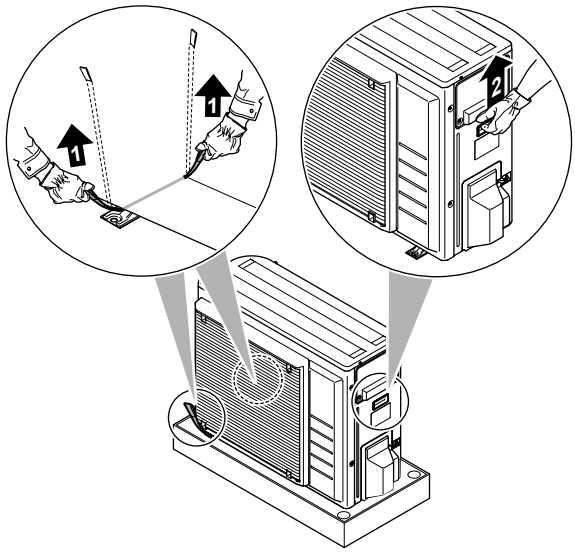


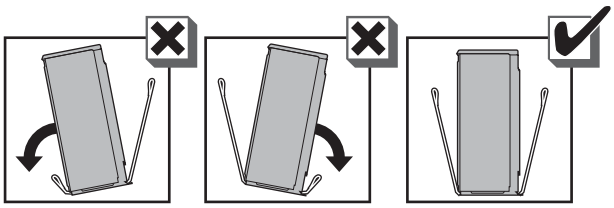
3.2.2 To handle the outdoor unit

CAUTION

To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.

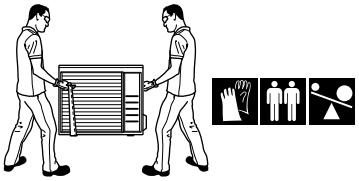
1 Handle the unit using the sling to the left and the handle to the right. Pull up both sides of the sling at the same time to prevent disconnection of the sling from the unit.





2 While handling the unit:

- Keep both sides of the sling level.
- Keep your back straight.

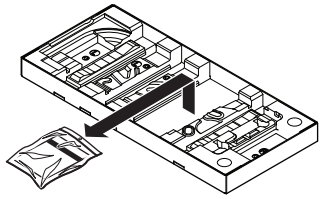


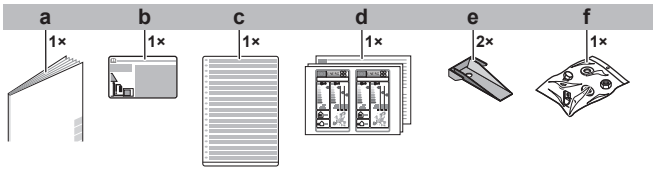
3 After mounting the unit, remove the sling from the unit by pulling 1 side of the sling.

3.2.3 To remove the accessories from the outdoor unit

1 Lift the outdoor unit. See "3.2.2 To handle the outdoor unit" on page 7.

2 Remove the accessories at the bottom of the package.

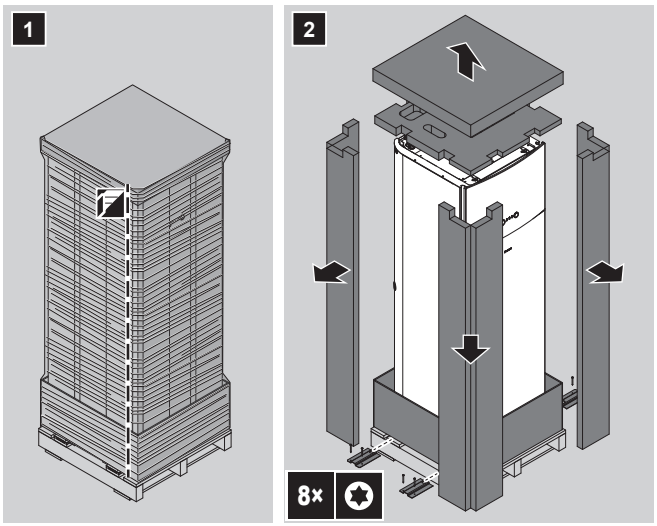




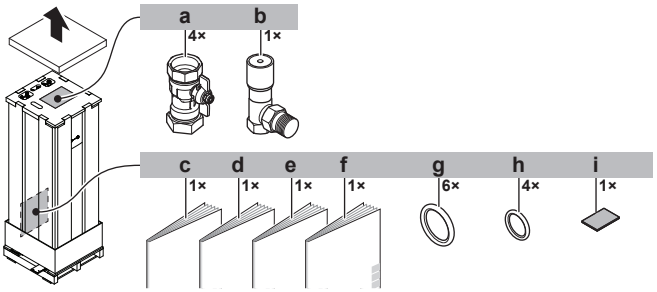
a Outdoor unit installation manual
b Fluorinated greenhouse gases label
c Multilingual fluorinated greenhouse gases label
d Energy label
e Unit mounting plate
f Bolts, nuts, washers, spring washers and wire clamp

3.3 Indoor unit

3.3.1 To unpack the indoor unit



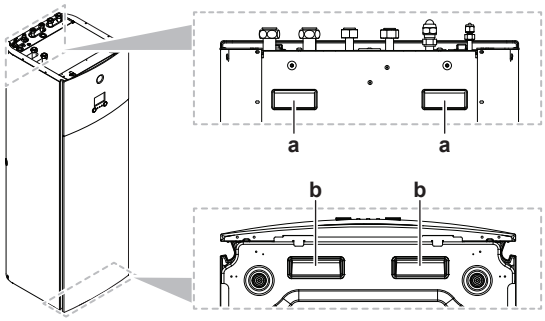
3.3.2 To remove the accessories from the indoor unit



a Shut-off valves for water circuit
b Overpressure bypass valve
c General safety precautions
d Addendum book for optional equipment
e Indoor unit installation manual
f Operation manual
g Sealing rings for shut-off valves (space heating water circuit)
h Sealing rings for field-supplied shut-off valves (domestic hot water circuit)
i Sealing tape for low voltage wiring intake

3.3.3 To handle the indoor unit

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



a Handles at the back of the unit
b Handles at the bottom of the unit. Carefully tilt the unit to the back so that the handles become visible.

4 About the units and options

4.1 Overview: About the units and options

This chapter contains information about:

- Identifying the outdoor unit
- Identifying the indoor unit
- Combining the outdoor unit with options
- Combining the indoor unit with options

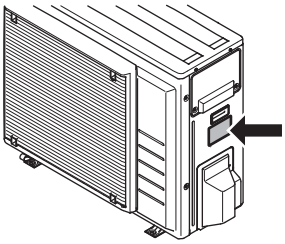
4.2 Identification

NOTICE

When installing or servicing several units at the same time, make sure NOT to switch the service panels between different models.

4.2.1 Identification label: Outdoor unit

Location



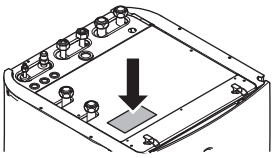
Model identification

Example: ER G A 06 DA V3 A

Code	Explanation
ER	European split outdoor pair heat pump
G	Medium water temperature – ambient zone: −10~−20°C
A	Refrigerant R32
06	Capacity class
DA	Model series
V3	Power supply
A	A=Austrian model [—]=Non-Austrian model

4.2.2 Identification label: Indoor unit

Location



Model identification

Example: E HV Z 04 S 18 DA 6V G

Code	Description
E	European model
HV	Floor-standing indoor unit with integrated tank
Z	Dual-zone model
04	Capacity class
S	Integrated tank material: Stainless steel
18	Integrated tank volume
DA	Model series
6V	Backup heater model
G	G=Grey model [—]=White model

4.3 Combining units and options

4.3.1 Possible options for the outdoor unit

Drain pan kit (EKDP008D)

The drain pan kit is required to gather the drain from the outdoor unit. The drain pan kit consists of:

- Drain pan
- Installation brackets

For installation instructions, see the installation manual of the drain pan.

Drain pan heater (EKDPH008CA)

The drain pan heater is required to avoid freezing-up of the drain pan.

It is recommended to install this option in colder regions with possible low ambient temperatures or heavy snowfall.

For installation instructions, see the installation manual of the drain pan heater.

U-beams (EKFT008D)

The U-beams are installation brackets on which the outdoor unit can be installed.

It is recommended to install this option in colder regions with possible low ambient temperatures or heavy snowfall.

For installation instructions, see the installation manual of the outdoor unit.

Low sound cover (EKLN08A1)

In sound sensitive areas (e.g. near a bedroom), you can install the low sound cover to decrease the operation noise of the outdoor unit.

You can install the low sound cover:

- On mounting feet to the ground. This must withstand 200 kg.
- On brackets to the wall. This must withstand 200 kg.

If you install the low sound cover, you also need to install one of the following options:

- Recommended: Drain pan kit (with or without drain pan heater)
- U-beams

For installation instructions, see the installation manual of the low sound cover.

4.3.2 Possible options for the indoor unit

User interface used as room thermostat (BRC1HHDA)

- The user interface used as room thermostat can only be used in combination with the user interface connected to the indoor unit.
- The user interface used as room thermostat needs to be installed in the room that you want to control.

For installation instructions, see the installation and operation manual of the user interface used as room thermostat.

Room thermostat (EKRTWA, EKRTR1)

You can connect an optional room thermostat to the indoor unit. This thermostat can either be wired (EKRTWA) or wireless (EKRTR1).

For installation instructions, see the installation manual of the room thermostat and addendum book for optional equipment.

Remote sensor for wireless thermostat (EKRTETS)

You can use a wireless indoor temperature sensor (EKRTETS) only in combination with the wireless thermostat (EKRTR1).

For installation instructions, see the installation manual of the room thermostat and addendum book for optional equipment.

Digital I/O PCB (EKRP1HB)

The digital I/O PCB is required to provide following signals:

- Alarm output
- Space heating On/OFF output
- Changeover to external heat source

For installation instructions, see the installation manual of the digital I/O PCB and addendum book for optional equipment.

Demand PCB (EKRP1AHTA)

To enable the power saving consumption control by digital inputs you must install the demand PCB.

For installation instructions, see the installation manual of the demand PCB and addendum book for optional equipment.

Remote indoor sensor (KRCS01-1)

By default the internal user interface sensor will be used as room temperature sensor.

As an option the remote indoor sensor can be installed to measure the room temperature on another location.

For installation instructions, see the installation manual of the remote indoor sensor and addendum book for optional equipment.

INFORMATION

- The remote indoor sensor can only be used in case the user interface is configured with room thermostat functionality.
- You can only connect either the remote indoor sensor or the remote outdoor sensor.

Remote outdoor sensor (EKRSCA1)

By default the sensor inside the outdoor unit will be used to measure the outdoor temperature.

As an option the remote outdoor sensor can be installed to measure the outdoor temperature on another location (e.g. to avoid direct sunlight) to have an improved system behaviour.

For installation instructions, see the installation manual of the remote outdoor sensor.

INFORMATION

You can only connect either the remote indoor sensor or the remote outdoor sensor.

PC cable (EKPCCAB)

The PC cable makes a connection between the switch box of the indoor unit and a PC. It gives the possibility to update the software of the indoor unit.

For installation instructions, see the installation manual of the PC cable.

Pipe bend kit (EKHVTC)

When the indoor unit is installed in a place with limited space, a pipe bend kit can be installed to facilitate the connection to the refrigerant liquid and gas connections of the indoor unit.

For installation instructions, see the instruction sheet of the pipe bend kit.

Heat pump convector (FWXV)

For installation instructions, see the installation manual of the heat pump convectors, and the addendum book for optional equipment.

LAN adapter for smartphone control + Smart Grid applications (BRP069A61)

You can install this LAN adapter to:

- Control the system via a smartphone app.
- Use the system in various Smart Grid applications.

For installation instructions, see the installation manual of the LAN adapter.

LAN adapter for smartphone control (BRP069A62)

You can install this LAN adapter to control the system via a smartphone app.

For installation instructions, see the installation manual of the LAN adapter.

4.3.3 Possible combinations of indoor unit and outdoor unit

Indoor unit	Outdoor unit		
	ERGA04	ERGA06	ERGA08
EHVZ04	O	—	—
EHVZ08	—	O	O

5 Application guidelines

5.1 Overview: Application guidelines

The purpose of the application guidelines is to give a glance of the possibilities of the heat pump system.

NOTICE

- The illustrations in the application guidelines are meant for reference only, and are NOT to be used as detailed hydraulic diagrams. The detailed hydraulic dimensioning and balancing are NOT shown, and are the responsibility of the installer.
- For more information about the configuration settings to optimize heat pump operation, see "8 Configuration" on page 44.

This chapter contains application guidelines for:

- Setting up the space heating system
- Setting up the domestic hot water tank
- Setting up the energy metering
- Setting up the power consumption control
- Setting up an external temperature sensor

5.2 Setting up the space heating system

The Daikin heat pump system supplies leaving water to heat emitters in one or more rooms.

Because the system offers a wide flexibility to control the temperature in each room, you need to answer the following questions first:

- How many rooms are heated by the Daikin heat pump system?
- Which heat emitter types are used in each room and what is their design leaving water temperature?

Once the space heating requirements are clear, Daikin recommends to follow the setup guidelines below.

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` is turned ON.

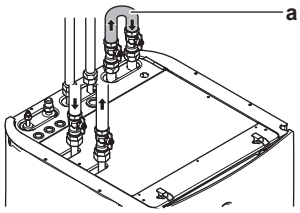
INFORMATION

In case an external room thermostat is used and room frost protection needs to be guaranteed in all conditions, then you have to set `Emergency` [9.5] to `Automatic`.

NOTICE

If you install this unit as a single-zone application, then:

Setup. Install a bypass between the space heating water inlet and outlet of the additional zone (=direct zone). Do NOT interrupt the water flow by closing the shut-off valves.



a Bypass

Configuration. Set field setting [7-02]=0 (`Number of zones` = `Single zone`).

5.2.1 Multiple rooms – Two LWT zones

This unit is designed to deliver water at 2 different temperatures. A typical installation consists of underfloor heating at a lower temperature and radiators at a higher water temperature.

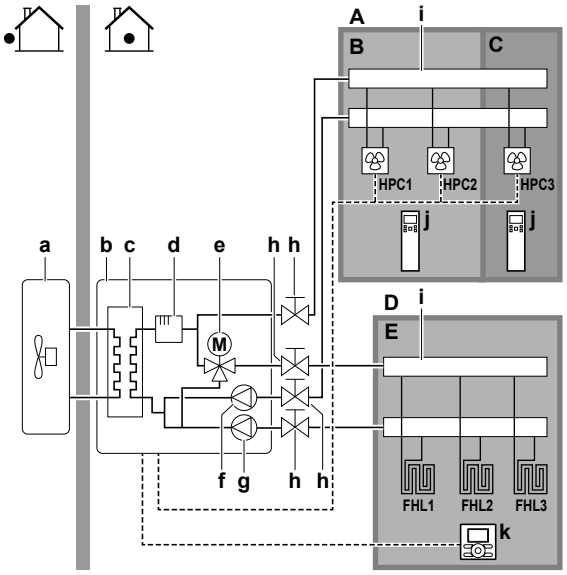
In this document:

- Main zone = Zone with the lowest design temperature
- Additional zone = Zone with the highest design temperature

Typical example:

Room (zone)	Heat emitters: Design temperature
Living room (main zone)	Underfloor heating: 35°C
Bed rooms (additional zone)	Heat pump convectors: 45°C

Setup



A Additional leaving water temperature zone
B Room 1
C Room 2
D Main leaving water temperature zone
E Room 3
a Outdoor unit
b Indoor unit
c Heat exchanger
d Backup heater
e Motorised 3-way valve (mixing the main zone)
f Additional pump
g Main pump
h Shut-off valve
i Collector (field supply)
j Remote controller of the heat pump convectors (field supply)
k User interface used as room thermostat
HPC1...3 Heat pump convectors (field supply)
FHL1...3 Floor heating loops (field supply)

- For the main zone: the room temperature is controlled by the user interface, which is used as room thermostat (optional equipment EKRUDAS).
- For the additional zone:
  - The external thermostat is directly connected to the indoor unit.
  - The desired room temperature is set via the external thermostat and the thermostatic valves of the radiators in each room.
  - The heating demand signal from the external thermostat is connected to the digital input on the indoor unit (X2M/35a and X2M/30). The indoor unit will only supply the desired additional leaving water temperature when there is an actual demand.

Configuration

Setting	Value
Unit temperature control: ▪ #: [2.9] ▪ Code: [C-07]	2 (`Room thermostat`): Unit operation is decided based on the ambient temperature of the user interface. **Note:** ▪ Main room = user interface used as room thermostat functionality ▪ Other rooms = external room thermostat functionality
Number of water temperature zones: ▪ #: [4.4] ▪ Code: [7-02]	1 (`Dual zone`): Main + additional

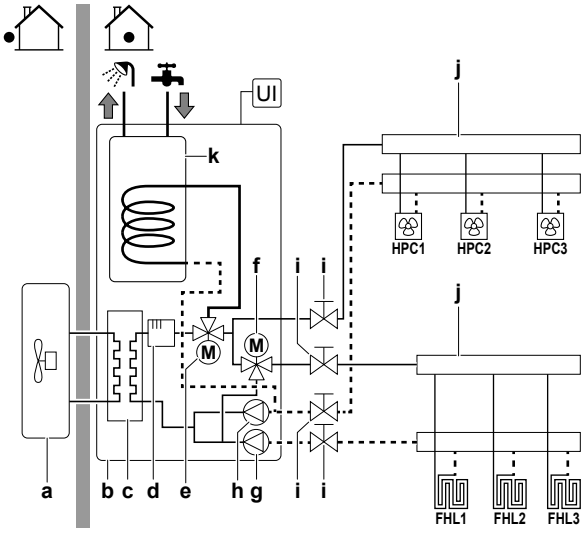
Setting	Value
In case of heat pump convectors: External room thermostat for the **additional** zone: ▪ #: [3.A] ▪ Code: [C-06]	1 (`1 contact`): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition.
Shut-off valve output	Set to follow the thermo demand of the main zone.

Benefits

- **Comfort.** The smart room thermostat functionality can decrease or increase the desired leaving water temperature based on the actual room temperature (modulation).
- **Efficiency.**
  - Depending on the demand, the indoor unit supplies different leaving water temperature matching the design temperature of the different heat emitters.
  - Underfloor heating has the best performance with the heat pump system.

5.3 Setting up the domestic hot water tank

5.3.1 System layout – Integrated DHW tank



a Outdoor unit
b Indoor unit
c Heat exchanger
d Backup heater
e Motorised 3-wave valve (switch between space heating and domestic hot water)
f Motorised 3-way valve (mixing the main zone)
g Main pump
h Additional pump
i Shut-off valve
j Collector (field supply)
k Domestic hot water tank
FHL1...3 Floor heating loops (field supply)
UI User interface (field supply)
HPC1...3 Heat pump convectors (field supply)

5.3.2 Selecting the volume and desired temperature for the DHW tank

People experience water as hot when its temperature is 40°C. Therefore, the DHW consumption is always expressed as equivalent hot water volume at 40°C. However, you can set the DHW tank temperature at a higher temperature (example: 53°C), which is then mixed with cold water (example: 15°C).

Selecting the volume and desired temperature for the DHW tank consists of:

1 Determining the DHW consumption (equivalent hot water volume at 40°C).
2 Determining the volume and desired temperature for the DHW tank.

Determining the DHW consumption

Answer the following questions and calculate the DHW consumption (equivalent hot water volume at 40°C) using typical water volumes:

Question	Typical water volume
How many showers are needed per day?	1 shower = 10 min×10 l/min = 100 l
How many baths are needed per day?	1 bath = 150 l
How much water is needed at the kitchen sink per day?	1 sink = 2 min×5 l/min = 10 l
Are there any other domestic hot water needs?	—

Example: If the DHW consumption of a family (4 persons) per day is as follows:

- 3 showers
- 1 bath
- 3 sink volumes

Then the DHW consumption = (3×100 l)+(1×150 l)+(3×10 l)=480 l

Determining the volume and desired temperature for the DHW tank

Formula	Example
$V_1=V_2+V_2\times(T_2-40)/(40-T_1)$	If: ▪ V_2=180 l ▪ T_2=54°C ▪ T_1=15°C Then V_1=280 l
$V_2=V_1\times(40-T_1)/(T_2-T_1)$	If: ▪ V_1=480 l ▪ T_2=54°C ▪ T_1=15°C Then V_2=307 l

V_1 DHW consumption (equivalent hot water volume at 40°C)
V_2 Required DHW tank volume if only heated once
T_2 DHW tank temperature
T_1 Cold water temperature

Possible DHW tank volumes

Type	Possible volumes
Integrated DHW tank	▪ 180 l ▪ 230 l

Energy saving tips

- If the DHW consumption differs from day to day, you can program a weekly schedule with different desired DHW tank temperatures for each day.
- The lower the desired DHW tank temperature, the more cost effective. By selecting a larger DHW tank, you can lower the desired DHW tank temperature.
- The heat pump itself can produce domestic hot water of maximum 55°C (50°C if outdoor temperature is low). The electrical resistance integrated in the heat pump can increase this temperature. However, this consumes more energy. We recommend to set the desired DHW tank temperature below 55°C to avoid using the backup heater.

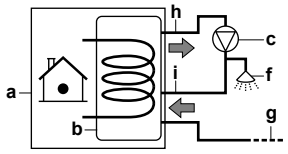
- The higher the outdoor temperature, the better the performance of the heat pump.
  - If energy prices are the same during the day and the night, Daikin recommends to heat up the DHW tank during the day.
  - If energy prices are lower during the night, Daikin recommends to heat up the DHW tank during the night.
- When the heat pump produces domestic hot water, it cannot heat up a space. In case you need domestic hot water and space heating at the same, we recommend to produce the domestic hot water during the night when there is lower space heating demand.

5.3.3 Setup and configuration – DHW tank

- For large DHW consumptions, you can heat up the DHW tank several times during the day.
- To heat up the DHW tank to the desired DHW tank temperature, you can use the following energy sources:
  - Thermodynamic cycle of the heat pump
  - Electrical backup heater
- For more information about optimizing the energy consumption for producing domestic hot water, see "8 Configuration" on page 44.

5.3.4 DHW pump for instant hot water

Setup



a Indoor unit
b DHW tank
c DHW pump (field supply)
f Shower (field supply)
g Cold water
h Domestic hot water OUT
i Recirculation connection

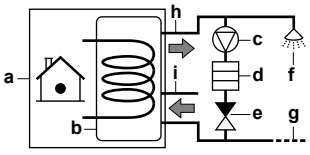
- By connecting a DHW pump, instant hot water can be available at the tap.
- The DHW pump and the installation are field supply and the responsibility of the installer.
- For more information about connecting the recirculation connection: see "7 Installation" on page 25.

Configuration

- For more information, see "8 Configuration" on page 44.
- You can program a schedule to control the DHW pump via the user interface. For more information, see the user reference guide.

5.3.5 DHW pump for disinfection

Setup



a Indoor unit
b DHW tank
c DHW pump (field supply)
d Heater element (field supply)
e Non-return valve (field supply)
f Shower (field supply)
g Cold water
h Domestic hot water OUT
i Recirculation connection

- The DHW pump is field-supplied and its installation is the responsibility of the installer.
- The temperature of the DHW tank can be set to maximum 60°C. If applicable legislation requires higher temperature for disinfection, you can connect a DHW pump and heater element as shown above.
- If applicable legislation requires disinfection of the water piping until the tapping point, you can connect a DHW pump and heater element (if needed) as shown above.
- To ensure a complete disinfection, you have to open the tapping point.

WARNING

When opening the tapping point, the water temperature can be up to 55°C.

Configuration

The indoor unit can control DHW pump operation. For more information, see "8 Configuration" on page 44.

5.4 Setting up the energy metering

- Via the user interface, you can read out the following energy data:
  - Produced heat
  - Consumed energy
- You can read out the energy data:
  - For space heating
  - For domestic hot water production
- You can read out the energy data:
  - Per month
  - Per year

INFORMATION

The calculated produced heat and consumed energy are an estimation, the accuracy cannot be guaranteed.

5.4.1 Produced heat

INFORMATION

The sensors used to calculate the produced heat are calibrated automatically.

- The produced heat is calculated internally based on:
  - The leaving and entering water temperature
  - The flow rate
- Setup and configuration: No additional equipment needed.

5.4.2 Consumed energy

You can use the following methods to determine the consumed energy:

- Calculating
- Measuring

INFORMATION

You cannot combine calculating the consumed energy (example: for backup heater) and measuring the consumed energy (example: for outdoor unit). If you do so, the energy data will be invalid.

Calculating the consumed energy

- The consumed energy is calculated internally based on:
  - The actual power input of the outdoor unit
  - The set capacity of the backup heater
  - The voltage
- Setup and configuration: To get accurate energy data, measure the capacity (resistance measurement) and set the capacity via the user interface for the backup heater (step 1).

Measuring the consumed energy

- Applicable for all models.
- Preferred method because of higher accuracy.
- Requires external power meters.
- Setup and configuration: When using electrical power meters, set the number of pulses/kWh for each power meter via the user interface.

INFORMATION

When measuring the electrical power consumption, make sure ALL power input of the system is covered by the electrical power meters.

5.4.3 Normal kWh rate power supply

General rule

One power meter that covers the entire system is sufficient.

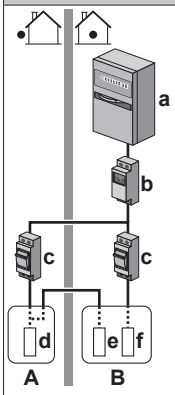
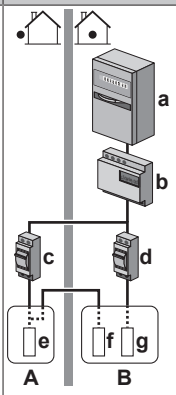
Setup

Connect the power meter to X5M/5 and X5M/6.

Power meter type

In case of…	Use a… power meter
▪ Single-phase outdoor unit ▪ Backup heater supplied from a single-phase grid (i.e. the backup heater model is *6V connected to a single-phase grid).	Single-phase (*6V (6V): 1N~ 230 V)
▪ Three-phase outdoor unit ▪ Backup heater supplied from a three-phase grid (i.e. the backup heater model is *9W or *6V connected to a three-phase grid).	Three-phase (*6V (6T1): 3~ 230 V) (*9W: 3N~ 400 V)

Example

Single-phase power meter	Three-phase power meter
	
A Outdoor unit	**A** Outdoor unit
B Indoor unit	**B** Indoor unit
a Electrical cabinet (L_1/N)	**a** Electrical cabinet (L_1/L_2/L_3/N)
b Power meter (L_1/N)	**b** Power meter (L_1/L_2/L_3/N)
c Fuse (L_1/N)	**c** Fuse (L_1/L_2/L_3/N)
d Outdoor unit (L_1/N)	**d** Fuse (L_1/N)
e Indoor unit (L_1/N)	**e** Outdoor unit (L_1/L_2/L_3/N)
f Backup heater (L_1/N)	**f** Indoor unit (L_1/L_2/L_3/N)
	g Backup heater (L_1/L_2/L_3/N)

Exception

- You can use a second power meter if:
  - The power range of one meter is insufficient.
  - The electrical meter cannot easily be installed in the electrical cabinet.
  - 230 V and 400 V three-phase grids are combined (very uncommon), because of technical limitations of power meters.
- Connection and setup:
  - Connect the second power meter to X5M/3 and X5M/4.
  - In the software the power consumption data of both meters is added so you do NOT have to set which meter covers which power consumption. You only need to set the number of pulses of each power meter.
- See "5.4.4 Preferential kWh rate power supply" on page 14 for an example with two power meters.

5.4.4 Preferential kWh rate power supply

General rule

- Power meter 1: Measures the outdoor unit.
- Power meter 2: Measures the rest (i.e. indoor unit and backup heater).

Setup

- Connect power meter 1 to X5M/5 and X5M/6.
- Connect power meter 2 to X5M/3 and X5M/4.

Power meter types

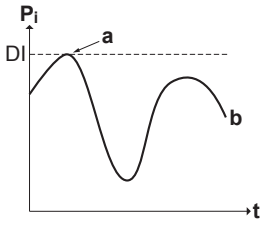
- Power meter 1: Single- or three-phase power meter according to the power supply of the outdoor unit.
- Power meter 2: Use a single-phase power meter.

5.5 Setting up the power consumption control

- The power consumption control:
  - Allows you to limit the power consumption of the entire system (sum of outdoor unit, indoor unit and backup heater).
  - Configuration: Set the power limitation level and how it has to be achieved via the user interface.
- The power limitation level can be expressed as:
  - Maximum running current (in A)
  - Maximum power input (in kW)
- The power limitation level can be activated:
  - Permanently
  - By digital inputs

5.5.1 Permanent power limitation

Permanent power limitation is useful to assure a maximum power or current input of the system. In some countries, legislation limits the maximum power consumption for space heating and DHW production.



P_i Power input
t Time
DI Digital input (power limitation level)
a Power limitation active
b Actual power input

Setup and configuration

- No additional equipment needed.
- Set the power consumption control settings in [9.9] via the user interface (for the description of all settings, see "8 Configuration" on page 44):
  - Select continuous limitation mode
  - Select the type of limitation (power in kW or current in A)
  - Set the desired power limitation level

NOTICE

Set a minimum power consumption of ±3.6 kW to guarantee:

- Defrost operation. Otherwise, if defrosting is interrupted several times, the heat exchanger will freeze up.
- Space heating and DHW production by allowing the backup heater step 1.

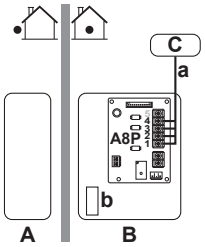
5.5.2 Power limitation activated by digital inputs

Power limitation is also useful in combination with an energy management system.

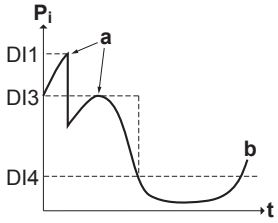
The power or current of the entire Daikin system is limited dynamically by digital inputs (maximum four steps). Each power limitation level is set via the user interface by limiting one of the following:

- Current (in A)
- Power input (in kW)

The energy management system (field supply) decides the activation of a certain power limitation level. **Example:** To limit the maximum power of the entire house (lighting, domestic appliances, space heating…).



A Outdoor unit
B Indoor unit
C Energy management system
a Power limitation activation (4 digital inputs)
b Backup heater



P_i Power input
t Time
DI Digital inputs (power limitation levels)
a Power limitation active
b Actual power input

Setup

- Demand PCB (option EKRP1AHTA) needed.
- Maximum four digital inputs are used to activate the corresponding power limitation level:
  - DI1 = weakest limitation (highest energy consumption)
  - DI4 = strongest limitation (lowest energy consumption)
- For the specifications of the digital inputs, and for where to connect them, refer to the wiring diagram.

Configuration

- Set the power consumption control settings in [9.9] via the user interface (for the description of all settings, see "8 Configuration" on page 44):
  - Select limitation by digital inputs.
  - Select the type of limitation (power in kW or current in A).
  - Set the desired power limitation level corresponding to each digital input.

INFORMATION

In case more than 1 digital input is closed (at the same time), the digital input priority is fixed: DI4 priority>…>DI1.

5.5.3 Power limitation process

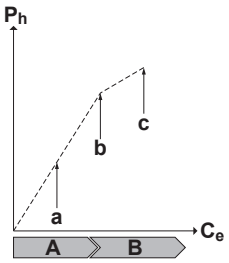
The outdoor unit has better efficiency than the electrical heater. Therefore, the electrical heater is limited and turned OFF first. The system limits power consumption in the following order:

1 Turns OFF the backup heater.
2 Limits the outdoor unit.
3 Turns OFF the outdoor unit.

Example

If the configuration is as follows: Power limitation level does NOT allow operation of backup heater (step 1).

Then power consumption is limited as follows:



P_h Produced heat
C_e Consumed energy
A Outdoor unit
B Backup heater
a Limited outdoor unit operation
b Full outdoor unit operation
c Backup heater step 1 turned ON

5.6 Setting up an external temperature sensor

You can connect one external temperature sensor. It measures the indoor or outdoor ambient temperature. We recommend to use an external temperature sensor in the following cases:

Indoor ambient temperature

- In room thermostat control, the user interface used as room thermostat (EKRUDAS) measures the indoor ambient temperature. Therefore, the user interface used as room thermostat must be installed on a location:
  - Where the average temperature in the room can be detected
  - That is NOT exposed to direct sunlight
  - That is NOT near a heat source
  - That is NOT affected by outside air or air draught because of, for example, door opening/closing
- If this is NOT possible, we recommend to connect a remote indoor sensor (option KRCS01-1).
- Setup: For installation instructions, see the installation manual of the remote indoor sensor.
- Configuration: Select room sensor [9.B].

Outdoor ambient temperature

- In the outdoor unit, the outdoor ambient temperature is measured. Therefore, the outdoor unit must be installed on a location:
  - At the north side of the house or at the side of the house where the most heat emitters are located
  - That is NOT exposed to direct sunlight
- If this is NOT possible, Daikin recommends to connect a remote outdoor sensor (option EKRSCA1).
- Setup: For installation instructions, see the installation manual of the remote outdoor sensor.
- Configuration: Select outdoor sensor [9.B].
- When the power saving functionality of the outdoor unit is active (see "8 Configuration" on page 44), the outdoor unit is turned down to reduce standby energy losses. As a result, the outdoor ambient temperature is NOT read out.
- If the desired leaving water temperature is weather dependent, the full time outdoor temperature measurement is important. This is another reason to install the optional outdoor ambient temperature sensor.

INFORMATION

The external outdoor ambient sensor data (either averaged or instantaneous) is used in the weather-dependent control curves. To protect the outdoor unit, the internal sensor of the outdoor unit is always used.

6 Preparation

6.1 Overview: Preparation

This chapter describes what you have to do and know before going on-site.

It contains information about:

- Preparing the installation site
- Preparing the refrigerant piping
- Preparing the water piping
- Preparing the electrical wiring

6.2 Preparing the installation site

Do NOT install the unit in places often used as work place. In case of construction works (e.g. grinding works) where a lot of dust is created, the unit MUST be covered.

Choose an installation location with sufficient space for carrying the unit in and out of the site.

NOTICE

This unit is designed for operation on 2 temperature zones:

- underfloor heating in the **main zone**, this is the zone with the **lowest water temperature**,
- radiators in the **additional zone**, this is the zone with the **highest water temperature**.

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.

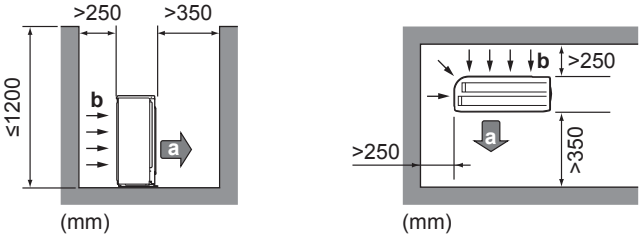
6.2.1 Installation site requirements of the outdoor unit

INFORMATION

Also read the following requirements:

- General installation site requirements. See the "General safety precautions" chapter.
- Refrigerant piping requirements (length, height difference). See further in this "Preparation" chapter.

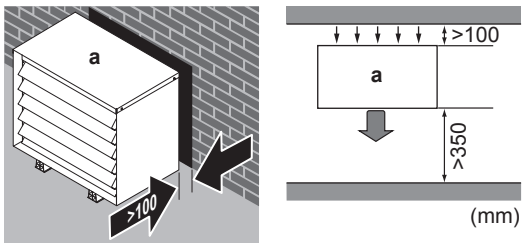
Mind the following spacing guidelines:



a Air outlet
b Air inlet

INFORMATION

In sound sensitive areas (e.g. near a bedroom), you can install the low sound cover (EKLN08A1) to decrease the operation noise of the outdoor unit. If you install it, mind the following spacing guidelines:



a Low sound cover

NOTICE

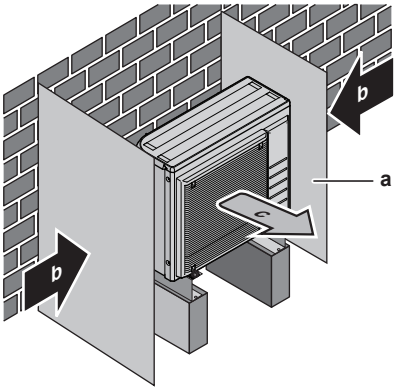
- Do NOT stack the units on each other.
- Do NOT hang the unit on a ceiling.

Strong winds (≥18 km/h) blowing against the outdoor unit's air outlet causes short circuit (suction of discharge air). This may result in:

- deterioration of the operational capacity;
- frequent frost acceleration in heating operation;
- disruption of operation due to decrease of low pressure or increase of high pressure;
- a broken fan (if a strong wind blows continuously on the fan, it may start rotating very fast, until it breaks).

It is recommended to install a baffle plate when the air outlet is exposed to wind.

It is recommended to install the outdoor unit with the air inlet facing the wall and NOT directly exposed to the wind.



a Baffle plate
b Prevailing wind direction
c Air outlet

Do NOT install the unit in the following places:

- Sound sensitive areas (e.g. near a bedroom), so that the operation noise will cause no trouble.
  Note: If the sound is measured under actual installation conditions, the measured value might be higher than the sound pressure level mentioned in Sound spectrum in the data book due to environmental noise and sound reflections.
- In places where a mineral oil mist, spray or vapour may be present in the atmosphere. Plastic parts may deteriorate and fall off or cause water leakage.

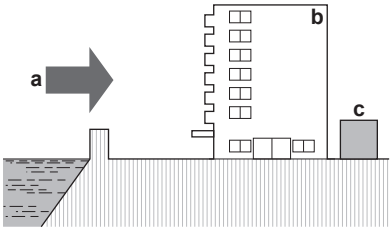
It is NOT recommended to install the unit in the following places because it may shorten the life of the unit:

- Where the voltage fluctuates a lot
- In vehicles or vessels
- Where acidic or alkaline vapour is present

Seaside installation. Make sure the outdoor unit is NOT directly exposed to sea winds. This is to prevent corrosion caused by high levels of salt in the air, which might shorten the life of the unit.

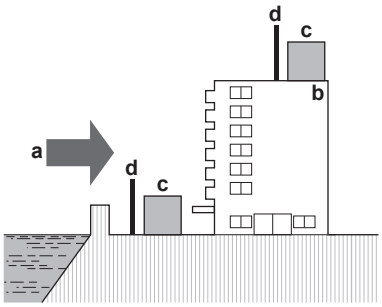
Install the outdoor unit away from direct sea winds.

Example: Behind the building.



If the outdoor unit is exposed to direct sea winds, install a windbreaker.

- Height of windbreaker≥1.5×height of outdoor unit
- Mind the service space requirements when installing the windbreaker.



a Sea wind
b Building
c Outdoor unit
d Windbreaker

The outdoor unit is designed for outdoor installation only, and for the following ambient temperatures:

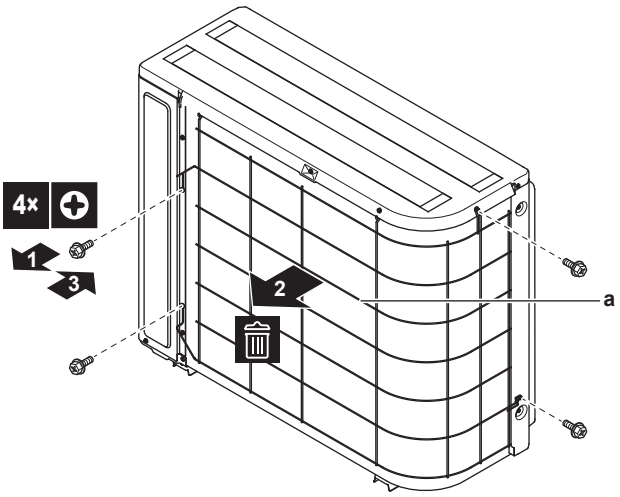
Cooling mode	10~43°C
Heating mode	–25~25°C

6.2.2 Additional installation site requirements of the outdoor unit in cold climates

In areas with low ambient temperatures and high humidity, or in areas with heavy snowfall, remove the suction grille to ensure proper operation.

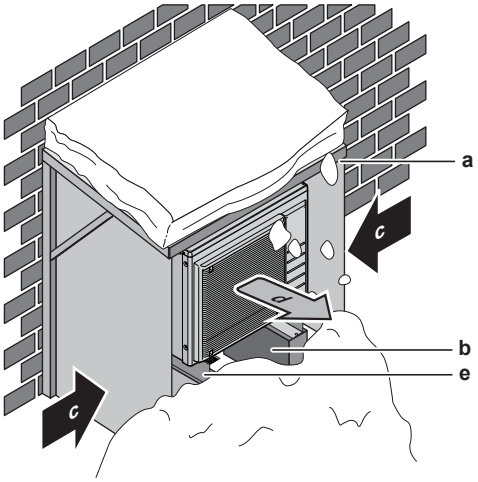
Non-exhaustive list of areas: Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Serbia, Slovakia, Sweden, …

1. Remove the screws holding the suction grille.
2. Remove the suction grille, and dispose of it.
3. Reattach the screws to the unit.



a Suction grille

Protect the outdoor unit against direct snowfall and take care that the outdoor unit is NEVER snowed up.



a Snow cover or shed
b Pedestal
c Prevailing wind direction
d Air outlet
e EKFT008D option kit

In any case, provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow. See "7.3 Mounting the outdoor unit" on page 27 for more details.

In heavy snowfall areas it is very important to select an installation site where the snow will NOT affect the unit. If lateral snowfall is possible, make sure that the heat exchanger coil is NOT affected by the snow. If necessary, install a snow cover or shed and a pedestal.

6.2.3 Installation site requirements of the indoor unit

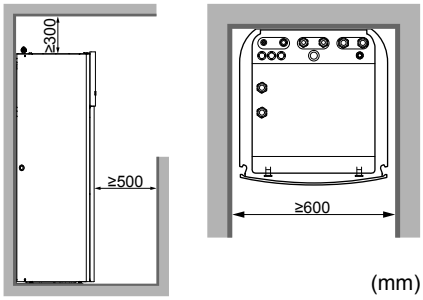
INFORMATION

Also read the precautions and requirements in the "General safety precautions" chapter.

- The indoor unit is designed for indoor installation only and for the following ambient temperatures:
  - Space heating operation: 5~30°C
  - Domestic hot water production: 5~35°C
- Mind the following measurements guidelines:

Maximum refrigerant piping length between indoor unit and outdoor unit	30 m
Minimum refrigerant piping length between indoor unit and outdoor unit	3 m
Maximum height difference between indoor unit and outdoor unit	20 m

- Mind the following spacing installation guidelines:



(mm)

INFORMATION

If you have limited installation space, do the following before installing the unit in its final position: "7.4.4 To connect the drain hose to the drain" on page 30. It requires to remove one or both side panels.

- The foundation must be strong enough to bear the weight of the unit. Take the weight of the unit with a domestic hot water tank full of water into account.
  Make sure, in the event of a water leak, water cannot cause any damage to the installation space and surroundings.

Do NOT install the unit in places such as:

- In places where a mineral oil mist, spray or vapour may be present in the atmosphere. Plastic parts may deteriorate and fall off or cause water leakage.
- Sound sensitive areas (e.g. near a bedroom), so that the operation noise will cause no trouble.
- In places with high humidity (max. RH=85%), for example a bathroom.
- In places where frost is possible. Ambient temperature around the indoor unit must be >5°C.

NOTICE

When the temperature in multiple rooms is controlled by 1 thermostat, do NOT place a thermostatic valve on the emitter in the room where the thermostat is installed.

Special requirements for R32

WARNING

- Do NOT pierce or burn.
- 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 which have been used already.
- Joints made in installation between parts of refrigerant system shall be accessible for maintenance purposes.

WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation (for example national gas regulation) and are executed only by authorised persons.

NOTICE

- Pipework shall be protected from physical damage.
- Installation of pipework shall be kept to a minimum.

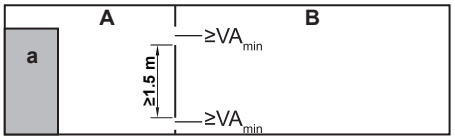
If the total refrigerant charge in the system is ≥1.84 kg (i.e. if the piping length is ≥27 m), you need to comply with the minimum floor area requirements as described in the following flow chart. The flow chart uses the following tables: "14.5 Table 1 – Maximum refrigerant charge allowed in a room: indoor unit" on page 91, "14.6 Table 2 – Minimum floor area: indoor unit" on page 91 and "14.7 Table 3 – Minimum venting opening area for natural ventilation: indoor unit" on page 91.

INFORMATION

Systems with a total refrigerant charge (m_c) <1.84 kg (i.e. if the piping length is <27 m) are NOT subjected to any requirements to the installation room.

INFORMATION

Multiple indoor units. If two or more indoor units are installed in a room, you must consider the maximum refrigerant charge that can be released in the room when a SINGLE leak occurs. **Example:** If two indoor units are installed in the room, each with its own outdoor unit, then you have to consider the refrigerant charge of the largest indoor-outdoor combination.



a Indoor unit
A Room where the indoor unit is installed.
B Room adjacent to room A.

Unit can be installed at **room A** if:
- 2 ventilation openings (permanently open) are provided between room A and B, 1 at the top and 1 at the bottom.
- **Bottom opening:** The bottom opening must meet the minimum area requirements (VA_{min}). It must be as close as possible to the floor. If the ventilation opening starts from the floor, the height must be ≥20 mm. The bottom of the opening must be situated ≤100 mm from the floor. At least 50% of the required opening area must be situated <200 mm from the floor. The entire area of the opening must be situated <300 mm from the floor.
- **Top opening:** The area of the top opening must be larger than or equal to the bottom opening. The bottom of the top opening must be situated at least 1.5 m above the top of the bottom opening.
- Ventilation openings to the outside are NOT considered suitable ventilation openings (the user can block them when it is cold).

6.3 Preparing refrigerant piping

6.3.1 Refrigerant piping requirements

INFORMATION

Also read the precautions and requirements in the "General safety precautions" chapter.

- **Piping material:** Phosphoric acid deoxidised seamless copper.
- **Piping diameter:**

Liquid piping	Ø6.4 mm (1/4")
Gas piping	Ø15.9 mm (5/8")

- **Piping temper grade and thickness:**

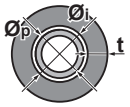
Outer diameter (Ø)	Temper grade	Thickness (t)[a]	
6.4 mm (1/4")	Annealed (O)	≥0.8 mm	
15.9 mm (5/8")	Annealed (O)	≥1.0 mm	

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

6.3.2 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.

6.4 Preparing water piping

- **Valve towards expansion vessel.** The valve towards the expansion vessel (if equipped) MUST be open.

6.4.1 Water circuit requirements

INFORMATION

Also read the precautions and requirements in the "General safety precautions" chapter.

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.

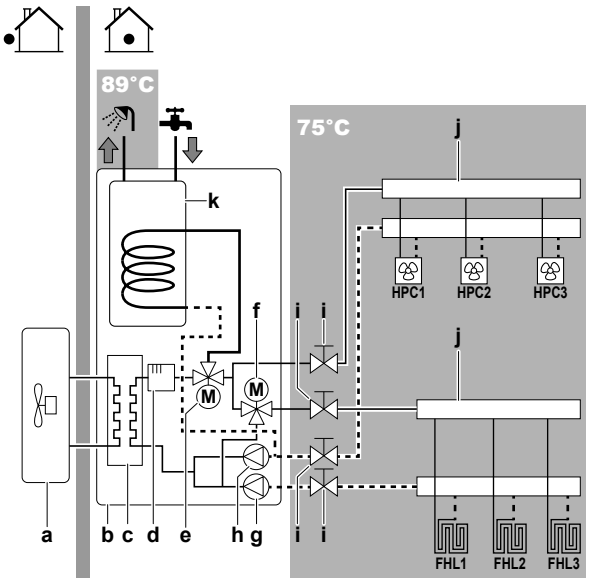
- **Connecting piping – Legislation.** Make all piping connections in accordance with the applicable legislation and the instructions in the "Installation" chapter, respecting the water inlet and outlet.
- **Connecting piping – Force.** Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit.
- **Connecting piping – Tools.** Only use appropriate tooling to handle brass, which is a soft material. If NOT, pipes will get damaged.
- **Connecting piping – Air, moisture, dust.** If air, moisture or dust gets into the circuit, problems may occur. To prevent this:
  - Only use clean pipes
  - Hold the pipe end downwards when removing burrs.
  - Cover the pipe end when inserting it through a wall, to prevent dust and/or particles from entering the pipe.
  - Use a decent thread sealant to seal connections.
- **Closed circuit.** Use the indoor unit ONLY in a closed water system. Using the system in an open water system will lead to excessive corrosion.
- **Glycol.** For safety reasons, it is NOT allowed to add any kind of glycol to the water circuit.
- **Piping length.** It is recommended to avoid long runs of piping between the domestic hot water tank and the hot water end point (shower, bath,…) and to avoid dead ends.
- **Piping diameter.** Select the water piping diameter in relation to the required water flow and the available external static pressure of the pump. See "14 Technical data" on page 85 for the external static pressure curves of the indoor unit.
- **Water flow.** You can find the minimum required water flow for indoor unit operation in the following table. In all cases, this flow needs to be guaranteed. When the flow is lower, the indoor unit will stop operation and display error 7H.

Minimum required flow rate
12 l/min

- **Field supply components – Water.** Only use materials that are compatible with water used in the system and with the materials used in the indoor unit.
- **Field supply components – Water pressure and temperature.** Check that all components in the field piping can withstand the water pressure and water temperature.
- **Water pressure.** The maximum water pressure is 4 bar. Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded.
- **Water temperature.** All installed piping and piping accessories (valve, connections,…) MUST withstand the following temperatures:

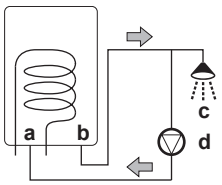
INFORMATION

The following illustration is an example and might NOT match your system layout.



a Outdoor unit
b Indoor unit
c Heat exchanger
d Backup heater
e Motorised 3-way valve (switch between space heating and domestic hot water)
f Motorised 3-way valve (mixing the main zone)
g Main pump
h Additional pump
i Shut-off valve
j Collector (field supply)
k Domestic hot water tank
HPC1...3 Heat pump convector (field supply)
FHL1...3 Floor heating loop (field supply)

- **Drainage – Low points.** Provide drain taps at all low points of the system in order to allow complete drainage of the water circuit.
- **Drainage – Pressure relief valve.** Connect the drain hose properly to the drain to avoid water dripping out of the unit. See "7.4.4 To connect the drain hose to the drain" on page 30.
- **Air vents.** Provide air vents at all high points of the system, which must also be easily accessible for servicing. Two automatic air purges are provided in the indoor unit. Check that the air purges are NOT tightened too much, so that automatic release of air in the water circuit is possible.
- **Zn-coated parts.** Never use Zn-coated parts in the water circuit. Because the unit's internal water circuit uses copper piping, excessive corrosion may occur.
- **Non-brass metallic piping.** When using non-brass metallic piping, insulate the brass and non-brass properly so that they do NOT make contact with each other. This to prevent galvanic corrosion.
- **Valve – Change-over time.** When using a 2-way valve or a 3-way valve in the water circuit, the maximum change-over time of the valve must be 60 seconds.
- **Domestic hot water tank – Capacity.** To avoid stagnation of water, it is important that the storage capacity of the domestic hot water tank meets the daily consumption of domestic hot water.
- **Domestic hot water tank – After installation.** Immediately after installation, the domestic hot water tank must be flushed with fresh water. This procedure must be repeated at least once a day the first 5 consecutive days after installation.
- **Domestic hot water tank – Standstills.** In cases where during longer periods of time there is no consumption of hot water, the equipment MUST be flushed with fresh water before usage.
- **Domestic hot water tank – Disinfection.** For the disinfection function of the domestic hot water tank, see "8.4.6 Tank" on page 58.
- **Thermostatic mixing valves.** In accordance with the applicable legislation, it may be necessary to install thermostatic mixing valves.
- **Hygienic measures.** The installation must be in compliance with the applicable legislation and may require additional hygienic installation measures.
- **Recirculation pump.** In accordance with the applicable legislation, it may be required to connect a recirculation pump in between the hot water end point and the recirculation connection of the domestic hot water tank.



a Recirculation connection
b Hot water connection
c Shower
d Recirculation pump

- **Valve towards expansion vessel.** The valve towards the expansion vessel (if equipped) MUST be open.

6.4.2 Formula to calculate the expansion vessel pre-pressure

The pre-pressure (Pg) of the vessel depends on the installation height difference (H):

Pg=0.3+(H/10) (bar)

6.4.3 To check the water volume and flow rate

The indoor unit has an expansion vessel of 10 litre with a factory-set pre-pressure of 1 bar.

To make sure that the unit operates properly:

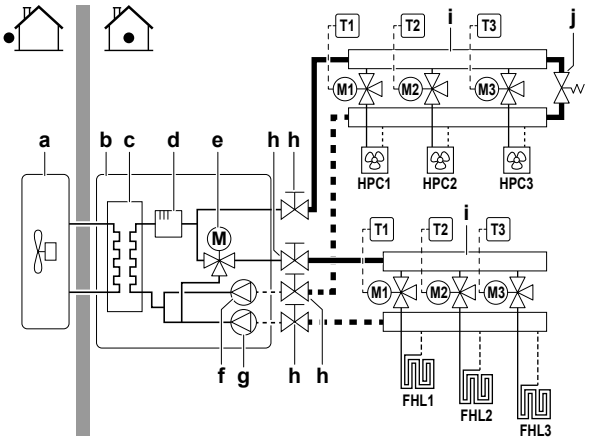
- You must check the minimum and maximum water volume.
- You might need to adjust the pre-pressure of the expansion vessel.

Minimum water volume

There are no requirements for the minimum water volume.

INFORMATION

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



a Outdoor unit
b Indoor unit
c Heat exchanger
d Backup heater
e Motorised 3-way valve (mixing the main zone)
f Additional pump
g Main pump
h Shut-off valve

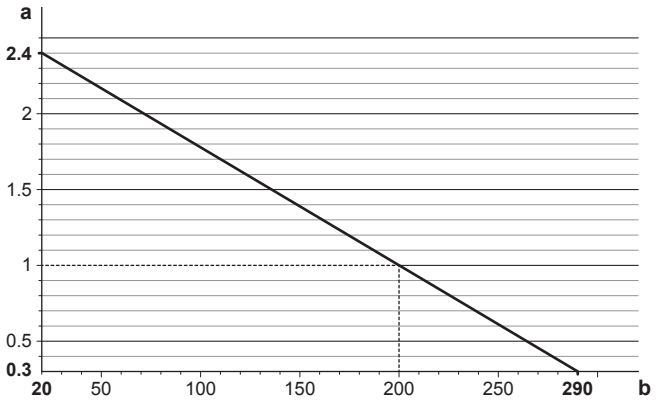
i	Collector (field supply)
j	Overpressure bypass valve (delivered as accessory)
FHL1...3	Floor heating loop (field supply)
HPC1...3	Heat pump convector (field supply)
T1...3	Individual room thermostat (optional)
M1...3	Individual motorised valve to control loop FHL1...3 and HPC1...3 (field supply)

INFORMATION

The pump of the additional zone ensures that the minimum flow rate for correct operation of the unit is guaranteed.

Maximum water volume

Use the following graph to determine the maximum water volume for the calculated pre-pressure.



a Pre-pressure (bar)
b Maximum water volume (l)

Example: Maximum water volume and expansion vessel pre-pressure

Installation height difference[(a)]	Water volume	
	≤200 l	>200 l
≤7 m	No pre-pressure adjustment is required.	Do the following: ▪ Decrease the pre-pressure according to the required installation height difference. The pre-pressure should decrease by 0.1 bar for each metre below 7 m. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.
>7 m	Do the following: ▪ Increase the pre-pressure according to the required installation height difference. The pre-pressure should increase by 0.1 bar for each metre above 7 m. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.	The expansion vessel of the indoor unit is too small for the installation. In this case, it is recommended to install an extra vessel outside the unit.

(a) This is the height difference (m) between the highest point of the water circuit and the indoor unit. If the indoor unit is at the highest point of the installation, the installation height is 0 m.

Minimum flow rate

Check that the minimum flow rate in the installation is guaranteed in all conditions on each zone separately. This minimum flow rate is required during defrost/backup heater operation. For this purpose, use the overpressure bypass valve delivered with the unit.

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).

Minimum required flow rate
12 l/min

See the recommended procedure as described in "9.4 Checklist during commissioning" on page 72.

6.4.4 Changing the pre-pressure of the expansion vessel

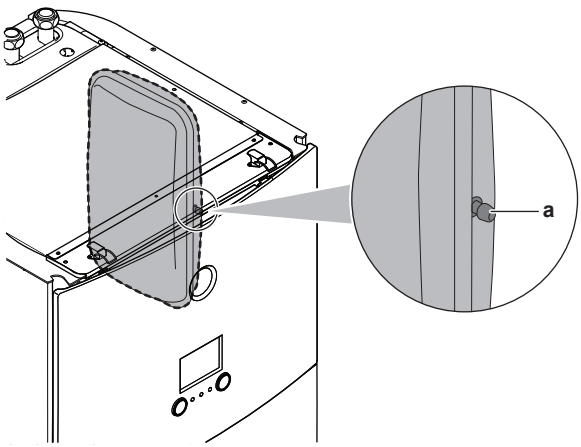
NOTICE

Only a licensed installer may adjust the pre-pressure of the expansion vessel.

When changing the default pre-pressure of the expansion vessel (1 bar) is required, take following guidelines into account:

- Only use dry nitrogen to set the expansion vessel pre-pressure.
- Inappropriate setting of the expansion vessel pre-pressure will lead to malfunction of the system.

Changing the pre-pressure of the expansion vessel should be done by releasing or increasing nitrogen pressure through the Schrader valve of the expansion vessel.



a Schrader valve

6.4.5 To check the water volume: Examples

Example 1

The indoor unit is installed 5 m below the highest point in the water circuit. The total water volume in the water circuit is 100 l.

No actions or adjustments are required.

Example 2

The indoor unit is installed at the highest point in the water circuit. The total water volume in the water circuit is 250 l.

Actions:

- Because the total water volume (250 l) is more than the default water volume (200 l), the pre-pressure must be decreased.
- The required pre-pressure is:
  Pg = (0.3+(H/10)) bar = (0.3+(0/10)) bar=0.3 bar.

- The corresponding maximum water volume at 0.3 bar is 290 l. (See the graph in the chapter above).
- Because 250 l is lower than 290 l, the expansion vessel is appropriate for the installation.

6.5 Preparing electrical wiring

6.5.1 About preparing electrical wiring

INFORMATION

Also read the precautions and requirements in the "General safety precautions" chapter.

WARNING

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

WARNING

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

WARNING

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

WARNING

ALWAYS use multicore cable for power supply cables.

6.5.2 About preferential kWh rate power supply

Electricity companies throughout the world work hard to provide reliable electric service at competitive prices and are often authorized to bill clients at benefit rates. E.g. time-of-use rates, seasonal rates, Wärmepumpentarif in Germany and Austria, ...

This equipment allows for connection to such preferential kWh rate power supply delivery systems.

Consult with the electricity company acting as provider at the site where this equipment is to be installed to know whether it is appropriate to connect the equipment in one of the preferential kWh rate power supply delivery systems available, if any.

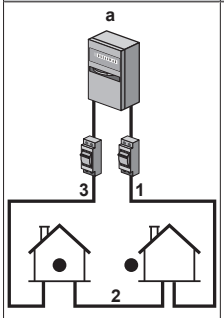
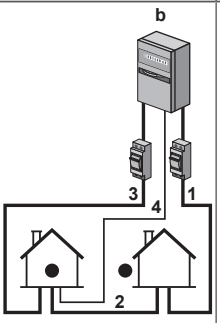
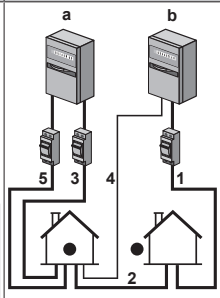
When the equipment is connected to such preferential kWh rate power supply, the electricity company is allowed to:

- interrupt power supply to the equipment for certain periods of time;
- demand that the equipment only consumes a limited amount of electricity during certain periods of time.

The indoor unit is designed to receive an input signal by which the unit switches into forced off mode. At that moment, the outdoor unit compressor will not operate.

The wiring to the unit is different depending on whether the power supply is interrupted or not.

6.5.3 Overview of electrical connections except external actuators

Normal power supply	Preferential kWh rate power supply	
	Power supply is NOT interrupted	Power supply is interrupted
	 During preferential kWh rate power supply activation, power supply is NOT interrupted. The outdoor unit is turned off by the control. **Remark:** The electricity company must always allow the power consumption of the indoor unit.	 During preferential kWh rate power supply activation, power supply is interrupted immediately or after some time by the electricity company. In this case, the indoor unit must be powered by a separate normal power supply.

a Normal power supply
b Preferential kWh rate power supply
1 Power supply for outdoor unit
2 Power supply and interconnection cable to indoor unit
3 Power supply for backup heater
4 Preferential kWh rate power supply (voltage free contact)
5 Normal kWh rate power supply (to power the indoor unit PCB in the event of power supply interruption of the preferential kWh rate power supply)

6.5.4 Overview of electrical connections for external and internal actuators

Item	Description	Wires	Maximum running current
Outdoor unit and indoor unit power supply			
1	Power supply for outdoor unit	2+GND	(a)
2	Power supply and interconnection cable to indoor unit	3	(f)
3	Power supply for backup heater	See table below.	—
4	Preferential kWh rate power supply (voltage free contact)	2	(d)
5	Normal kWh rate power supply	2	6.3 A
Optional equipment			

Item	Description	Wires	Maximum running current
6	User interface used as room thermostat	2	(e)
7	Room thermostat	3 or 4	100 mA(b)
8	Outdoor ambient temperature sensor	2	(b)
9	Indoor ambient temperature sensor	2	(b)
10	Heat pump convector	2	100 mA(b)
Field supplied components			
11	Shut-off valve	2	100 mA(b)
12	Electricity meter	2 (per meter)	(b)
13	Domestic hot water pump	2	(b)
14	Alarm output	2	(b)
15	Changeover to external heat source control	2	(b)
16	Space heating operation control	2	(b)
17	Power consumption digital inputs	2 (per input signal)	(b)
18	Safety thermostat for the main zone	2	(b)
19	Safety thermostat for the additional zone	2	(d)

(a) Refer to name plate on outdoor unit.
(b) Minimum cable section 0.75 mm².
(c) Cable section 2.5 mm².
(d) Cable section 0.75 mm² till 1.25 mm²; maximum length: 50 m. Voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.
(e) Cable section 0.75 mm² till 1.25 mm²; maximum length: 500 m.
(f) Cable section 1.5 mm².

NOTICE

More technical specifications of the different connections are indicated on the inside of the indoor unit.

NOTICE

A safety thermostat (normal closed contact) MUST be installed for the main zone. See "7.9.17 To connect the safety thermostat (normally closed contact)" on page 43.

Backup heater type	Power supply	Required number of conductors
*6V	1N~ 230 V (6V)	2+GND
	3~ 230 V (6T1)	3+GND
*9W	3N~ 400 V	4+GND

7 Installation

7.1 Overview: Installation

This chapter describes what you have to do and know on-site to install the system.

Typical workflow

Installation typically consists of the following stages:

1 Mounting the outdoor unit.
2 Mounting the indoor unit.
3 Connecting the refrigerant piping.
4 Checking the refrigerant piping.
5 Charging refrigerant.
6 Connecting the water piping.
7 Connecting the electrical wiring.
8 Finishing the outdoor installation.
9 Finishing the indoor installation.

INFORMATION

If you have limited installation space, do the following before installing the unit in its final position: "7.4.4 To connect the drain hose to the drain" on page 30. It requires to remove one or both side panels.

INFORMATION

Depending on the units and/or the installation conditions, it might be necessary to connect electrical wiring before you can charge refrigerant.

7.2 Opening the units

7.2.1 About opening the units

At certain times, you have to open the unit. **Example:**

- When connecting the refrigerant piping
- When connecting the electrical wiring
- When maintaining or servicing the unit

DANGER: RISK OF ELECTROCUTION

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

7.2.2 To open the outdoor unit

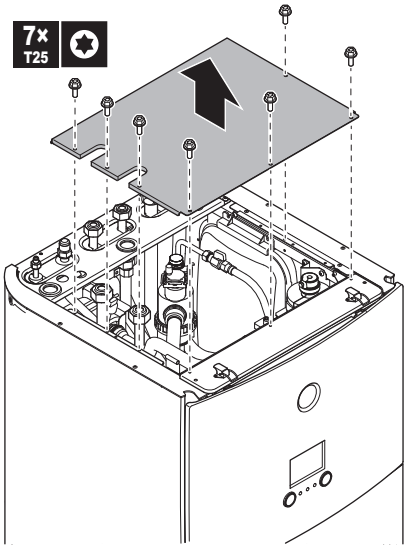
DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

See "7.5.8 To connect the refrigerant piping to the outdoor unit" on page 33 and "7.9.6 To connect the electrical wiring on the outdoor unit" on page 38.

7.2.3 To open the indoor unit

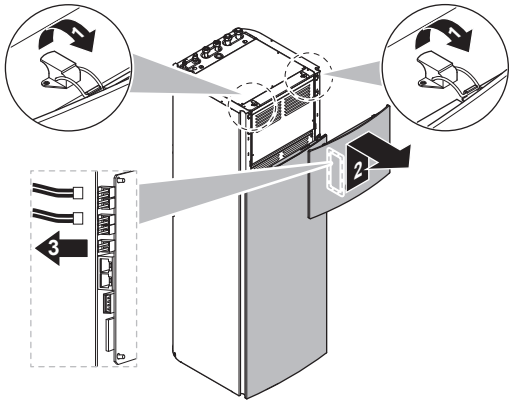
1 Remove the top panel.



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

NOTICE

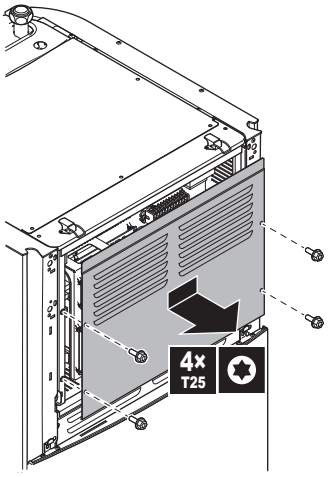
If you remove the user interface panel, also disconnect the cables from the back of the user interface panel to prevent damage.

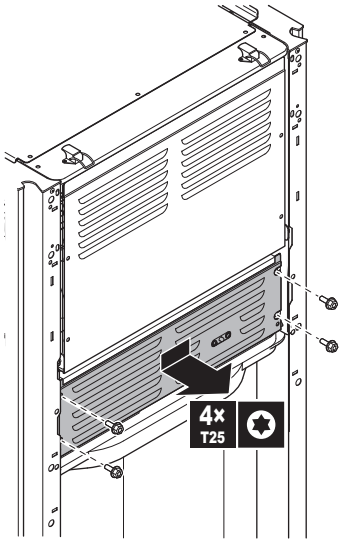


3 If necessary, remove the front plate. This is, for example, necessary in the following cases:

- "7.2.5 To lower the switch box on the indoor unit" on page 26
- "7.4.4 To connect the drain hose to the drain" on page 30
- When you need access to the high voltage switch box

7.2.4 To open the switch box cover of the indoor unit





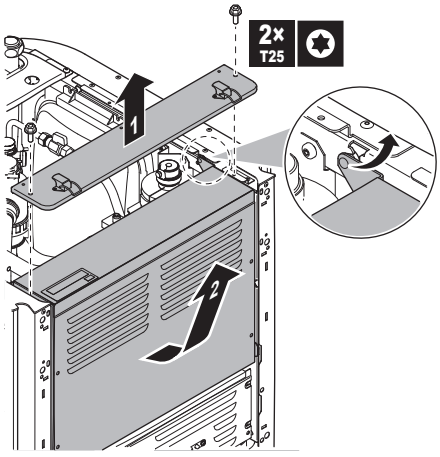
7.2.5 To lower the switch box on the indoor unit

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

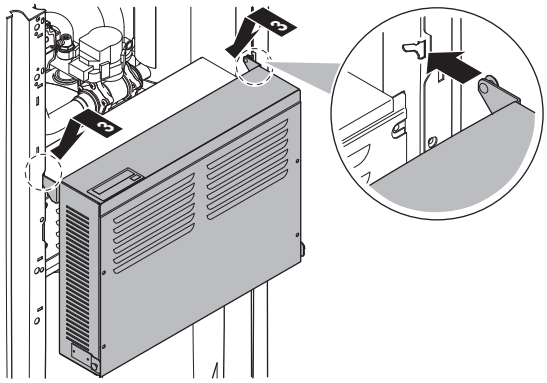
Prerequisite: The user interface panel and front panel have been removed.

1 Remove the top panel that keeps the switch box in place at the top of the unit.

2 Tilt the switch box to the front and lift it out of its hinges.



3 Place the switch box lower on the unit. Use the 2 hinges located lower on the unit.



7.3 Mounting the outdoor unit

7.3.1 About mounting the outdoor unit

When

You have to mount the outdoor and indoor unit before you can connect the refrigerant and water piping.

Typical workflow

Mounting the outdoor unit typically consists of the following stages:

1 Providing the installation structure.
2 Installing the outdoor unit.
3 Providing drainage.
4 Preventing the unit from falling over.
5 Protecting the unit against snow and wind by installing a snow cover and baffle plates. See "Preparing installation site" in "6 Preparation" on page 16.

7.3.2 Precautions when mounting the outdoor unit

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.3.3 To provide the installation structure

Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise.

Fix the unit securely by means of foundation bolts in accordance with the foundation drawing.

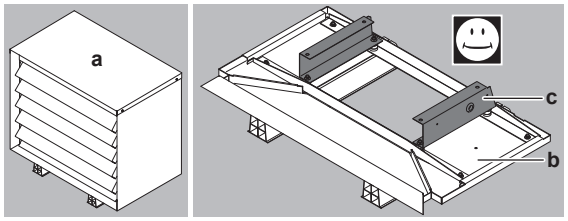
This topic shows different installation structures. For all, use 4 sets of M8 or M10 anchor bolts, nuts and washers. In any case, provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow.

INFORMATION

The maximum height of the upper protruding part of the bolts is 15 mm.

INFORMATION

If you install the U-beams in combination with the low sound cover (EKLN08A1), different installation instructions apply for the U-beams. See the installation manual of the low sound cover.

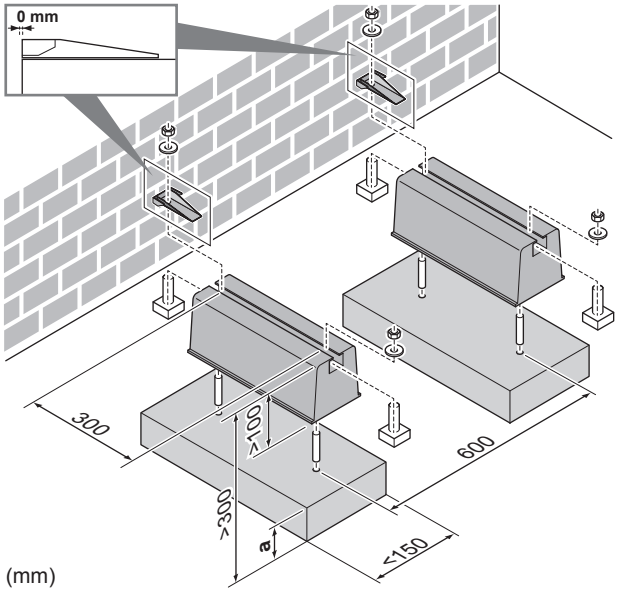


a Low sound cover

b Bottom parts of the low sound cover

c U-beams

Option 1: On mounting feet "flexi-foot with strut"

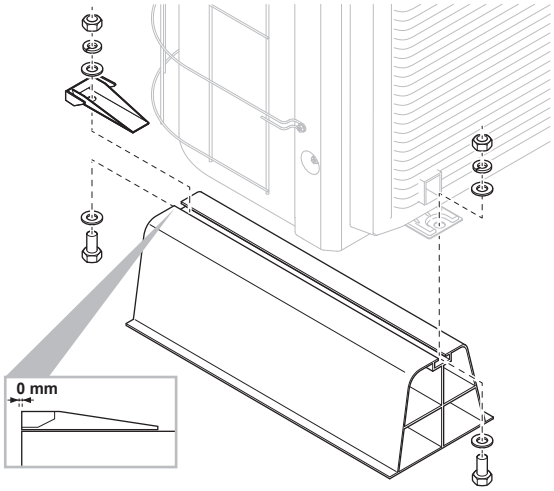


(mm)

a Maximum snowfall height

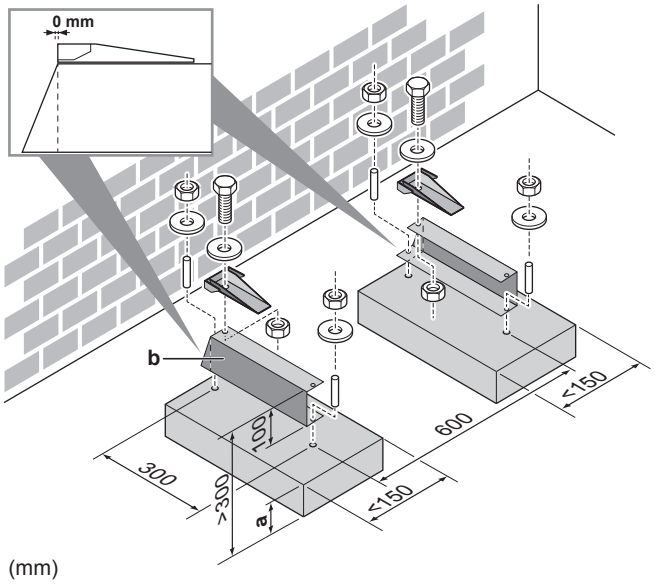
Option 2: On plastic mounting feet

In this case, you can use the bolts, nuts, washers and spring washers delivered with the unit as accessories.



Option 3: On a pedestal with the EKFT008D option kit

The EKFT008D option kit is recommended in areas with heavy snowfall.

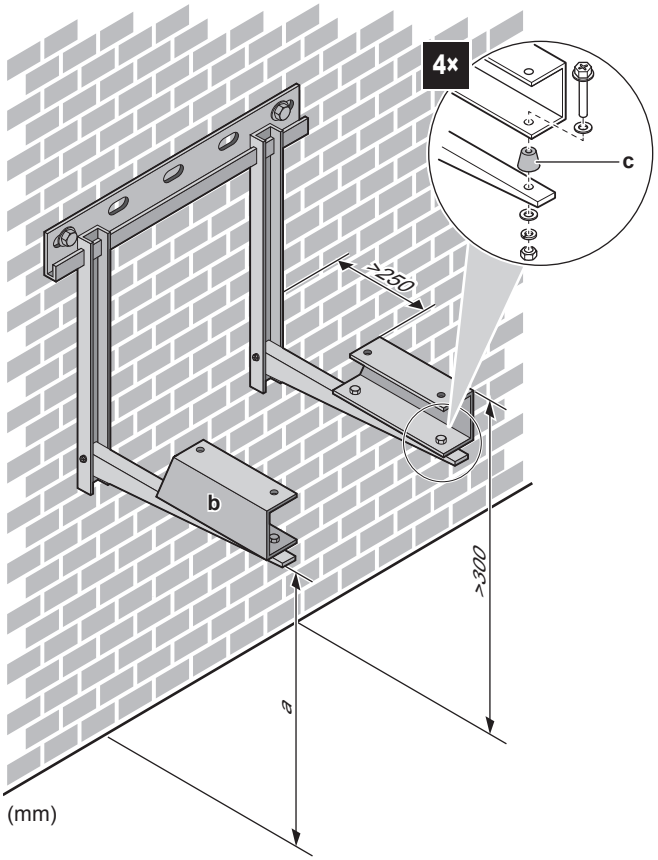


(mm)

a Maximum snowfall height
b EKFT008D option kit

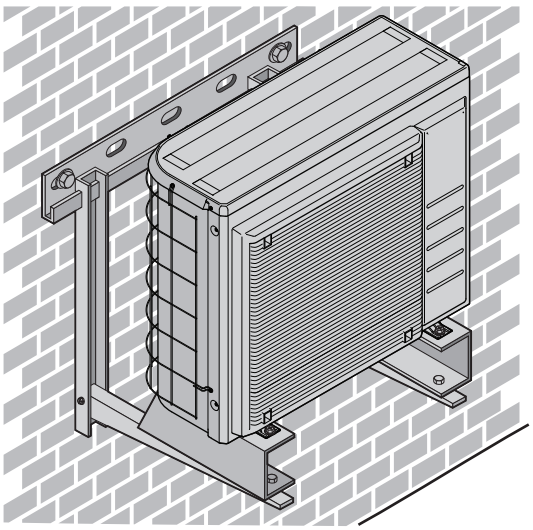
Option 4: On brackets to the wall with the EKFT008D option kit

The EKFT008D option kit is recommended in areas with heavy snowfall.



(mm)

a Maximum snowfall height
b EKFT008D option kit
c Anti-vibration rubber (field supply)



7.3.4 To install the outdoor unit

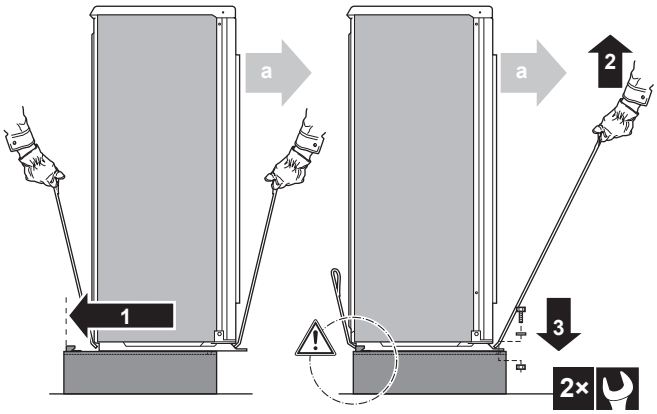
CAUTION

Do NOT remove the protective cardboard before the unit is installed properly.

1 Lift the outdoor unit as described in "3.2.2 To handle the outdoor unit" on page 7.

2 Install the outdoor unit as follows:

- (1) Put the unit into position (using the sling to the left and the handle to the right).
- (2) Remove the sling (by pulling 1 side of the sling).
- (3) Fix the unit.

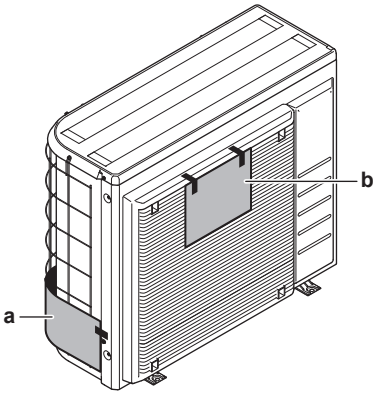


a Air outlet

NOTICE

Properly align the unit. Make sure the backside of the unit does NOT protrude.

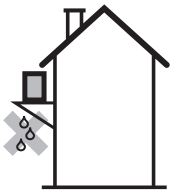
3 Remove the protective cardboard and instruction sheet.



a Protective cardboard
b Instruction sheet

7.3.5 To provide drainage

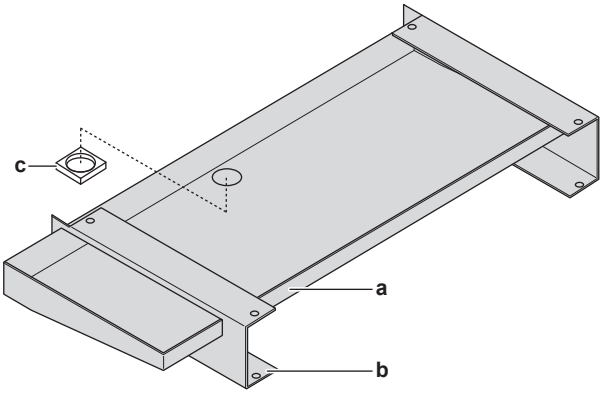
- Make sure that condensation water can be evacuated properly.
- Install the unit on a base to make sure that there is proper drainage in order to avoid ice accumulation.
- Prepare a water drainage channel around the foundation to drain waste water away from the unit.
- Avoid drain water flowing over the footpath, so that it does NOT become slippery in case of ambient freezing temperatures.
- If you install the unit on a frame, install a waterproof plate within 150 mm of the bottom side of the unit in order to prevent water from getting into the unit and to avoid drain water dripping (see the following figure).



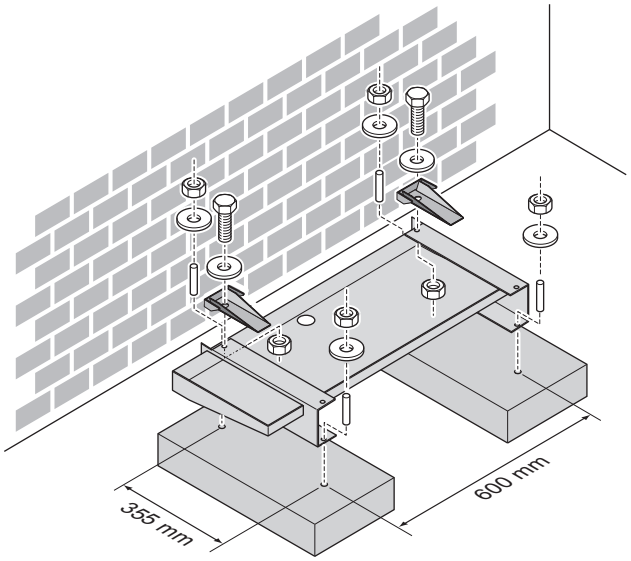
NOTICE

If the drain holes of the outdoor unit are blocked up, provide space of at least 300 mm below the outdoor unit.

- **Drain pan.** You can use the drain pan option (EKDP008D) to gather the drain water. For the complete installation instructions, see the installation manual of the drain pan. In short, the drain pan must be installed level (with a tolerance of 1° at all sides) and as follows:



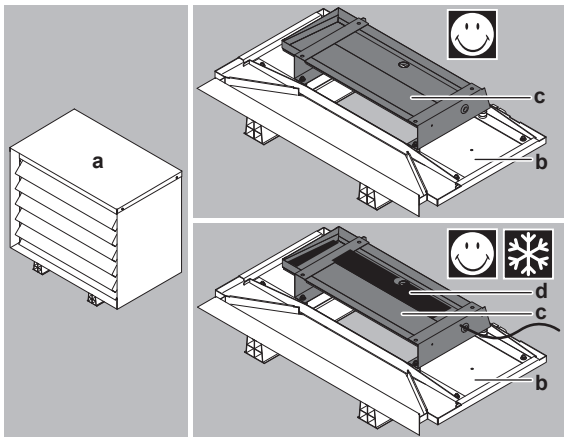
a Drain pan
b U-beams
c Drain hole insulation



- **Drain pan heater.** You can use the drain pan heater option (EKDPH008CA) to prevent freezing-up of the drain pan. For the installation instructions, see the installation manual of the drain pan heater.
- **Non-heated drain tube.** When using the drain pan heater without drain tube or with a non-heated drain tube, remove the drain hole insulation (Item c on the illustration).

INFORMATION

If you install the drain pan kit (with or without drain pan heater) in combination with the low sound cover (EKLN08A1), different installation instructions apply for the drain pan kit. See the installation manual of the low sound cover.



a Low sound cover

b Bottom parts of the low sound cover

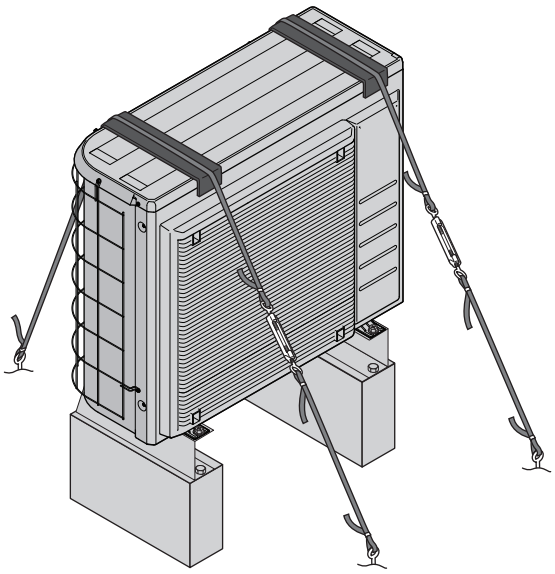
c Drain pan kit

d Drain pan heater

7.3.6 To prevent the outdoor unit from falling over

In case the unit is installed in places where strong wind can tilt the unit, take following measure:

1. Prepare 2 cables as indicated in the following illustration (field supply).
2. Place the 2 cables over the outdoor unit.
3. Insert a rubber sheet between the cables and the outdoor unit to prevent the cables from scratching the paint (field supply).
4. Attach the ends of the cables and tighten them.



7.4 Mounting the indoor unit

7.4.1 About mounting the indoor unit

When

You have to mount the outdoor and indoor unit before you can connect the refrigerant and water piping.

Typical workflow

Mounting the indoor unit typically consists of the following stages:

1 Installing the indoor unit.

7.4.2 Precautions when mounting the indoor unit

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

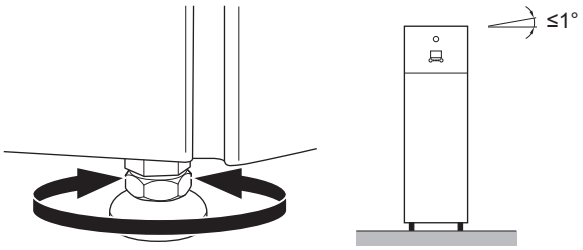
7.4.3 To install the indoor unit

1 Lift the indoor unit from the pallet and place it on the floor. Also see "3.3.3 To handle the indoor unit" on page 8.

2 Connect the drain hose to the drain. See "7.4.4 To connect the drain hose to the drain" on page 30.

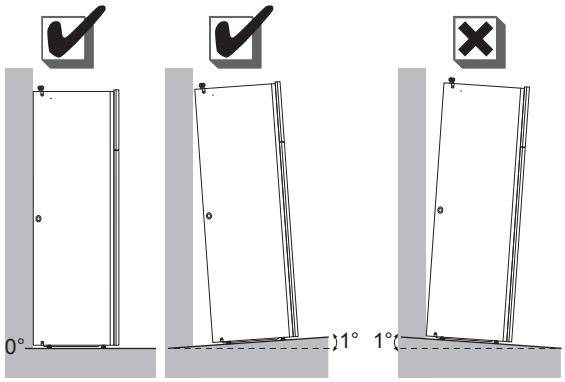
3 Slide the indoor unit into position.

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



NOTICE

Do NOT tilt the unit forwards:



7.4.4 To connect the drain hose to the drain

Water coming from the pressure relief valve is collected in the drain pan. The drain pan is connected to a drain hose inside the unit. You must connect the drain hose to an appropriate drain according to the applicable legislation. You can route the drain hose through the left or right side panel.

Prerequisite: The user interface panel and front panel have been removed.

1 Remove one of the side panels.

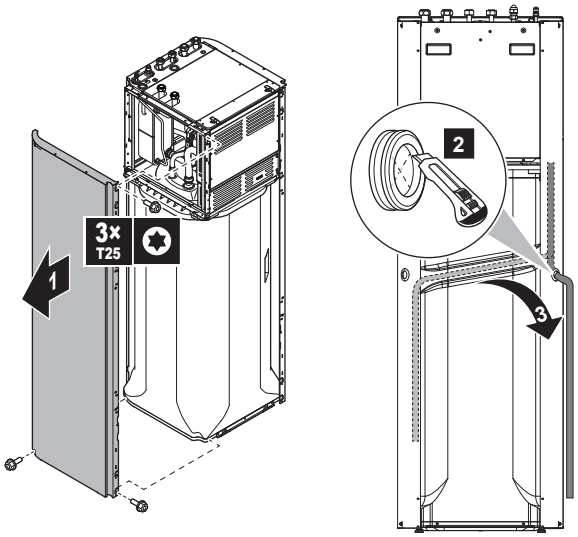
2 Cut out the rubber grommet.

3 Pull the drain hose through the hole.

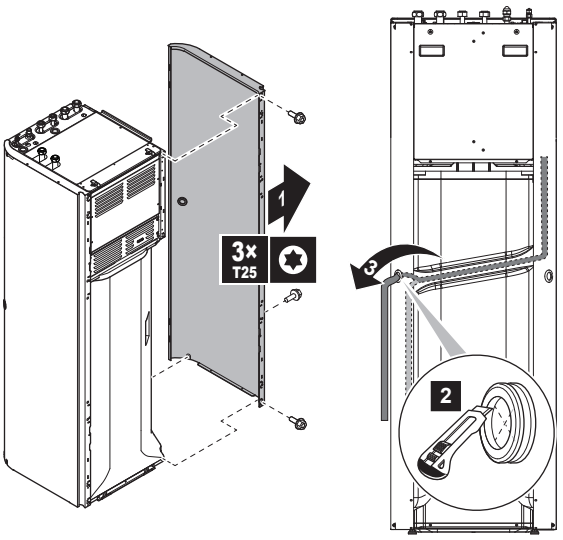
4 Reattach the side panel. Ensure the water can flow through the drain tube.

It is recommended to use a tundish to collect the water.

Option 1: Through the left side panel



Option 2: Through the right side panel



7.5 Connecting the refrigerant piping

7.5.1 About connecting the refrigerant piping

Before connecting the refrigerant piping

Make sure the outdoor and indoor unit are mounted.

Typical workflow

Connecting the refrigerant piping involves:

- Connecting the refrigerant piping to the outdoor unit
- Connecting the refrigerant piping to the indoor unit
- Insulating the refrigerant piping
- Keeping in mind the guidelines for:
  - Pipe bending
  - Flaring pipe ends
  - Brazing
  - Using the stop valves

7.5.2 Precautions when connecting the refrigerant piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

DANGER: RISK OF BURNING

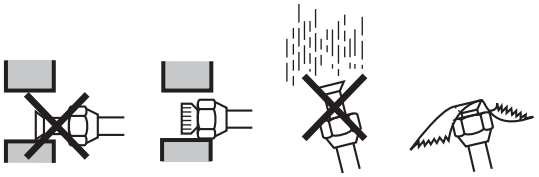
CAUTION

- Do NOT use mineral oil on flared part.
- Do NOT reuse piping from previous installations.
- NEVER install a drier to this R32 unit to guarantee its lifetime. The drying material may dissolve and damage the system.

NOTICE

Take the following precautions on refrigerant piping into account:

- Avoid anything but the designated refrigerant to get mixed into the refrigerant cycle (e.g. air).
- Only use R32 when adding refrigerant.
- Only use installation tools (e.g. manifold gauge set) that are exclusively used for R32 installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils and moisture) from mixing into the system.
- Install the piping so that the flare is NOT subjected to mechanical stress.
- Protect the piping as described in the following table to prevent dirt, liquid or dust from entering the piping.
- Use caution when passing copper tubes through walls (see figure below).



Unit	Installation period	Protection method
Outdoor unit	>1 month	Pinch the pipe
	<1 month	Pinch or tape the pipe
Indoor unit	Regardless of the period	

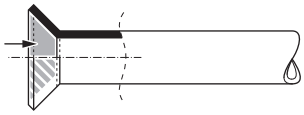
INFORMATION

Do NOT open the refrigerant stop valve before checking the refrigerant piping. When you need to charge additional refrigerant it is recommended to open the refrigerant stop valve after charging.

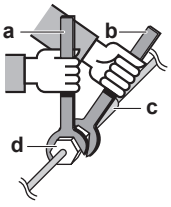
7.5.3 Guidelines when connecting the refrigerant piping

Take the following guidelines into account when connecting pipes:

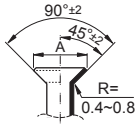
- Coat the flare inner surface with ether oil or ester oil when connecting a flare nut. Tighten 3 or 4 turns by hand, before tightening firmly.



- ALWAYS use 2 wrenches together when loosening a flare nut.
- ALWAYS use a spanner and torque wrench together to tighten the flare nut when connecting the piping. This to prevent nut cracking and leaks.



a Torque wrench
b Spanner
c Piping union
d Flare nut

Piping size (mm)	Tightening torque (N•m)	Flare dimensions (A) (mm)	Flare shape (mm)
Ø6.4	15~17	8.7~9.1	
Ø15.9	63~75	19.3~19.7	

7.5.4 Pipe bending guidelines

Use a pipe bender for bending. All pipe bends should be as gentle as possible (bending radius should be 30~40 mm or larger).

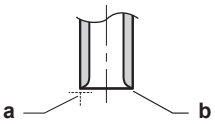
7.5.5 To flare the pipe end

CAUTION

- Incomplete flaring may cause refrigerant gas leakage.
- Do NOT re-use flares. Use new flares to prevent refrigerant gas leakage.
- Use flare nuts that are included with the unit. Using different flare nuts may cause refrigerant gas leakage.

1 Cut the pipe end with a pipe cutter.

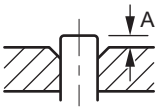
2 Remove burrs with the cut surface facing down so that the chips do NOT enter the pipe.



a Cut exactly at right angles.
b Remove burrs.

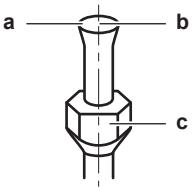
3 Remove the flare nut from the stop valve and put the flare nut on the pipe.

4 Flare the pipe. Set exactly at the position as shown in the following figure.



	Flare tool for R32 (clutch type)	Conventional flare tool	
		Clutch type (Ridgid-type)	Wing nut type (Imperial-type)
A	0~0.5 mm	1.0~1.5 mm	1.5~2.0 mm

5 Check that the flaring is properly made.

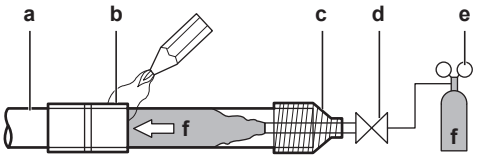


a Flare's inner surface MUST be flawless.
b The pipe end MUST be evenly flared in a perfect circle.
c Make sure the flare nut is fitted.

7.5.6 To braze the pipe end

The indoor unit and outdoor unit have flare connections. Connect both ends without brazing. If brazing should be needed, take the following into account:

- When brazing, blow through with nitrogen to prevent creation of large quantities of oxidised film on the inside of the piping. This film adversely affects valves and compressors in the refrigerating system and prevents proper operation.
- Set the nitrogen pressure to 20 kPa (0.2 bar) (just enough so it can be felt on the skin) with a pressure-reducing valve.



a Refrigerant piping
b Part to be brazed
c Taping
d Manual valve
e Pressure-reducing valve
f Nitrogen

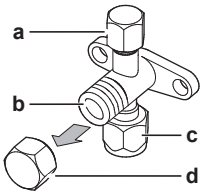
- Do NOT use anti-oxidants when brazing pipe joints. Residue can clog pipes and break equipment.
- Do NOT use flux when brazing copper-to-copper refrigerant piping. Use phosphor copper brazing filler alloy (BCuP), which does not require flux. Flux has an extremely harmful influence on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will deteriorate the refrigerant oil.
- Always protect the surrounding surfaces (e.g. insulation foam) from heat when brazing.

7.5.7 Using the stop valve and service port

To handle the stop valve

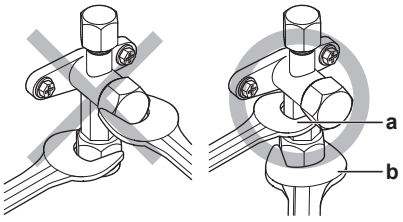
Take the following guidelines into account:

- The stop valves are factory closed.
- The following figure shows the stop valve parts required when handling the valve.



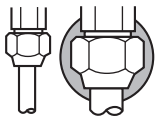
a Service port and service port cap
b Valve stem
c Field piping connection
d Stem cap

- Keep both stop valves open during operation.
- Do NOT apply excessive force to the valve stem. Doing so may break the valve body.
- ALWAYS make sure to secure the stop valve with a spanner, then loosen or tighten the flare nut with a torque wrench. Do NOT place the spanner on the stem cap, as this could cause a refrigerant leak.



a Spanner
b Torque wrench

- When it is expected that the operating pressure will be low (e.g. when cooling will be performed while the outside air temperature is low), sufficiently seal the flare nut in the stop valve on the gas line with silicon sealant to prevent freezing.

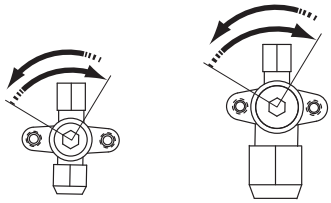


Silicon sealant; make sure there is no gap.

To open/close the stop valve

1 Remove the stop valve cover.

2 Insert a hexagon wrench (liquid side: 4 mm, gas side: 4 mm) into the valve stem and turn the valve stem:



Counterclockwise to open.
Clockwise to close.

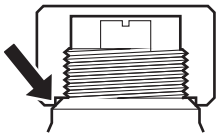
3 When the stop valve CANNOT be turned any further, stop turning.

4 Install the stop valve cover.

Result: The valve is now open/closed.

To handle the stem cap

- The stem cap is sealed where indicated with the arrow. Do NOT damage it.



- After handling the stop valve, tighten the stem cap, and check for refrigerant leaks.

Item	Tightening torque (N·m)
Stem cap, liquid side	13.5~16.5
Stem cap, gas side	22.5~27.5

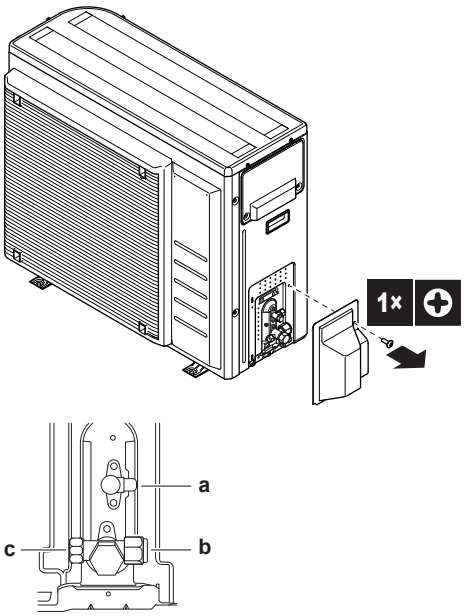
To handle the service cap

- ALWAYS use a charge hose equipped with a valve depressor pin, since the service port is a Schrader type valve.
- After handling the service port, tighten the service port cap, and check for refrigerant leaks.

Item	Tightening torque (N·m)
Service port cap	11.5~13.9

7.5.8 To connect the refrigerant piping to the outdoor unit

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



a Liquid stop valve
b Gas stop valve
c Service port

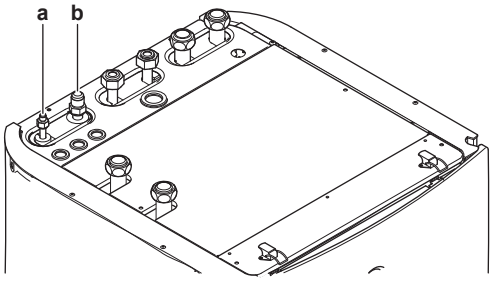
2 Connect the gas refrigerant connection from the indoor unit to the gas stop valve of the outdoor unit.

NOTICE

It is recommended that the refrigerant piping between indoor and outdoor unit is installed in a ducting or the refrigerant piping is wrapped with finishing tape.

7.5.9 To connect the refrigerant piping to the indoor unit

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



a Refrigerant liquid connection
b Refrigerant gas connection

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

NOTICE

It is recommended that the refrigerant piping between indoor and outdoor unit is installed in a ducting or the refrigerant piping is wrapped with finishing tape.

INFORMATION

When the indoor unit is installed in a place with limited space, an optional pipe bend (EKHVTC) kit can be installed to facilitate the connection to the refrigerant gas and liquid connections of the indoor unit. For installation instructions, see the instruction sheet of the pipe bend kit.

7.6 Checking the refrigerant piping

7.6.1 About checking the refrigerant piping

The outdoor unit's **internal** refrigerant piping has been factory tested for leaks. You only have to check the outdoor unit's **external** refrigerant piping.

Before checking the refrigerant piping

Make sure the refrigerant piping is connected between the outdoor unit and the indoor unit.

Typical workflow

Checking the refrigerant piping typically consists of the following stages:

1 Checking for leaks in the refrigerant piping.

2 Performing vacuum drying to remove all moisture, air or nitrogen from the refrigerant piping.

If there is a possibility of moisture being present in the refrigerant piping (for example, water may have entered the piping), first carry out the vacuum drying procedure below until all moisture has been removed.

7.6.2 Precautions when checking the refrigerant piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

NOTICE

Use a 2-stage vacuum pump with a non-return valve that can evacuate to a gauge pressure of −100.7 kPa (−1.007 bar)(5 Torr absolute). Make sure the pump oil does not flow oppositely into the system while the pump is not working.

NOTICE

Use this vacuum pump for R32 exclusively. Using the same pump for other refrigerants may damage the pump and the unit.

NOTICE

- Connect the vacuum pump to the service port of the gas stop valve.
- Make sure that the gas stop valve and liquid stop valve are firmly closed before performing the leak test or vacuum drying.

7.6.3 To check for leaks

NOTICE

Do NOT exceed the unit's maximum working pressure (see "PS High" on the unit name plate).

NOTICE

Make sure to use a recommended bubble test solution from your wholesaler. Do not use soap water, which may cause cracking of flare nuts (soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold), and/or lead to corrosion of flared joints (soap water may contain ammonia which causes a corrosive effect between the brass flare nut and the copper flare).

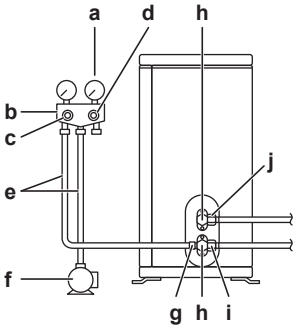
1 Charge the system with nitrogen gas up to a gauge pressure of at least 200 kPa (2 bar). It is recommended to pressurize to 3000 kPa (30 bar) in order to detect small leaks.

2 Check for leaks by applying the bubble test solution to all connections.

3 Discharge all nitrogen gas.

7.6.4 To perform vacuum drying

Connect the vacuum pump and manifold as follows:



a Pressure meter
b Gauge manifold
c Low-pressure valve (Lo)
d High-pressure valve (Hi)
e Charging hoses
f Vacuum pump
g Service port
h Valve lids
i Gas stop valve
j Liquid stop valve

1 Vacuum the system until the pressure on the manifold indicates −0.1 MPa (−1 bar).

2 Leave as is for 4-5 minutes and check the pressure:

If the pressure…	Then…
Does not change	There is no moisture in the system. This procedure is finished.
Increases	There is moisture in the system. Go to the next step.

3 Vacuum the system for at least 2 hours to a manifold pressure of −0.1 MPa (−1 bar).

4 After turning the pump OFF, check the pressure for at least 1 hour.

5 If you do NOT reach the target vacuum or CANNOT maintain the vacuum for 1 hour, do the following:

- Check for leaks again.
- Perform vacuum drying again.

NOTICE

Make sure to open the stop valves after installing the refrigerant piping and performing vacuum drying. Running the system with the stop valves closed may break the compressor.

INFORMATION

After opening the stop valve, it is possible that the pressure in the refrigerant piping does NOT increase. This might be caused by e.g. the closed state of the expansion valve in the outdoor unit circuit, but does NOT present any problem for correct operation of the unit.

7.7 Charging refrigerant

7.7.1 About charging refrigerant

The outdoor unit is factory charged with refrigerant, but in some cases the following might be necessary:

What	When
Charging additional refrigerant	When the total liquid piping length is more than specified (see later).
Completely recharging refrigerant	**Example:** ▪ When relocating the system. ▪ After a leak.

Charging additional refrigerant

Before charging additional refrigerant, make sure the outdoor unit's **external** refrigerant piping is checked (leak test, vacuum drying).

INFORMATION

Depending on the units and/or the installation conditions, it might be necessary to connect electrical wiring before you can charge refrigerant.

Typical workflow – Charging additional refrigerant typically consists of the following stages:

1 Determining if and how much you have to charge additionally.
2 If necessary, charging additional refrigerant.
3 Filling in the fluorinated greenhouse gases label, and fixing it to the inside of the outdoor unit.

Completely recharging refrigerant

Before completely recharging refrigerant, make sure the following is done:

1 All refrigerant is recovered from the system.
2 The outdoor unit's **external** refrigerant piping is checked (leak test, vacuum drying).
3 Vacuum drying on the outdoor unit's **internal** refrigerant piping is performed.

NOTICE

Before completely recharging, perform vacuum drying on the outdoor unit's **internal** refrigerant piping as well.

Typical workflow – Completely recharging refrigerant typically consists of the following stages:

1 Determining how much refrigerant to charge.
2 Charging refrigerant.
3 Filling in the fluorinated greenhouse gases label, and fixing it to the inside of the outdoor unit.

7.7.2 Precautions when charging refrigerant

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.7.3 To determine the additional refrigerant amount

WARNING

If the total refrigerant charge in the system is ≥1.84 kg (i.e. if the piping length is ≥27 m), you need to comply with the minimum floor area requirements for the indoor unit. For more information, see "6.2.3 Installation site requirements of the indoor unit" on page 18.

If the total liquid piping length is…	Then…
≤10 m	Do NOT add additional refrigerant.
>10 m	R=(total length (m) of liquid piping–10 m)×0.020 R=Additional charge (kg) (rounded in units of 0.01 kg)

INFORMATION

Piping length is the one-way length of liquid piping.

7.7.4 To determine the complete recharge amount

INFORMATION

If a complete recharge is necessary, the total refrigerant charge is: the factory refrigerant charge (see unit name plate) + the determined additional amount.

7.7.5 To charge additional refrigerant

WARNING

- Only use R32 as refrigerant. Other substances may cause explosions and accidents.
- R32 contains fluorinated greenhouse gases. Its global warming potential (GWP) value is 675. Do NOT vent these gases into the atmosphere.
- When charging refrigerant, ALWAYS use protective gloves and safety glasses.

CAUTION

To avoid compressor breakdown, do NOT charge more than the specified amount of refrigerant.

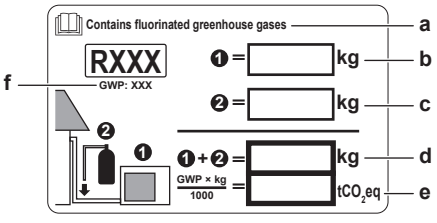
Prerequisite: Before charging refrigerant, make sure the refrigerant piping is connected and checked (leak test and vacuum drying).

1 Connect the refrigerant cylinder to the service port.
2 Charge the additional refrigerant amount.
3 Open the gas stop valve.

If pump down is needed in case of dismantling or relocating the system, see "13.2 To pump down" on page 83 for more details.

7.7.6 To fix the fluorinated greenhouse gases label

1 Fill in the label as follows:



a If a multilingual fluorinated greenhouse gases label is delivered with the unit (see accessories), peel off the applicable language and stick it on top of **a**.
b Factory refrigerant charge: see unit name plate
c Additional refrigerant amount charged
d Total refrigerant charge
e **Quantity of fluorinated greenhouse gases** of the total refrigerant charge expressed as tonnes CO_2 equivalent.
f GWP = Global warming potential

NOTICE

Applicable legislation on **fluorinated greenhouse gases** requires that the refrigerant charge of the unit is indicated both in weight and CO_2 equivalent.

Formula to calculate the quantity in CO_2 equivalent tonnes: GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

Use the GWP value mentioned on the refrigerant charge label. That GWP is based on the current legislation on fluorinated greenhouse gases. The GWP mentioned in the manual might be outdated.

2 Fix the label on the inside of the outdoor unit near the gas and liquid stop valves.

7.8 Connecting the water piping

7.8.1 About connecting the water piping

Before connecting the water piping

Make sure the outdoor and indoor unit are mounted.

Typical workflow

Connecting the water piping typically consists of the following stages:

1 Connecting the water piping to the indoor unit.
2 Connecting the recirculation piping.
3 Connecting the drain hose to the drain.
4 Filling the water circuit.
5 Filling the domestic hot water tank.
6 Insulating the water piping.

7.8.2 Precautions when connecting the water piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.8.3 To connect the water piping

NOTICE

Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit.

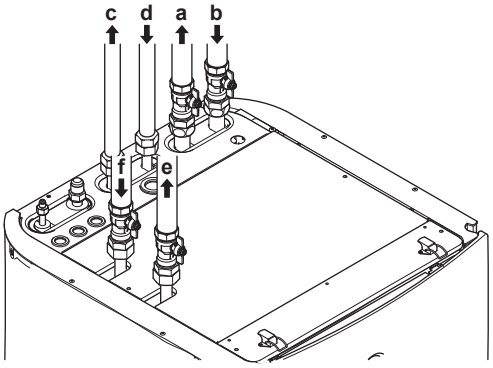
To facilitate service and maintenance, 4 shut-off valves and 1 overpressure bypass valve are provided. Mount the shut-off valves on the space heating water inlets and space heating water outlets. To ensure the minimum flow rate (and prevent overpressure), install the **overpressure bypass valve** on the space heating water outlet for the **additional zone**.

NOTICE

This unit is designed for operation on 2 temperature zones:

- underfloor heating in the **main zone**, this is the zone with the **lowest water temperature**,
- radiators in the **additional zone**, this is the zone with the **highest water temperature**.

1 Install the shut-off valves on the space heating water pipes.
2 Screw the indoor unit nuts on the shut-off valve.
3 Connect the domestic hot water in and out pipes to the indoor unit.



a Space heating additional zone water out
b Space heating additional zone water in
c Domestic hot water out
d Domestic cold water in (cold water supply)
e Space heating main zone water out
f Space heating main zone water in

NOTICE

It is recommended to install shut-off valves to domestic cold water in and domestic hot water out connections. These shut-off valves are field supplied.

NOTICE

To avoid damage to the surroundings in case of water leakage, it is recommended to close the domestic cold water inlet shut-off valves during periods of absence.

NOTICE



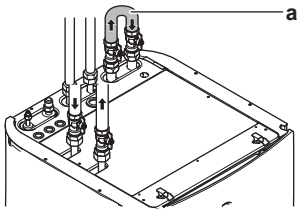
Overpressure bypass valve (delivered as accessory). We recommend to install the overpressure bypass valve in the space heating water circuit.

Mind the minimum flow rate when adjusting the overpressure bypass valve setting. See "6.4.3 To check the water volume and flow rate" on page 22 and "9.4.1 To check the minimum flow rate" on page 72.

NOTICE

If you install this unit as a single-zone application, then:

Setup. Install a bypass between the space heating water inlet and outlet of the additional zone (=direct zone). Do NOT interrupt the water flow by closing the shut-off valves.



a Bypass

Configuration. Set field setting [7-02]=0 (`Number of zones` = `Single zone`).

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.

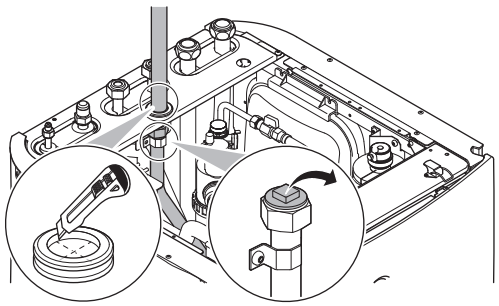
NOTICE

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

7.8.4 To connect the recirculation piping

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

1. Remove the top panel from the unit, see "7.2.3 To open the indoor unit" on page 25.
2. Cut out the rubber grommet on top of the unit, and remove the stop. The recirculation connector is placed below the hole.
3. Route the recirculation piping through the grommet and connect it to the recirculation connector.



4. Reattach the top panel.

7.8.5 To fill the water circuit

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

INFORMATION

Make sure both air purge valves (one on the magnetic filter and one on the backup heater) are open.

7.8.6 To fill the domestic hot water tank

1. Open every hot water tap in turn to purge air from the system pipe work.
2. Open the cold water supply valve.
3. Close all water taps after all air is purged.
4. Check for water leaks.
5. Manually operate the field-installed pressure relief valve to ensure a free water flow through the discharge pipe.

7.8.7 To insulate the water piping

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

7.9 Connecting the electrical wiring

7.9.1 About connecting the electrical wiring

Before connecting the electrical wiring

Make sure:

- The refrigerant piping is connected and checked
- The water piping is connected

Typical workflow

Connecting the electrical wiring typically consists of the following stages:

1 Making sure the power supply system complies with the electrical specifications of the heat pump.
2 Connecting the electrical wiring to the outdoor unit.
3 Connecting the electrical wiring to the indoor unit.
4 Connecting the main power supply.
5 Connecting the backup heater power supply.
6 Connecting the shut-off valves.
7 Connecting the electrical meters.
8 Connecting the domestic hot water pump.
9 Connecting the alarm output.
10 Connecting the space heating ON/OFF output.
11 Connecting the changeover to an external heat source.
12 Connecting the power consumption digital inputs.
13 Connecting the safety thermostat.

7.9.2 About electrical compliance

Only for ERGA04~08DAV3 (not for ERGA04~08DAV3A)

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.).

Only for the backup heater of the indoor unit

See "7.9.9 To connect the backup heater power supply" on page 41.

7.9.3 Precautions when connecting the electrical wiring

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

DANGER: RISK OF ELECTROCUTION

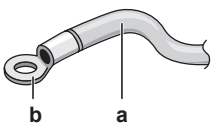
WARNING

ALWAYS use multicore cable for power supply cables.

7.9.4 Guidelines when connecting the electrical wiring

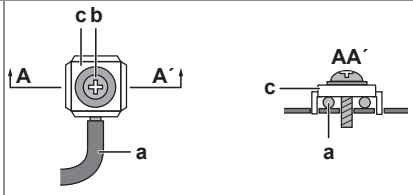
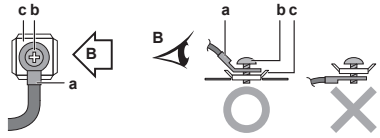
Keep the following in mind:

- If stranded conductor wires are used, install a round crimp-style terminal on the end of the wire. Place the round crimp-style terminal on the wire up to the covered part and fasten the terminal with the appropriate tool.



a Stranded conductor wire
b Round crimp-style terminal

- Use the following methods for installing wires:

Wire type	Installation method
Single-core wire	 **a** Curled single-core wire **b** Screw **c** Flat washer
Stranded conductor wire with round crimp-style terminal	 **a** Terminal **b** Screw **c** Flat washer **O** Allowed **X** NOT allowed

Tightening torques

Item	Tightening torque (N•m)
M4 (X1M)	1.2~1.5
M4 (earth)	

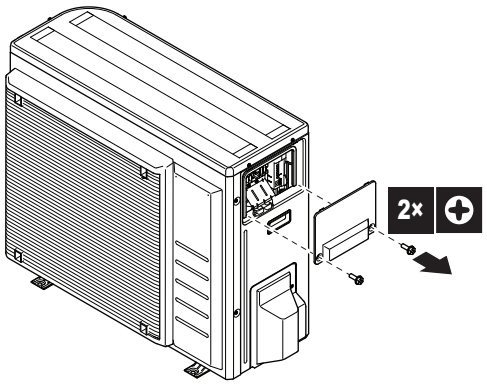
7.9.5 Specifications of standard wiring components

Component		ERGA04+06DAV3	ERGA08DAV3	ERGA04~08DAV3A
Power supply cable	MCA[(a)]	19.9 A	24.0 A	15.9 A
	Voltage	230 V		
	Phase	1~		
	Frequency	50 Hz		
	Wire sizes	Must comply with applicable legislation		
Interconnection cable		Minimum cable section of 1.5 mm² and applicable for 230 V		
Recommended field fuse		20 A	25 A	16 A
Earth leakage circuit breaker		Must comply with applicable legislation		

(a) MCA=Minimum circuit ampacity. Stated values are maximum values (see electrical data of combination with indoor units for exact values).

7.9.6 To connect the electrical wiring on the outdoor unit

1 Remove the switch box cover.

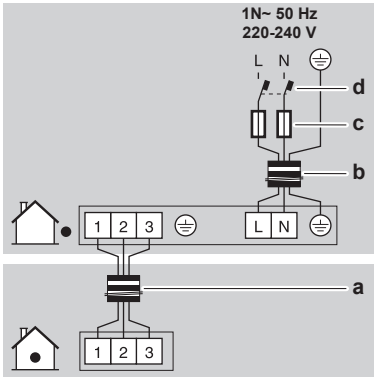


2 Strip insulation (20 mm) from the wires.

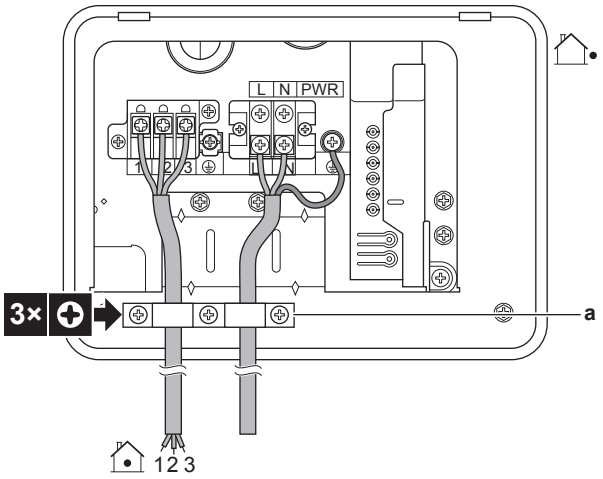


a Strip wire end to this point
b Excessive strip length may cause electrical shock or leakage.

3 Connect the interconnection cable and power supply as follows. Ensure stress relief by using the wire clamp.



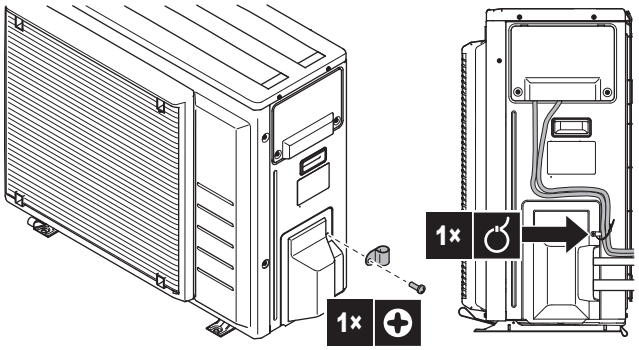
a Interconnection cable
b Power supply cable
c Fuse
d Earth leakage circuit breaker



a Wire clamp

4 Reattach the switch box cover.

5 Optional: Attach the wire clamp (accessory) to the screw of the refrigerant piping cover, and fix the cables to it with a cable tie.

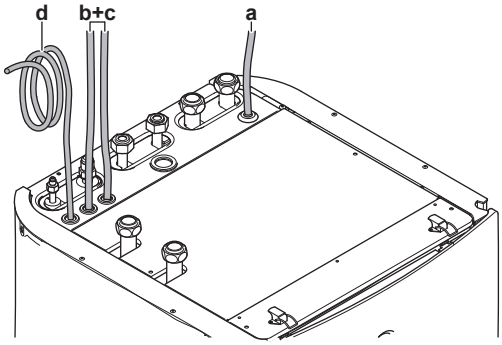


6 Connect an earth leakage circuit breaker and fuse to the power supply line.

7.9.7 To connect the electrical wiring on the indoor unit

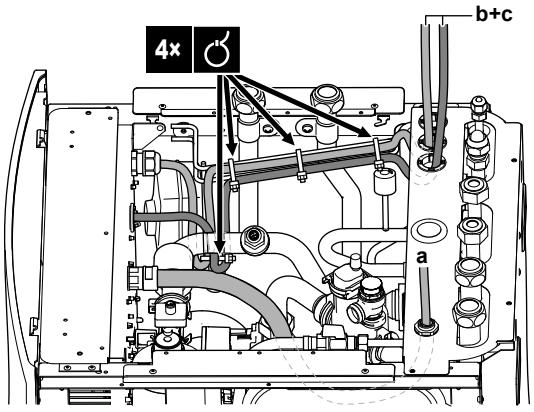
1 To open the indoor unit, see "7.2.3 To open the indoor unit" on page 25 and "7.2.4 To open the switch box cover of the indoor unit" on page 26.

2 The wiring enters the unit from the top:



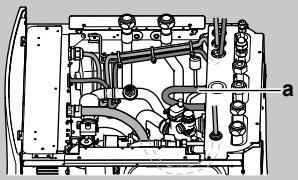
a, b, c Field wiring (see table below)
d Factory-mounted cable for power supply of backup heater

3 Routing of the wiring inside the unit should be as follows. Fix the cable to the cable rail using cable ties:



WARNING

Make sure that the electrical wiring does NOT touch the refrigerant gas pipe, which can be very hot.



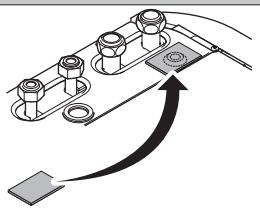
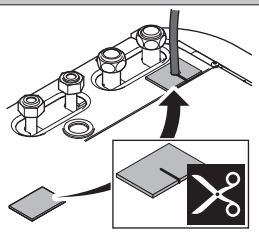
a Refrigerant gas pipe

Routing	Possible cables (depending on unit type and installed options)
a Low voltage	▪ Preferential power supply contact ▪ User interface used as room thermostat (option) ▪ Power consumption digital inputs (field supply) ▪ Outdoor ambient temperature sensor (option) ▪ Indoor ambient temperature sensor (option) ▪ Electrical meters (field supply) ▪ Safety thermostat (field supply)
b High voltage power supply	▪ Interconnection cable ▪ Normal kWh rate power supply ▪ Preferential kWh rate power supply
c High voltage control signal	▪ Heat pump convector (option) ▪ Room thermostat (option) ▪ Shut-off valve (field supply) ▪ Domestic hot water pump (field supply) ▪ Alarm output ▪ Changeover to external heat source control ▪ Space heating operation control
d High voltage power supply (factory-mounted cable)	▪ Power supply for backup heater

CAUTION

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

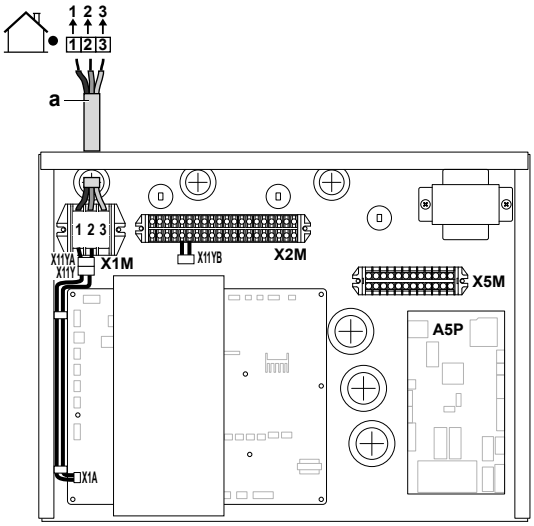
4 Seal the low voltage wiring intake using the sealing tape (delivered as accessory).

Without low voltage cables	With low voltage cables
	

7.9.8 To connect the main power supply

1 Connect the main power supply.

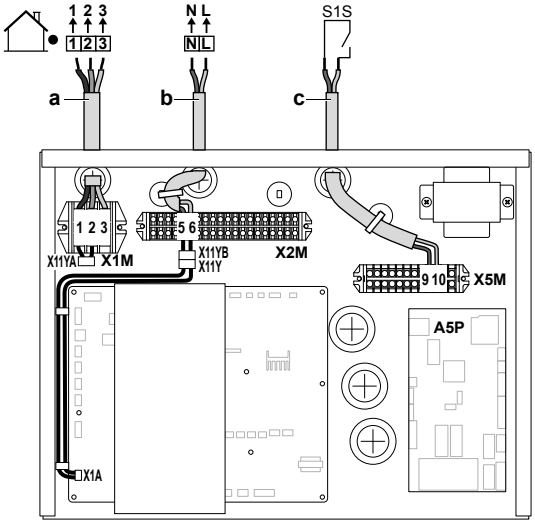
In case of normal kWh rate power supply



Legend: see illustration below.

In case of preferential kWh rate power supply

Connect X11Y to X11YB.



a Interconnection cable (=main power supply)
b Normal kWh rate power supply
c Preferential power supply contact

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

INFORMATION

In case of preferential kWh rate power supply, connect X11Y to X11YB. The necessity of separate normal kWh rate power supply to indoor unit (b) X2M/5+6 depends on the type of preferential kWh rate power supply.

Separate connection to the indoor unit is required:

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

INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/9+10) as the safety thermostat for the additional zone. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat for the additional zone.

7.9.9 To connect the backup heater power supply

WARNING

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

CAUTION

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

The backup heater capacity can vary, depending on the indoor unit model. 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}
*6V	2 kW	1N~ 230 V(c)	9 A	—
	4 kW	1N~ 230 V(c)	17 A(a)(b)	0.22 Ω
	6 kW	1N~ 230 V(c)	26 A(a)(b)	0.22 Ω
	2 kW	3~ 230 V(d)	5 A	—
	4 kW	3~ 230 V(d)	10 A	—
	6 kW	3~ 230 V(d)	15 A	—
*9W	3 kW	3N~ 400 V	4 A	—
	6 kW	3N~ 400 V	9 A	—
	9 kW	3N~ 400 V	13 A	—

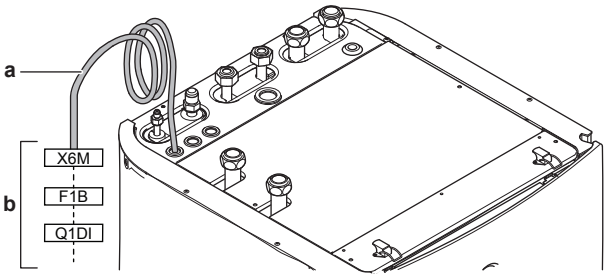
(a) Equipment complying with EN/IEC 61000-3-12 (European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase.).

(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}.

(c) (6V)

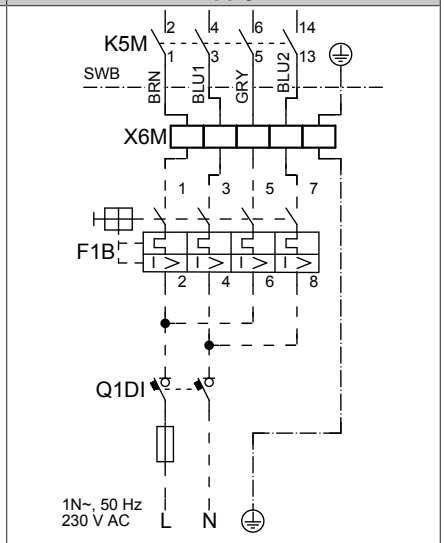
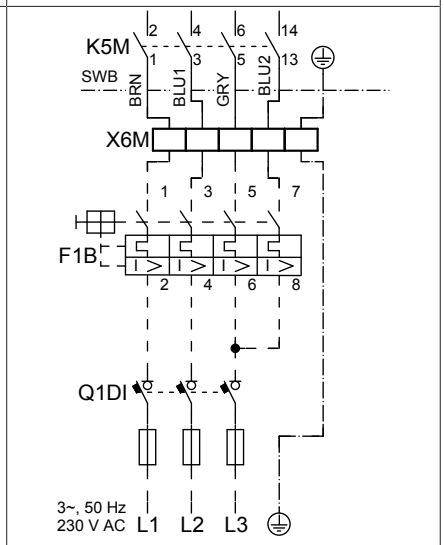
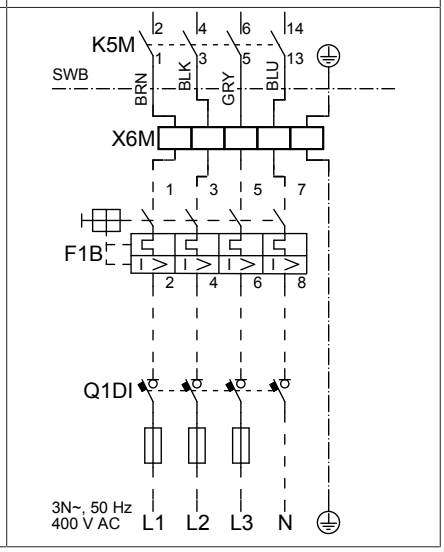
(d) (6T1)

Connect the backup heater power supply as follows:



a Factory-mounted cable connected to the backup heater contactor inside the switch box (K5M for *6V and *9W models)

b Field wiring (see table below)

Model (power supply)	Connections to backup heater power supply
*6V (6V: 1N~ 230 V)	
*6V (6T1: 3~ 230 V)	
*9W (3N~ 400 V)	

F1B Overcurrent fuse (field supply). Recommended fuse for *6V and *9W models: 4-pole; 20 A; curve 400 V; tripping class C.

K1M Contactor (in the lower switch box)

K5M Safety contactor (in the lower switch box)

Q1DI Earth leakage circuit breaker (field supply)

SWB Switch box

X6M Terminal (field supply)

NOTICE

Do NOT cut or remove the backup heater power supply cable.

7.9.10 To connect the shut-off valve

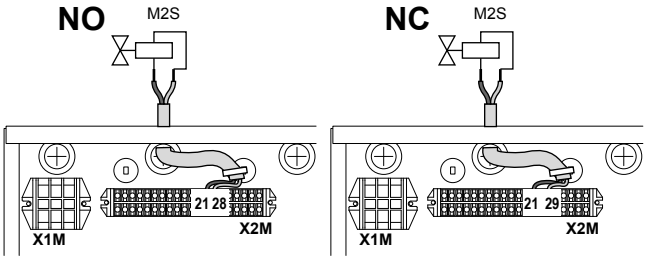
INFORMATION

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. For more information, see the installer reference guide.

1 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.



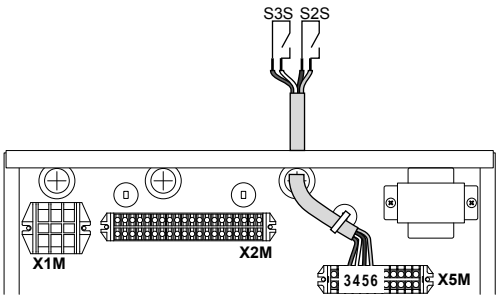
2 Fix the cable with cable ties to the cable tie mountings.

7.9.11 To connect the electricity meters

INFORMATION

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

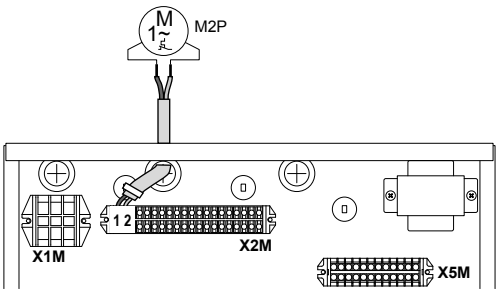
1 Connect the electrical meters cable to the appropriate terminals as shown in the illustration below.



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

7.9.12 To connect the domestic hot water pump

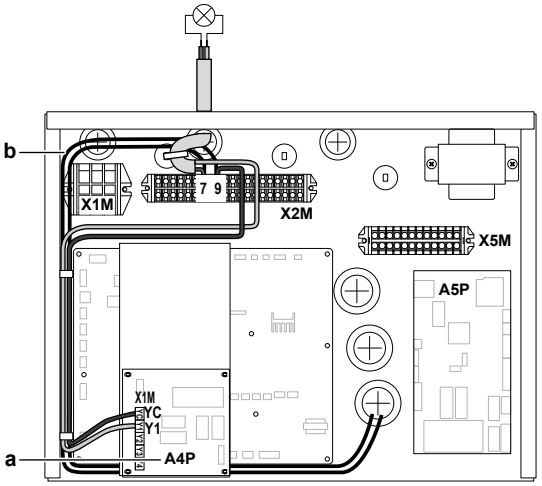
1 Connect the domestic hot water pump cable to the appropriate terminals as shown in the illustration below.



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

7.9.13 To connect the alarm output

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

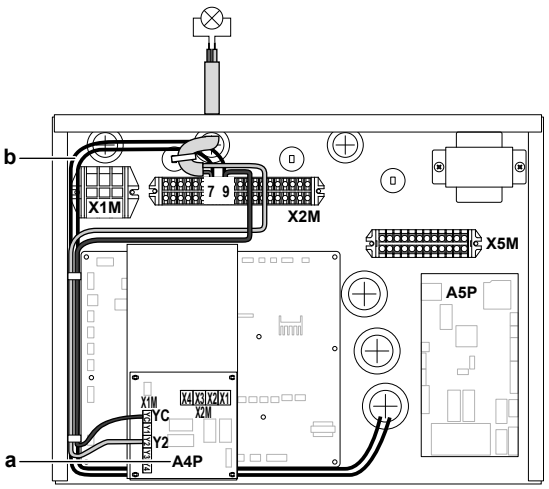


a Installation of EKRP1HB is required.
b Prewiring between X2M/7+9 and Q1L (= thermal protector backup heater). Do NOT change.

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

7.9.14 To connect the space heating ON/OFF output

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

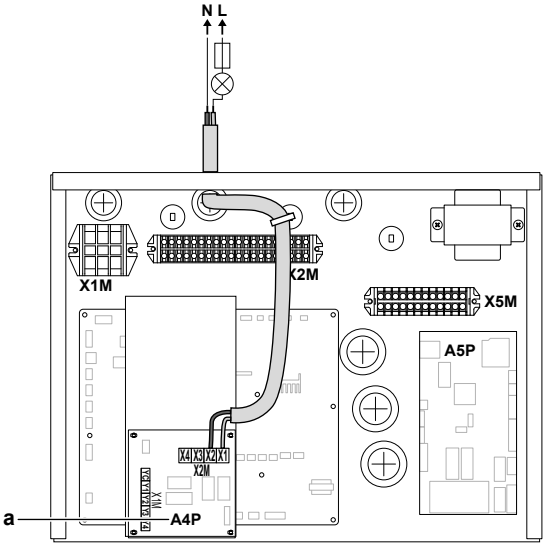


a Installation of EKRP1HB is required.
b Prewiring between X2M/7+9 and Q1L (= thermal protector backup heater). Do NOT change.

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

7.9.15 To connect the changeover to external heat source

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

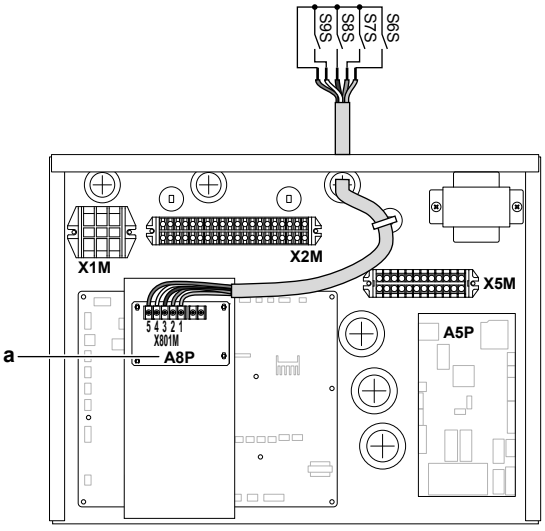


a Installation of EKRP1HB is required.

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

7.9.16 To connect the power consumption digital inputs

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



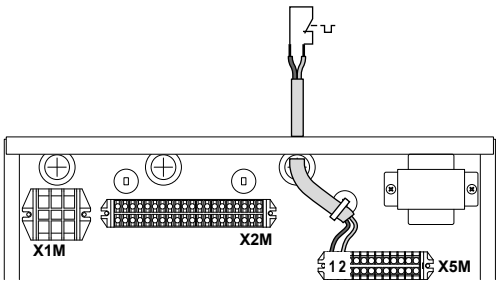
a Installation of EKRP1AHTA is required.

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

7.9.17 To connect the safety thermostat (normally closed contact)

Main zone

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



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

INFORMATION

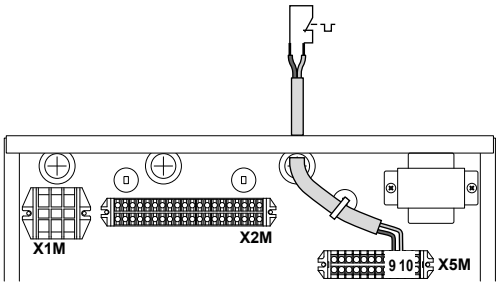
Installation of a safety thermostat (field supply) is required for the main zone, otherwise the unit will NOT operate.

NOTICE

A safety thermostat MUST be installed on the main zone to avoid too high water temperatures in this zone. The safety thermostat is typically a thermostatically controlled valve with a normally closed contact. When the water temperature in the main zone is too high, the contact will open and the user interface will show a 8H-02 error. ONLY the main pump will stop.

Additional zone

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



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

NOTICE

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

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

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

INFORMATION

After it is installed, do NOT forget to configure the safety thermostat for the additional zone. Without configuration, the indoor unit will ignore the safety thermostat contact.

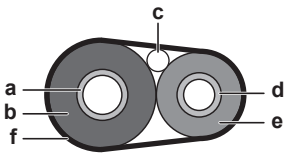
INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/9+10) as the safety thermostat for the additional zone. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat for the additional zone.

7.10 Finishing the outdoor unit installation

7.10.1 To finish the outdoor unit installation

1 Insulate and fix the refrigerant piping and interconnection cable as follows:



a Gas pipe
b Gas pipe insulation
c Interconnection cable
d Liquid pipe
e Liquid pipe insulation
f Finishing tape

2 Install the service cover.

7.11 Finishing the indoor unit installation

7.11.1 To close the indoor unit

1 Close the cover of the switch box.
2 Put the switch box back into place.
3 Reinstall the top panel.
4 Reinstall the side panels.
5 Reinstall the front panel.
6 Reconnect the cables to the user interface panel.
7 Reinstall the user interface panel.

NOTICE

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

8 Configuration

8.1 Overview: Configuration

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

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 indoor 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 "8.1.1 To access the most used commands" on page 44.
- **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: [9.1.5.2]
Accessing settings via the code in the **overview field settings**.	**Code** For example: [C-07]

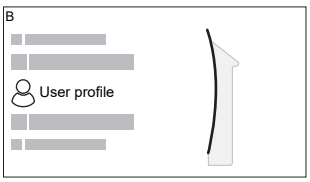
See also:

- "To access the installer settings" on page 45
- "8.6 Menu structure: Overview installer settings" on page 71

8.1.1 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.	

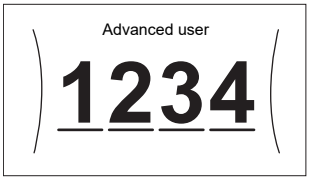
Installer pin code

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



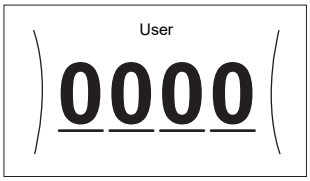
Advanced user pin code

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" on page 44.	—
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. 0 / **1** / 2 / 3 00 01 02 03 04 / 05 06 07 08 09 / 0A 0B 0C 0D 0E	
4	Turn the left dial to select the second part of the setting **1** 00 01 **15** 02 03 04 / 05 06 07 08 09 / 0A 0B 0C 0D 0E	
5	Turn the right dial to modify the value from 15 to 20. **1** 00 01 **20** 02 03 04 / 05 06 07 08 09 / 0A 0B 0C 0D 0E	
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.

8.2 Configuration wizard

After first power ON of the system, the user interface will guide you using the configuration wizard. This way you can set the most important initial settings. This way the unit will be able to run properly. Afterwards, more detailed settings can be done via the menu structure if required.

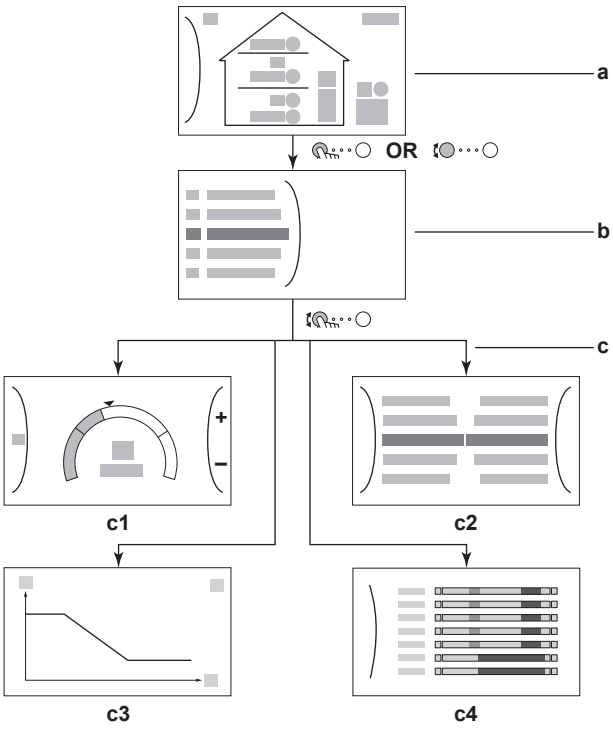
You can find a short overview of the settings in the configuration here. All the settings can also be adjusted in the settings menu (use the breadcrumbs).

For the setting…		Refer to…
`Language` [7.1]		
`Time/date` [7.2]		
	`Hours`	—
	`Minutes`	
	`Year`	
	`Month`	
	`Day`	
`System`		
	`Indoor unit type` (read only)	"8.4.9 Installer settings" on page 63
	`Backup heater type` [9.3.1]	
	`Domestic hot water` [9.2.1]	
	`Emergency` [9.5]	
	`Number of zones` [4.4]	"8.4.5 Space heating" on page 56
`Backup heater`		
	`Voltage` [9.3.2]	"Backup heater" on page 63
	`Configuration` [9.3.3]	
	`Capacity step 1` [9.3.4]	
	`Additional capacity step 2` [9.3.5] (if applicable)	
`Main zone`		
	`Emitter type` [2.7]	"8.4.3 Main zone" on page 51
	`Control` [2.9]	
	`Setpoint mode` [2.4]	
	`Heating WD curve` [2.5] (if applicable)	
	`Schedule` [2.1]	
`Additional zone` (only if [4.4]=1)		
	`Emitter type` [3.7]	"8.4.4 Additional zone" on page 55
	`Control` (read only) [3.9]	
	`Setpoint mode` [3.4]	
	`Heating WD curve` [3.5] (if applicable)	
	`Schedule` [3.1]	
`Tank`		
	`Heat up mode` [5.6]	"8.4.6 Tank" on page 58
	`Comfort setpoint` [5.2]	
	`Eco setpoint` [5.3]	
	`Reheat setpoint` [5.4]	

8.3 Possible screens

8.3.1 Possible screens: Overview

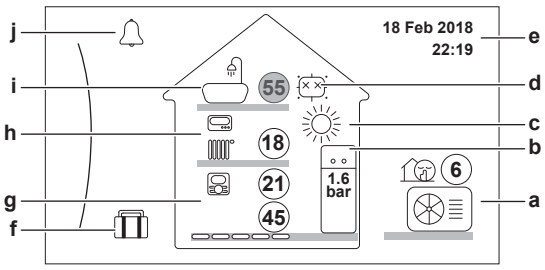
The most common screens are as follows:



a Home screen
b Main menu screen
c Lower level screens:
c1: Setpoint screen
c2: Detailed screen with values
c3: Screen with weather-dependent curve
c4: Screen with schedule

8.3.2 Home screen

Press the ⌂ button to go back to the home screen. You see an overview of the unit configuration and the room and setpoint temperatures. Only symbols applicable for your configuration are visible on the home screen.



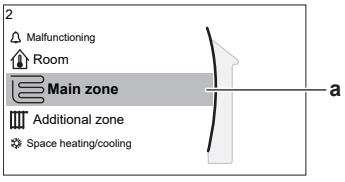
Possible actions on this screen	
	Go through the list of the main menu.
	Go to the main menu screen.
?	Enable/disable breadcrumbs.

Item		Description
21 21		The temperatures are shown in circles. If the circle is grey, the corresponding operation (example: space heating) is currently not active.
Outdoor unit a2 a3 a1	a1	: Outdoor unit
	a2	: Quiet mode active
	a3	Measured ambient temperature

Item		Description
Indoor unit / domestic hot water tank b2 b1	b1	Indoor unit: ▪ : Floor-standing indoor unit with integrated tank
	b2	Water pressure
Space operation mode	c	: Heating
Disinfection / Powerful	d	▪ : Disinfection mode active ▪ : Powerful operation active
Date / time	e	Current date and time
Holiday	f	: Holiday mode active
Main zone g3 g4 g1 g2	g1	Heat emitter type: ▪ : Underfloor heating ▪ : Fancoil unit ▪ : Radiator
	g2	Leaving water temperature setpoint
	g3	Room thermostat type: ▪ : Daikin user interface used as room thermostat ▪ : External control ▪ Hidden: Leaving water temperature control
	g4	Measured room temperature
Additional zone h3 h1 h2	h1	Heat emitter type: ▪ : Underfloor heating ▪ : Fancoil unit ▪ : Radiator
	h2	Leaving water temperature setpoint
	h3	Room thermostat type: ▪ : External control ▪ Hidden: Leaving water temperature control
Domestic hot water i1 i2	i1	: Domestic hot water
	i2	Measured tank temperature
Malfunction	j	or : A malfunction occurred See "12.4.1 To display the help text in case of a malfunction" on page 81 for more information.

8.3.3 Main menu screen

Starting from the home screen, press ( ) or turn ( ) the left dial to open the main menu screen. From the main menu, you can access the different setpoint screens and submenus.



a Selected submenu

Possible actions on this screen	
	Go through the list.
	Enter the submenu.
?	Enable/disable breadcrumbs.

Submenu		Description
[0]	or Malfunctioning	**Restriction:** Only displayed if a malfunction occurs. See "12.4.1 To display the help text in case of a malfunction" on page 81 for more information.
[1]	Room	**Restriction:** Only displayed if a room thermostat is connected to the indoor unit. Set the room temperature.
[2]	Main zone	Shows the applicable symbol for your main zone emitter type. Set the leaving water temperature for the main zone.
[3]	Additional zone	**Restriction:** Only displayed if there are two leaving water temperature zones. Shows the applicable symbol for your additional zone emitter type. Set the leaving water temperature for the additional zone (if present).
[4]	Space heating/ cooling	Shows the applicable symbol for your unit. You cannot change the operation mode on heating only models.
[5]	Tank	**Restriction:** Only displayed if a domestic hot water tank is present. Set the domestic hot water tank temperature.
[7]	User settings	Gives access to user settings such as holiday mode and quiet mode.
[8]	Information	Displays data and information about the indoor unit.
[9]	Installer settings	**Restriction:** Only for the installer. Gives access to advanced settings.
[A]	Commissioning	**Restriction:** Only for the installer. Perform tests and maintenance.
[B]	User profile	Change the active user profile.
[C]	Operation	Turn heating functionality and domestic hot water preparation on or off.

8.3.4 Menu screen



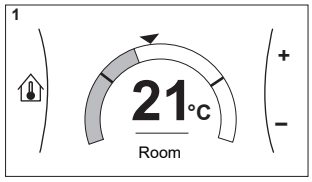
Possible actions on this screen	
	Go through the list.
	Enter the submenu/setting.

8.3.5 Setpoint screen

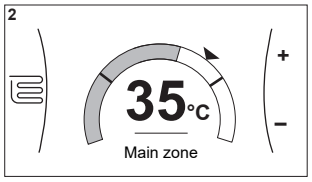
The setpoint screen is displayed for screens describing system components that need a setpoint value.

Examples

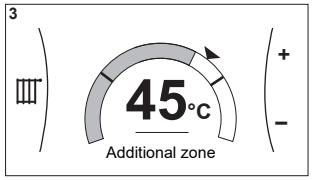
[1] Room temperature screen



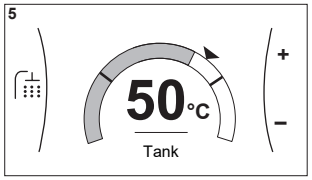
[2] Main zone screen



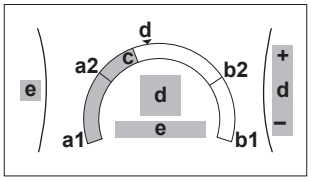
[3] Additional zone screen



[5] Tank temperature screen



Explanation

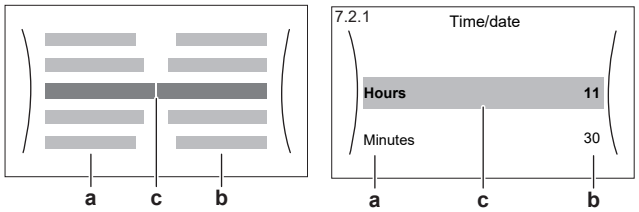


Possible actions on this screen	
	Go through the list of the submenu.
	Go to the submenu.
	Adjust and automatically apply the desired temperature.

Item		Description
Minimum temperature limit	**a1**	Fixed by the unit
	a2	Restricted by the installer
Maximum temperature limit	**b1**	Fixed by the unit
	b2	Restricted by the installer
Current temperature	**c**	Measured by the unit
Desired temperature	**d**	Turn the right dial to increase/decrease.
Submenu	**e**	Turn or press the left dial to go to the submenu.

8.3.6 Detailed screen with values

Example:



a Settings
b Values
c Selected setting and value

Possible actions on this screen	
	Go through the list of settings.
	Change the value.
	Go to the next setting.
	Confirm changes and proceed.

8.3.7 Detailed screen with weather-dependent curve

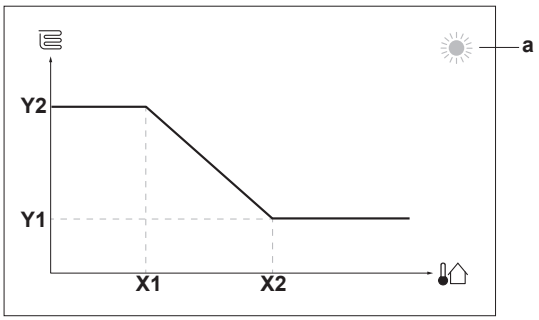
When weather-dependent (WD) operation is active the desired leaving water or tank temperature is determined automatically depending on the averaged outdoor temperature. When the outdoor temperature is lower the leaving water or tank temperature will need to be higher as the water pipes will be colder and vice versa.

2-points WD curve

The weather-dependent curve is defined by two setpoints:

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

Weather-dependent curve:



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

Item	Description
a	Possible weather dependent zones: ▪ : Main zone or additional zone heating ▪ : Domestic hot water
X1, X2	Outdoor ambient temperature
Y1, Y2	Desired tank temperature or leaving water temperature. The symbol shown here corresponds to the heat emitter for that zone: ▪ : Underfloor heating ▪ : Fan coil unit ▪ : Radiator ▪ : Domestic hot water tank

8.3.8 Schedule screen: Example

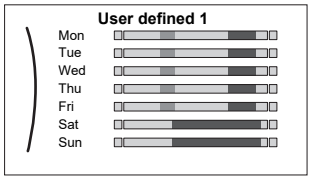
This example shows how to set a room temperature schedule in heating mode for the main zone.

INFORMATION

The procedures to program other schedules are similar.

To program the schedule: overview

Example: You want to program the following schedule:



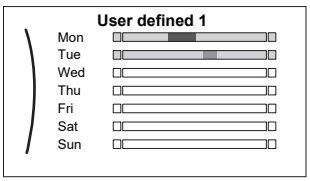
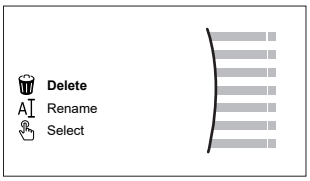
Prerequisite: The room temperature schedule is only available if room thermostat control is active. If leaving water temperature control is active, you can program the main zone schedule instead.

1 Go to the schedule.
2 (optional) Clear the content of the whole week schedule or the content of a selected day schedule.
3 Program the schedule for `Monday`.
4 Copy the schedule to the other weekdays.
5 Program the schedule for `Saturday` and copy it to `Sunday`.
6 Give the schedule a name.

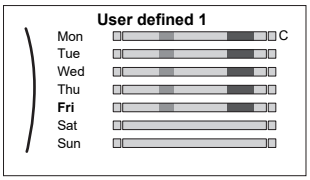
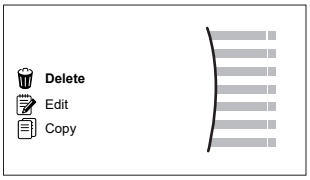
To go to the schedule:

1	Go to [1.1]: `Room` > `Schedule`.	
2	Set scheduling to `Yes`.	
3	Go to [1.2]: `Room` > `Heating schedule`.	

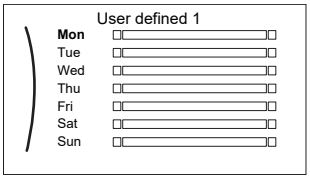
To clear the content of the week schedule:

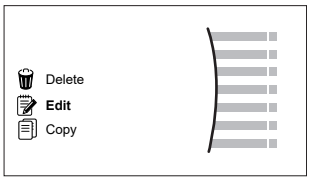
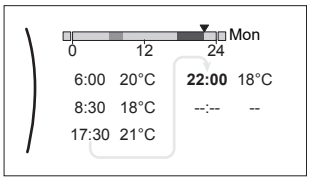
1	Select the name of the current schedule. 	
2	Select `Delete`. 	
3	Select `OK` to confirm.	

To clear the content of a day schedule:

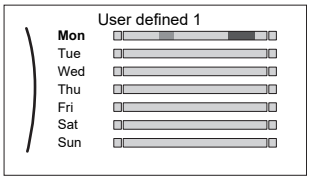
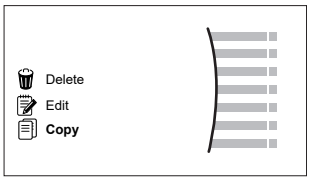
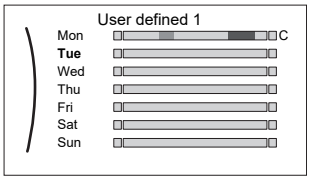
1	Select the day of which you want to clear the content. For example `Friday` 	
2	Select `Delete`. 	
3	Select `OK` to confirm.	

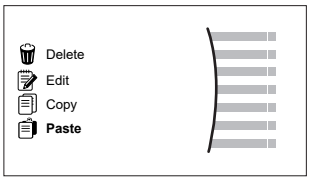
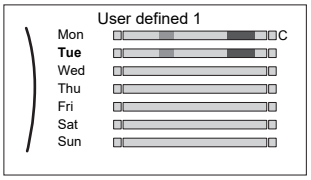
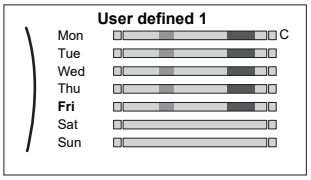
To program the schedule for Monday:

1	Select `Monday`. 	

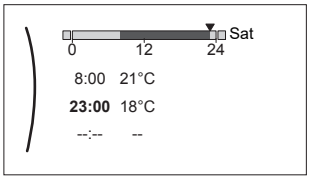
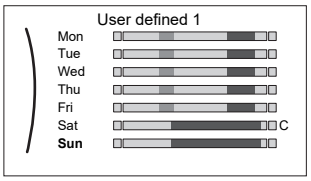
2	Select `Edit`. 	
3	Use the left dial to select an entry and edit the entry with the right dial. You can program up to 6 actions each day. On the bar, a high temperature has a darker colour than a low temperature.  **Note:** To clear an action, set its time as the time of the previous action.	
4	Confirm the changes. **Result:** The schedule for Monday is defined. The value of the last action is valid until the next programmed action. In this example, Monday is the first day you programmed. Thus, the last programmed action is valid up to the first action of next Monday.	

To copy the schedule to the other weekdays:

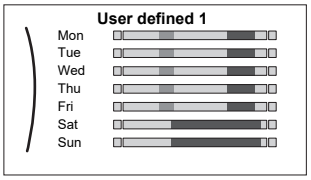
1	Select `Monday`. 	
2	Select `Copy`.  **Result:** Next to the copied day, "C" is displayed.	
3	Select `Tuesday`. 	

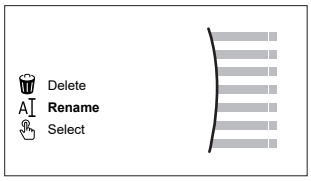
4	Select `Paste`.  **Result:** 	
5	Repeat this action for all other weekdays. 	—

To program the schedule for `Saturday` and copy it to `Sunday`:

1	Select `Saturday`.	
2	Select `Edit`.	
3	Use the left dial to select an entry and edit the entry with the right dial. 	
4	Confirm the changes.	
5	Select `Saturday`.	
6	Select `Copy`.	
7	Select `Sunday`.	
8	Select `Paste`. **Result:** 	

To rename the schedule:

1	Select the name of the current schedule. 	

2	Select `Rename`. 	
3	(optional) To delete the current schedule name, browse through the character list until ← is displayed, then press to remove the previous character. Repeat for each character of the schedule name.	
4	To name the current schedule, browse through the character list and confirm the selected character. The schedule name can contain up to 15 characters.	
5	Confirm the new name.	

INFORMATION

Not all schedules can be renamed.

8.4 Settings menu

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

8.4.1 Malfunction

In case of a malfunction, or will appear on the home screen. If you open the menu screen, the `Malfunctioning` menu will now be visible. Open the menu to see the error code. Press **?** to get more information about the error.

8.4.2 Room

Setpoint screen

You can control the room temperature of the main zone with the setpoint screen, also see "8.3.5 Setpoint screen" on page 47.

Schedule

In this menu item you can indicate if the room temperature is controlled with a schedule or not.

#	Code	Description
[1.1]	N/A	`Schedule` ▪ `0 No`: Room temperature is controlled by the user. ▪ `1 Yes`: Room temperature is controlled with a schedule and can be modified by the user.

Heating schedule

This is available for all models.

You can set the room temperature heating schedule using the schedule screen. For more information about this screen, see "8.3.8 Schedule screen: Example" on page 48.

Antifrost

Room frost protection [1.4] prevents the room from getting too cold. This setting behaves differently depending on the set unit control method [2.9]. Perform actions according to the table below.

Main zone unit control method [2.9]	Description
Leaving water temperature control ([C-07]=0)	Room frost protection is NOT guaranteed.
External room thermostat control ([C-07]=1)	Allow for the external room thermostat to take care of room frost protection: ▪ Turn ON [C.2]: `Space heating/cooling`
Room thermostat control ([C-07]=2)	Allow for the user interface used as room thermostat to take care of room frost protection: ▪ Choose [1.4.1]=1: `Room > Antifrost > Activation > Yes` ▪ Set the room antifrost setpoint ([1.4.2]): `Room > Antifrost > Room setpoint`

INFORMATION

If a U4 error occurs, room frost protection is NOT guaranteed.

For more detailed information about room frost protection in relation to the applicable unit control method, see the sections below:

Leaving water temperature control ([C-07]=0)

Under leaving water temperature control, room frost protection is NOT guaranteed. However, if room antifrost [1.4] is activated, limited frost protection by the unit is possible:

If...	Then...
`Space heating/cooling` is OFF and the outdoor ambient temperature drops below 4°C	The unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered.
`Space heating/cooling` is ON and the operation mode is "heating"	The unit will supply leaving water to the heat emitters to heat up the room according to normal logic.

External room thermostat control ([C-07]=1)

Under external room thermostat control, room frost protection is guaranteed by the external room thermostat, provided that `Space heating/cooling` [C.2] is turned ON and the emergency setting [9.5] is set to automatic.

In case of one leaving water temperature zone:

If...	Then...
`Space heating/cooling` is OFF and the outdoor ambient temperature drops below 4°C	The unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered.
`Space heating/cooling` is ON, the external room thermostat is "Thermo OFF" and the outdoor temperature drops below 4°C	The unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered.
`Space heating/cooling` is ON and the external room thermostat is "Thermo ON"	Room frost protection is guaranteed by the normal logic.

In case of two leaving water temperature zones:

If...	Then...
`Space heating/cooling` is OFF and the outdoor ambient temperature drops below 4°C	The unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered.

If...	Then...
Space heating/cooling is ON, the external room thermostat is "Thermo OFF", the operation mode is "heating" and the outdoor temperature drops below 4°C	The unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered.

Room thermostat control ([C-07]=2)

During room thermostat control, room frost protection is guaranteed if it is enabled. When room frost protection [2-06] is activated and the room temperature drops below the room antifrost temperature [2-05], the unit will supply leaving water to the heat emitters to heat up the room again.

#	Code	Description
[1.4.1]	[2-06]	Activation: ▪ 0 No: Antifrost functionality is OFF. ▪ 1 Yes: Antifrost functionality is on.
[1.4.2]	[2-05]	Room setpoint 4°C~16°C

INFORMATION

When the user interface used as room thermostat is disconnected (due to miswiring, damage of the cable), then room frost protection is NOT guaranteed.

NOTICE

If Emergency is set to Manual ([9.5]=0), and the unit is triggered to start emergency operation, the unit will stop and need to be recovered manually via the user interface. To recover operation manually, go to the Malfunctioning main menu screen, where the user interface will then ask you to confirm emergency operation before starting.

Room frost protection is active even if the user does NOT confirm emergency operation.

Setpoint range

ONLY applicable in room thermostat control. To save energy by preventing overheating the room, you can limit the range of the room temperature for heating.

NOTICE

When adjusting the room temperature ranges, all desired room temperatures are also adjusted to guarantee they are between the limits.

#	Code	Description
[1.5.1]	[3-07]	Heating minimum
[1.5.2]	[3-06]	Heating maximum

Room sensor offset

ONLY applicable in case of room thermostat control. You can calibrate the (external) room temperature sensor. It is possible to give an offset to the room thermistor value measured by the user interface used as room thermostat or by the external room sensor. The settings can be used to compensate for situations where the user interface used as room thermostat or the external room sensor CANNOT be installed on the ideal installation location (see "5.6 Setting up an external temperature sensor" on page 16).

#	Code	Description
[1.6]	[2-0A]	Room sensor offset (user interface used as room thermostat): Offset on the actual room temperature measured on the user interface used as room thermostat. ▪ –5°C~5°C, step 0.5°C
[1.7]	[2-09]	Room sensor offset (external room sensor option): ONLY applicable if the external room sensor option is installed and configured. ▪ –5°C~5°C, step 0.5°C

8.4.3 Main zone

Setpoint screen

You can set the leaving water temperature for the main zone using the setpoint screen. For more information about how to do this, see "8.3.5 Setpoint screen" on page 47.

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	Schedule ▪ 0: No ▪ 1: Yes

Heating schedule

You can set the main zone heating temperature schedule using the schedule screen. For more information about this screen, see "8.3.8 Schedule screen: Example" on page 48.

Setpoint mode

In Fixed mode, the desired leaving water temperature does NOT depend on the outdoor ambient temperature.

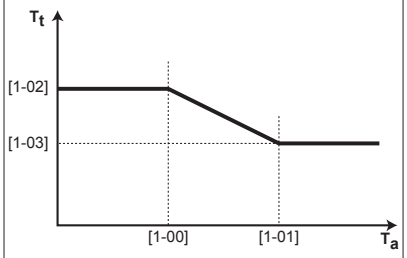
In Weather dependent mode, the desired leaving water temperature depends on the outdoor ambient temperature.

#	Code	Description
[2.4]	N/A	Setpoint mode ▪ 0: Fixed ▪ 2: 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 has the possibility to shift the water temperature up or down by a maximum of 10°C.

Heating WD curve

Set weather-dependent heating for the main zone (if [2.4] = 1 or 2):

#	Code	Description
[2.5]	[1-00] [1-01] [1-02] [1-03]	Set weather-dependent heating:  ▪ T_t: Target leaving water temperature (main zone) ▪ T_a: Outdoor temperature ▪ [1-00]: Low outdoor ambient temperature. –40°C~+5°C ▪ [1-01]: High outdoor ambient temperature. 10°C~25°C ▪ [1-02]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. [9-01]°C~[9-00]°C **Note:** This value should be higher than [1-03] as for low outdoor temperatures warmer water is required. ▪ [1-03]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. [9-01]°C~min(45, [9-00])°C **Note:** This value should be lower than [1-02] as for high outdoor temperatures less warm water is required.

Emitter type

Depending on the system water volume and the heater emitter type of the main zone, the heat up of the main zone can take longer. This setting can compensate for a slow or a quick heating system during the heat up cycle. The target delta T for the main zone will depend on this setting. Target delta T control is only possible in case only 1 zone is active. Pump control will be different when both zones are active.

In room thermostat control, this setting will influence the maximum modulation of the desired leaving water temperature.

Therefore it is important to set this correctly and in accordance with your system layout.

#	Code	Description
[2.7]	[2-0C]	Emitter type ▪ 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:

Emitter type Main zone	Space heating setpoint range [9-01]~[9-00]	Target delta T in heating [1-0B]
0: Underfloor heating	Maximum 55°C	Variable (see [2.B])
1: Fancoil unit	Maximum 55°C	Variable (see [2.B])
2: Radiator	Maximum 65°C	Fixed 10°C

NOTICE

The maximum setpoint in space heating depends on the emitter type as can be seen in above table. If there are 2 water temperature zones, then the maximum setpoint is the maximum of the 2 zones.

CAUTION

If there are 2 zones, it is important that 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. Not configuring the system in this way could cause damage to the heat emitters.

CAUTION

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.

INFORMATION

Depending on the target delta T, the average emitter temperature will vary. To counteract the effect on the average emitter temperature due to a higher delta T target, the leaving water setpoint (fixed or weather dependent) can be adjusted.

Setpoint range

You can limit the range of the leaving water temperature for the main leaving water temperature zone. The purpose of this setting is to prevent a wrong (i.e. too hot or too cold) leaving water temperature. Therefore, the available desired heating temperature range can be configured.

NOTICE

In case of a floor heating application it is important to limit the maximum leaving water temperature at heating operation according to the specifications of the floor heating installation.

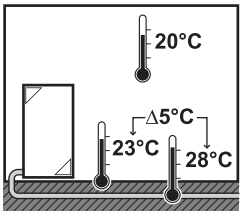
INFORMATION

Only for EHVZ: If the indoor unit is connected to a high temperature emitter system, and simultaneous demand exists on both emitter zones, and if the high emitter system leaving water setpoint is chosen bigger than 60°C in the complete operation range, there can be an increased power consumption.

NOTICE

- When adjusting the leaving water temperature ranges, all desired leaving water temperatures are also adjusted to guarantee they are between the limits.
- Always balance between the desired leaving water temperature with the desired room temperature and/or the capacity (according to the design and selection of the heat emitters). The desired leaving water temperature is the result of several settings (preset values, shift values, weather dependent curves, modulation). As a result, too high or too low leaving water temperatures could occur which lead to overtemperatures or capacity shortage. By limiting the leaving water temperature range to adequate values (depending on the heat emitter), such situations can be avoided.

Example: Set the minimum leaving water temperature to 28°C to avoid NOT to be able to heat up the room: leaving water temperatures MUST be sufficiently higher than the room temperatures (in heating).



#	Code	Description
Leaving water temperature range for the main leaving water temperature zone (= the leaving water temperature zone with the lowest leaving water temperature in heating operation)		
[2.8.1]	[9-01]	`Heating minimum` 15°C~37°C
[2.8.2]	[9-00]	`Heating maximum` ▪ [2-0C]=2 (emitter type main zone = radiator) 37°C~65°C ▪ Otherwise: 37°C~55°C

Control

Defines how the operation of the unit is controlled. There are 3 possibilities:

Control	In this control...
`Leaving water`	Unit operation is decided based on the leaving water temperature regardless the actual room temperature and/or heating 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 user interface used as a room thermostat.

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

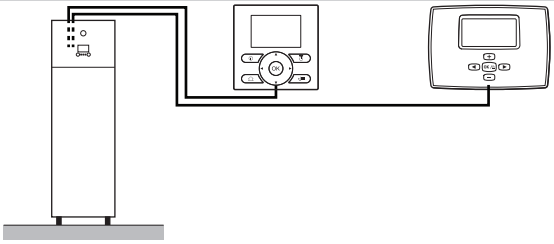
Thermostat type

Only applicable in external room thermostat control.

Following combinations are possible to control the unit (not applicable when [C-07]=0):

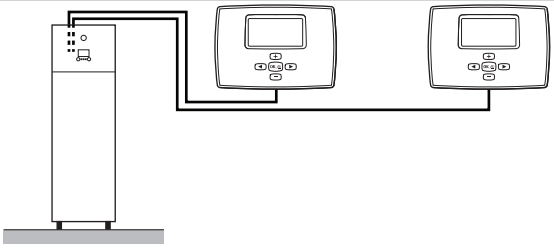
When [C-07]=2 (`RT control`)

User interface at indoor unit	User interface used as room thermostat at main zone	External room thermostat at additional zone



When [C-07]=1 (`Ext RT control`)

User interface at indoor unit	External room thermostat at main zone	External room thermostat at additional zone



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` is turned ON.

#	Code	Description
[2.A]	[C-05]	External room thermostat type for the main zone: ▪ 1: `1 contact`: The used external room thermostat can only send a thermo ON/OFF condition. There is no separation between heating or cooling demand. The room thermostat is connected to only 1 digital input (X2M/35). Select this value in case of a connection to the heat pump convector (FWXV). ▪ 2: `2 contacts`: The used external room thermostat can send a separate heating/cooling thermo ON/OFF condition. The room thermostat is connected to 2 digital inputs (X2M/35 and X2M/34). Select this value in case of a connection to the wired (EKRTWA) or wireless (EKRTR1) room thermostat

Leaving water temperature: Delta T

The target delta T in heating for the main zone depends on the emitter type for the main zone selected above. In heating, this setting indicates the temperature difference between the leaving water setpoint and entering water.

The unit is designed to support underfloor loops operation. The recommended leaving water temperature for underfloor loops is 35°C. In such case, the unit will be controlled to realize a temperature difference of 5°C which means that the unit entering water temperature is around 30°C. Depending on the installed application (radiators, heat pump convector, underfloor loops) or situation, it can be possible to change the difference between

entering and leaving water temperature. Note that the pump will regulate its flow to keep the delta T. In some special cases, the measured delta T can be different from the set value.

INFORMATION

When only the backup heater is active in heating, delta T will be controlled according to the fixed capacity of the backup heater. It is possible that this delta T is different from the selected target delta T.

INFORMATION

In heating, the target delta T will only be achieved after some operation time, when the setpoint is being reached, because of the big difference between leaving water temperature setpoint and inlet temperature at startup.

INFORMATION

If the main zone or the additional zone has a heating demand, and this zone is equipped with radiators, then the target delta T that the unit will use in heating operation will be 10°C fixed.

If the zones are not equipped with radiators, then in heating the unit will give priority to the target delta T for the additional zone, if there is a heating demand in the additional zone.

#	Code	Description
[2.B.1]	[1-0B]	`Delta T heating`: A minimum temperature difference is required for the good operation of heat emitters in heating mode. ▪ If [2-0C]=2, this is fixed to 10°C ▪ Else: 3°C~10°C

Leaving water temperature: Modulation

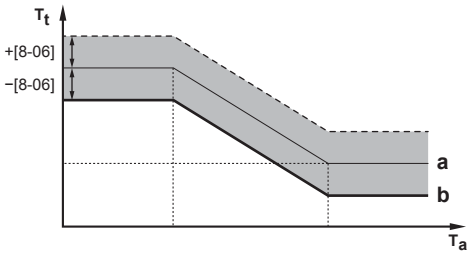
Only applicable in case of room thermostat control. When using the room thermostat functionality, the customer needs to set the desired room temperature. The unit will supply hot water to the heat emitters and the room will be heated. Additionally, also the desired leaving water temperature must be configured: when turning on the modulation, the desired leaving water temperature will be calculated automatically by the unit (based on the preset temperatures, if weather-dependent is selected, modulation will be done based on the desired weather-dependent temperatures); when turning off the modulation, you can set the desired leaving water temperature on the user interface. Moreover, with the modulation turned on, the desired leaving water temperature is lowered or raised in function of the desired room temperature and the difference between the actual and the desired room temperature. This results in:

- stable room temperatures exactly matching the desired temperature (higher comfort level)
- less on/off cycles (lower noise level, higher comfort and higher efficiency)
- water temperatures as low as possible to match the desired temperature (higher efficiency)

#	Code	Description
[2.C.1]	[8-05]	`Modulation`: ▪ `0 No`: Disabled, the desired leaving water temperature needs to be set on the user interface. ▪ `1 Yes`: Enabled, the leaving water temperature is calculated according to the difference between the desired and the actual room temperature. This creates a better match between the capacity of the heat pump and the actual required capacity, and results in less start/stop cycles and a more economic operation. **Note:** The desired leaving water temperature can only be read out on the user interface.
[2.C.2]	[8-06]	`Max modulation`: ▪ 0°C~10°C This is the temperature value by which the desired leaving water temperature is increased or decreased.

INFORMATION

When leaving water temperature modulation is enabled, the weather-dependent curve needs to be set to a higher position than [8-06] plus the minimum leaving water temperature setpoint required to reach a stable condition on the comfort setpoint for the room. To increase efficiency, modulation can lower the leaving water setpoint. By setting the weather-dependent curve to a higher position, it cannot drop below the minimum setpoint. See the illustration below.



a Weather-dependent curve
b Minimum leaving water temperature setpoint required to reach a stable condition on the comfort setpoint for the room.

Shut off valve

The following is only applicable in case of 2 leaving water temperature zones. In case of 1 leaving water temperature zone, connect the shut-off valve to the heating/cooling output.

The shut off valve for the main leaving water temperature zone can close under these circumstances:

INFORMATION

During defrost operation, the shut-off valve is ALWAYS opened.

`During thermo`: If [F-0B] is enabled, the shut off valve closes when there is no heating demand from the main zone. Enable this setting to:

- avoid leaving water supply to the heat emitters in the main LWT zone (through the mixing valve station) when there is request from the additional LWT zone.
- activate the ON/OFF pump of the mixing valve station ONLY when there is demand.

#	Code	Description
[2.D.1]	[F-0B]	The shut off valve: ▪ 0 No: is NOT influenced by heating demand. ▪ 1 Yes: closes when there is NO heating demand.

INFORMATION

The setting [F-0B] is only valid when there is a thermostat or external room thermostat request setting (NOT in case of leaving water temperature setting).

8.4.4 Additional zone

Setpoint screen

You can set the leaving water temperature for the additional zone using the setpoint screen. For more information about how to do this, see "8.3.5 Setpoint screen" on page 47.

Schedule

Indicates if the desired leaving water temperature is according to a schedule. Also see "8.4.3 Main zone" on page 51.

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

Heating schedule

You can set the additional zone heating temperature schedule using the schedule screen. For more information about this screen, see "8.3.8 Schedule screen: Example" on page 48.

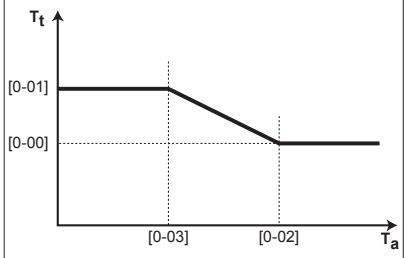
Setpoint mode

The setpoint mode of the additional zone can be independently set from the setpoint mode of the main zone, see "Setpoint mode" on page 51.

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

Heating WD curve

Set weather-dependent heating for the additional zone (if [3.4] = 1 or 2):

#	Code	Description
[3.5]	[0-00] [0-01] [0-02] [0-03]	Set weather-dependent heating:  ▪ T_t: Target leaving water temperature (additional zone) ▪ T_a: Outdoor temperature ▪ [0-03]: Low outdoor ambient temperature. –40°C~+5°C ▪ [0-02]: High outdoor ambient temperature. 10°C~25°C ▪ [0-01]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. [9-05]°C~[9-06]°C **Note:** This value should be higher than [0-00] as for low outdoor temperatures warmer water is required. ▪ [0-00]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. [9-05]~min(45, [9-06])°C **Note:** This value should be lower than [0-01] as for high outdoor temperatures less warm water is required.

Emitter type

For more info about this functionality, see "8.4.3 Main zone" on page 51.

#	Code	Description
[3.7]	[2-0D]	Emitter type ▪ 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:

Emitter type Additional zone	Space heating setpoint range [9-05]~[9-06]	Target delta T in heating [1-0C]
0: Underfloor heating	Maximum 55°C	Variable (see [2.B])
1: Fancoil unit	Maximum 55°C	Variable (see [2.B])
2: Radiator	Maximum 65°C	Fixed 10°C

Setpoint range

For more information about this setting, also see "8.4.3 Main zone" on page 51.

#	Code	Description
Leaving water temperature range for the additional leaving water temperature zone (= the leaving water temperature zone with the highest leaving water temperature in heating operation)		

#	Code	Description
[3.8.1]	[9-05]	`Heating minimum`: 15°C~37°C
[3.8.2]	[9-06]	`Heating maximum` ▪ [2-0D]=2 (emitter type additional zone = radiator) 37°C~65°C ▪ Else: 37°C~55°C

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 "8.4.3 Main zone" on page 51.

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

Thermostat type

Only applicable in external room thermostat control. For more info about the functionality, see "8.4.3 Main zone" on page 51.

#	Code	Description
[3.A]	[C-06]	External room thermostat type for the additional zone: ▪ 1: `1 contact`. Connected to only 1 digital input (X2M/35a) ▪ 2: `2 contacts`. Connected to 2 digital inputs (X2M/34a and X2M/35a)

Leaving water temperature: Delta T

For more information, see "8.4.3 Main zone" on page 51.

#	Code	Description
[3.B.1]	[1-0C]	`Delta T heating`: A minimum temperature difference is required for the good operation of heat emitters in heating mode. ▪ If [2-0D] = 2, this is fixed to 10°C ▪ Else: 3°C~10°C

8.4.5 Space heating

About space operation modes

This unit is a heating only model. The system can heat up a space, but NOT cool down a space.

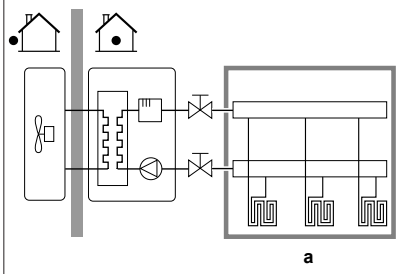
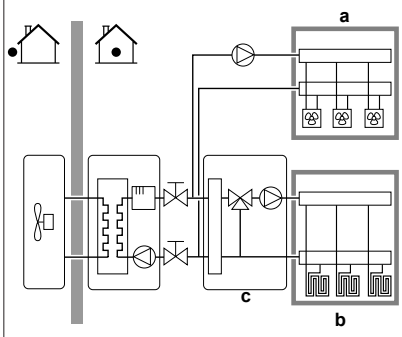
Operation range

Depending on the average outdoor temperature, the operation of the unit in space heating is prohibited.

#	Code	Description
[4.3.1]	[4-02]	`Space heating off temperature`: When the averaged outdoor temperature rises above this value, space heating is turned off. ▪ 14°C~35°C

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.

#	Code	Description
[4.4]	[7-02]	▪ 0: `Single zone` Only one leaving water temperature zone:  a ▪ **a**: Main LWT zone
[4.4]	[7-02]	▪ 1: `Dual zone` Two leaving water temperature zones. The main leaving water temperature zone consists of the higher load heat emitters and a mixing station to achieve the desired leaving water temperature. In heating:  a c b ▪ **a**: Additional LWT zone: Highest temperature ▪ **b**: Main LWT zone: Lowest temperature ▪ **c**: Mixing station

CAUTION

If there are 2 zones, it is important that 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. Not configuring the system in this way could cause damage to the heat emitters.

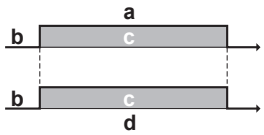
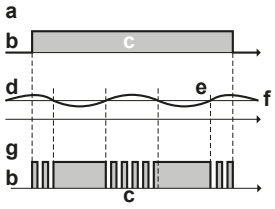
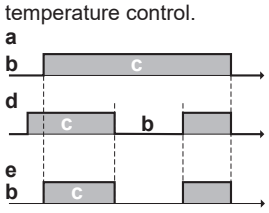
CAUTION

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.

Pump operation mode

When the space heating operation is OFF, the pump is always OFF. When space heating operation is ON, you have the choice between these operation modes:

#	Code	Description
[4.5]	[F–0D]	Pump operation mode: ▪ 0 Continuous: Continuous pump operation, regardless of thermo ON or OFF condition. **Remark:** Continuous pump operation requires more energy than sample or request pump operation.  ▪ a: Space heating control ▪ b: Off ▪ c: On ▪ d: Pump operation
[4.5]	[F-0D]	▪ 1 Sample: The pump is ON when there is heating demand as the leaving water temperature has not yet reached the desired temperature yet. When thermo OFF condition occurs, the pump runs every 3 minutes to check the water temperature and demand heating if necessary. **Remark:** Sample is ONLY available in leaving water temperature control.  ▪ a: Space heating control ▪ b: Off ▪ c: On ▪ d: LWT temperature ▪ e: Actual ▪ f: Desired ▪ g: Pump operation
[4.5]	[F-0D]	▪ 2 Request: Pump operation based on request. **Example:** Using a room thermostat and thermostat creates thermo ON/OFF condition. **Remark:** NOT available in leaving water temperature control.  ▪ a: Space heating control ▪ b: Off ▪ c: On ▪ d: Heating demand (by external room thermostat or room thermostat) ▪ e: Pump operation

Unit type

In this part of the menu it can be read out which type of unit is used:

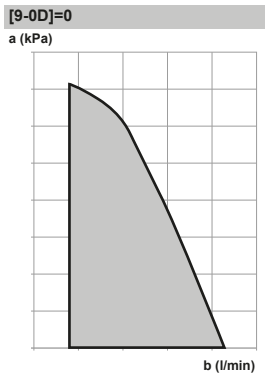
#	Code	Description
[4.6]	N/A	Unit type: ▪ 1 Cooling only ▪ 2 Heating only ▪ 3 Reversible

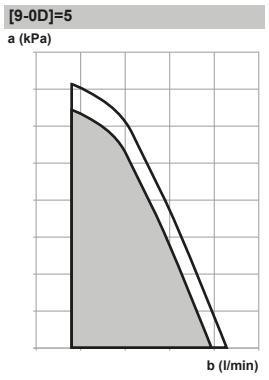
Pump limitation

The pump speed limitation for the main zone [9-0E] and additional zone [9-0D] defines the maximum pump speed. In normal conditions, the default setting should NOT be modified. The pump speed limitation will be overruled when the flow rate is in the range of the minimum flow (error 7H).

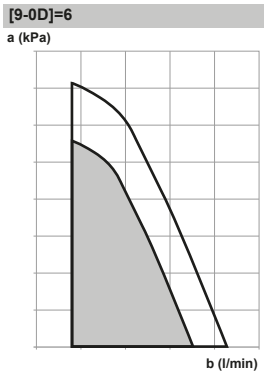
#	Code	Description
[4.7]	[9-0D]	Pump limitation Additional zone: ▪ 0: No limitation ▪ 1~4: General limitation. There is limitation in all conditions. The required delta T control and comfort are NOT guaranteed. ▪ 5~8: Limitation when no actuators. When there is no heating output, the pump speed limitation is applicable. When there is heating output, the pump speed is only determined by delta T in relation to the required capacity. With this limitation range, delta T is possible and the comfort is guaranteed.
[4.8]	[9-0E]	Pump limitation Main zone: ▪ 0: No limitation ▪ 1~4: General limitation. There is limitation in all conditions. The required delta T control and comfort are NOT guaranteed. ▪ 5~8: Limitation when no actuators. When there is no heating output, the pump speed limitation is applicable. When there is heating output, the pump speed is only determined by delta T in relation to the required capacity. With this limitation range, delta T is possible and the comfort is guaranteed.

The maximum values depend on the unit type:

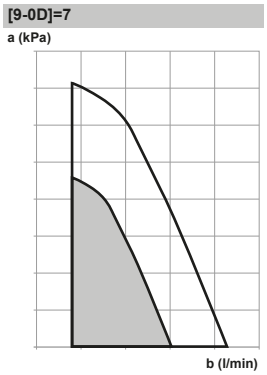




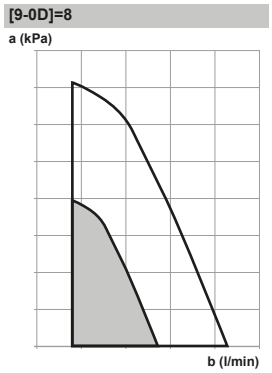
[9-0D]=6



[9-0D]=7



[9-0D]=8



a External static pressure
b Water flow rate

Pump outside range

When the pump operation function is disabled the pump will stop if the outdoor temperature is higher than the value set by the `Space heating off temperature` [4-02]. When the pump operation is enabled, the pump operation is possible at all outdoor temperatures.

#	Code	Description
[4.9]	[F-00]	Pump operation: ▪ 0: Disabled if outdoor temperature is higher than [4-02]. ▪ 1: Possible at all outdoor temperatures.

Overshoot

This function defines how much the water temperature may rise above the desired leaving water temperature before the compressor stops. The compressor will start up again when the leaving water temperature drops below the desired leaving water temperature. This function is ONLY applicable in heating mode.

#	Code	Description
[4.B]	[9-04]	`Overshoot` ▪ 1°C~4°C

Antifrost

Room frost protection [1.4] prevents the room from getting too cold. For more information about room frost protection, see "8.4.2 Room" on page 50.

8.4.6 Tank

Tank setpoint screen

You can set the domestic hot water temperature using the setpoint screen. For more information about how to do this, see "8.3.5 Setpoint screen" on page 47.

Powerful operation

You can use powerful operation to immediately start heating up the water to the preset value (Storage comfort). However, this consumes extra energy. If powerful operation is active, will be shown on the home screen.

To activate powerful operation

Activate or deactivate `Powerful operation` as follows:

1	Go to [5.1]: `Tank` > `Powerful operation`	
2	Turn powerful operation `Off` or `On`.	

Usage example: You immediately need more hot water

If you are in the following situation:

- You already consumed most of your hot water.
- You cannot wait for the next scheduled action to heat up the DHW tank.

Then you can activate DHW powerful operation.

Advantage: The DHW tank immediately starts heating up the water to the preset value (Storage comfort).

INFORMATION

When powerful operation is active, the risk of space heating and capacity shortage comfort problems is significant. In case of frequent domestic hot water operation, frequent and long space heating interruptions will happen.

Comfort setpoint

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

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

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

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

Eco setpoint

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

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

Reheat setpoint

Desired reheat tank temperature, used:

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

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

Schedule

You can set the tank temperature schedule using the schedule screen. For more information about this screen, see "8.3.8 Schedule screen: Example" on page 48.

Heat up mode

The domestic hot water can be prepared in 3 different ways. They differ from each other by the way the desired tank temperature is set and how the unit acts upon it.

#	Code	Description
[5.6]	[6-0D]	Heat up mode ▪ 0: Reheat only: Only reheat operation is allowed. ▪ 1: Schedule + reheat: The domestic hot water tank is heated according to a schedule and between the scheduled heat up cycles, reheat operation is allowed. ▪ 2: Schedule only: The domestic hot water tank can ONLY be heated according to a schedule.

See the operation manual for more details.

Disinfection

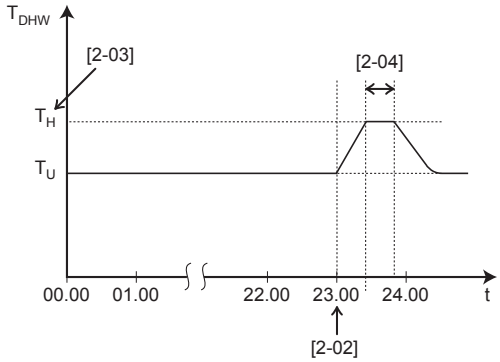
Applies only to installations with a domestic hot water tank.

The disinfection function disinfects the domestic hot water tank by periodically heating the domestic hot water to a specific temperature.

CAUTION

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

#	Code	Description
[5.7.1]	[2-01]	Activation ▪ 0: No ▪ 1: Yes
[5.7.2]	[2-00]	Operation day ▪ 0: Every day ▪ 1: Monday ▪ 2: Tuesday ▪ 3: Wednesday ▪ 4: Thursday ▪ 5: Friday ▪ 6: Saturday ▪ 7: Sunday
[5.7.3]	[2-02]	Start time
[5.7.4]	[2-03]	Tank setpoint 60°C
[5.7.5]	[2-04]	Duration 40~60 minutes



T_{DHW} Domestic hot water temperature
T_U User set point temperature
T_H High set point temperature [2-03]
t Time

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 hot water outlet connection of the domestic hot water 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

Be 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.

INFORMATION

In case of error code AH and no interruption of the disinfection function occurred due to domestic hot water tapping, following actions are recommended:

- When the Reheat only or Schedule + reheat mode is selected, it is recommended to program the start-up of the disinfection function at least 4 hours later than the last expected large hot water tapping. This start-up can be set by installer settings (disinfection function).
- When the Schedule only mode is selected, it is recommended to program an Eco action 3 hours before the scheduled start-up of the disinfection function to preheat the tank.

INFORMATION

Disinfection function is restarted in case the domestic hot water temperature drops 5°C below the disinfection target temperature within the duration time.

INFORMATION

An AH error occurs if you turn off domestic hot water operation during disinfection.

Maximum DHW temperature setpoint

The maximum temperature that users can select for the domestic hot water. You can use this setting to limit the temperatures at the hot water taps.

INFORMATION

During disinfection of the domestic hot water tank, the DHW temperature can exceed this maximum temperature.

INFORMATION

Limit the maximum hot water temperature according to the applicable legislation.

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

Hysteresis

The following ON hysteresis can be set.

Heat pump ON hysteresis

Applicable when domestic hot water preparation is reheat only. When the tank temperature drops below the reheat temperature minus the heat pump ON hysteresis temperature, the tank heats up to the reheat temperature.

The minimum ON temperature is 20°C, even if setpoint hysteresis is smaller than 20°C.

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

Reheat hysteresis

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

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

Setpoint mode

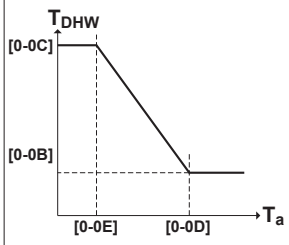
#	Code	Description
[5.B]	N/A	`Setpoint mode`: ▪ `Fixed` ▪ `Weather dependent`

WD curve

When weather dependent operation is active the desired tank temperature is determined automatically depending on the averaged outdoor temperature: low outdoor temperatures will result in higher desired tank temperatures as the cold water tap is colder and vice versa.

In case of `Schedule only` or `Schedule + reheat` domestic hot water preparation, the storage comfort temperature is weather dependent (according to the weather dependent curve), the storage economic and reheat temperature are NOT weather dependent.

In case of `Reheat only` domestic hot water preparation, the desired tank temperature is weather dependent (according to the weather dependent curve). During weather dependent operation, the end-user cannot adjust the desired tank temperature on the user interface. Also see "8.3.7 Detailed screen with weather-dependent curve" on page 48.

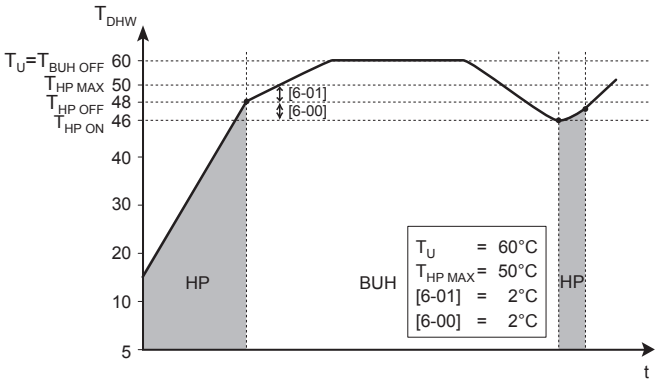
#	Code	Description
[5.C]	[0-0E] [0-0D] [0-0C] [0-0B]	`WD curve`  ▪ T_{DHW}: The desired tank temperature. ▪ T_a: The (averaged) outdoor ambient temperature ▪ [0-0E]: low outdoor ambient temperature: -40°C-5°C ▪ [0-0D]: high outdoor ambient temperature: 10°C-25°C ▪ [0-0C]: desired tank temperature when the outdoor temperature equals or drops below the low ambient temperature: 45°C~[6-0E]°C ▪ [0-0B]: desired tank temperature when the outdoor temperature equals or rises above the high ambient temperature: 35°C~[6-0E]°C

Margin

In domestic hot water operation, the following hysteresis value can be set for the heat pump operation:

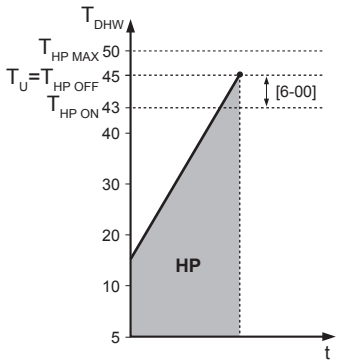
#	Code	Description
[5.D]	[6-01]	The temperature difference determining the heat pump OFF temperature. Range: 0°C~10°C

Example: setpoint (T_U)>maximum heat pump temperature–[6-01] ($T_{HP\ MAX}$–[6-01])



BUH Backup heater
HP Heat pump. If heating up time by the heat pump takes too long, auxiliary heating by the backup heater can take place
$T_{BUH\ OFF}$ Backup heater OFF temperature (T_U)
$T_{HP\ MAX}$ Maximum heat pump temperature at sensor in domestic hot water tank
$T_{HP\ OFF}$ Heat pump OFF temperature ($T_{HP\ MAX}$–[6-01])
$T_{HP\ ON}$ Heat pump ON temperature ($T_{HP\ OFF}$–[6-00])
T_{DHW} Domestic hot water temperature
T_U User set point temperature (as set on the user interface)
t Time

Example: setpoint (T_U)≤maximum heat pump temperature–[6-01] ($T_{HP\ MAX}$–[6-01])



HP	Heat pump. If heating up time by the heat pump takes too long, auxiliary heating by the backup heater can take place
$T_{HP\ MAX}$	Maximum heat pump temperature at sensor in domestic hot water tank
$T_{HP\ OFF}$	Heat pump OFF temperature ($T_{HP\ MAX}$−[6-01])
$T_{HP\ ON}$	Heat pump ON temperature ($T_{HP\ OFF}$−[6-00])
T_{DHW}	Domestic hot water temperature
T_U	User set point temperature (as set on the user interface)
t	Time

INFORMATION

The maximum heat pump temperature depends on the ambient temperature. For more information, see the operation range.

8.4.7 User settings

Language

#	Code	Description
[7.1]	N/A	Language

Time/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.

Holiday

About holiday mode

During your holiday, you can use the holiday mode to deviate from your normal schedules without having to change them. While holiday mode is active, space heating operation and domestic hot water operation will be turned off. Room frost protection and anti-legionella operation will remain active.

Typical workflow

Using holiday mode typically consists of the following stages:

1 Setting the starting date and ending date of your holiday.

2 Activating the holiday mode.

To check if holiday mode is activated and/or running

If is activated on the home screen, holiday mode is active.

To configure the holiday

1	Activate the holiday mode.	—
	▪ Go to [7.3.1]: `User settings` > `Holiday` > `Activation`. 7.3.1 **Activation** From Till	
	▪ Select `On`.	
2	Set the first day of your holiday.	—
	▪ Go to [7.3.2]: `From`.	
	▪ Select a date.	
	▪ Confirm the changes.	
3	Set the last day of your holiday.	—
	▪ Go to [7.3.3]: `Till`.	
	▪ Select a date.	
	▪ Confirm the changes.	

Quiet

About quiet mode

You can use quiet mode to decrease the sound of the outdoor unit. However, this also decreases the heating capacity of the system. There are multiple quiet mode levels.

You can:

- Completely deactivate quiet mode
- Manually activate a quiet mode level until the next scheduled action
- Use and program a quiet mode schedule

INFORMATION

If the outdoor temperature is below zero, we recommend to NOT use the most quiet level.

To check if quiet mode is active

If is displayed on the home screen, quiet mode is active.

To use quiet mode

1	Go to [7.4.1]: `User settings` > `Quiet` > `Activation`.	
2	Do one of the following:	—

If you want to…	Then…	
Completely deactivate quiet mode	Select `Off`.	
Manually activate a quiet mode level	Select the applicable quiet mode level. **Example:** `Most quiet`.	
Use and program a quiet mode schedule	Select `Automatic`.	
	Go to [7.4.2] `Schedule` and program the schedule. For more information about scheduling, see "8.3.8 Schedule screen: Example" on page 48.	

Usage example: Baby is sleeping in the afternoon

If you are in the following situation:

- You have programmed a quiet mode schedule:
  - During the night: `Most quiet`.
  - During the day: `Off` to ensure the heating capacity of the system.
- However, during the afternoon the baby is sleeping and you want it to be quiet.

Then you can do the following:

1	Go to [7.4.1]: `User settings` > `Quiet` > `Activation`.	
2	Select `Most quiet`.	

Advantage:

The outdoor unit runs in its most quiet level.

Electricity prices and gas price

Only applicable in combination with the bivalent function. See also "Bivalent" on page 67.

#	Code	Description
[7.5.1]	N/A	`Electricity price` > `High`
[7.5.2]	N/A	`Electricity price` > `Medium`
[7.5.3]	N/A	`Electricity price` > `Low`
[7.6]	N/A	`Gas price`

INFORMATION

Electricity price can only be set when bivalent is ON ([9.C.1] or [C-02]). These values can only be set in menu structure [7.5.1], [7.5.2] and [7.5.3]. Do NOT use overview settings.

To set the gas price

1	Go to [7.6]: `User settings` > `Gas price`.	
2	Select the correct gas price.	
3	Confirm the changes.	

INFORMATION

Price value ranging from 0.00~990 valuta/kWh (with 2 significant values).

To set the electricity price

1	Go to [7.5.1]/[7.5.2]/[7.5.3]: `User settings` > `Electricity price` > `High`/`Medium`/`Low`.	
2	Select the correct electricity price.	
3	Confirm the changes.	
4	Repeat this for all three electricity prices.	—

INFORMATION

Price value ranging from 0.00~990 valuta/kWh (with 2 significant values).

INFORMATION

If no schedule is set, the `Electricity price` for `High` is taken into account.

To set the electricity price schedule timer

1	Go to [7.5.4]: `User settings` > `Electricity price` > `Schedule`.	
2	Program the selection using the scheduling screen. You can set the `High`, `Medium` and `Low` electricity prices according to your electricity supplier.	—
3	Confirm the changes.	

INFORMATION

The values correspond with the electricity price values for `High`, `Medium` and `Low` previously set. If no schedule is set, the electricity price for `High` is taken into account.

About energy prices in case of an incentive per kWh renewable energy

An incentive can be taken into account when setting the energy prices. Although the running cost can increase, the total operation cost, taking into account the reimbursement will be optimized.

NOTICE

Make sure to modify the setting of the energy prices at the end of the incentive period.

To set the gas price in case of an incentive per kWh renewable energy

Calculate the value for the gas price with the following formula:

- Actual gas price+(Incentive/kWh×0.9)

For the procedure to set the gas price, see "To set the gas price" on page 62.

To set the electricity price in case of an incentive per kWh renewable energy

Calculate the value for the electricity price with following formula:

- Actual electricity price+Incentive/kWh

For the procedure to set the electricity price, see "To set the electricity price" on page 62.

Example

This is an example and the prices and/or values used in this example are NOT accurate.

Data	Price/kWh
Gas price	4.08
Electricity price	12.49
Renewable heat incentive per kWh	5

Calculation of the gas price:

Gas price=Actual gas price+(Incentive/kWh×0.9)

Gas price=4.08+(5×0.9)

Gas price=8.58

Calculation of the electricity price:

Electricity price=Actual electricity price+Incentive/kWh

Electricity price=12.49+5

Electricity price=17.49

Price	Value in breadcrumb
Gas: 4.08 /kWh	[7.6]=8.6
Electricity: 12.49 /kWh	[7.5.1]=17

8.4.8 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.

Possible read-out information

In menu…	You can read out…
[8.1] `Energy data`	Produced energy, consumed electricity, and consumed gas

In menu…	You can read out…
[8.2] Malfunction history	Malfunction history
[8.3] Dealer information	Contact/helpdesk number
[8.4] Sensors	Room, tank or domestic hot water, outside, and leaving water temperature (if applicable)
[8.5] Actuators	Status/mode of each actuator **Example:** Domestic hot water pump ON/OFF
[8.6] Operation modes	Current operation mode **Example:** Defrost/oil return mode
[8.7] About	Version information about the system
[8.8] Connection status	Information about the connection status of the unit, the room thermostat and the LAN adapter.

8.4.9 Installer settings

Configuration wizard

After first power ON of the system, the user interface will guide you using the configuration wizard. This way you can set the most important initial settings. This way the unit will be able to run properly. Afterwards, more detailed settings can be done via the menu structure if required.

To restart the configuration wizard, go to Installer settings > Configuration wizard [9.1].

Domestic hot water

Domestic hot water

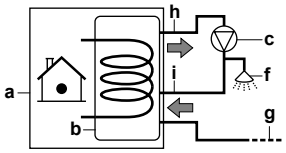
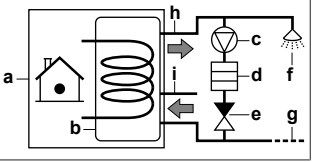
The following setting determines if the system can prepare domestic hot water or not, and which tank is used. This setting is read only.

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

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

DHW pump

#	Code	Description
[9.2.2]	[D-02]	DHW pump: ▪ 0: No DHW pump: NOT installed ▪ 1: Instant hot water: Installed for instant hot water when water is tapped. The user sets the operation timing of the domestic hot water pump using the schedule. Control of this pump is possible with the user interface. ▪ 2: Disinfection: Installed for disinfection. It runs when the disinfection function of the domestic hot water tank is running. No further settings are needed. See also illustrations below.

Domestic hot water pump installed for…	
Instant hot water	Disinfection
	

a Indoor unit
b Tank
c Domestic hot water pump
d Heater element
e Non-return valve
f Shower
g Cold water
h Domestic hot water OUT
i Recirculation connection

DHW pump schedule

Here you can program a schedule for the DHW pump **(only for field supplied domestic hot water pump for secondary return)**.

Program a domestic hot water pump schedule to determine when to turn on and off the pump.

When turned on, the pump runs and makes sure hot water is instantly available at the tap. To save energy, only turn on the pump during periods of the day when instant hot water is necessary.

Backup heater

Besides the type of backup heater, the voltage, configuration and capacity must be set on the user interface.

The capacities for the different steps of the backup heater must be set for the energy metering and/or power consumption 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

The backup heater is adapted to be connected to most common European electricity grids. The type of backup heater must be set on the user interface. For units with a built-in backup heater, the type of heater can be viewed but not changed.

#	Code	Description
[9.3.1]	[E-03]	▪ 3: 6V ▪ 4: 9W

Voltage

- For a 3V model, this is fixed to 230V, 1ph.
- For a 6V model, this can be set to:
  - 230V, 1ph
  - 230V, 3ph
- For a 9W model, this is fixed to 400V, 3ph.

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

Configuration

The backup heater can be configured in different ways. It can be chosen to have a 1-step only backup heater or a backup heater with 2 steps. If 2 steps, the capacity of the second step depends on this setting. It can also be chosen to have a higher capacity of the second step in emergency.

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

(a) Not available for `3V` models.

INFORMATION

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

INFORMATION

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

INFORMATION

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

INFORMATION

Only for systems with integrated domestic hot water tank: If the storage temperature set point is higher than 50°C, 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 domestic hot water tank.

Capacity step 1

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

Additional capacity step 2

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

Equilibrium

#	Code	Description
[9.3.6]	[5-00]	`Equilibrium`: Is backup heater operation allowed above equilibrium temperature during space heating operation? ▪ 1: NOT allowed ▪ 0: Allowed
[9.3.7]	[5-01]	`Equilibrium temperature`: Outdoor temperature below which operation of the backup heater is allowed. Range: –15°C~35°C

Operation

#	Code	Description
[9.3.8]	[4-00]	Backup heater operation: ▪ 0: `Restricted` ▪ 1: `Allowed` ▪ 2: `Only DHW` Enabled for domestic hot water, disable for space heating

INFORMATION

Only for systems with integrated domestic hot water tank: If backup heater operation during space heating needs to be limited but can be allowed for domestic hot water operation, then set [4-00] to 2.

Emergency

Emergency

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

- When `Emergency` is set to `Automatic` and a heat pump failure occurs, the backup heater automatically takes over the domestic hot water production and space heating.
- When `Emergency` is set to `Manual` and a heat pump failure occurs, the domestic hot water heating and space heating stops. To manually recover it via the user interface, go to the `Malfunctioning` main menu screen and confirm whether the backup heater can take over the heat load or not.

We recommend to set `Emergency` to `Automatic` if the house is unattended for longer periods.

#	Code	Description
[9.5]	N/A	▪ 0: `Manual` ▪ 1: `Automatic`

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 room frost protection function, the underfloor heating screed dryout function, and the water pipe antifreeze function will remain active even if the user does NOT confirm emergency operation.

Balancing

Priorities

For systems with an integrated domestic hot water tank

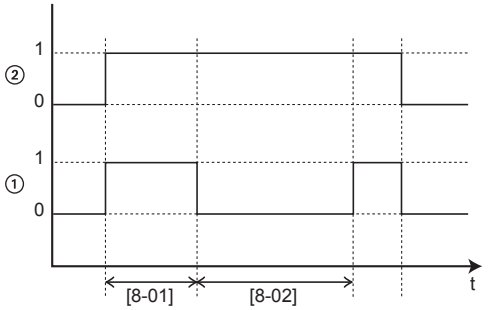
#	Code	Description
[9.6.1]	[5-02]	`Space heating priority`: Defines whether backup heater will assist the heat pump during domestic hot water operation. Enable this function to shorten tank heating operation time and interruption of the space heating cycle. This setting MUST always be 1. [5-01] Equilibrium temperature and [5-03] Space heating priority temperature are related to backup heater. So, you must set [5-03] equal or a few degrees higher than [5-01]. If the backup heater operation is limited ([4-00]=0) and the outdoor temperature is lower than setting [5-03], the domestic hot water will not be heated with the backup heater.
[9.6.2]	[5-03]	`Priority temperature`: Defines the outdoor temperature which below the backup heater will assist during domestic hot water heating.

#	Code	Description
[9.6.3]	[5-04]	`Offset BSH setpoint`: Set point correction for domestic hot water temperature: set point correction for the desired domestic hot water temperature, to be applied at low outdoor temperature when space heating priority is enabled. The corrected (higher) set point will make sure that the total heat capacity of the water in the tank remains approximately unchanged, by compensating for the colder bottom water layer of the tank (because the heat exchanger coil is not operational) with a warmer top layer. Range: 0°C~20°C

Timers for simultaneous space and domestic hot water operation request

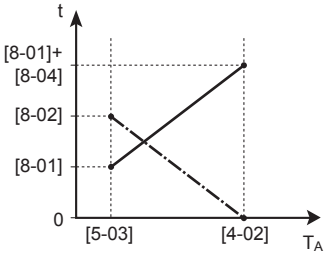
#	Code	Description
[9.6.4]	[8-02]	`Anti-recycle timer`: Minimum time between two cycles for domestic hot water. The actual anti-recycling time also depends on setting [8-04]. Range: 0~10 hours **Remark:** The minimum time is 0.5 hours even when the selected value is 0.
[9.6.5]	N/A	`Minimum running timer`: Do NOT change.
[9.6.6]	[8-01]	`Maximum running timer` for domestic hot water operation. Domestic hot water heating stops even when the target domestic hot water temperature is NOT reached. The actual maximum running time also depends on setting [8-04]. ▪ When `Control=Room thermostat`: This preset value is only taken into account if there is a request for space heating. If there is NO request for space heating, the tank is heated until the setpoint has been reached. ▪ When `Control≠Room thermostat`: This preset value is always taken into account. Range: 5~95 minutes
[9.6.7]	[8-04]	`Additional timer`: Additional running time for the maximum running time depending on the outdoor temperature [4-02]. Range: 0~95 minutes

[8-02]: `Anti-recycle timer`



1 Heat pump domestic water heating mode (1=active, 0=not active)
2 Hot water request for heat pump (1=request, 0=no request)
t Time

[8-04]: `Additional timer` at [4-02]



T_A Ambient (outdoor) temperature
t Time
`Anti-recycle timer`
Maximum running time domestic hot water

Water pipe freeze prevention

Only relevant for installations with water piping outdoors. This function tries to protect outdoor water piping from freezing.

#	Code	Description
[9.7]	[4-04]	`Water pipe freeze prevention`: ▪ 0: `Intermittent` ▪ 1: `Continuous` ▪ 2: `Off`

Preferential kWh rate power supply

INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/9+10) as the safety thermostat for the additional zone. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat for the additional zone.

#	Code	Description
[9.8.1]	[D-01]	Connection to a `Benefit kWh power supply` or a `Safety thermostat` ▪ 0 `No`: The outdoor unit is connected to a normal power supply. ▪ 1 `Open`: The outdoor unit is connected to a preferential kWh rate power supply. When the preferential kWh rate signal is sent by the electricity company, the contact will open and the unit will go in forced off mode. When the signal is released again, the voltage-free contact will close and the unit will restart operation. Therefore, always enable the auto restart function. ▪ 2 `Closed`: The outdoor unit is connected to a preferential kWh rate power supply. When the preferential kWh rate signal is sent by the electricity company, the contact will close and the unit will go in forced off mode. When the signal is released again, the voltage-free contact will open and the unit will restart operation. Therefore, always enable the auto restart function. ▪ 3 `Safety thermostat`: A safety thermostat is connected to the system (normal closed contact)

#	Code	Description
[9.8.2]	[D-00]	Allow heater: Which heaters are allowed to operate during preferential kWh rate power supply? ▪ 0 No: None ▪ 1 Only BSH: Booster heater only ▪ 2 Only BUH: Backup heater only ▪ 3 All: All heaters See table below. Setting 2 is only meaningful if the preferential kWh rate power supply is of type 1 or indoor unit is connected to a normal kWh rate power supply (via X2M/5-6) and the backup heater is NOT connected to the preferential kWh rate power supply.
[9.8.3]	[D-05]	Allow pump: ▪ 0 No: Pump is forced off ▪ 1 Yes: No limitation

Do NOT use 1 or 3.

[D-00]	Backup heater	Compressor
0	Forced OFF	Forced OFF
2	Allowed	

Power consumption control

Power consumption control

See "5 Application guidelines" on page 10 for detailed information about this functionality.

#	Code	Description
[9.9.1]	[4-08]	Power consumption control: ▪ 0 No: Disabled. ▪ 1 Continuous: Enabled: You can set one power limitation value (in A or kW) to which the system power consumption will be limited for all the time. ▪ 2 Inputs: Enabled: You can set up to four different power limitation values (in A or kW) to which the system power consumption will be limited when the corresponding digital input asks.
[9.9.2]	[4-09]	Type: ▪ 0 Amp: The limitation values are set in A. ▪ 1 kW: The limitation values are set in kW.

Limit when [9.9.1]=Continuous and [9.9.2]=Amp:

#	Code	Description
[9.9.3]	[5-05]	Limit: Only applicable in case of full time current limitation mode. 0 A~50 A

Limits when [9.9.1]=Inputs and [9.9.2]=Amp:

#	Code	Description
[9.9.4]	[5-05]	Limit 1: 0 A~50 A
[9.9.5]	[5-06]	Limit 2: 0 A~50 A
[9.9.6]	[5-07]	Limit 3: 0 A~50 A
[9.9.7]	[5-08]	Limit 4: 0 A~50 A

Limit when [9.9.1]=Continuous and [9.9.2]=kW:

#	Code	Description
[9.9.8]	[5-09]	Limit: Only applicable in case of full time power limitation mode. 0 kW~20 kW

Limits when [9.9.1]=Inputs and [9.9.2]=kW:

#	Code	Description
[9.9.9]	[5-09]	Limit 1: 0 kW~20 kW
[9.9.A]	[5-0A]	Limit 2: 0 kW~20 kW
[9.9.B]	[5-0B]	Limit 3: 0 kW~20 kW
[9.9.C]	[5-0C]	Limit 4: 0 kW~20 kW

Priority heater

#	Code	Description
[9.9.D]	[4-01]	**Power consumption control DISABLED [4-08]=0** ▪ 0 None : Backup heater and booster heater can operate simultaneously. ▪ 1 Booster heater: The booster heater is prioritised. ▪ 2 Backup heater: The backup heater is prioritised. **Power consumption control ENABLED [4-08]=1/2** ▪ 0 None : Depending on the power limitation level, the booster heater will be limited first, before the backup heater is limited. ▪ 1 Booster heater: Depending on the power limitation level, the backup heater will be limited first, before the booster heater is limited. ▪ 2 Backup heater: Depending on the power limitation level, the booster heater will be limited first, before the backup heater is limited.

Note: In case power consumption control is DISABLED (for all models) the setting [4-01] defines whether backup heater and booster heater can operate simultaneously, or if the booster heater/ backup heater has priority over the backup heater/booster heater.

In case power consumption control is ENABLED, the setting [4-01] defines the priority of the electrical heaters depending on applicable limitation.

Energy metering

Energy metering

If energy metering is performed by the use of external power meters, configure the settings as described below. Select the pulse frequency output of each power meter in accordance with the power meter specifications. It is possible to connect up to 2 power meters with different pulse frequencies. If only 1 or no power meter is used, select 'None' to indicate the corresponding pulse input is NOT used.

#	Code	Description
[9.A.1]	[D-08]	Electricity meter 1: ▪ 0 None: NOT installed ▪ 1 1/10kWh: Installed ▪ 2 1/kWh: Installed ▪ 3 10/kWh: Installed ▪ 4 100/kWh: Installed ▪ 5 1000/kWh: Installed
[9.A.2]	[D-09]	Electricity meter 2: ▪ 0 None: NOT installed ▪ 1 1/10kWh: Installed ▪ 2 1/kWh: Installed ▪ 3 10/kWh: Installed ▪ 4 100/kWh: Installed ▪ 5 1000/kWh: Installed

Sensors

External sensor

#	Code	Description
[9.B.1]	[C–08]	External sensor : When an optional external ambient sensor is connected, the type of the sensor must be set. ▪ 0 None : NOT installed. The thermistor in the user interface and in the outdoor unit are used for measurement. ▪ 1 Outdoor: Connected to PCB of the indoor unit measuring the **outdoor temperature**. **Remark:** For some functionality, the temperature sensor in the outdoor unit is still used. ▪ 2 Room: Connected to PCB of the indoor unit measuring the **indoor temperature**. The temperature sensor in the user interface is NOT used anymore. **Remark:** This value has only meaning in room thermostat control.

Ext. amb. sensor offset

ONLY applicable in case an external outdoor ambient sensor is connected and configured.

You can calibrate the external outdoor ambient temperature sensor. It is possible to give an offset to the thermistor value. This setting can be used to compensate for situations where the external outdoor ambient sensor cannot be installed on the ideal installation location.

#	Code	Description
[9.B.2]	[2-0B]	Ext. amb. sensor offset: Offset on the ambient temperature measured on the external outdoor temperature sensor. ▪ –5°C~5°C, step 0.5°C

Averaging time

The average timer corrects the influence of ambient temperature variations. The weather-dependent set point calculation is done on the average outdoor temperature.

The outdoor temperature is averaged over the selected time period.

#	Code	Description
[9.B.3]	[1-0A]	Averaging time: ▪ 0: No averaging ▪ 1: 12 hours ▪ 2: 24 hours ▪ 3: 48 hours ▪ 4: 72 hours

Bivalent

Bivalent

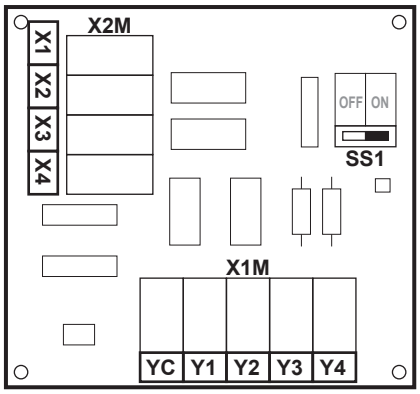
Only applies to indoor unit installations with an auxiliary boiler (alternating operation, connected in parallel). The purpose of bivalent operation is to determine which heating source can/will provide the space heating, either the indoor unit or an auxiliary boiler.

#	Code	Description
[9.C.1]	[C-02]	Bivalent: Indicates if the space heating is also performed by means of another heat source than the system. ▪ 0 No: Not installed ▪ 1 Yes: Installed. The auxiliary boiler (gas boiler, oil burner) will operate when the outdoor ambient temperature is low. During bivalent operation, the heat pump is turned off. Set this value in case an auxiliary boiler is used.

- If Bivalent is enabled: When the outdoor temperature drops below the bivalent ON temperature (fixed or variable based on energy prices), the space heating by the indoor unit stops automatically and the permission signal for the auxiliary boiler is active.
- If Bivalent is disabled: Space heating is only done by the indoor unit within the operation range. The permission signal for the auxiliary boiler is always inactive.

INFORMATION

- The combination of setting [4-03]=0/2 with bivalent operation at low outdoor temperature can result in domestic hot water shortage.
- The bivalent operation function has no impact on the domestic water heating mode. The domestic hot water is still and only heated by the indoor unit.
- The permission signal for the auxiliary boiler is located on the EKRP1HB (digital I/O PCB). When it is activated, the contact X1, X2 is closed and open when it is deactivated. See illustration below for the schematic location of this contact.



Boiler efficiency

Depending on the used boiler, this should be chosen as follows:

#	Code	Description
[9.C.2]	[7-05]	▪ 0: Very high ▪ 1: High ▪ 2: Medium ▪ 3: Low ▪ 4: Very low

Possibility 1: Based on the outdoor temperature

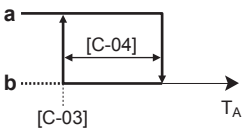
Set all electricity prices ([7.5.1]~[7.5.3]) to "0" in the menu structure. Also set the following values:

NOTICE

Do NOT use overview settings!

#	Code	Description
[9.C.3]	[C-03]	Bivalent ON temperature: Defines the outdoor temperature below which the permission signal for the auxiliary boiler is active (X1 and X2 on EKRP1HB is closed) and space heating by indoor unit is stopped.
[9.C.4]	[C-04]	Hysteresis: Defines the temperature difference between the ON temperature and the OFF temperature.

Permission signal X1–X2



T_A Outdoor temperature
[C-03] Bivalent ON temperature (fixed)
a Auxiliary boiler active
b Auxiliary boiler inactive

Possibility 2: Based on the outdoor temperature and energy prices

The installer can set a temperature range [C-04]. Depending on the energy prices, a calculated point T_{calc} varies within a range between [C-03] and [C-03]+[C-04]. It is recommended to choose [C-04] bigger than the default value to have an optimal operation when choosing possibility 2.

Electricity and gas prices

#	Code	Description
[7.5.1]	N/A	Electricity price > High
[7.5.2]	N/A	Electricity price > Medium
[7.5.3]	N/A	Electricity price > Low
[7.6]	N/A	Gas price

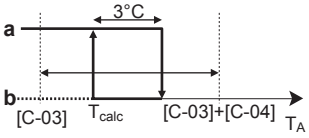
INFORMATION

Electricity price can only be set when bivalent is ON ([9.C.1] or [C-02]). These values can only be set in menu structure [7.5.1], [7.5.2] and [7.5.3]. Do NOT use overview settings.

When the outdoor temperature reaches below the T_{calc} point, then the permission signal for the auxiliary boiler becomes active. To prevent too much switching, there is a hysteresis of 3°C.

#	Code	Description
[9.C.3]	[C-03]	Bivalent ON temperature: Below this temperature bivalent operation will always be ON.
[9.C.4]	[C-04]	Operation range between which T_{calc} is calculated.

Permission signal X1–X2 (EKRP1HB**)**



T_A Outdoor temperature
T_{calc} Bivalent ON temperature (variable). Below this temperature, the auxiliary boiler will always be ON. T_{calc} can never go below [C-03] or above [C-03]+[C-04].
a Auxiliary boiler active
b Auxiliary boiler inactive

CAUTION

Make sure to observe all rules mentioned in application guideline 5 when bivalent operation function is enabled.

Daikin shall NOT be held liable for any damage resulting from failure to observe this rule.

Alarm output

Alarm output

#	Code	Description
[9.D]	[C–09]	Alarm output: Indicates the logic of the alarm output on the digital I/O PCB during malfunctioning. ▪ 0 Abnormal: The alarm output will be powered when an alarm occurs. By setting this value, a distinction is made between the detection of an alarm, and the detection of a power failure. ▪ 1 Normal : The alarm output will NOT be powered when an alarm occurs. See also table below (Alarm output logic).

Alarm output logic

[C-09]	Alarm	No alarm	No power supply to unit
0	Closed output	Open output	Open output
1	Open output	Closed output	

Auto restart

Auto restart

When power returns after a power supply failure, the auto restart function reapplies the remote controller settings at the time of the power failure. Therefore, it is recommended to always enable the function.

If the preferential kWh rate power supply is of the type that power supply is interrupted, always enable the auto restart function. Continuous indoor unit control can be guaranteed independent of the preferential kWh rate power supply status, by connecting the indoor unit to a normal kWh rate power supply.

#	Code	Description
[9.E]	[3-00]	Auto restart: ▪ 0: Manual ▪ 1: Automatic

Power saving function

Power saving function

Defines whether the outdoor unit power supply can be interrupted (internally by indoor unit control) during stand-still conditions (no space heating/cooling nor domestic hot water demand). The final decision to allow power interruption of the outdoor unit during standstill depends on the ambient temperature, compressor conditions and minimum internal timers.

To enable the power saving function setting, [E-08] needs to be enabled on the user interface.

#	Code	Description
[9.F]	[E-08]	`Power saving function` for outdoor unit: ▪ 0: `No` ▪ 1: `Yes`

Disable protections

INFORMATION

The software is equipped with an "installer-on-site" mode ([9.G]: `Disable protections`), that disables automatic operation by the unit. At first installation, setting `Disable protections` is by default set to `Yes`, meaning automatic operation is disabled. All protective functions are then disabled. If the user interface home pages are off, the unit will NOT operate automatically. To enable automatic operation and the protective functions, set `Disable protections` to `No`.

36 hours after the first power-on, the unit will automatically set `Disable protections` to `No`, ending "installer-on-site" mode and enabling the protective functions. If – after first installation – the installer returns to the site, the installer has to set `Disable protections` to `Yes` manually.

#	Code	Description
[9.G]	N/A	`Disable protections` ▪ 0: `No` ▪ 1: `Yes`

Forced defrost

Forced defrost

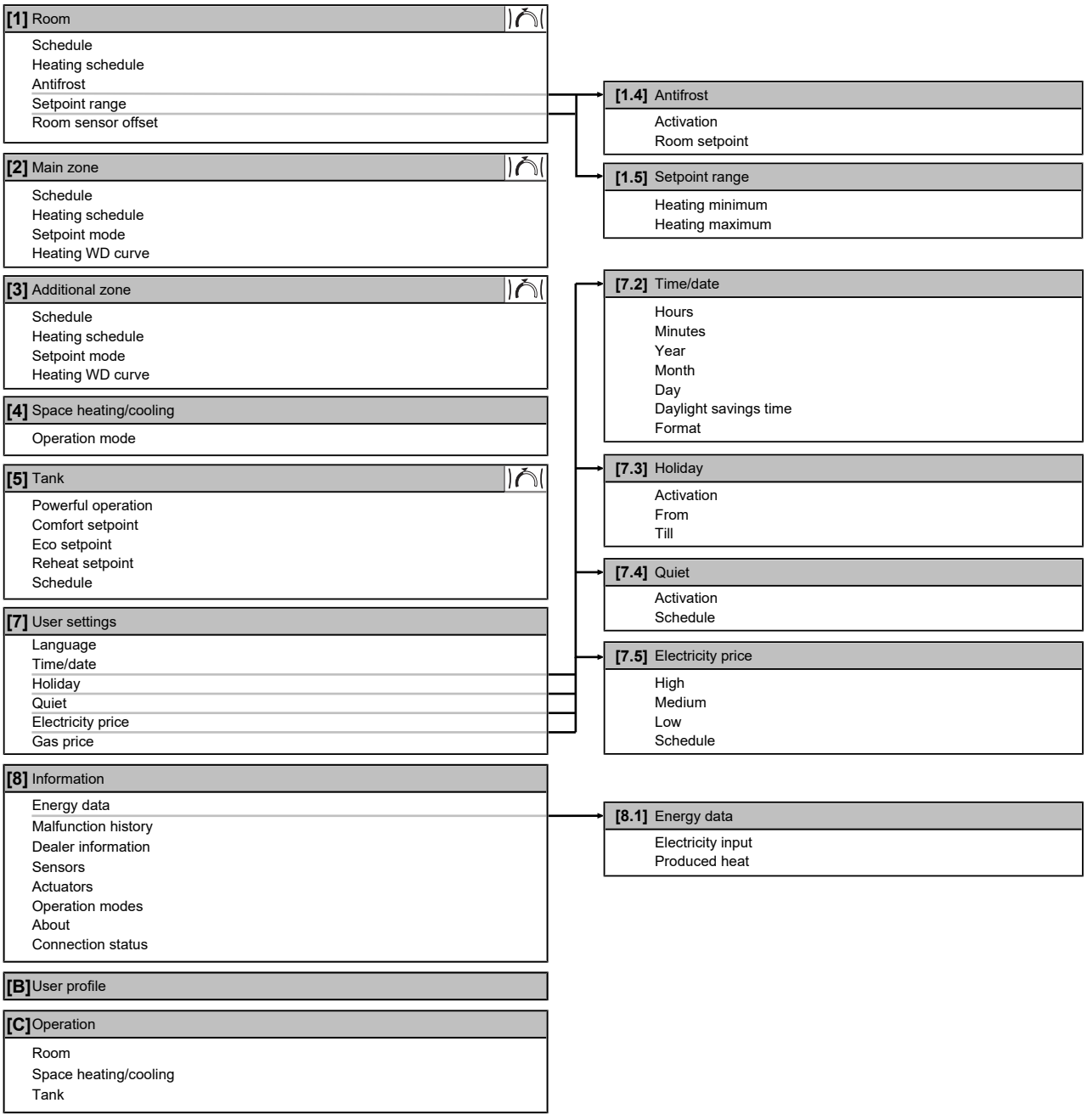
Manually start a defrost operation.

#	Code	Description
[9.H]	N/A	Do you want to start a defrost operation? ▪ `Back` ▪ `OK`

Overview field settings

All settings can be done using 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 in the field settings overview [9.I].
See "To modify an overview setting" on page 45.

8.5 Menu structure: Overview user settings

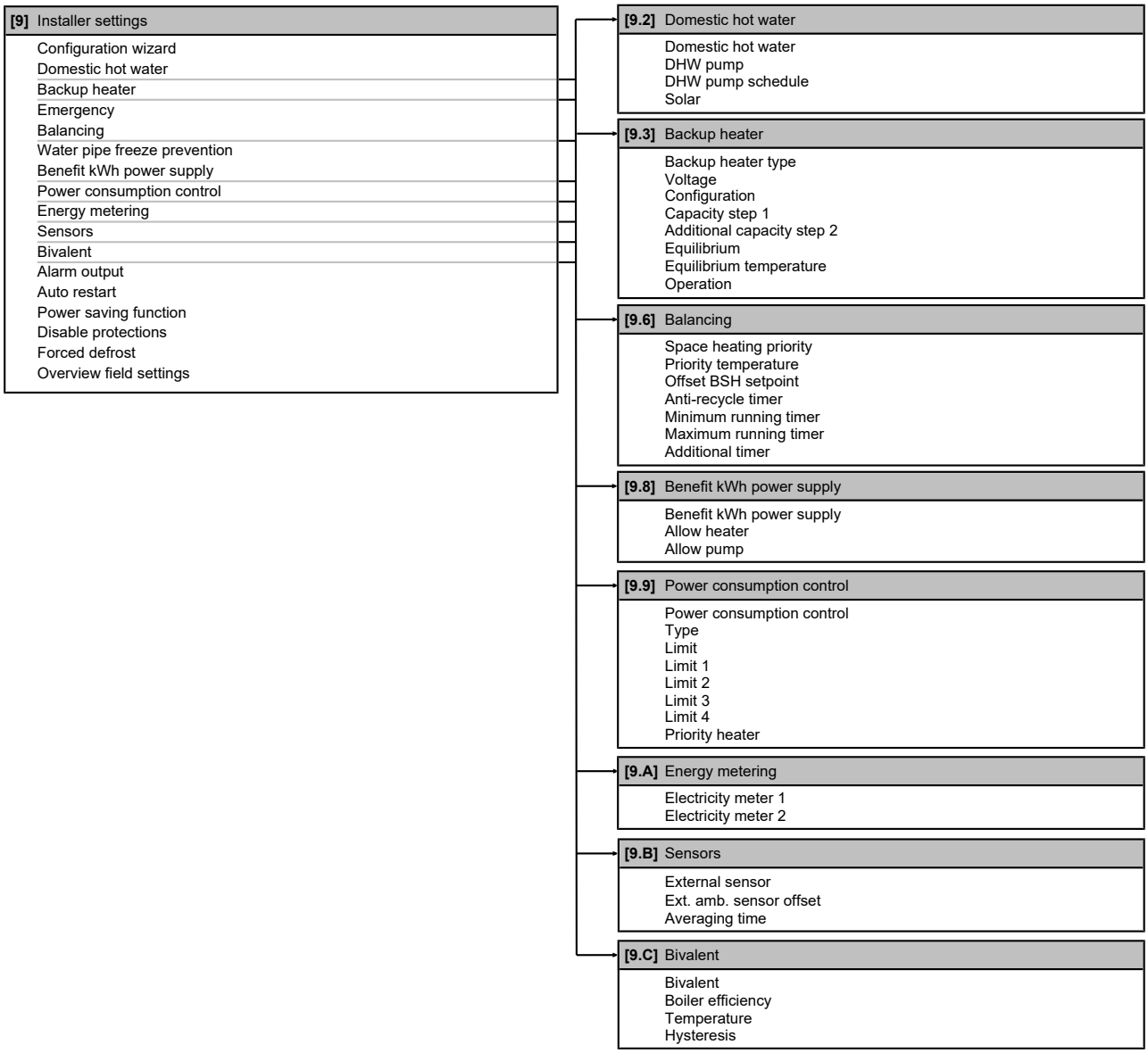


Setpoint screen

INFORMATION

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

8.6 Menu structure: Overview installer settings



INFORMATION

Solar kit settings are shown but are NOT applicable for this unit. Settings shall NOT be used or changed.

INFORMATION

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

9 Commissioning

INFORMATION

The software is equipped with an "installer-on-site" mode ([9.G]: `Disable protections`), that disables automatic operation by the unit. At first installation, setting `Disable protections` is by default set to `Yes`, meaning automatic operation is disabled. All protective functions are then disabled. If the user interface home pages are off, the unit will NOT operate automatically. To enable automatic operation and the protective functions, set `Disable protections` to `No`.

36 hours after the first power-on, the unit will automatically set `Disable protections` to `No`, ending "installer-on-site" mode and enabling the protective functions. If – after first installation – the installer returns to the site, the installer has to set `Disable protections` to `Yes` manually.

9.1 Overview: Commissioning

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

Typical workflow

Commissioning typically consists of the following stages:

1 Checking the "Checklist before commissioning".
2 Performing an air purge.
3 Performing a test run for the system.
4 If necessary, performing a test run for one or more actuators.
5 If necessary, performing an underfloor heating screed dryout.

9.2 Precautions when commissioning

INFORMATION

During the first running period of the unit, the required power may be higher than stated on the nameplate of the unit. This phenomenon is caused by the compressor, that needs a continuous run time of 50 hours before reaching smooth operation and stable power consumption.

NOTICE

NEVER operate the unit without thermistors and/or pressure sensors/switches. Burning of the compressor might result.

NOTICE

Do NOT operate the unit until the refrigerant piping is complete (when operated this way, the compressor will break).

9.3 Checklist before commissioning

After the installation of the unit, first check the following items. Once all below checks are fulfilled, the unit MUST be closed, ONLY then can the unit be powered up.

☐	You read the complete installation instructions, as described in the **installer reference guide**.
☐	The **indoor unit** is properly mounted.
☐	The **outdoor unit** is properly mounted.
☐	The following **field wiring** has been carried out according to this document and the applicable legislation: ▪ Between the local supply panel and the outdoor unit ▪ Between indoor unit and outdoor unit ▪ Between the local supply panel and the indoor unit ▪ Between the indoor unit and the valves (if applicable) ▪ Between the indoor unit and the room thermostat (if applicable)
☐	The system is properly **earthed** and the earth terminals are tightened.
☐	The **fuses** or locally installed protection devices are installed according to this document, and have NOT been bypassed.
☐	The **power supply voltage** matches the voltage on the identification label of the unit.
☐	There are NO **loose connections** or damaged electrical components in the switch box.
☐	There are NO **damaged components** or **squeezed pipes** on the inside of the indoor and outdoor units.
☐	**Backup heater circuit breaker** F1B (field supply) is turned ON.
☐	There are NO **refrigerant leaks**.
☐	The **refrigerant pipes** (gas and liquid) are thermally insulated.
☐	The correct pipe size is installed and the **pipes** are properly insulated.
☐	There is NO **water leak** inside the indoor unit.
☐	The **shut-off valves** are properly installed and fully open.
☐	The **stop valves** (gas and liquid) on the outdoor unit are fully open.
☐	The **air purge** valve is open (at least 2 turns).
☐	The **pressure relief valve** purges water when opened.
☐	The **domestic hot water tank** is filled completely.

9.4 Checklist during commissioning

☐	The **minimum flow rate** during backup heater/defrost operation is guaranteed in all conditions. See "To check the water volume and flow rate" in "6.4 Preparing water piping" on page 21.
☐	To perform an **air purge**.
☐	To perform a **test run**.
☐	To perform an **actuator test run**.
☐	**Underfloor screed dryout function** The underfloor screed dryout function is started (if necessary).

9.4.1 To check the minimum flow rate

Mandatory procedure for the additional zone

1	Confirm according to the hydraulic configuration which space heating loops can be closed due to mechanical, electronic, or other valves.	—

2	Close all space heating loops that can be closed (see previous step).	—
3	Start the pump test run operation (see "9.4.4 To perform an actuator test run" on page 74).	—
4	During pump test run operation, go to `Sensors`.	
5	Select the flow rate information. During test run operation, the unit can operate below the minimum required flow rate.	
6	Modify the bypass valve setting to reach the minimum required flow rate + 2 l/min.	—

Recommended procedure for the main zone

INFORMATION

The pump of the additional zone ensures that the minimum flow rate for correct operation of the unit is guaranteed.

1	Confirm according to the hydraulic configuration which space heating loops can be closed due to mechanical, electronic, or other valves.	—
2	Close all space heating loops that can be closed (see previous step).	—
3	Create a thermo request on the main zone only.	—
4	Wait 1 minute until the unit is stabilized.	—
5	If the additional pump is still assisting (the green LED on the right hand sided pump is ON) increase the flow until the additional pump is not assisting anymore (LED is OFF).	—
6	Go to [8.4.A]: `Information` > `Sensors` > `Flow rate`.	
7	Modify the bypass valve setting to reach the minimum required flow rate + 2 l/min.	—

Minimum required flow rate
12 l/min

9.4.2 Air purge function

When commissioning and installing the unit, it is very important to remove all air in the water circuit. When the air purge function is running, the pump operates without actual operation of the unit and the removal of air in the water circuit will start.

NOTICE

Before starting the air purge, open the safety valve and check if the circuit is sufficiently filled with water. Only if water escapes the valve after opening it, you can start the air purge procedure.

There are 2 modes for purging air:

- Manual: the unit operates with a fixed pump speed and in a fixed or custom position of the 3-way valve. The custom position of the 3-way valve is a more than helpful feature to remove all air from the water circuit in the space heating or the domestic hot water heating mode. Air purge must be performed for both the space heating and the domestic hot water circuit. The operation speed of the pump (slow or quick) can also be set.
- Automatic: the unit automatically changes the pump speed and switches the position of the 3-way valve between the space heating and the domestic hot water heating mode.

INFORMATION

For both manual and automatic air purge, 1 temperature zone is purged with each air purge start. To purge the other temperature zone, you have to restart the air purge function. When performing an air purge for the first time, the main temperature zone will be purged.

Typical workflow

Purging the air from the system should consist of:

1 Performing a manual air purge for both zones
2 Performing an automatic air purge for both zones

INFORMATION

Start by performing a manual air purge. When almost all the air is removed, perform an automatic air purge. If necessary, repeat performing the automatic air purge until you are sure that all air is removed from the system. During air purge function, pump speed limitation [9-0D] is NOT applicable.

The air purge function automatically stops after 30 minutes.

To perform a manual air purge

INFORMATION

When purging the main zone, make sure the setpoint for the main zone is at least 5°C higher than the actual water temperature inside the unit.

Conditions: Make sure all operation is disabled. Go to the `Operation` menu and turn off `Room`, `Space heating/cooling` and `Tank` operation.

1	Set the user permission level to Installer. See "To change the user permission level" on page 44.	—
2	Go to [A.3]: `Commissioning` > `Air purge`.	
3	In the menu, set `Type` = `Manual`.	
4	Select `Start air purge`.	
5	Select `OK` to confirm. **Result:** The air purge starts. It will stop automatically when air purge cycle is finished.	
6	During manual operation, you can change the desired pump speed. The position of the 3-way valve must be changed between space heating and domestic hot water. To change the settings during the air purge, open the menu and go to `Settings`.	
	▪ Scroll to `Circuit` and set it to `Space/Tank`.	
	▪ Scroll to `Pump speed` and set it to `Low/High`.	
7	To stop the air purge manually:	—
	1 Go to `Stop air purge`.	
	2 Select `OK` to confirm.	

INFORMATION

For both manual and automatic air purge, 1 temperature zone is purged with each air purge start. To purge the other temperature zone, you have to restart the air purge function. When performing an air purge for the first time, the main temperature zone will be purged.

To perform an automatic air purge

INFORMATION

When purging the main zone, make sure the setpoint for the main zone is at least 5°C higher than the actual water temperature inside the unit.

Conditions: Make sure all operation is disabled. Go to the `Operation` menu and turn off `Room`, `Space heating/cooling` and `Tank` operation.

1	Set the user permission level to Installer. See "To change the user permission level" on page 44.	—
2	Go to [A.3]: `Commissioning` > `Air purge`.	

3	In the menu, set Type = Automatic.	
4	Select Start air purge.	
5	Select OK to confirm. **Result:** The air purge starts. It stops automatically when done.	
6	To stop the air purge manually:	—
1	Go to Stop air purge.	
2	Select OK to confirm.	

9.4.3 To perform an operation test run

Conditions: Make sure all operation is disabled. Go to the Operation menu and turn off Room, Space heating/cooling and Tank operation.

INFORMATION

The test run only applies to the additional temperature zone.

1	Set the user permission level to Installer. See "To change the user permission level" on page 44.	—
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 done (±30 min).	
	To stop the test run manually:	—
1	Go to Stop test run.	
2	Select OK to confirm.	

If the installation of the unit has been done correctly, the unit will start up during test operation in the selected operation mode. During test mode, 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 temperature:

1	Go to Sensors.	
2	Select the temperature information.	

9.4.4 To perform an actuator test run

Conditions: Make sure all operation is disabled. Go to the Operation menu and turn off Room, Space heating/cooling and Tank operation.

Purpose of the actuator test run is to confirm the operation of the different actuators (e.g., when you select Pump, a test run of the pump will start).

1	Set the user permission level to Installer. See "To change the user permission level" on page 44.	—
2	Go to [A.2]: Commissioning > Actuator test run.	
3	Select a test from the list. **Example:** Pump.	
4	Select OK to confirm. **Result:** The actuator test run starts. It stops automatically when done (±30 min).	
	To stop the test run manually:	—
1	Go to Stop test run.	
2	Select OK to confirm.	

Possible actuator test runs

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

INFORMATION

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

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

9.4.5 Underfloor heating screed dryout

This function is used for drying out the screed of an underfloor heating system very slowly during the construction of a house. It allows the installer to program and execute this program.

Conditions: Make sure all operation is disabled. Go to the Operation menu and turn off Room, Space heating/cooling and Tank operation.

This function can be executed without finishing the outdoor installation. In this case, the backup heater will perform the screed dryout and supply the leaving water without heat pump operation.

When no outdoor unit is installed yet, then connect the main power supply cable to the indoor unit via X2M/30 and X2M/31. See "7.9.8 To connect the main power supply" on page 40.

INFORMATION

- If Emergency is set to Manual ([9.5]=0), and the unit is triggered to start emergency operation, the user interface will ask confirmation before starting. The underfloor heating screed dryout function is active even if the user does NOT confirm emergency operation.
- During underfloor heating screed dryout, pump speed limitation [9-0D] is NOT applicable.

NOTICE

The installer is responsible for:

- contacting the screed manufacturer for the initial heating instructions to avoid cracking the screed,
- programming the underfloor heating screed dryout schedule according to the above instruction of the screed manufacturer,
- checking the proper functioning of the setup on a regular basis,
- selecting the correct program complying with the type of the used screed of the floor.

NOTICE

To perform an underfloor heating screed dryout, room frost protection needs to be disabled ([2-06]=0). By default, it is enabled ([2-06]=1). However, due to the "installer-on-site" mode (see "Commissioning"), room frost protection will be automatically disabled for 36 hours after the first power-on.

If the screed dryout still needs to be performed after the first 36 hours of power-on, manually disable room frost protection by setting [2-06] to "0", and KEEP it disabled until the screed dryout has finished. Ignoring this notice will result in cracking of the screed.

NOTICE

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

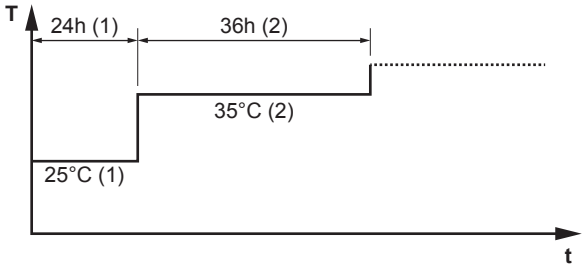
- [4-00]=1
- [C-02]=0
- [D-01]=0
- [4-08]=0
- [4-01]≠1

The installer can program up to 20 steps. For each step he needs to enter:

1 the duration in hours, up to 72 hours,

2 the desired leaving water temperature.

Example:



T Desired leaving water temperature (15~55°C)
t Duration (1~72 h)
(1) Action step 1
(2) Action step 2

To program an underfloor heating screed dryout schedule

1	Set the user permission level to Installer. See "To change the user permission level" on page 44.	—
2	Go to the programming screen [A.4.2]: `Commissioning` > `UFH screed dryout` > `Program`.	
3	Program the schedule: To add a new step, select an empty line and change its value. To delete a step and all steps below it, decrease the duration to "–".	—
	▪ Scroll through the schedule.	
	▪ Adjust the duration (between 1 and 72 hours) and temperatures (between 15°C and 55°C).	
4	Press the left dial to save the schedule.	

To perform an underfloor heating screed dryout

Conditions: Make sure all operation is disabled. Go to the `Operation` menu and turn off `Room`, `Space heating/cooling` and `Tank` operation.

1	Set the user permission level to Installer. See "To change the user permission level" on page 44.	—
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.	

To read out the status of an underfloor heating screed dryout

Prerequisite: You are performing an underfloor heating screed dryout.

1 Press ↰.

2 A graph highlighting the current step of the screed dryout schedule, the total remaining time, and the current desired leaving water temperature will be displayed.

Press the left dial to access the menu structure and view the status of sensors and actuators and to adjust the current program.

To stop an underfloor heating screed dryout

When the program is stopped by an error, an operation switch off, or a power failure, the U3 error will be displayed on the user interface. To resolve the error codes, see "12.4 Solving problems based on error codes" on page 81.

1	Start in the `UFH screed dryout` screen.	—
2	Open the menu and select `Stop UFH screed dryout`.	
3	Select `OK` to confirm. **Result:** The underfloor heating screed dryout is stopped.	

When the program is stopped due to an error, an operation switch-off, or a power failure, you can read out the underfloor heating screed dryout status:

1	Go to [A.4.3]: `Commissioning` > `UFH screed dryout` > `Status`	
2	You can read out the value here: `Stopped at` + the step where the underfloor screed dryout was stopped.	—
3	Modify and restart the execution of the program.	—

10 Hand-over to the user

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

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

11 Maintenance and service

NOTICE

Maintenance MUST be done by an authorized installer or service agent.

We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.

NOTICE

Applicable legislation on **fluorinated greenhouse gases** requires that the refrigerant charge of the unit is indicated both in weight and CO_2 equivalent.

Formula to calculate the quantity in CO_2 equivalent tonnes: GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

11.1 Overview: Maintenance and service

This chapter contains information about:

- The yearly maintenance of the outdoor unit
- The yearly maintenance of the indoor unit

11.2 Maintenance safety precautions

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

NOTICE: Risk of electrostatic discharge

Before performing any maintenance or service work, touch a metal part of the unit in order to eliminate static electricity and to protect the PCB.

11.3 Checklist for yearly maintenance of the outdoor unit

Check the following at least once a year:

- Heat exchanger
  The heat exchanger of the outdoor unit can get blocked up due to dust, dirt, leaves, etc. It is recommended to clean the heat exchanger yearly. A blocked heat exchanger can lead to too low pressure or too high pressure leading to worse performance.

11.4 Checklist for yearly maintenance of the indoor unit

Check the following at least once a year:

- Water pressure
- Water filters
- Magnetic filter/dirt separator
- Water pressure relief valve
- Relief valve hose
- Pressure relief valve of the domestic hot water tank
- Switch box
- Descaling
- Chemical disinfection

Water pressure

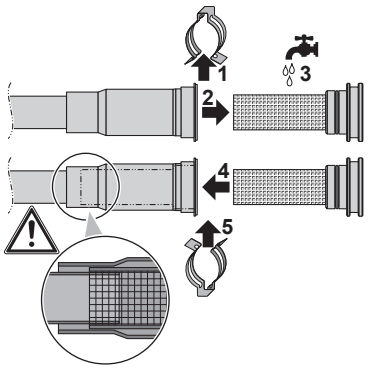
Keep water pressure above 1 bar. If it is lower, add water.

Water filters

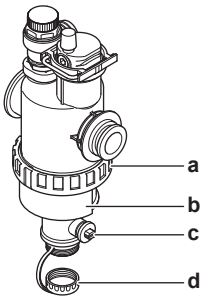
Clean the water filters.

NOTICE

Handle the water filters with care. Do NOT use excessive force when you reinsert the water filters so as NOT to damage the water filters mesh.



Magnetic filter/dirt separator



a Screw connection
b Magnetic sleeve
c Drain valve
d Drain cap

The yearly maintenance of the magnetic filter/dirt separator consists of:

- Checking if both parts of the magnetic filter/dirt separator are still screwed tight (a).
- Emptying the dirt separator as follows:

1 Take off the magnetic sleeve (b).

2 Unscrew the drain cap (d).

3 Connect a drain hose to the bottom of the water filter so that the water and dirt can be collected in a suitable container (bottle, sink...).

4 Open the drain valve for a couple of seconds (c).

Result: Water and dirt will come out.

5 Close the drain valve.

6 Screw the drain cap back on.

7 Reattach the magnetic sleeve.

8 Check the pressure of the water circuit. If required, add water.

NOTICE

- When checking the magnetic filter/dirt separator for tightness, hold it firmly, so as NOT to apply stress to the water piping.
- Do NOT isolate the magnetic filter/dirt separator by closing the shut-off valves. To properly empty the dirt separator, sufficient pressure is required.
- To prevent dirt from remaining in the dirt separator, ALWAYS take off the magnetic sleeve.
- ALWAYS first unscrew the drain cap, and connect a drain hose to the bottom of the water filter, then open the drain valve.

INFORMATION

For yearly maintenance, you do not have to remove the water filter from the unit to clean it. But in case of trouble with the water filter, you might have to remove it so that you can thoroughly clean it. Then you need to do as follows:

- "11.5.1 To remove the water filter" on page 78
- "11.5.2 To clean the water filter in case of trouble" on page 78
- "11.5.3 To install the water filter" on page 78

Water pressure relief valve

Open the valve and check if it operates correctly. **The water may be very hot!**

Checkpoints are:

- The water flow coming from the relief valve is high enough, no blockage of the valve or in between piping is suspected.
- Dirty water coming out of the relief valve:
  - open the valve until the discharged water does NOT contain dirt anymore
  - flush the system

To make sure this water originates from the tank, check after a tank heat up cycle.

It is recommended to do this maintenance more frequently.

Pressure relief valve hose

Check whether the pressure relief valve hose is positioned appropriately to drain the water. See "7.4.4 To connect the drain hose to the drain" on page 30.

Relief valve of the domestic hot water tank (field supply)

Open the valve.

CAUTION

Water coming out of the valve may be very hot.

- Check if nothing blocks the water in the valve or in between piping. The water flow coming from the relief valve must be high enough.
- Check if the water coming out of the relief valve is clean. If it contains debris or dirt:
  - Open the valve until the discharged water does not contain debris or dirt anymore.
  - Flush and clean the complete tank, including the piping between the relief valve and cold water inlet.

To make sure this water originates from the tank, check after a tank heat up cycle.

INFORMATION

It is recommended to perform this maintenance more than once a year.

Switch box

- Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.
- Using an ohmmeter, check if contactors K1M, K2M and K3M operate correctly. All contacts of these contactors must be in open position when the power is turned OFF.

WARNING

If the internal wiring is damaged, it has to be replaced by the manufacturer, its service agent or similarly qualified persons.

Descaling

Depending on water quality and set temperature, scale can deposit on the heat exchanger inside the domestic hot water tank and can restrict heat transfer. For this reason, descaling of the heat exchanger may be required at certain intervals.

Chemical disinfection

If the applicable legislation requires a chemical disinfection in specific situations, involving the domestic hot water tank, please be aware that the domestic hot water tank is a stainless steel cylinder. We recommend to use a non-chloride based disinfectant approved for use with water intended for human consumption.

NOTICE

When using means for descaling or chemical disinfection, it must be ensured that the water quality remains compliant with EU directive 98/83 EC.

11.4.1 To drain the domestic hot water tank

DANGER: RISK OF BURNING

The water in the tank can be very hot.

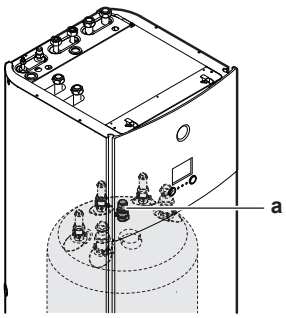
Prerequisite: Stop the unit operation (via the user interface, central controller, operation switch, …).

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Close the cold water supply.

Prerequisite: Open all the hot water tapping points to allow air to enter the system.

1. Remove the top panel, the user interface panel and the front panel.
2. Lower the switch box.
3. Remove the stop from the access point to the tank.
4. Use a drain hose and a pump to drain the tank via the access point.



a Access point to the tank

11.5 About cleaning the water filter in case of trouble

INFORMATION

For yearly maintenance, you do not have to remove the water filter from the unit to clean it. But in case of trouble with the water filter, you might have to remove it so that you can thoroughly clean it. Then you need to do as follows:

- "11.5.1 To remove the water filter" on page 78
- "11.5.2 To clean the water filter in case of trouble" on page 78
- "11.5.3 To install the water filter" on page 78

11.5.1 To remove the water filter

Prerequisite: Stop the unit operation (via the user interface, central controller, operation switch, …).

Prerequisite: Turn OFF the respective circuit breaker.

1 The water filter is located behind the switch box. To get access to it, see:
- "7.2.3 To open the indoor unit" on page 25
- "7.2.5 To lower the switch box on the indoor unit" on page 26

2 Close the stop valves of the water circuit.

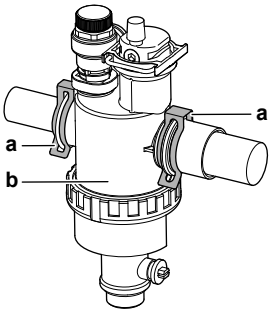
3 Close the valve (if equipped) of the water circuit towards the expansion vessel.

4 Remove the cap on the bottom of the magnetic filter/dirt separator.

5 Connect a drain hose to the bottom of the water filter.

6 Open the valve on the bottom of the water filter to drain water from the water circuit. Collect the drained water in a bottle, sink, … using the installed drain hose.

7 Remove the 2 clips that fix the water filter.



a Clip
b Magnetic filter/dirt separator

8 Remove the water filter.

9 Remove the drain hose from the water filter.

CAUTION

Although the water circuit is drained, some water may be spilled when removing the magnetic filter/dirt separator from the filter housing. ALWAYS clean spilled water.

11.5.2 To clean the water filter in case of trouble

1 Remove the water filter from the unit. See "11.5.1 To remove the water filter" on page 78.

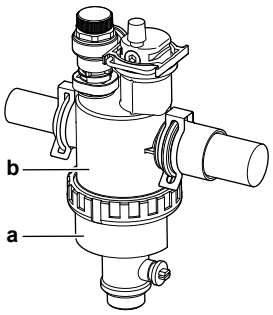
CAUTION

To protect the piping connected to the magnetic filter/dirt separator from damage it is recommended to perform this procedure with the magnetic filter/dirt separator removed from the unit.

2 Unscrew the bottom of the water filter housing. Use an appropriate tool if needed.

CAUTION

Opening the magnetic filter/dirt separator is ONLY required in case of severe issues. Preferably this action is never to be done during the complete lifetime of the magnetic filter/dirt separator.



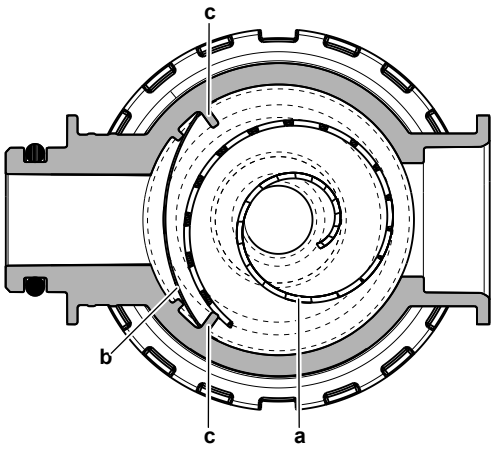
a Bottom part to be unscrewed
b Water filter housing

3 Remove the strainer and the rolled-up filter from the water filter housing and clean with water.

4 Install the cleaned rolled-up filter and strainer in the water filter housing.

INFORMATION

Correctly install the strainer in the magnetic filter/dirt separator housing using the protrusions.



a Rolled-up filter
b Strainer
c Protrusion

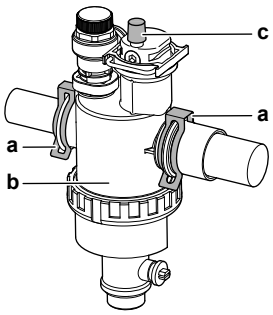
5 Install and properly tighten the bottom of the water filter housing.

11.5.3 To install the water filter

CAUTION

Check the condition of the O-rings and replace if needed. Apply water to the O-rings before installation.

1 Install the water filter in the correct location.



a Clip
b Magnetic filter/dirt separator
c Air purge valve

2 Install the 2 clips to fix the water filter to the water circuit pipes.

3 Make sure that the air purge valve of the water filter is in the open position.

4 Open the valve (if equipped) of the water circuit towards the expansion vessel.

CAUTION

Make sure to open the valve (if equipped) towards the expansion vessel, otherwise the overpressure will be generated.

5 Open the stop valves and add water to the water circuit if needed.

12 Troubleshooting

For the symptoms listed below, you can try to solve the problem yourself. For any other problem, contact your installer. You can find the contact/helpdesk number via the user interface.

12.1 Overview: Troubleshooting

This chapter describes what you have to do in case of problems.

It contains information about:

- Solving problems based on symptoms
- Solving problems based on error codes

Before troubleshooting

Carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

12.2 Precautions when troubleshooting

WARNING

- When carrying out an inspection on the switch box of the unit, ALWAYS make sure that the unit is disconnected from the mains. Turn off the respective circuit breaker.
- When a safety device was activated, stop the unit and find out why the safety device was activated before resetting it. NEVER shunt safety devices or change their values to a value other than the factory default setting. If you are unable to find the cause of the problem, call your dealer.

DANGER: RISK OF ELECTROCUTION

WARNING

Prevent hazards due to inadvertent resetting of the thermal cut-out: power to this appliance MUST NOT be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly turned ON and OFF by the utility.

DANGER: RISK OF BURNING

12.3 Solving problems based on symptoms

12.3.1 Symptom: The unit is NOT heating as expected

Possible causes	Corrective action
The temperature setting is NOT correct	Check the temperature setting on the remote controller. Refer to the operation manual.
The water flow is too low	Check and make sure that: ▪ All shut-off valves of the water circuit are completely open. ▪ The water filters are clean. Clean if necessary. ▪ There is no air in the system. Purge air if necessary. You can purge air manually (see "To perform a manual air purge" on page 73) or use the automatic air purge function (see "To perform an automatic air purge" on page 73). ▪ The water pressure is >1 bar. ▪ The expansion vessel is NOT broken. ▪ The valve (if equipped) of the water circuit towards the expansion vessel is open. ▪ The resistance in the water circuit is NOT too high for the pump (see the ESP curve in the "Technical data" chapter). If the problem persists after you have conducted all of the above checks, contact your dealer. In some cases, it is normal that the unit decides to use a low water flow.
The water volume in the installation is too low	Make sure that the water volume in the installation is above the minimum required value (see "6.4.3 To check the water volume and flow rate" on page 22).

12.3.2 Symptom: The compressor does NOT start (space heating or domestic water heating)

Possible causes	Corrective action
The unit must start up out of its operation range (the water temperature is too low)	If the water temperature is too low, the unit uses the backup heater to reach the minimum water temperature first (15°C). Check and make sure that: ▪ The power supply to the backup heater is correctly wired. ▪ The backup heater thermal protector is NOT activated. ▪ The backup heater contactor is NOT broken. If the problem persists after you have conducted all of the above checks, contact your dealer.
The preferential kWh rate power supply settings and electrical connections do NOT match	This should match with the connections as explained in "6.5 Preparing electrical wiring" on page 24 and "7.9.8 To connect the main power supply" on page 40.

Possible causes	Corrective action
The preferential kWh rate signal was sent by the electricity company	Wait for the power to return (2 hours max.).

12.3.3 Symptom: The system is making gurgling noises after commissioning

Possible cause	Corrective action
There is air in the system.	Purge air from the system.(a)
Various malfunctions.	Check if 🔔 or ⚠ is displayed on the home screen of the user interface. See "12.4.1 To display the help text in case of a malfunction" on page 81 for more information about the malfunction.

(a) We recommend to purge air with the air purge function of the unit (to be performed by the installer). 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.

12.3.4 Symptom: The pump is making noise (cavitation)

Possible causes	Corrective action
There is air in the system	Purge air manually on both zones (see "To perform a manual air purge" on page 73) or use the automatic air purge function on both zones (see "To perform an automatic air purge" on page 73).
The water pressure at the pump inlet is too low	Check and make sure that: ▪ The water pressure is >1 bar. ▪ The water pressure sensor is not broken. ▪ The expansion vessel is NOT broken. ▪ The valve (if equipped) of the water circuit towards the expansion vessel is open. ▪ The pre-pressure setting of the expansion vessel is correct (see "6.4.4 Changing the pre-pressure of the expansion vessel" on page 23).

12.3.5 Symptom: The pressure relief valve opens

Possible causes	Corrective action
The expansion vessel is broken	Replace the expansion vessel.
The valve (if equipped) of the water circuit towards the expansion vessel is closed.	Open the valve.
The water volume in the installation is too high	Make sure that the water volume in the installation is below the maximum allowed value (see "6.4.3 To check the water volume and flow rate" on page 22 and "6.4.4 Changing the pre-pressure of the expansion vessel" on page 23).
The water circuit head is too high	The water circuit head is the difference in height between the indoor unit and the highest point of the water circuit. If the indoor unit is located at the highest point of the installation, the installation height is considered 0 m. The maximum water circuit head is 10 m. Check the installation requirements.

12.3.6 Symptom: The water pressure relief valve leaks

Possible causes	Corrective action
Dirt is blocking the water pressure relief valve outlet	Check whether the pressure relief valve works correctly by turning the red knob on the valve counterclockwise: ▪ If you do NOT hear a clacking sound, contact your dealer. ▪ If the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your dealer.

12.3.7 Symptom: The space is NOT sufficiently heated at low outdoor temperatures

Possible causes	Corrective action
The backup heater operation is not activated	Check the following: ▪ The backup heater operation mode is enabled. Go to: ▪ [9.3.8]: `Installer settings` > `Backup heater` > `Operation` [4-00] ▪ The backup heater overcurrent circuit breaker is on. If not, turn it back on. ▪ The thermal protector of the backup heater is NOT activated. If it has, check the following, and then press the reset button in the switch box: ▪ The water pressure ▪ Whether there is air in the system ▪ The air purge operation

Possible causes	Corrective action
The backup heater equilibrium temperature has not been configured correctly	Increase the equilibrium temperature to activate the backup heater operation at a higher outdoor temperature. Go to: ▪ [9.3.7]: `Installer settings > Backup heater > Equilibrium temperature` [5-01]
There is air in the system.	Purge air manually or automatically. See the air purge function in the chapter "9 Commissioning" on page 72.
Too much heat pump capacity is used for heating domestic hot water	Check and make sure that the `Space heating priority` settings have been configured appropriately: ▪ Make sure that the `Space heating priority` has been enabled. Go to [9.6.1]: `Installer settings > Balancing > Space heating priority` [5-02] ▪ Increase the "space heating priority temperature" to activate backup heater operation at a higher outdoor temperature. Go to [9.6.3]: `Installer settings > Balancing > Offset BSH setpoint` [5-03]

12.3.8 Symptom: The pressure at the tapping point is temporarily unusually high

Possible causes	Corrective action
Failing or blocked pressure relief valve.	▪ Flush and clean the complete tank including the piping between pressure relief valve and the cold water inlet. ▪ Replace the pressure relief valve.

12.3.9 Symptom: Decoration panels are pushed away due to a swollen tank

Possible causes	Corrective action
Failing or blocked pressure relief valve.	Contact your local dealer.

12.3.10 Symptom: Tank disinfection function is NOT completed correctly (AH-error)

Possible causes	Corrective action
The disinfection function was interrupted by domestic hot water tapping	Program the start-up of the disinfection function when the coming 4 hours NO domestic hot water tapping is expected.
Large domestic hot water tapping happened recently before the programmed start-up of the disinfection function	When `Tank > Heat up mode > Reheat only` or `Schedule + reheat` is selected, it is recommended to program the start-up the disinfection function at least 4 hours later than the last expected large hot water tapping. This start-up can be set by installer settings (disinfection function). When `Tank > Heat up mode > Schedule only` is selected, it is recommended to program a `Eco` action 3 hours before the scheduled start-up of the disinfection function to preheat the tank.
The disinfection operation was stopped manually: [C.3] `Operation > Tank` was turned off during disinfection.	Do NOT stop tank operation during disinfection.

12.4 Solving problems based on error codes

If the unit runs into a problem, the user interface displays an error code. It is important to understand the problem and to take measures before resetting an error code. This should be done by a licensed installer or by your local dealer.

This chapter gives you an overview of all possible error codes and their descriptions as they appear on the user interface.

For detailed troubleshooting of each error, see the service manual.

12.4.1 To display the help text in case of a malfunction

In case of a malfunction, the following will appear on the home screen depending on the severity:

- : Error
- : Malfunction

You can get a short and a long description of the malfunction as follows:

1	Press the left dial to open the main menu and go to `Malfunctioning`. **Result:** A short description of the error and the error code is displayed on the screen.	
2	Press **?** in the error screen. **Result:** A long description of the error is displayed on the screen.	**?**

12.4.2 Error codes: Overview

Error codes of the outdoor unit

Error code	Detailed error code	Description
A1	00	`Zero cross detection problem`
A5	00	`OU: High pressure peak cut / freeze protection problem`
E1	00	`OU: PCB defect`

Error code	Detailed error code	Description
E3	00	OU: Actuation of high pressure switch (HPS)
E5	00	OU: Overheat of inverter compressor motor
E6	00	OU: Compressor startup defect
E7	00	OU: Malfunction of outdoor unit fan motor
E8	00	OU: Power input overvoltage
EA	00	OU: Cool/heat switchover problem
H0	00	OU: Voltage/current sensor problem
H3	00	OU: Malfunction of high pressure switch (HPS)
H6	00	OU: Malfunction of position detection sensor
H8	00	OU: Malfunction of compressor input (CT) system
H9	00	OU: Malfunction of outdoor air thermistor
F3	00	OU: Malfunction of discharge pipe temperature
F6	00	OU: Abnormal high pressure in cooling
FA	00	OU: Abnormal high pressure, actuation of HPS
JA	00	OU: Malfunction of high pressure sensor
J3	00	OU: Malfunction of discharge pipe thermistor
J6	00	OU: Malfunction of heat exchanger thermistor
J6	07	OU: Malfunction of heat exchanger thermistor
L3	00	OU: Electrical box temperature rise problem
L4	00	OU: Malfunction of inverter radiating fin temperature rise
L5	00	OU: Inverter instantaneous overcurrent (DC)
P4	00	OU: Malfunction of radiating fin temperature sensor
U0	00	OU: Shortage of refrigerant
U2	00	OU: Defect of power supply voltage
U7	00	OU: Transmission malfunction between main CPU- INV CPU

Error codes of the indoor unit

Error code	Detailed error code	Description
7H	01	Water flow problem
7H	04	Water flow problem during domestic hot water production
7H	05	Water flow problem during heating/sampling
7H	06	Water flow problem during cooling/defrost
7H	07	Water flow problem. Pump deblocking active
80	00	Returning water temperature sensor problem
81	00	Leaving water temperature sensor problem
81	01	Mixed water thermistor abnormality.
89	01	Heat exchanger frozen
89	02	Heat exchanger frozen
89	03	Heat exchanger frozen
8F	00	Abnormal increase outlet water temperature (DHW)
8H	00	Abnormal increase outlet water temperature
8H	01	Overheating mixed water circuit
8H	02	Overheating mixed water circuit (thermostat)
8H	03	Overheating water circuit (thermostat)
AA	01	Backup heater overheated
AA	02	External backup heater overheated
AH	00	Tank disinfection function not completed correctly
AJ	03	Too long DHW heat-up time required
C0	00	Water flow detected while pump is OFF
C0	01	Flow switch malfunction
C0	02	Flow switch malfunction
C4	00	Heat exchanger temperature sensor problem
CJ	02	Room temperature sensor problem
EC	00	Abnormal increase tank temperature
EC	04	Tank preheating
H1	00	External temperature sensor problem
HC	00	Tank temperature sensor problem
HC	01	Second tank temperature sensor problem
HJ	10	Water pressure sensor abnormality
JA	17	Refrigerant pressure sensor abnormality
U3	00	Underfloor heating screed dryout function not completed correctly
U4	00	Indoor/outdoor unit communication problem

Error code	Detailed error code	Description
U5	00	User interface communication problem
U8	01	Connection with LAN adapter lost
U8	02	Connection with room thermostat lost
U8	03	No connection with room thermostat
UA	00	Indoor unit, outdoor unit matching problem
UA	16	Extension/hydro communication problem
UA	17	Tank type problem
UA	21	Extension/hydro mismatch problem
UA	22	Communication problem between control box and option box

NOTICE

When the minimum water flow is lower than described in the table below, the unit will temporarily stop operation and the user interface will display error 7H-01. After some time, this error will reset automatically and the unit will resume operation.

INFORMATION

Error AJ-03 is reset automatically from the moment there is a normal tank heat-up.

INFORMATION

How an error code can be reset will be displayed on the user interface connected on the indoor unit.

13 Disposal

NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

13.1 Overview: Disposal

Typical workflow

Disposing of the system typically consists of the following stages:

1 Pumping down the system.

2 Bringing the system to a specialized treatment facility.

INFORMATION

For more details, see the service manual.

13.2 To pump down

Example: To protect the environment, pump down when relocating the unit or when disposing of the unit.

DANGER: RISK OF EXPLOSION

Pump down – Refrigerant leakage. If you want to pump down the system, and there is a leak in the refrigerant circuit:

- Do NOT use the unit's automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit. **Possible consequence:** Self-combustion and explosion of the compressor because of air going into the operating compressor.
- Use a separate recovery system so that the unit's compressor does NOT have to operate.

NOTICE

During pump down operation, stop the compressor before removing the refrigerant piping. If the compressor is still running and the stop valve is open during pump down, air will be sucked into the system. Compressor breakdown or damage to the system can result due to abnormal pressure in the refrigerant cycle.

Pump down operation will extract all refrigerant from the system into the outdoor unit.

1 Remove the valve lid from the liquid stop valve and the gas stop valve.

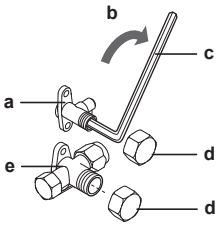
2 Install a manifold on the gas stop valve.

3 Carry out the forced cooling operation. See "13.3 To start and stop forced cooling" on page 83.

4 After 5 to 10 minutes (after only 1 or 2 minutes in case of very low ambient temperatures (<−10°C)), close the liquid stop valve with a hexagonal wrench.

5 Check on the manifold if the vacuum is reached.

6 After 2-3 minutes, close the gas stop valve and stop forced cooling operation.

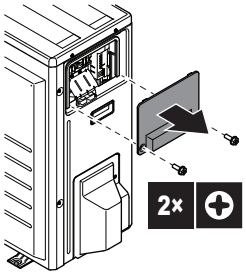


a Liquid stop valve
b Closing direction
c Hexagonal wrench
d Valve lid
e Gas stop valve

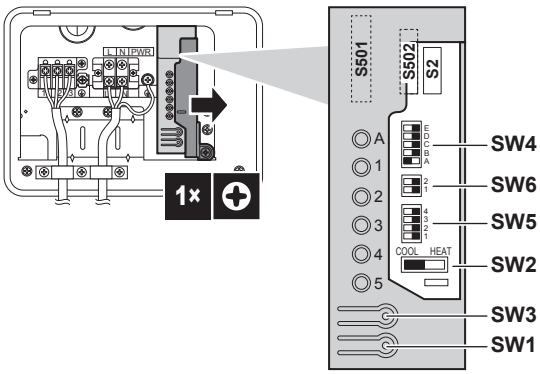
13.3 To start and stop forced cooling

1 Turn OFF the power.

2 Remove the switch box cover.



3 Remove the service PCB cover.



4 Set DIP switches SW5 and SW6 to OFF.

5 Set DIP switch SW2 to COOL.

6 Reattach the service PCB cover.

7 Turn the power back ON. **Proceed with the next step within 3 minutes after restarting.**

8 To start forced cooling, press the forced cooling operation switch SW1.

9 To stop forced cooling, press the forced cooling operation switch SW1 again.

10 Turn OFF the power, remove the switch box cover and service PCB cover and set the DIP switches SW5, SW6 and SW2 back to their original position.

11 Reattach the service PCB cover and switch box cover and turn the power back ON.

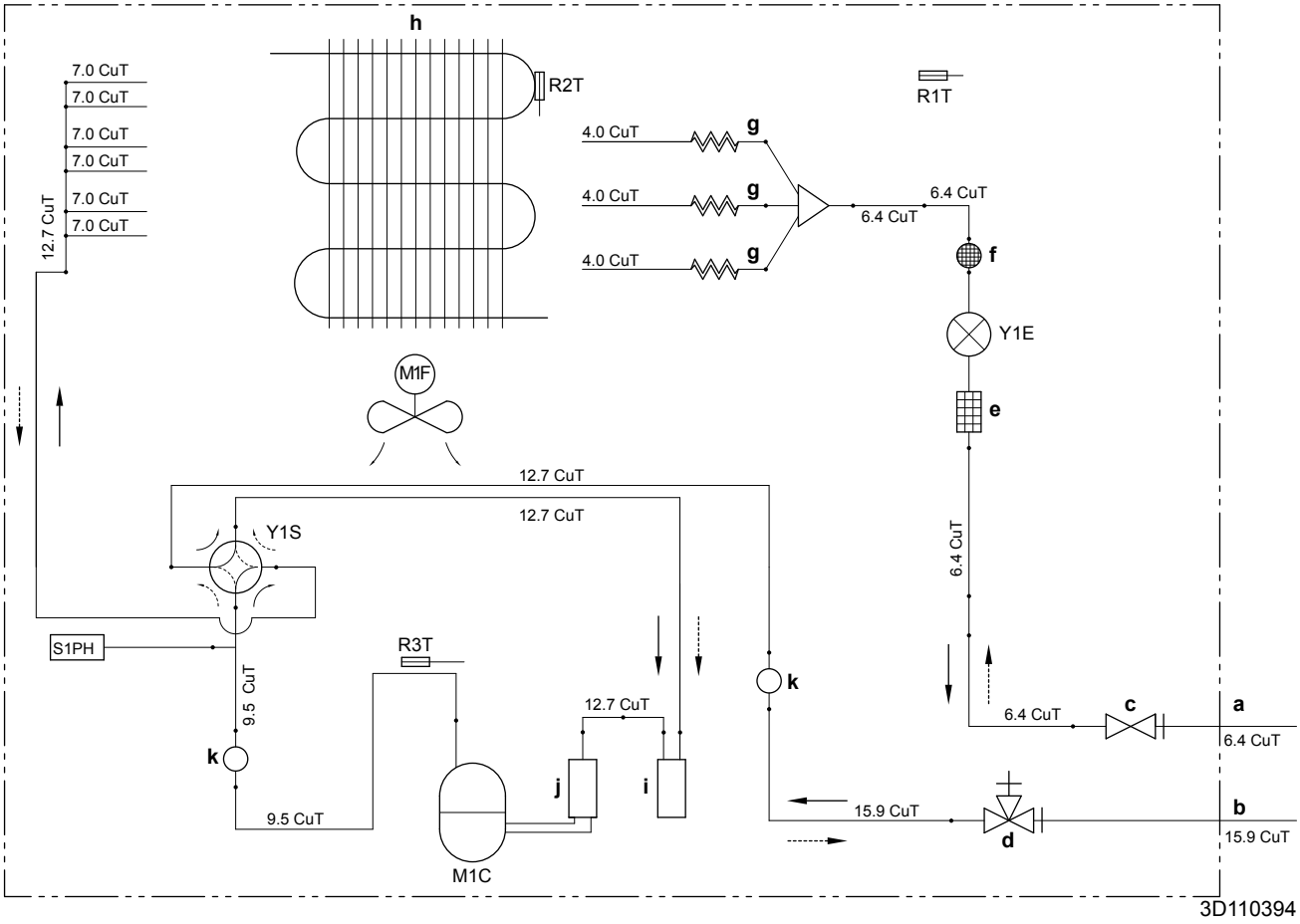
NOTICE

Take care that while running forced cooling operation, the water temperature remains higher than 5°C (see temperature read out of the indoor unit). You can achieve this, for example, by activating all fans of the fan coil units.

14 Technical data

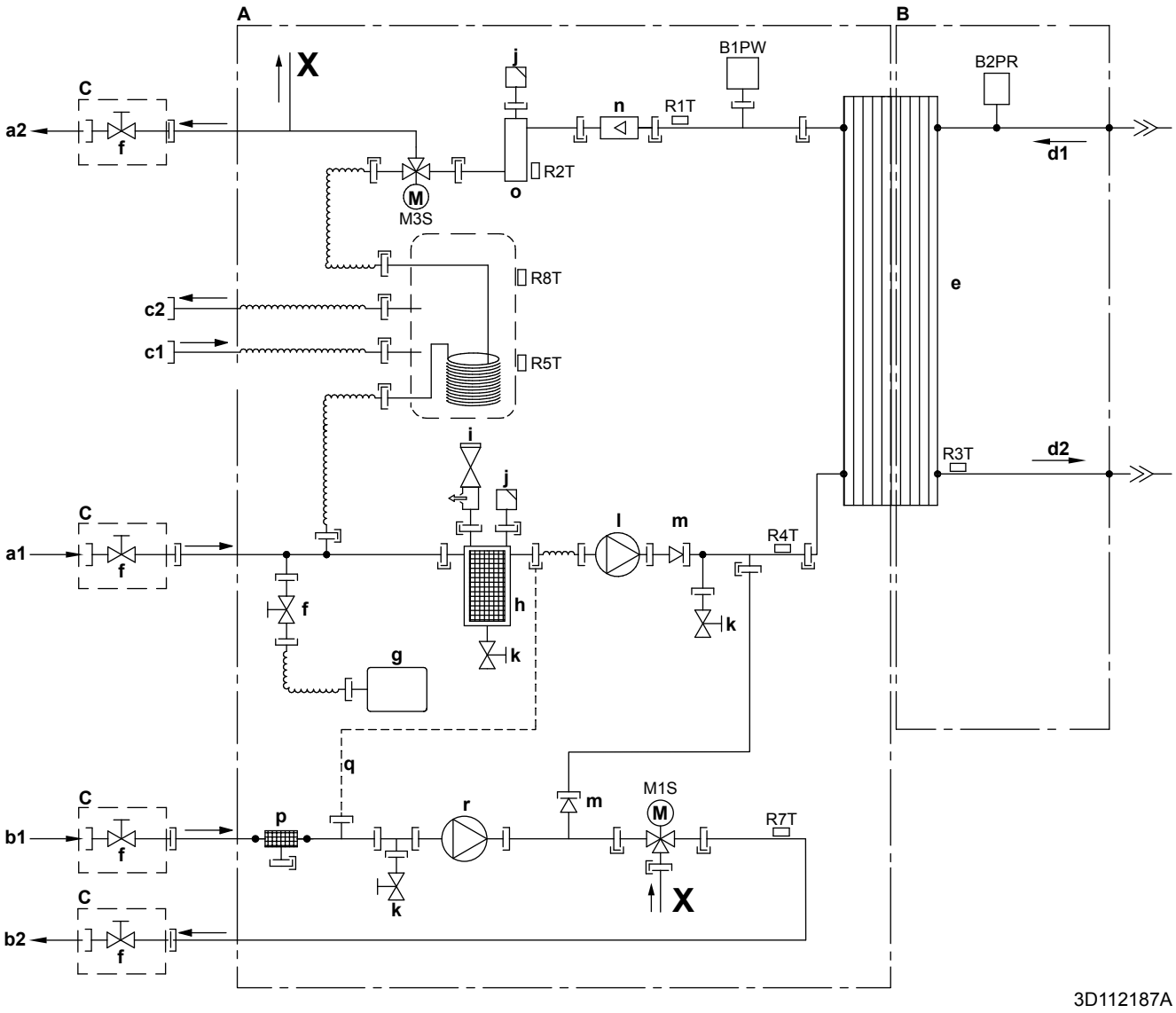
A **subset** of the latest technical data is available on the regional Daikin website (publicly accessible). The **full set** of latest technical data is available on the Daikin Business Portal (authentication required).

14.1 Piping diagram: Outdoor unit



a Field piping (liquid: Ø6.4 mm flare connection)
b Field piping (gas: Ø15.9 mm flare connection)
c Stop valve (liquid)
d Stop valve with service port (gas)
e Filter
f Muffler with filter
g Capillary tube
h Heat exchanger
i Accumulator
j Compressor accumulator
k Muffler
M1C Compressor
M1F Fan
R1T Thermistor (outdoor air)
R2T Thermistor (heat exchanger)
R3T Thermistor (compressor discharge)
S1PH High pressure switch (automatic reset)
Y1E Electronic expansion valve
Y1S Solenoid valve (4-way valve)(ON: cooling)
--► Heating
——► Cooling

14.2 Piping diagram: Indoor unit



3D112187A

A Water side
B Refrigerant side
C Field installed
a1 Space heating water IN (additional/direct zone)
a2 Space heating water OUT (additional/direct zone)
b1 Space heating water IN (main/mixed zone)
b2 Space heating water OUT (main/mixed zone)
c1 Domestic hot water: cold water IN
c2 Domestic hot water: hot water OUT
d1 Gas refrigerant IN (heating mode; condenser)
d2 Liquid refrigerant OUT (heating mode; condenser)
e Plate heat exchanger
f Shut-off valve for service (if equipped)
g Expansion vessel
h Magnetic filter/dirt separator
i Safety valve
j Air purge
k Drain valve
l Pump (additional/direct zone)
m Check valve
n Flow sensor
o Backup heater
p Water filter (main/mixed zone)
q Capillary tube
r Pump (main/mixed zone)
B1PW Space heating water pressure sensor
B2PR Refrigerant pressure sensor
M1S 3-way valve (mixing valve for the main/mixed zone)
M3S 3-way valve (space heating/domestic hot water)
R1T Thermistor (heat exchanger – water OUT)
R2T Thermistor (backup heater – water OUT)
R3T Thermistor (liquid refrigerant)
R4T Thermistor (heat exchanger – water IN)
R5T, R8T Thermistor (tank)
R7T Thermistor (main/mixed zone– water OUT)

Screw connection
Flare connection
Quick coupling
Brazed connection

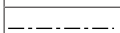
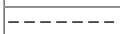
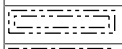
14.3 Wiring diagram: Outdoor unit

See the internal wiring diagram supplied with the unit (on the inside of the top plate). The abbreviations used are listed below.

(1) Connection diagram

English	Translation
Connection diagram	Connection diagram

(2) Notes

English	Translation
Notes	Notes
	Connection
X1M	Main terminal
	Earth wiring
	Field supply
	Option
	Switch box
	PCB
	Wiring depending on model
	Protective earth
	Field wire

NOTES:

1 When operating, do not short-circuit protection device S1PH.

2 Refer to the combination table and the option manual for how to connect the wiring to X6A, X28A and X77A.

3 Colours: BLK: black; RED: red; BLU: blue; WHT: white; GRN: green; YLW: yellow

(3) Legend

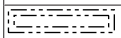
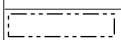
AL*		Connector
C*		Capacitor
DB*		Rectifier bridge
DC*		Connector
DP*		Connector
E*		Connector
F1U		Fuse T 6.3 A 250 V
FU1, FU2		Fuse T 3.15 A 250 V
FU3		Fuse T 30 A 250 V
H*		Connector
IPM*		Intelligent power module
L		Connector
LED 1~5		Indication lamp
LED A		Pilot lamp
L*		Reactor
M1C		Compressor motor
M1F		Fan motor
MR*		Magnetic relay
N		Connector
PCB1		Printed circuit board (main)
PCB2		Printed circuit board (service)
PS		Switching power supply
Q1L		Thermal protector
Q1DI	#	Earth leakage circuit breaker
Q*		Insulated gate bipolar transistor (IGBT)
R1T		Thermistor (air)
R2T		Thermistor (heat exchanger)
R3T		Thermistor (discharge)
RTH2		Resistor
S		Connector
S1PH		High pressure switch
S20~502		Connector
SA1		Surge arrestor
SHM		Terminal strip fixed plate
SW*		Push button
U, V, W		Connector
V3, V4, V401		Varistor
X*A		Connector
X*M		Terminal strip
Y1E		Electronic expansion valve
Y1S		Solenoid valve (4-way valve)
Z*C		Noise filter (ferrite core)
Z*F		Noise filter

Field supply

14.4 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
X2M	Field wiring terminal for AC
X5M	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
Note 1: Connection point of the power supply for the BUH should be foreseen outside the unit.	Note 1: Connection point of the power supply for the backup heater should be foreseen outside the unit.
Backup heater power supply	Backup heater power supply
☐ 1N~, 230 V	☐ 1N~, 230 V
☐ 3~, 230 V	☐ 3~, 230 V
☐ 3N~, 400 V	☐ 3N~, 400 V
User installed options	User installed options
☐ LAN adapter	☐ LAN adapter
☐ Remote user interface	☐ User interface used as room thermostat
☐ Ext. indoor thermistor	☐ External indoor thermistor
☐ Ext outdoor thermistor	☐ External outdoor thermistor
☐ Digital I/O PCB	☐ Digital I/O PCB
☐ Demand PCB	☐ Demand PCB
Main LWT	Main leaving water temperature
☐ On/OFF thermostat (wired)	☐ On/OFF thermostat (wired)
☐ On/OFF thermostat (wireless)	☐ On/OFF thermostat (wireless)
☐ Ext. thermistor	☐ External thermistor
☐ Heat pump convector	☐ Heat pump convector
☐ Safety thermostat	☐ Safety thermostat
Add LWT	Additional leaving water temperature
☐ On/OFF thermostat (wired)	☐ On/OFF thermostat (wired)
☐ On/OFF thermostat (wireless)	☐ On/OFF thermostat (wireless)
☐ Ext. thermistor	☐ External thermistor
☐ Heat pump convector	☐ Heat pump convector

Position in switch box

English	Translation
Position in switch box	Position in switch box

Legend

A1P		Main PCB
A2P	*	On/OFF thermostat (PC=power circuit)
A3P	*	Heat pump convector
A4P	*	Digital I/O PCB
A5P		Bizone PCB
A6P		Current loop PCB
A8P	*	Demand PCB
A9P		Status indicator
A10P		MMI (= user interface connected to the indoor unit) – Power supply unit PCB
A11P		MMI (= user interface connected to the indoor unit) – Main PCB
A12P		MMI display PCB
A13P	*	LAN adapter
A14P	*	User interface used as room thermostat – PCB
A15P	*	Receiver PCB (wireless On/OFF thermostat)
B1L		Flow sensor
B1PR		Refrigerant pressure sensor
B1PW		Water pressure sensor
CN* (A4P)	*	Connector
DS1 (A5P)		DIP switch
DS1(A8P)	*	DIP switch
E1A		Electrical anode
E1H		Backup heater element (1 kW)
E2H		Backup heater element (2 kW)
E*P (A9P)		Indication LED
F1B	#	Overcurrent fuse backup heater
F1T		Thermal fuse backup heater
F1U, F2U (A4P)	*	Fuse 5 A 250 V for digital I/O PCB
F1U, F2U (A5P)		Fuse T 2 A 250 V for PCB
FU1 (A1P)		Fuse T 5 A 250 V for PCB
FU2 (A10P)		Fuse T 1.6 A 250 V for PCB
K1M, K2M		Contactor backup heater
K5M		Safety contactor backup heater
K6M		Relay 3-way valve bypass
K7M		Relay 3-way valve flow
K*R (A4P)		Relay on PCB
M1P		Main supply pump
M1S		Mixing 3-way valve
M2P	#	Domestic hot water pump
M2S	#	2-way valve for cooling mode
M3P		Main zone pump
M3S		3-way valve for space heating/domestic hot water
P1M		MMI display
PC (A15P)	*	Power circuit
PHC1 (A4P)	*	Optocoupler input circuit
Q1L		Thermal protector backup heater
Q3L, Q4L	#	Safety thermostat
Q*DI	#	Earth leakage circuit breaker
R1H (A2P)	*	Humidity sensor
R1T (A1P)		Outlet water heat exchanger thermistor
R1T (A2P)	*	Ambient sensor On/OFF thermostat
R1T (A14P)	*	Ambient sensor user interface
R2T (A1P)		Outlet backup heater thermistor

R2T (A2P)	*	External sensor (floor or ambient)
R3T		Refrigerant liquid side thermistor
R4T		Inlet water thermistor
R5T, R8T		Domestic hot water thermistor
R6T	*	External indoor or outdoor ambient thermistor
R7T		Mixed leaving water thermistor
S1S	#	Preferential kWh rate power supply contact
S2S	#	Electrical meter pulse input 1
S3S	#	Electrical meter pulse input 2
S6S~S9S	*	Digital power limitation inputs
SS1 (A4P)	*	Selector switch
SW1~2 (A12P)		Turn buttons
SW3~5 (A12P)		Push buttons
TR1		Power supply transformer
X6M	#	Backup heater power supply terminal strip
X*, X*A, X*Y, Y*		Connector
X*M		Terminal strip

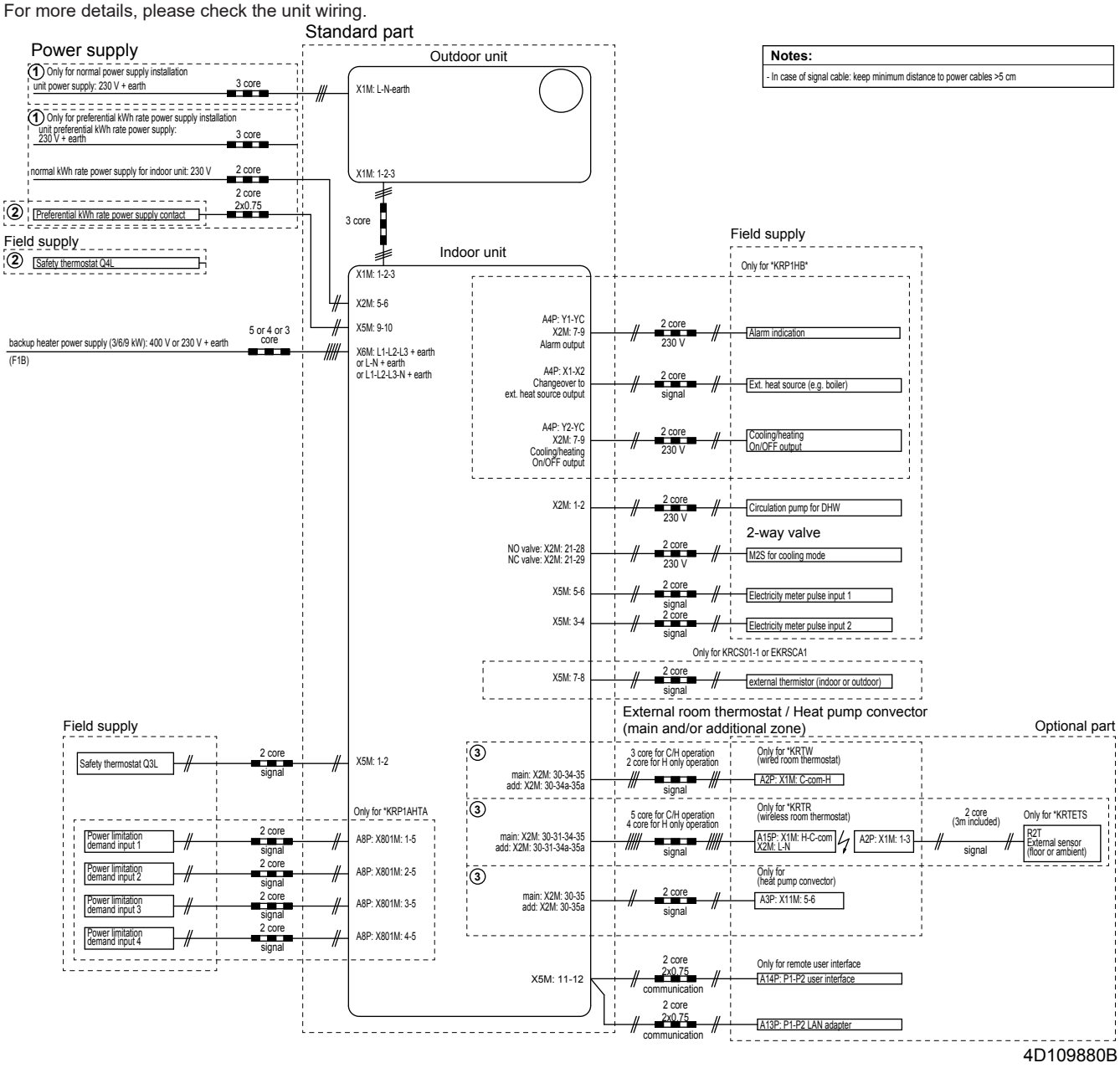
* Optional
\# Field supply

Translation of text on wiring diagram

English	Translation
(1) Main power connection	(1) Main power connection
For preferential kWh rate power supply	For preferential kWh rate power supply
Indoor unit supplied from outdoor	Indoor unit supplied from outdoor
Normal kWh rate power supply	Normal kWh rate power supply
Only for normal power supply (standard)	Only for normal power supply (standard)
Only for preferential kWh rate power supply (outdoor)	Only for preferential kWh rate power supply (outdoor)
Outdoor unit	Outdoor unit
Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB)	Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB)
SWB	Switch box
Use normal kWh rate power supply for indoor unit	Use normal kWh rate power supply for indoor unit
(2) Backup heater power supply	(2) Backup heater power supply
Only for ***	Only for ***
(3) User interface	(3) User interface
Only for LAN adapter	Only for the LAN adapter
Only for remote user interface	Only for the remote user interface
(5) Ext. thermistor	(5) External thermistor
SWB	Switch box
(6) Field supplied options	(6) Field supplied options
12 V DC pulse detection (voltage supplied by PCB)	12 V DC pulse detection (voltage supplied by PCB)
230 V AC supplied by PCB	230 V AC supplied by PCB
Continuous	Continuous current
DHW pump output	Domestic hot water pump output
DHW pump	Domestic hot water pump
Electrical meters	Electrical meters
For safety thermostat	For safety thermostat
Inrush	Inrush current
Max. load	Maximum load
Normally closed	Normally closed
Normally open	Normally open
Safety thermostat	Safety thermostat
Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)	Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)
Shut-off valve	Shut-off valve
SWB	Switch box
(7) Option PCBs	(7) Option PCBs
Alarm output	Alarm output
Changeover to ext. heat source	Changeover to external heat source
Max. load	Maximum load
Min. load	Minimum load
Only for demand PCB option	Only for demand PCB option
Only for digital I/O PCB option	Only for digital I/O PCB option
Options: ext. heat source output, alarm output	Options: external heat source output, alarm output
Options: On/OFF output	Options: On/OFF output
Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)	Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)
Space C/H On/OFF output	Space cooling/heating On/OFF output
SWB	Switch box
(8) External On/OFF thermostats and heat pump convector	(8) External On/OFF thermostats and heat pump convector
Additional LWT zone	Additional leaving water temperature zone
Main LWT zone	Main leaving water temperature zone
Only for external sensor (floor/ ambient)	Only for external sensor (floor or ambient)
Only for heat pump convector	Only for heat pump convector
Only for wired On/OFF thermostat	Only for wired On/OFF thermostat
Only for wireless On/OFF thermostat	Only for wireless On/OFF thermostat

Electrical connection diagram

For more details, please check the unit wiring.



14.5 Table 1 – Maximum refrigerant charge allowed in a room: indoor unit

A_{room} (m^2)	Maximum refrigerant charge in a room (m_{max}) (kg)
	H=600 mm
1	0.138
2	0.276
3	0.414
4	0.553
5	0.691
6	0.829
7	0.907
8	0.970
9	1.028
10	1.084
11	1.137
12	1.187
13	1.236
14	1.283
15	1.328
16	1.371
17	1.413
18	1.454
19	1.494
20	1.533
21	1.571
22	1.608
23	1.644
24	1.679
25	1.714
26	1.748
27	1.781
28	1.814
29	1.846
30	1.877
31	1.909

INFORMATION

- For floorstanding models, the value of "Installation height (H)" is considered 600 mm to comply to IEC 60335-2-40:2013 A1 2016 Clause GG2.
- For intermediate A_{room} values (i.e. when A_{room} is between two values from the table), consider the value that corresponds to the lower A_{room} value from the table. If A_{room}=12.5 m^2, consider the value that corresponds to "A_{room}=12 m^2".

14.6 Table 2 – Minimum floor area: indoor unit

m_c (kg)	Minimum floor area (m^2)
	H=600 mm
1.84	28.81
1.86	29.44
1.88	30.08
1.90	30.72

INFORMATION

- For floorstanding models, the value of "Installation height (H)" is considered 600 mm to comply to IEC 60335-2-40:2013 A1 2016 Clause GG2.
- For intermediate m_c values (i.e. when m_c is between two values from the table), consider the value that corresponds to the higher m_c value from the table. If m_c=1.87 kg, consider the value that corresponds to "m_c=1.88 kg".
- Systems with a total refrigerant charge (m_c) <1.84 kg (i.e. if the piping length is <27 m) are NOT subjected to any requirements to the installation room.
- Charges >1.9 kg are NOT allowed in the unit.

14.7 Table 3 – Minimum venting opening area for natural ventilation: indoor unit

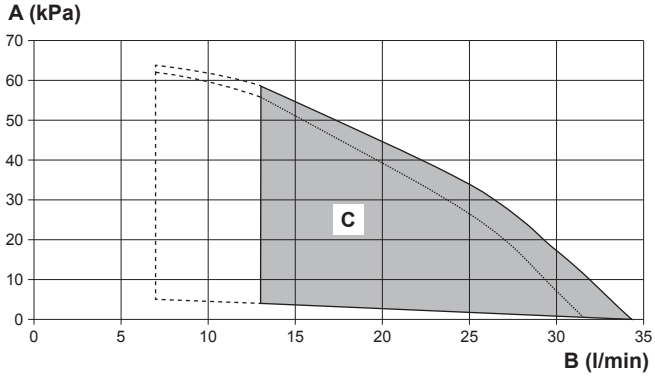
m_c	m_{max}	$dm=m_c-m_{max}$ (kg)	Minimum venting opening area (cm^2)
			H=600 mm
1.9	0.1	1.80	729
1.9	0.3	1.60	648
1.9	0.5	1.40	567
1.9	0.7	1.20	486
1.9	0.9	1.00	418
1.9	1.1	0.80	370
1.9	1.3	0.60	301
1.9	1.5	0.40	216
1.9	1.7	0.20	115

INFORMATION

- For floorstanding models, the value of "Installation height (H)" is considered 600 mm to comply to IEC 60335-2-40:2013 A1 2016 Clause GG2.
- For intermediate dm values (i.e. when dm is between two dm values from the table), consider the value that corresponds to the higher dm value from the table. If dm=1.55 kg, consider the value that corresponds to "dm=1.6 kg".

14.8 ESP curve: Indoor unit

Note: A flow error will occur when the minimum water flow rate is not reached.



A External static pressure in the space heating circuit
B Water flow rate through the unit in the space heating circuit
C Operation range
——— Additional/direct zone
..... Main/mixed zone

Dashed lines: Operation area is extended to lower flow rates only in case the unit operates with heat pump only. (Not in startup, no backup heater operation, no defrost operation.)

Notes:

- Selecting a flow outside the operating area can damage the unit or cause the unit to malfunction. See also the minimum and maximum allowed water flow range in the technical specifications.
- Water quality must be according to EU directive 98/83 EC.

15 Glossary

Dealer
Sales distributor for the product.

Authorised installer
Technical skilled person who is qualified to install the product.

User
Person who is owner of the product and/or operates the product.

Applicable legislation
All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company
Qualified company which can perform or coordinate the required service to the product.

Installation manual
Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual
Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions
Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories
Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment
Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supply
Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field settings table

[8.7.5] = ... **7401**

Applicable indoor units

EHVZ04S18D*6V*
EHVZ08S18D*6V*
EHVZ08S18D*9W*
EHVZ08S23D*6V*
EHVZ08S23D*9W*

Notes

(*1) *3V
(*2) *6V
(*3) *9W

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
Room						
└ Antifrost						
1.4.1	[2-06]	Activation	R/W	0: Disabled **1: Enabled**		
1.4.2	[2-05]	Room setpoint	R/W	4~16°C, step: 1°C **12°C**		
└ Setpoint range						
1.5.1	[3-07]	Heating minimum	R/W	12~18°C, step: 0,5°C **12°C**		
1.5.2	[3-06]	Heating maximum	R/W	18~30°C, step: 0,5°C **30°C**		
Room						
1.6	[2-09]	Room sensor offset	R/W	-5~5°C, step: 0,5°C **0°C**		
1.7	[2-0A]	Room sensor offset	R/W	-5~5°C, step: 0,5°C **0°C**		
Main zone						
2.4		Setpoint mode		0: Fixed **2: Weather dependent**		
└ Heating WD curve						
2.5	[1-00]	Low ambient temp. for LWT main zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
2.5	[1-01]	High ambient temp. for LWT main zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
2.5	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~[9-00], step: 1°C **35°C**		
2.5	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~min(45, [9-00])°C , step: 1°C **25°C**		
Main zone						
2.7	[2-0C]	Emitter type	R/W	**0: Underfloor heating** 1: Fancoil unit 2: Radiator		
└ Setpoint range						
2.8.1	[9-01]	Heating minimum	R/W	15~37°C, step: 1°C **25°C**		
2.8.2	[9-00]	Heating maximum	R/W	[2-0C]=2: 37~65, step: 1°C **55°C** [2-0C]≠2: 37~55, step: 1°C **55°C**		
Main zone						
2.9	[C-07]	Control	R/W	**0: LWT control** 1: Ext RT control 2: RT control		
2.A	[C-05]	Thermostat type	R/W	0: - 1: 1 contact **2: 2 contacts**		
└ Delta T						
2.B.1	[1-0B]	Delta T heating	R/W	3~10°C, step: 1°C **5°C**		
└ Modulation						
2.C.1	[8-05]	Modulation	R/W	**0: No** 1: Yes		
2.C.2	[8-06]	Max modulation	R/W	0~10°C, step: 1°C **5°C**		
└ Shut off valve						
2.D.1	[F-0B]	During thermo	R/W	**0: No** 1: Yes		
Additional zone						
3.4		Setpoint mode		0: Fixed **2: Weather dependent**		
└ Heating WD curve						
3.5	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~min(45,[9-06])°C, step: 1°C **35°C**		
3.5	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~[9-06]°C, step: 1°C **50°C**		
3.5	[0-02]	High ambient temp. for LWT add zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
3.5	[0-03]	Low ambient temp. for LWT add zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
Additional zone						
3.7	[2-0D]	Emitter type	R/W	**0: Underfloor heating** 1: Fancoil unit 2: Radiator		
└ Setpoint range						
3.8.1	[9-05]	Heating minimum	R/W	15~37°C, step: 1°C **25°C**		
3.8.2	[9-06]	Heating maximum	R/W	[2-0D]=2: 37~65, step: 1°C **55°C** [2-0D]≠2: 37~55, step: 1°C **55°C**		
Additional zone						
3.A	[C-06]	Thermostat type	R/W	0: - 1: 1 contact **2: 2 contacts**		
└ Delta T						
3.B.1	[1-0C]	Delta T heating	R/W	3~10°C, step: 1°C **5°C**		
Space heating / cooling						
└ Operation range						
4.3.1	[4-02]	Space heating OFF temp	R/W	14~35°C, step: 1°C **22°C**		
Space heating / cooling						
4.4	[7-02]	Number of zones	R/W	0: 1 LWT zone **1: 2 LWT zones**		
4.5	[F-0D]	Pump operation mode	R/W	0: Continuous **1: Sample** 2: Request		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
4.6	[E-02]	Unit type	R/O	**1: Heating only**		
└ Pump limitation						
4.8.1	[9-0E]	Main zone	R/W	0~8, step:1 0 : No limitation 1~4 : 50~80% 5~8 : 50~80% during sampling **6**		
4.8.2	[9-0D]	Additional zone	R/W	0~8, step:1 0 : No limitation 1~4 : 50~80% 5~8 : 50~80% during sampling **6**		
Space heating / cooling						
4.9	[F-00]	Pump outside range	R/W	**0: Restricted** 1: Allowed		
4.A	[D-03]	Increase around 0°C	R/W	0: No **1: increase 2°C, span 4°C** 2: increase 4°C, span 4°C 3: increase 2°C, span 8°C 4: increase 4°C, span 8°C		
4.B	[9-04]	Overshoot	R/W	1~4°C, step: 1°C **1°C**		
4.C	[2-06]	Antifrost	R/W	0: Disabled **1: Enabled**		
Tank						
5.2	[6-0A]	Comfort setpoint	R/W	30~[6-0E]°C, step: 1°C **60°C**		
5.3	[6-0B]	Eco setpoint	R/W	30~min(50, [6-0E])°C, step: 1°C **45°C**		
5.4	[6-0C]	Reheat setpoint	R/W	30~min(50, [6-0E])°C, step: 1°C **45°C**		
5.6	[6-0D]	Heat up mode	R/W	0: Reheat only **1: Reheat + sched.** 2: Scheduled only		
└ Disinfection						
5.7.1	[2-01]	Activation	R/W	0: No **1: Yes**		
5.7.2	[2-00]	Operation day	R/W	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday **5: Friday** 6: Saturday 7: Sunday		
5.7.3	[2-02]	Start time	R/W	0~23 hour, step: 1 hour **1**		
5.7.4	[2-03]	Tank setpoint	R/W	**60°C**		
5.7.5	[2-04]	Duration	R/W	40~60 min, step: 5 min **40 min**		
Tank						
5.8	[6-0E]	Maximum	R/W	40~60°C, step: 1°C **60°C**		
5.9	[6-00]	Hysteresis	R/W	2~40°C, step: 1°C **25°C**		
5.A	[6-08]	Hysteresis	R/W	2~20°C, step: 1°C **10°C**		
5.B		Setpoint mode	R/W	**0: Fixed** 1: Weather dependent		
└ WD curve						
5.C	[0-0B]	Leaving water value for high ambient temp. for DHW WD curve.	R/W	35~[6-0E]°C, step: 1°C **55°C**		
5.C	[0-0C]	Leaving water value for low ambient temp. for DHW WD curve.	R/W	45~[6-0E]°C, step: 1°C 60**°C**		
5.C	[0-0D]	High ambient temp. for DHW WD curve.	R/W	10~25°C, step: 1°C **15°C**		
5.C	[0-0E]	Low ambient temp. for DHW WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
Tank						
5.D	[6-01]	Margin	R/W	0~10°C, step: 1°C **2°C**		
User settings └ Quiet						
7.4.1		Activation	R/W	**0: OFF** 1: Quiet 2: More quiet 3: Most quiet 4: Automatic		
└ Electricity price						
7.5.1		High	R/W	0,00~990/kWh **1/kWh**		
7.5.2		Medium	R/W	0,00~990/kWh **1/kWh**		
7.5.3		Low	R/W	0,00~990/kWh **1/kWh**		
User settings						
7.6		Gas price	R/W	0,00~990/kWh 0,00~290/MBtu **1,0/kWh**		
Installer settings └ Configuration wizard └ System						
9.1	[E-03]	BUH type	R/O	**2: 3V (*1)** **3: 6V (*2)** **4: 9W (*3)**		
9.1	[E-05] [E-06] [E-07]	Domestic hot water	R/O	**3: Integrated**		
9.1	[4-06]	Emergency	R/W	**0: Manual** 1: Automatic		
9.1	[7-02]	Number of zones	R/W	0: Single zone **1: Dual zone**		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
		└ Backup heater				
9.1	[5-0D]	Voltage	R/W (*2) R/O (*1) (*3)	**0: 230V, 1~ (*1) (*2)** 1: 230V, 3~ (*2) **2: 400V, 3~ (*3)**		
9.1	[4-0A]	Configuration	R/W	**0: 1 (*1)** **1: 1/1+2 (*2) (*3)** 2: 1/2 3: 1/2 + 1/1+2 in emergency		
9.1	[6-03]	Capacity step 1	R/W	0~10kW, step: 0,2kW 2**kW (*2)** **3kW (*1)(*3)**		
9.1	[6-04]	Additional capacity step 2	R/O (*1) R/W (*2) (*3)	0~10kW, step: 0,2kW **0kW (*1)** **4kW (*2)** **6kW (*3)**		
		└ Main zone				
9.1	[2-0C]	Emitter type	R/W	**0: Underfloor heating** 1: Fancoil unit 2: Radiator		
9.1	[C-07]	Control	R/W	**0: LWT control** 1: Ext RT control 2: RT control		
9.1		Setpoint mode	R/W	0: Fixed **2: Weather dependent**		
9.1		Schedule	R/W	**0: No** 1: Yes		
9.1	[1-00]	Low ambient temp. for LWT main zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
9.1	[1-01]	High ambient temp. for LWT main zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
9.1	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~[9-00], step: 1°C **35°C**		
9.1	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~min(45, [9-00])°C , step: 1°C **25°C**		
9.1	[1-06]	--		**20**		
9.1	[1-07]	--		**35**		
9.1	[1-08]	--		**22**		
9.1	[1-09]	--		**18**		
		└ Additional zone				
9.1	[2-0D]	Emitter type	R/W	**0: Underfloor heating** 1: Fancoil unit 2: Radiator		
9.1		Setpoint mode	R/W	0: Fixed **2: Weather dependent**		
9.1		Schedule	R/W	**0: No** 1: Yes		
9.1	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~min(45,[9-06])°C, step: 1°C **35°C**		
9.1	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~[9-06]°C, step: 1°C **50°C**		
9.1	[0-02]	High ambient temp. for LWT add zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
9.1	[0-03]	Low ambient temp. for LWT add zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
9.1	[0-04]	--		**8**		
9.1	[0-05]	--		**12**		
9.1	[0-06]	--		**35**		
9.1	[0-07]	--		**20**		
		└ Tank				
9.1	[6-0D]	Heat up mode	R/W	0: Reheat only **1: Reheat + sched.** 2: Scheduled only		
9.1	[6-0A]	Comfort setpoint	R/W	30~[6-0E]°C, step: 1°C **60°C**		
9.1	[6-0B]	Eco setpoint	R/W	30~min(50, [6-0E])°C, step: 1°C **45°C**		
9.1	[6-0C]	Reheat setpoint	R/W	30~min(50, [6-0E])°C, step: 1°C **45°C**		
	└ Domestic hot water					
9.2.1	[E-05] [E-06] [E-07]	Domestic hot water	R/O	**3: Integrated**		
9.2.2	[D-02]	DHW pump	R/W	**0: No** 1: Secondary rtrn 2: Disinf. Shunt		
9.2.4	[D-07]	Solar	R/W	**0: No** 1: Yes		
	└ Back up heater					
9.3.1	[E-03]	BUH type	R/O	**2: 3V (*1)** **3: 6V (*2)** **4: 9W (*3)**		
9.3.2	[5-0D]	Voltage	R/W (*2) R/O (*1) (*3)	**0: 230V, 1~ (*1) (*2)** 1: 230V, 3~ (*2) **2: 400V, 3~ (*3)**		
9.3.3	[4-0A]	Configuration	R/W	**0: 1 (*1)** **1: 1/1+2 (*2) (*3)** 2: 1/2 3: 1/2 + 1/1+2 in emergency		
9.3.4	[6-03]	Capacity step 1	R/W	0~10kW, step: 0,2kW 2**kW (*2)** **3kW (*1)(*3)**		
9.3.5	[6-04]	Additional capacity step 2	R/O (*1) R/W (*2) (*3)	0~10kW, step: 0,2kW **0kW (*1)** **4kW (*2)** **6kW (*3)**		
9.3.6	[5-00]	Equilibrium	R/W	0: Allowed **1: Not allowed**		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
9.3.7	[5-01]	Equilibrium temperature	R/W	-15~35°C, step: 1°C **0°C**		
9.3.8	[4-00]	Operation	R/W	0: Disabled **1: Enabled** 2: Only DHW		
└ Booster heater						
9.4.1	[6-02]	Capacity	R/W	0~10kW, step: 0,2kW 0**kW**		
9.4.3	[8-03]	BSH eco timer	R/W	20~95 min, step: 5 min **50 min**		
9.4.4	[4-03]	Operation	R/W	0: Restricted 1: Allowed 2: Overlap **3: Compressor off** 4: Legionella only		
Installer settings						
9.5	[4-06]	Emergency	R/W	**0: Manual** 1: Automatic		
└ Balancing						
9.6.1	[5-02]	Space heating priority	R/W	**0: Disabled** 1: Enabled		
9.6.2	[5-03]	Priority temperature	R/W	-15~35°C, step: 1°C **0°C**		
9.6.3	[5-04]	Offset BSH setpoint	R/W	0~20°C, step: 1°C **10°C**		
9.6.4	[8-02]	Anti-recycle timer	R/W	0~10 hour, step: 0,5 hour **0,5 hour**		
9.6.5	[8-00]	Minimum running timer	R/W	0~20 min, step 1 min **1 min**		
9.6.6	[8-01]	Maximum running timer	R/W	5~95 min, step: 5 min **30 min**		
9.6.7	[8-04]	Additional timer	R/W	0~95 min, step: 5 min **95 min**		
Installer settings						
9.7	[4-04]	Water pipe freeze prevention		0: Intermittent 1: Continuous **2: Off**		
└ Benefit kWh power supply						
9.8.1	[D-01]	Benefit kWh power supply	R/W	**0: No** 1: Active open 2: Active closed 3: Safety thermostat		
9.8.2	[D-00]	Allow heater	R/W	**0: None** 1: BSH only 2: BUH only 3: All heaters		
9.8.3	[D-05]	Allow pump	R/W	0: Forced off **1: As normal**		
└ Power consumption control						
9.9.1	[4-08]	Power consumption control	R/W	**0: No limitation** 1: Continuous 2: Digital inputs		
9.9.2	[4-09]	Type	R/W	0: Current **1: Power**		
9.9.3	[5-05]	Limit	R/W	0~50 A, step: 1 A **50 A**		
9.9.4	[5-05]	Limit 1	R/W	0~50 A, step: 1 A **50 A**		
9.9.5	[5-06]	Limit 2	R/W	0~50 A, step: 1 A **50 A**		
9.9.6	[5-07]	Limit 3	R/W	0~50 A, step: 1 A **50 A**		
9.9.7	[5-08]	Limit 4	R/W	0~50 A, step: 1 A **50 A**		
9.9.8	[5-09]	Limit	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.9.9	[5-09]	Limit 1	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.9.A	[5-0A]	Limit 2	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.9.B	[5-0B]	Limit 3	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.9.C	[5-0C]	Limit 4	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.9.D	[4-01]	Priority heater		**0: None** 1: BSH 2: BUH		
└ Energy metering						
9.A.1	[D-08]	Electricity meter 1	R/W	**0: No** 1: 0,1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
9.A.2	[D-09]	Electricity meter 2	R/W	**0: No** 1: 0,1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
└ Sensors						
9.B.1	[C-08]	External sensor	R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
9.B.2	[2-0B]	Ext. amb. sensor offset	R/W	-5~5°C, step: 0,5°C **0°C**		
9.B.3	[1-0A]	Averaging time	R/W	**0: No averaging** 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours		
└ Bivalent						

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
9.C.1	[C-02]	Bivalent	R/W	**0: No** 1: Bivalent		
9.C.2	[7-05]	Boiler efficiency	R/W	**0: Very high** 1: High 2: Medium 3: Low 4: Very low		
9.C.3	[C-03]	Temperature	R/W	-25~25°C, step: 1°C 0°C		
9.C.4	[C-04]	Hysteresis	R/W	2~10°C, step 1°C **3°C**		
Installer settings						
9.D	[C-09]	Alarm output	R/W	**0: Normally open** 1: Normally closed		
9.E	[3-00]	Auto restart	R/W	0: No **1: Yes**		
9.F	[E-08]	Power saving function	R/O	**1: Enabled**		
9.G		Disable protections	R/W	0: No **1: Yes**		
└ Overview field settings						
9.I	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~min(45,[9-06])°C, step: 1°C **35°C**		
9.I	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~[9-06]°C, step: 1°C **50°C**		
9.I	[0-02]	High ambient temp. for LWT add zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
9.I	[0-03]	Low ambient temp. for LWT add zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
9.I	[0-04]	--		**8**		
9.I	[0-05]	--		**12**		
9.I	[0-06]	--		**35**		
9.I	[0-07]	--		**20**		
9.I	[0-0B]	Leaving water value for high ambient temp. for DHW WD curve.	R/W	35~[6-0E]°C, step: 1°C **55°C**		
9.I	[0-0C]	Leaving water value for low ambient temp. for DHW WD curve.	R/W	45~[6-0E]°C, step: 1°C 60**°C**		
9.I	[0-0D]	High ambient temp. for DHW WD curve.	R/W	10~25°C, step: 1°C **15°C**		
9.I	[0-0E]	Low ambient temp. for DHW WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
9.I	[1-00]	Low ambient temp. for LWT main zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
9.I	[1-01]	High ambient temp. for LWT main zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
9.I	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~[9-00], step: 1°C **35°C**		
9.I	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~min(45, [9-00])°C , step: 1°C **25°C**		
9.I	[1-04]	--		**1**		
9.I	[1-05]	--		**1**		
9.I	[1-06]	--		**20**		
9.I	[1-07]	--		**35**		
9.I	[1-08]	--		**22**		
9.I	[1-09]	--		**18**		
9.I	[1-0A]	What is the averaging time for the outdoor temp?	R/W	**0: No averaging** 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours		
9.I	[1-0B]	What is the desired delta T in heating for the main zone?	R/W	3~10°C, step: 1°C **5°C**		
9.I	[1-0C]	What is the desired delta T in heating for the additional zone?	R/W	3~10°C, step: 1°C **5°C**		
9.I	[1-0D]	--		**5**		
9.I	[1-0E]	--		**5**		
9.I	[2-00]	When should the disinfection function be executed?	R/W	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday **5: Friday** 6: Saturday 7: Sunday		
9.I	[2-01]	Should the disinfection function be executed?	R/W	0: No **1: Yes**		
9.I	[2-02]	When should the disinfection function start?	R/W	0~23 hour, step: 1 hour **1**		
9.I	[2-03]	What is the disinfection target temperature?	R/W	**60°C**		
9.I	[2-04]	How long must the tank temperature be maintained?	R/W	40~60 min, step: 5 min **40 min**		
9.I	[2-05]	Room antifrost temperature	R/W	4~16°C, step: 1°C **12°C**		
9.I	[2-06]	Room frost protection	R/W	0: Disabled **1: Enabled**		
9.I	[2-09]	Adjust the offset on the measured room temperature	R/W	-5~5°C, step: 0,5°C **0°C**		
9.I	[2-0A]	Adjust the offset on the measured room temperature	R/W	-5~5°C, step: 0,5°C **0°C**		
9.I	[2-0B]	What is the required offset on the measured outdoor temp.?	R/W	-5~5°C, step: 0,5°C **0°C**		
9.I	[2-0C]	What emitter type is connected to the main LWT zone?	R/W	**0: Underfloor heating** 1: Fancoil unit 2: Radiator		
9.I	[2-0D]	What emitter type is connected to the additional LWT zone?	R/W	**0: Underfloor heating** 1: Fancoil unit 2: Radiator		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table

Breadcrumb	Field code	Setting name		Range, step **Default value**	Installer setting at variance with default value Date	 Value
9.I	[3-00]	Is auto restart of the unit allowed?	R/W	0: No **1: Yes**		
9.I	[3-01]	--		**0**		
9.I	[3-02]	--		**1**		
9.I	[3-03]	--		**4**		
9.I	[3-04]	--		**2**		
9.I	[3-05]	--		**1**		
9.I	[3-06]	What is the maximum desired room temperature in heating?	R/W	18~30°C, step: 0,5°C **30°C**		
9.I	[3-07]	What is the mimimum desired room temperature in heating?	R/W	12~18°C, step: 0,5°C **12°C**		
9.I	[3-08]	--		**35**		
9.I	[3-09]	--		**15**		
9.I	[4-00]	What is the BUH operation mode?	R/W	0: Disabled **1: Enabled** 2: Only DHW		
9.I	[4-01]	Which electric heater has priority?	R/W	**0: None** 1: BSH 2: BUH		
9.I	[4-02]	Below which outdoor temperature is heating allowed?	R/W	14~35°C, step: 1°C **22°C**		
9.I	[4-03]	Operation permission of the booster heater.	R/W	0: Restricted 1: Allowed 2: Overlap **3: Compressor off** 4: Legionella only		
9.I	[4-04]	Water pipe freeze prevention		0: Intermittent 1: Continuous **2: Off**		
9.I	[4-05]	--		**0**		
9.I	[4-06]	Emergency	R/W	**0: Manual** 1: Automatic		
9.I	[4-08]	Which power limitation mode is required on the system?	R/W	**0: No limitation** 1: Continuous 2: Digital inputs		
9.I	[4-09]	Which power limitation type is required?	R/W	0: Current **1: Power**		
9.I	[4-0A]	Backup heater configuration	R/W	**0: 1 (*1)** **1: 1/1+2 (*2) (*3)** 2: 1/2 3: 1/2 + 1/1+2 in emergency		
9.I	[4-0B]	--		**1**		
9.I	[4-0D]	--		**3**		
9.I	[5-00]	Is backup heater operation allowed above equilibrium temperature during space heating operation?	R/W	0: Allowed **1: Not allowed**		
9.I	[5-01]	What is the equilibrium temperature for the building?	R/W	-15~35°C, step: 1°C **0°C**		
9.I	[5-02]	Space heating priority.	R/W	**0: Disabled** 1: Enabled		
9.I	[5-03]	Space heating priority temperature.	R/W	-15~35°C, step: 1°C **0°C**		
9.I	[5-04]	Set point correction for domestic hot water temperature.	R/W	0~20°C, step: 1°C **10°C**		
9.I	[5-05]	What is the requested limit for DI1?	R/W	0~50 A, step: 1 A **50 A**		
9.I	[5-06]	What is the requested limit for DI2?	R/W	0~50 A, step: 1 A **50 A**		
9.I	[5-07]	What is the requested limit for DI3?	R/W	0~50 A, step: 1 A **50 A**		
9.I	[5-08]	What is the requested limit for DI4?	R/W	0~50 A, step: 1 A **50 A**		
9.I	[5-09]	What is the requested limit for DI1?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.I	[5-0A]	What is the requested limit for DI2?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.I	[5-0B]	What is the requested limit for DI3?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.I	[5-0C]	What is the requested limit for DI4?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
9.I	[5-0D]	Backup heater voltage	R/W (*2) R/O (*1) (*3)	**0: 230V, 1~ (*1) (*2)** 1: 230V, 3~ (*2) **2: 400V, 3~ (*3)**		
9.I	[5-0E]	--		**1**		
9.I	[6-00]	The temperature difference determining the heat pump ON temperature.	R/W	2~40°C, step: 1°C **25°C**		
9.I	[6-01]	The temperature difference determining the heat pump OFF temperature.	R/W	0~10°C, step: 1°C **2°C**		
9.I	[6-02]	What is the capacity of the booster heater?	R/W	0~10kW, step: 0,2kW 0**kW**		
9.I	[6-03]	What is the capacity of the backup heater step 1?	R/W	0~10kW, step: 0,2kW 2**kW (*2)** **3kW (*1)(*3)**		
9.I	[6-04]	What is the capacity of the backup heater step 2?	R/O (*1) R/W (*2) (*3)	0~10kW, step: 0,2kW **0kW (*1)** **4kW (*2)** **6kW (*3)**		
9.I	[6-05]	--		**0**		
9.I	[6-06]	--		**0**		
9.I	[6-07]	What is the capacity of the bottom plate heater?	R/W	0~200W, step: 10W **0W**		
9.I	[6-08]	What is the hysteresis to be used in reheat mode?	R/W	**2~20°C, step: 1°C** **10°C**		
9.I	[6-09]	--		**0**		
9.I	[6-0A]	What is the desired comfort storage temperature?	R/W	30~[6-0E]°C, step: 1°C **60°C**		
9.I	[6-0B]	What is the desired eco storage temperature?	R/W	30~min(50, [6-0E])°C, step: 1°C **45°C**		
9.I	[6-0C]	What is the desired reheat temperature?	R/W	30~min(50, [6-0E])°C, step: 1°C **45°C**		
9.I	[6-0D]	What is the desired DHW production type?	R/W	0: Reheat only **1: Reheat + sched.** 2: Scheduled only		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
9.I	[6-0E]	What is the maximum temperature setpoint?	R/W	40~60°C, step: 1°C **60°C**		
9.I	[7-00]	Domestic hot water booster heater overshoot temperature.	R/W	0~4°C, step: 1°C **0°C**		
9.I	[7-01]	Domestic hot water booster heater hysteresis.	R/W	2~40°C, step: 1°C **2°C**		
9.I	[7-02]	How many leaving water temperature zones are there?	R/W	0: 1 LWT zone **1: 2 LWT zones**		
9.I	[7-03]	--		**2,5**		
9.I	[7-04]	--		**0**		
9.I	[7-05]	Boiler efficiency	R/W	**0: Very high** 1: High 2: Medium 3: Low 4: Very low		
9.I	[8-00]	Minimum running time for domestic hot water operation.	R/W	0~20 min, step 1 min **1 min**		
9.I	[8-01]	Maximum running time for domestic hot water operation.	R/W	5~95 min, step: 5 min **30 min**		
9.I	[8-02]	Anti-recycling time.	R/W	0~10 hour, step: 0,5 hour **0,5 hour**		
9.I	[8-03]	Booster heater delay timer.	R/W	20~95 min, step: 5 min **50 min**		
9.I	[8-04]	Additional running time for the maximum running time.	R/W	0~95 min, step: 5 min **95 min**		
9.I	[8-05]	Allow modulation of the LWT to control the room temp?	R/W	**0: No** 1: Yes		
9.I	[8-06]	Leaving water temperature maximum modulation.	R/W	0~10°C, step: 1°C **5°C**		
9.I	[8-07]	--		**18**		
9.I	[8-08]	--		**20**		
9.I	[8-09]	What is the desired comfort main LWT in heating?	R/W	[9-01]~[9-00], step: 1°C **35°C**		
9.I	[8-0A]	What is the desired eco main LWT in heating?	R/W	[9-01]~[9-00], step: 1°C **33°C**		
9.I	[8-0B]	--		**13**		
9.I	[8-0C]	--		**10**		
9.I	[8-0D]	--		**16**		
9.I	[9-00]	What is the maximum desired LWT for main zone in heating?	R/W	[2-0C]=2: 37~65, step: 1°C **55°C** [2-0C]≠2: 37~55, step: 1°C **55°C**		
9.I	[9-01]	What is the mimimum desired LWT for main zone in heating?	R/W	15~37°C, step: 1°C **25°C**		
9.I	[9-02]	--		**22**		
9.I	[9-03]	--		**5**		
9.I	[9-04]	Leaving water temperature overshoot temperature.	R/W	1~4°C, step: 1°C **1°C**		
9.I	[9-05]	What is the mimimum desired LWT for add. zone in heating?	R/W	15~37°C, step: 1°C **25°C**		
9.I	[9-06]	What is the maximum desired LWT for add. zone in heating?	R/W	[2-0D]=2: 37~65, step: 1°C **55°C** [2-0D]≠2: 37~55, step: 1°C **55°C**		
9.I	[9-07]	--		**5**		
9.I	[9-08]	--		**22**		
9.I	[9-0C]	Room temperature hysteresis.	R/W	1~6°C, step: 0,5°C **1 °C**		
9.I	[9-0D]	Pump speed limitation add zone	R/W	0~8, step:1 0 : No limitation 1~4 : 50~80% 5~8 : 50~80% during sampling **6**		
9.I	[9-0E]	Pump speed limitation main zone	R/W	0~8, step:1 0 : No limitation 1~4 : 50~80% 5~8 : 50~80% during sampling **6**		
9.I	[C-00]	Domestic heating water priority.	R/O	**1: Heat pump priority**		
9.I	[C-01]	--		**0**		
9.I	[C-02]	Is an external backup heat source connected?	R/W	**0: No** 1: Bivalent		
9.I	[C-03]	Bivalent activation temperature.	R/W	-25~25°C, step: 1°C 0°C		
9.I	[C-04]	Bivalent hysteresis temperature.	R/W	2~10°C, step 1°C **3°C**		
9.I	[C-05]	What is the thermo request contact type for the main zone?	R/W	0: - 1: 1 contact **2: 2 contacts**		
9.I	[C-06]	What is the thermo request contact type for the add. zone?	R/W	0: - 1: 1 contact **2: 2 contacts**		
9.I	[C-07]	What is the unit control method in space operation?	R/W	**0: LWT control** 1: Ext RT control 2: RT control		
9.I	[C-08]	Which type of external sensor is installed?	R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
9.I	[C-09]	What is the required alarm output contact type?	R/W	**0: Normally open** 1: Normally closed		
9.I	[C-0A]	--		**0**		
9.I	[D-00]	Which heaters are permitted if prefer. kWh rate PS is cut?	R/W	**0: None** 1: BSH only 2: BUH only 3: All heaters		
9.I	[D-01]	Contact type of preferential kWh rate PS installation?	R/W	**0: No** 1: Active open 2: Active closed 3: Safety thermostat		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
9.I	[D-02]	Which type of DHW pump is installed?	R/W	**0: No** 1: Secondary rtrn 2: Disinf. Shunt		
9.I	[D-03]	Leaving water temperature compensation around 0°C.	R/W	0: No **1: increase 2°C, span 4°C** 2: increase 4°C, span 4°C 3: increase 2°C, span 8°C 4: increase 4°C, span 8°C		
9.I	[D-04]	Is a demand PCB connected?	R/W	**0: No** 1: Pwr consmp ctrl		
9.I	[D-05]	Is the pump allowed to run if prefer. kWh rate PS is cut?	R/W	0: Forced off **1: As normal**		
9.I	[D-07]	Is a solar kit connected?	R/O	**0: No**		
9.I	[D-08]	Is an external kWh meter used for power measurement?	R/W	**0: No** 1: 0,1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
9.I	[D-09]	Is an external kWh meter used for power measurement?	R/W	**0: No** 1: 0,1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
9.I	[D-0A]	--		**0**		
9.I	[D-0B]	--		**2**		
9.I	[E-00]	Which type of unit is installed?	R/O	0~5 **0: LT split**		
9.I	[E-01]	Which type of compressor is installed?	R/O	**0**		
9.I	[E-02]	What is the indoor unit software type?	R/O	**1: Heating only**		
9.I	[E-03]	What is the number of backup heater steps?	R/O	**2: 3V (*1)** **3: 6V (*2)** **4: 9W (*3)**		
9.I	[E-04]	Is the power saving function available on the outdoor unit?	R/O	0: No **1: Yes**		
9.I	[E-05]	Can the system prepare domestic hot water?	R/O	0: No **1: Yes**		
9.I	[E-06]	Is a DHW tank installed in the system?	R/O	0: No **1: Yes**		
9.I	[E-07]	What kind of DHW tank is installed?	R/O	**1: Integrated**		
9.I	[E-08]	Power saving function for outdoor unit.	R/O	**1: Enabled**		
9.I	[E-09]	--		**1**		
9.I	[E-0A]	--		**0**		
9.I	[E-0B]	Is a bi-zone kit installed?	R/O	**1: Yes**		
9.I	[E-0C]	--		**0**		
9.I	[E-0D]	Is glycol present in the system?		**0**		
9.I	[E-0E]	--		**0**		
9.I	[F-00]	Pump operation allowed outside range.	R/W	**0: Disabled** 1: Enabled		
9.I	[F-01]	--		**20**		
9.I	[F-02]	Bottom plate heater ON temperature.	R/W	3~10°C, step: 1°C **3°C**		
9.I	[F-03]	Bottom plate heater hysteresis.	R/W	2~5°C, step: 1°C **5°C**		
9.I	[F-04]	Is a bottom plate heater connected?	R/W	**0: No** 1: Yes		
9.I	[F-05]	--		**0**		
9.I	[F-09]	Pump operation during flow abnormality.	R/W	**0: Disabled** 1: Enabled		
9.I	[F-0A]	--		**0**		
9.I	[F-0B]	Close shut-off valve during thermo OFF?	R/W	**0: No** 1: Yes		
9.I	[F-0C]	--		**1**		
9.I	[F-0D]	What is the pump operation mode?	R/W	0: Continuous **1: Sample** 2: Request		

(*1) *3V_
(*2) *6V_
(*3) *9W

(#) Setting is not applicable for this unit.





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