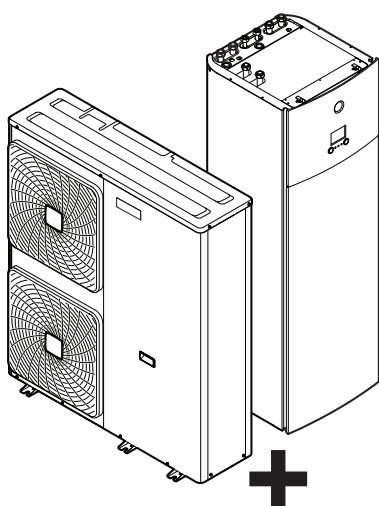




Installer reference guide

Daikin Altherma – Low temperature split



EPGA11DAV3
EPGA14DAV3
EPGA16DAV3

EAVZ16S18DA6V
EAVZ16S23DA6V
EAVZ16S18DA9W
EAVZ16S23DA9W

Installer reference guide
Daikin Altherma – Low temperature split








English

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	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.

1 General safety precautions



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 re-charge is required, refer to the nameplate of the unit. It states the type of refrigerant and necessary amount.
- 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.

2 About the documentation



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 tightened 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	<ul style="list-style-type: none"> 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

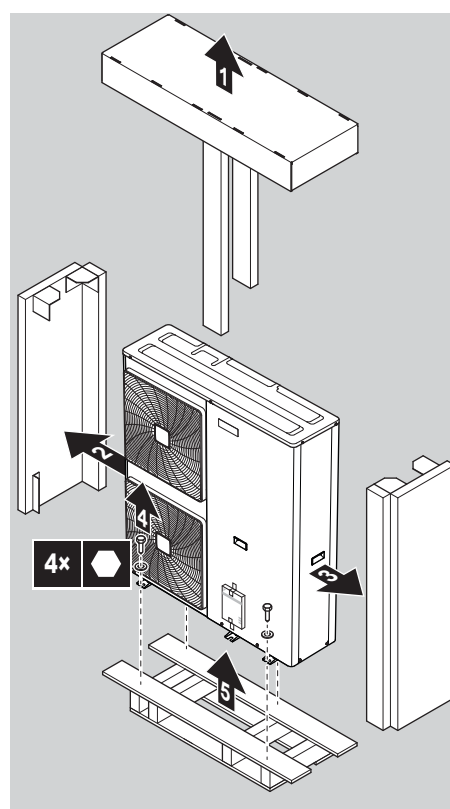
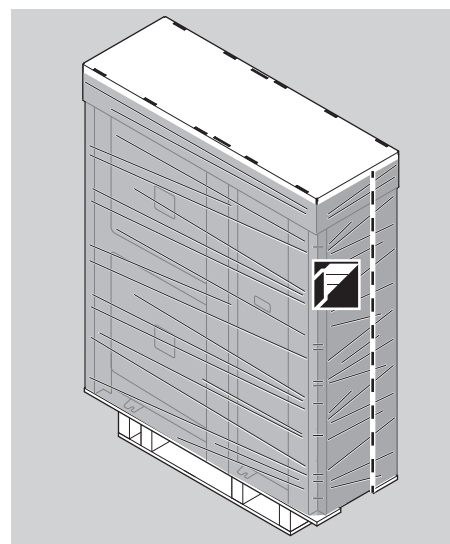
This chapter describes what you have to do after the boxes with the outdoor and indoor unit are delivered on-site.

Keep the following in mind:

- At delivery, the unit **MUST** be checked for damage. Any damage **MUST** be reported immediately to the carrier's claims agent.
- 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

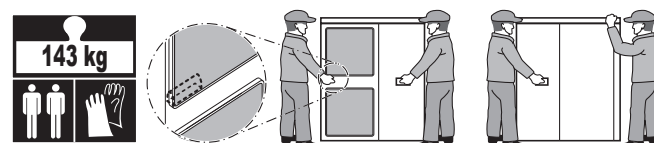


3.2.2 To handle the outdoor unit



CAUTION

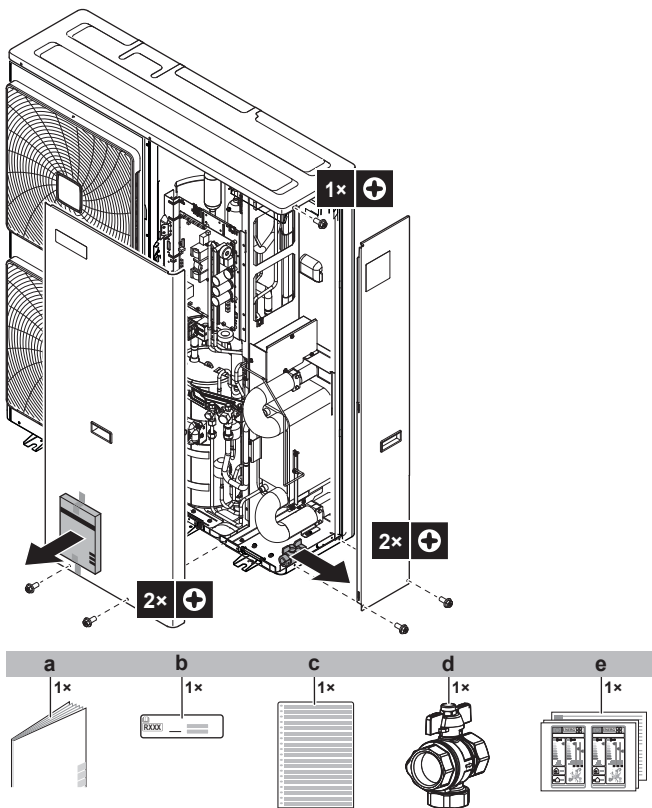
To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.



3 About the box

3.2.3 To remove the accessories from the outdoor unit

- 1 Open the outdoor unit.
- 2 Remove the accessories.



- a Outdoor unit installation manual
- b Fluorinated greenhouse gases label
- c Multilingual fluorinated greenhouse gases label
- d Shut-off valve (with integrated filter)
- e Energy label

3.2.4 To remove the transportation stay

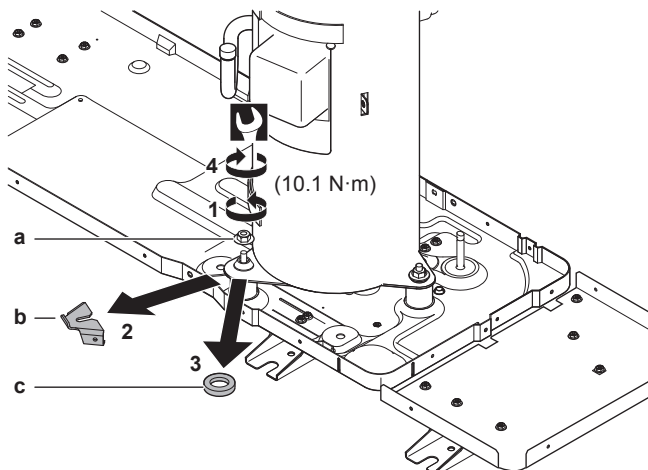


NOTICE

If the unit is operated with the transportation stay attached, abnormal vibration or noise may be generated.

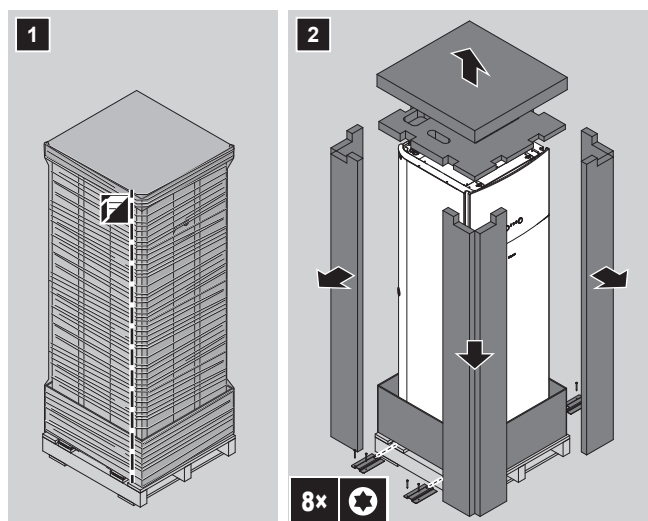
The compressor transportation stay must be removed. It is installed under the compressor leg in order to protect the unit during transport. Proceed as shown in the figure and procedure below.

- 1 Remove the nut (a) of the compressor mounting bolt.
- 2 Remove and discard the transportation stay (b).
- 3 Remove and discard the washer (c).
- 4 Re-install the nut (a) of the compressor mounting bolt and tighten to 10.1 N·m of torque.

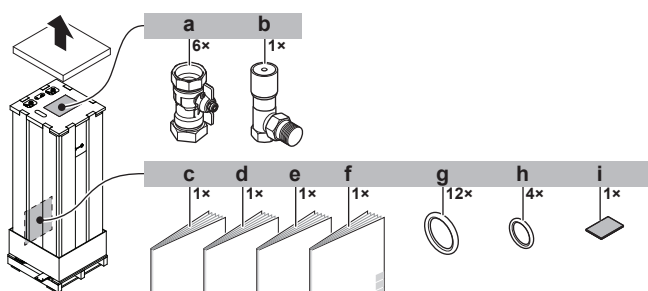


3.3 Indoor unit

3.3.1 To unpack the indoor unit



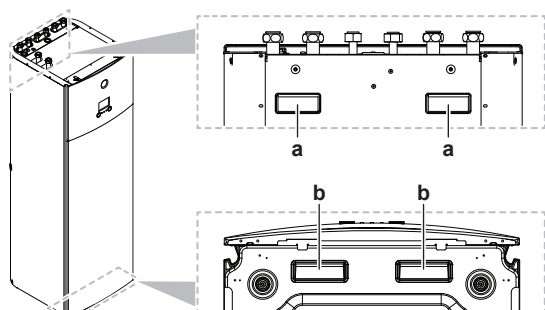
3.3.2 To remove the accessories from the indoor unit



- 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

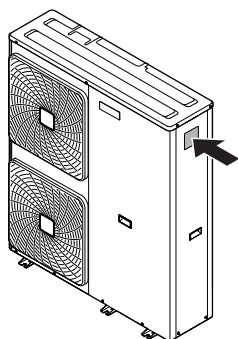


NOTICE

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



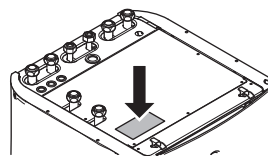
Model identification

Example: EP G A 11 DA V3

Code	Explanation
EP	European hydro-split outdoor pair heat pump
G	Medium water temperature – ambient zone: –10~–20°C
A	Refrigerant R32
11	Capacity class
DA	Model series
V3	Power supply

4.2.2 Identification label: Indoor unit

Location



Model identification

Example: E AV Z 16 S 18 DA 6V

Code	Description
E	European model
AV	Floor-standing hydro-split unit with integrated tank
Z	Dual-zone model
16	Capacity class
S	Integrated tank material: Stainless steel
18	Integrated tank volume
DA	Model series
6V	Backup heater model

4.3 Combining units and options

4.3.1 Possible options for the outdoor unit

Bottom plate heater (EKBPH140L7)

- Prevents freeze-up of the bottom plate.
- Recommended in areas with low ambient temperature and high humidity.

For installation instructions, see the installation manual of the bottom plate heater.

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, EKTR1)

You can connect an optional room thermostat to the indoor unit. This thermostat can either be wired (EKRTWA) or wireless (EKTR1).

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 (EKTR1).

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.

5 Application guidelines

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 (EKRS01-1)

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 (EKPC01-1)

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 and "8 Configuration" on page 36.

Heat pump convactor (FWXV)

For installation instructions, refer to 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.

Universal centralised controller (EKCC8-W)

Controller for cascade control.

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 36.

This chapter contains application guidelines for:

- 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 the leaving water temperature control on the unit's user interface is turned ON.



INFORMATION

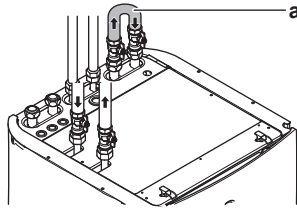
In case an external room thermostat is used and room frost protection needs to be guaranteed in all conditions, then you have to set Emergency [9.5] to Automatic.



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.

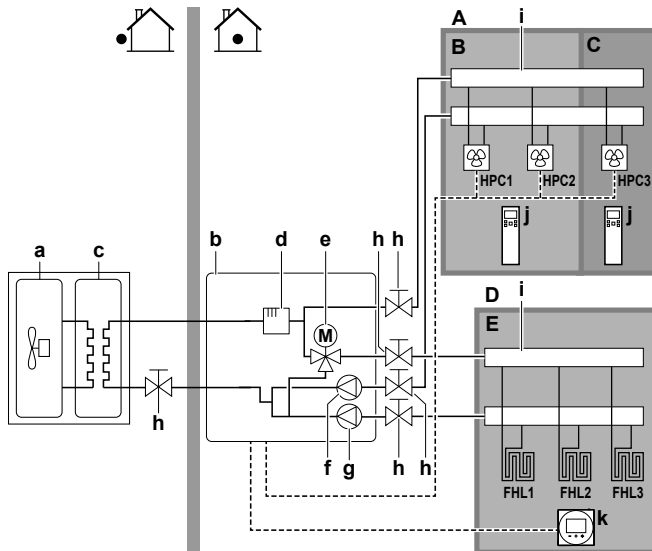
In this document:

- 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)	Under floor 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 (Room thermostat): Unit operation is decided based on the ambient temperature of the user interface.
▪ #: [2.9]	
▪ Code: [C-07]	
	Note:
	<ul style="list-style-type: none"> ▪ Main room = user interface used as room thermostat functionality ▪ Other rooms = external room thermostat functionality
Number of water temperature zones:	1 (Dual zone): Main + additional
▪ #: [4.4]	
▪ Code: [7-02]	
In case of heat pump convectors:	1 (1 contact): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition.
External room thermostat for the additional zone:	
▪ #: [3.A]	
▪ Code: [C-06]	
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.
 - Under floor heating has the best performance with Altherma LT.

5.3 Setting up an auxiliary heat source for space heating

- Space heating can be done by:
 - The indoor unit
 - An auxiliary boiler (field supply) connected to the system
- When the room thermostat requests heating, the indoor unit or the auxiliary boiler starts operating depending on the outdoor temperature (status of the changeover to external heat source). When the permission is given to the auxiliary boiler, the space heating by the indoor unit is turned OFF.
- Bivalent operation is only possible for space heating, NOT for domestic hot water production. Domestic hot water is always produced by the DHW tank connected to the indoor unit.

5 Application guidelines



INFORMATION

- During heating operation of the heat pump, the heat pump operates to achieve the desired temperature set via the user interface. When weather-dependent operation is active, the water temperature is determined automatically depending on the outdoor temperature.
- During heating operation of the auxiliary boiler, the auxiliary boiler operates to achieve the desired water temperature set via the auxiliary boiler controller.

Setup



NOTICE

- Make sure the auxiliary boiler and its integration in the system complies with applicable legislation.
- Daikin is NOT responsible for incorrect or unsafe situations in the auxiliary boiler system.

- Make sure the return water to the heat pump does NOT exceed 55°C. To do so:
 - Set the desired water temperature via the auxiliary boiler controller to maximum 55°C.
 - Install an aquastat valve in the return water flow of the heat pump. Set the aquastat valve to close above 55°C and to open below 55°C.
- Install non-return valves.
- Make sure to only have one expansion vessel in the water circuit. An expansion vessel is already pre-mounted in the indoor unit.
- Install the digital I/O PCB (option EKRPI1HB).
- Connect X1 and X2 (changeover to external heat source) on the digital I/O PCB to the auxiliary boiler thermostat.

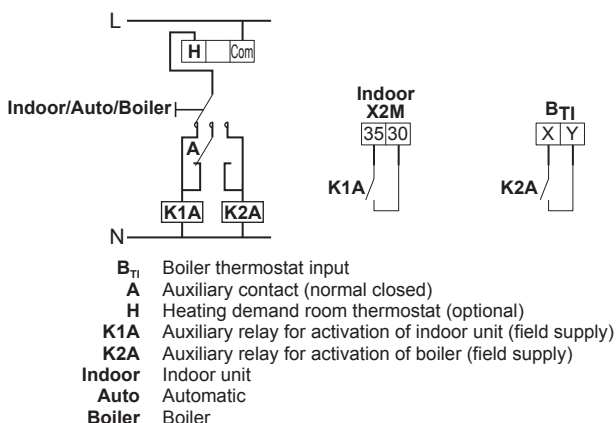
Configuration

Via the user interface (quick wizard):

- Set the use of a bivalent system as external heat source.
- Set the bivalent temperature and hysteresis.

Changeover to external heat source decided by an auxiliary contact

- The auxiliary contact can be:
 - An outdoor temperature thermostat
 - An electricity tariff contact
 - A manually operated contact
 - ...
- Setup: Connect the following field wiring:

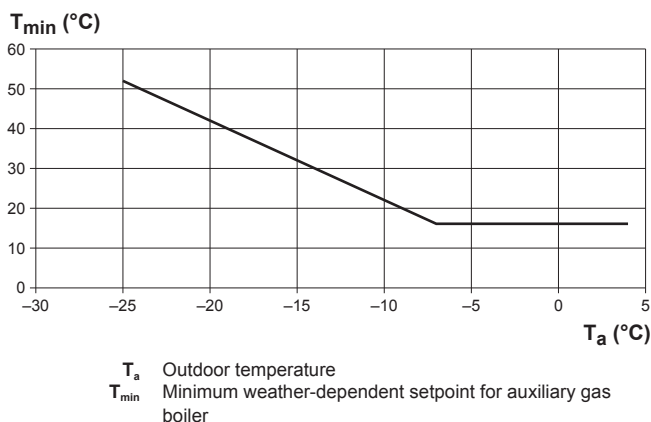


NOTICE

- Make sure the auxiliary contact has enough differential or time delay to prevent frequent changeover between indoor unit and auxiliary boiler.
- If the auxiliary contact is an outdoor temperature thermostat, install the thermostat in the shadow so that it is NOT influenced or turned ON/OFF by direct sunlight.
- Frequent changeover may cause corrosion of the auxiliary boiler. Contact the manufacturer of the auxiliary boiler for more information.

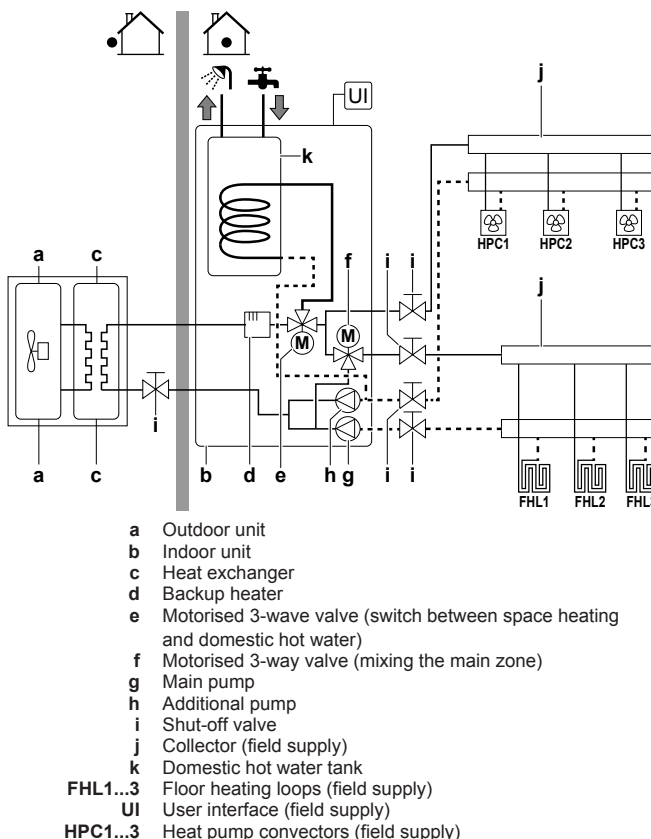
Setpoint of the auxiliary gas boiler

To prevent freeze-up of the water piping, the auxiliary gas boiler must have a fixed setpoint $\geq 55^\circ\text{C}$, or a weather-dependent setpoint $\geq T_{\min}$.



5.4 Setting up the domestic hot water tank

5.4.1 System layout – Integrated DHW tank



5.4.2 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 desired temperature for the DHW tank consists of:

- 1 Determining the DHW consumption (equivalent hot water volume at 40°C).
- 2 Determining the 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: <ul style="list-style-type: none"> • $V_2 = 180$ l • $T_2 = 54^\circ\text{C}$ • $T_1 = 15^\circ\text{C}$ Then $V_1 = 280$ 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	<ul style="list-style-type: none"> • 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. Daikin recommends to set the desired DHW tank temperature below 55°C to avoid using the backup heater.

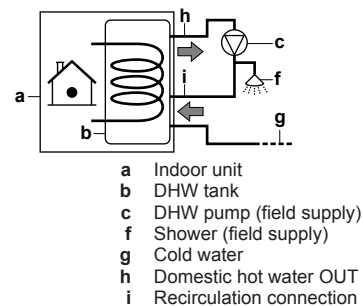
- The higher the outdoor temperature, the better the performance of the heat pump.
- If energy prices are the same during the day and the night, Daikin recommends to heat up the DHW tank during the day.
- If energy prices are lower during the night, Daikin recommends to heat up the DHW tank during the 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, Daikin recommends to produce the domestic hot water during the night when there is lower space heating demand.

5.4.3 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 36.

5.4.4 DHW pump for instant hot water

Setup



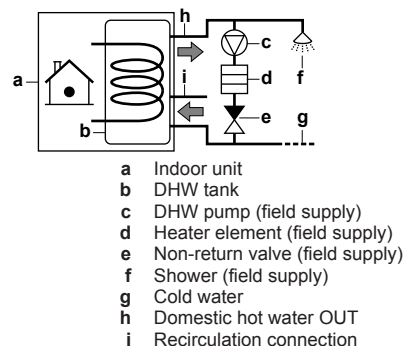
- By connecting a DHW pump, instant hot water can be available at the tap.
- The DHW pump and the installation are field supply and the responsibility of the installer.
- For more information about connecting the recirculation connection: see "7 Installation" on page 23.

Configuration

- For more information, see "8 Configuration" on page 36.
- You can program a schedule to control the DHW pump via the user interface. For more information, see the user reference guide.

5.4.5 DHW pump for disinfection

Setup



5 Application guidelines

- 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 36](#).

5.5 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.

5.5.1 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.

5.5.2 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.

5.5.3 Normal kWh rate power supply

General rule

One power meter that covers the entire system is sufficient.

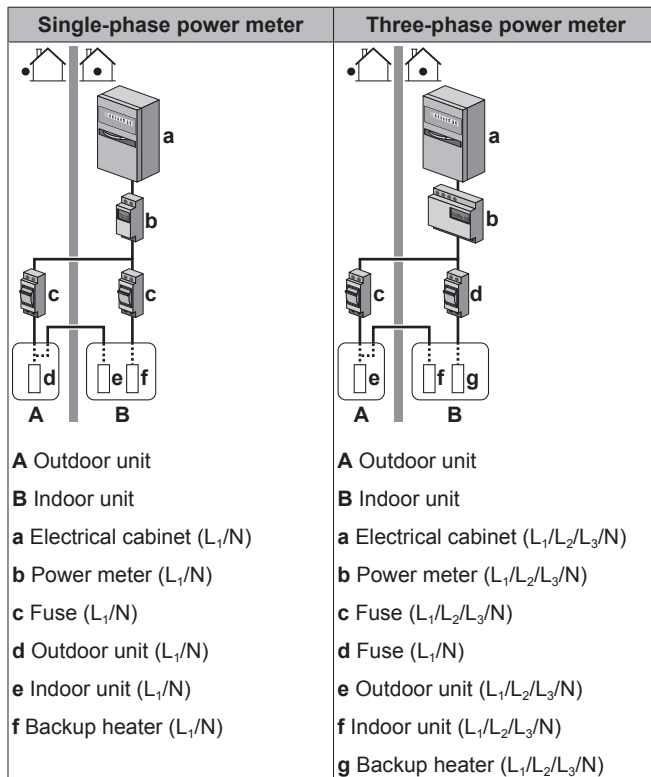
Setup

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

Power meter type

In case of...	Use a... power meter
<ul style="list-style-type: none">▪ 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)
<ul style="list-style-type: none">▪ 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



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 "5.5.4 Preferential kWh rate power supply" on page 15 for an example with two power meters.

5.5.4 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.

5.6 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



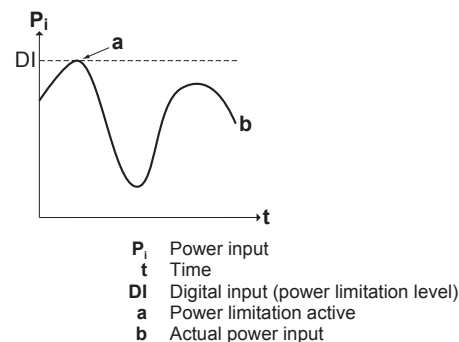
NOTICE

It is possible to install a field fuse with lower than recommended rating over the heat pump. For this you must modify field setting [2-0E] according to the maximum allowed current over the heat pump.

Note that field setting [2-0E] overrules all power consumption control settings. Power limiting the heat pump will reduce performance.

5.6.1 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.



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 36):
 - 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 Application guidelines

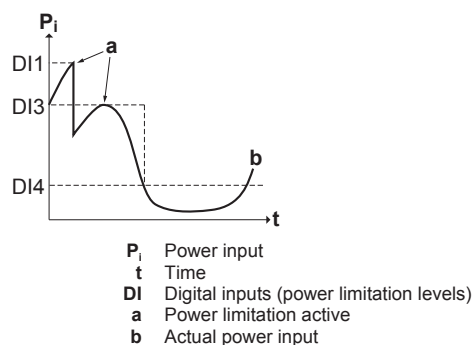
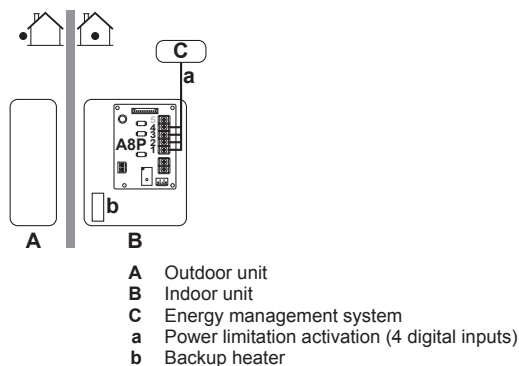
5.6.2 Power limitation activated by digital inputs

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...).



Setup

- Demand PCB (option EKR1AHTA) 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 36](#)):
 - 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.

5.6.3 Power limitation process

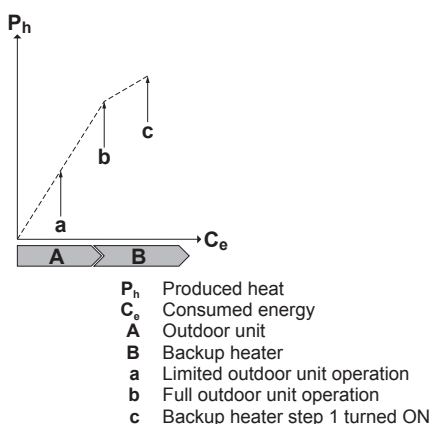
The outdoor unit has better efficiency than the electrical heater. Therefore, the electrical heater is limited and turned OFF first. The system limits power consumption in the following order:

- 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:



5.7 Setting up an external temperature sensor

You can connect one external temperature sensor. It can measure the indoor or outdoor ambient temperature. Daikin recommends to use an external temperature sensor in the following cases:

Indoor ambient temperature

- In room thermostat control, the user interface used as room thermostat (BRC1H) 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, Daikin recommends 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 36), 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 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).

6.2.1 Installation site requirements of the outdoor unit



INFORMATION

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

Mind the following spacing guidelines (see "Service space: Outdoor unit" in the chapter "Technical data").



NOTICE

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

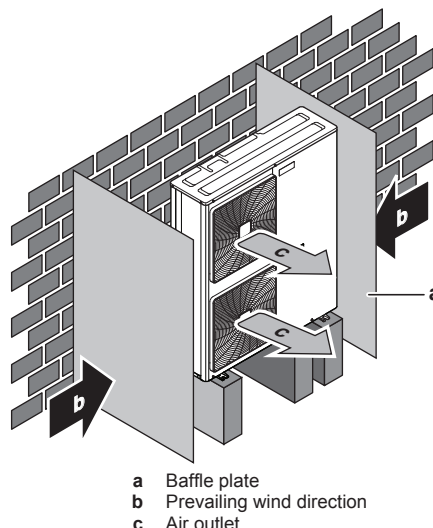
Strong winds (≥ 18 km/h) blowing against the outdoor unit's air outlet causes short circuit (suction of discharge air). This may result in:

- 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.



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.

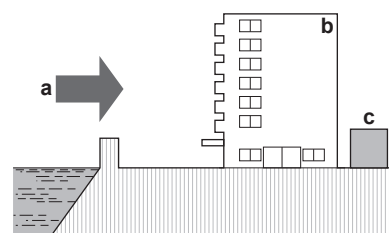
It is NOT recommended to install the unit in the following places because it may shorten the life of the unit:

- 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.

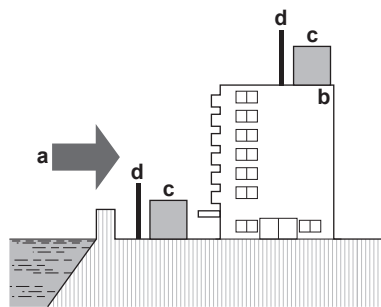
Example: Behind the building.



6 Preparation

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

- Height of windbreaker $\geq 1.5 \times$ 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	-28~35°C

Special requirements for R32

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

Mind the following requirements and precautions:



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).

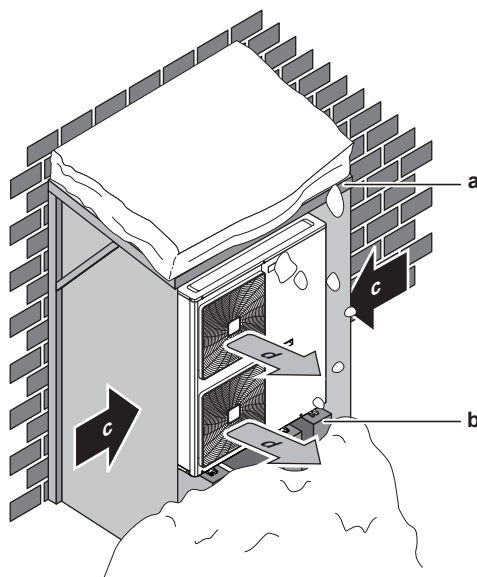


WARNING

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.

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

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

In any case, provide at least 150 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 25 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.

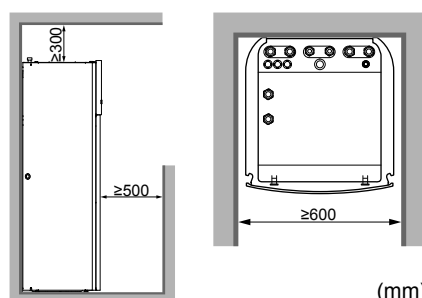
6.2.3 Installation site requirements of the indoor unit



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
 - Space cooling operation: 5~35°C (only in combination with kit EKHVCONV2)
 - Domestic hot water production: 5~35°C
- The maximum height difference between the indoor unit and tank compared to the outdoor unit is 10 m
- The maximum piping length between the indoor and outdoor unit is 50 m.
- Mind the following spacing installation guidelines:



(mm)

i 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 26](#). 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 $>5^{\circ}\text{C}$.

! 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.

6.3 Preparing water piping

6.3.1 Water circuit requirements

i 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 entering the pipe.
 - Use a decent thread sealant to seal connections.
- Insulation.** Insulate up to the base of the heat exchanger.
- Freeze.** Protect against freezing.
- 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.
- 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 79](#) 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.

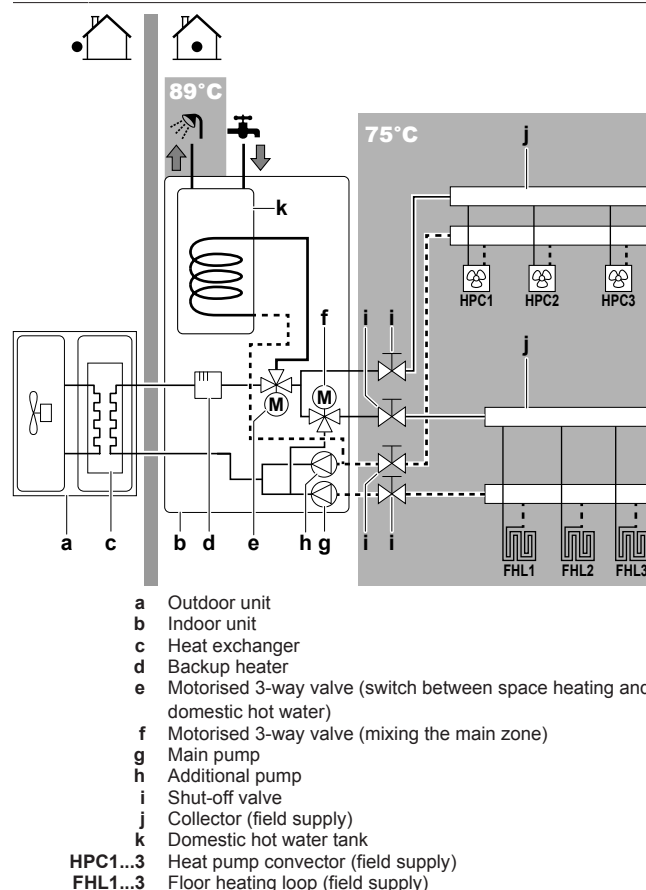
Minimum required flow rate

20 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:

i INFORMATION

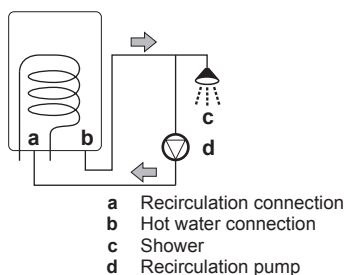
The following illustration is an example and might NOT match your system layout.



- 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 26](#).

6 Preparation

- **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.
- **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.



6.3.2 Formula to calculate the expansion vessel pre-pressure

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

$$P_g = 0.3 + (H/10) \text{ (bar)}$$

6.3.3 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

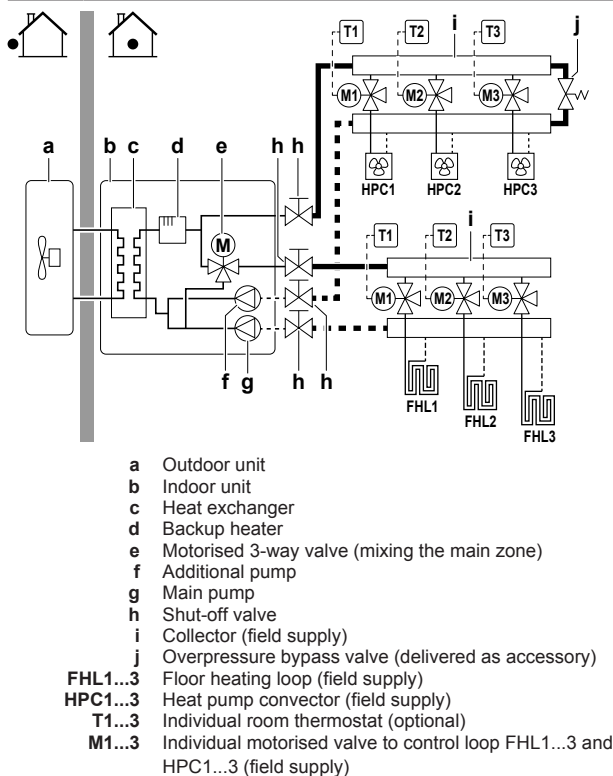
Check that the total water volume in the installation is minimum 20 litres, the internal water volume of the outdoor unit NOT included.

! INFORMATION

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

! NOTICE

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

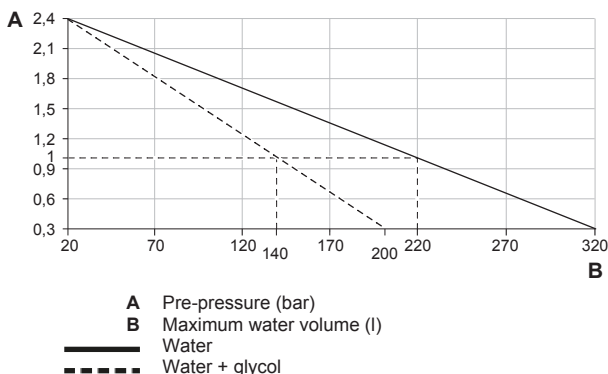


Maximum water volume

! NOTICE

The maximum water volume depends on whether glycol is added to the water circuit. For more information on the addition of glycol, refer to ["7.5.6 To protect the water circuit against freezing" on page 29](#).

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



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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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

To guarantee proper operation it is recommended to have a minimum flow of 28 l/min during DHW.



NOTICE

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



NOTICE

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

Minimum required flow rate

20 l/min

See the recommended procedure as described in "9.4 Checklist during commissioning" on page 66.

6.3.4 Changing the pre-pressure of the expansion vessel



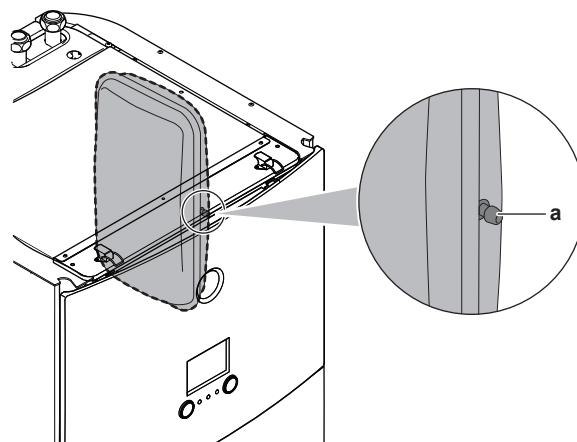
NOTICE

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

6.3.5 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:
 $P_g = (0.3 + (H/10)) \text{ bar} = (0.3 + (0/10)) \text{ bar} = 0.3 \text{ bar}$.
- 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.

6.4 Preparing electrical wiring

6.4.1 About preparing electrical wiring



INFORMATION

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

6 Preparation



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.

6.4.2 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.

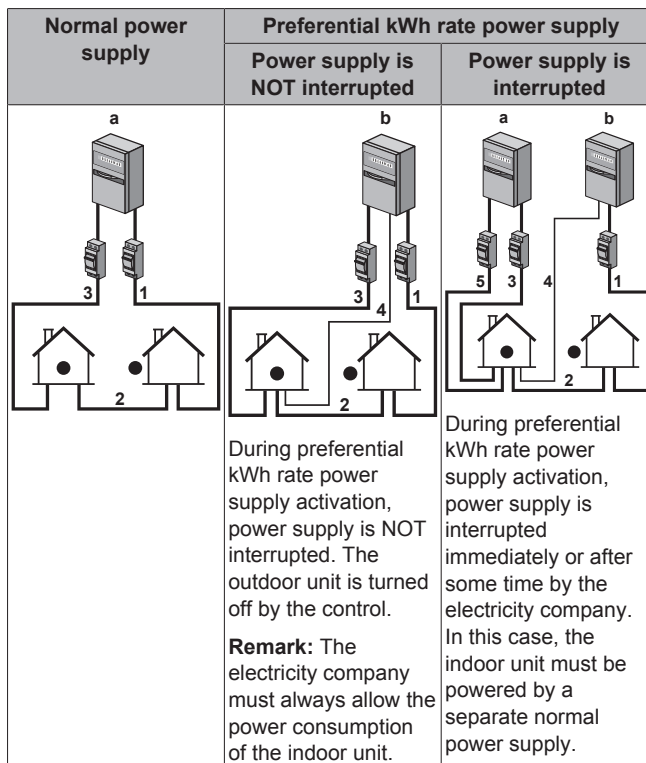
When the equipment is connected to such preferential kWh rate power supply, the electricity company is allowed to:

- 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.

Whether the power supply is interrupted or not, the wiring to the unit is different.

6.4.3 Overview of electrical connections except external actuators



- 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)

6.4.4 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			
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)

Item	Description	Wires	Maximum running current
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.

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 water piping.
- 4 Connecting the electrical wiring.
- 5 Finishing the outdoor installation.
- 6 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 26. It requires to remove one or both side panels.

7.2 Opening the units

7.2.1 About opening the units

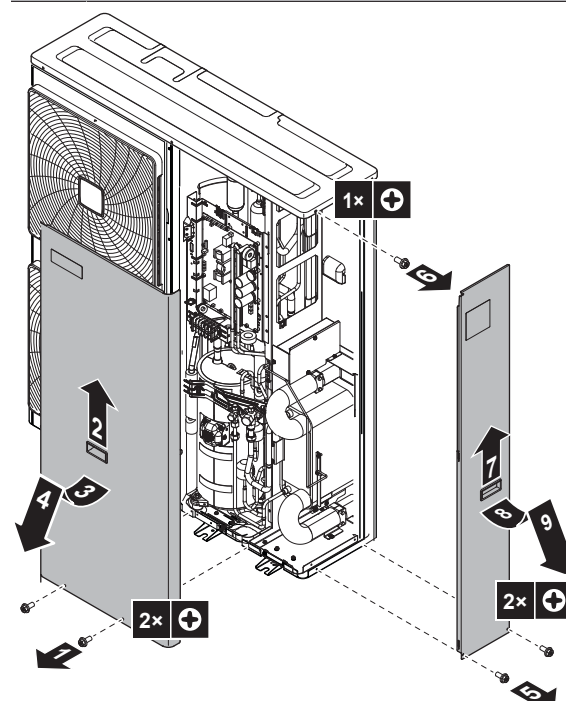
At certain times, you have to open the unit. **Example:**

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

**DANGER: RISK OF ELECTROCUTION**

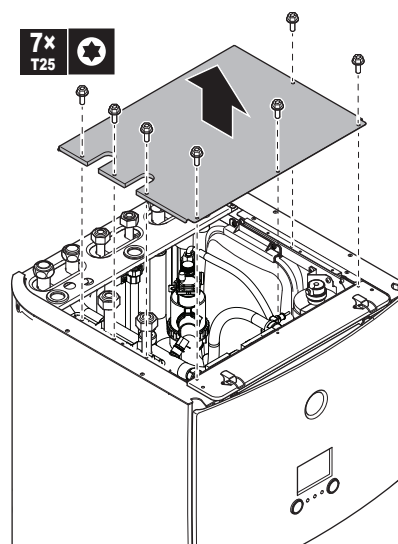
Do NOT leave the unit unattended when the service cover is removed.

7.2.2 To open the outdoor unit

**DANGER: RISK OF ELECTROCUTION****DANGER: RISK OF BURNING**

7.2.3 To open the indoor unit

- 1 Remove the top panel.

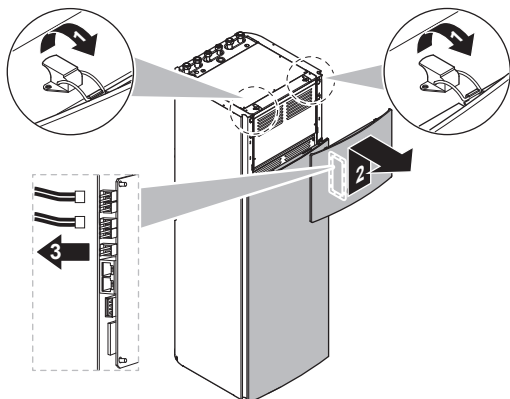


7 Installation

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

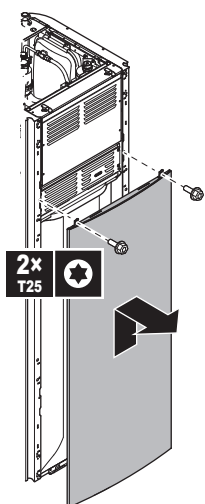
NOTICE

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

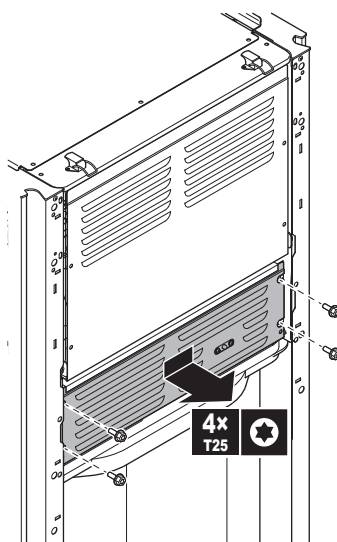
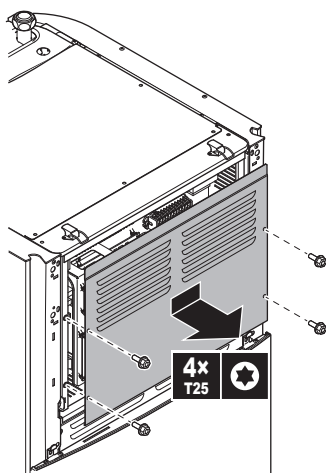


- 3 If necessary, remove the front plate. This is, for example, necessary in the following cases:

- "7.2.5 To lower the switch box on the indoor unit" on page 24
- "7.4.4 To connect the drain hose to the drain" on page 26
- When you need access to the high voltage switch box



7.2.4 To open the switch box cover of the indoor unit

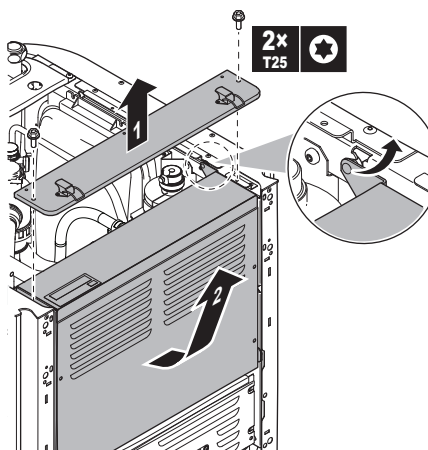


7.2.5 To lower the switch box on the indoor unit

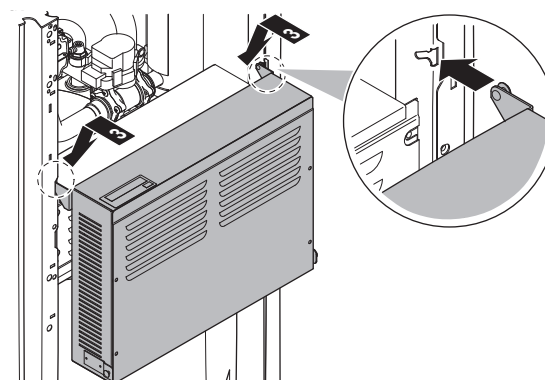
During the installation, you will need access to the inside of the indoor unit. To have easier front access, put the switch box lower on the unit as follows:

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

- 1 Remove the top panel that keeps the switch box into 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 unit before you can connect the 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 17.

7.3.2 Precautions when mounting the outdoor unit



INFORMATION

Also read the precautions and requirements in the following chapters:

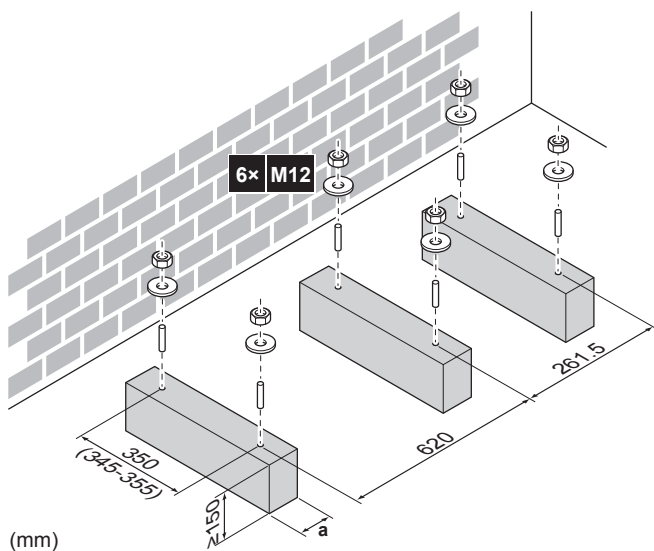
- General safety precautions
- Preparation

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.

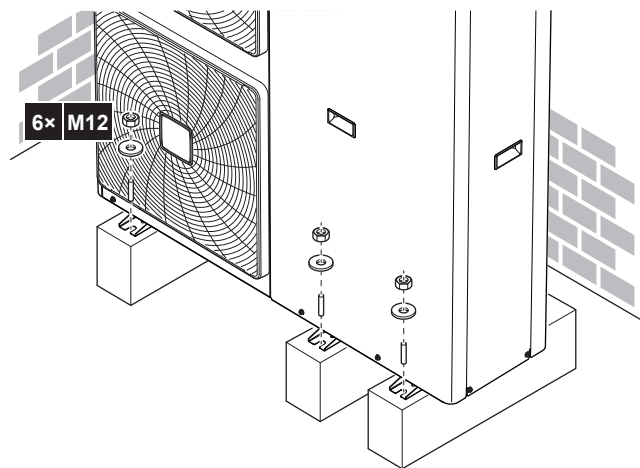
Prepare 6 sets of anchor bolts, nuts and washers (field supply) as follows:



a Make sure not to cover the drain holes.

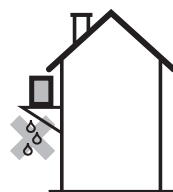
In any case, make sure the unit is positioned at least 100 mm above the maximum expected level of snow.

7.3.4 To install the outdoor unit



7.3.5 To provide drainage

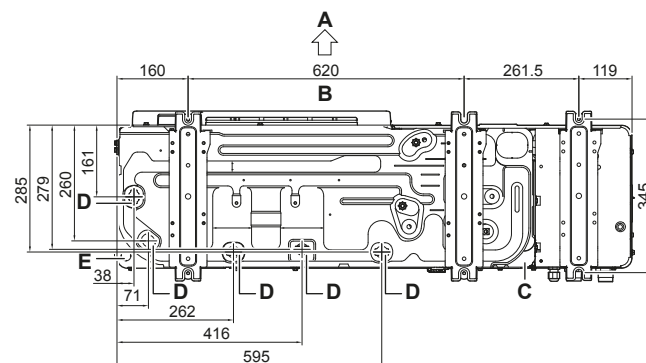
- Make sure that condensation water can be evacuated properly.
- Install the unit on a base to make sure that there is proper drainage in order to avoid ice accumulation.
- Prepare a water drainage channel around the foundation to drain waste water away from the unit.
- Avoid drain water flowing over 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 unit is installed in a cold climate, take adequate measures so that the evacuated condensate CANNOT freeze.

Drain holes (dimensions in mm)



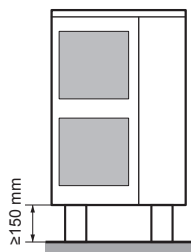
- A Discharge side
- B Distance between anchor points
- C Bottom frame
- D Drain holes
- E Knockout hole for snow

7 Installation



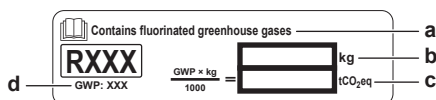
NOTICE

If drain holes of the outdoor unit are covered by a mounting base or by floor surface, raise the unit to provide a free space of more than 150 mm under the outdoor unit.



7.3.6 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 Total refrigerant charge
- c **Quantity of fluorinated greenhouse gases** of the total refrigerant charge expressed as tonnes CO₂ equivalent.
- d 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 CO₂ equivalent.

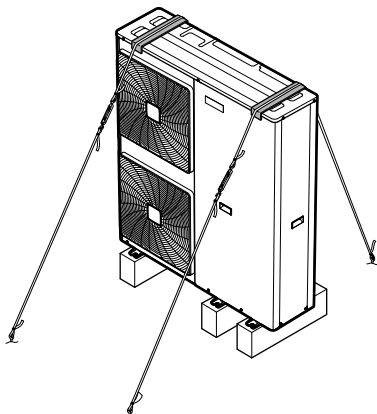
Formula to calculate the quantity in CO₂ equivalent tonnes: GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

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

7.3.7 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

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



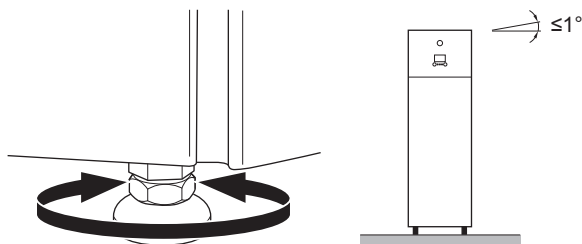
INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

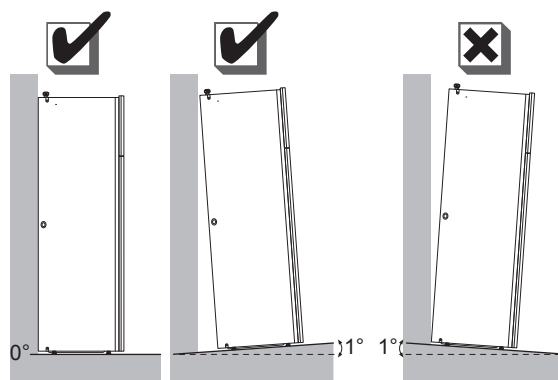
7.4.3 To install the indoor unit

- 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 26.
- 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.

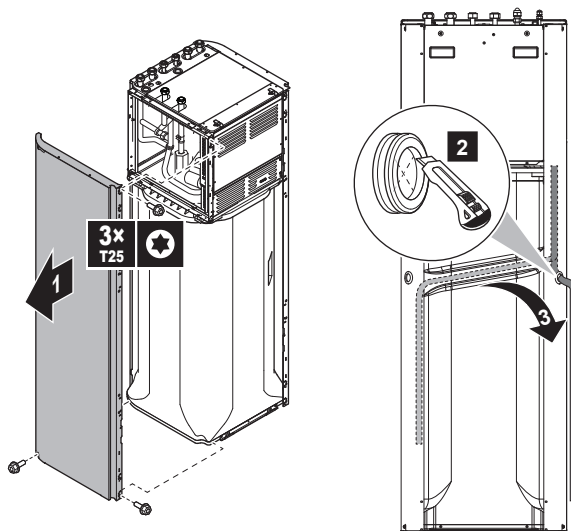
Prerequisite: The user interface panel and front panel have been removed.

- 1 Remove one of the side panels.
- 2 Cut out the rubber grommet.
- 3 Pull the drain hose through the hole.

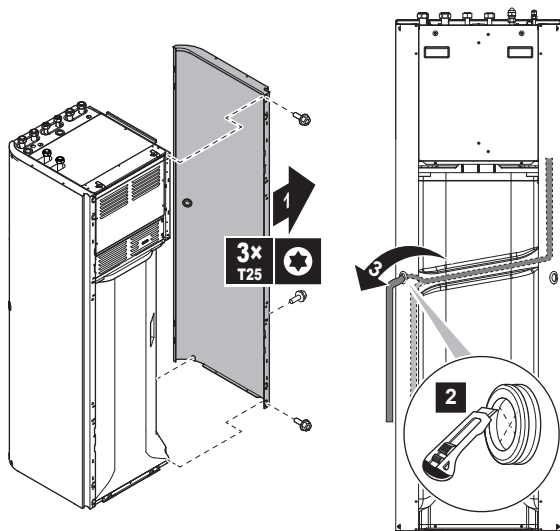
- 4 Reattach the side panel. Ensure the water can flow through the drain tube.

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 water piping

7.5.1 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 outdoor 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.

7.5.2 Precautions when connecting the water piping



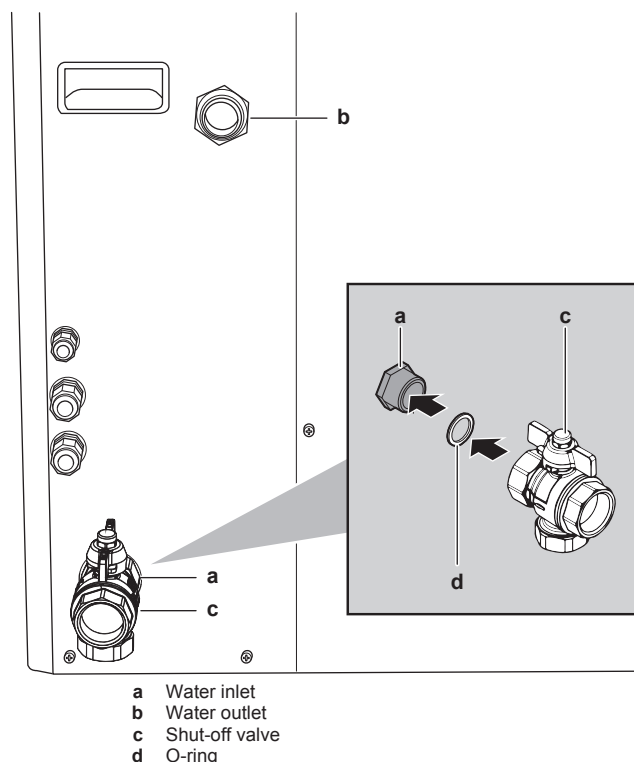
INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.5.3 To connect the water piping

Outdoor unit



- a Water inlet
- b Water outlet
- c Shut-off valve
- d O-ring



NOTICE

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

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

- 1 Connect the O-rings and shut-off valve to the outdoor unit water inlet.
- 2 Connect the field piping to the shut-off valve.
- 3 Connect the field piping to the outdoor unit water outlet.



NOTICE

Install air purge valves at all local high points.

Indoor unit



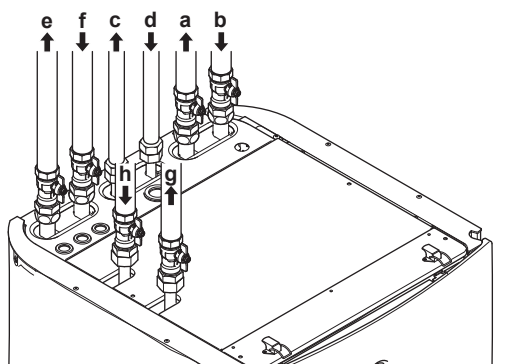
NOTICE

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

- 4 Connect the O-rings and shut-off valves to the outdoor unit water connection pipes of the indoor unit.
- 5 Connect the outdoor unit field piping to the shut-off valves.
- 6 Connect the O-rings and shut-off valves to the space heating/cooling water pipes of both zones of the indoor unit.

7 Installation

- 7 Connect the space heating/cooling field piping of both zones to the shut-off valves.
- 8 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 Outdoor unit water connection out
- f Outdoor unit water connection in
- g Space heating main zone water out
- h 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.

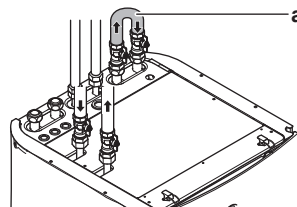
- Mind the minimum water volume when choosing the installation location of the overpressure bypass valve (at the indoor unit, or at the collector). See ["6.3.3 To check the water volume and flow rate" on page 20](#).
- Mind the minimum flow rate when adjusting the overpressure bypass valve setting. See ["6.3.3 To check the water volume and flow rate" on page 20](#) and ["9.4.1 To check the minimum flow rate" on page 66](#).



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 must be installed on the domestic cold water inlet connection in accordance with the applicable legislation.



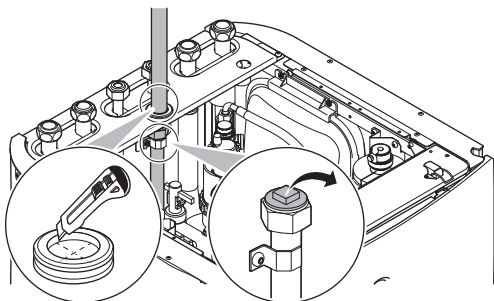
NOTICE

- 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.

7.5.4 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 23](#).
- 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.

7.5.5 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.

7.5.6 To protect the water circuit against freezing

About freeze protection

Frost can damage the system. To prevent the hydraulic components from freezing, the software is equipped with special frost protection functions, that include the activation of pump in case of low temperatures:

- Water pipe freeze prevention (see ["Water pipe freeze prevention" on page 59](#))
- Drain prevention (see ["Drain prevention" on page 60](#))

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

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

- Add glycol to the water. Glycol lowers the freezing point of the water.
- Install freeze protection valves. Freeze protection valves drain the water from the system before it can freeze.



NOTICE

If you add glycol to the water, do NOT install freeze protection valves. **Possible consequence:** Glycol leaking out of the freeze protection valves.

Freeze protection by glycol

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

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



INFORMATION

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

Lowest expected outdoor temperature	Prevent from bursting	Prevent from freezing
-5°C	10%	15%
-10°C	15%	25%

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



NOTICE

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

The types of glycol that can be used depend on whether the system contains a domestic hot water tank:

If...	Then...
The system contains a domestic hot water tank	Only use propylene glycol ^(a)
The system does NOT contain a domestic hot water tank	You can use either propylene glycol ^(a) or ethylene glycol

(a) Propylene glycol, including the necessary inhibitors, classified as Category III according to EN1717.



WARNING

Ethylene glycol is toxic.



NOTICE

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



WARNING

Due to presence of glycol, corrosion of the system is possible. Uninhibited glycol will turn acidic under the influence of oxygen. This process is accelerated by the presence of copper and high temperatures. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that cause severe damage to the system. Therefore it is important that:

- the water treatment is correctly executed by a qualified water specialist,
- a glycol with corrosion inhibitors is selected to counteract acids formed by the oxidation of glycols,
- no automotive glycol is used because their corrosion inhibitors have a limited lifetime and contain silicates which can foul or plug the system,
- galvanized pipes are NOT used in glycol systems since the presence may lead to the precipitation of certain components in the glycol's corrosion inhibitor.

Adding glycol to the water circuit reduces the maximum allowed water volume of the system. For more information, refer to the chapter "To check the water volume and flow rate" in the installer reference guide.

7 Installation

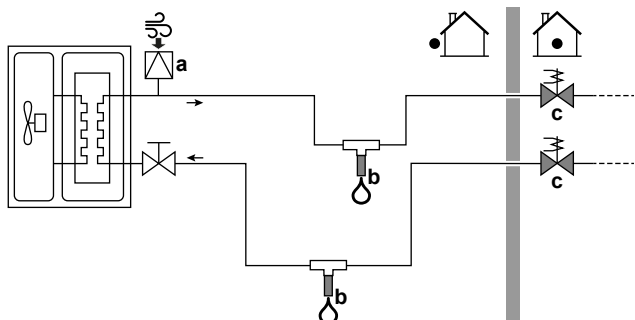


NOTICE




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

Freeze protection by freeze protection valves

It is the installer's responsibility to protect the field piping against freezing. When no glycol is added to the water, you can use freeze protection valves at all lowest points of the field piping to drain the water from the system before it can freeze. To do so, install the following parts:



- a Automatic air intake
- b Protection for the field piping
- c Isolation of water inside the house when there is a power interruption

Part	Description
a	<p>An automatic air intake should be installed at the highest point.</p>  <p>a Automatic air intake (for air supply) (for example an automatic air purge)</p>
b	<p>The freeze protection valves must be installed:</p> <ul style="list-style-type: none"> vertically to allow water to flow out properly and free from obstructions. at all lowest points of the field piping. in the coldest part and away from heat sources. <p>Note: Leave at least 15 cm clearance from the ground to prevent ice from blocking the water exit.</p>  <p>b Freeze protection valve (Optional – field supply)</p>
c	<p>Normally closed valves (located indoors near the piping entry/exit points) can prevent that all water from indoor piping is drained when the freeze protection valves open.</p> <ul style="list-style-type: none"> When there is a power interruption: The normally closed valves close and isolate the water inside the house. If the freeze protection valves open, only the water outside the house is drained. In other circumstances (example: when there is a pump failure): The normally closed valves remain open. If the freeze protection valves open, the water from inside the house is also drained.  <p>c Normally closed valves (Recommended – Field supply).</p>



NOTICE

When freeze protection valves are installed, do NOT select a minimum cooling setpoint lower than 8°C (8°C=default). If lower, freeze protection valves can open during cooling operation.

Heater tape (field supply)

- 1 Install heater tape to the outdoor field piping.
- 2 Provide external power supply for the heater tape.



NOTICE

- For the internal heater tape to operate, the power to the unit MUST be ON. For this reason, during cold periods, never disconnect the power, nor turn off the main switch.
- In case of a power failure, power to the heater tape (both internal and external) will be aborted and the water circuit will NOT be protected. To guarantee a full protection, it is always possible to add glycol to the water circuit or to use freeze protection valves, even when installing heater tape to the outdoor field piping.

7.5.7 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.

7.5.8 To insulate the water piping

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

Outdoor water piping

For piping in free air, it is recommended to use the insulation thickness as shown in below table as a minimum (with $\lambda=0.039$ W/mK).

Piping length (m)	Minimum insulation thickness (mm)
<20	19
20~30	32
30~40	40
40~50	50

For other cases the minimum insulation thickness can be determined using the Hydronic Piping Calculation tool.

The Hydronic Piping Calculation tool also calculates the maximum hydronic piping length from the indoor unit to the outdoor unit based on the emitter pressure drop or the other way around.

The Hydronic Piping Calculation tool is part of the Heating Solutions Navigator which can be reached via <https://professional.standby.me.daikin.eu>.

Please contact your dealer if you have no access to Heating Solutions Navigator.

This recommendation ensures good operation of the unit, however, local regulations may differ and shall be followed.

7.6 Connecting the electrical wiring

7.6.1 About connecting the electrical wiring

Before connecting the electrical wiring

Make sure 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.

7.6.2 About electrical compliance

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 "7.6.9 To connect the backup heater power supply" on page 33.

7.6.3 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



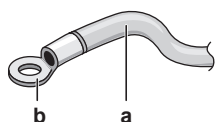
WARNING

ALWAYS use multicore cable for power supply cables.

7.6.4 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	<p>a Curled single-core wire b Screw c Flat washer</p>
Stranded conductor wire with round crimp-style terminal	<p>a Terminal b Screw c Flat washer O Allowed X NOT allowed</p>

Tightening torques

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

7.6.5 Specifications of standard wiring components

Component		EPGA11~16DAV3
Power supply cable	MCA ^(a)	30.7 A
	Voltage	230 V
	Phase	1~
	Frequency	50 Hz
	Wire sizes	Must comply with applicable legislation
Interconnection cable		Minimum cable section of 1.5 mm ² and applicable for 230 V
Recommended field fuse ^(b)		32 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).

(b) The minimum allowed field fuse is 20 A.



NOTICE

It is possible to install a field fuse with lower than recommended rating over the heat pump. For this you must modify field setting [2-0E] according to the maximum allowed current over the heat pump.

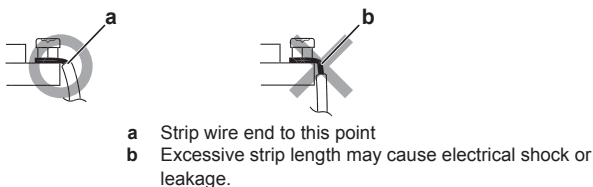
Note that field setting [2-0E] overrules all power consumption control settings. Power limiting the heat pump will reduce performance.

7.6.6 To connect the electrical wiring on the outdoor unit

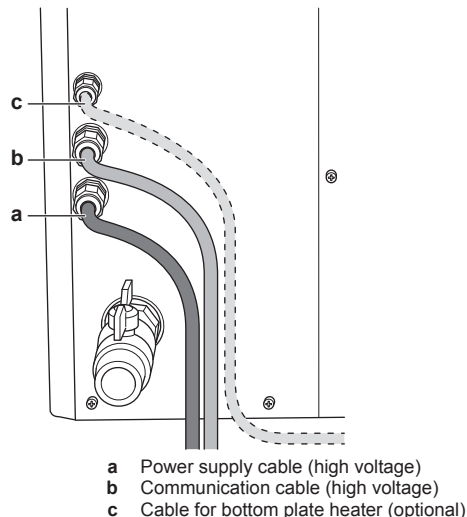
- 1 Remove the switch box cover. See "7.2.2 To open the outdoor unit" on page 23.

7 Installation

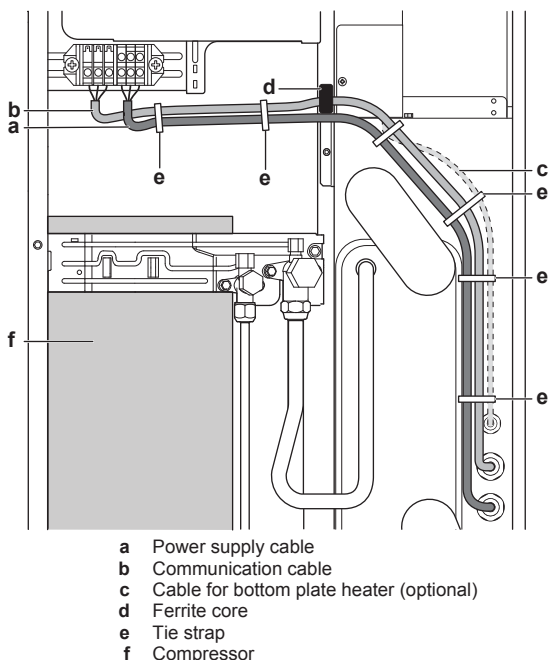
- Strip insulation (20 mm) from the wires.



- Insert the wiring at the back of the unit:



- Inside the unit, route the wiring as follows:



NOTICE

To guarantee electromagnetic compatibility:

- Make sure both power supply and communication cables run parallel to one another. Use tie straps to hold the cables together.
- Make sure the cables are located as far away from the compressor as possible.
- The communication cable **MUST** pass through the ferrite core.

- Make sure that the cable does NOT come in contact with sharp edges or hot gas piping.
- Install the switch box cover.

INFORMATION

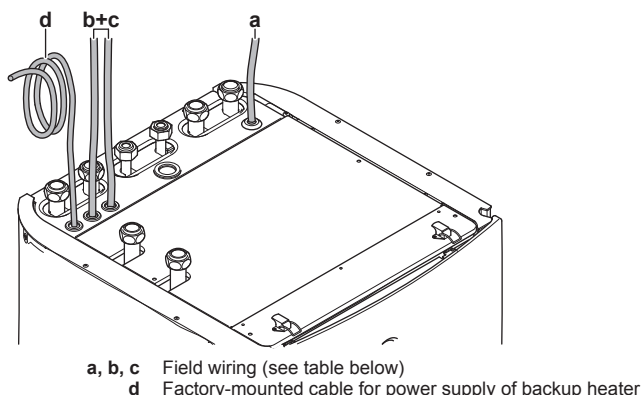
When installing field supply or option cables, foresee sufficient cable length. This will make it possible to remove/reposition the switch box and gain access to other components during service.

CAUTION

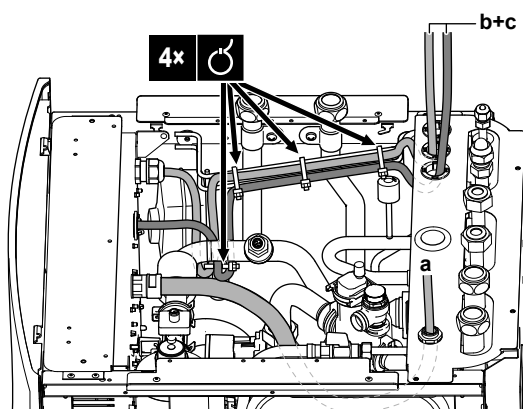
Do NOT push or place redundant cable length in the unit.

7.6.7 To connect the electrical wiring on the indoor unit

- To open the indoor unit, see "7.2.3 To open the indoor unit" on page 23 and "7.2.4 To open the switch box cover of the indoor unit" on page 24.
- The wiring enters the unit from the top:



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



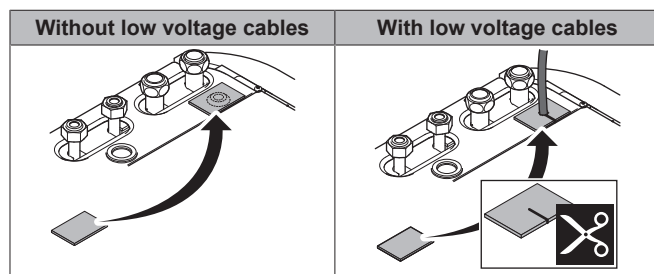
Routing	Possible cables (depending on unit type and installed options)
a Low voltage	<ul style="list-style-type: none"> Preferential power supply contact User interface (option) Power consumption digital inputs (field supply) Outdoor ambient temperature sensor (option) Indoor ambient temperature sensor (option) Electrical meters (field supply) Safety thermostat (field supply)
b High voltage power supply	<ul style="list-style-type: none"> Interconnection cable Normal kWh rate power supply Preferential kWh rate power supply

Routing	Possible cables (depending on unit type and installed options)
c High voltage control signal	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Power supply for backup heater

**CAUTION**

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

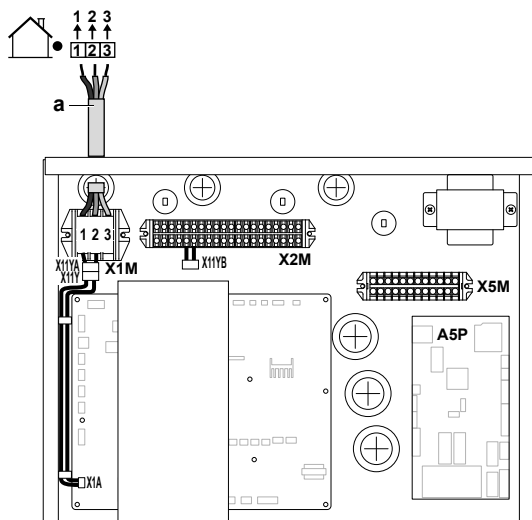
- 4 Seal the low voltage wiring intake using the sealing tape (delivered as accessory).



7.6.8 To connect the main power supply

- 1 Connect the main power supply.

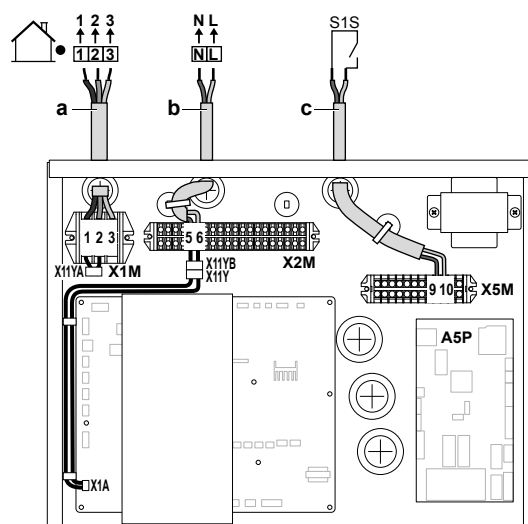
In case of normal kWh rate power supply



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.

7.6.9 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.

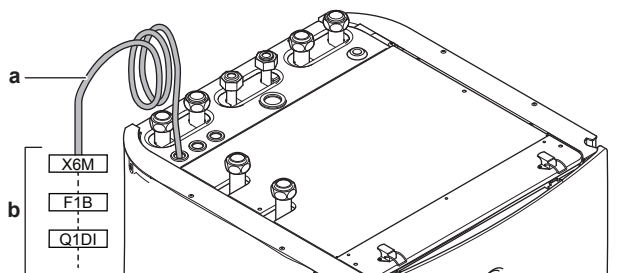
The backup heater capacity can vary, depending on the indoor unit model. Make sure that the power supply is in accordance with the backup heater capacity, as listed in the table below.

7 Installation

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)
- b Field wiring (see table below)

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

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

- F1B Overcurrent fuse (field supply). Recommended fuse:
4-pole; 20 A; curve 400 V; tripping class C.
- 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.

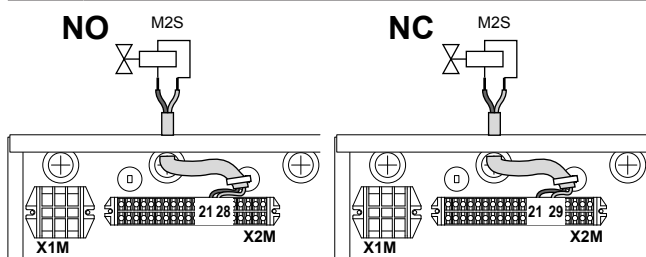
7.6.10 To connect the shut-off valve

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



NOTICE

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



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

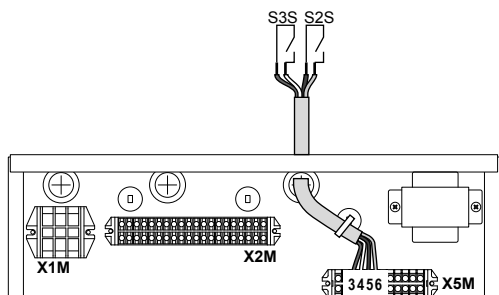
7.6.11 To connect the electrical meters



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.

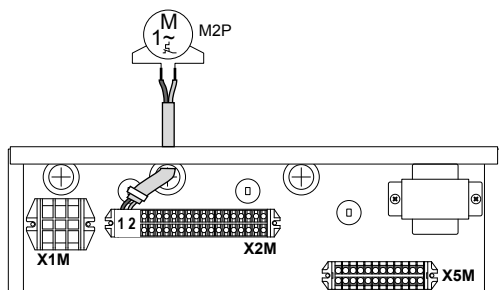
- 1 Connect the electrical meters cable to the appropriate terminals as shown in the illustration below.



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

7.6.12 To connect the domestic hot water pump

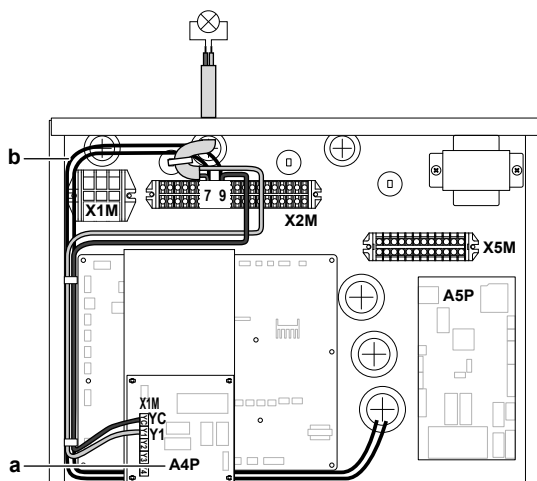
- 1 Connect the domestic hot water pump cable to the appropriate terminals as shown in the illustration below.



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

7.6.13 To connect the alarm output

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



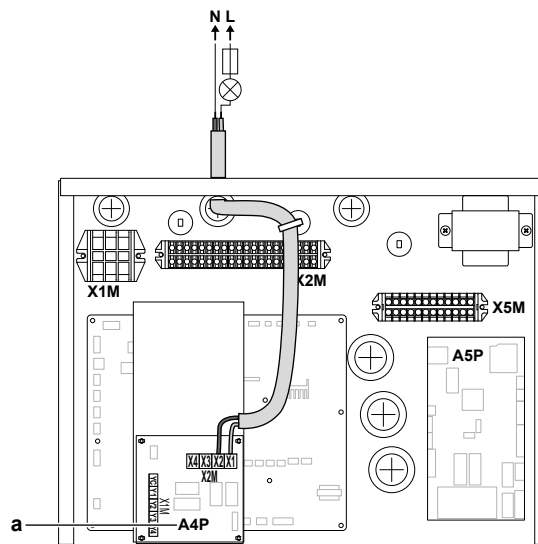
- a Installation of EKR1HB is required.
b Rewiring between X2M/7+9 and Q1L (= thermal protector backup heater). Do NOT change.

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

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

7.6.15 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.

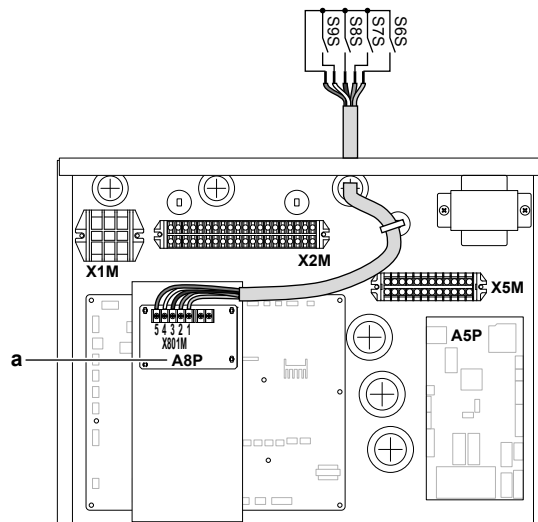


- a Installation of EKR1HB is required.

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

7.6.16 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 EKR1AHTA is required.

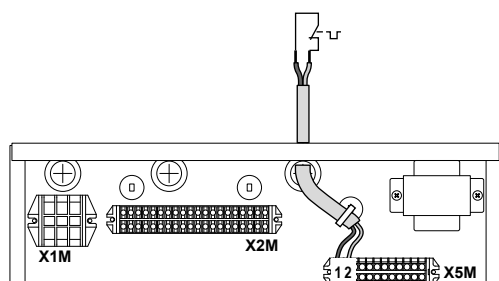
- 2 Fix the cable with cable ties to the cable tie mountings.

7.6.17 To connect the safety thermostat (normal closed contact)

Main zone

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

8 Configuration



- 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.

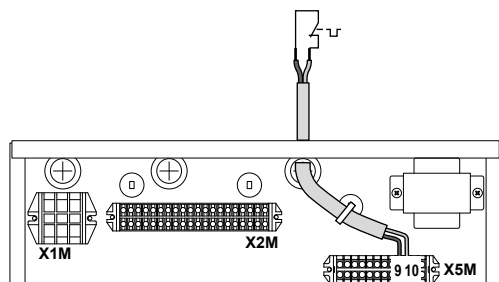


NOTICE

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 normal 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 (normal 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, it is recommended that ...

- ... 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.



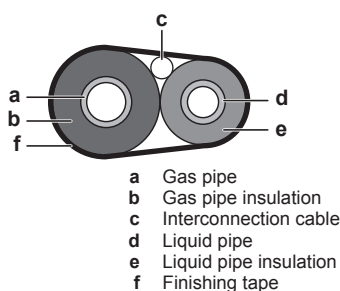
INFORMATION

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.

7.7 Finishing the outdoor unit installation

7.7.1 To finish the outdoor unit installation

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



- 2 Install the service cover.

To close the outdoor unit

- 1 Close the switch box cover.
- 2 Mount the front plate and the side plate.



NOTICE

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

7.8 Finishing the indoor unit installation

7.8.1 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 37](#).
- **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 menu structure . To enable breadcrumbs, press the ? button in the home screen.	#
Accessing settings via the code in the overview field settings .	Code

See also:

- ["To access the installer settings" on page 37](#)
- ["8.6 Menu structure: Overview installer settings" on page 65](#)

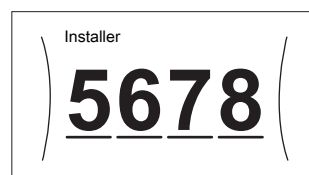
8.1.1 To access the most used commands**To change the user permission level**

You can change the user permission level as follows:

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

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 as follows:

1	Set the user permission level to Installer. See " To change the user permission level " on page 37.	—																
2	Go to [9.I]: settings > Overview field settings.																	
3	Turn the left dial to select the first part of the setting and confirm by pressing the dial.																	
<div><table><tr><td rowspan="5">)</td><td>00</td><td>05</td><td>0A</td></tr><tr><td>0 01</td><td>06</td><td>0B</td></tr><tr><td>1 02</td><td>07</td><td>0C</td></tr><tr><td>2 03</td><td>08</td><td>0D</td></tr><tr><td>3 04</td><td>09</td><td>0E</td></tr></table></div>)	00	05	0A	0 01	06	0B	1 02	07	0C	2 03	08	0D	3 04	09	0E
)	00	05		0A														
	0 01	06		0B														
	1 02	07		0C														
	2 03	08		0D														
	3 04	09	0E															
4	Turn the left dial to select the second part of the setting																	
<div><table><tr><td rowspan="5">)</td><td>00</td><td>05</td><td>0A</td></tr><tr><td>01 15</td><td>06</td><td>0B</td></tr><tr><td>02</td><td>07</td><td>0C</td></tr><tr><td>03</td><td>08</td><td>0D</td></tr><tr><td>04</td><td>09</td><td>0E</td></tr></table></div>)	00	05	0A	01 15	06	0B	02	07	0C	03	08	0D	04	09	0E
)	00	05		0A														
	01 15	06		0B														
	02	07		0C														
	03	08		0D														
	04	09	0E															
5	Turn the right dial to modify the value from 15 to 20.																	
<div><table><tr><td rowspan="5">)</td><td>00</td><td>05</td><td>0A</td></tr><tr><td>01 20</td><td>06</td><td>0B</td></tr><tr><td>02</td><td>07</td><td>0C</td></tr><tr><td>03</td><td>08</td><td>0D</td></tr><tr><td>04</td><td>09</td><td>0E</td></tr></table></div>)	00	05	0A	01 20	06	0B	02	07	0C	03	08	0D	04	09	0E
)	00	05		0A														
	01 20	06		0B														
	02	07		0C														
	03	08		0D														
	04	09	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).

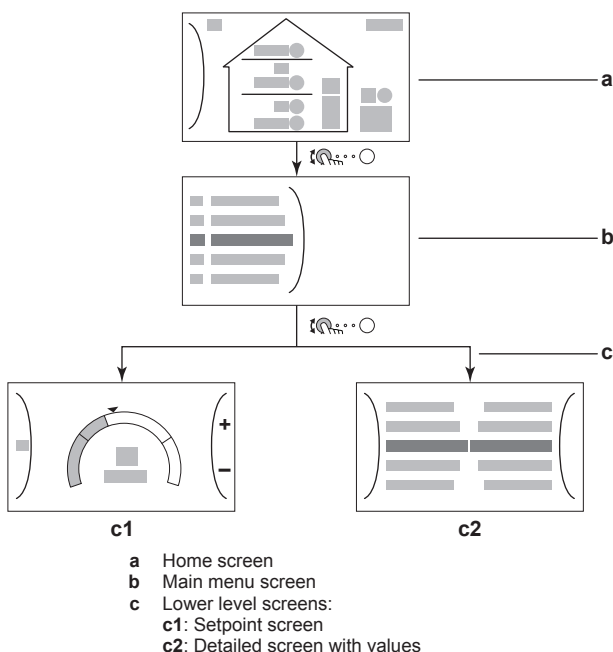


Cooling settings are only applicable in case a conversion kit (EKHVCONV2) is installed.

For the setting...	Refer to...
Language [7.1]	
Time/date [7.2]	

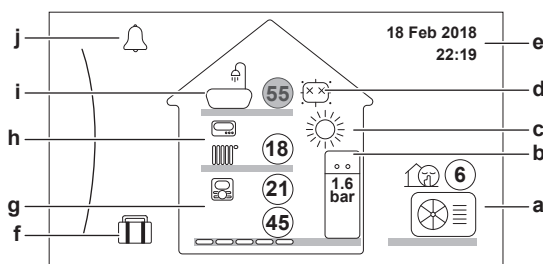
8 Configuration

For the setting...		Refer to...
	Hours	—
	Minutes	
	Year	
	Month	
	Day	
System		
	Indoor unit type (read only)	"8.4.9 Installer settings" on page 57
	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/ cooling" on page 49
Backup heater		
	Voltage [9.3.2]	"Backup heater" on page 57
	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 43
	Control [2.9]	
	Setpoint mode [2.4]	
	Heating WD curve [2.5] (if applicable)	
	Cooling WD curve [2.6] (if applicable)	
	Schedule [2.1]	
Additional zone (only if [4.4]=1)		
	Emitter type [3.7]	"8.4.4 Additional zone" on page 47
	Control (read only) [3.9]	
	Setpoint mode [3.4]	
	Heating WD curve [3.5] (if applicable)	
	Cooling WD curve [3.6] (if applicable)	
	Schedule [3.1]	
Tank		
	Heat up mode [5.6]	"8.4.6 Tank" on page 52
	Comfort setpoint [5.2]	
	Eco setpoint [5.3]	
	Reheat setpoint [5.4]	



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	
a1	Outdoor unit
a2	Quiet mode active
a3	Measured ambient temperature
Indoor unit / domestic hot water tank	
b1	Indoor unit: • : Floor-standing indoor unit with integrated tank
b2	Water pressure
Space operation mode	
c	• : Cooling (only with EKHVCONV2 installed)
	• : Heating

8.3 Possible screens

8.3.1 Possible screens: Overview

The most common screens are as follows:

Item	Description
Disinfection / Powerful	<ul style="list-style-type: none"> : Disinfection mode active : Powerful operation active
Date / time	e Current date and time
Holiday	f : Holiday mode active
Main zone	g1 Heat emitter type: <ul style="list-style-type: none"> : Underfloor heating : Fancoil unit : Radiator g2 Leaving water temperature setpoint g3 Room thermostat type: <ul style="list-style-type: none"> : Daikin user interface used as room thermostat : External control Hidden: Leaving water temperature control g4 Measured room temperature
Additional zone	h1 Heat emitter type: <ul style="list-style-type: none"> : Underfloor heating : Fancoil unit : Radiator h2 Leaving water temperature setpoint h3 Room thermostat type: <ul style="list-style-type: none"> : External control Hidden: Leaving water temperature control
Domestic hot water	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 75 for more information.

8.3.3 Main menu screen

In the home screen, press to open the main menu screen. From the main menu, you can access the different setpoint screens and submenus.

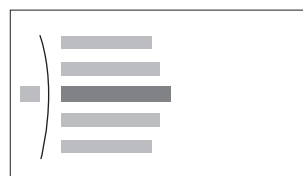


Possible actions on this screen	
	Go through the list.
	Enter the submenu.
	Enable/disable breadcrumbs.

Item	Description
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 75 for more information.

Item	Description
Room	Restriction: Only displayed if a room thermostat is connected to the indoor unit. Set the room temperature.
Main zone	Shows the applicable symbol for your main zone emitter type. Set the leaving water temperature for the main zone.
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).
Space heating/cooling	Shows the applicable symbol for your unit. Put the unit in heating mode or cooling mode. You cannot change the mode on heating only models.
Tank	Restriction: Only displayed if a domestic hot water tank is present. Set the domestic hot water tank temperature.
User settings	Gives access to user settings such as holiday mode and quiet mode.
Information	Displays data and information about the indoor unit.
Installer settings	Restriction: Only for the installer. Gives access to advanced settings.
Commissioning	Restriction: Only for the installer. Perform tests and maintenance.
User profile	Change the active user profile.
Operation	Turn heating/cooling 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.

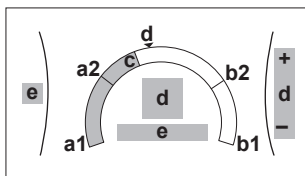
8.3.5 Setpoint screen

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

Example:

- Room temperature screen
- Main zone screen
- Additional zone screen
- Tank temperature screen

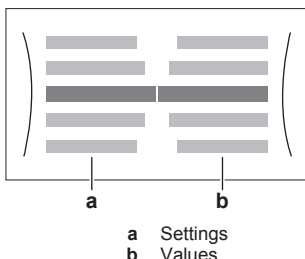
8 Configuration



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



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

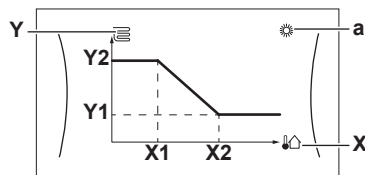
8.3.7 Detailed screen with weather-dependent curve

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

The weather-dependent curves are 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.

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

Item	Description
a	Possible weather dependent zones: <ul style="list-style-type: none"> : Main zone or additional zone heating : Main zone or additional zone cooling (only with EKHVCONV2 installed) : Domestic hot water
X, X1, X2	Outdoor ambient temperature
Y, Y1, Y2	Desired tank temperature or leaving water temperature. The symbol shown here corresponds to the heat emitter for that zone: <ul style="list-style-type: none"> : 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.

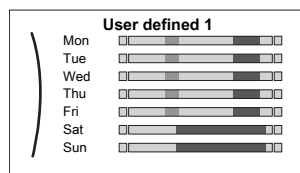


INFORMATION

The procedures to program other schedules are similar.

To program the schedule

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.

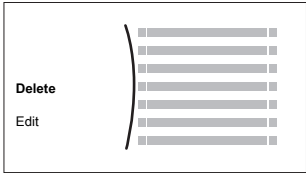
- Go to the schedule.
- Clear the contents of the schedule (optional).
- Program the schedule for Monday.
- Copy the schedule to the other weekdays.
- Program the schedule for Saturday and copy it to Sunday.
- Give the schedule a name.

To go to the schedule:


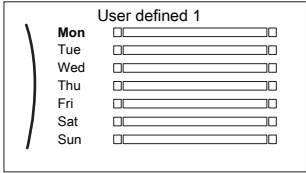




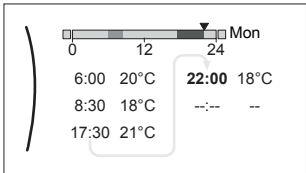

1	Go to [1.1]: Room > Schedule.	
2	Set scheduling to Yes.	
3	Go to [1.2]: Room > Heating schedule.	

To clear the contents of the schedule:


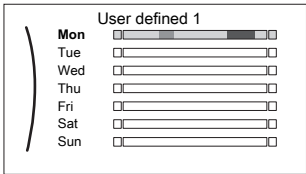



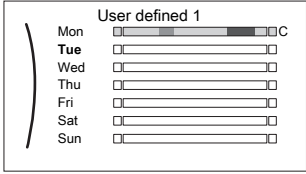
1	Select the name of the current schedule.	


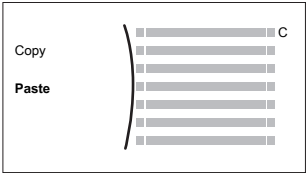
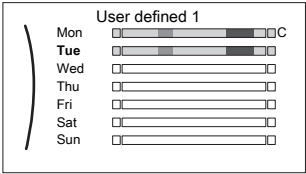
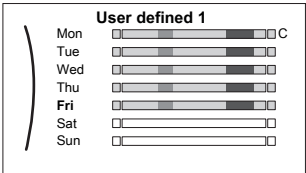
2	Select Delete.	
		
3	Select OK to confirm.	

To program the schedule for Monday:





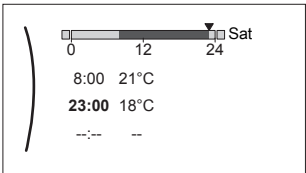





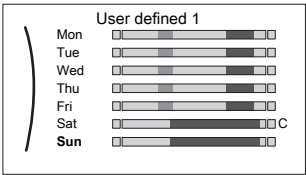
1	Select Monday.	
		
2	Select Edit.	
		
3	Use the left dial to select an entry and edit the entry with the right dial. You can program up to 6 actions each day.	 
		
4	Confirm the changes.	

To copy the schedule to the other weekdays:

1	Select Monday.	
		
2	Select Copy.	
		
Result: "C" is displayed next to the copied day.		
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:


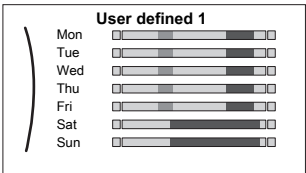
1	Select Saturday.	
2	Select Edit.	
3	Use the left dial to select an entry and edit the entry with the right dial.	 
		
4	Confirm the changes.	
5	Select Saturday.	
6	Select Copy.	
7	Select Sunday.	
8	Select Paste.	
Result:		
		

To rename the schedule:






INFORMATION

Not all schedules can be renamed.

1	Select the name of the current schedule.	
		



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2	Select the Rename option.	
3	Browse through the character list and confirm the selected character.	
4	Confirm the new name.	

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



Cooling settings are only applicable in case a conversion kit (EKHVCONV2) is installed.

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 39](#).

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	<p>Schedule</p> <ul style="list-style-type: none"> 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 40](#).

Cooling schedule

Only available if EKHVCONV2 is installed.

You can set the room temperature cooling schedule using the schedule screen. For more information about this screen, see ["8.3.8 Schedule screen: Example" on page 40](#).

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.

Main zone unit control method [2.9]	Description
External room thermostat control ([C-07]=1)	<p>Allow for the external room thermostat to take care of room frost protection:</p> <ul style="list-style-type: none"> Turn ON [C.2]: Space heating/cooling
Room thermostat control ([C-07]=2)	<p>Allow for the user interface used as room thermostat to take care of room frost protection:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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 or undercooling the room, you can limit the range of the room temperature, both for heating and/or cooling.



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
[1.5.3]	[3-09]	Cooling minimum
[1.5.4]	[3-08]	Cooling 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 "5.7 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. <ul style="list-style-type: none"> -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. <ul style="list-style-type: none"> -5°C~5°C, step 0.5°C

8.4.3 Main zone



Cooling settings are only applicable in case a conversion kit (EKHVCONV2) is installed.

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 39.

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 <ul style="list-style-type: none"> 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 40.

Cooling schedule

You can set the main zone cooling temperature using the schedule screen. For more information about this screen, see "8.3.8 Schedule screen: Example" on page 40.

Setpoint mode

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

In WD heating, fixed cooling mode, the desired leaving water temperature:

- depends on the outdoor ambient temperature for heating
- does NOT depend on the outdoor ambient temperature for cooling

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

#	Code	Description
[2.4]	N/A	Setpoint mode <ul style="list-style-type: none"> 0: Fixed 1: WD heating, fixed cooling (only with EKHVCONV2 installed) 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.

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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]	<p>Set weather-dependent heating:</p> <ul style="list-style-type: none"> ▪ T_t: Target leaving water temperature (main zone) ▪ T_a: Outdoor temperature ▪ [1-00]: Low outdoor ambient temperature. $-40^{\circ}\text{C} \sim +5^{\circ}\text{C}$ ▪ [1-01]: High outdoor ambient temperature. $10^{\circ}\text{C} \sim 25^{\circ}\text{C}$ ▪ [1-02]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. $[9-01]^{\circ}\text{C} \sim [9-00]^{\circ}\text{C}$ 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. $[9-01]^{\circ}\text{C} \sim \min(45, [9-00])^{\circ}\text{C}$ Note: This value should be lower than [1-02] as for high outdoor temperatures less warm water is required.

Cooling WD curve

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

#	Code	Description
[2.6]	[1-06] [1-07] [1-08] [1-09]	<p>Set weather-dependent cooling:</p> <ul style="list-style-type: none"> ▪ T_t: Target leaving water temperature (main zone) ▪ T_a: Outdoor temperature ▪ [1-06]: Low outdoor ambient temperature. $10^{\circ}\text{C} \sim 25^{\circ}\text{C}$ ▪ [1-07]: High outdoor ambient temperature. $25^{\circ}\text{C} \sim 43^{\circ}\text{C}$ ▪ [1-08]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. $[9-03]^{\circ}\text{C} \sim [9-02]^{\circ}\text{C}$ Note: This value should be higher than [1-09] as for low outdoor temperatures less cold water is required. ▪ [1-09]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. $[9-03]^{\circ}\text{C} \sim [9-02]^{\circ}\text{C}$ Note: This value should be lower than [1-08] as for high outdoor temperatures colder water is required.

Emitter type

Depending on the system water volume and the heater emitter type of the main zone, the heat up or cooling down of the main zone can take longer. This setting can compensate for a slow or a quick heating/cooling system during the heat up/cool down cycle (cooling only with EKHVCONV2 installed).

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.
- the possibility for usage of the automatic cooling/heating changeover based on the indoor ambient temperature (only with EKHVCONV2 installed).

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

#	Code	Description
[2.7]	[2-0C]	<p>Emitter type</p> <ul style="list-style-type: none"> ▪ 0: Underfloor heating ▪ 1: Fancoil unit ▪ 2: Radiator

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

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 60°C	Fixed 8°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 and desired cooling 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.

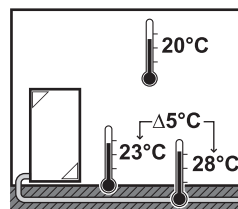
**INFORMATION**

Only for EAVZ: 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 and the highest leaving water temperature in cooling operation)		
[2.8.1]	[9-01]	Heating minimum 15°C~37°C
[2.8.2]	[9-00]	Heating maximum <ul style="list-style-type: none"> ▪ [2-0C]=2 (emitter type main zone = radiator) 37°C~60°C ▪ Otherwise: 37°C~55°C
[2.8.3]	[9-02]	Cooling minimum 5°C~18°C
[2.8.4]	[9-03]	Cooling maximum 18°C~22°C

Control

For the control of the unit 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 or cooling demand of the room.
External room thermostat	Unit operation is decided by the external thermostat or equivalent (e.g. heat pump convector).
Room thermostat	Unit operation is decided based on the ambient temperature of the user interface used as a room thermostat.

#	Code	Description
[2.9]	[C-07]	<ul style="list-style-type: none"> ▪ 0: Leaving water ▪ 1: External room thermostat ▪ 2: Room thermostat

Thermostat type

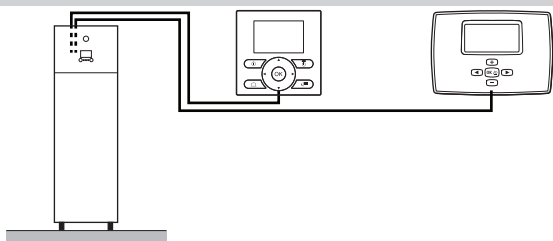
Only applicable in external room thermostat control.

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

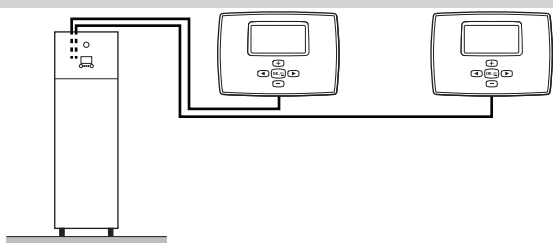
When [C-07]=2 (RT control)

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 the leaving water temperature control on the unit's user interface is turned ON.

#	Code	Description
[2.A]	[C-05]	<p>External room thermostat type for the main zone:</p> <ul style="list-style-type: none"> 1: 1 contact: The used external room thermostat can only send a thermo ON/OFF condition. There is no separation between heating or cooling demand. 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 (EKTR1) room thermostat

Leaving water temperature: Delta T

The unit is designed to support under floor loops operation. The recommended leaving water temperature for under floor 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, under floor 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.

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. In cooling (only with EKHVCONV2 installed), this setting indicates the temperature difference between entering and leaving water temperature.

#	Code	Description
[2.B.1]	[1-0B]	<p>Delta T heating: A minimum temperature difference is required for the good operation of heat emitters in heating mode.</p> <ul style="list-style-type: none"> If [2-0C]=2, this is fixed to 8°C Else: 3°C~10°C
[2.B.2]	[1-0D]	<p>Delta T cooling: A minimum temperature difference is required for the good operation of heat emitters in cooling mode.</p> <ul style="list-style-type: none"> 3°C~10°C



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 8°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.

In cooling the unit will give priority to the target delta T for the additional zone, if there is a cooling demand in the additional zone.

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)

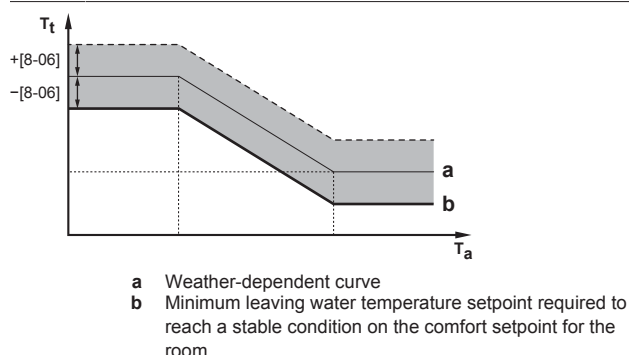
- water temperatures as low as possible to match the desired temperature (higher efficiency)

#	Code	Description
[2.C.1]	[8-05]	<p>Modulation:</p> <ul style="list-style-type: none"> 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. <p>Note: The desired leaving water temperature can only be read out on the user interface.</p>
[2.C.2]	[8-06]	<p>Max modulation:</p> <ul style="list-style-type: none"> 0°C~10°C <p>This is the temperature value by which the desired leaving water temperature is increased or decreased.</p>



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. Refer to the illustration below.



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]	<p>The shut off valve:</p> <ul style="list-style-type: none"> 0 No: is NOT influenced by heating or cooling demand. 1 Yes: closes when there is NO heating or cooling 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



Cooling settings are only applicable in case a conversion kit (EKHVCONV2) is installed.

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 39.

Schedule

Indicates if the desired leaving water temperature is according to a schedule. Also see "8.4.3 Main zone" on page 43.

#	Code	Description
[3.1]	N/A	<p>Schedule</p> <ul style="list-style-type: none"> 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 40.

Cooling schedule

You can set the additional zone cooling temperature using the schedule screen. For more information about this screen, see "8.3.8 Schedule screen: Example" on page 40.

Setpoint mode

The setpoint mode of the additional zone can be independently set from the setpoint mode of the main zone, see "Main zone" on page 43.

#	Code	Description
[3.4]	N/A	<p>Setpoint mode</p> <ul style="list-style-type: none"> 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):

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#	Code	Description
[3.5]	[0-00] [0-01] [0-02] [0-03]	<p>Set weather-dependent heating:</p> <ul style="list-style-type: none"> ▪ T_t: Target leaving water temperature (additional zone) ▪ T_a: Outdoor temperature ▪ [0-03]: Low outdoor ambient temperature. $-40^{\circ}\text{C} \sim +5^{\circ}\text{C}$ ▪ [0-02]: High outdoor ambient temperature. $10^{\circ}\text{C} \sim 25^{\circ}\text{C}$ ▪ [0-01]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. $[9-05]^{\circ}\text{C} \sim [9-06]^{\circ}\text{C}$ 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. $[9-05] \sim \min(45, [9-06])^{\circ}\text{C}$ Note: This value should be lower than [0-01] as for high outdoor temperatures less warm water is required.

Cooling WD curve

Set weather-dependent cooling for the main zone (if [3.4] = 2):

#	Code	Description
[3.6]	[0-04] [0-05] [0-06] [0-07]	<p>Set weather-dependent cooling:</p> <ul style="list-style-type: none"> ▪ T_t: Target leaving water temperature (additional zone) ▪ T_a: Outdoor temperature ▪ [0-07]: Low outdoor ambient temperature. $10^{\circ}\text{C} \sim 25^{\circ}\text{C}$ ▪ [0-06]: High outdoor ambient temperature. $25^{\circ}\text{C} \sim 43^{\circ}\text{C}$ ▪ [0-05]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. $[9-07]^{\circ}\text{C} \sim [9-08]^{\circ}\text{C}$ Note: This value should be higher than [0-04] as for low outdoor temperatures less cold water is required. ▪ [0-04]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. $[9-07]^{\circ}\text{C} \sim [9-08]^{\circ}\text{C}$ Note: This value should be lower than [0-05] as for high outdoor temperatures colder water is required.

Emitter type

For more info about this functionality, see ["8.4.3 Main zone" on page 43](#).

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

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

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 8°C

Setpoint range

For more information about this setting, also see ["8.4.3 Main zone" on page 43](#).

#	Code	Description
[3.8.1]	[9-05]	<p>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 and the lowest leaving water temperature in cooling operation)</p> <p>Heating minimum: $15^{\circ}\text{C} \sim 37^{\circ}\text{C}$</p>

#	Code	Description
[3.8.2]	[9-06]	Heating maximum <ul style="list-style-type: none"> [2-0D]=2 (emitter type additional zone = radiator) 37°C~60°C Else: 37°C~55°C
[3.8.3]	[9-07]	Cooling minimum: 5°C~18°C
[3.8.4]	[9-08]	Cooling maximum: 8°C~22°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 43](#).

#	Code	Description
[3.9]	N/A	Control <ul style="list-style-type: none"> 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 43](#).

#	Code	Description
[3.A]	[C-06]	External room thermostat type for the additional zone: <ul style="list-style-type: none"> 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 43](#).

#	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. <ul style="list-style-type: none"> If [2-0D] = 2, this is fixed to 8°C Else: 3°C~10°C
[3.B.2]	[1-0E]	Delta T cooling: A minimum temperature difference is required for the good operation of heat emitters in cooling mode. <ul style="list-style-type: none"> 3°C~10°C

8.4.5 Space heating/cooling



Cooling settings are only applicable in case a conversion kit (EKHVCONV2) is installed.

About space operation modes

Depending on your heat pump model, you have to tell the system which space operation mode to use: heating or cooling.

If a ... heat pump model is installed	Then...
Heating/cooling	The system can heat up and cool down a space. You have to tell the system which space operation mode to use.

If a ... heat pump model is installed	Then...
Heating only	The system can heat up a space, but NOT cool down a space. You do NOT have to tell the system which space operation mode to use.

To determine if a heating/cooling heat pump model is installed

1	Go to [4]: Space heating/cooling.	
2	Check if [4.1] Operation mode is listed and editable. If so, a heating/cooling heat pump model is installed.	

To tell the system which space operation to use, you can:

You can...	Location
Check which space operation mode is currently used .	Home screen
Set the space operation mode permanently.	Main menu
Restrict automatic changeover according to a monthly schedule.	

To check which space operation mode is currently used

The space operation mode is displayed on the home screen:

- When the unit is in heating mode, the icon is shown.
- When the unit is in cooling mode, the icon is shown.

The status indicator shows if the unit is currently in operation:

- When the unit is not in operation, the status indicator will show a blue pulsation with an interval of approximately 5 seconds.
- While the unit is in operation, the status indicator will light up blue constantly.

To set the space operation mode

1	Go to [4.1]: Space heating/cooling > Operation mode	
2	Select one of the following options: <ul style="list-style-type: none"> Heating: Always heating mode Cooling: Always cooling mode Automatic: The operation mode changes automatically based on the outdoor temperature. Restricted according to the operation mode schedule. 	

Automatic heating/cooling changeover is only applicable for EABX, EAVX and EAVZ (only with EKHVCONV2 installed).

When Automatic is selected, the changing of the operation mode is based on the Operation mode schedule [4.2]: the end user indicates on a monthly base which operation is allowed.

Operation range

Depending on the average outdoor temperature, the operation of the unit in space heating or space cooling 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. This setting is also used in automatic heating/cooling changeover. <ul style="list-style-type: none"> 14°C~35°C
[4.3.2]	[F-01]	Space cooling off temperature: When the averaged outdoor temperature drops below this value, space cooling is turned off. This setting is also used in automatic heating/cooling changeover. <ul style="list-style-type: none"> 10°C~35°C

8 Configuration

Exception: If the system is configured in room thermostat control with one leaving water temperature zone and quick heat emitters, the operation mode will change based on:

- The measured indoor temperature: Besides the heating and the cooling desired room temperature, the installer sets a hysteresis value (e.g. when in heating, this value is related to the desired cooling temperature) and an offset value (e.g. when in heating, this value is related to the desired heating temperature).

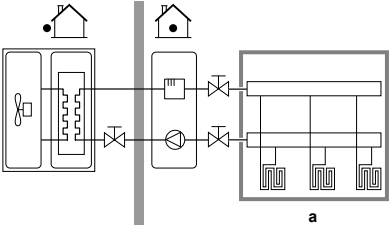
Example: The desired room temperature in heating mode is 22°C and in cooling mode it is 24°C, with a hysteresis value of 1°C and an offset of 4°C. Changeover from heating to cooling will occur when the room temperature rises above the maximum of the desired cooling temperature added by the hysteresis value (thus 25°C) and the desired heating temperature added by the offset value (26°C). Oppositely, changeover from cooling to heating will occur when the room temperature drops below the minimum of the desired heating temperature subtracted by the hysteresis value (thus 21°C) and the desired cooling temperature subtracted by the offset value (thus 20°C)

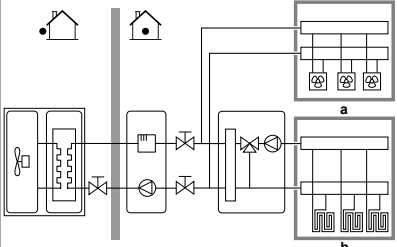
Guard timer to prevent too frequent changing from heating to cooling and vice versa.

#	Code	Description
Changeover settings related to the indoor temperature. ONLY applicable when Automatic is selected and the system is configured in room thermostat control with 1 leaving water temperature zone and quick heat emitters.		
N/A	[4-0B]	<p>Hysteresis: Ensures that changeover is ONLY done when necessary. The space operation ONLY changes from heating to cooling when the room temperature rises above the desired cooling temperature added by the hysteresis value.</p> <ul style="list-style-type: none"> Range: 1°C~10°C
N/A	[4-0D]	<p>Offset: Ensures that the active desired room temperature is always reached. In heating mode, the space operation ONLY changes when the room temperature rises above the desired heating temperature added by the offset value.</p> <ul style="list-style-type: none"> Range: 1°C~10°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]	<ul style="list-style-type: none"> 0: Single zone Only one leaving water temperature zone:  <ul style="list-style-type: none"> a: Main LWT zone

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



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.



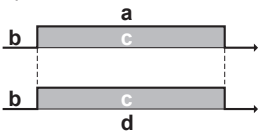
CAUTION

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

#	Code	Description
[4.5]	[F-0D]	<p>Pump operation mode:</p> <ul style="list-style-type: none"> 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.  <ul style="list-style-type: none"> a: Space heating/cooling control b: Off c: On d: Pump operation

#	Code	Description
[4.5]	[F-0D]	<ul style="list-style-type: none"> 1 Sample: The pump is ON when there is heating or cooling 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 or cooling if necessary. Remark: Sample is ONLY available in leaving water temperature control. <ul style="list-style-type: none"> a: Space heating/cooling control b: Off c: On d: LWT temperature e: Actual f: Desired g: Pump operation
[4.5]	[F-0D]	<ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> a: Space heating/cooling 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:

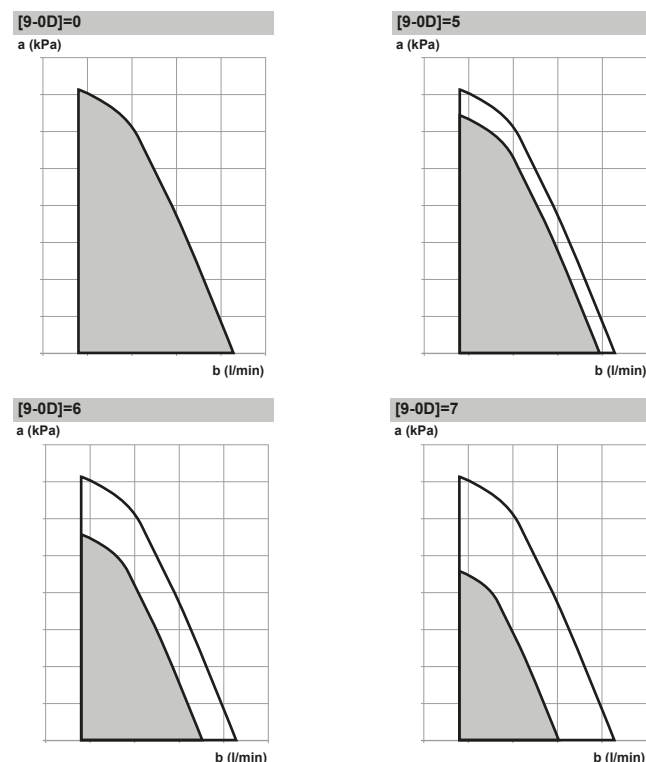
#	Code	Description
[4.6]	[E-02]	Unit type: <ul style="list-style-type: none"> 0 Reversible (only with EKHVCONV2 installed) 1 Heating only

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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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:



8 Configuration

[9-0D]=8



- a External static pressure
b Water flow rate

Pump outside range

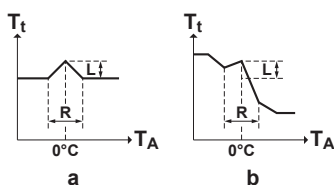
When the pump operation function is disabled the pump will stop if the outdoor temperature is higher than the value set by the Space heating off temperature [4-02] or if the outdoor temperature drops below the value set by the Space cooling off temperature [F-01]. When the pump operation is enabled, the pump operation is possible at all outdoor temperatures.

#	Code	Description
[4.9]	[F-00]	Pump operation: <ul style="list-style-type: none"> 0: Disabled if outdoor temperature is higher than [4-02] or lower than [F-01] depending on heating/cooling operation mode. 1: Possible at all outdoor temperatures.

Increase around 0°C

Use this setting to compensate for possible heat losses of the building due to the evaporation of melted ice or snow. (e.g. in cold region countries).

In heating operation, the desired leaving water temperature is locally increased around an outdoor temperature of 0°C. This compensation can be selected when using an absolute or a weather dependent desired temperature (see illustration below).



- a Absolute desired LWT
b Weather dependent desired LWT

#	Code	Description
[4.A]	[D-03]	Increase around 0°C <ul style="list-style-type: none"> 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

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 <ul style="list-style-type: none"> 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 42.

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 39.

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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 40](#).

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 <ul style="list-style-type: none"> 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.

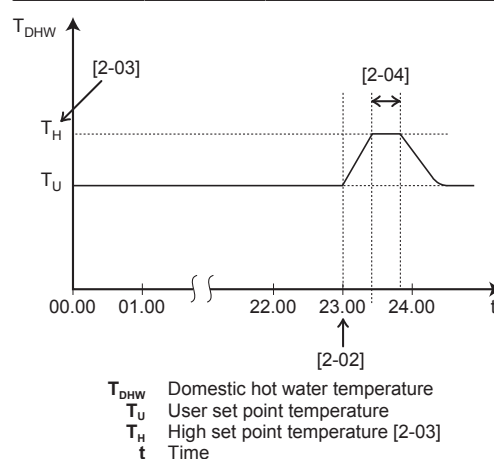


CAUTION

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

#	Code	Description
[5.7.1]	[2-01]	Activation <ul style="list-style-type: none"> 0: No 1: Yes

#	Code	Description
[5.7.2]	[2-00]	Operation day <ul style="list-style-type: none"> 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



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.

8 Configuration



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 Domestic hot water > Type > Reheat or Reheat + sched. 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 Domestic hot water > Type > Scheduled only is selected, it is recommended to program a Storage eco 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 40.

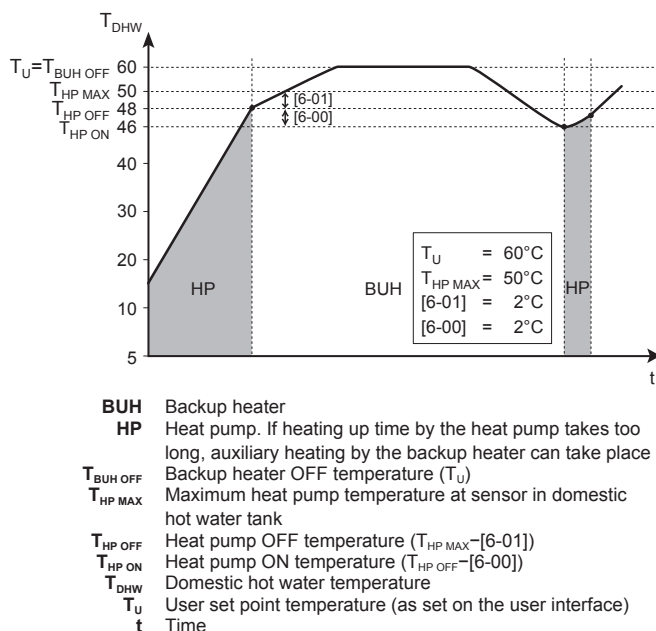
#	Code	Description
[5.C]	[0-0E] [0-0D] [0-0C] [0-0B]	Weather-dependent curve <ul style="list-style-type: none"> T_{DHW}: The desired tank temperature. T_a: The (averaged) outdoor ambient temperature [0-0E]: low outdoor ambient temperature: -40°C~5°C [0-0D]: high outdoor ambient temperature: 10°C~25°C [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

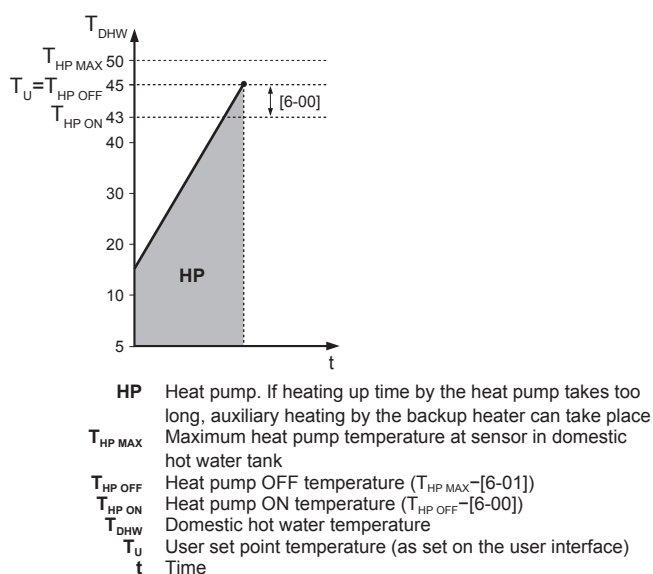
In domestic hot water operation, the following hysteresis value can be set for the heat pump operation:

#	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]
($T_{HP\ MAX} - [6-01]$)



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



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.	
	▪ 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

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.	

8 Configuration

If you want to...	Then...	
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 40.	

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 62.](#)

#	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 56.](#)

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 56.](#)

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
[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.

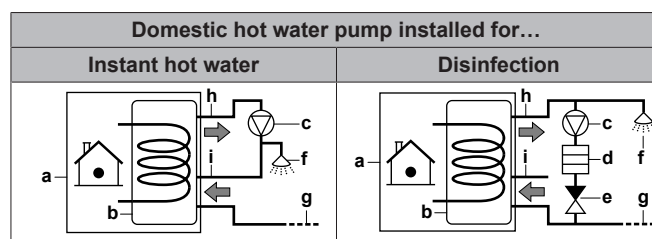
#	Code	Description
[9.2.1]	[E-05] ^(*) [E-06] ^(*) [E-07] ^(*)	<ul style="list-style-type: none"> Integrated <p>The backup heater will also be used for domestic hot water heating.</p>

(*) 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]	<p>DHW pump:</p> <ul style="list-style-type: none"> 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. <p>See also illustrations below.</p>



- 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]	<ul style="list-style-type: none"> 3: 6V 4: 9W

8 Configuration

Voltage

- 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]	<ul style="list-style-type: none"> 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]	<ul style="list-style-type: none"> 1: Relay 1 / Relay 1+2 2: Relay 1 / Relay 2 3: Relay 1 / Relay 2 Emergency Relay 1+2



INFORMATION

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



INFORMATION

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



INFORMATION

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



INFORMATION

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

Additional capacity step 2

#	Code	Description
[9.3.5]	[6-04]	<ul style="list-style-type: none"> The capacity difference between the second and first step of the backup heater at nominal voltage. Nominal value depends on backup heater configuration.

Equilibrium

#	Code	Description
[9.3.6]	[5-00]	Equilibrium: Is backup heater operation allowed above equilibrium temperature during space heating operation? <ul style="list-style-type: none"> 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



INFORMATION

Above 10°C ambient temperature, the heat pump will operate until 55°C. Configuring a higher setpoint with an ambient temperature that is higher than the set equilibrium temperature will prevent the backup heater from assisting. The backup heater will ONLY assist if you increase the equilibrium temperature [5-01] to the required ambient temperature you need to reach the higher setpoint.

Operation

#	Code	Description
[9.3.8]	[4-00]	Backup heater operation: <ul style="list-style-type: none"> 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 and either automatically or non-automatically take over the heat load.

- When auto emergency is set to Automatic and a heat pump failure occurs, the backup heater will automatically take over the heat load and the domestic hot water production.
- When auto emergency is set to Manual and a heat pump failure occurs, the domestic hot water and space heating operation 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 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	<ul style="list-style-type: none"> 0: Manual 1: Automatic



INFORMATION

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

**INFORMATION**

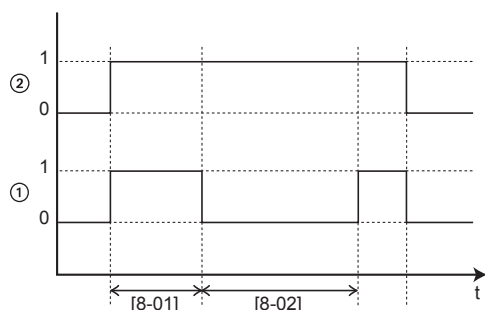
If a heat pump failure occurs and Emergency is set to Manual, the room frost protection function, the underfloor heating screed dryout function, and the water pipe antifreeze function will remain active even if the user does NOT confirm emergency operation.

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. For optimal operation and lowest power consumption, it is strongly recommended to keep the default setting (0). 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: Used for calculation of anti-recycling timer. If [5-02]=1, it defines the outdoor temperature below which the backup heater will assist during domestic hot water heating. [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].
[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

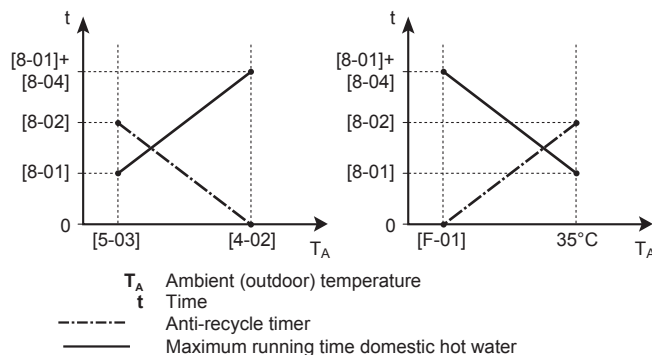
Timers for simultaneous space and domestic hot water operation request

[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]/[F-01]



#	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 or cooling. If there is NO request for space heating/cooling, 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 Remark: It is NOT allowed to set [8-01] to a value below 10 minutes.
[9.6.7]	[8-04]	Additional timer: Additional running time for the maximum running time depending on the outdoor temperature [4-02] or [F-01]. Range: 0~95 minutes

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 (read only)

8 Configuration

Drain prevention

Only applicable when the bivalent function ([C-02]) is activated. This function prevents the opening of the freeze protection valves in the water piping to the outdoor unit when the auxiliary boiler is running at negative outdoor temperatures.

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: <ul style="list-style-type: none"> 0 No 1 Yes

Benefit kWh 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 <ul style="list-style-type: none"> 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? <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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

#	Code	Description
[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]	<p>Power consumption control DISABLED [4-08]=0</p> <ul style="list-style-type: none"> 0 None : Backup heater and booster heater can operate simultaneously. 1 Booster heater: The booster heater is prioritized. 2 Backup heater: The backup heater is prioritized. <p>Power consumption control ENABLED [4-08]=1/2</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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]	<p>External sensor : When an optional external ambient sensor is connected, the type of the sensor must be set.</p> <ul style="list-style-type: none"> 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]	<p>Ext. amb. sensor offset: Offset on the ambient temperature measured on the external outdoor temperature sensor.</p> <ul style="list-style-type: none"> -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.

8 Configuration

#	Code	Description
[9.B.3]	[1-0A]	Averaging time: <ul style="list-style-type: none"> 0: No averaging 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours

Bivalent

Bivalent

Only applicable in case of auxiliary boiler.

About bivalent

The purpose of this function is to determine which heating source can/will provide the space heating, either the heat pump system or the 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. <ul style="list-style-type: none"> 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.

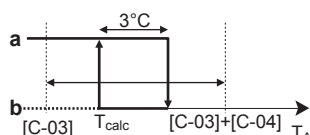
- If Bivalent is enabled: When the outdoor temperature drops below the bivalent ON temperature (fixed or variable based on energy prices), the space heating by the indoor unit stops automatically and the permission signal for the auxiliary boiler is active.
- If Bivalent is disabled: Space heating is only done by the indoor unit within the operation range. The permission signal for the auxiliary boiler is always inactive.

The switch-over between the heat pump system and the auxiliary boiler is based on the following settings:

- [C-03] and [C-04]
- Electricity and gas prices ([7.4.5.1], [7.4.5.2], [7.4.5.3], and [7.4.6])

[C-03], [C-04], and T_{calc}

Based on the settings above, the heat pump system calculates a value T_{calc} , which is variable between [C-03] and [C-03]+[C-04].



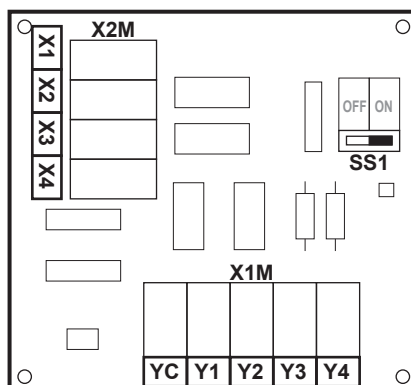
- T_A Outdoor temperature
- T_{calc} Bivalent ON temperature (variable). Below this temperature, the auxiliary boiler will always be ON. T_{calc} can never go below [C-03] or above [C-03]+[C-04].
- 3°C Fixed hysteresis to prevent too much switching between heat pump system and auxiliary boiler
- a Auxiliary boiler active
- b Auxiliary boiler inactive

If the outdoor temperature...	Then...	
	Space heating by the heat pump system...	Bivalent signal for the auxiliary boiler is...
Drops below T_{calc}	Stops	Active
Rises above $T_{calc} + 3^\circ\text{C}$	Starts	Inactive



INFORMATION

- 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 EKR1HB (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.



#	Code	Description
N/A	[C-03]	Range: $-25^\circ\text{C} \sim 25^\circ\text{C}$ (step: 1°C)
N/A	[C-04]	Range: $2^\circ\text{C} \sim 10^\circ\text{C}$ (step: 1°C) The higher the value of [C-04], the higher the accuracy of the switch-over between the heat pump system and the auxiliary boiler.

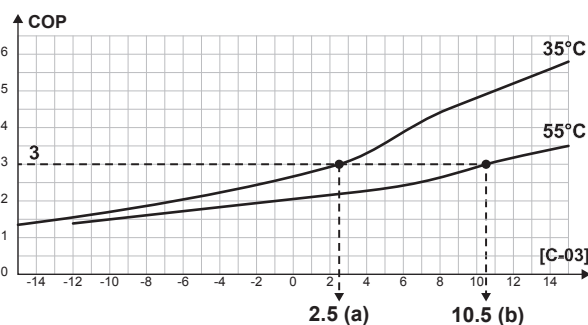
To determine the value of [C-03], proceed as follows:

- Determine the COP (= coefficient of performance) using the formula:

Formula	Example
$\text{COP} = (\text{Electricity price} / \text{gas price})^{(a)} \times \text{boiler efficiency}$	If: <ul style="list-style-type: none"> Electricity price: 20 c€/kWh Gas price: 6 c€/kWh Boiler efficiency: 0.9 Then: $\text{COP} = (20/6) \times 0.9 = 3$

- Make sure to use the same units of measurement for the electricity price and gas price (example: both c€/kWh).

- Determine the value of [C-03] using the graph:



Example:

- [C-03]=2.5 in case of COP=3 and LWT=35°C
- [C-03]=10.5 in case of COP=3 and LWT=55°C



NOTICE

Make sure to set the value of [5-01] at least 1°C higher than the value of [C-03].

Electricity and gas prices

**INFORMATION**

To set electricity and gas price values, do NOT use overview settings. Set them in the menu structure instead ([7.4.5.1], [7.4.5.2], [7.4.5.3], and [7.4.6]). For more information on how to set the energy prices, see the operation manual and the user reference guide.

**INFORMATION**

Solar panels. If solar panels are used, set the electricity price value very low to promote the use of the heat pump.

#	Code	Description
[7.4.5.1]	N/A	What is the high electricity price?
[7.4.5.2]	N/A	What is the medium electricity price?
[7.4.5.3]	N/A	What is the low electricity price?
[7.4.6]	N/A	What is the fuel price?

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. <ul style="list-style-type: none"> 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]	[C-09]	Auto restart: <ul style="list-style-type: none"> 0: Manual 1: Automatic

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

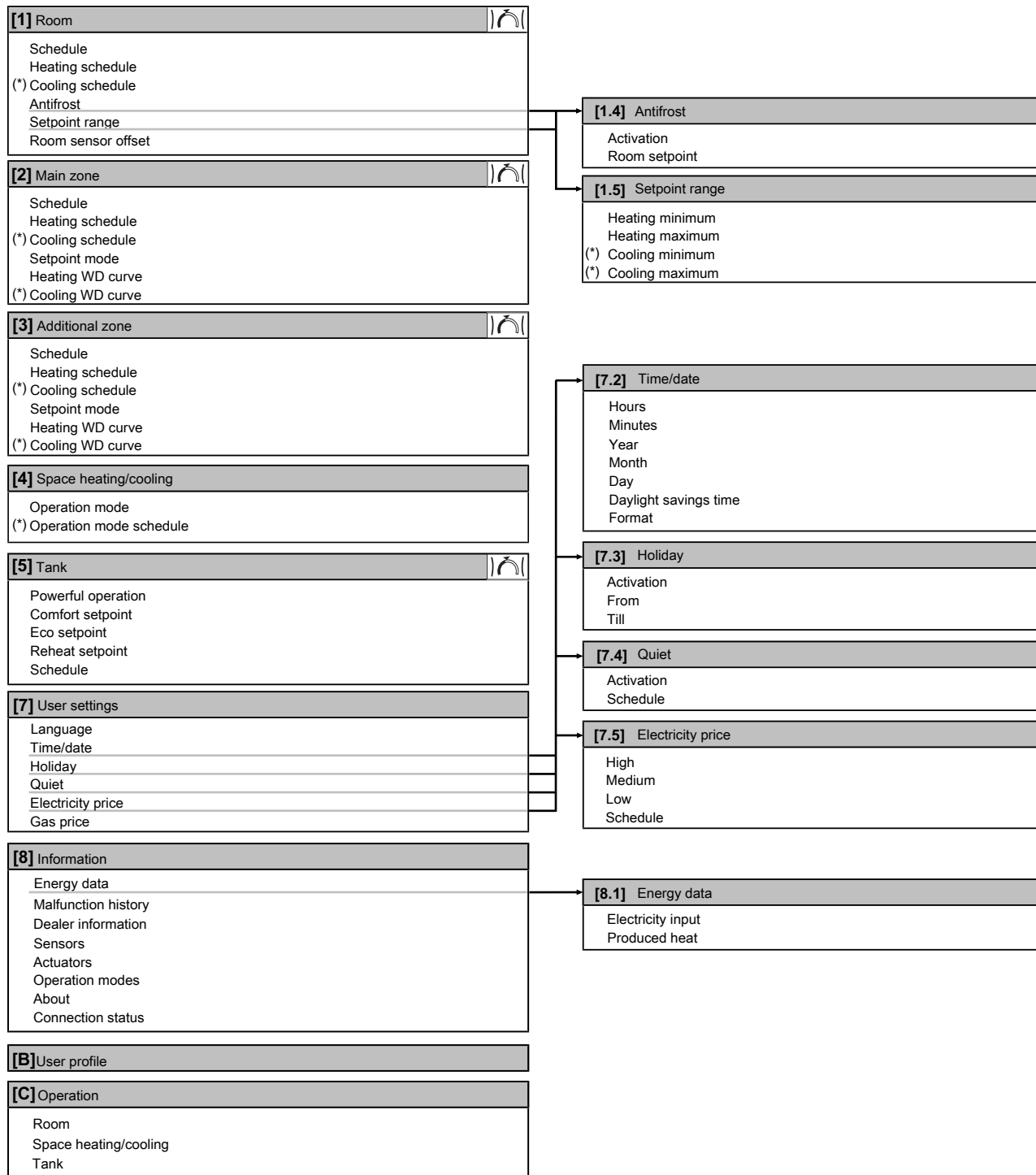
8.4.10 Operation

In the operation menu, you can separately enable or disable functionalities of the unit.

#	Code	Description
[C.1]	N/A	Room <ul style="list-style-type: none"> 0: Off 1: On
[C.2]	N/A	Space heating/cooling <ul style="list-style-type: none"> 0: Off 1: On
[C.3]	N/A	Tank <ul style="list-style-type: none"> 0: Off 1: On

8 Configuration

8.5 Menu structure: Overview user settings



Setpoint screen

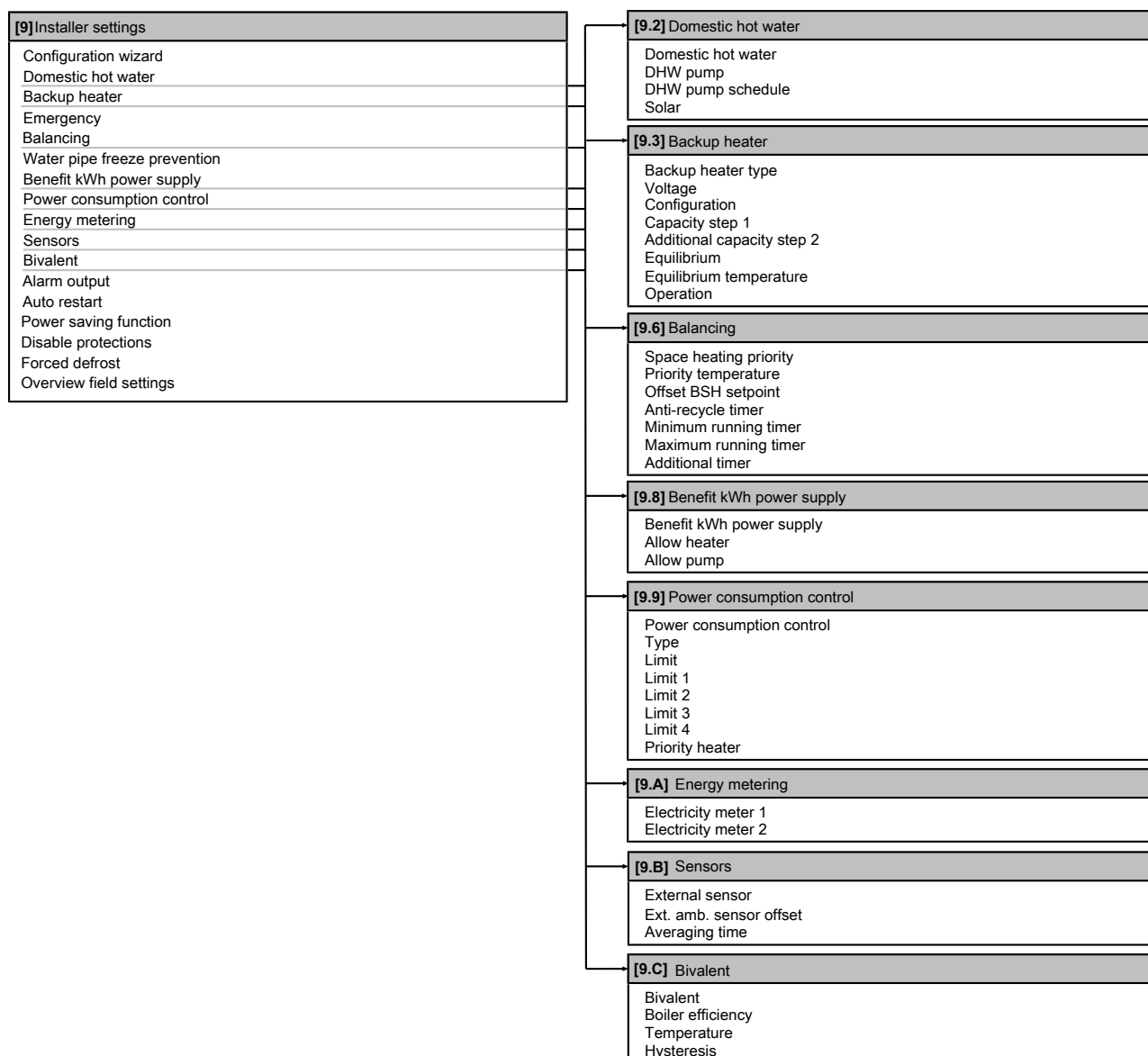
(*) Only applicable when EKHVCONV2 is installed.



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.

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.

<input type="checkbox"/>	You read the complete installation instructions, as described in the installer reference guide .
<input type="checkbox"/>	The indoor unit is properly mounted.
<input type="checkbox"/>	The outdoor unit is properly mounted.
<input type="checkbox"/>	The following field wiring has been carried out according to this document and the applicable legislation: <ul style="list-style-type: none"> Between the local supply panel and the outdoor unit Between indoor unit and outdoor unit Between the local supply panel and the indoor unit Between the indoor unit and the valves (if applicable) Between the indoor unit and the room thermostat (if applicable)

<input type="checkbox"/>	The system is properly earthed and the earth terminals are tightened.
<input type="checkbox"/>	The fuses or locally installed protection devices are installed according to this document, and have NOT been bypassed.
<input type="checkbox"/>	The power supply voltage matches the voltage on the identification label of the unit.
<input type="checkbox"/>	There are NO loose connections or damaged electrical components in the switch box.
<input type="checkbox"/>	There are NO damaged components or squeezed pipes on the inside of the indoor and outdoor units.
<input type="checkbox"/>	Backup heater circuit breaker F1B (field supply) is turned ON.
<input type="checkbox"/>	The correct pipe size is installed and the pipes are properly insulated.
<input type="checkbox"/>	There is NO water leak inside the indoor unit.
<input type="checkbox"/>	The shut-off valves are properly installed and fully open.
<input type="checkbox"/>	The air purge valve is open (at least 2 turns).
<input type="checkbox"/>	The pressure relief valve purges water when opened.
<input type="checkbox"/>	The domestic hot water tank is filled completely.

9.4 Checklist during commissioning

<input type="checkbox"/>	The minimum flow rate during backup heater/defrost operation is guaranteed in all conditions. See "To check the water volume and flow rate" in "6.3 Preparing water piping" on page 19 .
<input type="checkbox"/>	To perform an air purge .
<input type="checkbox"/>	To perform a test run .
<input type="checkbox"/>	To perform an actuator test run .
<input type="checkbox"/>	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 68).	—
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

20 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:

- Performing a manual air purge for both zones
- 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 37 .	—
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 37 .	—
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 Commissioning

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 37.	—
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 37.	—
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 "[7.6.8 To connect the main power supply](#)" on page 33.



INFORMATION

- If Emergency is set to Manual ([A.6.C]=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.



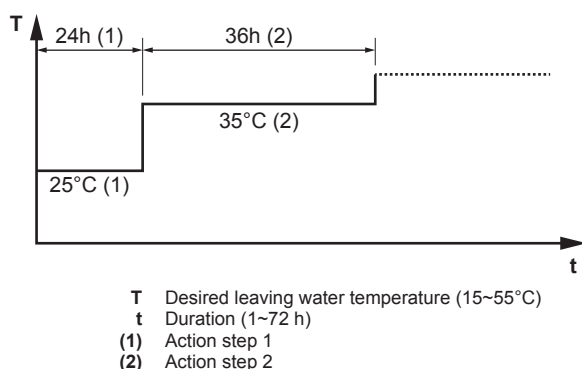
NOTICE

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:**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 37.	—
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 37.	—
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.

- Press .
- 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 75.

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.

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 Maintenance and service

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.

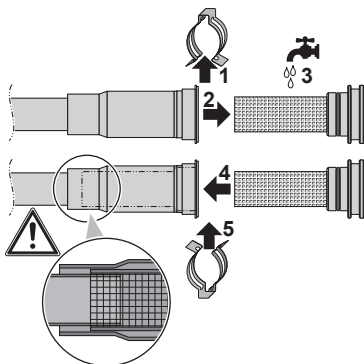
Water filters

Clean the water filters.

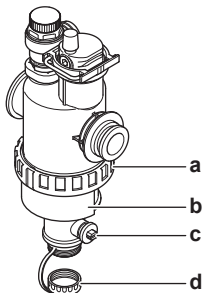


NOTICE

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:
 - Take off the magnetic sleeve (b).
 - Unscrew the drain cap (d).
 - 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...).
 - Open the drain valve for a couple of seconds (c).
Result: Water and dirt will come out.
 - Close the drain valve.
 - Screw the drain cap back on.
 - Reattach the magnetic sleeve.
 - 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 71](#)
- ["11.5.2 To clean the water filter in case of trouble" on page 71](#)
- ["11.5.3 To install the water filter" on page 72](#)

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

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 26](#).

Relief valve of the domestic hot water tank (field supply)

Open the valve and check the correct operation. **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 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.

It is recommended to do this maintenance more frequently.

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, 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:

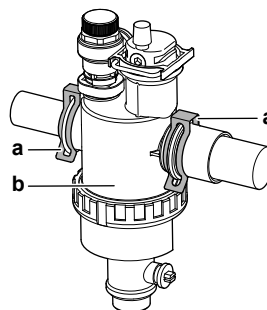
- ["11.5.1 To remove the water filter" on page 71](#)
- ["11.5.2 To clean the water filter in case of trouble" on page 71](#)
- ["11.5.3 To install the water filter" on page 72](#)

11.5.1 To remove the water filter

Prerequisite: Stop the unit operation (via the user interface, 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 23](#)
 - ["7.2.5 To lower the switch box on the indoor unit" on page 24](#)
- 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 71](#).

12 Troubleshooting



CAUTION

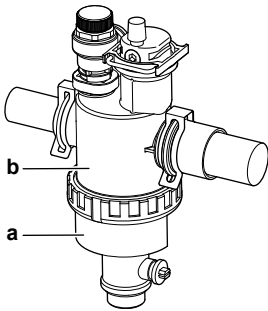
To protect the piping connected to the magnetic filter/dirt separator from damage it is recommended to perform this procedure with the magnetic filter/dirt separator removed from the unit.

- 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.



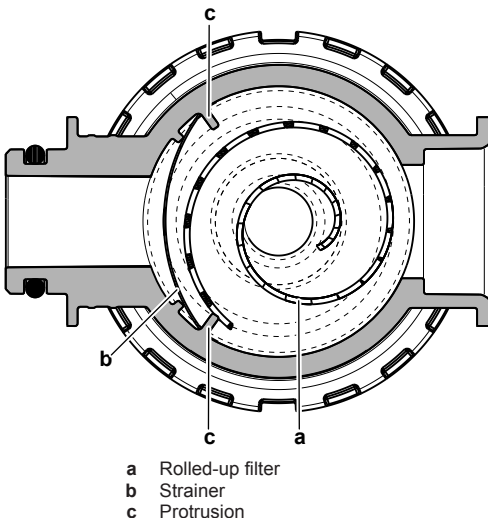
- a Bottom part to be unscrewed
b Water filter housing

- 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.

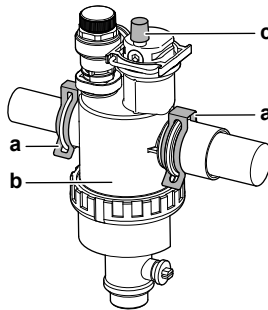
11.5.3 To install the water filter



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

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 or cooling as expected



12.3.2 Symptom: Hot water does NOT reach the desired temperature

Possible causes	Corrective action
One of the tank temperature sensors is broken.	See the service manual of the unit for the corresponding corrective action.

12.3.3 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)	<p>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:</p> <ul style="list-style-type: none"> 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. <p>If the problem persists after you have conducted all of the above checks, contact your dealer.</p>
The preferential kWh rate power supply settings and electrical connections do NOT match	This should match with the connections as explained in "6.4 Preparing electrical wiring" on page 21 and "7.6.8 To connect the main power supply" on page 33 .
The preferential kWh rate signal was sent by the electricity company	Wait for the power to return (2 hours max.).



12.3.4 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 75 for more information about the malfunction.

(a) We recommend to purge air with the unit's air purge function (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.

12.3.5 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 67) or use the automatic air purge function on both zones (see "To perform an automatic air purge" on page 67).
The water pressure at the pump inlet is too low	<p>Check and make sure that:</p> <ul style="list-style-type: none"> 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 "6.3.4 Changing the pre-pressure of the expansion vessel" on page 21).

12.3.6 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	<p>Make sure that the water volume in the installation is below the maximum allowed value (see "6.3.3 To check the water volume and flow rate" on page 20 and "6.3.4 Changing the pre-pressure of the expansion vessel" on page 21).</p>
The water circuit head is too high	<p>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.</p> <p>Check the installation requirements.</p>

12 Troubleshooting

12.3.7 Symptom: The water pressure relief valve leaks

Possible causes	Corrective action
Dirt is blocking the water pressure relief valve outlet	<p>Check whether the pressure relief valve works correctly by turning the red knob on the valve counterclockwise:</p> <ul style="list-style-type: none"> 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.

12.3.8 Symptom: The space is NOT sufficiently heated at low outdoor temperatures

Possible causes	Corrective action
The backup heater operation is not activated	<p>Check and make sure that:</p> <ul style="list-style-type: none"> The backup heater operation mode is enabled. Go to: <ul style="list-style-type: none"> [9.3.8]: Installer settings > Backup heater > Operation [4-00] The backup heater overcurrent fuse has not been turned off. If it has, check the fuse and turn it back on. The thermal protector of the backup heater has not been activated. If it has, check the following, and then press the reset button in the switch box: <ul style="list-style-type: none"> The water pressure Whether there is air in the system The air purge operation
The backup heater equilibrium temperature has not been configured correctly	<p>Increase the "equilibrium temperature" to activate the backup heater operation at a higher outdoor temperature. Go to:</p> <ul style="list-style-type: none"> [9.3.7]: Installer settings > Backup heater > Equilibrium temperature [5-01]
There is air in the system.	<p>Purge air manually or automatically. See the air purge function in the chapter "9 Commissioning" on page 66.</p>

Possible causes	Corrective action
Too much heat pump capacity is used for heating domestic hot water	<p>Check and make sure that the "space heating priority" settings have been configured appropriately:</p> <ul style="list-style-type: none"> Make sure that the "space heating priority status" 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]

12.3.9 Symptom: The pressure at the tapping point is temporarily unusually high

Possible causes	Corrective action
Failing or blocked pressure relief valve.	<ul style="list-style-type: none"> Flush and clean the complete tank including the piping between pressure relief valve and the cold water inlet. Replace the pressure relief valve.

12.3.10 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.

12.3.11 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	<p>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).</p> <p>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.</p>
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



When a problem happens, an error code appears on the user interface. 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 error codes and the content of the error code as it appears on the user interface.


For a more detailed troubleshooting guideline for each error, please 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 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	01	Entering water thermistor abnormality of outdoor unit
81	00	Leaving water temperature sensor problem
81	01	Mixed water thermistor abnormality.
81	04	Leaving water temperature sensor not properly mounted
81	06	Entering water temperature thermistor abnormality (indoor unit)
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

Error code	Detailed error code	Description
8H	01	Overheating mixed water circuit
8H	02	Overheating mixed water circuit (thermostat)
8H	03	Overheating water circuit (thermostat)
A1	00	Zero cross detection problem
A5	00	OU: High pressure peak cut / freeze protection problem
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	Flow sensor malfunction
C0	01	Flow switch malfunction
C0	02	Flow switch malfunction
C4	00	Heat exchanger temperature sensor problem
C5	00	Heat exchanger thermistor abnormality
CJ	02	Room temperature sensor problem
E1	00	OU: PCB defect
E2	00	Leakage current detection error
E3	00	OU: Actuation of high pressure switch (HPS)
E4	00	Abnormal suction pressure
E5	00	OU: Overheat of inverter compressor motor
E6	00	OU: Compressor startup defect
E7	00	OU: Malfunction of outdoor unit fan motor
E7	62	Brine flow abnormality
E8	00	OU: Power input overvoltage
E9	00	Malfunction of electronic expansion valve
EA	00	OU: Cool/heat switchover problem
EC	00	Abnormal increase tank temperature
EC	04	Tank preheating
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
H0	00	OU: Voltage/current sensor problem
H0	01	Brine flow switch malfunction
H1	00	External temperature sensor problem
H3	00	OU: Malfunction of high pressure switch (HPS)
H4	00	Malfunction of low pressure switch

12 Troubleshooting

Error code	Detailed error code	Description
H5	00	Malfunction of compressor overload protection
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
HC	00	Tank temperature sensor problem
HC	01	Second tank temperature sensor problem
HJ	10	Water pressure sensor abnormality
HJ	11	Boiler abnormality detection
HJ	12	Bypass valve turning error
J3	00	OU: Malfunction of discharge pipe thermistor
J5	00	Malfunction of suction pipe thermistor
J6	00	OU: Malfunction of heat exchanger thermistor
J6	07	OU: Malfunction of heat exchanger thermistor
J6	32	Leaving water temperature thermistor Abnormality (outdoor unit)
J6	33	Sensor communication error
J7	12	Brine inlet thermistor abnormality
J8	00	Malfunction of refrigerant liquid thermistor
J8	07	Brine outlet thermistor abnormality
JA	00	OU: Malfunction of high pressure sensor
JA	17	Refrigerant pressure sensor abnormality
L1	00	Malfunction of INV PCB
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)
L8	00	Malfunction triggered by a thermal protection in the inverter PCB
L9	00	Prevention of compressor lock
LC	00	Malfunction in communication system of outdoor unit
P1	00	Open-phase power supply imbalance
P3	00	Abnormal direct current
P4	00	OU: Malfunction of radiating fin temperature sensor
PJ	00	Capacity setting mismatch
U0	00	OU: Shortage of refrigerant
U1	00	Malfunction by reverse phase/open-phase

Error code	Detailed error code	Description
U2	00	OU: Defect of power supply voltage
U3	00	Under floor heating screed dryout function not completed correctly
U4	00	Indoor/outdoor unit communication problem
U5	00	User interface communication problem
U6	36	Boiler standby abnormality
U7	00	OU: Transmission malfunction between main CPU- INV CPU
U8	01	Connection with LAN adapter lost
U8	02	Connection with room thermostat lost
U8	03	No connection with room thermostat
U8	04	Unknown USB device
U8	05	File malfunction
U8	06	Boiler communication error
U8	07	P1P2 communication error
U8	08	Boiler communication error
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
UA	52	Boiler, indoor unit matching problem
UF	00	Reversed piping or bad communication wiring detection



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 Domestic hot water > Type > Reheat or Reheat + sched. 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 Domestic hot water > Type > Scheduled only is selected, it is recommended to program a Storage eco 3 hours before the scheduled start-up of the disinfection function to preheat the tank.



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**

In case of an E7-62 error, brine pump operation stops due to not enough flow in the brine circuit. If 10-day brine pump operation is running, it will stop running and will only resume once the error is reset. It is only possible to reset the error with the domestic hot water home screen or the leaving water temperature home screen turned ON. To reset the error, press **i** and confirm by pressing **OK**.

**INFORMATION**

If an U8-04 error occurs, the error can be reset after a successful update of the software. If the software is not successfully updated then you must make sure that your USB device has the FAT32 format.

**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 Performing vacuum drying.
- 3 Bringing the system to a specialized treatment facility.

**INFORMATION**

For more details, see the service manual.

13.2 To pump down

**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.

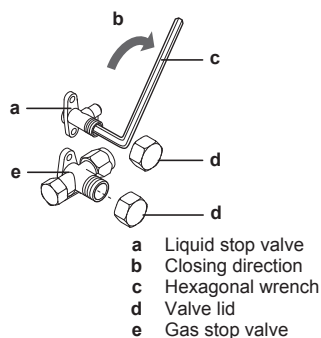
**NOTICE**

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 After 5 to 10 minutes (after only 1 or 2 minutes in case of very low ambient temperatures ($<-10^{\circ}\text{C}$)), close the liquid stop valve with a hexagonal wrench.
- 4 Check on the manifold if the vacuum is reached.
- 5 After 2-3 minutes, close the gas stop valve and stop forced cooling operation.



13.3 To activate/deactivate the vacuum mode field setting

To perform vacuum drying of the outdoor unit's internal refrigerant piping it is necessary to activate the vacuum mode. This will open required valves in the refrigerant circuit so the vacuuming process can be done properly.

To activate vacuum mode:

Activating the vacuum mode is done by operating the BS1 push button on the PCB (A1P). Operate the switches and push buttons with an insulated stick (such as a closed ball-point pen) to avoid touching of live parts.



When the unit is powered on and not running, push the BS1 push button 3 times within a time frame of 10 seconds to activate vacuum mode.

To deactivate vacuum mode:

After vacuuming the unit, please deactivate the vacuum mode by pushing the BS1 push button 3 times within a time frame of 10 seconds.

Make sure to reattach the electronic component box cover and to install the front cover after the job is finished.

**NOTICE**

Make sure that all outside panels, except for the service cover on the electrical component box, are closed while working.

Close the lid of the electrical component box firmly before turning on the power.

13.4 To perform vacuum drying

**NOTICE**

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

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

13 Disposal

- 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.



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.



NOTICE

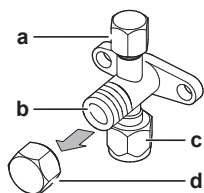
Make sure to open the stop valves after performing vacuum drying. Running the system with the stop valves closed may break the compressor.

13.5 Using the stop valve and service port

13.5.1 To handle the stop valve

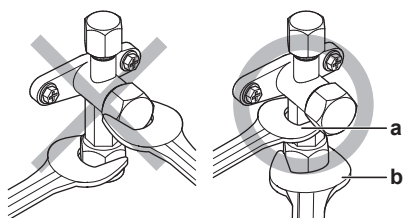
Take the following guidelines into account:

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



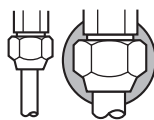
- a Service port and service port cap
- b Valve stem
- c Field piping connection
- d Stem cap

- 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

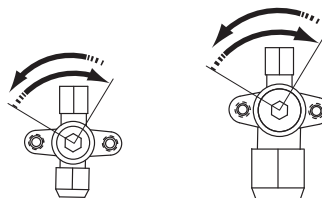
- When it is expected that the operating pressure will be low (e.g. when cooling will be performed while the outside air temperature is low), sufficiently seal the flare nut in the stop valve on the gas line with silicon sealant to prevent freezing.



Silicon sealant; make sure there is no gap.

13.5.2 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:



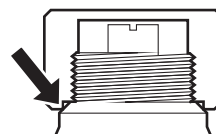
Counterclockwise to open.
Clockwise to close.

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

Result: The valve is now open/closed.

13.5.3 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

13.5.4 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.

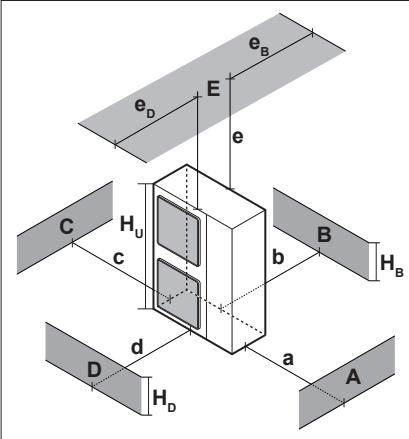
Item	Tightening torque (N·m)
Service port cap	11.5~13.9

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 Service space: Outdoor unit

Single unit

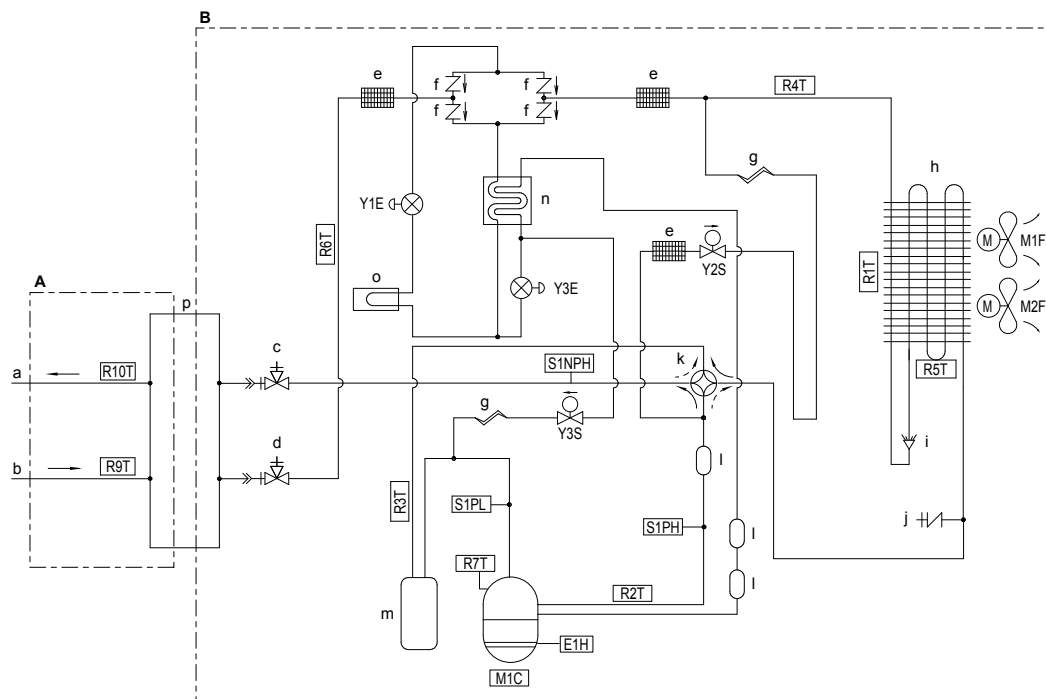


A~E	H_B H_D H_U	(mm)							
		a	b	c	d	e	e_B	e_D	H
A, B, C	—	≥ 500	≥ 300	≥ 100					≥ 150
A, B, C, E	—	≥ 500	≥ 300	≥ 150		≥ 1000		≤ 500	≥ 150
D	—				≥ 500				≥ 150
D, E	—				≥ 500	≥ 1000	≤ 500		≥ 150
B, D	$H_D < H_U$		≥ 300		≥ 500				≥ 150
B, D, E	$H_D < H_U$ & $H_B > H_U$		≥ 300		≥ 1000	≥ 1000		≤ 500	≥ 150
	$H_D > H_U$ & $H_B < H_U$		≥ 300		≥ 1000	≥ 1000	≤ 500		≥ 150

- A, C** Left side and right side obstacles (walls/baffle plates)
B Suction side obstacle (wall/baffle plate)
D Discharge side obstacle (wall/baffle plate)
E Top side obstacle (roof)
a, b, c, d, e Minimum service space between the unit and obstacles A, B, C, D and E
 e_B Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle B
 e_D Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle D
 H_U Height of the unit including the installation structure
 H_B, H_D Height of obstacles B and D
H Height of installation structure below the unit

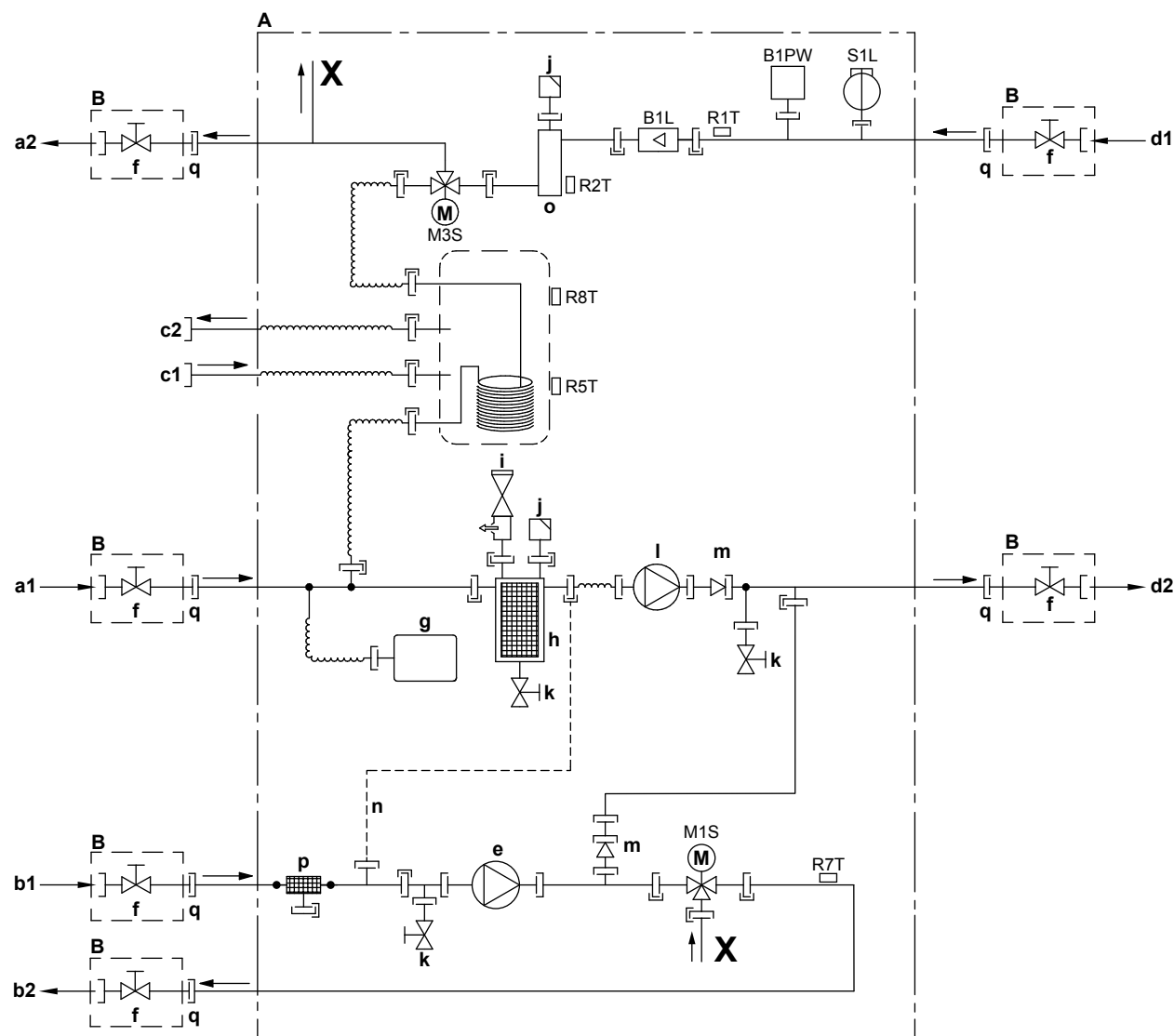
14 Technical data

14.2 Piping diagram: Outdoor unit



- a Water OUT, male 1"
- b Water IN, male 1"
- c Gas stop valve with service port
- d Liquid stop valve with service port
- e Refrigerant filter
- f One-way valve
- g Capillary tube
- h Heat exchanger
- i Distributor
- j Service port 5/16" flare
- k 4-way valve
- l Muffler
- m Accumulator
- n Economiser heat exchanger
- o Inverter PCB heat sink
- p Plate heat exchanger
- E1H Crankspace heater
- M1C Compressor
- M1F Upper fan motor
- M2F Lower fan motor
- R1T Thermistor (outdoor air)
- R2T Thermistor (compressor discharge)
- R3T Thermistor (compressor suction)
- R4T Thermistor (air heat exchanger liquid pipe)
- R5T Thermistor (air heat exchanger middle)
- R6T Thermistor (refrigerant liquid)
- R7T Thermistor (compressor protection)
- R9T Thermistor (entering water)
- R10T Thermistor (leaving water)
- S1PH High pressure switch
- S1PL Low pressure switch
- S1NPH High pressure sensor
- Y1E Electronic expansion valve (main)
- Y2S Solenoid valve (hot gas bypass)
- Y3E Electronic expansion valve (injection)
- Y3S Solenoid valve (injection bypass)
- A Water side
- B Refrigerant side
- Heating
- Cooling

14.3 Piping diagram: Indoor unit



3D120612

- A** Water side
B 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, loose nut 3/4"
c2 Domestic hot water: hot water OUT, loose nut 3/4"
d1 Gas refrigerant IN (heating mode; condenser)
d2 Liquid refrigerant OUT (heating mode; condenser)
e Pump (main/mixed zone)
f Shut-off valve, male-female 1" (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 Capillary tube
o Backup heater
p Water filter (main/mixed zone)
q Loose nut 1"
B1L Flow sensor
B1PW Space heating water 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)
R5T, R8T Thermistor (tank)
R7T Thermistor (main/mixed zone – water OUT)
S1L Flow switch
 —|— Screw connection

- >—> Flare connection
 —|— Quick coupling
 —●— Brazed connection

14 Technical data



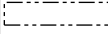
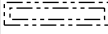
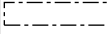
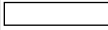
14.4 Wiring diagram: Outdoor unit

The wiring diagram is delivered with the unit, located at the inside of the service cover.

(1) Connection diagram

English	Translation
Connection diagram	Connection diagram
Only for ***	Only for ***
See note ***	See note ***
Outdoor	Outdoor
Indoor	Indoor
Position of compressor terminal	Position of compressor terminal
Position in switch box	Position in switch box
Front	Front
Right	Right
Back	Back
Upper	Upper
Lower	Lower
Fan	Fan
ON	ON
OFF	OFF

(2) Notes

English	Translation
Notes	Notes
L	Live
N	Neutral
	Connection
	Connector
-----	Earth wiring
-----	Field supply
	Protective earth
	Noiseless earth
	Field wire
	Terminal
	Terminal strip
	Wiring depending on model
	Option
	Switch box
	PCB

NOTES:

- Colours: BLK: black, RED: red, BLU: blue, WHT: white, GRN: green, YLW: yellow, PNK: pink, ORG: orange.
- This wiring diagram applies only to the outdoor unit.
- When operating, do not short-circuit protective devices S1PH and S1PL.
- Refer to the combination table and the option manual for how to connect the wiring to X6A, X4A and X41A.
- Refer to the service manual for instructions on how to set the selector switches (DS1). The factory setting of all switches is OFF.

(3) Legend

English	Translation
Legend	Legend
Field supply	Field supply

English	Translation
Optional	Optional
Part n°	Part n°
Description	Description

A1P	Printed circuit board (main)
A2P	Printed circuit board (noise filter)
A3P	Printed circuit board (leakage current)
A4P	Printed circuit board (ACS)
BS1~BS4 (A1P)	Push button switch
C1~C4 (A1P, A2P)	Capacitor
DS1 (A1P)	Dipswitch
E1H	Crankcase heater
E2H	Bottom plate heater (option)
E3H~E5H	Plate heat exchanger heaters
F1U~F4U (A2P)	Fuse
F6U (A1P)	Fuse (T 5.0 A / 250 V)
H1P~H7P (A1P)	Light-emitting diode (service monitor is orange)
HAP (A1P)	Light-emitting diode (service monitor is green)
K1R (A1P)	Magnetic relay (Y1S)
K1R (A4P)	Magnetic relay (E3H~E5H)
K2R (A1P)	Magnetic relay (Y2S)
K2R (A4P)	Magnetic relay (E2H)
K3R (A1P)	Magnetic relay (Y3S)
K4R (A1P)	Magnetic relay (E1H)
K10R (A1P)	Magnetic relay
K11M (A1P)	Magnetic contactor
K13R~K15R (A1P, A2P)	Magnetic relay
L1R~L3R (A1P)	Reactor
M1C	Compressor motor
M1F~M2F	Fan motor
PS (A1P)	Switching power supply
Q1DI	Earth leakage circuit breaker (30 mA) (field supply)
R1~R5 (A1P, A2P)	Resistor
R1T	Thermistor (outdoor air)
R2T	Thermistor (compressor discharge)
R3T	Thermistor (compressor suction)
R4T	Thermistor (air heat exchanger liquid pipe)
R5T	Thermistor (air heat exchanger middle)
R6T	Thermistor (refrigerant liquid)
R7T	Thermistor (compressor protection)
R9T	Thermistor (entering water)
R10T	Thermistor (leaving water)
R11T	Thermistor (fin)
RC (A2P)	Signal receiver circuit
S1NPH	High pressure sensor
S1PH	High pressure switch
S1PL	Low pressure switch
T1A	Current sensor

TC (A2P)	Signal transmission circuit
V1D~V4D (A1P)	Diode
V1R (A1P)	IGBT power module
V2R (A1P)	Diode module
V1T~V3T (A1P)	Insulated Gate Bipolar Transistor (IGBT)
X1M	Terminal strip
Y1E	Electronic expansion valve (main)
Y3E	Electronic expansion valve (injection)
Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (hot gas bypass)
Y3S	Solenoid valve (injection bypass)
Z1C~Z11C	Noise filter (ferrite core)
Z1F~Z6F (A1P, A2P)	Noise filter

14 Technical data

14.5 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/BSH 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
<input type="checkbox"/> 6T1 (3~, 230 V, 6 kW)	<input type="checkbox"/> 6T1 (3~, 230 V, 6 kW)
<input type="checkbox"/> 6V3 (1N~, 230 V, 6 kW)	<input type="checkbox"/> 6V3 (1N~, 230 V, 6 kW)
<input type="checkbox"/> 6WN (3N~, 400 V, 6 kW)/9WN (3N~, 400 V, 9 kW)	<input type="checkbox"/> 6WN/9WN (3N~, 400 V, 6 kW)
User installed options	User installed options
<input type="checkbox"/> LAN adapter	<input type="checkbox"/> LAN adapter
<input type="checkbox"/> Remote user interface	<input type="checkbox"/> User interface used as room thermostat
<input type="checkbox"/> Ext. indoor thermistor	<input type="checkbox"/> External indoor thermistor
<input type="checkbox"/> Ext outdoor thermistor	<input type="checkbox"/> External outdoor thermistor
<input type="checkbox"/> Digital I/O PCB	<input type="checkbox"/> Digital I/O PCB
<input type="checkbox"/> Demand PCB	<input type="checkbox"/> Demand PCB
<input type="checkbox"/> Bottom plate heater	<input type="checkbox"/> Bottom plate heater
Main LWT	Main leaving water temperature
<input type="checkbox"/> On/OFF thermostat (wired)	<input type="checkbox"/> On/OFF thermostat (wired)
<input type="checkbox"/> On/OFF thermostat (wireless)	<input type="checkbox"/> On/OFF thermostat (wireless)
<input type="checkbox"/> Ext. thermistor	<input type="checkbox"/> External thermistor
<input type="checkbox"/> Heat pump convactor	<input type="checkbox"/> Heat pump convactor
<input type="checkbox"/> Safety thermostat	<input type="checkbox"/> Safety thermostat
Add LWT	Additional leaving water temperature
<input type="checkbox"/> On/OFF thermostat (wired)	<input type="checkbox"/> On/OFF thermostat (wired)
<input type="checkbox"/> On/OFF thermostat (wireless)	<input type="checkbox"/> On/OFF thermostat (wireless)
<input type="checkbox"/> Ext. thermistor	<input type="checkbox"/> External thermistor
<input type="checkbox"/> Heat pump convactor	<input type="checkbox"/> Heat pump convactor

Position in switch box

English	Translation
Position in switch box	Position in switch box

Legend

A1P	Main PCB
-----	----------

A2P	* On/OFF thermostat (PC=power circuit)
A3P	* Heat pump convactor
A4P	* Digital I/O PCB
A5P	Bizone PCB
A6P	Current Loop PCB
A8P	* Demand PCB
A10P	MMI (= user interface connected to the indoor unit) – Power supply unit PCB
A11P	MMI (= user interface connected to the indoor unit) – Main PCB
A13P	* LAN adapter
A14P	* User interface PCB
A15P	* Receiver PCB (wireless On/OFF thermostat)
CN* (A4P)	* Connector
DS1 (A8P)	* DIP switch
F1B	# Overcurrent fuse backup heater
F1U, F2U (A4P)	* Fuse 5 A 250 V for digital I/O PCB
K1M, K2M	Contact 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
M2P	# Domestic hot water pump
M2S	# 2-way valve for cooling mode
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 (A2P)	* Ambient sensor On/OFF thermostat
R2T (A2P)	* External sensor (floor or ambient)
R6T	* External indoor or outdoor ambient thermistor
S1S	# Preferential kWh rate power supply contact
S2S	# Electrical meter pulse input 1
S3S	# Electrical meter pulse input 2
S6S~S9S	* Digital power limitation inputs
SS1 (A4P)	* Selector switch
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

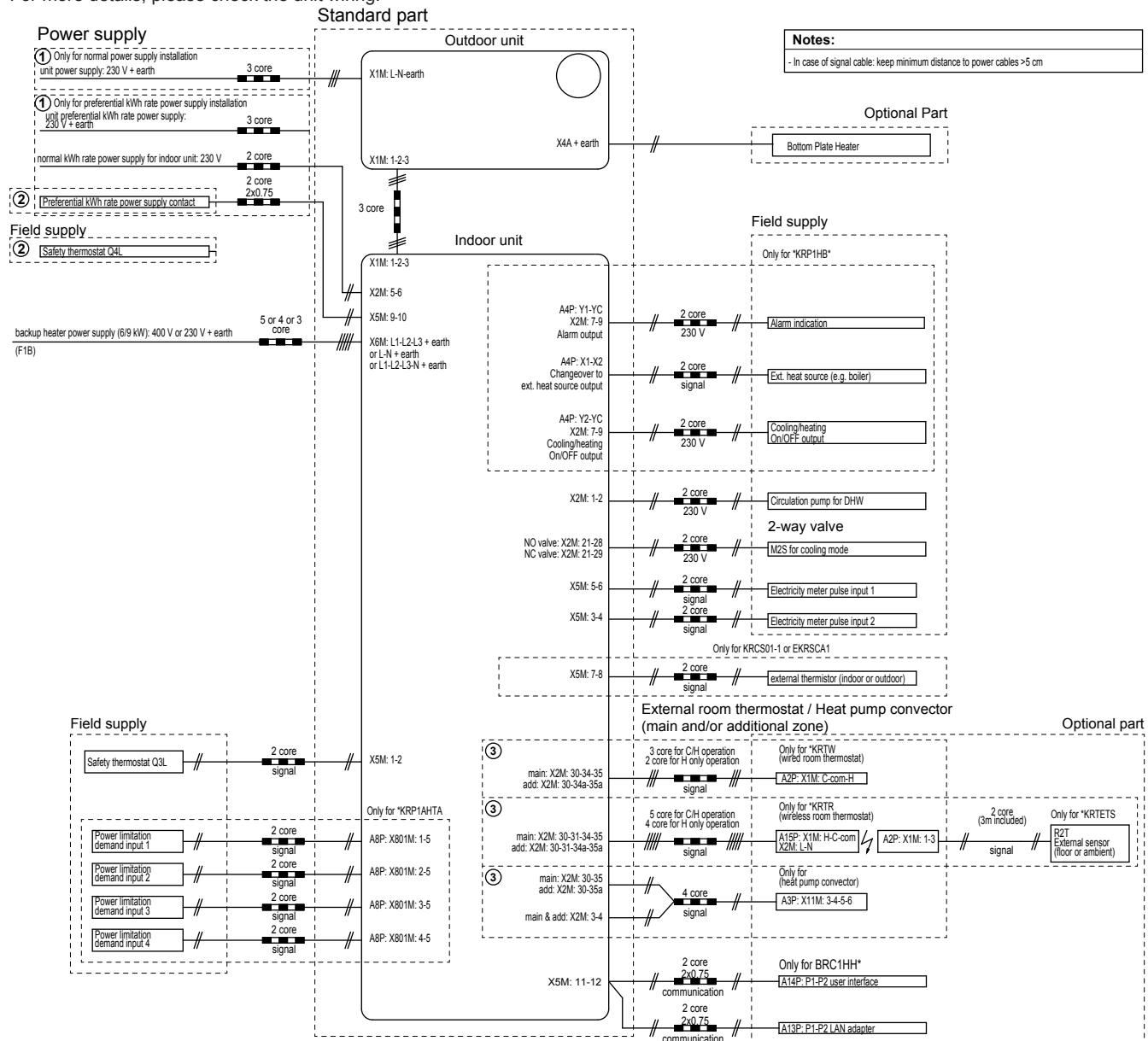
English	Translation
Only for normal power supply (standard)	Only for normal power supply (standard)
Only for preferential kWh rate power supply (outdoor)	Only for preferential kWh rate power supply (outdoor)
Outdoor unit	Outdoor unit
Preferential kWh rate power supply contact: 16 V DC detection (voltage 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 EKRUDAS	Only for the user interface used as room thermostat (EKRUDAS)
(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

English	Translation
Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)	Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)
Shut-off valve	Shut-off valve
SWB	Switch box
(7) Option PCBs	(7) Option PCBs
Alarm output	Alarm output
Changeover to ext. heat source	Changeover to external heat source
Max. load	Maximum load
Min. load	Minimum load
Only for demand PCB option	Only for demand PCB option
Only for digital I/O PCB option	Only for digital I/O PCB option
Options: ext. heat source output, alarm output	Options: external heat source output, alarm output
Options: On/OFF output	Options: On/OFF output
Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)	Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)
Space C/H On/OFF output	Space cooling/heating On/OFF output
SWB	Switch box
(8) External On/OFF thermostats and heat pump convector	(8) External On/OFF thermostats and heat pump convector
Additional LWT zone	Additional leaving water temperature zone
Main LWT zone	Main leaving water temperature zone
Only for external sensor (floor/ambient)	Only for external sensor (floor or ambient)
Only for heat pump convector	Only for heat pump convector
Only for wired On/OFF thermostat	Only for wired On/OFF thermostat
Only for wireless On/OFF thermostat	Only for wireless On/OFF thermostat

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Electrical connection diagram

For more details, please check the unit wiring.

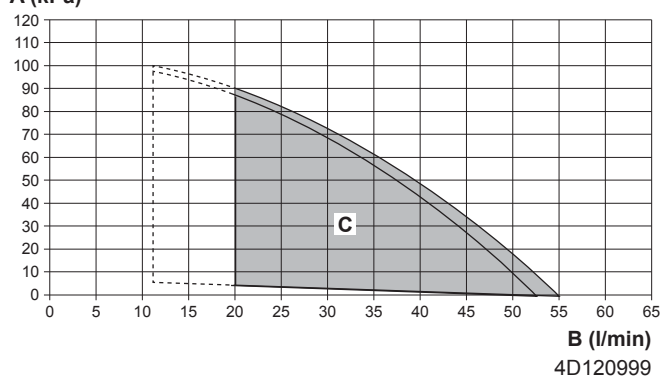


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14.6 ESP curve: Indoor unit

Note: A flow error will occur when the minimum water flow rate is not reached.

A (kPa)



- 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.

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.

15 Glossary

Dealer

Sales distributor for the product.

Authorized 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.

Field settings table[8.7.5] = **8291****Applicable indoor units**

EAVZ16S18DA6V
EAVZ16S23DA6V
EAVZ16S18DA9W
EAVZ16S23DA9W

Notes

- (*1) *6V
- (*2) *9W
- (*3) + EKHVCONV2
- (*4) EAVZ16S18*
- (*5) EAVZ16S23*

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 8°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		
1.5.3	[3-09]	Cooling minimum	R/W	15~25°C, step: 0,5°C 15°C (*3)		
1.5.4	[3-08]	Cooling maximum	R/W	25~35°C, step: 0,5°C 35°C (*3)		
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 1: WD heating, fixed cooling (*3) 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		
	└ Cooling WD curve					
2.6	[1-06]	Low ambient temp. for LWT main zone cooling WD curve.	R/W	10~25°C, step: 1°C 20°C (*3)		
2.6	[1-07]	High ambient temp. for LWT main zone cooling WD curve.	R/W	25~43°C, step: 1°C 35°C (*3)		
2.6	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C 22°C (*3)		
2.6	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C 18°C (*3)		
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: 37~60, step: 1°C 55°C [2-0C]≠2: 37~55, step: 1°C 55°C		
2.8.3	[9-03]	Cooling minimum	R/W	5~18°C, step: 1°C 8°C (*3)		
2.8.4	[9-02]	Cooling maximum	R/W	18~22°C, step: 1°C 22°C (*3)		
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		
2.B.2	[1-0D]	Delta T cooling	R/W	3~10°C, step: 1°C 5°C (*3)		
	└ 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		
2.D.2	[F-0C]	During cooling	R/W	0: No 1: Yes (*3)		
Additional zone						
3.4		Setpoint mode		0: Fixed 1: WD heating, fixed cooling (*3) 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		
	└ Cooling WD curve					
3.6	[0-04]	Leaving water value for high ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C 8°C (*3)		
3.6	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C 12°C (*3)		
3.6	[0-06]	High ambient temp. for LWT add zone cooling WD curve.	R/W	25~43°C, step: 1°C 35°C (*3)		
3.6	[0-07]	Low ambient temp. for LWT add zone cooling WD curve.	R/W	10~25°C, step: 1°C 20°C (*3)		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Date	Value
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: 37~60, step: 1°C 55°C [2-0D]≠2: 37~55, step: 1°C 55°C		
3.8.3	[9-07]	Cooling minimum	R/W	5~18°C, step: 1°C 8°C (*3)		
3.8.4	[9-08]	Cooling maximum	R/W	18~22°C, step: 1°C 22°C (*3)		
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		
3.B.2	[1-0E]	Delta T cooling	R/W	3~10°C, step: 1°C 5°C (*3)		
Space heating / cooling						
Operation range						
4.3.1	[4-02]	Space heating OFF temp	R/W	14~35°C, step: 1°C 35°C		
4.3.2	[F-01]	Space cooling OFF temp	R/W	10~35°C, step: 1°C 20°C (*3)		
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		
4.6	[E-02]	Unit type	R/W (*3) R/O	0: Reversible (*3) 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 28°C (*4) 22°C (*5)		
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		

(*1) *6V_(*2) *9W_

(*3) + EKHVCONV2_

(*4) EAVZ16S18*(*5) EAVZ16S23*

(#) Setting is not applicable for this unit.

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Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Date	Value
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	3: 6V (*1) 4: 9W (*2)		
9.1	[E-05] [E-06] [E-07]	Domestic hot water	R/O	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		
Backup heater						
9.1	[5-0D]	Voltage	R/W (*1) R/O (*2)	0: 230V, 1~ (*1) 1: 230V, 3~ (*1) 2: 400V, 3~ (*2)		
9.1	[4-0A]	Configuration	R/W	1: 1/1+2 (*1) (*2) 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 2kW (*1) 3kW (*2)		
9.1	[6-04]	Additional capacity step 2	R/W	0~10kW, step: 0,2kW 4kW (*1) 6kW (*2)		
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]	Low ambient temp. for LWT main zone cooling WD curve.	R/W	10~25°C, step: 1°C 20°C (*3)		
9.1	[1-07]	High ambient temp. for LWT main zone cooling WD curve.	R/W	25~43°C, step: 1°C 35°C (*3)		
9.1	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C 22°C (*3)		
9.1	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C 18°C (*3)		
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 1: WD heating, fixed cooling (*3) 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		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step	Default value	Date	Value
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]	Leaving water value for high ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C	8°C (*3)		
9.1	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C	12°C (*3)		
9.1	[0-06]	High ambient temp. for LWT add zone cooling WD curve.	R/W	25~43°C, step: 1°C	35°C (*3)		
9.1	[0-07]	Low ambient temp. for LWT add zone cooling WD curve.	R/W	10~25°C, step: 1°C	20°C (*3)		
└ 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 rtn 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	3: 6V (*1) 4: 9W (*2)			
9.3.2	[5-0D]	Voltage	R/W (*1) R/O (*2)	0: 230V, 1~ (*1) 1: 230V, 3~ (*1) 2: 400V, 3~ (*2)			
9.3.3	[4-0A]	Configuration	R/W	1: 1/1+2 (*1) (*2) 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 2kW (*1) 3kW (*2)			
9.3.5	[6-04]	Additional capacity step 2	R/W	0~10kW, step: 0.2kW 4kW (*1) 6kW (*2)			
9.3.6	[5-00]	Equilibrium	R/W	0: Allowed 1: Not allowed			
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 0kW			
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/O	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	R/O	0: Intermittent			
└ 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			

(*1) *6V_(*2) *9W_

(*3) + EKHVCONV2_

(*4) EAVZ16S18*_(*5) EAVZ16S23*

(#) Setting is not applicable for this unit.

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Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Date	Value
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						
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	0: disabled 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]	Leaving water value for high ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C 8°C (*3)		
9.I	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C 12°C (*3)		
9.I	[0-06]	High ambient temp. for LWT add zone cooling WD curve.	R/W	25~43°C, step: 1°C 35°C (*3)		
9.I	[0-07]	Low ambient temp. for LWT add zone cooling WD curve.	R/W	10~25°C, step: 1°C 20°C (*3)		
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]	Weather dependent cooling of the main leaving water temperature zone.	R/W	0: Disabled 1: Enabled		
9.I	[1-05]	Weather dependent cooling of the additional leaving water temperature zone	R/W	0: Disabled 1: Enabled		
9.I	[1-06]	Low ambient temp. for LWT main zone cooling WD curve.	R/W	10~25°C, step: 1°C 20°C (*3)		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step	Default value	Date	Value
9.I	[1-07]	High ambient temp. for LWT main zone cooling WD curve.	R/W	25~43°C, step: 1°C	35°C (*3)		
9.I	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C	22°C (*3)		
9.I	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C	18°C (*3)		
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]	What is the desired delta T in cooling for the main zone?	R/W	3~10°C, step: 1°C	5°C (*3)		
9.I	[1-0E]	What is the desired delta T in cooling for the additional zone?	R/W	3~10°C, step: 1°C	5°C (*3)		
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	8°C (*3)		
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			
9.I	[2-0E]	What is the maximum allowed current over the heatpump ?	R/W	20~50 A, step: 1 A	50 A		
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 minimum desired room temperature in heating?	R/W	12~18°C, step: 0.5°C	12°C		
9.I	[3-08]	What is the maximum desired room temperature in cooling?	R/W	25~35°C, step: 0.5°C	35°C (*3)		
9.I	[3-09]	What is the minimum desired room temperature in cooling?	R/W	15~25°C, step: 0.5°C	15°C (*3)		
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	35°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	R/O	0: Intermittent			
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	1: 1/1+2 (*1) (*2) 2: 1/2 3: 1/2 + 1/1+2 in emergency			
9.I	[4-0B]	Automatic cooling/heating changeover hysteresis.	R/W	1~10°C, step: 0.5°C	1°C (*3)		
9.I	[4-0D]	Automatic cooling/heating changeover offset.	R/W	1~10°C, step: 0.5°C	3°C (*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			

(*1) *6V_(*2) *9W_

(*3) + EKHVCONV2_

(*4) EAVZ16S18*_(*5) EAVZ16S23*

(#) Setting is not applicable for this unit.

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Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Date	Value
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 (*1) R/O (*2)	0: 230V, 1~ (*1) 1: 230V, 3~ (*1) 2: 400V, 3~ (*2)		
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 28°C (*4) 22°C (*5)		
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 0kW		
9.I	[6-03]	What is the capacity of the backup heater step 1?	R/W	0~10kW, step: 0,2kW 2kW (*1) 3kW (*2)		
9.I	[6-04]	What is the capacity of the backup heater step 2?	R/W	0~10kW, step: 0,2kW 4kW (*1) 6kW (*2)		
9.I	[6-05]	--		0		
9.I	[6-06]	--		0		
9.I	[6-07]	--		0		
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		
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/O	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]	What is the desired comfort main LWT in cooling?	R/W	[9-03]~[9-02], step: 1°C 18°C (*3)		
9.I	[8-08]	What is the desired eco main LWT in cooling?	R/W	[9-03]~[9-02], step: 1°C 20°C (*3)		
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; 37~60, step: 1°C 55°C [2-0C]≠2; 37~55, step: 1°C 55°C		
9.I	[9-01]	What is the minimum desired LWT for main zone in heating?	R/W	15~37°C, step: 1°C 25°C		
9.I	[9-02]	What is the maximum desired LWT for main zone in cooling?	R/W	18~22°C, step: 1°C 22°C (*3)		

Field settings table

Breadcrum	Field code	Setting name		Range, step	Installer setting at variance with default value	
					Date	Value
9.I	[9-03]	What is the minimum desired LWT for main zone in cooling?	R/W	5~18°C, step: 1°C 8°C (*3)		
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 minimum 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: 37~60, step: 1°C 55°C [2-0D]≠2: 37~55, step: 1°C 55°C		
9.I	[9-07]	What is the minimum desired LWT for add. zone in cooling?	R/W	5~18°C, step: 1°C 8°C (*3)		
9.I	[9-08]	What is the maximum desired LWT for add. zone in cooling?	R/W	18~22°C, step: 1°C 22°C (*3)		
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		
9.I	[D-02]	Which type of DHW pump is installed?	R/W	0: No 1: Secondary rtn 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	1		
9.I	[E-02]	What is the indoor unit software type?	R/W (*3) R/O	0: Reversible (*3) 1: Heating only		
9.I	[E-03]	What is the number of backup heater steps?	R/O	3: 6V (*1) 4: 9W (*2)		
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	0: disabled 1: Enabled		
9.I	[E-09]	--		1		

(*1) *6V_(*2) *9W_

(*3) + EKHVCONV2_

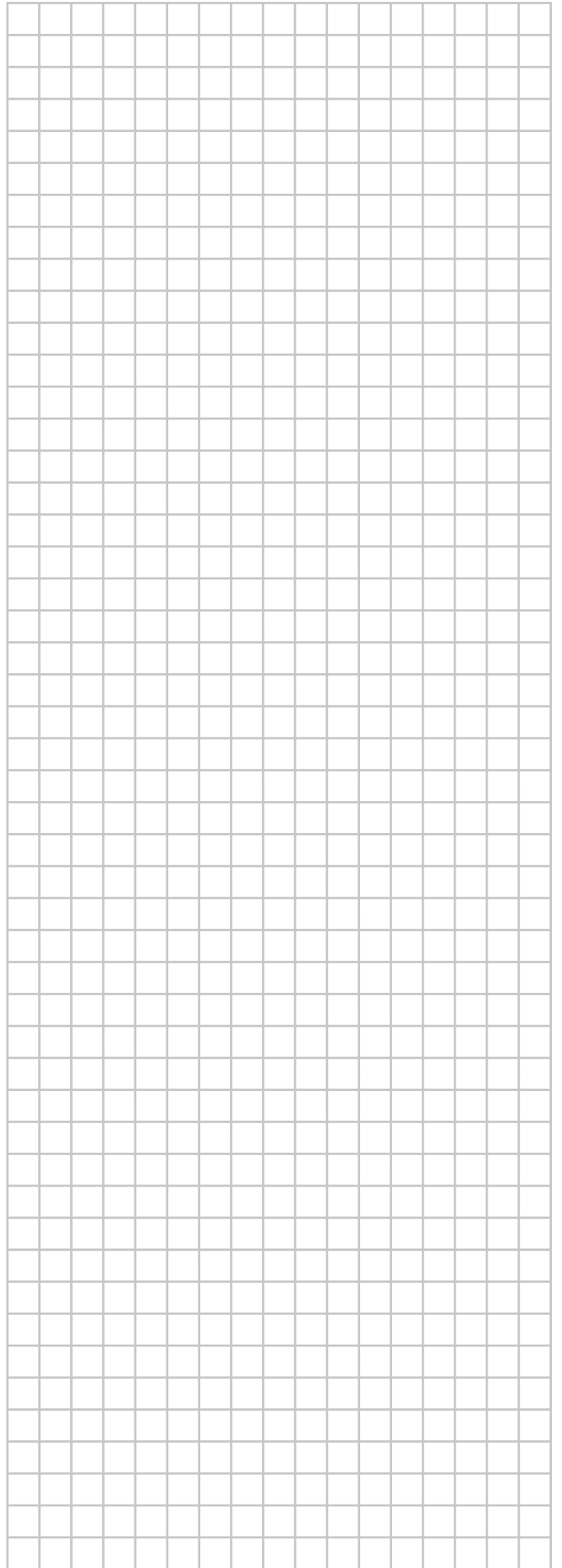
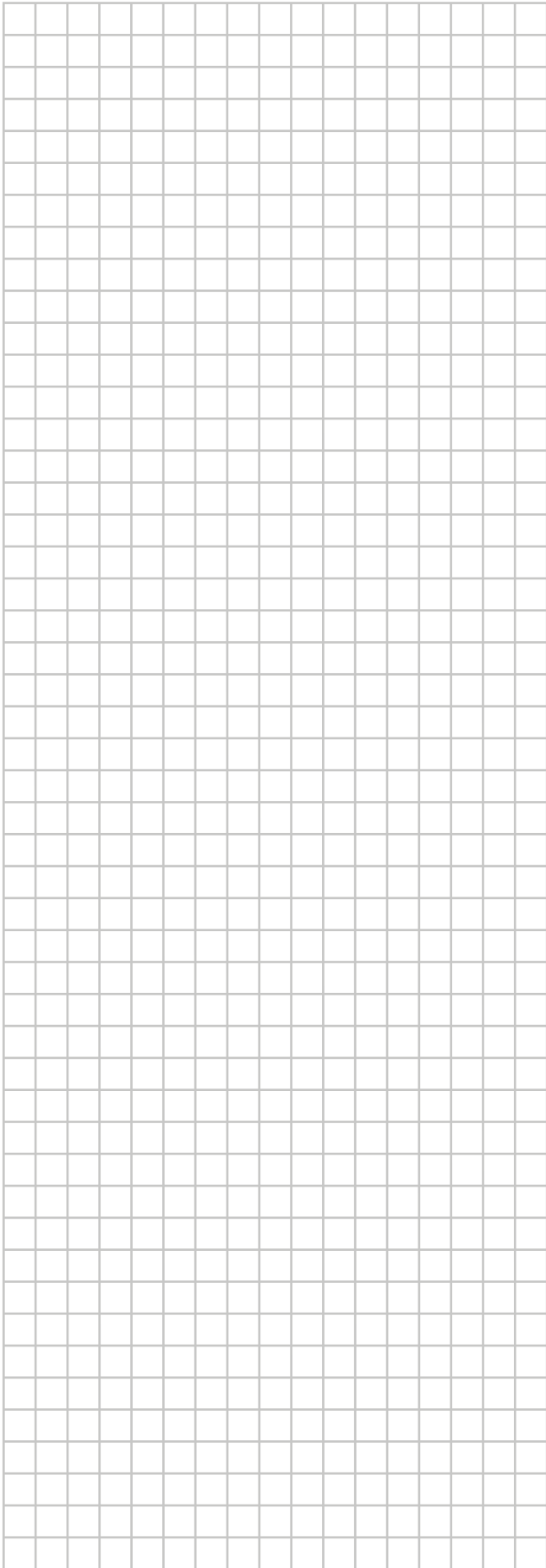
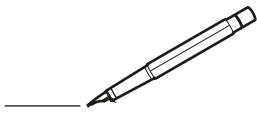
(*4) EAVZ16S18*_(*5) EAVZ16S23*

(#) Setting is not applicable for this unit.

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Field settings table				Installer setting at variance with default value	
Breadcrumb	Field code	Setting name	Range, step Default value	Date	Value
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 the system filled with glycol ?	R/W 0: No 1: Yes		
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]	--	3		
9.I	[F-03]	--	5		
9.I	[F-04]	--	0		
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]	Close shut-off valve during cooling?	R/W 0: No 1: Yes		
9.I	[F-0D]	What is the pump operation mode?	R/W 0: Continuous 1: Sample 2: Request		





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