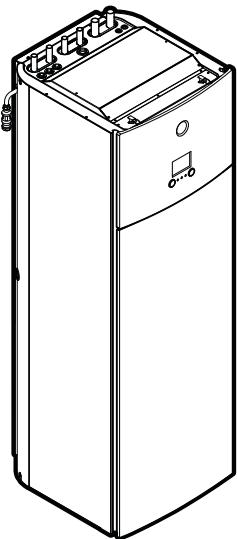




Installer reference guide
Daikin Altherma 3 GEO



[EGSAH06UDA9W](#)
[EGSAH10UDA9W](#)

[EGSAX06UDA9W](#)
[EGSAX10UDA9W](#)

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1 General safety precautions

1.1 About the documentation

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

1.1.1 Meaning of warnings and symbols

| | | |
|---|--------------------------------------|---|
|  | DANGER | Indicates a situation that results in death or serious injury. |
|  | DANGER: RISK OF ELECTROCUTION | Indicates a situation that could result in electrocution. |
|  | DANGER: RISK OF BURNING | Indicates a situation that could result in burning because of extreme hot or cold temperatures. |
|  | DANGER: RISK OF EXPLOSION | Indicates a situation that could result in explosion. |
|  | WARNING | Indicates a situation that could result in death or serious injury. |
|  | WARNING: FLAMMABLE MATERIAL | |
|  | CAUTION | Indicates a situation that could result in minor or moderate injury. |
|  | NOTICE | Indicates a situation that could result in equipment or property damage. |
|  | INFORMATION | Indicates useful tips or additional information. |

Symbols used on the unit:

| 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. |

Symbols used in the documentation:

| Symbol | Explanation |
|--------|---|
| | Indicates a figure title or a reference to it. Example: "▲ 1–3 Figure title" means "Figure 3 in chapter 1". |
| | Indicates a table title or a reference to it. Example: "■ 1–3 Table title" means "Table 3 in chapter 1". |

1.2 For the installer

1.2.1 General

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



WARNING

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

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.

Possible consequence: Self-combustion and explosion of the compressor because of oxygen going into the operating compressor.

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

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

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



CAUTION

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

1.2.4 Brine

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



WARNING

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



WARNING

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



WARNING

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



WARNING

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

1.2.5 Water

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



NOTICE

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

1.2.6 Electrical

**DANGER: RISK OF ELECTROCUTION**

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

**WARNING**

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

**WARNING**

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

**CAUTION**

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



NOTICE

Precautions when laying power wiring:



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



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



INFORMATION

Make sure that the user has the printed documentation and ask him/her to keep it for future reference.

Target audience

Authorised installers

Documentation set

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

- **General safety precautions:**

- Safety instructions that you must read before installing
- Format: Paper (in the box of the unit)

- **Operation manual:**

- Quick guide for basic usage
- Format: Paper (in the box of the unit)

- **User reference guide:**

- Detailed step-by-step instructions and background information for basic and advanced usage
- Format: Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>

- **Installation manual:**

- Installation instructions
- Format: Paper (in the box of the unit)

- **Installer reference guide:**

- Preparation of the installation, good practices, reference data, ...
- Format: Digital files on <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 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 Business Portal (authentication required).

Online tools

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

▪ **Heating Solutions Navigator**

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

▪ **Daikin e-Care**

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

App Store



Google Play



2.2 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 |
| Unit installation | What to do and know to install the system, including information on how to prepare for an installation |
| Piping installation | What to do and know to install the piping of the system, including information on how to prepare for an installation |
| Electrical installation | What to do and know to install the electrical components of the system, including information on how to prepare for an installation |

| Chapter | Description |
|-------------------------|--|
| LAN adapter | <p>What to do and know to integrate the unit (with integrated LAN adapter) into one of the following applications:</p> <ul style="list-style-type: none"> ▪ App control (only) ▪ Smart Grid application (only) ▪ App control + Smart Grid application |
| 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 | <p>Table to be filled in by the installer, and kept for future reference</p> <p>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.</p> |

3 About the box

3.1 Overview: About the box

This chapter describes what you have to do after the box with the indoor unit is delivered on-site.

Keep the following in mind:

- At delivery, the unit MUST be checked for damage. Any damage MUST be reported immediately to the claims agent of the carrier.
- Bring the packed unit as close as possible to its final installation position to prevent damage during transport.
- Prepare the path along which you want to bring the unit inside in advance.

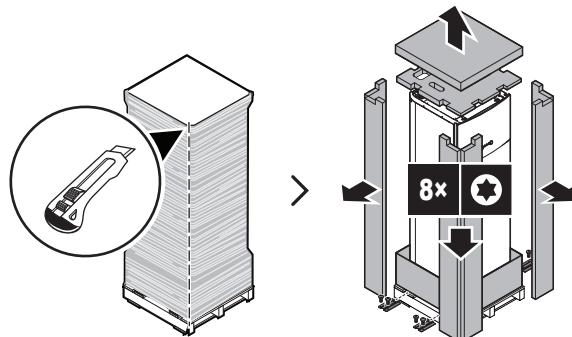
3.2 Indoor unit



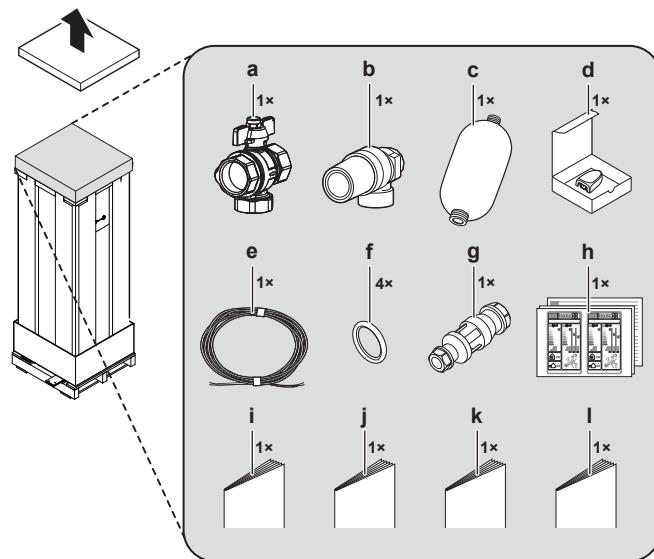
INFORMATION

This unit has been tested and approved according to BS EN12897:2016

3.2.1 To unpack the indoor unit



3.2.2 To remove the accessories from the indoor unit



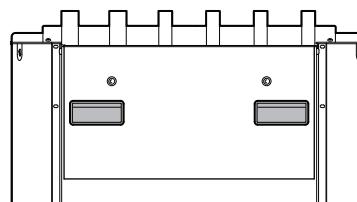
- a** Shut-off valve with integrated filter
- b** Safety valve (connection parts for mounting on top of brine level vessel included)
- c** Brine level vessel
- d** Remote outdoor sensor (with installation manual)
- e** Cable for remote outdoor sensor (40 m)
- f** O-rings (spares for hydro module shut-off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

3.2.3 To handle the indoor unit

Mind the following guidelines when handling the unit:



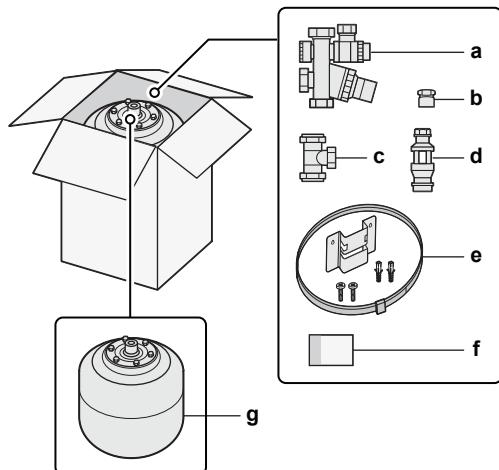
- The unit is heavy. At least 2 persons are needed to handle it.
- Use a trolley to transport the unit. Make sure to use a trolley with a sufficiently long horizontal ledge, suitable for transportation of heavy appliances.
- When transporting the unit, keep the unit upright.
- Use the handles at the back to carry the unit.



- Remove the hydro module when you want to carry the unit up or down staircases. See "[6.2.3 To remove the hydro module from the unit](#)" [▶ 57] for more information.
- It is recommended to use lifting straps to carry the unit up or down staircases.

3.3 Domestic hot water tank kit

3.3.1 To remove the accessories from the domestic hot water tank kit



- a** Pressure reducing valve/pressure relief valve combination. Water inlet and water outlet 22 mm connection, discharge piping connection 15 mm
- b** Adaptor 22 mm×3/4" Female BSP
- c** T-piece 22 mm×22 mm×22 mm
- d** Tundish 15 mm inlet, 22 mm outlet
- e** Wall mounting set for expansion vessel
- f** Instruction sheet
- g** Expansion vessel of 18 L – 3/4" Male BSP



NOTICE

All piping MUST be installed according to section G3 of the Building Regulations.

3.4 Checklist for the required DHW accessories

For installation compliant with section G3 of the Building Regulations, you must verify that the following accessories are present.

Delivered with indoor unit:

| | |
|--------------------------|-----------------------------------|
| <input type="checkbox"/> | Tundish 15 mm inlet, 22 mm outlet |
|--------------------------|-----------------------------------|

Delivered with domestic hot water tank kit:

| | |
|--------------------------|---|
| <input type="checkbox"/> | Pressure reducing valve/pressure relief valve combination |
| <input type="checkbox"/> | Adaptor 22 mm×3/4" Female BSP |
| <input type="checkbox"/> | T-piece 22 mm×22 mm×22 mm |
| <input type="checkbox"/> | Tundish 15 mm inlet, 22 mm outlet |
| <input type="checkbox"/> | Wall mounting set for expansion vessel |
| <input type="checkbox"/> | Instruction sheet |
| <input type="checkbox"/> | Expansion vessel of 18 L – 3/4" Male BSP |

4 About the units and options

4.1 Overview: About the units and options

This chapter contains information about:

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

4.2 Identification

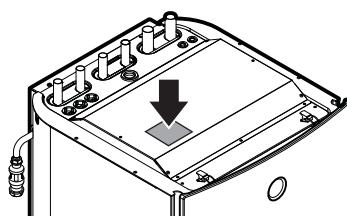


NOTICE

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: Indoor unit

Location



Model identification

Example: E GS A X 10 U DA 9W

| Code | Description |
|------|-------------------------------------|
| E | European model |
| GS | Ground source heat pump |
| A | Refrigerant R32 |
| X | H=Heating only X=Heating/cooling |
| 10 | Capacity class |
| U | UK model |
| DA | Model series |
| 9W | Backup heater model |

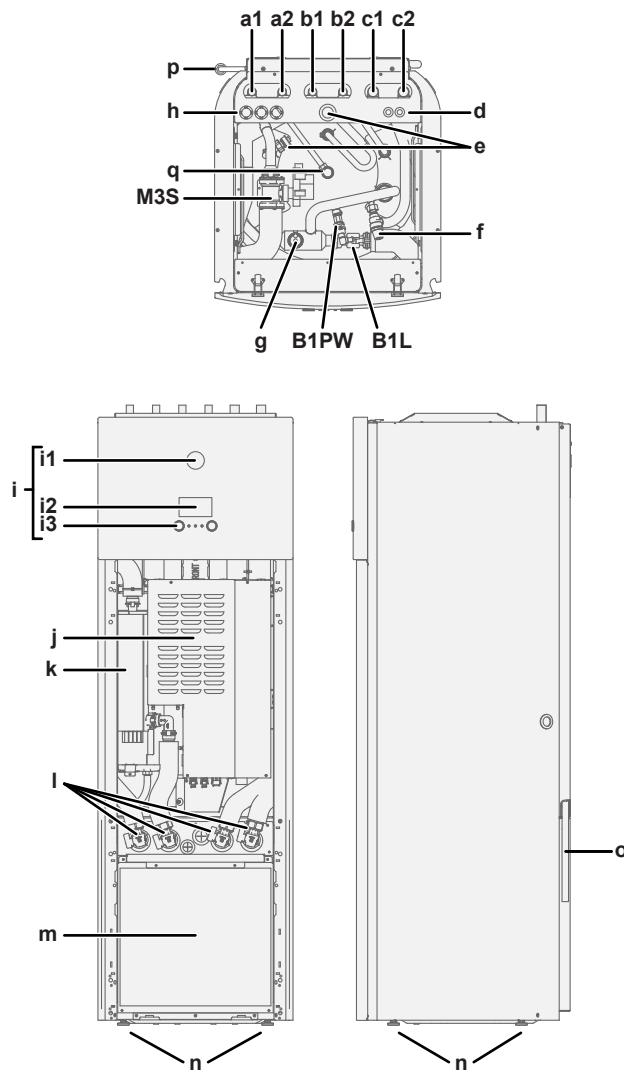


INFORMATION

Active cooling is available for reversible units only. Passive cooling is only available for heating only models. In this document, active cooling is referred to as "cooling".

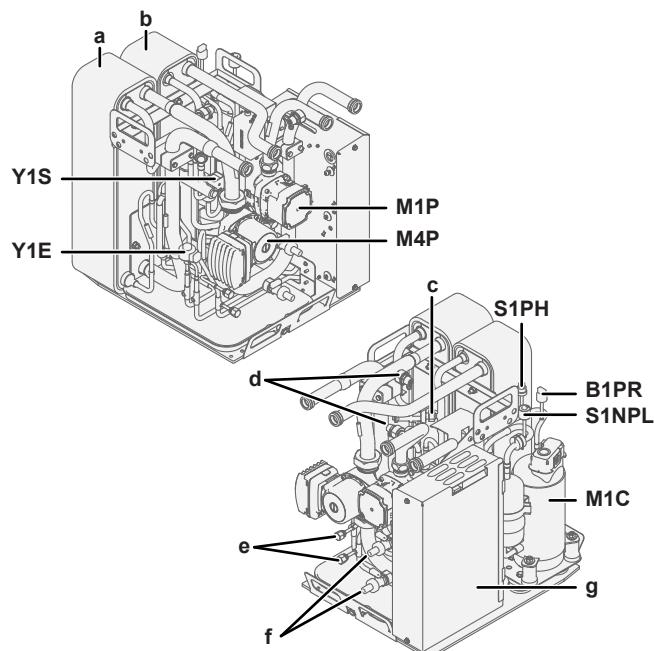
4.3 Components

Top, front and side views



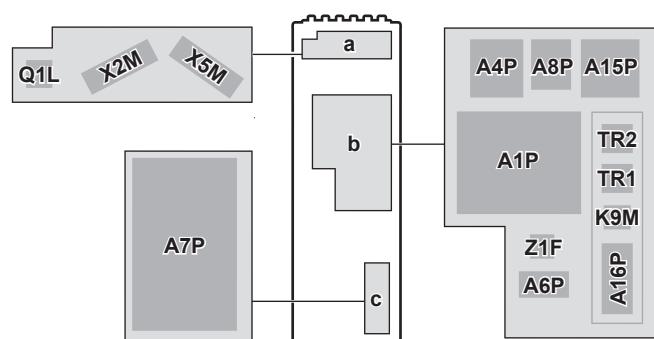
- a1** Space heating/cooling water OUT (Ø22 mm)
- a2** Space heating/cooling water IN (Ø22 mm)
- b1** Domestic hot water: hot water OUT (Ø22 mm)
- b2** Domestic hot water: cold water IN (Ø22 mm)
- c1** Brine OUT (Ø28 mm)
- c2** Brine IN (Ø28 mm)
- d** Low voltage wiring intake (Ø13.5 mm)
- e** Recirculation connection (3/4" G female)
- f** Safety valve (space heating/cooling water circuit)
- g** Automatic air purge valve
- h** High voltage wiring intake (Ø24 mm)
- i** User interface
- i1** Status indicator
- i2** LCD screen
- i3** Dials and buttons
- j** Main switch box
- k** Backup heater
- l** Shut-off valves
- m** Hydro module
- n** Levelling feet
- o** Drain hose (unit + safety valve)
- p** Tundish (safety relief valve discharge)
- q** Safety relief valve (DHW tank)
- B1L** Flow sensor
- B1PW** Space heating water pressure sensor
- M3S** 3-way valve (space heating/domestic hot water)

Hydro module



- a** Plate heat exchanger – Brine side
- b** Plate heat exchanger – Water side
- c** Refrigerant pressure relief valve
- d** Manual air purge valve
- e** Service port (5/16" flare)
- f** Drain valve
- g** Inverter switch box (only for service)
- B1PR** Refrigerant high pressure sensor
- M1C** Compressor
- M1P** Water pump
- M4P** Brine pump
- S1NPL** Low pressure sensor
- S1PH** High pressure switch
- Y1E** Electronic expansion valve
- Y1S** Solenoid valve (4-way valve)

Switch boxes



- a** Installer switch box
- b** Main switch box
- c** Inverter switch box (only for service)
- A1P** Main PCB (hydro)
- A4P** Option EKRP1HBAA: Digital I/O PCB
- A6P** Backup heater control PCB
- A7P** Inverter PCB
- A8P** Option EKRP1AHTA: Demand PCB
- A15P** LAN adapter
- A16P** ACS digital I/O PCB
- K9M** Thermal protector backup heater relay
- Q1L** Thermal protector backup heater
- TR1, TR2** Power supply transformer
- X2M** Terminal strip – High voltage
- X5M** Terminal strip – Low voltage

4.4 Possible options for the indoor unit

Digital I/O PCB (EKRP1HBAA)

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

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

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

Demand PCB (EKRP1AHTA)

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

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

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.

Remote indoor sensor (KRC501-1)

By default the internal sensor of the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat) 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.

PC cable (EKPCAB4)

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.

Heat pump convector (FWXV)

For providing space heating/cooling, it is possible to use heat pump convectors (FWXV).

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

Room thermostat (EKRTWA, EKRTR1)

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

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

Remote sensor for wireless thermostat (EKRTETS)

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

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

Brine filling kit (KGSFILL2)

Brine filling valve kit for flushing, filling, and draining the brine circuit.

Current sensor (EKCSENS)

Current sensor for power limitation. For installation instructions, see the installation manual of the current sensor.

Hydro module (EKGSHYDMOD)

Hydro module replacement.

For installation instructions, see the installation manual of the hydro module.

Power cable with connector for Germany (EKGSPOWCAB)

Power cable for split power supply layout, needed for installations in Germany.

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

Multi-zoning base unit and wired thermostats (EKWUFHTA1V3, EKWCTRDI1V3, EKWCTTRAN1V3)

Multi-zoning base unit (EKWUFHTA1V3) and thermostats for multi zone control of underfloor heating and radiators. Both digital (EKWCTRDI1V3) and analog (EKWCTTRAN1V3) wired thermostat options are available.

For more information, see the installation manual of the multi-zoning base unit and the applicable thermostat.

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 "[10 Configuration](#)" [▶ 128].

This chapter contains application guidelines for:

- Setting up the space heating/cooling system
- Setting up an auxiliary heat source for space heating
- Setting up the domestic hot water tank
- Setting up the energy metering
- Setting up the power consumption control
- Setting up an external temperature sensor
- Setting up passive cooling
- Setting up the brine low pressure switch

5.2 Setting up the space heating/cooling system

The 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 or cooled by the heat pump system?
- Which heat emitter types are used in each room and what is their design leaving water temperature?

Once the space heating/cooling requirements are clear, we recommend to follow the setup guidelines below.



NOTICE

If an external room thermostat is used, the external room thermostat will control the room frost protection. However, the room frost protection is only possible if [C.2] **Space heating/cooling=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**.

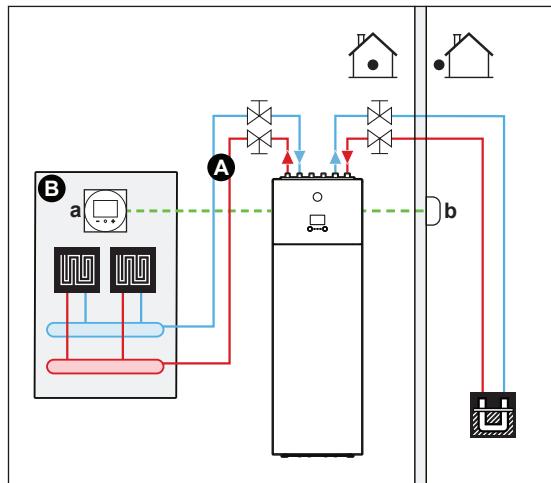
**NOTICE**

An overpressure bypass valve can be integrated in the system. Keep in mind that this valve might not be shown on the illustrations.

5.2.1 Single room

Underfloor heating or radiators – Wired room thermostat

Setup



- A Main leaving water temperature zone
- B One single room
- a Dedicated Human Comfort Interface (BRC1HHDA used as room thermostat)
- b Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- The underfloor heating or radiators are directly connected to the indoor unit.
- The room temperature is controlled by the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat).

Configuration

| Setting | Value |
|--|---|
| Unit temperature control: <ul style="list-style-type: none"> ▪ #: [2.9] ▪ Code: [C-07] | 2 (Room thermostat): Unit operation is decided based on the ambient temperature of the dedicated Human Comfort Interface. |
| Number of water temperature zones: <ul style="list-style-type: none"> ▪ #: [4.4] ▪ Code: [7-02] | 0 (Single zone): Main |

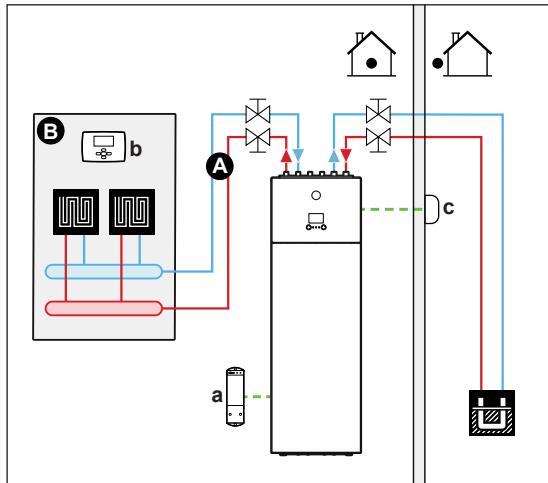
Benefits

- **Highest comfort and efficiency.** The smart room thermostat functionality can decrease or increase the desired leaving water temperature based on the actual room temperature (modulation). This results in:
 - Stable room temperature matching the desired temperature (higher comfort)
 - Less ON/OFF cycles (more quiet, higher comfort and higher efficiency)
 - Lowest possible leaving water temperature (higher efficiency)

- **Easy.** You can easily set the desired room temperature via the user interface:
 - For your daily needs, you can use preset values and schedules.
 - To deviate from your daily needs, you can temporarily overrule the preset values and schedules, or use the holiday mode.

Underfloor heating or radiators – Wireless room thermostat

Setup



- A** Main leaving water temperature zone
- B** One single room
- a** Receiver for wireless external room thermostat
- b** Wireless external room thermostat
- c** Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- The underfloor heating or radiators are directly connected to the indoor unit.
- The room temperature is controlled by the wireless external room thermostat (optional equipment EKRTR1).

Configuration

| Setting | Value |
|--|--|
| Unit temperature control: ▪ #: [2.9] ▪ Code: [C-07] | 1 (External room thermostat): Unit operation is decided by the external thermostat. |
| Number of water temperature zones: ▪ #: [4.4] ▪ Code: [7-02] | 0 (Single zone): Main |
| External room thermostat for the main zone: ▪ #: [2.A] ▪ Code: [C-05] | 1 (1 contact): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. No separation between heating or cooling demand. |

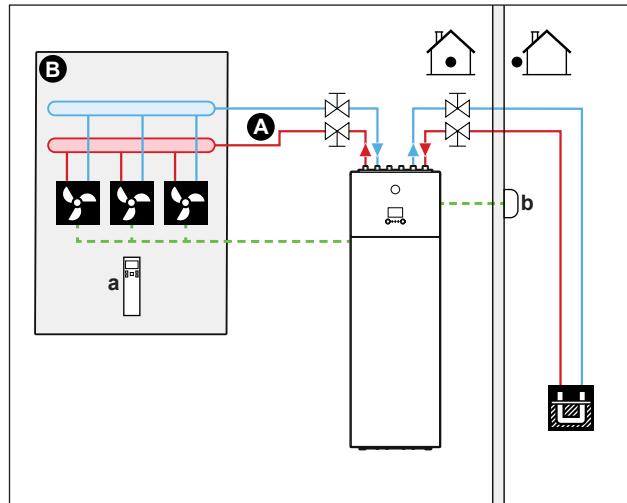
Benefits

- **Wireless.** The Daikin external room thermostat is available in a wireless version.

- **Efficiency.** Although the external room thermostat only sends ON/OFF signals, it is specifically designed for the heat pump system.
- **Comfort.** In case of underfloor heating, the wireless external room thermostat prevents condensation on the floor during cooling operation by measuring the room humidity.

Heat pump convectors

Setup



- A Main leaving water temperature zone
- B One single room
- a Remote controller of the heat pump convectors
- b Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- The heat pump convectors are directly connected to the indoor unit.
- The desired room temperature is set via the remote controller of the heat pump convectors.
- The space heating/cooling demand signal is sent to one digital input on the indoor unit (X2M/35 and X2M/30).
- The space operation mode is sent to the heat pump convectors by one digital output on the indoor unit (X2M/4 and X2M/3).



INFORMATION

When using multiple heat pump convectors, make sure each one receives the infrared signal from the remote controller of the heat pump convectors.

Configuration

| Setting | Value |
|--|--|
| Unit temperature control: ▪ #: [2.9] ▪ Code: [C-07] | 1 (External room thermostat): Unit operation is decided by the external thermostat. |
| Number of water temperature zones: ▪ #: [4.4] ▪ Code: [7-02] | 0 (Single zone): Main |

| Setting | Value |
|--|--|
| External room thermostat for the main zone: ▪ #: [2.A] ▪ Code: [C-05] | 1 (1 contact): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. No separation between heating or cooling demand. |

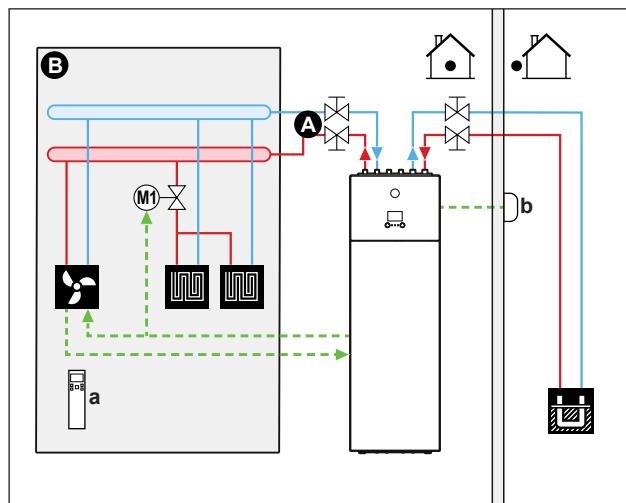
Benefits

- **Cooling.** The heat pump convector offers, besides heating capacity, also excellent cooling capacity.
- **Efficiency.** Optimal energy efficiency because of the interlink function.
- **Stylish.**

Combination: Underfloor heating + Heat pump convectors

- Space heating is provided by:
 - The underfloor heating
 - The heat pump convectors
- Space cooling is provided by the heat pump convectors only. The underfloor heating is shut off by the shut-off valve.

Setup



A Main leaving water temperature zone
B One single room
a Remote controller of the heat pump convectors
b Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "[8.2 Overview of electrical connections for external and internal actuators](#)" [▶ 80].
- The heat pump convectors are directly connected to the indoor unit.
- A shut-off valve (field supply) is installed before the underfloor heating to prevent condensation on the floor during cooling operation.
- The desired room temperature is set via the remote controller of the heat pump convectors.
- The space heating/cooling demand signal is sent to one digital input on the indoor unit (X2M/35 and X2M/30).

- The space operation mode is sent by one digital output (X2M/4 and X2M/3) on the indoor unit to:
 - The heat pump convectors
 - The shut-off valve

Configuration

| Setting | Value |
|--|---|
| Unit temperature control: <ul style="list-style-type: none"> #: [2.9] Code: [C-07] | 1 (External room thermostat): Unit operation is decided by the external thermostat. |
| Number of water temperature zones: <ul style="list-style-type: none"> #: [4.4] Code: [7-02] | 0 (Single zone): Main |
| External room thermostat for the main zone: <ul style="list-style-type: none"> #: [2.A] Code: [C-05] | 1 (1 contact): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. No separation between heating or cooling demand. |

Benefits

- Cooling.** Heat pump convectors provide, besides heating capacity, also excellent cooling capacity.
- Efficiency.** Underfloor heating has the best performance with the heat pump system.
- Comfort.** The combination of the two heat emitter types provides:
 - The excellent heating comfort of the underfloor heating
 - The excellent cooling comfort of the heat pump convectors

5.2.2 Multiple rooms – One LWT zone

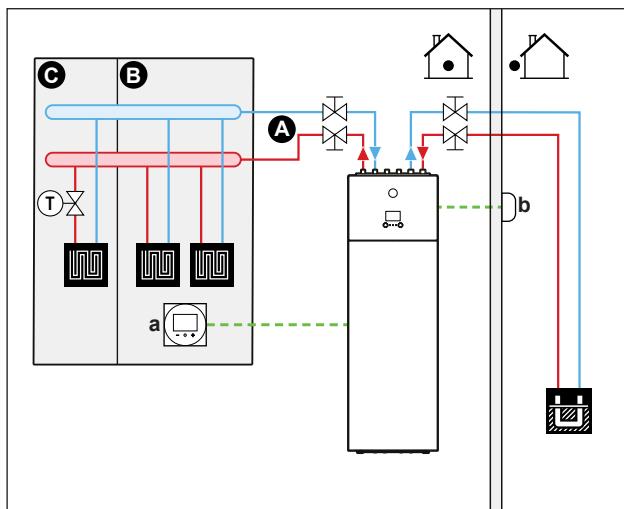
If only one leaving water temperature zone is needed because the design leaving water temperature of all heat emitters is the same, you do NOT need a mixing valve station (cost effective).

Example: If the heat pump system is used to heat up one floor where all the rooms have the same heat emitters.

Underfloor heating or radiators – Thermostatic valves

If you are heating up rooms with underfloor heating or radiators, a very common way is to control the temperature of the main room by using a thermostat (this can either be the dedicated Human Comfort Interface (BRC1HHDA) or an external room thermostat), while the other rooms are controlled by so-called thermostatic valves, which open or close depending on the room temperature.

Setup



- A** Main leaving water temperature zone
- B** Room 1
- C** Room 2
- a** Dedicated Human Comfort Interface (BRC1HHDA used as room thermostat)
- b** Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- The underfloor heating of the main room is directly connected to the indoor unit.
- The room temperature of the main room is controlled by the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat).
- A thermostatic valve is installed before the underfloor heating in each of the other rooms.



INFORMATION

Mind situations where the main room can be heated by another heating source.
Example: Fireplaces.

Configuration

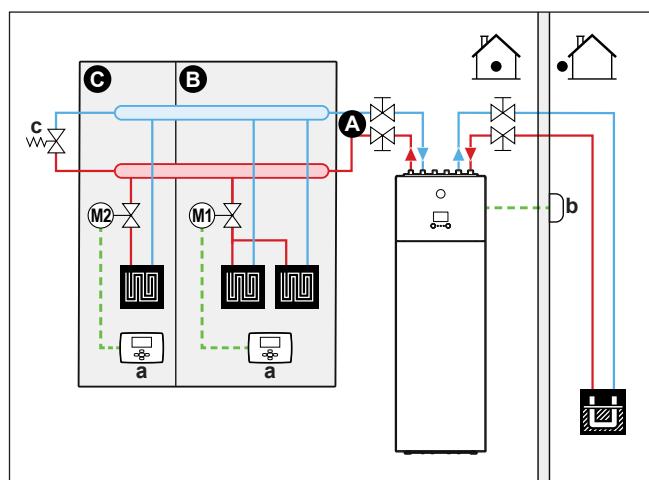
| Setting | Value |
|--|---|
| Unit temperature control: ▪ #: [2.9] ▪ Code: [C-07] | 2 (Room thermostat): Unit operation is decided based on the ambient temperature of the dedicated Human Comfort Interface. |
| Number of water temperature zones: ▪ #: [4.4] ▪ Code: [7-02] | 0 (Single zone): Main |

Benefits

- **Easy.** Same installation as for one room, but with thermostatic valves.

Underfloor heating or radiators – Multiple external room thermostats

Setup



A Main leaving water temperature zone
B Room 1
C Room 2
a External room thermostat
b Remote outdoor sensor
c Bypass valve

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- For each room, a shut-off valve (field supplied) is installed to avoid leaving water supply when there is no heating or cooling demand.
- A bypass valve must be installed to make water recirculation possible when all shut-off valves are closed.
- The user interface integrated in the indoor unit decides the space operation mode. Mind that the operation mode on each room thermostat must be set to match the indoor unit.
- The room thermostats are connected to the shut-off valves, but do NOT have to be connected to the indoor unit. The indoor unit will supply leaving water all the time, with the possibility to program a leaving water schedule.

Configuration

| Setting | Value |
|--|--|
| Unit temperature control: <ul style="list-style-type: none"> #: [2.9] Code: [C-07] | 0 (Leaving water): Unit operation is decided based on the leaving water temperature. |
| Number of water temperature zones: <ul style="list-style-type: none"> #: [4.4] Code: [7-02] | 0 (Single zone): Main |

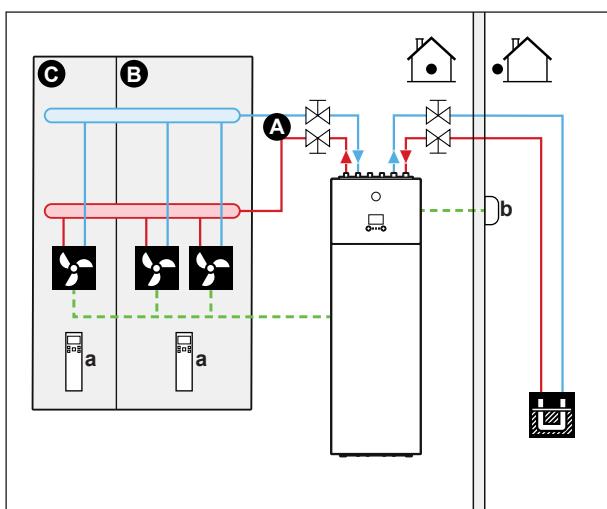
Benefits

Compared with underfloor heating or radiators for one room:

- Comfort.** You can set the desired room temperature, including schedules, for each room via the room thermostats.

Heat pump convectors – Multiple rooms

Setup



- A** Main leaving water temperature zone
- B** Room 1
- C** Room 2
- a** Remote controller of the heat pump convectors
- b** Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- The desired room temperature is set via the remote controller of the heat pump convectors.
- The user interface integrated in the indoor unit decides the space operation mode.
- The heating or cooling demand signals of each heat pump convector are connected in parallel to the digital input on the indoor unit (X2M/35 and X2M/30). The indoor unit will only supply leaving water temperature when there is an actual demand.



INFORMATION

To increase comfort and performance, we recommend to install the valve kit option EKVKHPC on each heat pump convector.

Configuration

| Setting | Value |
|--|--|
| Unit temperature control: ▪ #: [2.9] ▪ Code: [C-07] | 1 (External room thermostat): Unit operation is decided by the external thermostat. |
| Number of water temperature zones: ▪ #: [4.4] ▪ Code: [7-02] | 0 (Single zone): Main |

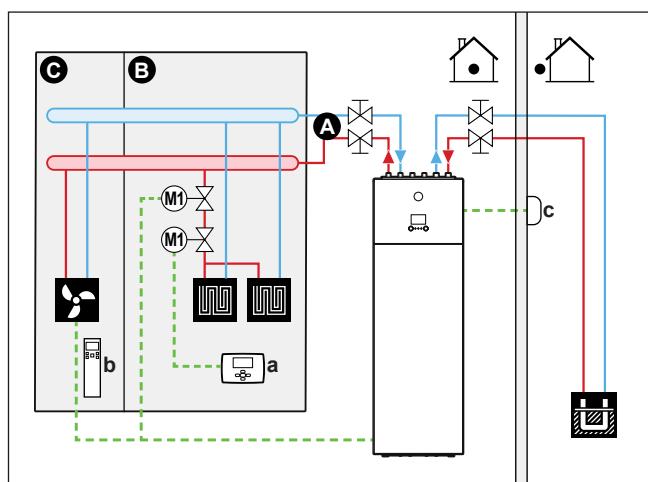
Benefits

Compared with heat pump convectors for one room:

- **Comfort.** You can set the desired room temperature, including schedules, for each room via the remote controller of the heat pump convectors.

Combination: Underfloor heating + Heat pump convectors – Multiple rooms

Setup



- A** Main leaving water temperature zone
- B** Room 1
- C** Room 2
- a** External room thermostat
- b** Remote controller of the heat pump convectors
- c** Remote outdoor sensor

- For more information about connecting the electrical wiring to the unit, see "8.2 Overview of electrical connections for external and internal actuators" [▶ 80].
- For each room with heat pump convectors: The heat pump convectors are directly connected to the indoor unit.
- For each room with underfloor heating: Two shut-off valves (field supply) are installed before the underfloor heating:
 - A shut-off valve to prevent hot water supply when the room has no heating demand
 - A shut-off valve to prevent condensation on the floor during cooling operation of the rooms with heat pump convectors.
- For each room with heat pump convectors: The desired room temperature is set via the remote controller of the heat pump convectors.
- For each room with underfloor heating: The desired room temperature is set via the external room thermostat (wired or wireless).
- The user interface integrated in the indoor unit decides the space operation mode. Mind that the operation mode on each external room thermostat and remote controller of the heat pump convectors must be set to match the indoor unit.



INFORMATION

To increase comfort and performance, we recommend to install the valve kit option EKVKHPC on each heat pump convector.

Configuration

| Setting | Value |
|--|--|
| Unit temperature control: <ul style="list-style-type: none"> ▪ #: [2.9] ▪ Code: [C-07] | 0 (Leaving water): Unit operation is decided based on the leaving water temperature. |

| Setting | Value |
|--|-----------------------|
| Number of water temperature zones: ▪ #: [4.4] ▪ Code: [7-02] | 0 (Single zone): Main |

5.2.3 Multiple rooms – Two LWT zones

If the heat emitters selected for each room are designed for different leaving water temperatures, you can use different leaving water temperature zones (maximum 2).

In this document:

- Main zone = Zone with the lowest design temperature in heating, and the highest design temperature in cooling
- Additional zone = Zone with the highest design temperature in heating, and the lowest design temperature in cooling



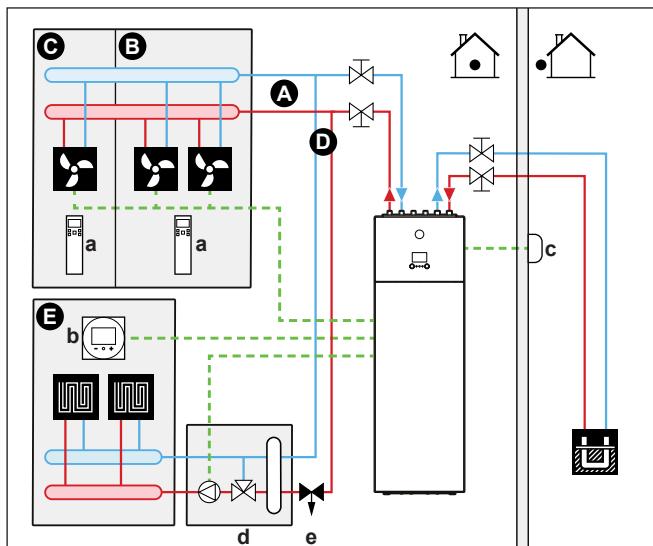
CAUTION

If there is more than one leaving water zone, ALWAYS install a mixing valve station in the main zone to decrease (in heating) the leaving water temperature when the additional zone has demand.

Typical example:

| Room (zone) | Heat emitters: Design temperature |
|-----------------------------|---|
| Living room (main zone) | Underfloor heating: ▪ In heating: 35°C ▪ In cooling: 20°C (only refreshment, no real cooling allowed) |
| Bed rooms (additional zone) | Heat pump convectors: ▪ In heating: 45°C ▪ In cooling: 12°C |

Setup



A Additional leaving water temperature zone
B Room 1
C Room 2

- D** Main leaving water temperature zone
- E** Room 3
- a** Remote controller of the heat pump convectors
- b** Dedicated Human Comfort Interface (BRC1HHDA used as room thermostat)
- c** Remote outdoor sensor
- d** Mixing valve station
- e** Pressure regulating valve



INFORMATION

A pressure regulating valve should be implemented before the mixing valve station. This is to guarantee the correct water flow balance between the main leaving water temperature zone and the additional leaving water temperature zone in relation to the required capacity of both water temperature zones.

- For more information about connecting the electrical wiring to the unit, see "[8.2 Overview of electrical connections for external and internal actuators](#)" [▶ 80].
- For the main zone:
 - A mixing valve station is installed before the underfloor heating.
 - The pump of the mixing valve station is controlled by the ON/OFF signal on the indoor unit (X2M/29 and X2M/21; normally closed shut-off valve output).
 - The room temperature is controlled by the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat).
- For the additional zone:
 - The heat pump convectors are directly connected to the indoor unit.
 - The desired room temperature is set via the remote controller of the heat pump convectors for each room.
 - The heating or cooling demand signals of each heat pump convector are connected in parallel 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.
- The user interface integrated in the indoor unit decides the space operation mode. Mind that the operation mode on each remote controller of the heat pump convectors must be set to match the indoor unit.

Configuration

| Setting | Value |
|---|--|
| Unit temperature control: <ul style="list-style-type: none"> ▪ #: [2.9] ▪ Code: [C-07] | 2 (Room thermostat): Unit operation is decided based on the ambient temperature of the dedicated Human Comfort Interface. Note: <ul style="list-style-type: none"> ▪ Main room = dedicated Human Comfort Interface used as room thermostat functionality ▪ Other rooms = external room thermostat functionality |
| Number of water temperature zones: <ul style="list-style-type: none"> ▪ #: [4.4] ▪ Code: [7-02] | 1 (Dual zone): Main + additional |

| Setting | Value |
|--|--|
| In case of heat pump convectors: External room thermostat for the additional zone: ▪ #: [3.A] ▪ Code: [C-06] | 1 (1 contact): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. No separation between heating or cooling demand. |
| Shut-off valve output | Set to follow the thermo demand of the main zone. |
| Shut-off valve | If the main zone must be shut off during cooling mode to prevent condensation on the floor, set it accordingly. |
| At the mixing valve station | Set the desired main leaving water temperature for heating and/or cooling. |

Benefits

▪ Comfort.

- The smart room thermostat functionality can decrease or increase the desired leaving water temperature based on the actual room temperature (modulation).
- The combination of the two heat emitter systems provides the excellent heating comfort of the underfloor heating, and the excellent cooling comfort of the heat pump convectors.

▪ Efficiency.

- Depending on the demand, the indoor unit supplies different leaving water temperature matching the design temperature of the different heat emitters.
- Underfloor heating has the best performance with the heat pump system.

5.3 Setting up 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.

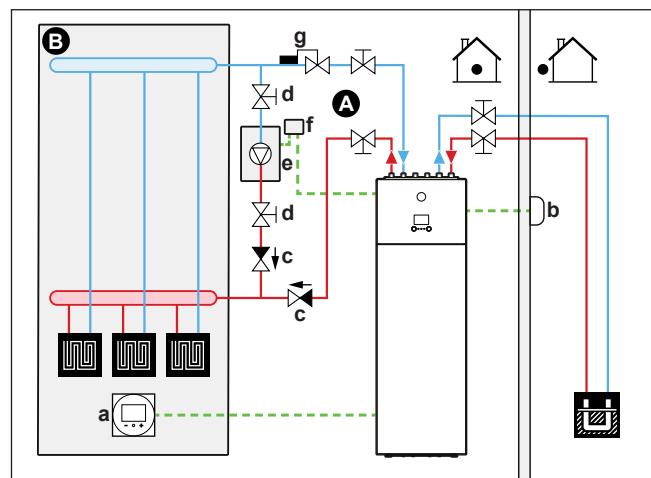


INFORMATION

- 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

- Integrate the auxiliary boiler as follows:



- A** Main leaving water temperature zone
- B** One single room
- a** Dedicated Human Comfort Interface (BRC1HHDA used as room thermostat)
- b** Remote outdoor sensor
- c** Non-return valve (field supply)
- d** Shut-off valve (field supply)
- e** Auxiliary boiler (field supply)
- f** Auxiliary boiler thermostat (field supply)
- g** Aquastat valve (field supply)

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. The indoor unit does NOT contain an expansion vessel.
- Install the digital I/O PCB (option EKRP1HBAA).
- Connect X1 and X2 (changeover to external heat source) on the digital I/O PCB to the auxiliary boiler thermostat. See "[8.2.8 To connect the changeover to external heat source](#)" [▶ 94].
- To setup the heat emitters, see "[5.2 Setting up the space heating/cooling system](#)" [▶ 24].

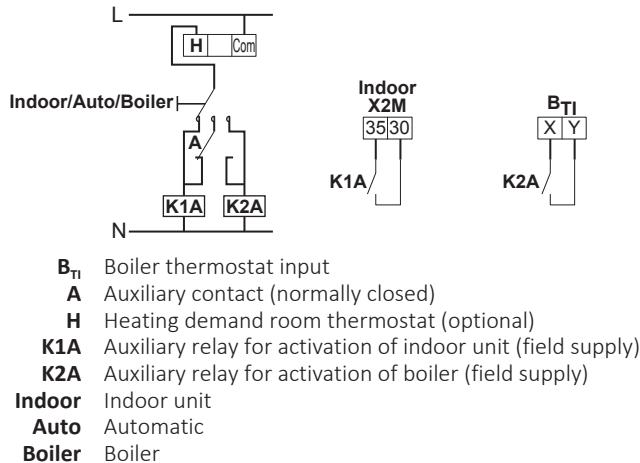
Configuration

Via the user interface (configuration 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

- Only possible in external room thermostat control AND one leaving water temperature zone (see "5.2 Setting up the space heating/cooling system" [▶ 24]).
- The auxiliary contact can be:
 - An outdoor temperature thermostat
 - An electricity tariff contact
 - A manually operated contact
 - ...
- Setup: Connect the following field wiring:

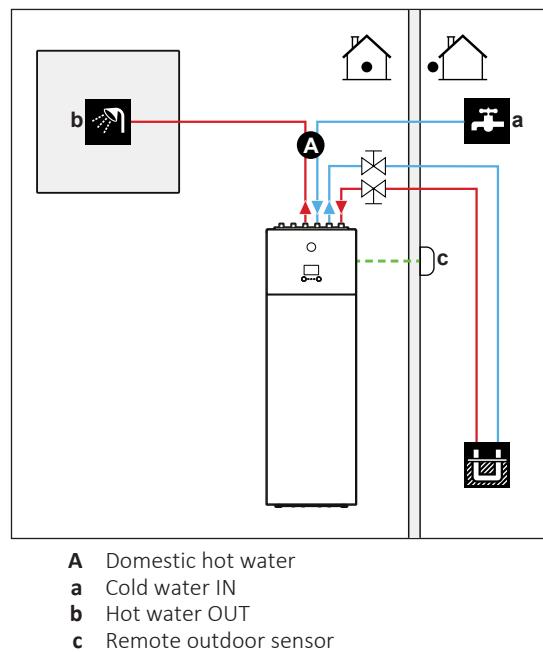


NOTICE

- 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.

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 = $(3 \times 100 \text{ l}) + (1 \times 150 \text{ l}) + (3 \times 10 \text{ l}) = 480 \text{ l}$

Determining the desired temperature for the DHW tank

| Formula | Example |
|--|--|
| $V_1 = V_2 + V_2 \times (T_2 - 40) / (40 - T_1)$ | <p>If:</p> <ul style="list-style-type: none"> ▪ $V_2 = 180 \text{ l}$ ▪ $T_2 = 54^\circ\text{C}$ ▪ $T_1 = 15^\circ\text{C}$ <p>Then $V_1 = 280 \text{ l}$</p> |

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

DHW tank volume

Integrated DHW tank volume: 180 l ($=V_2$)



INFORMATION

DHW tank volume. You cannot select the volume of the DHW tank because only one size is available.

Energy saving tips

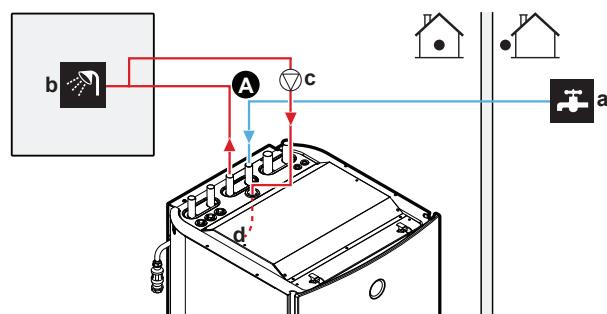
- If the DHW consumption differs from day to day, you can program a weekly schedule with different desired DHW tank temperatures for each day.
- The lower the desired DHW tank temperature, the more cost effective.
- The heat pump itself can produce domestic hot water of maximum 55°C. The electrical resistance (backup heater) integrated in the heat pump can increase this temperature. However, this consumes more energy. We recommend to set the desired DHW tank temperature below 55°C to avoid using the electrical resistance.
- When the heat pump produces domestic hot water, it cannot heat up a space. In case you need domestic hot water and space heating at the same, we recommend to produce the domestic hot water during the night when there is lower space heating demand.

5.4.3 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 "[10 Configuration](#)" [▶ 128].

5.4.4 DHW pump for instant hot water

Setup



A Domestic hot water
a Cold water IN
b Domestic hot water OUT (shower (field supply))
c DHW pump (field supply)
d Recirculation connection

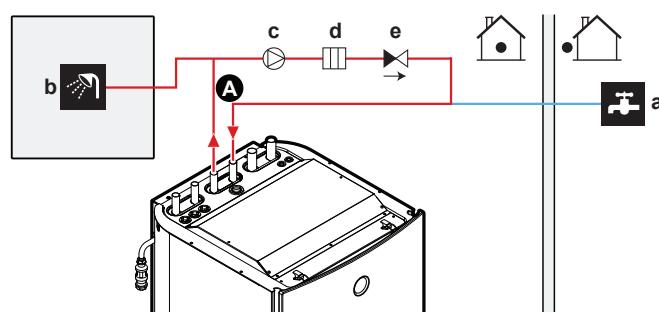
- By connecting a DHW pump, instant hot water can be available at the tap.
- The DHW pump and the installation are field supply and the responsibility of the installer. For the electrical wiring, see "8.2.5 To connect the domestic hot water pump" [▶ 90].

Configuration

- For more information, see "10 Configuration" [▶ 128].
- 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



A Domestic hot water
a Cold water IN
b Domestic hot water OUT (shower (field supply))
c DHW pump (field supply)
d Heater element (field supply)
e Non-return valve (field supply)

- The DHW pump is field-supplied and its installation is the responsibility of the installer. For the electrical wiring, see "8.2.5 To connect the domestic hot water pump" [▶ 90].
- If the applicable legislation requires a higher temperature than the maximum tank setpoint during disinfection (see [2-03] in the field settings table), 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.

Configuration

The indoor unit can control DHW pump operation. For more information, see "[10 Configuration](#)" [▶ 128].

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 space cooling
 - 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 the backup heater) and measuring the consumed energy (example: for the rest of the 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 indoor unit
 - The set capacity of the backup heater
 - The voltage
- Setup and configuration: None.

Measuring the consumed energy

- 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.

Power supply layouts with power meters

In most cases, one power meter that measures the entire system (compressor, backup heater and hydro) is sufficient.

| Power meter | Measures | Type | Connection |
|-------------|---------------|--|------------|
| 1 | Entire system | 1N~ or 3N~ depending on the backup heater | X5M/5+6 |

In case of the following combination, you need 2 power meters:

- Dual cable power supply (= split power supply)
- + Preferential kWh rate power supply with separate normal kWh rate power supply

| Power meter | Measures ⁽¹⁾ | Type | Connection |
|-------------|-------------------------|--|------------|
| 1 | Hydro and backup heater | 1N~ or 3N~ depending on the backup heater | X5M/5+6 |
| 2 | Compressor | 1N~ | X5M/3+4 |

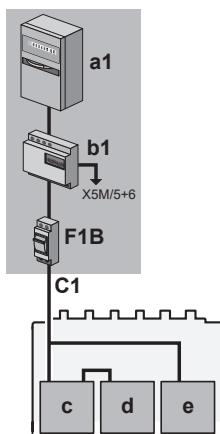
(1) In the software the power consumption data of both meters is added so you do NOT have to set which meter covers which power consumption.

Exceptional cases. You can also use a second power meter if:

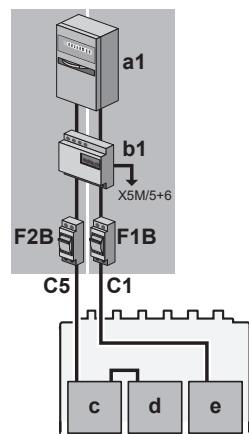
- The power range of one meter is insufficient.
- The power meter cannot easily be installed in the electrical cabinet.
- 230 V and 400 V three-phase grids are combined (very uncommon), because of technical limitations of power meters.

Examples of power supply layouts with power meters

#1: Single cable power supply (= combined power supply)



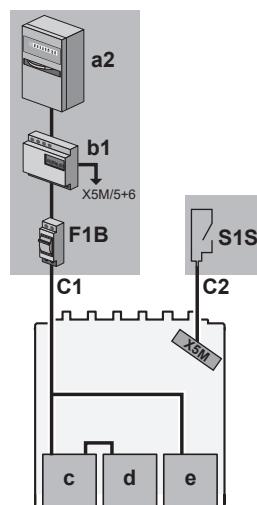
#2: Dual cable power supply (= split power supply)



#3: Single cable power supply (= combined power supply)

+

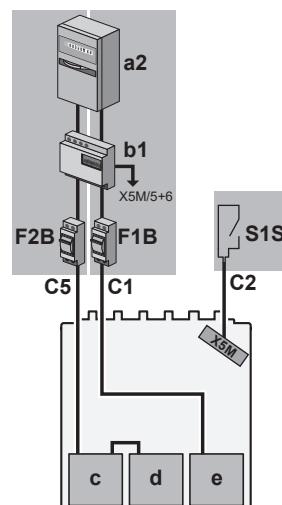
Preferential kWh rate power supply without separate normal kWh rate power supply

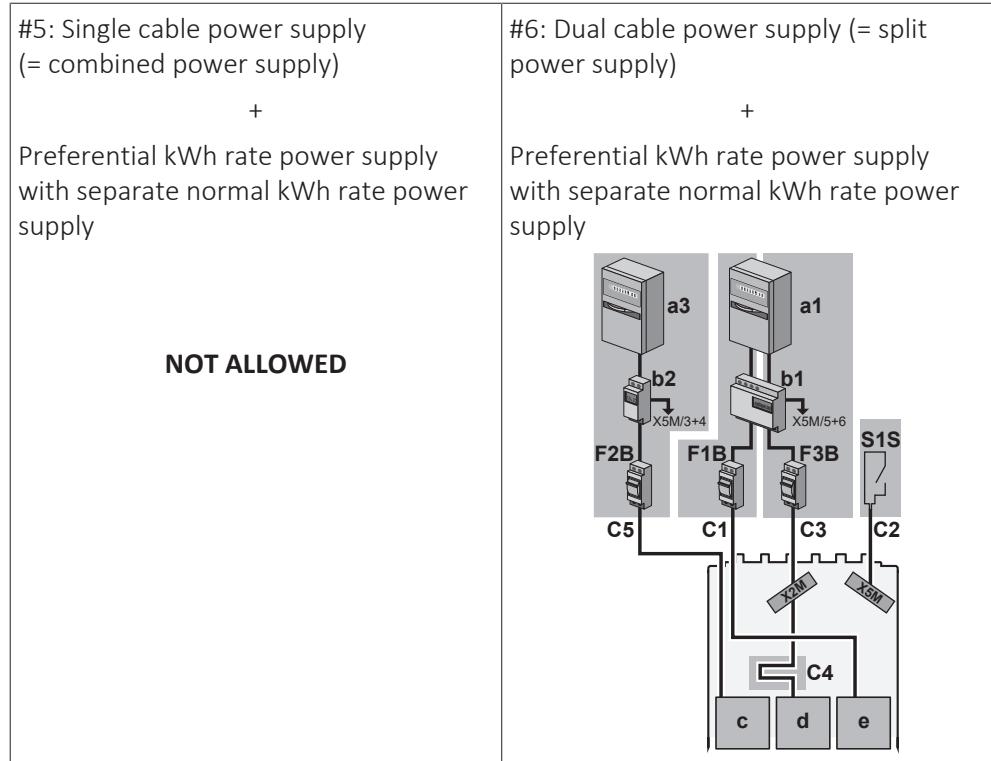


#4: Dual cable power supply (= split power supply)

+

Preferential kWh rate power supply without separate normal kWh rate power supply





Legend:

| | |
|--|---|
| a | Electrical cabinet: |
| a1 | Normal kWh rate power supply (1N~ or 3N~ depending on the backup heater) |
| | Preferential kWh rate power supply (1N~ or 3N~ depending on the backup heater) |
| | Preferential kWh rate power supply (1N~) |
| b | b1 Power meter 1 (1N~ or 3N~ depending on the backup heater) |
| | b2 Power meter 2 (1N~) |
| For details about connecting the power meters to the unit, see " 8.2.4 To connect the electricity meters " [▶ 90]. | |
| c | Compressor (1N~) |
| d | Hydro (1N~) |
| e | Backup heater (1N~ or 3N~) |
| C1~C5 | For details about C1~C5 , see " 8.2.1 To connect the main power supply " [▶ 82]. |
| F1B~F3B | Overcurrent fuse |
| S1S | Preferential kWh rate power supply contact |

5.6 Setting up the power consumption control

You can use the following power consumption controls. For more information about the corresponding settings, see "[Power consumption control](#)" [▶ 190].

| # | Power consumption control |
|---|---|
| 1 | <p>"5.6.1 Permanent power limitation" [▶ 46]</p> <ul style="list-style-type: none"> Allows you to limit the power consumption of the entire heat pump system (sum of indoor unit and backup heater) with one permanent setting. Limitation of power in kW or current in A. |
| 2 | <p>"5.6.2 Power limitation activated by digital inputs" [▶ 47]</p> <ul style="list-style-type: none"> Allows you to limit the power consumption of the entire heat pump system (sum of indoor unit and backup heater) via 4 digital inputs. Limitation of power in kW or current in A. |
| 3 | <p>"5.6.4 Current limitation by current sensors" [▶ 48]</p> <ul style="list-style-type: none"> Allows you to limit the current of the household by limiting the current of the heat pump system (sum of indoor unit and backup heater). Limitation of current in A. |
| 4 | <p>"5.6.5 BBR16 power limitation" [▶ 49]</p> <ul style="list-style-type: none"> Restriction: Only available in Swedish language. Allows you to comply with BBR16 regulations (Swedish energy regulations). Limitation of power in kW. Can be combined with the other power consumption controls. If you do so, the unit uses the most restrictive control. |



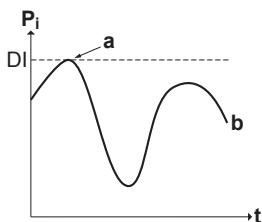
NOTICE

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.



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

Setup and configuration

- No additional equipment needed.

- Set the power consumption control settings in [9.9] via the user interface (see "Power consumption control" [▶ 190]):
 - Select continuous limitation mode
 - Select the type of limitation (power in kW or current in A)
 - Set the desired power limitation level

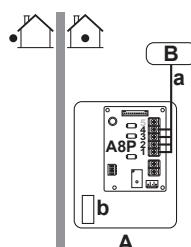
5.6.2 Power limitation activated by digital inputs

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

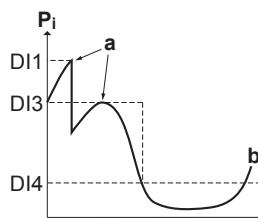
The power or current of the entire Daikin system is limited dynamically by digital inputs (maximum four steps). Each power limitation level is set via the user interface by limiting one of the following:

- 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...).



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



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

Setup

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

Configuration

- Set the power consumption control settings in [9.9] via the user interface (for the description of all settings, see "Power consumption control" [▶ 190]):
 - 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.

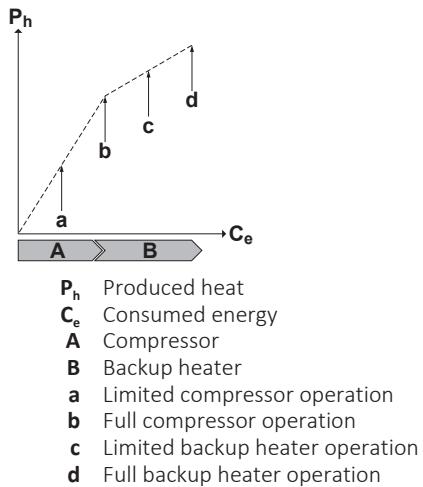
5.6.3 Power limitation process

The compressor 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 Limits the backup heater.
- 2 Turns OFF the backup heater.
- 3 Limits the compressor.
- 4 Turns OFF the compressor.

Example

If the power limitation level does NOT allow operation of full backup heater capacity, then power consumption is limited as follows:



5.6.4 Current limitation by current sensors



INFORMATION

Restriction: Current limitation by current sensors is only available for 3-phase setups ([9.3.2]=2 (Installer settings > Backup heater > Voltage = 400V, 3ph)).

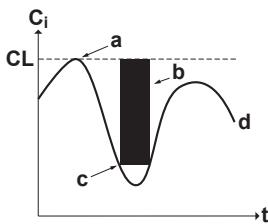


NOTICE

Disconnected sensor. If you use current limitation by current sensors and one of the sensors is disconnected, the corresponding phase is not limited anymore.

Current sensors can be used to limit the consumption of the heat pump on every phase taking into account the set household fuse and the actual consumption of other appliances.

Current sensors must be installed before the main fuses on each phase to make use of this feature. This function can be useful in countries where the government gives incentives to limit the fuse sizes.



Ci Current input
t Time
CL Current limit corresponding to fuse size
a Current limitation active (no external load)
b External load
c Current limitation active (with external load)
d Actual current input

Setup and configuration

| | |
|--|---|
| | See: <ul style="list-style-type: none">The installation manual of the current sensors"To perform a current sensor phase check" [▶ 205] |
| | Wires: 3x2. Use part of the cable (40 m) delivered as accessory. |
| | See "Power consumption control" [▶ 190]: [9.9.1]=3 (Power consumption control = Current sensor) [9.9.E] Current sensor offset |

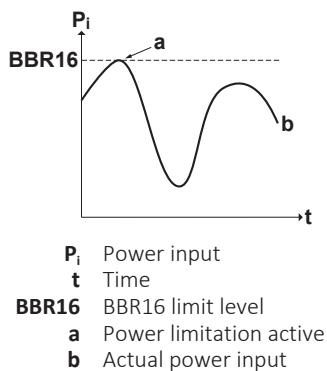
5.6.5 BBR16 power limitation

| | |
|--|--|
| | INFORMATION Restriction: BBR16 settings are only visible when the language of the user interface is set to Swedish. |
|--|--|

| | |
|--|---|
| | NOTICE 2 weeks to change. After you activated BBR16, you only have 2 weeks to change its settings (BBR16 activation and BBR16 power limit). After 2 weeks, the unit freezes these settings. Note: This is different from the permanent power limitation, which is always changeable. |
|--|---|

Use the BBR16 power limitation when you must comply with BBR16 regulations (Swedish energy regulations).

You can combine the BBR16 power limitation with the other power consumption controls. If you do so, the unit uses the most restrictive control.



Setup and configuration

- No additional equipment needed.
- Set the power consumption control settings in [9.9] via the user interface (see "[Power consumption control](#)" [▶ 190]):
 - Activate BBR16
 - Set the desired power limitation level

5.7 Setting up an external temperature sensor

Indoor ambient temperature

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

- In room thermostat control, the dedicated Human Comfort Interface (BRC1HHDA) is used as room thermostat and it measures the indoor ambient temperature. Therefore, the dedicated Human Comfort Interface must be installed on a location:
 - Where the average temperature in the room can be detected
 - That is NOT exposed to direct sunlight
 - That is NOT near a heat source
 - That is NOT affected by outside air or air draught because of, for example, door opening/closing
- If this is NOT possible, we recommend to connect a remote indoor sensor (option KRCS01-1).
- Setup and configuration:

| | |
|--|---|
| | <p>See:</p> <ul style="list-style-type: none"> ▪ Installation manual of the remote indoor sensor ▪ Addendum book for optional equipment |
| | Wires: 2x0.75 mm ² |
| | <p>[9.B.1]=2 (External sensor = Room) [1.7] Room sensor offset</p> |

Outdoor ambient temperature

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

- Setup and configuration: See "[8.2.2 To connect the remote outdoor sensor](#)" [▶ 88] (+ the installation manual of the remote outdoor sensor (delivered as accessory)).

5.8 Setting up passive cooling

i

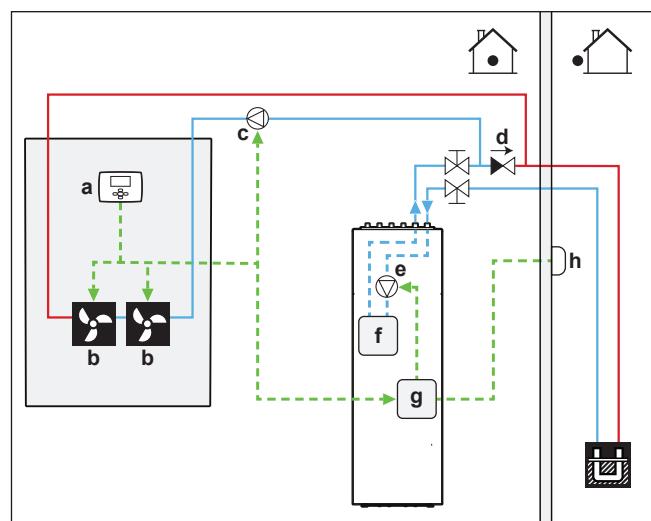
INFORMATION

Restriction: Passive cooling is only possible for:

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

Passive cooling is cooling without using the compressor. Here the brine circuit must be branched over the cooling fan coils.

Setup



- a Thermostat
- b Fan coil units
- c External circulation pump
- d Non-return valve
- e Brine pump
- f Plate heat exchanger
- g Hydro
- h Remote outdoor sensor

- A thermostat input contact creates a demand for the brine pump to run. For more information, see "[8.2.12 To connect the thermostat for passive cooling](#)" [▶ 99].
- An external circulation pump is required and needs to be controlled by the external thermostat.
- A non-return valve must prevent backflow to the inlet of the passive cooling loop and force the brine to go through the borehole.

Configuration

None.

5.9 Setting up the brine low pressure switch

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

The brine low pressure switch can be used to notify the user when there is a leak in the brine circuit. The switch (normally closed) is triggered when the pressure in the brine circuit is lower than the threshold value of the switch.



NOTICE

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



NOTICE

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

If [C-OB]=1 (brine low pressure switch installed), and the brine low pressure switch is triggered, then:

| | |
|--|---|
| Heat pump operation | Stops with error. When the pressure in the brine circuit is restored, a power restart of the system is required. |
| Emergency mode | Activates |
| 10-day brine pump operation Passive cooling Brine pump actuator test run | Interrupts |

If [C-OB]=1 (brine low pressure switch installed), and the connection to the ACS digital I/O PCB is malfunctioning, then:

| | |
|--|--|
| Heat pump operation | Stops with error. When the malfunction is over, the unit resumes operation. |
| Emergency mode | Activates but no heating is possible because the backup heater is disconnected from the ACS digital I/O PCB. |
| 10-day brine pump operation Passive cooling Brine pump actuator test run | Interrupts |

Setup

See "[8.2.11 To connect the brine low pressure switch](#)" [▶ 97].

Configuration

See "[Brine low pressure switch](#)" [▶ 193].

6 Unit installation

6.1 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.



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).

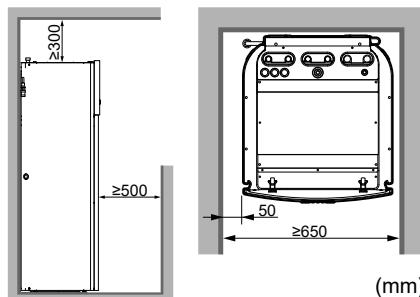
6.1.1 Installation site requirements of the indoor unit



INFORMATION

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

- Mind the following spacing installation guidelines:



INFORMATION

If you have limited installation space and need to install the option kit EKGSPOWCAB (= power cable for split power supply), remove the left side panel before installing the unit in its final position. See "[6.2.2 To open the indoor unit](#)" [55].

- The indoor unit is designed for indoor installation only and for ambient temperatures ranging from 5~35°C.
- 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 $>5^{\circ}\text{C}$.

Special requirements for R32

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

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



WARNING

- Do NOT pierce or burn.
- 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 Opening and closing the unit

6.2.1 About opening the unit

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.

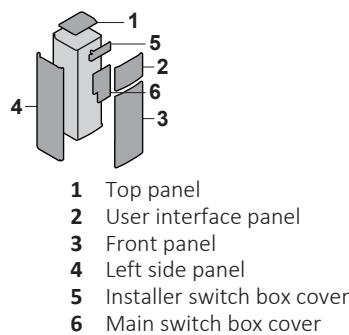


NOTICE

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

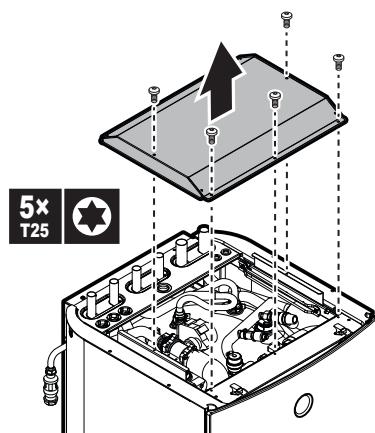
6.2.2 To open the indoor unit

Overview



Open

- 1 Remove the top panel.

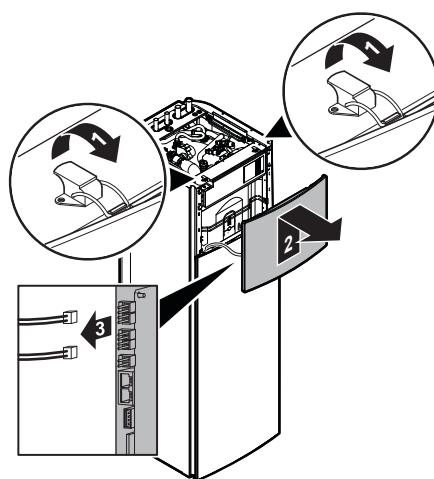


- 2 Remove the user interface panel. Open the hinges at the top and slide the user interface panel upwards.

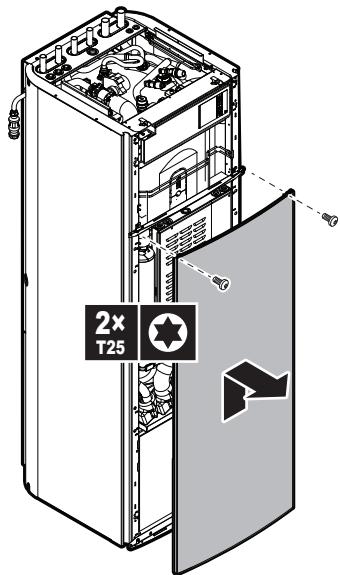


NOTICE

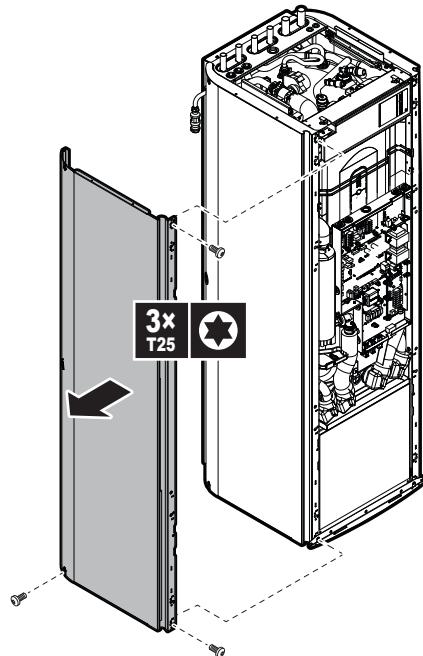
If you remove the user interface panel, also disconnect the cables from the back of the user interface panel to prevent damage.



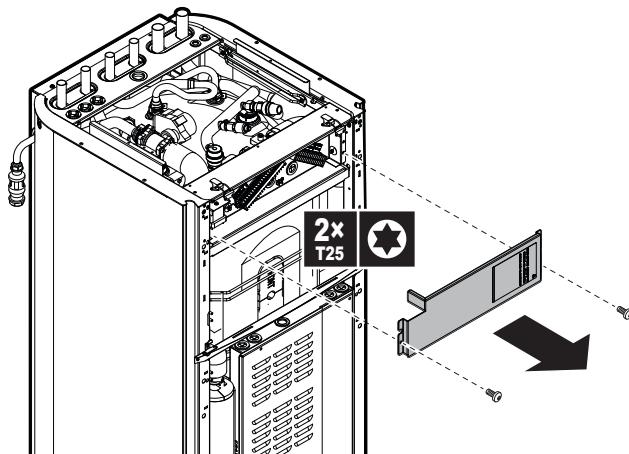
- 3 If necessary, remove the front panel. This is, for example, necessary when you want to remove the hydro module from the unit. See "[6.2.3 To remove the hydro module from the unit](#)" [▶ 57] for more information.



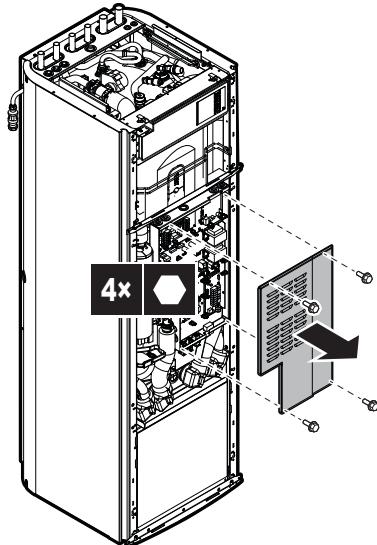
- 4 In case you want to install the option kit EKGSPOWCAB (= power cable for split power supply), also remove the left side panel. Also see "[8.2.1 To connect the main power supply](#)" [▶ 82].



- 5 Open the installer switch box as follows:



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



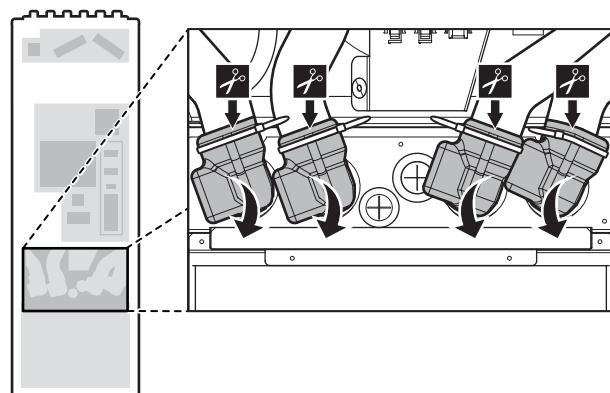
6.2.3 To remove the hydro module from the unit

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

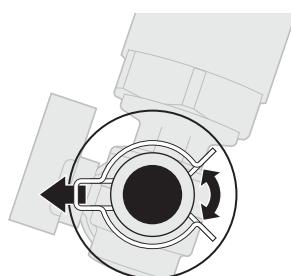
1 Open the following (see "[6.2.2 To open the indoor unit](#)" [55]):

| | | |
|----------|----------------------|--|
| 1 | User interface panel | |
| 2 | Front panel | |

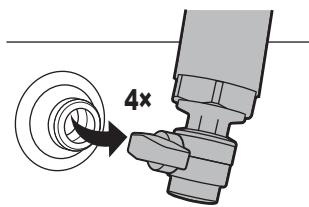
2 Remove the insulation from the shut-off valves by cutting the cable ties.



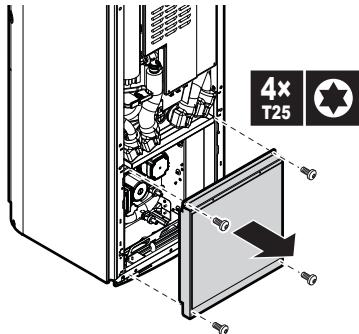
3 Remove the clips that lock the valves in place.



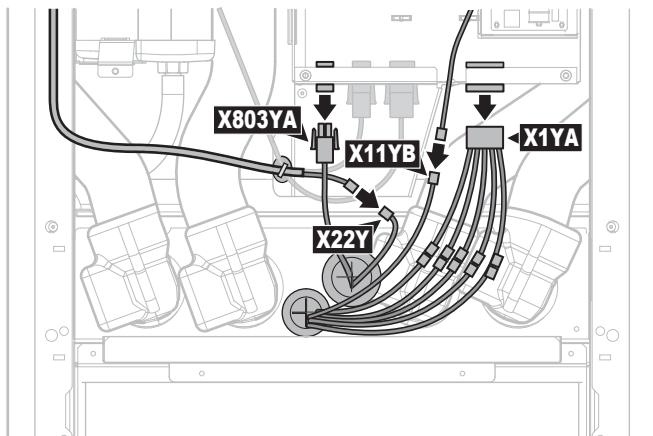
4 Uncouple the piping.



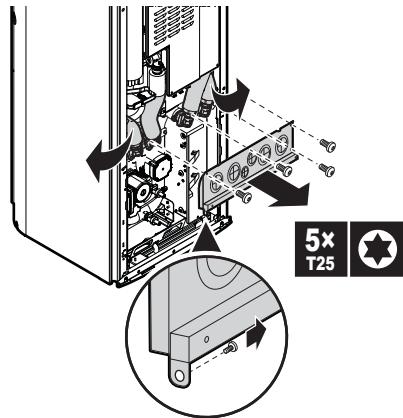
5 Remove the lower hydro module cover.



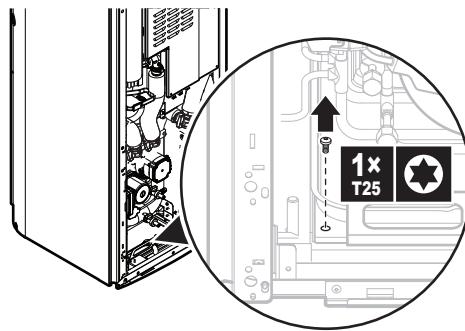
6 Unlink the connectors that run from the hydro module to the main switch box or other locations. Route the wires through the grommets of the upper hydro module cover.



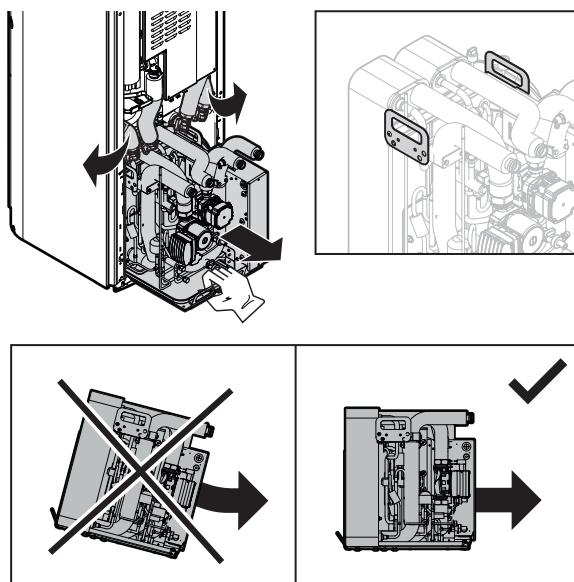
7 Remove the upper hydro module cover. You can lift up the uncoupled piping to access the screws more easily, and to take off the cover itself.



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



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



CAUTION

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



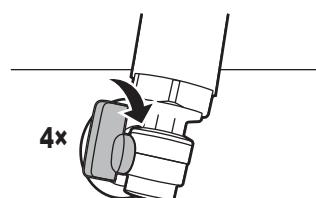
NOTICE

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

Removal after first installation

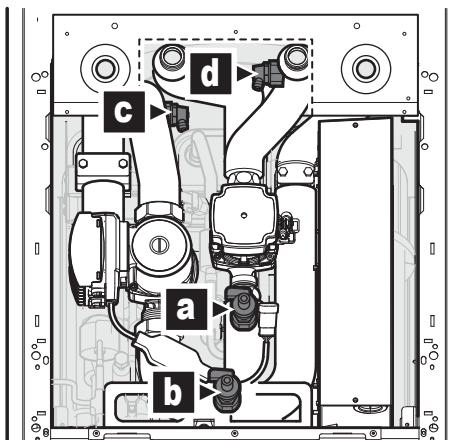
If the water and brine circuits have been filled before, remaining water and brine need to be drained from the hydro module before removal. In this case, perform the following actions:

- 1 Remove the insulation from the shut-off valves. (See step 2 in "[6.2.3 To remove the hydro module from the unit](#)" [▶ 57].)
- 2 Close the shut-off valves by turning the lever handles.



- 3 Remove the lower hydro module cover. (See step 5 in "[6.2.3 To remove the hydro module from the unit](#)" [▶ 57].)

- 4 Drain remaining water and brine from the hydro module. Open the water and brine air purge valves at the top of the module to speed up the draining process.



a Water drain valve
b Brine drain valve
c Brine air purge valve
d Water air purge valve



NOTICE

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

- 5 Perform the remaining steps as described in "[6.2.3 To remove the hydro module from the unit](#)" [▶ 57].

6.2.4 To close the indoor unit

- 1 If applicable, reinstall the left side panel.
- 2 If applicable, reinsert the hydro module.
- 3 If applicable, close the cover of the main switch box and reinstall the front panel.
- 4 Close the cover of the installer switch box.
- 5 Reconnect the cables to the user interface panel.
- 6 Reinstall the user interface panel.
- 7 Reinstall the top panel.



NOTICE

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

6.3 Mounting the indoor unit

6.3.1 About mounting the indoor unit

When

Mount the indoor unit before you connect the brine and water piping.

6.3.2 Precautions when mounting the indoor unit



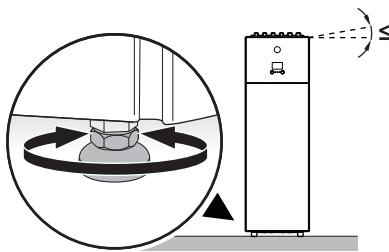
INFORMATION

Also read the precautions and requirements in the following chapters:

- "1 General safety precautions" [▶ 6]
- "6.1 Preparing the installation site" [▶ 53]

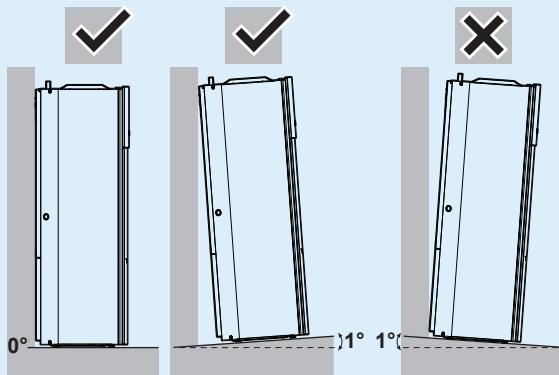
6.3.3 To install the indoor unit

- 1 Lift the indoor unit from the pallet and place it on the floor. See "["3.2.3 To handle the indoor unit"](#) [▶ 17].
- 2 Connect the drain hose to the drain. See "["6.3.4 To connect the drain hose to the drain"](#) [▶ 62].
- 3 Slide the unit into position.
- 4 Adjust the height of the 4 levelling feet of the outer frame to compensate for floor irregularities. The maximum allowed deviation is 1°.



NOTICE

Do NOT tilt the unit forwards:



NOTICE

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

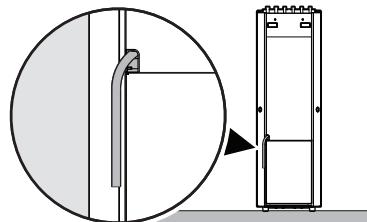


NOTICE

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

6.3.4 To connect the drain hose to the drain

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



7 Piping installation

7.1 Preparing piping



NOTICE

All piping MUST be installed according to section G3 of the Building Regulations.

7.1.1 Circuit requirements



INFORMATION

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



NOTICE

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

- **Circuit types.** Except for the refrigerant circuit, inside the unit 2 other circuits are included. For future references: the circuit connected to the bore hole is referred to as the brine circuit, the other circuit connected to the heating emitters is referred to as the space heating circuit.
- **Connecting piping – Legislation.** Make all piping connections in accordance with the applicable legislation and the instructions in the "Installation" chapter, respecting the water inlet and outlet.
- **Connecting piping – Force.** Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit.
- **Connecting piping – Tools.** Only use appropriate tooling to handle brass, which is a soft material. If NOT, pipes will get damaged.
- **Connecting piping – Air, moisture, dust.** If air, moisture or dust gets into the circuit, problems may occur. To prevent this:
 - Only use clean pipes
 - Hold the pipe end downwards when removing burrs.
 - Cover the pipe end when inserting it through a wall, to prevent dust and/or particles from entering the pipe.
 - Use a decent thread sealant to seal connections.
- **Closed circuit.** Use the indoor unit ONLY in a closed water system for brine circuit and space heating circuit. Using the system in an open water system will lead to excessive corrosion.



WARNING

When connecting to an open groundwater system, an intermediate heat exchanger is required to prevent damage (dirt, freeze ups) to the unit.

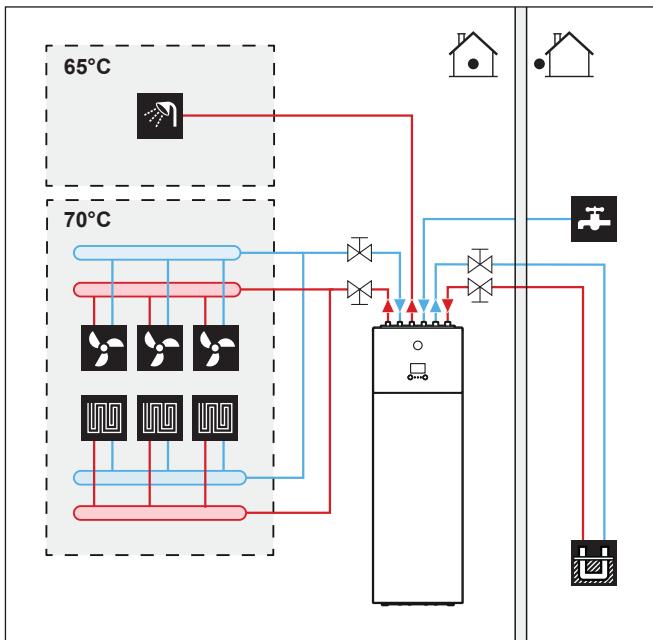
- **Expansion vessel – Water side.** To avoid cavitation, install an expansion vessel (field supply) on the entering pipe before the water pump within 10 m of the unit.

- **Glycol.** For safety reasons, it is NOT allowed to add any kind of glycol to the space heating circuit.
- **Piping length.** It is recommended to avoid long runs of piping between the domestic hot water tank and the hot water end point (shower, bath,...) and to avoid dead ends.
- **Piping diameter.** Select the piping diameter in relation to the required flow and the available external static pressure of the pump. See "[16 Technical data](#)" [▶ 227] for the external static pressure curves of the indoor unit.
- **Fluid flow.** Depending on the type of operation, the minimum required flow can be different. See "[7.1.3 To check the water volume and flow rate of the space heating circuit and brine circuit](#)" [▶ 67] for more information.
- **Field supply components – Fluid.** Only use materials that are compatible with fluid used in the system and with the materials used in the indoor unit.
- **Field supply components – Fluid pressure and temperature.** Check that all components in the field piping can withstand the fluid pressure and fluid temperature.
- **Fluid pressure – Space heating and brine circuit.** The maximum fluid pressure of the space heating and brine circuit is 3 bar.
- **Fluid pressure – Domestic hot water tank.** The maximum fluid pressure of the domestic hot water tank is 10 bar. Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded.
- **Fluid temperature.** All installed piping and piping accessories (valve, connections,...) MUST withstand the following temperatures:



INFORMATION

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



- **Drainage – Low points.** Provide drain taps at all low points of the system in order to allow complete drainage of the circuit.
- **Drainage – Pressure relief valves.** Provide a proper drain for the pressure relief valves (of both the domestic hot water tank and the domestic hot water tank kit) to avoid water spillage around the unit. For the discharge piping connected to

these valves, respect the requirements from the table below. For more information, see "[7.3.4 To connect the water piping for domestic hot water](#)" [▶ 73].

| Item | Requirement |
|---|-------------|
| Pressure relief valve diameter | 15 mm |
| Discharge pipe diameter (to pressure relief valve) | 15 mm |
| Discharge piping diameter (from tundish) | 22 mm |
| Discharge piping material (from tundish) | Metal |
| Vertical length below tundish, before first elbow or bend | ≥300 mm |
| Continuous fall after first elbow or bend | ≥1:200 |
| Maximum resistance ^(a) | ≤9 m |
| Resistance created by each elbow or bend | 0.8 m |

(a) The maximum allowed resistance (i.e. equivalent length) is expressed as a length of straight pipe (i.e. no elbows or bends).



NOTICE

All piping MUST be installed according to section G3 of the Building Regulations.

- **Drainage – Pressure relief valve (space heating/cooling circuit).** Connect the drain hose properly to the drain to avoid water dripping out of the unit. See "[6.3.4 To connect the drain hose to the drain](#)" [▶ 62].
- **Zn-coated parts.** NEVER use Zn-coated parts in the fluid circuit. Because the unit's internal circuit uses copper piping, excessive corrosion may occur. Zn-coated parts used in the brine circuit may lead to the precipitation of certain components in the anti-freeze fluids corrosion inhibitor.



WARNING

Due to the 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.

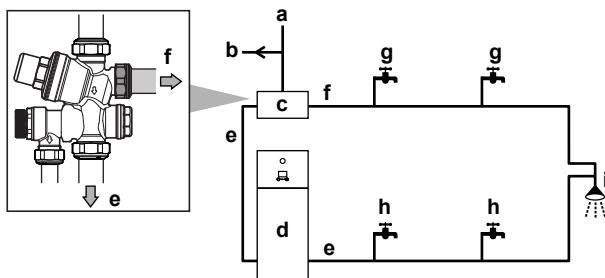


INFORMATION

Be aware of the hygroscopic property of anti-freeze fluids: it absorbs moisture from its environment. Leaving the cap off the anti-freeze fluid container causes the concentration of water to increase. The anti-freeze fluid concentration is then lower than assumed. And in consequence, freezing can happen after all.

Preventive actions MUST be taken to ensure minimal exposure of the anti-freeze fluid to air.

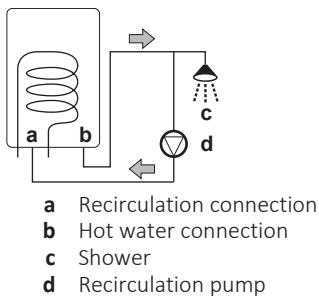
- **Non-brass metallic piping.** When using non-brass metallic piping, insulate the brass and non-brass properly so that they do NOT make contact with each other. This to prevent galvanic corrosion.
- **Valve – Change-over time.** When using a 2-way valve in the space heating circuit, the maximum change-over time of the valve MUST be 60 seconds.
- **Filter.** It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic particles from foul heating piping, it is recommended to use a magnetic or cyclone filter, which can remove small particles. Small particles may damage the unit and will NOT be removed by the standard filter of the heat pump system.
- **Domestic hot water tank – Capacity.** To avoid stagnation of water, it is important that the storage capacity of the domestic hot water tank meets the daily consumption of domestic hot water.
- **Domestic hot water tank – After installation.** Immediately after installation, the domestic hot water tank must be flushed with fresh water. This procedure must be repeated at least once a day the first 5 consecutive days after installation.
- **Domestic hot water tank – Standstills.** In cases where during longer periods of time there is no consumption of hot water, the equipment MUST be flushed with fresh water before usage.
- **Domestic hot water tank – Disinfection.** For the disinfection function of the domestic hot water tank, see "10.5.6 Tank" [▶ 171].
- **Domestic hot water tank kit – Clean pipes.** Before installing the domestic hot water tank kit, all piping and fittings must be flushed free of flux and debris. Failure to do this may cause irreparable damage to the tank kit control valves. Flush the system by opening the hot water tap.
- **Domestic hot water tank kit – Pressure balancing.** To prevent large pressure differences at the taps and damage to the shower valve due to high-pressure cold water (5 bar), provide a dedicated 3.5-bar feed to both cold water and hot water taps. To do this, also connect the cold water supply for the cold water taps to the pressure reducing valve of the domestic hot water tank kit.



- a Cold water supply into house at 5 bar
- b To 5 bar taps
- c Pressure reducing valve (set to 3.5 bar) (part of the domestic hot water tank kit)
- d Indoor unit
- e Dedicated 3.5 bar feed – to/from DHW tank
- f Dedicated 3.5 bar feed – cold water
- g Cold water taps
- h Hot water taps
- i Shower

- **Domestic hot water tank – Pressure relief valve.** A pressure relief valve (part of the inlet control group) with an opening pressure of 8 bar prevents excessive water pressure in the water circuit.
- **Domestic hot water tank – Pressure and temperature relief valve.** The pressure and temperature relief valve prevents excessive water pressure (≥ 10 bar) and excessive water temperature ($>95^{\circ}\text{C}$) in the domestic hot water tank.

- **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.



7.1.2 Formula to calculate the expansion vessel pre-pressure

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

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

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

The unit does not have an integrated expansion vessel, but a field supplied expansion vessel can be installed in the brine circuit in case installing the brine level vessel (delivered as accessory) is not optimal. For more information, see "[7.2.4 To connect the brine level vessel](#)" [▶ 69].

To make sure that the unit operates properly:

- You must check the minimum water volume.
- You might need to adjust the pre-pressure of the expansion vessel.
- You must check the total space heating water volume in the unit.
- You must check the total brine water volume in the unit.

Minimum water volume

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



INFORMATION

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

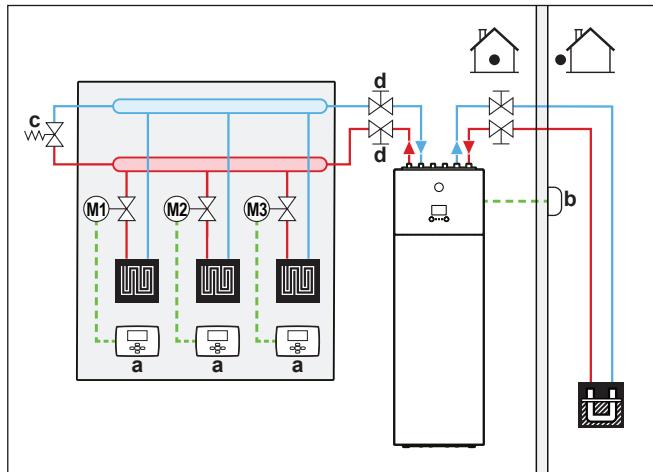


INFORMATION

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

**NOTICE**

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



- a** External room thermostat
- b** Remote outdoor sensor
- c** By-pass valve (field supply)
- d** Shut-off valve

Minimum flow rate

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

7.1.4 Changing the pre-pressure of the expansion vessel

**NOTICE**

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

The expansion vessel is field supplied. For more information on how to change the pre-pressure, see the manual of the expansion vessel.

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.

7.2 Connecting the brine piping

7.2.1 About connecting the brine piping

Before connecting the brine piping

Make sure the indoor unit is mounted.

Typical workflow

Connecting the brine piping typically consists of the following stages:

- 1 Connecting the brine piping.
- 2 Connecting the brine level vessel.
- 3 Connecting the brine filling kit.
- 4 Filling the brine circuit.
- 5 Insulating the brine piping.

7.2.2 Precautions when connecting the brine piping



INFORMATION

Also read the precautions and requirements in the following chapters:

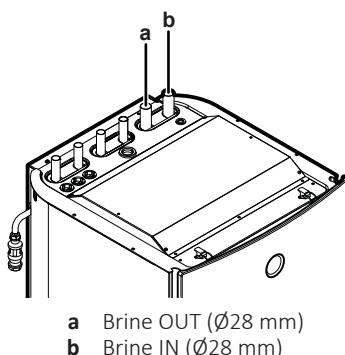
- ["1 General safety precautions" \[▶ 6\]](#)
- ["7.1 Preparing piping" \[▶ 63\]](#)

7.2.3 To connect the brine piping



NOTICE

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



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



NOTICE

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

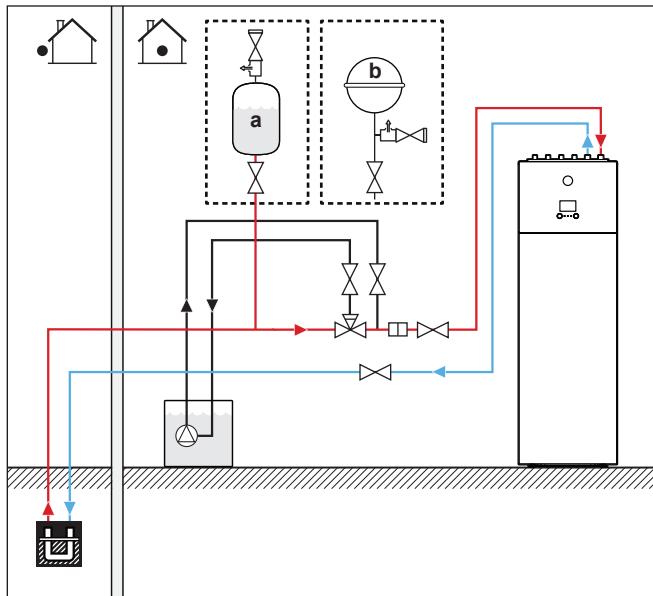
7.2.4 To connect the brine level vessel

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

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

**NOTICE**

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



a Brine level vessel (accessory)

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

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

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

7.2.5 To connect the brine filling kit

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

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

7.2.6 To fill the brine circuit

**WARNING**

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

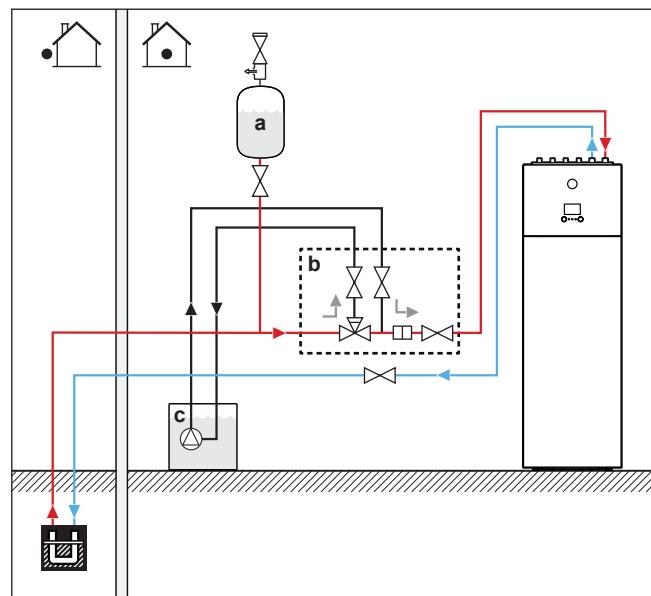
**INFORMATION**

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

- 40 mass% propylene glycol
- 29 mass% ethanol

- 1 Install the brine filling kit. See "7.2.5 To connect the brine filling kit" [▶ 70].

- 2 Connect a field supplied brine filling system to the 3-way valve.
- 3 Position the 3-way valve correctly.



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

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



NOTICE

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



WARNING

Temperature of the fluid running through the evaporator can become negative. It **MUST** be protected against freezing. For more information, see setting [A-04] in "Brine freezing temperature" [▶ 194].

7.2.7 To insulate the brine piping

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

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

7.3 Connecting water piping

7.3.1 About connecting the water piping

Before connecting the water piping

Make sure the indoor unit is mounted.

Typical workflow

Connecting the water piping typically consists of the following stages:

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

7.3.2 Precautions when connecting the water piping



INFORMATION

Also read the precautions and requirements in the following chapters:

- ["1 General safety precautions" \[▶ 6\]](#)
- ["7.1 Preparing piping" \[▶ 63\]](#)

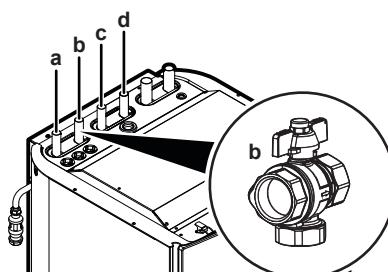
7.3.3 To connect the water piping



NOTICE

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

- 1 Install the shut off-valve with integrated filter (delivered as accessory) at the space heating/cooling water inlet.
- 2 Connect the space heating/cooling in pipe to the shut-off valve and the space heating/cooling out pipe to the unit.
- 3 Connect the domestic hot water in and out pipes to the indoor unit. It is obligatory to use the accessory G3 kit EKUHWG3D to comply with UK legislation. See ["7.3.4 To connect the water piping for domestic hot water" \[▶ 73\]](#).



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



NOTICE

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

**NOTICE**

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

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

**NOTICE**

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

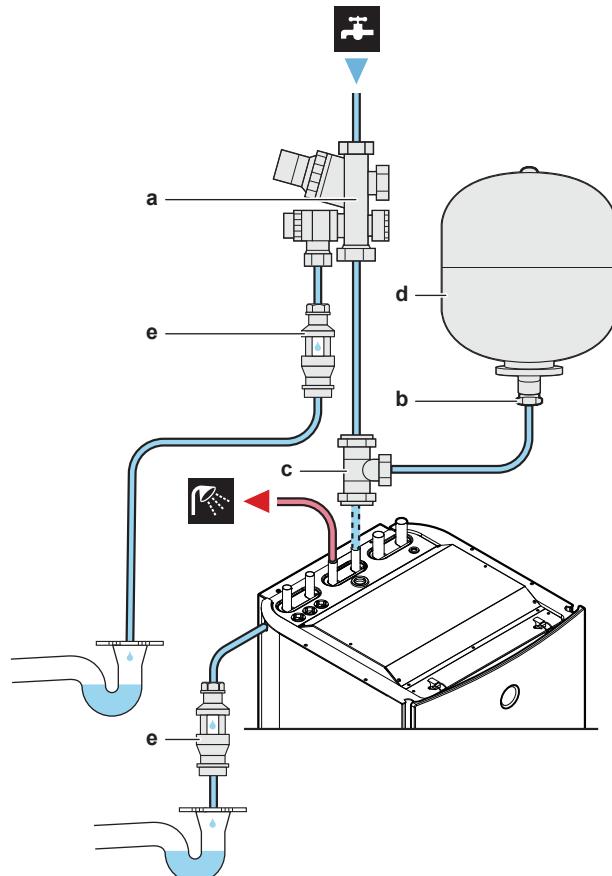
**NOTICE**

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

**NOTICE**

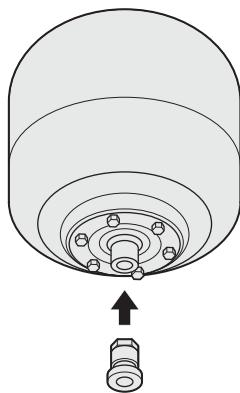
Install air purge valves at all local high points.

7.3.4 To connect the water piping for domestic hot water

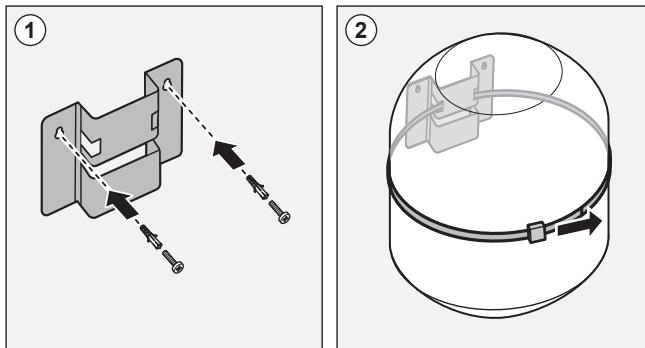


- a** Pressure reducing valve/pressure relief valve combination. Water inlet and water outlet 22 mm connection, discharge piping connection 15 mm
- b** Adaptor 22 mm×3/4" Female BSP
- c** T-piece 22 mm×22 mm×22 mm
- d** Expansion vessel of 18 L – 3/4" Male BSP
- e** Tundish 15 mm inlet, 22 mm outlet

- 1 Pre-assemble the adaptor and expansion vessel so that the expansion vessel is ready for installation.



2 Mount the expansion vessel to the wall.



- 3 Fit the T-piece (part of the kit) to the domestic hot water cold water IN pipe of the unit.
- 4 Connect the pressure reducing valve/pressure relief valve combination (part of the kit) to the T-piece with a length of copper tube Ø22 mm (field supply).
- 5 Connect the expansion vessel to the T-piece with a length of copper tube Ø22 mm (field supply).
- 6 Connect the pressure reducing valve/pressure relief valve combination to the water mains inlet.
- 7 Install the tundish (part of the kit) in a vertical position within a maximum of 600 mm away from the pressure reducing valve/pressure relief valve combination.



WARNING

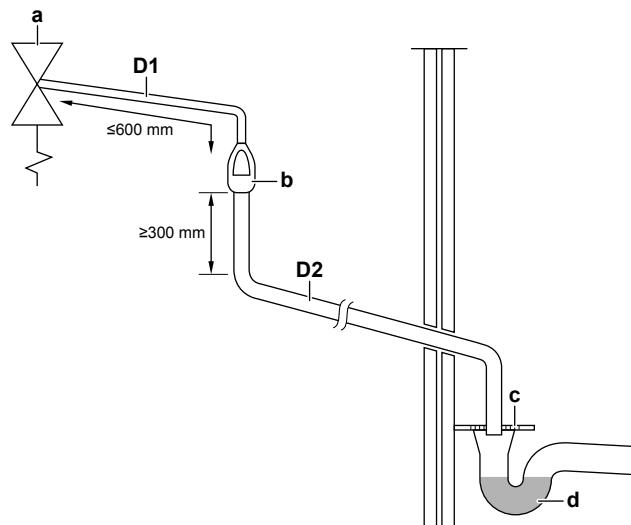
Install the tundish away from any electrical device. **Possible consequence:** Electric shock or fire.



NOTICE

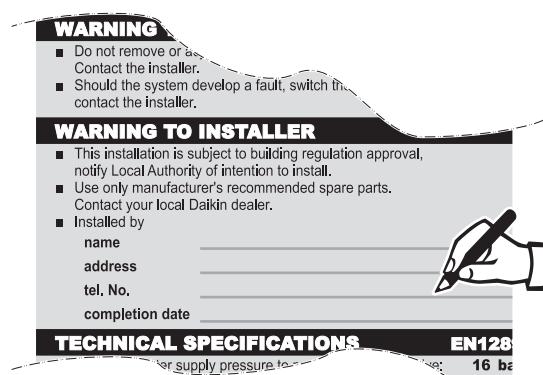
To ensure a free water flow through the discharge pipe, manually operate the pressure relief valve by turning its knob left.

- 8 Connect the 2 tundishes (1 from the pressure relief valve of the domestic hot water tank, and 1 from the pressure relief valve of the domestic hot water tank kit) to an appropriate drain according to the applicable legislation. The following example shows discharge below fixed grating (Building Regulation G3 section 3.61 gives alternative points of discharge):



a Safety device (pressure and temperature relief valve of domestic hot water tank; pressure relief valve of domestic hot water tank kit)
b Tundish
c Fixed grating
d Trapped gully
D1 Metal discharge pipe from safety device to tundish
D2 Discharge pipe from tundish, with continuous fall. See Building Regulation G3 section 3.56, Table 03 and worked example.

9 After completing the installation, the installer has to fill out the warning label on the tank with indelible ink. The warning label can be found on the unit top plate.



WARNING

The discharge pipes from the pressure relief valves MUST terminate in a safe and visible position without forming any risk to persons in the vicinity.



WARNING

- Discharge piping, tundish, drain valves, etc. must be positioned away from any electrical components.
- The discharge pipe away from the tundish must terminate in a safe, visible position without forming any risk to persons in the vicinity.



WARNING

- Do not install any valves between the domestic hot water tank and relief valves/ expansion vessel.
- Do not install shut-off valves between the expansion relief valve and the domestic hot water tank.

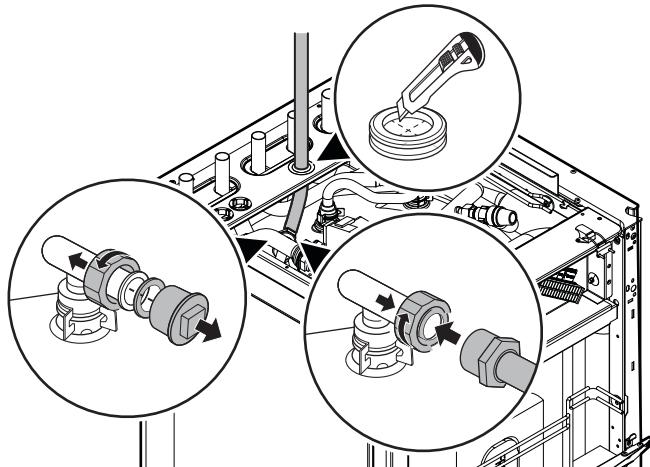
**NOTICE**

- All pipework and fittings must be flushed free of flux and debris prior to installing the domestic hot water tank kit. Failure to do this may cause irreparable damage to the tank kit controls. Flush the system by opening the hot water tap.
- The tundish pipework must be a 22 mm metal pipe with a minimal vertical length of 300 mm below the tundish before any elbows or bends in the pipework. All pipework must have a continuous fall of 1 in 200 thereafter. Maximum permitted (equivalent) length of 22 mm pipework is 9 m. Each bend or elbow is equivalent to 0.8 m of pipework.

7.3.5 To connect the recirculation piping

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

- 1 Remove the top panel from the unit, see "[6.2.2 To open the indoor unit](#)" [▶ 55].
- 2 Cut out the rubber grommet on top of the unit, and remove the stop. The recirculation connector is located below the space heating/cooling water outlet pipe.
- 3 Route the recirculation piping through the grommet and connect it to the recirculation connector.



- 4 Reattach the top panel.

7.3.6 To fill the space heating circuit

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

**NOTICE**

- Air in the water circuit can cause malfunctioning of the backup heater. During filling, it may not be possible to remove all the air from the circuit. Remaining air will be removed through the automatic air purge valves during the initial operating hours of the system. Additional filling with water afterwards may be required.
- To purge the system, use the special function as described in the chapter "[11 Commissioning](#)" [▶ 199]. This function should be used to purge the heat exchanger coil of the domestic hot water tank.

7.3.7 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.
- 5** Manually operate the field-installed pressure relief valve to ensure a free water flow through the discharge pipe.

7.3.8 To check for water leaks

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



NOTICE

After water piping installation, check all connections for leaks.

7.3.9 To insulate the water piping

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

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

8 Electrical installation

8.1 About connecting the electrical wiring

Before connecting the electrical wiring

Make sure the brine and water piping are connected.

Typical workflow

Connecting the electrical wiring typically consists of the following stages:

See "[8.2 Overview of electrical connections for external and internal actuators](#)" [▶ 80].

8.1.1 Precautions when connecting the electrical wiring



DANGER: RISK OF ELECTROCUTION



INFORMATION

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



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

- 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.



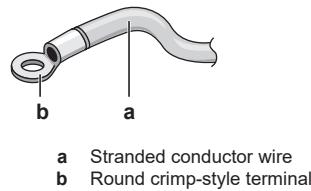
WARNING

ALWAYS use multicore cable for power supply cables.

8.1.2 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 ○ Allowed ✗ NOT allowed</p> |

Tightening torques

| Item | Tightening torque (N·m) |
|------|-------------------------|
| X2M | 0.8~0.9 |
| X5M | |

8.1.3 About electrical compliance

For the models EGSAH/X06+10DA9W(G), the following statement...

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

...is valid in the following cases:

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

(a) For details of C1 and C5, see "[8.2.1 To connect the main power supply](#)" [▶ 82].

(b) **Normal operation:** backup heater = maximum 3 kW
Emergency operation: backup heater = maximum 6 kW

8.2 Overview of electrical connections for external and internal actuators

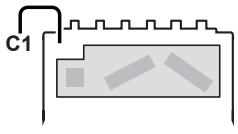
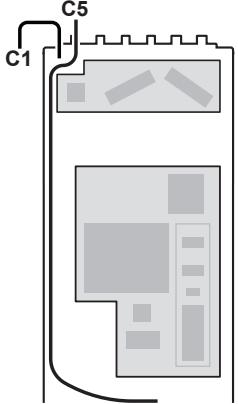
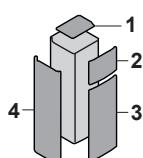
| Item | Description |
|--|---|
| Power supply | See " 8.2.1 To connect the main power supply " [▶ 82]. |
| Remote outdoor sensor | See " 8.2.2 To connect the remote outdoor sensor " [▶ 88]. |
| Shut-off valve | See " 8.2.3 To connect the shut-off valve (Heating/Cooling) " [▶ 89]. |
| Electricity meter | See " 8.2.4 To connect the electricity meters " [▶ 90]. |
| Domestic hot water pump | See " 8.2.5 To connect the domestic hot water pump " [▶ 90]. |
| Alarm output | See " 8.2.6 To connect the alarm output " [▶ 91]. |
| Space cooling/heating operation control | See " 8.2.7 To connect the space cooling/heating ON/OFF output " [▶ 93]. |
| Changeover to external heat source control | See " 8.2.8 To connect the changeover to external heat source " [▶ 94]. |
| Power consumption digital inputs | See " 8.2.9 To connect the power consumption digital inputs " [▶ 95]. |
| Safety thermostat | See " 8.2.10 To connect the safety thermostat (normally closed contact) " [▶ 96]. |

| Item | Description |
|-------------------------------------|---|
| Brine low pressure switch | See " 8.2.11 To connect the brine low pressure switch " [▶ 97]. |
| Thermostat for passive cooling | See " 8.2.12 To connect the thermostat for passive cooling " [▶ 99]. |
| LAN adapter connections | See " 9 LAN adapter " [▶ 100]. |
| Room thermostat (wired or wireless) |  See: <ul style="list-style-type: none"> ▪ Installation manual of the room thermostat (wired or wireless) ▪ Addendum book for optional equipment |
| |  Wires for wired room thermostat: (3 for cooling/heating operation; 2 for heating only operation)×0.75 mm ² Wires for wireless room thermostat: (5 for cooling/heating operation; 4 for heating only operation)×0.75 mm ² Maximum running current: 100 mA |
| |  For the main zone: <ul style="list-style-type: none"> ▪ [2.9] Control ▪ [2.A] Thermostat type For the additional zone: <ul style="list-style-type: none"> ▪ [3.A] Thermostat type ▪ [3.9] (read-only) Control |
| Heat pump convector |  See: <ul style="list-style-type: none"> ▪ Installation manual of the heat pump convectors ▪ Addendum book for optional equipment |
| |  Wires: 4×0.75 mm ² Maximum running current: 100 mA |
| |  For the main zone: <ul style="list-style-type: none"> ▪ [2.9] Control ▪ [2.A] Thermostat type For the additional zone: <ul style="list-style-type: none"> ▪ [3.A] Thermostat type ▪ [3.9] (read-only) Control |
| Remote indoor sensor |  See: <ul style="list-style-type: none"> ▪ Installation manual of the remote indoor sensor ▪ Addendum book for optional equipment |
| |  Wires: 2×0.75 mm ² |
| |  [9.B.1]=2 (External sensor = Room) [1.7] Room sensor offset |

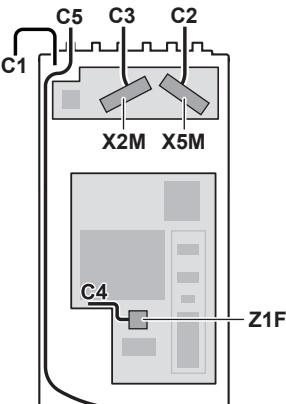
| Item | Description | |
|-------------------------|-------------|--|
| Current sensors | | See the installation manual of the current sensors. |
| | | Wires: 3x2. Use part of the cable (40 m) delivered as accessory. |
| | | [9.9.1]=3 (Power consumption control = Current sensor) [9.9.E] Current sensor offset |
| Human Comfort Interface | | See: <ul style="list-style-type: none">▪ Installation and operation manual of the Human Comfort Interface▪ Addendum book for optional equipment |
| | | Wires: 2x(0.75~1.25 mm ²) Maximum length: 500 m |
| | | [2.9] Control [1.6] Room sensor offset |

8.2.1 To connect the main power supply

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

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

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

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

(a) See "6.2.2 To open the indoor unit" [▶ 55].

(b) Types of preferential kWh rate power supply:



INFORMATION

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

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

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 unit compressor will not operate.

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

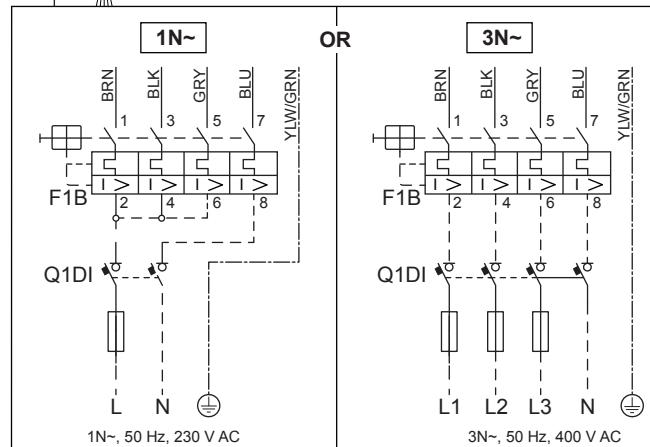
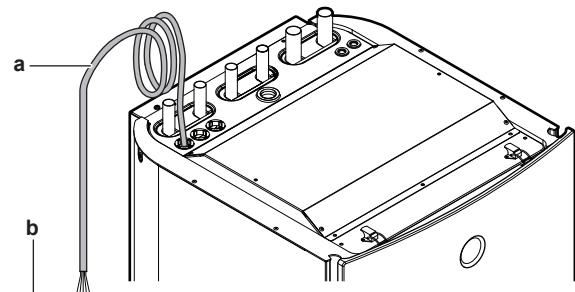
Detail C1: Factory-mounted power supply cable



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

Maximum running current: Refer to name plate on unit.

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



a Factory-mounted power supply cable

b Field wiring

F1B Overcurrent fuse (field supply). Recommended fuse for 1N~: 4-pole, 32 A fuse, C curve. Recommended fuse for 3N~: 4-pole, 16 A fuse, C curve.

Q1DI Earth leakage circuit breaker (field supply)

Detail C2: Preferential kWh rate power supply contact

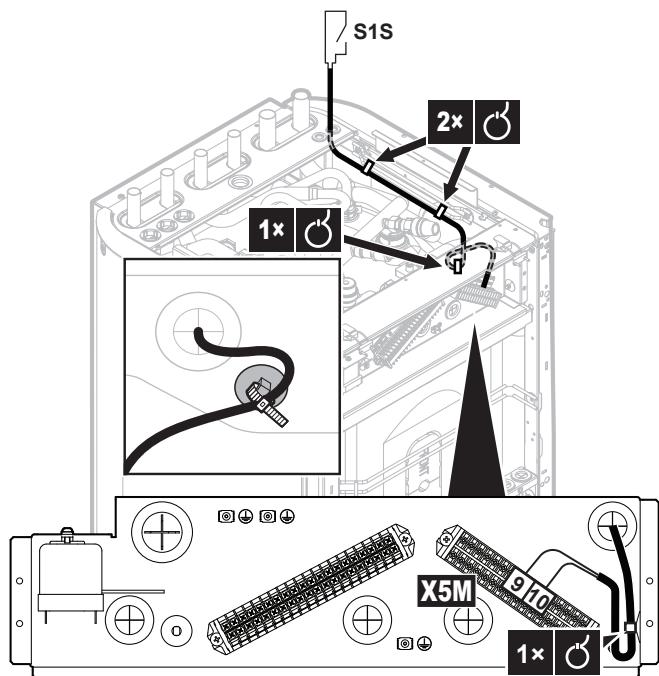


Wires: 2x(0.75~1.25 mm²)

Maximum length: 50 m.

Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB). The voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.

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



INFORMATION

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

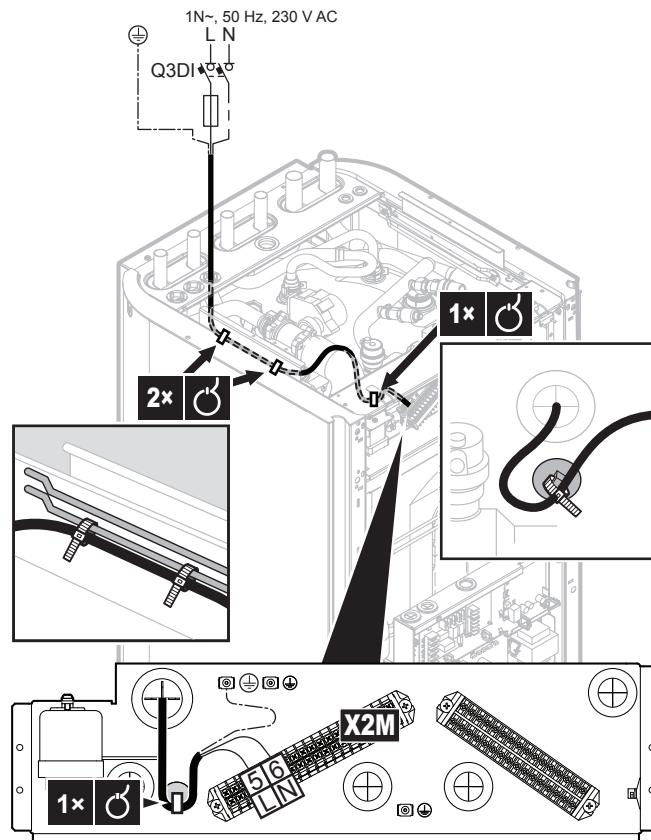
Detail C3: Separate normal kWh rate power supply



Wires: 1N+GND

Maximum running current: 6.3 A

Connect the separate normal kWh rate power supply as follows:

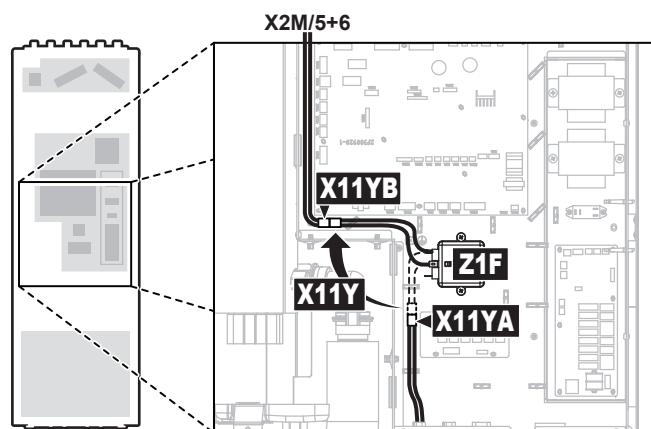


Detail C4: Connection of X11Y



Factory-mounted cables.

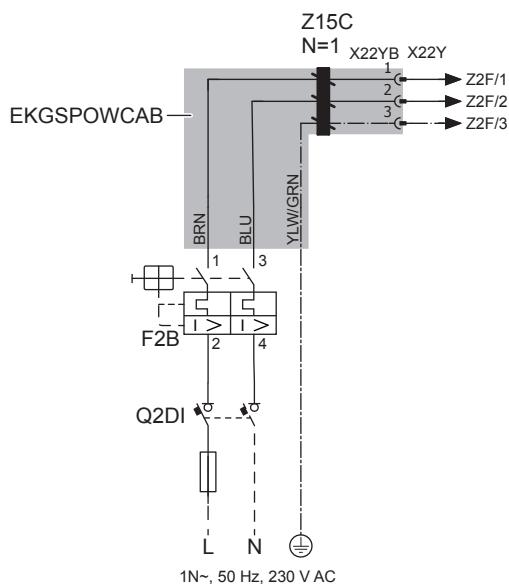
Disconnect X11Y from X11YA, and connect it to X11YB.



Detail C5: Option kit EKGSPOWCAB



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



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

Q2DI Earth leakage circuit breaker (field supply)

Configuration power supply



[9.3] Backup heater

[9.8] Benefit kWh power supply

8.2.2 To connect the remote outdoor sensor

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

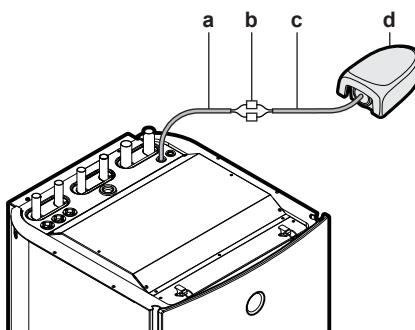


INFORMATION

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

| | |
|---|---|
|  | Remote outdoor sensor + cable (40 m) delivered as accessory |
|  | [9.8.2] Ext. amb. sensor offset (= overview field setting [2-0B]) [9.8.3] Averaging time (= overview field setting [1-0A]) |

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



- a** Factory-mounted cable
- b** Splicing connectors (field supply)
- c** Remote outdoor sensor cable (40 m)(delivered as accessory)
- d** Remote outdoor sensor (delivered as accessory)

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

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

8.2.3 To connect the shut-off valve (Heating/Cooling)



INFORMATION

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



Wires: 2x0.75 mm²

Maximum running current: 100 mA

230 V AC supplied by PCB



[2.D] Shut off valve

1 Open the following (see "[6.2.2 To open the indoor unit](#)" [▶ 55]):

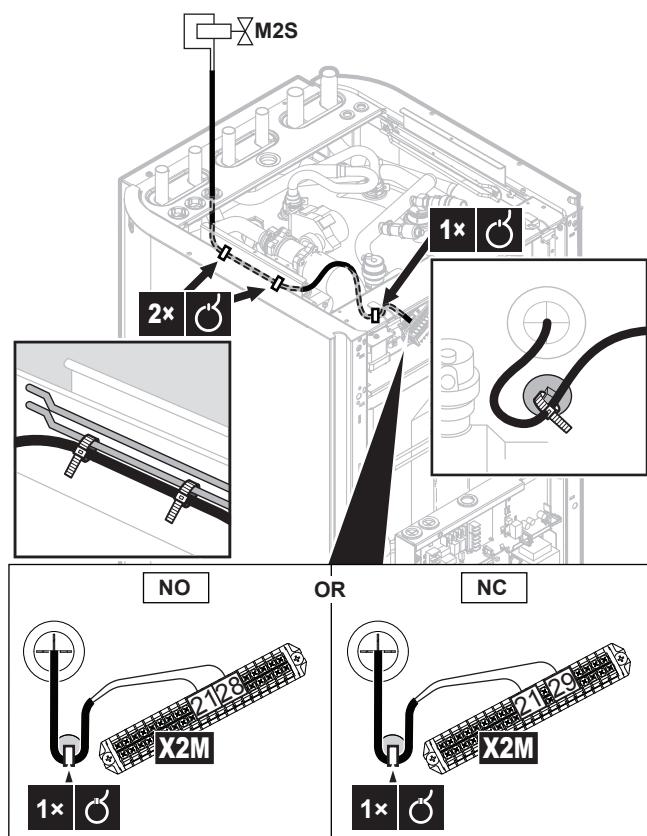
| | | |
|----------|----------------------------|--|
| 1 | Top panel | |
| 2 | User interface panel | |
| 3 | Installer switch box cover | |

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



NOTICE

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



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

8.2.4 To connect the electricity meters

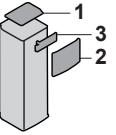
| | |
|---|--|
|  | Wires: 2 (per meter)×0.75 mm ² Electricity meters: 12 V DC pulse detection (voltage supplied by PCB) |
|  | [9.A] Energy metering |



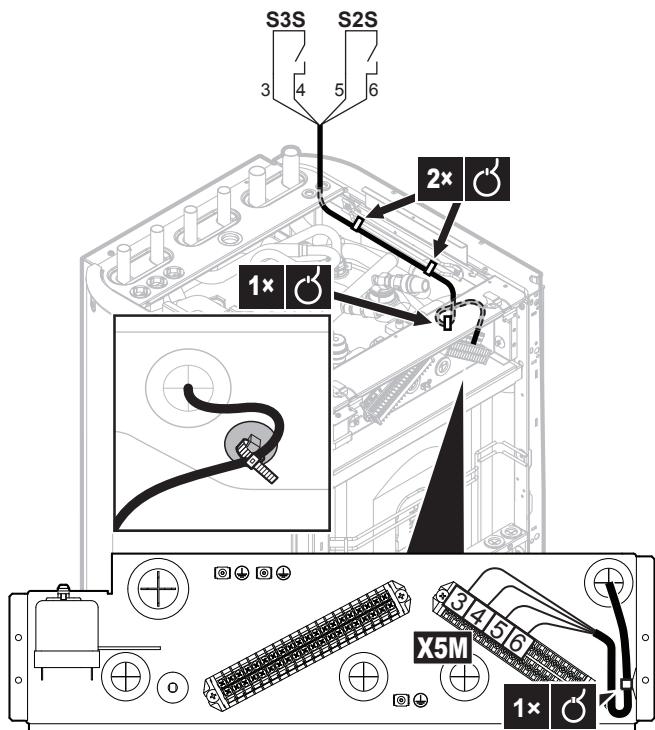
INFORMATION

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

1 Open the following (see "[6.2.2 To open the indoor unit](#)" [▶ 55]):

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

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

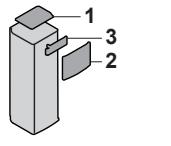


3 Fix the cable with cable ties to the cable tie mountings.

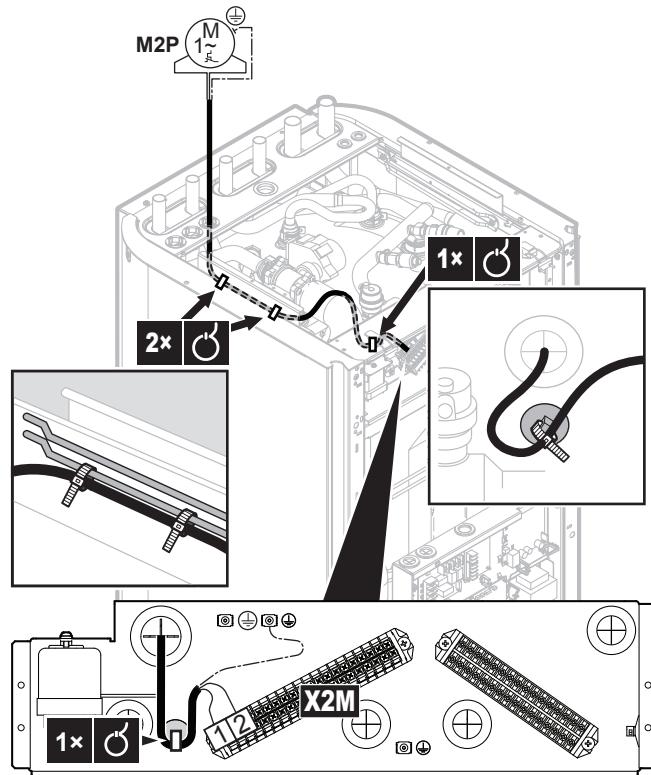
8.2.5 To connect the domestic hot water pump

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

1 Open the following (see "6.2.2 To open the indoor unit" [▶ 55]):

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

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

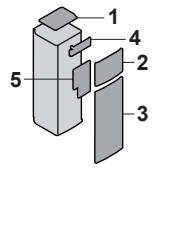


3 Fix the cable with cable ties to the cable tie mountings.

8.2.6 To connect the alarm output

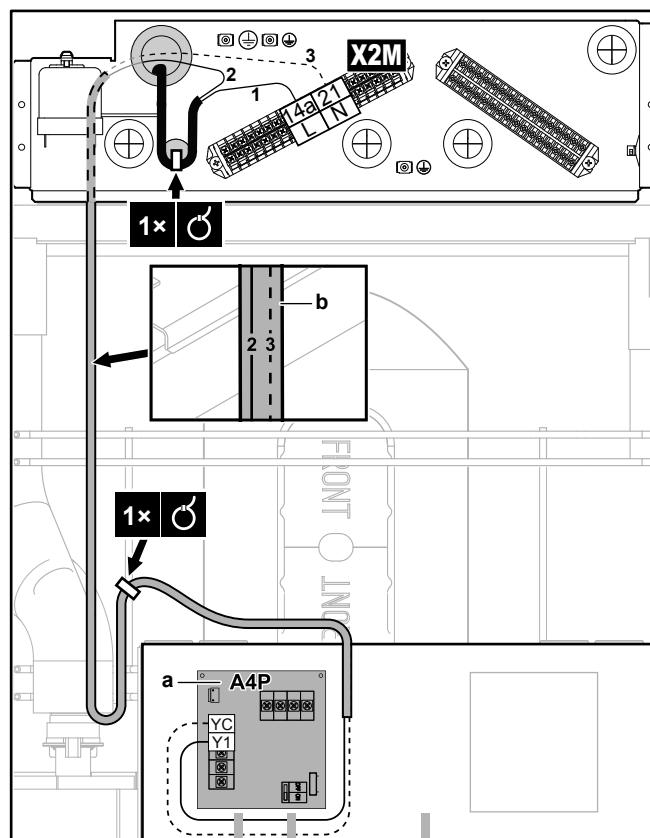
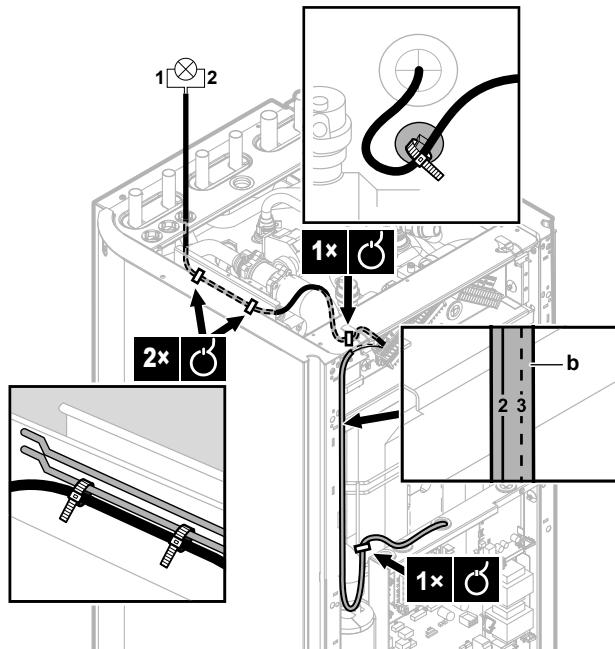
| | |
|---|--|
|  | Wires: (2+1)×0.75 mm ² Maximum load: 0.3 A, 250 V AC |
|  | [9.D] Alarm output |

1 Open the following (see "6.2.2 To open the indoor unit" [▶ 55]):

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

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

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

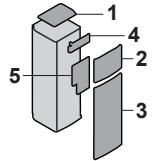


3 Fix the cable with cable ties to the cable tie mountings.

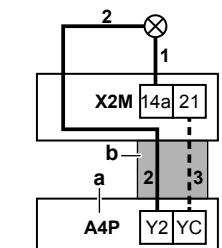
8.2.7 To connect the space cooling/heating ON/OFF output

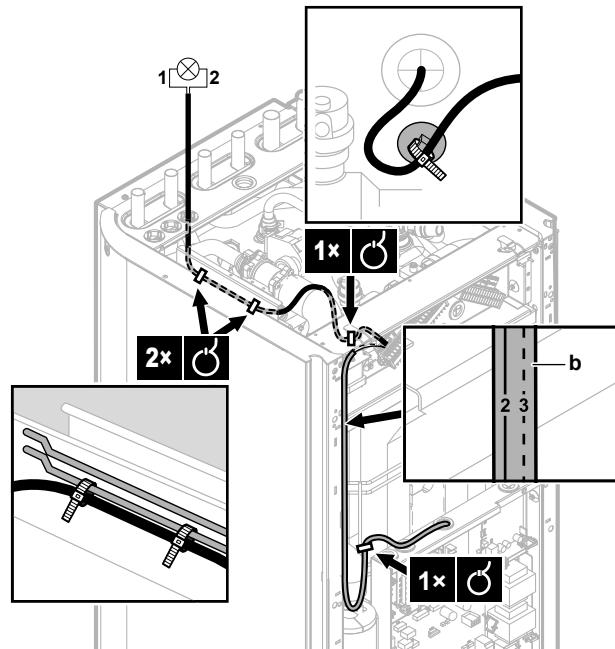
| | |
|---|--|
|  | Wires: (2+1)×0.75 mm ² Maximum load: 3.5 A, 250 V AC |
|  | — |

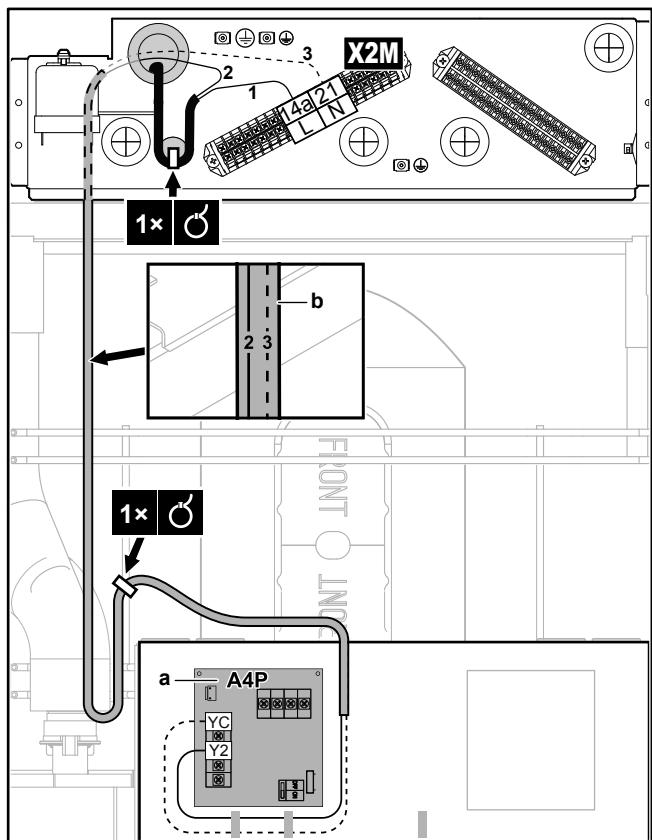
1 Open the following (see "6.2.2 To open the indoor unit" [▶ 55]):

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

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

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





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

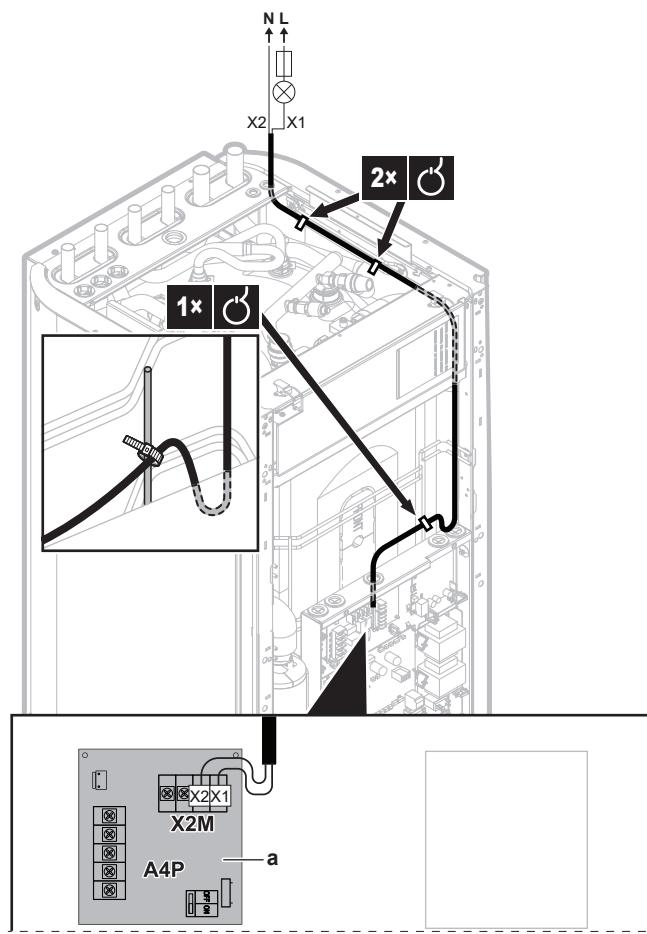
8.2.8 To connect the changeover to external heat source

| | |
|--|---|
| | Wires: 2x0.75 mm ² Maximum load: 0.3 A, 250 V AC Minimum load: 20 mA, 5 V DC |
| | [9.C] Bivalent |

1 Open the following (see "[6.2.2 To open the indoor unit](#)" [**55**]):

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

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



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

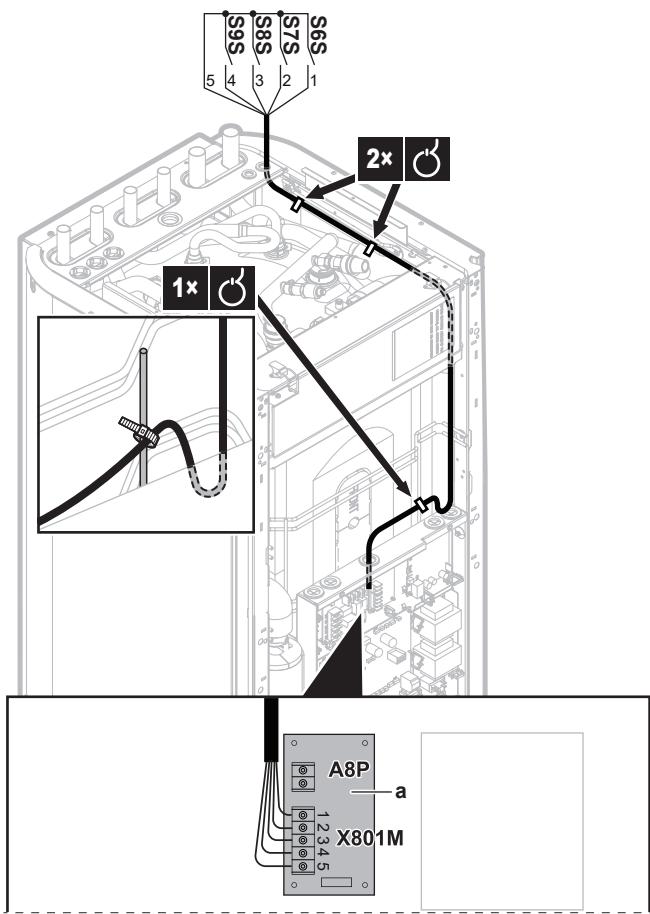
8.2.9 To connect the power consumption digital inputs

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

- Open the following (see "[6.2.2 To open the indoor unit](#)" [55]):

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

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



a Installation of EKRP1AHTA is required.

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

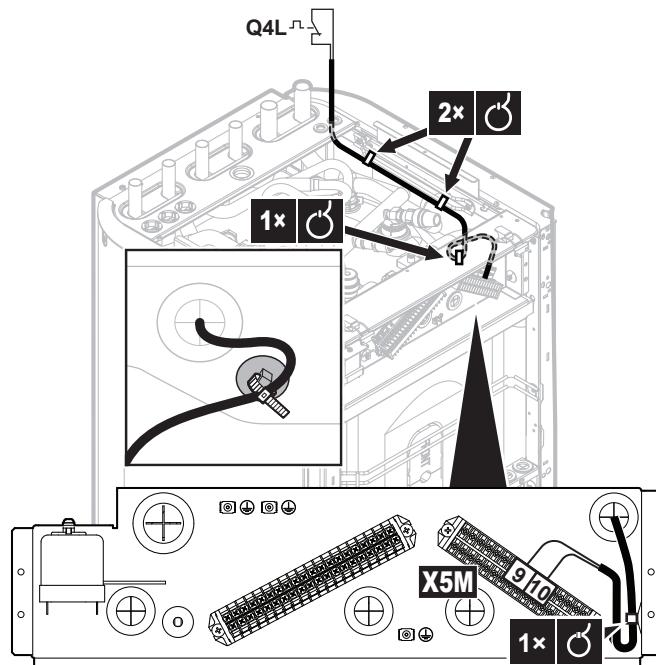
8.2.10 To connect the safety thermostat (normally closed contact)

| | |
|--|---|
| | Wires: 2x0.75 mm ² Safety thermostat contact: 16 V DC detection (voltage supplied by PCB) |
| | [9.8.1]=3 (Benefit kWh power supply = Safety thermostat) |

- Open the following (see "6.2.2 To open the indoor unit" [▶ 55]):

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

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



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



NOTICE

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

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

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



INFORMATION

ALWAYS configure the safety thermostat after its installation. 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. Thus, the system can have EITHER preferential kWh rate power supply OR a safety thermostat.

8.2.11 To connect the brine low pressure switch

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



NOTICE

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

**NOTICE**

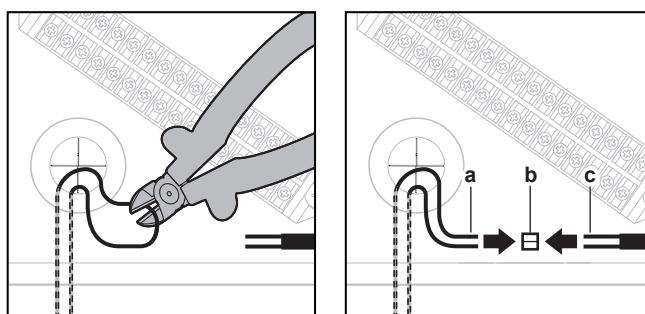
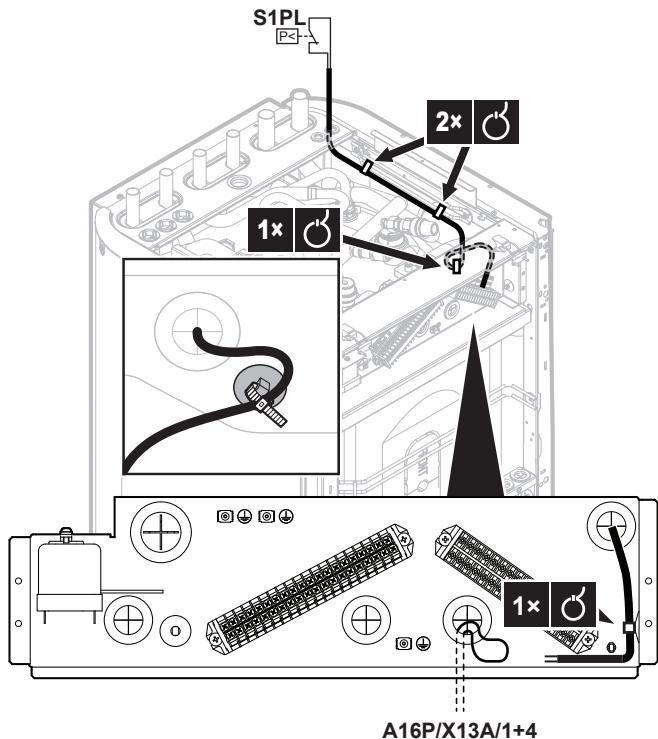
Before disconnecting. If you want to remove or disconnect the brine low pressure switch, first set [C-OB]=0 (brine low pressure switch not installed). If not, this causes an error.

| | |
|--|--|
| | Wires: 2x0.75 mm ² |
| | <p>Set overview field setting [C-OB]=1.</p> <ul style="list-style-type: none"> If [C-OB]=0 (brine low pressure switch not installed), the unit does not check the input. If [C-OB]=1 (brine low pressure switch installed), the unit checks the input. If the input is "open", error EJ-01 occurs. |

1 Open the following (see "6.2.2 To open the indoor unit" [▶ 55]):

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

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



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

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

8.2.12 To connect the thermostat for passive cooling



INFORMATION

Restriction: Passive cooling is only possible for:

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

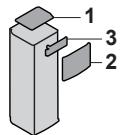


Wires: 2x0.75 mm²

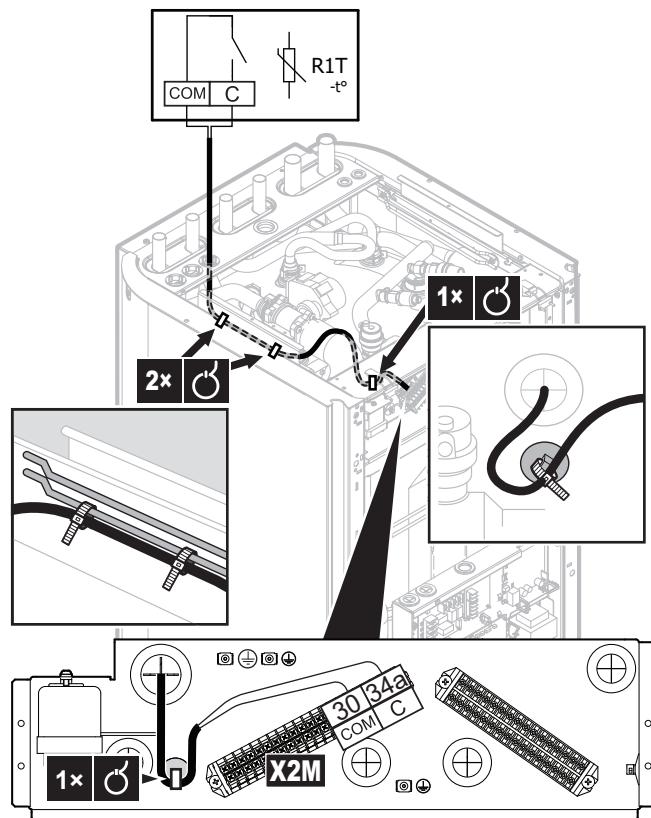


—

- Open the following (see "[6.2.2 To open the indoor unit](#)" [▶ 55]):

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

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



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

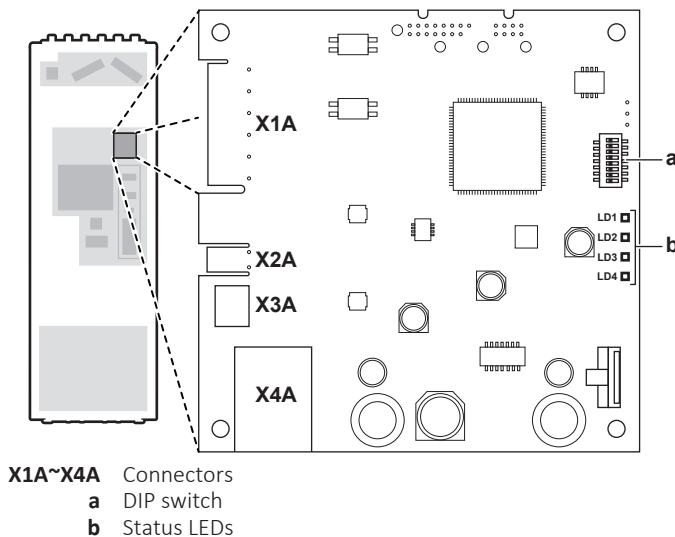
9 LAN adapter

9.1 About the LAN adapter

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

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

Components: PCB



Status LEDs

| LED | Description | Behaviour |
|-------------|--|---|
| LD1 ♥ | Indication of power to the adapter, and of normal operation. | <ul style="list-style-type: none"> ▪ LED flashing: normal operation. ▪ LED NOT flashing: no operation. |
| LD2 ✉✉ | Indication of TCP/IP communication with the router. | <ul style="list-style-type: none"> ▪ LED ON: normal communication. ▪ LED flashing: communication problem. |
| LD3 P1P2 | Indication of communication with the indoor unit. | <ul style="list-style-type: none"> ▪ LED ON: normal communication. ▪ LED flashing: communication problem. |

| LED | Description | Behaviour |
|--|------------------------------------|--|
| LD4  | Indication of Smart Grid activity. | <ul style="list-style-type: none"> LED ON: system running in the "Recommended ON", "Forced ON", or "Forced OFF" Smart Grid operation mode. LED OFF: system running in the "Normal operation" Smart Grid operation mode, or operating in normal operation conditions (space heating/cooling, production of domestic hot water). LED flashing: LAN adapter performing a Smart Grid compatibility check. |



INFORMATION

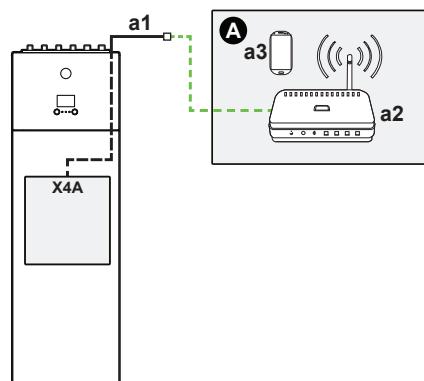
- The DIP switch is used to configure the system. For more information, see ["9.4 Configuration – LAN adapter" \[▶ 112\]](#).
- When the LAN adapter performs a Smart Grid compatibility check, LD4 flashes. This is NOT erroneous behaviour. After a successful check, LD4 will either stay ON or go OFF. When it keeps flashing for more than 30 minutes, the compatibility check failed, and NO Smart Grid operation is possible.

9.1.1 System layout

Integrating the LAN adapter into the heat pump system allows for the following applications:

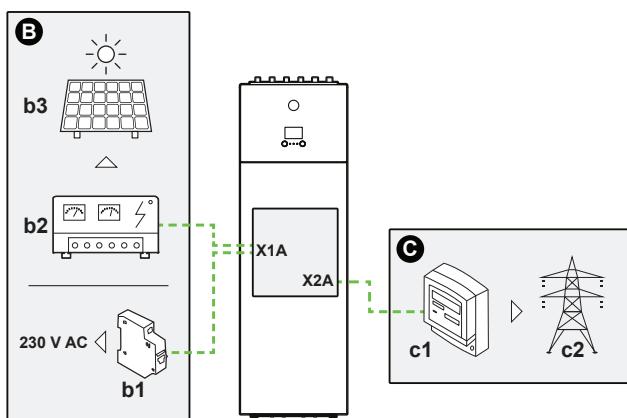
- App control (only)
- Smart Grid application (only)
- App control + Smart Grid application

App control (only)



A See ["9.2.2 Router" \[▶ 106\]](#).
a1 Factory-mounted Ethernet cable
a2 Router
a3 Smartphone with app control

Smart Grid application (only)



B See "9.2.4 Solar inverter/energy management system" [▶ 109].

b1 Circuit breaker

b2 Solar inverter/energy management system

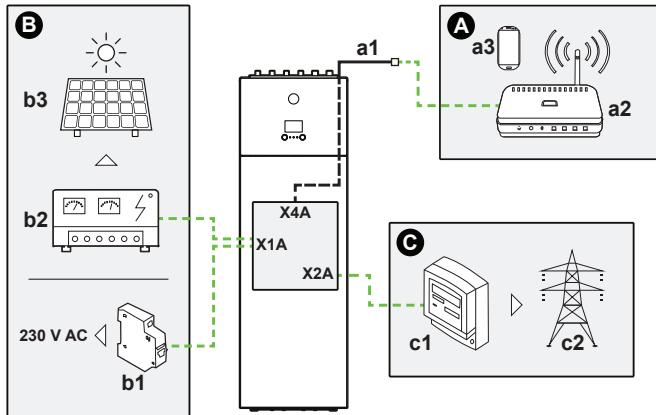
b3 Solar panels

C See "9.2.3 Electricity meter" [▶ 107].

c1 Electricity meter

c2 Electrical grid

App control + Smart Grid application



A See "9.2.2 Router" [▶ 106].

a1 Factory-mounted Ethernet cable

a2 Router

a3 Smartphone with app control

B See "9.2.4 Solar inverter/energy management system" [▶ 109].

b1 Circuit breaker

b2 Solar inverter/energy management system

b3 Solar panels

C See "9.2.3 Electricity meter" [▶ 107].

c1 Electricity meter

c2 Electrical grid

9.1.2 System requirements

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

App control

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

Smart Grid application

| Item | Requirement |
|------------------------------------|--|
| LAN adapter software | It is recommended to ALWAYS keep the LAN adapter software up-to-date. |
| Unit control method | On the user interface, make sure to set [2.9]=2 (Control = Room thermostat) |
| Domestic hot water settings | To allow for energy buffering in the domestic hot water tank, on the user interface, make sure to set [9.2.1]=4 (Domestic hot water = Integrated). |
| Power consumption control settings | On the user interface, make sure to set: <ul style="list-style-type: none"> ▪ [9.9.1]=1 (Power consumption control = Continuous) ▪ [9.9.2]=1 (Type = kW) |



INFORMATION

For instructions on how to perform a software update, see "["9.4.4 Updating software"](#) [113].

9.1.3 On-site installation requirements

What you need on site to install the LAN adapter depends on the system layout.

| BRP069A61 | BRP069A62 |
|---|--------------------------------------|
| Always | |
| PC/laptop with Ethernet connector | |
| Router (DHCP enabled) | |
| Smartphone with the Daikin Residential Controller app | |
| Depending on the system layout | |
| IF connection to an electricity meter (X2A) | Electricity meter |
| | 2-wire cable |
| IF connection to a solar inverter/energy management system (X1A) | 2-wire cable |
| | Circuit breaker (100 mA~6 A, type B) |



INFORMATION

- For an overview of the possible system layouts, see "[9.1.1 System layout](#)" [▶ 101]. For more information about the electrical wiring, see "[9.2.1 Overview of electrical connections](#)" [▶ 104].
- The function of the router in the system depends on the system layout. In case of app control (only), the router is a mandatory system component, required for the communication between heat pump system and smartphone. In case of Smart Grid application (only), the router is NOT a mandatory component, but only used for configuration purposes. In case of app control + Smart Grid application, you need the router both as a system component and for configuration purposes.
- The smartphone and Daikin Residential Controller app are used to perform a LAN adapter software update (if required). Therefore, ALWAYS take a smartphone plus app to the installation site, also when the adapter is only used for the Smart Grid application.
- Some tools and components might already be available on site. Before going on site, find out which components are already at hand, and which ones you need to provide (e.g. router, electricity meter, ...).

9.2 Connecting the electrical wiring

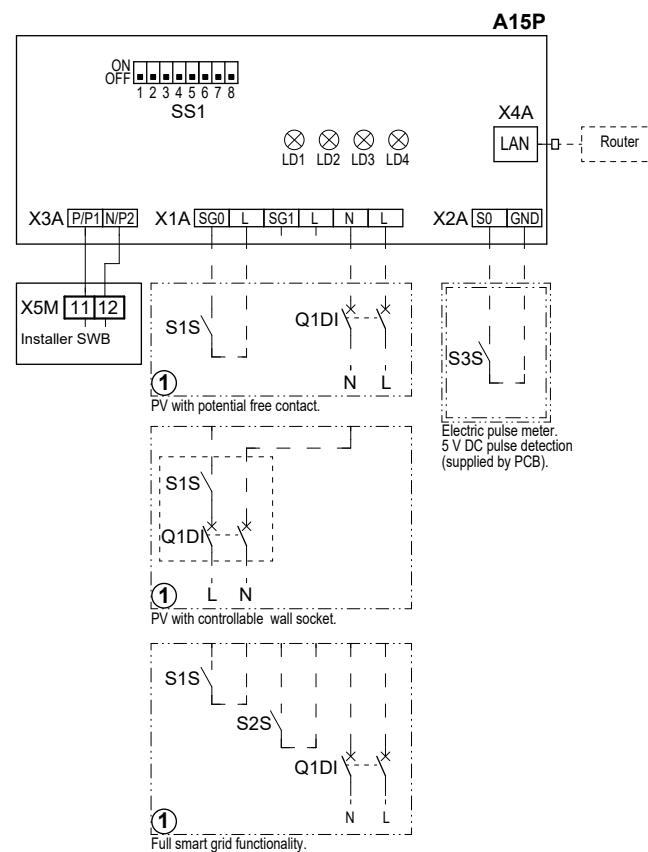
9.2.1 Overview of electrical connections

Typical workflow

Connecting the electrical wiring typically consists of the following stages:

| System layout | Typical workflow |
|--------------------------------------|---|
| App control (only) | Connecting the adapter to a router. |
| Smart Grid application (only) | <ul style="list-style-type: none"> ▪ Connecting the adapter to a solar inverter/energy management system. ▪ Connecting the adapter to an electricity meter (optional). <p>For more information about the Smart Grid application, see "9.5 Smart Grid application" [▶ 120].</p> |
| App control + Smart Grid application | <ul style="list-style-type: none"> ▪ Connecting the adapter to a router. ▪ Connecting the adapter to a solar inverter/energy management system, if required by the Smart Grid application. ▪ Connecting the adapter to an electricity meter, if required by the Smart Grid application (optional). <p>For more information about the Smart Grid application, see "9.5 Smart Grid application" [▶ 120].</p> |

Wiring diagram

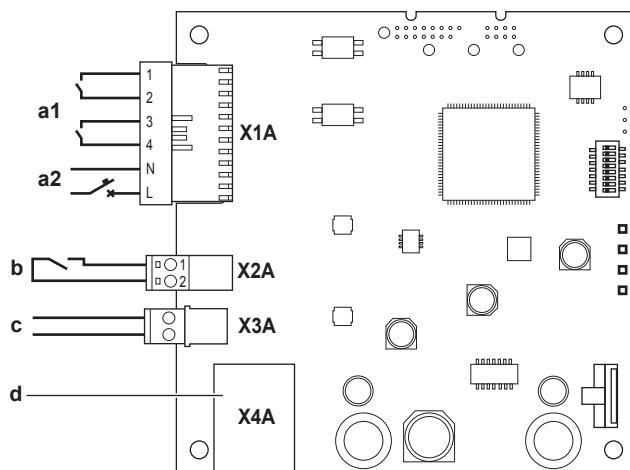


| | | |
|---------|------------------------------|------------------------------|
| ----- | Field supply | |
| ① | Several wiring possibilities | |
| | Option | |
| | Wiring depending on model | |
| A15P | LAN adapter PCB | |
| LD1~LD4 | PCB LED | |
| Q1DI | # | Circuit breaker |
| SS1 | DIP switch | |
| S1S | # | SG0 contact |
| S2S | # | SG1 contact |
| S3S | * | Electrical pulse meter input |
| X*A | Connector | |
| X5M | Field wiring terminal for DC | |

* Optional

Field supply

Connectors



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

Connections

Field-supplied cables:

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

- (a) Ethernet cable: Respect the maximum allowed distance between LAN adapter and router, which is 50 m in case of Cat5e cables, and 100 m in case of Cat6 cables.
- (b) These wires MUST be sheathed. Recommended strip length: 6 mm.
- (c) All wiring to X1A MUST be H05VV. Required strip length: 7 mm. For more information, see "9.2.4 Solar inverter/energy management system" [▶ 109].

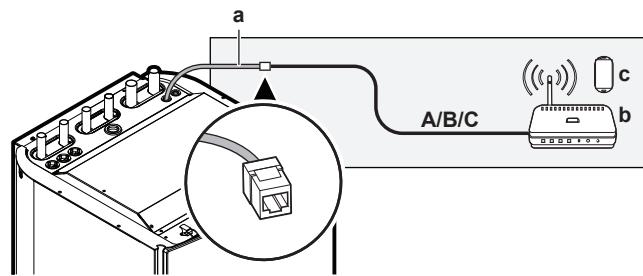
9.2.2 Router

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

The minimum category for the Ethernet cable is Cat5e.

To connect the router

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



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

| # | Router connection |
|---|---|
| A | <p>Wired</p> <p>d Field-supplied Ethernet cable:</p> <ul style="list-style-type: none"> ▪ Minimum category: Cat5e ▪ Maximum length: <ul style="list-style-type: none"> - 50 m in case of Cat5e cables - 100 m in case of Cat6 cables |
| B | <p>Wireless</p> <p>e Wireless bridge (field supply)</p> |
| C | <p>Power line</p> <p>f Power line adapter (field supply)</p> <p>g Power line (field supply)</p> |



INFORMATION

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



NOTICE

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

9.2.3 Electricity meter

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

Requirements:

| Item | | Specification |
|---------------------------|------------------|--|
| Type | | Pulse meter (5 V DC pulse detection) |
| Possible number of pulses | | <ul style="list-style-type: none"> ▪ 100 pulse/kWh ▪ 1000 pulse/kWh |
| Pulse duration | Minimum On time | 10 ms |
| | Minimum OFF time | 100 ms |
| Measurement type | | <p>Depends on the installation:</p> <ul style="list-style-type: none"> ▪ 1N~ AC meter ▪ 3N~ AC meter (balanced loads) ▪ 3N~ AC meter (unbalanced loads) |

**INFORMATION**

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

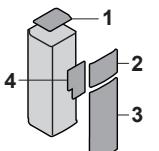
Suggested electricity meters

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

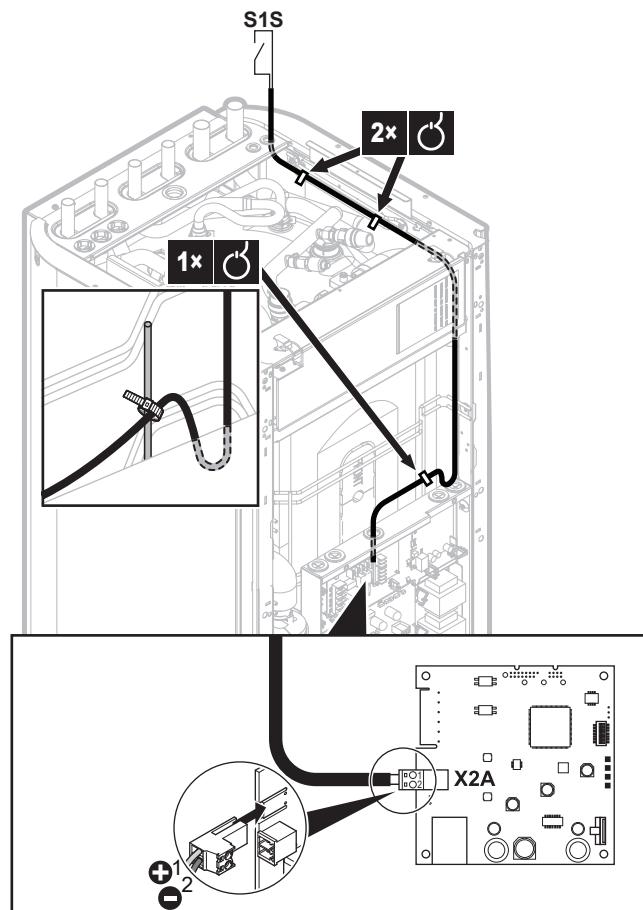
To connect the electricity meter**NOTICE**

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

- 1 Open the following (see "6.2.2 To open the indoor unit" [▶ 55]):

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

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



INFORMATION

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



WARNING

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

9.2.4 Solar inverter/energy management system



INFORMATION

Before installation, confirm that the solar inverter/energy management system is equipped with the digital outputs required to connect it to the LAN adapter. For more information, see "[9.5 Smart Grid application](#)" [▶ 120].

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

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

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

The rest of the wiring to X1A differs depending on the digital outputs available on the solar inverter/energy management system and/or on the Smart Grid operation modes that you want the system to run in. For more information, see "[9.5 Smart Grid application](#)" [▶ 120].

To connect the solar inverter/energy management system



NOTICE

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



INFORMATION

How the solar inverter/energy management system is connected to X1A depends on the Smart Grid application. The connection described in the instructions below is for the system to run in the "Recommended ON" operation mode. For more information, see "[9.5 Smart Grid application](#)" [▶ 120].



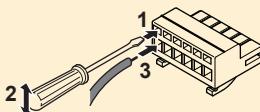
WARNING

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



WARNING

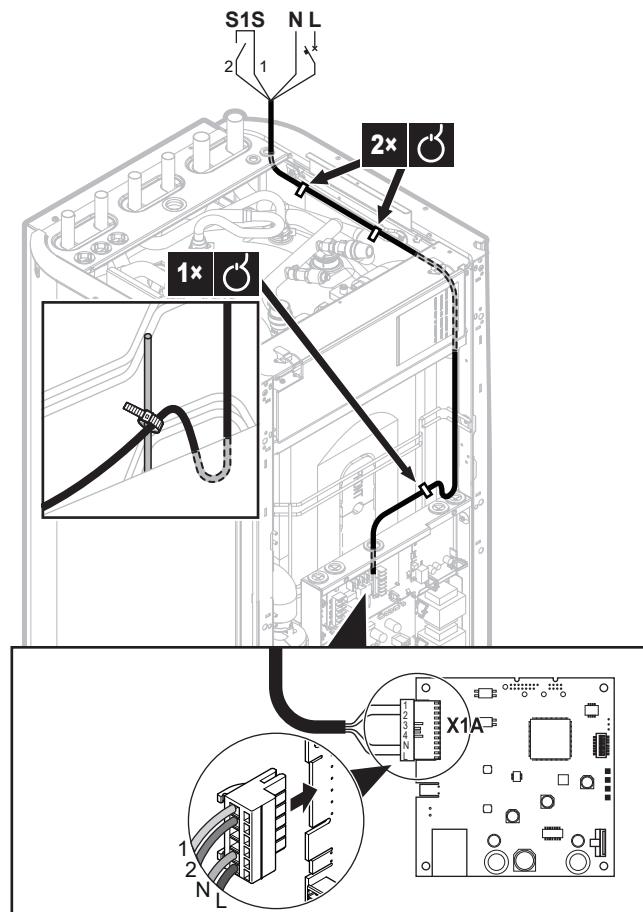
When connecting the wiring to LAN adapter terminal X1A, make sure each wire is securely fastened to the appropriate terminal. Use a screwdriver to open the wire clamps. Make sure the bare copper wire is fully inserted into the terminal (bare copper wire CANNOT be visible).



- 1 Open the following (see "[6.2.2 To open the indoor unit](#)" [▶ 55]):

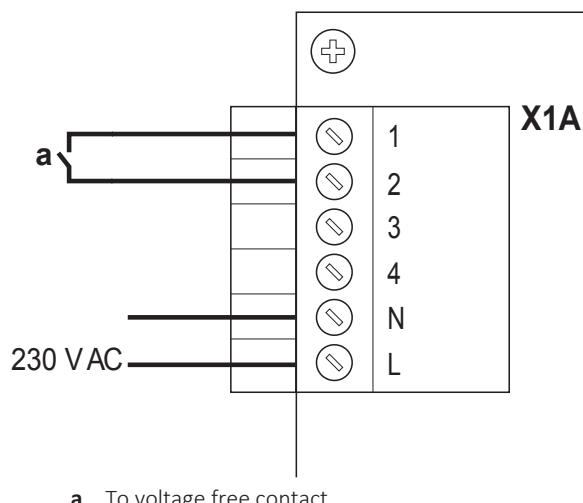
| | | |
|----------|-----------------------|--|
| 1 | Top panel | |
| 2 | User interface panel | |
| 3 | Front panel | |
| 4 | Main switch box cover | |

- 2 Provide a detection voltage to X1A/N+L. Make sure X1A/N+L are protected by a fast acting circuit breaker (100 mA~6 A, type B).
- 3 For the system to run in the "Recommended ON" operation mode (Smart Grid application), connect the digital outputs of the solar inverter/energy management system to LAN adapter digital inputs X1A/1+2 LAN.



To connect to a voltage free contact (Smart Grid application)

If the solar inverter/energy management system has a voltage free contact, connect the LAN adapter as follows:



a To voltage free contact

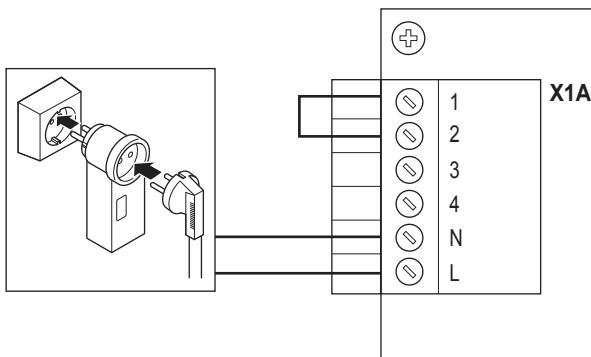


INFORMATION

The voltage free contact should be able to switch 230 V AC – 20 mA.

To connect to a controllable wall socket (Smart Grid application)

If a wall socket is available that is controlled by the solar inverter/energy management system, connect the LAN adapter as follows:

**NOTICE**

Make sure a fast acting fuse or circuit breaker is present in the setup (or as part of the wall socket, or install an external one (rated current 100 mA~6 A, type B)).

9.3 Starting up the system

The LAN adapter gets its power from the indoor unit. After powering on the system, it can take up to 30 minutes before the LAN adapter is operational, depending on the system layout.

9.4 Configuration – LAN adapter

9.4.1 Overview: Configuration

LAN adapter configuration depends on the LAN adapter application/system layout.

| If | Then |
|--|---|
| The LAN adapter is used for app control | See " 9.4.2 Configuring the adapter for app control " [▶ 113]. |
| The LAN adapter is used for the Smart Grid application | See " 9.4.3 Configuring the adapter for the Smart Grid application " [▶ 113]. |

Additionally, this chapter contains instructions for how to:

| Topic | Chapter |
|--|---|
| Update software | "9.4.4 Updating software" [▶ 113] |
| Access the configuration web interface | "9.4.5 Configuration web interface" [▶ 114] |
| Consult system information | "9.4.6 System information" [▶ 115] |
| Perform a factory reset | "9.4.7 Factory reset" [▶ 116] |
| Configure network settings | "9.4.8 Network settings" [▶ 118] |

**INFORMATION**

If 2 LAN adapters are present in the same LAN network, configure them separately.

9.4.2 Configuring the adapter for app control

When the LAN adapter is used for app control (only), there is hardly any configuration required. After correct installation and system start-up, all system components (LAN adapter, router, and Daikin Residential Controller app) should be able to find each other automatically by way of their IP address.

If the system components fail to connect to each other automatically, you can connect them to each other manually by making use of a fixed IP address. In this case, provide LAN adapter, router, and Daikin Residential Controller app with the same fixed IP address. For how to provide the LAN adapter with a fixed IP address, see "[9.4.8 Network settings](#)" [▶ 118].

9.4.3 Configuring the adapter for the Smart Grid application

When the LAN adapter is used for the Smart Grid application, configure the LAN adapter on the dedicated configuration web interface.

- For instructions on how to access the configuration web interface, see "[9.4.5 Configuration web interface](#)" [▶ 114].
- For an overview of Smart Grid settings, see "[9.5.1 Smart Grid settings](#)" [▶ 121].
- For more information on the Smart Grid application, see "[9.5 Smart Grid application](#)" [▶ 120].

If required, perform a software update. For instructions, see "[9.4.4 Updating software](#)" [▶ 113].



INFORMATION

For a good understanding of the Smart Grid application, and to be able to properly configure the LAN adapter, it is recommended to first read up on the Smart Grid application in "[9.5 Smart Grid application](#)" [▶ 120].

9.4.4 Updating software

To update LAN adapter software, use the Daikin Residential Controller app.



INFORMATION

- To update LAN adapter software with the Daikin Residential Controller app, you need a router. In case the LAN adapter is only used for the Smart Grid application (and a router is not part of the system), temporarily add a router to the setup according to "[App control + Smart Grid application](#)" [▶ 102].
- The Daikin Residential Controller app will automatically check the LAN adapter software version and ask for an update, if required.



INFORMATION

For the indoor unit and user interface to function with the LAN adapter, it is required that their software meets requirements. **ALWAYS** make sure the unit and user interface have the latest software version. For more information, see https://my.daikin.eu/denv/en_US/home/applications/software-finder/service-software/unit-software/heating/MMI-software-daikin-altherma-LT.html.

To update adapter software

Prerequisite: A router is (temporarily) part of the layout, you have a smartphone with the Daikin Residential Controller app, and the app notified you that new LAN adapter software is available.

- 1 Follow the update procedure in the app.

Result: The new software is automatically downloaded to the LAN adapter.

Result: To implement changes, the LAN adapter automatically performs a power reset.

Result: The LAN adapter software is now updated to the latest version.



INFORMATION

During the software update, the LAN adapter and the app CANNOT be operated. It is possible that the user interface of the indoor unit displays error U8-01. When the update is finished, this error code will disappear automatically.

9.4.5 Configuration web interface

On the configuration web interface you can make the following settings:

| Section | Settings |
|-------------------|---|
| Information | Consult various system parameters |
| Upload adapter SW | Perform a LAN adapter software update |
| Factory reset | Perform a LAN adapter factory reset |
| Network settings | Make various network settings (e.g. set a fixed IP address) |
| Smart Grid | Make settings related to the Smart Grid application |



INFORMATION

The configuration web interface is available for 2 hours after powering on the LAN adapter. To make the configuration web interface available again after it has expired, the LAN adapter requires a power reset (power reset of the indoor unit). It is NOT required to reset the 230 V AC detection voltage.

Accessing the configuration web interface

Normally, you should be able to access the configuration web interface by browsing to its URL: <http://altherma.local>. If this does not work out, navigate to the configuration web interface by using the LAN adapter's IP address. The IP address depends on network configuration.

Access via URL

Prerequisite: Your computer is connected to the same router (same network) the LAN adapter is connected to.

Prerequisite: The router supports DHCP.

- 1 In your browser, go to <http://altherma.local>

Access via LAN adapter IP address

Prerequisite: Your computer is connected to the same router (same network) the LAN adapter is connected to.

Prerequisite: You have retrieved the IP address of the LAN adapter.

- 1 In your browser, go to the IP address of the LAN adapter.

To retrieve the IP address of the LAN adapter:

| Retrieval via | Instruction |
|---------------------------------------|---|
| The Daikin Residential Controller app | <ul style="list-style-type: none"> From the app's home screen, tap the pencil icon to go to the "Edit unit" screen. Under "Units", tap a unit that is connected to the LAN adapter of which you want to retrieve the IP address. In the "Manage unit" screen, find the LAN adapter IP address under "Network gateway information". |
| The DHCP client list of your router | Find the LAN adapter in the DHCP client list of the router. |

Access via DIP switch + custom static IP address

Prerequisite: Your computer is directly connected to the LAN adapter with an Ethernet cable, and is NOT connected to any network (wifi, LAN, ...).

Prerequisite: The power to the LAN adapter is OFF.

- 1 Set DIP switch 4 to "ON".
- 2 Turn ON the power to the LAN adapter.
- 3 In your browser, go to <http://169.254.10.10>.



NOTICE

Use appropriate tooling to set the DIP switches to another position. Beware of electrostatic discharge.



INFORMATION

The LAN adapter only checks the configuration of the DIP switch after a power reset. To configure the DIP switch, therefore make sure the power to the adapter is OFF.



INFORMATION

"Power" is both the power supplied by the indoor unit AND the 230 V AC detection voltage supplied to X1A.

9.4.6 System information

To consult system information, go to "Information" on the configuration web interface.

Information

LAN adapter firmware: 17003905_PP

Smart grid: enabled

IP address: 10.0.0.7

MAC address: 00:23:7e:f8:09:5d

Serial number: 170300003

User interface SW: v01.19.00

User interface EEPROM: AS1705847-01F

Hydro SW: ID66F2

Hydro EEPROM: AS1706432-25A

| Information | Description/translation |
|-----------------------|---|
| LAN adapter | |
| LAN adapter firmware | LAN adapter software version |
| Smart grid | Check if the LAN adapter can be used for the Smart Grid application |
| IP address | LAN adapter IP address |
| MAC address | LAN adapter MAC address |
| Serial number | Serial number |
| User interface | |
| User interface SW | User interface software |
| User interface EEPROM | User interface EEPROM |
| Indoor unit | |
| Hydro SW | Indoor unit hydro module software version |
| Hydro EEPROM | Indoor unit hydro module EEPROM |

9.4.7 Factory reset

Perform a factory reset as follows:

- Via the DIP switch (preferred method);
- Via the configuration web interface;
- Via the Daikin Residential Controller app.



INFORMATION

Mind that when you perform a factory reset, ALL current settings and configuration will be reset. Use this function with care.

Performing a factory reset might be useful in the following cases:

- You can't find the LAN adapter (anymore) in the network;
- The LAN adapter lost its IP address;
- You want to reconfigure the Smart Grid application;
- ...

To perform a factory reset

Via the DIP switch (preferred method)

- 1 Turn OFF the power to the LAN adapter.
- 2 Set DIP switch 2 to "ON".
- 3 Turn ON the power.
- 4 Wait for 15 seconds.
- 5 Turn OFF the power.
- 6 Set the switch back to "OFF".
- 7 Turn ON the power.



NOTICE

Use appropriate tooling to set the DIP switches to another position. Beware of electrostatic discharge.



INFORMATION

The LAN adapter only checks the configuration of the DIP switch after a power reset. To configure the DIP switch, therefore make sure the power to the adapter is OFF.



INFORMATION

"Power" is both the power supplied by the indoor unit AND the 230 V AC detection voltage supplied to X1A.

Via the configuration web interface

- 1 Go to "Factory reset" on the configuration web interface.
- 2 Click the reset button.

Factory reset

This will set the LAN adapter back to default settings. Unit settings remains the same. After this a reboot will be executed.

| Information | Translation |
|---|---|
| This will set the LAN adapter back to default settings. Unit settings remains the same. After this a reboot will be executed. | This will reset the LAN adapter to default settings. Indoor unit settings remain the same. After the reset, a reboot is executed. |



INFORMATION

For instructions on how to access the configuration web interface, see "["Accessing the configuration web interface"](#) [▶ 114].

Via the app

Open the Daikin Residential Controller app and perform a factory reset.

9.4.8 Network settings

Normally, the LAN adapter applies network settings automatically, and no changes to these are required. If required, however, it is possible to configure network settings as follows:

- Via the configuration web interface (various settings);
- Via the DIP switch (custom static IP address only).

Note on the LAN adapter IP address

Assign an IP address to the LAN adapter in one of the following ways:

| IP address | Description + method |
|--------------------------|---|
| DHCP protocol (default) | The system automatically assigns the LAN adapter an IP address by way of the DHCP protocol. This is the default situation, and set on the configuration web interface. See " Via the configuration web interface " [▶ 118]. |
| Static IP address | Bypass the DHCP protocol and manually assign a static IP address to the LAN adapter. Do this via the configuration web interface. See " Via the configuration web interface " [▶ 118]. |
| Custom static IP address | Bypass any IP settings made on the configuration web interface and assign a custom static IP address to the LAN adapter. Do this via the DIP switch. See " Via the DIP switch " [▶ 119]. |



INFORMATION

Normally, network/IP settings are automatically applied and require no changes. Only make changes to the network/IP settings when absolutely required (e.g. when the system does not detect the LAN adapter automatically).

To configure network settings

Via the configuration web interface

- 1 Go to "Network settings" on the configuration web interface.
- 2 Configure network settings.

Network settings

DHCP active Automatic Manually

Static IP address . . .

Subnetmask . . .

Default gateway . . .

Primary DNS . . .

Secondary DNS . . .

| Information | Translation/description |
|-------------------|-------------------------|
| DHCP active | DHCP active |
| Automatic | Automatic |
| Manually | Manually |
| Static IP address | Static IP address |
| Subnet Mask | Subnetmask |
| Default gateway | Default gateway |
| Primary DNS | Primary DNS |
| Secondary DNS | Secondary DNS |



INFORMATION

By default "DHCP active" is set to "Automatic" and IP settings are configured automatically and dynamically by way of the DHCP protocol. When setting "DHCP active" to "Manually", you bypass the DHCP protocol. Instead, define a static IP address for the LAN adapter in the fields next to "Static IP address".

When you set a static IP address for the LAN adapter, you make access to the configuration web interface via the URL (<http://altherma.local>) impossible. Therefore, when setting a static IP address, note it down somewhere, this for easy future access to the configuration web interface.

Via the DIP switch

The DIP switch allows you to assign a custom static IP address to the LAN adapter. This IP address is **169.254.10.10**. When you choose to do this, you bypass any IP settings made on the configuration web interface.

To assign the custom static IP address to the LAN adapter:

- 1 Turn OFF the power to the LAN adapter.
- 2 Set DIP switch 2 to "ON".
- 3 Turn ON the power.



NOTICE

Use appropriate tooling to set the DIP switches to another position. Beware of electrostatic discharge.

**INFORMATION**

The LAN adapter only checks the configuration of the DIP switch after a power reset. To configure the DIP switch, therefore make sure the power to the adapter is OFF.

**INFORMATION**

"Power" is both the power supplied by the indoor unit AND the 230 V AC detection voltage supplied to X1A.

9.5 Smart Grid application

**INFORMATION**

To use the LAN adapter for the Smart Grid application, it is required that DIP switch 1 is set to "OFF" (default the case). Alternatively, to disable the possibility of using the LAN adapter for the Smart Grid application, it is possible to set DIP switch 1 to "ON".

**NOTICE**

Use appropriate tooling to set the DIP switches to another position. Beware of electrostatic discharge.

The LAN adapter allows for the connection of the heat pump system to a solar inverter/energy management system, and enables it to run in various Smart Grid operation modes. In this way, all system components work together to limit the injection of (self-generated) power into the grid, instead converting this power into thermal energy by making use of the thermal storage capacity of the heat pump. This is called "energy buffering".

The system can buffer energy in the following ways:

- Heat up the domestic hot water tank
- Heat up the room
- Cool down the room

The Smart Grid application is controlled by the solar inverter/energy management system, that monitors the grid, and sends commands to the LAN adapter. The adapter is connected to the solar inverter/energy management system (digital outputs) by way of connector X1A (digital inputs).

| Solar inverter/energy management system (digital outputs) | X1A (digital inputs) |
|--|---------------------------------|
| Digital output 1 | SG0 (X1A/1+2) |
| Digital output 2 | SG1 (X1A/3+4) |

The solar inverter/energy management system controls the state of the digital inputs of the LAN adapter. Depending on the state of the inputs (open or closed), the heat pump system can run in the following Smart Grid operation modes:

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



INFORMATION

For the system to run in all 4 possible Smart Grid operation modes, the solar inverter/energy management system needs to have 2 digital outputs available. If only 1 output is available, then you can only connect to SG0, and the system can only run in the "Normal operation/Free running" and "Recommended ON" operation modes. For the system to run in "Forced OFF" and "Forced ON", a connection to SG1 is required (for those operation modes, SG1 needs to get "closed").



INFORMATION

In case the system layout includes a controllable wall socket, and the solar inverter/energy management system activates this socket, SG0 gets "closed" and the system runs in the "Recommended ON" operation mode. If the solar inverter/energy management system deactivates the socket, SG0 (and SG1) get "opened" and the system runs in the "Normal operation/Free running" operation mode (due to the 230 V C detection voltage to X1A/L+N getting cut off).

9.5.1 Smart Grid settings

To make changes to Smart Grid settings, go to Smart Grid on the configuration web interface.

Smart Grid

Pulse meter setting

Electrical heaters allowed No Yes

Room buffering allowed No Yes

Static power limitation

| Information | Translation |
|---------------------|---------------------|
| Pulse meter setting | Pulse meter setting |

| Information | Translation |
|-------------------------------------|-------------------------------------|
| No meter | No meter |
| Electrical heaters allowed - No/Yes | Electrical heaters allowed – No/Yes |
| Room buffering allowed - No/Yes | Room buffering allowed – No/Yes |
| Static power limitation | Static power limitation |



INFORMATION

For instructions on how to access the configuration web interface, see "[Accessing the configuration web interface](#)" [▶ 114].

Energy buffering

Depending on Smart Grid settings (configuration web interface), energy buffering either happens in the domestic hot water tank only, or in the domestic hot water tank and in the room. You can choose whether or not to have the electrical heaters assist with the buffering of energy in the domestic hot water tank.

| Energy buffering | System requirements | Description |
|-------------------------|--|--|
| Domestic hot water tank | On the user interface, make sure to set [9.1.3.3]=4 (Domestic hot water = Integrated). | The system produces domestic hot water. The tank heats up the water up to the maximum temperature. |
| Room (heating) | <ul style="list-style-type: none"> Allow for buffering in the room on the configuration web interface. On the user interface, make sure to set [2.9]=2 (Control = Room thermostat). | The system heats up the room up to the comfort setpoint. |
| Room (cooling) | <ul style="list-style-type: none"> Allow for buffering in the room on the configuration web interface. On the user interface, make sure to set [2.9]=2 (Control = Room thermostat). | The system cools down the room down to the comfort setpoint. |



INFORMATION

- The system will ONLY buffer energy when the indoor unit is in standby mode. Normal operation (scheduled actions, etc.) has priority over energy buffering.
- On the configuration web interface, the buffering is default set to "domestic hot water tank only".
- The maximum temperature during domestic hot water tank buffering is the maximum tank temperature for the applicable tank type.
- The space heating/cooling setpoint during room buffering is the comfort setpoint for the room.
- The system will ONLY buffer energy during space heating if the space heating setpoint is lower than the heating comfort setpoint. The system will ONLY buffer energy during space cooling if the space cooling setpoint is higher than the cooling comfort setpoint.

Power limitation

In the "Recommended ON" operation mode, the power consumption of the heat pump system is limited either statically or dynamically. In both cases, it is possible to include the power consumption of the electrical heaters in the calculation (default NOT the case).

| IF | THEN |
|--|--|
| Static power limitation (Static power limitation) | <p>The power consumption of the indoor unit is limited statically based on a fixed value (default 1.5 kW) that is set in the configuration web interface. During energy buffering, the power consumption of the indoor unit will NOT exceed this limit.</p> <p>The value for this setting is only used if the system does not include an electricity meter (on the configuration web interface: Pulse meter setting: "No meter"). Otherwise, make use of dynamic power limitation.</p> |
| Dynamic power limitation (Pulse meter setting) | <p>The power limitation is auto-adaptive, and dynamically performed based on the power injection into the grid, measured by the electricity meter. To minimise the power injection into the grid, the indoor unit operates as much as possible.</p> |



INFORMATION

- In the "Forced ON" operation mode, energy buffering happens WITHOUT power limitation.
- To get the most out of the energy buffering it is recommended to make use of dynamic power limitation by way of an electricity meter.
- The electrical heaters will ONLY operate when the power limitation is higher than the power rating of the heaters.



WARNING

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



INFORMATION

- For dynamic power limitation to be possible, a single connection point to the grid is required (one connection point for the photovoltaic system AND the domestic appliances). To function properly, the Smart Grid algorithm requires the net sum of generated AND consumed energy. The algorithm will NOT work when there are separate meters for generated energy and consumed energy.
- Since dynamic power limitation is performed based on electricity meter input, you do NOT have to set the power limitation value in the configuration web interface.

9.5.2 Operation modes

"Normal operation/Free running" mode

In the "Normal operation"/"Free running" operation mode, the indoor unit operates as normal, according to its owner's settings and schedules. No Smart Grid functionalities are enabled.

"Recommended ON" mode

In the "Recommended ON" operation mode, the heat pump system makes use of solar/grid power (when it is available, as measured by the solar inverter/energy management system) to produce domestic hot water and/or heat up or cool down the space. The amount of solar/grid power that is used for buffering depends on the domestic hot water tank and/or the room temperature. To align solar/grid capacity and the power consumption by the heat pump system, the power consumption of the indoor unit is limited either statically (by a fixed value set in the configuration web interface) or dynamically (auto-adaptively, as measured by the electricity meter – if part of the system layout).

"Forced OFF" mode

In the "Forced OFF" operation mode, the solar inverter/energy management system triggers the system to deactivate the operation of the unit's compressor and the electrical heaters. This is especially useful in case of energy management systems that react to high energy tariffs, or in case of grid overload (signaled by the energy distributor to the energy management system). Once active, "Forced OFF" mode will cause the system to stop space heating/cooling, as well as domestic hot water production.



INFORMATION

Once running in one of the Smart Grid operation modes, the system will keep running in that mode until the input state of the LAN adapter is changed. Beware that if the system runs in "Forced OFF" mode for a long time, comfort issues can occur.

"Forced ON" mode

In the "Forced ON" operation mode, the heat pump system makes use of solar/grid power (when it is available, as measured by the solar inverter/energy management system) to produce domestic hot water and/or heat up or cool down the space. The amount of solar/grid power that is used for buffering depends on the domestic hot water tank and/or the room temperature. In contrast to the "Recommended

ON" operation mode, there is NO power limitation: the system selects the comfort setpoint for space heating/cooling, and will heat up the domestic hot water tank to the maximum temperature. The unit's compressor and the electrical heaters are not limited in their power consumption.

The "Forced ON" operation mode is particularly useful in case of energy management systems that react to low energy tariffs, in case of grid overload (signaled by the energy distributor to the energy management system), or when multiple houses are connected to the grid that are controlled simultaneously, this to stabilise the grid.



INFORMATION

Once running in one of the Smart Grid operation modes, the system will keep running in that mode until the input state of the LAN adapter is changed.

9.5.3 System requirements

The Smart Grid application poses the following requirements to the heat pump system:

| Item | Requirement |
|------------------------------------|--|
| LAN adapter software | It is recommended to ALWAYS keep the LAN adapter software up-to-date. |
| Unit control method | On the user interface, make sure to set [2.9]=2 (Control = Room thermostat) |
| Domestic hot water settings | To allow for energy buffering in the domestic hot water tank, on the user interface, make sure to set [9.2.1]=4 (Domestic hot water = Integrated). |
| Power consumption control settings | On the user interface, make sure to set: <ul style="list-style-type: none"> ▪ [9.9.1]=1 (Power consumption control = Continuous) ▪ [9.9.2]=1 (Type = kW) |

9.6 Troubleshooting – LAN adapter

9.6.1 Overview: Troubleshooting

This chapter describes what to do in case of problems.

It contains information about:

- Solving problems based on symptoms
- Solving problems based on error codes

9.6.2 Solving problems based on symptoms – LAN adapter

Symptom: Cannot access the web page

| Possible causes | Corrective action |
|--|---|
| The LAN adapter is not powered (heartbeat LED not blinking). | Make sure that the LAN adapter is correctly connected to the indoor unit, and that the power of all connected equipment is turned ON. |

| Possible causes | Corrective action |
|--|---|
| The configuration web interface is ONLY available for 2 hours after every power reset. Its timer can have run out. | Perform a power reset on the LAN adapter. |
| The LAN adapter is NOT connected to the network (network connection LED NOT blinking). | Connect the LAN adapter to a router. |
| The LAN adapter is NOT connected to the router or the router does NOT support DHCP. | Connect the LAN adapter to a router that supports DHCP. |
| The computer is NOT connected to the same router as the LAN adapter. | Connect the computer to the same router as the LAN adapter. |



INFORMATION

If none of the corrective actions work, try performing a power reset of the total system.

Symptom: The app does not find the LAN adapter

In the rare case that the Daikin Residential Controller app does not find the LAN adapter automatically, connect router, LAN adapter, and app manually by way of a fixed IP address.

- 1 In the router, check the IP address that is currently assigned to the LAN adapter.
- 2 Access the configuration web interface with this IP address.
- 3 On the configuration web interface, set "DHCP active" to "Manually".
- 4 In the router, assign a static IP address to the LAN adapter.
- 5 On the configuration web interface, in the fields next to "Static IP address", set the same static IP address.
- 6 In the Daikin Residential Controller app (Settings menu), assign the same IP address to the LAN adapter.
- 7 Reset the power to the LAN adapter.

Result: Router, LAN adapter, and Daikin Residential Controller app share the same fixed IP address and should be able to find each other.

9.6.3 Solving problems based on error codes – LAN adapter

Error codes of the indoor unit

If the indoor unit loses its connection with the LAN adapter, the following error code appears on the user interface:

| Error code | Description |
|------------|----------------------------------|
| U8-01 | Connection with LAN adapter lost |

Error codes of the adapter

LAN adapter errors are indicated by the status LEDs. There is a problem if one or more status LEDs have the following behaviour:

| LED | Error behavior | Description |
|---|---|--|
|  | Heartbeat LED NOT blinking | No normal operation. Try resetting the LAN adapter or contact your dealer. |
|  | Network LED flashing | Communication problem. Check the network connection. |
|  | Indoor unit communication LED flashing | Communication problem with the indoor unit. |
|  | Smart Grid LED flashing for more than 30 minutes. | Smart Grid compatibility problem. Try resetting the LAN adapter or contact your dealer. |



INFORMATION

- The DIP switch is used to configure the system. For more information, see "[9.4 Configuration – LAN adapter](#)" [▶ 112].
- When the LAN adapter performs a Smart Grid compatibility check, LD4 flashes. This is NOT erroneous behaviour. After a successful check, LD4 will either stay ON or go OFF. When it keeps flashing for more than 30 minutes, the compatibility check failed, and NO Smart Grid operation is possible.

For a complete description of the status LEDs, check "["9.1 About the LAN adapter"](#) [▶ 100].

10 Configuration

10.1 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 "[10.1.1 To access the most used commands](#)" [▶ 128].
- **Afterwards.** If necessary, you can make changes to the configuration in the menu structure or the overview settings.



INFORMATION

When the configuration wizard is finished, the user interface will show an overview screen and request to confirm. When confirmed, the system will restart and the home screen will be displayed.

Accessing settings – Legend for tables

You can access the installer settings using two different methods. However, NOT all settings are accessible via both methods. If so, the corresponding table columns in this chapter are set to N/A (not applicable).

| Method | Column in tables |
|---|-----------------------------|
| Accessing settings via the breadcrumb in the home menu screen or the menu structure . To enable breadcrumbs, press the ? button in the home screen. | # For example: [9.1.5.2] |
| Accessing settings via the code in the overview field settings . | Code For example: [C-07] |

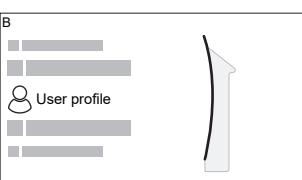
See also:

- "[To access the installer settings](#)" [▶ 129]
- "[10.7 Menu structure: Overview installer settings](#)" [▶ 198]

10.1.1 To access the most used commands

To change the user permission level

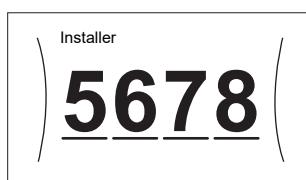
You can change the user permission level as follows:

| | | | |
|----------|--|---|---|
| 1 | Go to [B]: User profile. |  |  |
| 2 | Enter the applicable pin code for the user permission level. | — | |

- Browse through the list of digits and change the selected digit.
- Move the cursor from left to right.
- Confirm the pin code and proceed.

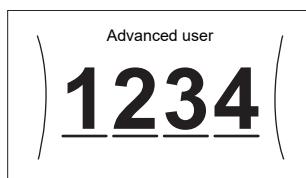
Installer pin code

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



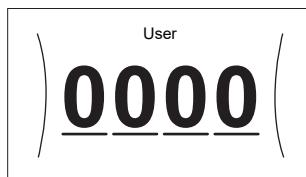
Advanced user pin code

The **Advanced user** pin code is **1234**. Additional menu items for the user are now visible.



User pin code

The **User** pin code is **0000**.



To access the installer settings

- 1** Set the user permission level to **Installer**.
- 2** Go to [9]: **Installer settings**.

To modify an overview setting

Example: Modify [1-01] from 15 to 20.

Most settings can be configured via the menu structure. If for any reason it is required to change a setting using the overview settings, then the overview settings can be accessed as follows:

| | | |
|----------|--|---|
| 1 | Set the user permission level to Installer . See " To change the user permission level " [▶ 128]. | — |
| 2 | Go to [9.1]: Installer settings > Overview field settings . |  |

| | | |
|---|--|-------|
| 3 | Turn the left dial to select the first part of the setting and confirm by pressing the dial. | ●●●●○ |
| 4 | Turn the left dial to select the second part of the setting | ●●●●○ |
| 5 | Turn the right dial to modify the value from 15 to 20. | ○●●●○ |
| 6 | Press the left dial to confirm the new setting. | ●●●●○ |
| 7 | Press the center button to go back to the home screen. | ⌂ |



INFORMATION

When you change the overview settings and you go back to the home screen, the user interface will show a popup screen and request to restart the system.

When confirmed, the system will restart and recent changes will be applied.

10.2 Configuration wizard

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

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

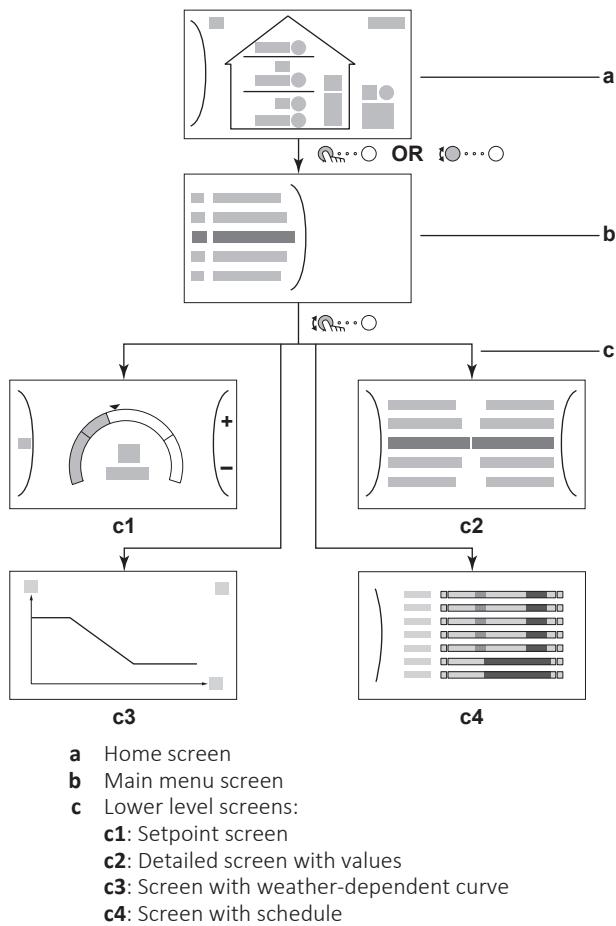
| For the setting... | Refer to... |
|--|-------------|
| Language [7.1] | |
| Time/date [7.2] | — |
| Hours Minutes Year Month Day | |
| System | |

| For the setting... | | Refer to... |
|--|--|--|
| Indoor unit type (read only) | | "10.5.9 Installer settings" [▶ 183] |
| Backup heater type (read only) | | |
| Domestic hot water [9.2.1] | | |
| Emergency [9.5.1] | | |
| Number of zones [4.4] | | "10.5.5 Space heating/cooling" [▶ 164] |
| Backup heater | | |
| Voltage [9.3.2] | | "Backup heater" [▶ 184] |
| Maximum capacity [9.3.9] | | |
| Main zone | | |
| Emitter type [2.7] | | "10.5.3 Main zone" [▶ 150] |
| Control [2.9] | | |
| Setpoint mode [2.4] | | |
| Heating WD curve [2.5] (if applicable) | | |
| Cooling WD curve [2.6] (if applicable) | | |
| Schedule [2.1] | | |
| WD curve type [2.E] | | |
| Additional zone (only if [4.4]=1) | | |
| Emitter type [3.7] | | "10.5.4 Additional zone" [▶ 159] |
| 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] | | |
| WD curve type [3.C] | | |
| Tank | | |
| Heat up mode [5.6] | | "10.5.6 Tank" [▶ 171] |
| Comfort setpoint [5.2] | | |
| Eco setpoint [5.3] | | |
| Reheat setpoint [5.4] | | |
| Hysteresis [5.9] and [5.A] | | |
| WD curve type [5.E] | | |

10.3 Possible screens

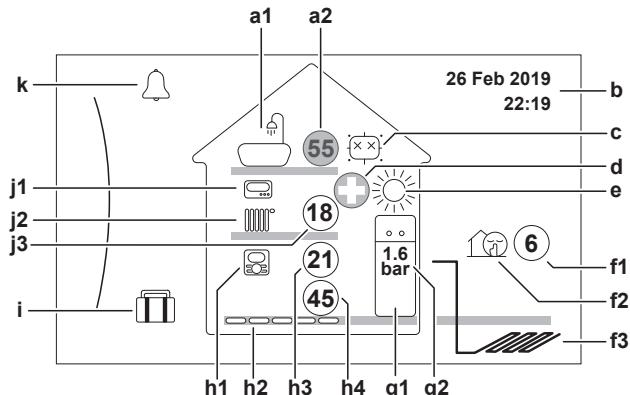
10.3.1 Possible screens: Overview

The most common screens are as follows:



10.3.2 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. |

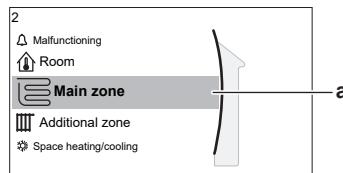
| Possible actions on this screen | | |
|---|---|--|
| ? | Enable/disable breadcrumbs. | |
| Item | Description | |
| a Domestic hot water | | |
| a1 |  | Domestic hot water |
| a2 |  | Measured tank temperature ⁽¹⁾ |
| b Current date and time | | |
| c Disinfection / Powerful | | |
| |  | Disinfection mode active |
| |  | Powerful operation mode active |
| d Emergency | | |
| |  | Heat pump failure and system operates in Emergency mode or heat pump is forced off. |
| e Space operation mode | | |
| |  | Cooling |
| |  | Heating |
| f Outdoor / quiet mode | | |
| f1 |  | Measured outdoor temperature ⁽¹⁾ |
| f2 |  | Quiet mode active |
| f3 |  | Outdoor brine piping |
| g Indoor unit / domestic hot water tank | | |
| g1 |  | Floor-standing indoor unit with integrated tank |
| g2 |  | Water pressure |

| Item | | Description |
|-----------|---|--|
| h | Main zone | |
| h1 | Installed room thermostat type: | |
| |  | Unit operation is decided based on the ambient temperature of the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat). |
| |  | Unit operation is decided by the external room thermostat (wired or wireless). |
| | — | No room thermostat installed or set. Unit operation is decided based on the leaving water temperature regardless of the actual room temperature and/or heating demand of the room. |
| h2 | Installed heat emitter type: | |
| |  | Underfloor heating |
| |  | Fancoil unit |
| |  | Radiator |
| h3 |  | Measured room temperature ⁽¹⁾ |
| h4 |  | Leaving water temperature setpoint ⁽¹⁾ |
| i | Holiday mode | |
| |  | Holiday mode active |
| j | Additional zone | |
| j1 | Installed room thermostat type: | |
| |  | Unit operation is decided by the external room thermostat (wired or wireless). |
| | — | No room thermostat installed or set. Unit operation is decided based on the leaving water temperature regardless of the actual room temperature and/or heating demand of the room. |
| | j2 | |
| j2 | Installed heat emitter type: | |
| |  | Underfloor heating |
| |  | Fancoil unit |
| |  | Radiator |
| j3 |  | Leaving water temperature setpoint ⁽¹⁾ |
| k | Malfunction | |
| |  | A malfunction occurred. |
| |  | See " 14.4.1 To display the help text in case of a malfunction " [▶ 222] for more information. |

(1) If the corresponding operation (for example: space heating) is not active, the circle is greyed out.

10.3.3 Main menu screen

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



a Selected submenu

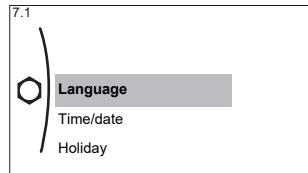
| Possible actions on this screen | |
|---|-----------------------------|
|  | Go through the list. |
|  | Enter the submenu. |
| ? | Enable/disable breadcrumbs. |

| | Submenu | Description |
|-----|---|--|
| [0] |  or  Malfunctioning | Restriction: Only displayed if a malfunction occurs. See " 14.4.1 To display the help text in case of a malfunction " [▶ 222] for more information. |
| [1] |  Room | Restriction: Only displayed if a dedicated Human Comfort Interface (BRC1HHDA used as room thermostat) is controlling the indoor unit. Set the room temperature. |
| [2] |  Main zone | Shows the applicable symbol for your main zone emitter type. Set the leaving water temperature for the main zone. |
| [3] |  Additional zone | Restriction: Only displayed if there are two leaving water temperature zones. Shows the applicable symbol for your additional zone emitter type. Set the leaving water temperature for the additional zone (if present). |
| [4] |  Space heating/cooling | Shows the applicable symbol of your unit. Put the unit in heating mode or cooling mode. You cannot change the mode on heating only models. |
| [5] |  Tank | Set the domestic hot water tank temperature. |
| [7] |  User settings | Gives access to user settings such as holiday mode and quiet mode. |
| [8] |  Information | Displays data and information about the indoor unit. |
| [9] |  Installer settings | Restriction: Only for the installer. Gives access to advanced settings. |

| Submenu | | Description |
|---------|---|--|
| [A] |  Commissioning | Restriction: Only for the installer. Perform tests and maintenance. |
| [B] |  User profile | Change the active user profile. |
| [C] |  Operation | Turn heating/cooling functionality and domestic hot water preparation on or off. |

10.3.4 Menu screen

Example:



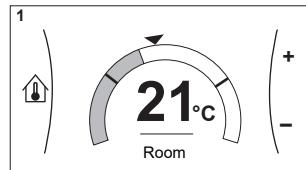
| Possible actions on this screen | |
|---|----------------------------|
|  ... | Go through the list. |
|  ... | Enter the submenu/setting. |

10.3.5 Setpoint screen

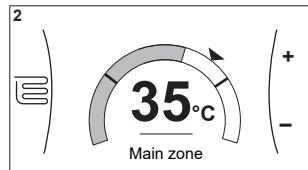
The setpoint screen is displayed for screens describing system components that need a setpoint value.

Examples

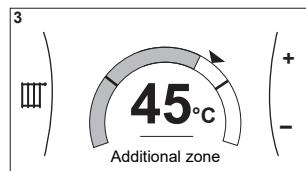
[1] Room temperature screen



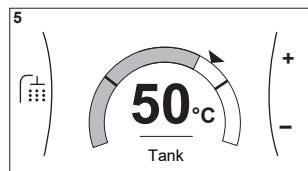
[2] Main zone screen



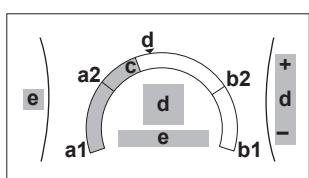
[3] Additional zone screen



[5] Tank temperature screen



Explanation

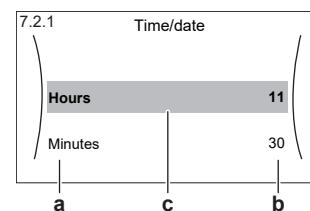
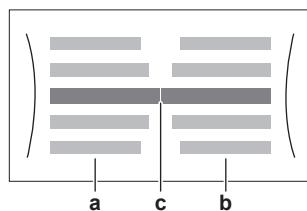


| Possible actions on this screen | |
|---|-------------------------------------|
|  ... | Go through the list of the submenu. |
|  ... | Go to the submenu. |

| Possible actions on this screen | | |
|---------------------------------|---|---|
| ○...○ | 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. |

10.3.6 Detailed screen with values

Example:



- a** Settings
- b** Values
- c** Selected setting and value

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

10.3.7 Schedule screen: Example

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

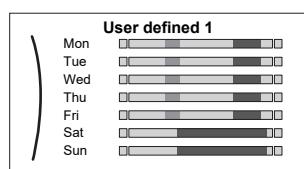


INFORMATION

The procedures to program other schedules are similar.

To program the schedule: overview

Example: You want to program the following schedule:



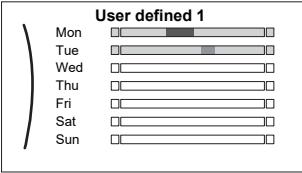
Prerequisite: The room temperature schedule is only available if room thermostat control is active. If leaving water temperature control is active, you can program the main zone schedule instead.

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

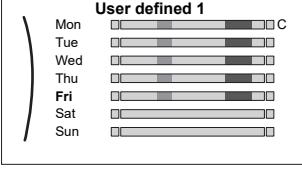
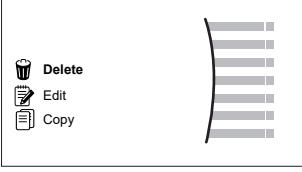
To go to the schedule:

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

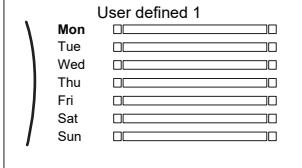
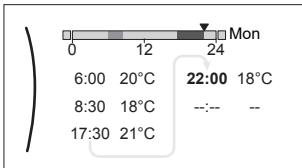
To clear the content of the week schedule:

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

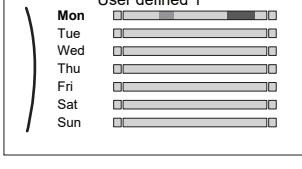
To clear the content of a day schedule:

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

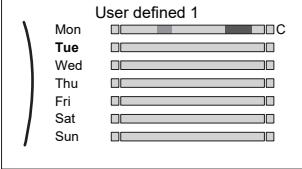
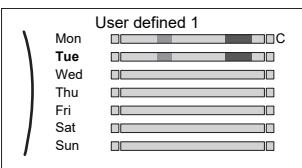
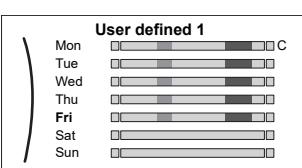
To program the schedule for Monday:

| | | | |
|---|---|--|--|
| 1 | Select Monday. |  |  |
| 2 | Select Edit. |  |  |
| 3 | Use the left dial to select an entry and edit the entry with the right dial. You can program up to 6 actions each day. On the bar, a high temperature has a darker colour than a low temperature. |  |   |
| 4 | Note: To clear an action, set its time as the time of the previous action. Result: The schedule for Monday is defined. The value of the last action is valid until the next programmed action. In this example, Monday is the first day you programmed. Thus, the last programmed action is valid up to the first action of next Monday. | |  |

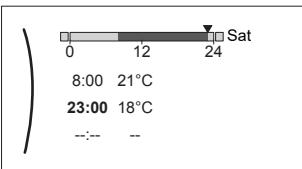
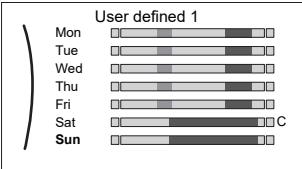
To copy the schedule to the other weekdays:

| | | | |
|---|----------------|---|---|
| 1 | Select Monday. |  |  |
| 2 | Select Copy. |  |  |

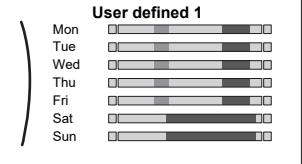
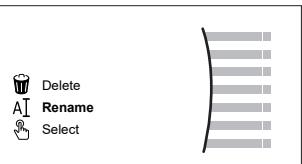
Result: Next to the copied day, "C" is displayed.

| | | |
|---|--|--------|
| 3 | Select Tuesday. | இஇ...○ |
| |  | |
| 4 | Select Paste. | இஇ...○ |
| |  | |
| | Result: | |
| |  | |
| 5 | Repeat this action for all other weekdays. | — |
| |  | |

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

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

To rename the schedule:

| | | |
|--|---|--|
| 1 Select the name of the current schedule. |  |  |
| 2 Select Rename. |  |  |
| 3 (optional) To delete the current schedule name, browse through the character list until ← is displayed, then press to remove the previous character. Repeat for each character of the schedule name. | |  |
| 4 To name the current schedule, browse through the character list and confirm the selected character. The schedule name can contain up to 15 characters. | |  |
| 5 Confirm the new name. | |  |



INFORMATION

Not all schedules can be renamed.

10.4 Weather-dependent curve

10.4.1 What is a weather-dependent curve?

Weather-dependent operation

The unit operates 'weather dependent' if the desired leaving water or tank temperature is determined automatically by the outdoor temperature. It therefore is connected to a temperature sensor on the North wall of the building. If the outdoor temperature drops or rises, the unit compensates instantly. Thus, the unit does not have to wait for feedback by the thermostat to increase or decrease the temperature of the leaving water or tank. Because it reacts more quickly, it prevents high rises and drops of the indoor temperature and water temperature at tap points.

Advantage

Weather-dependent operation reduces energy consumption.

Weather-dependent curve

To be able to compensate for differences in temperature, the unit relies on its weather-dependent curve. This curve defines how much the temperature of the tank or leaving water must be at different outdoor temperatures. Because the slope of the curve depends on local circumstances such as climate and the insulation of the house, the curve can be adjusted by an installer or user.

Types of weather-dependent curve

There are 2 types of weather-dependent curves:

- 2-points curve
- Slope-offset curve

Which type of curve you use to make adjustments, depends on your personal preference. See "[10.4.4 Using weather-dependent curves](#)" [▶ 144].

Availability

The weather-dependent curve is available for:

- Main zone - Heating
- Main zone - Cooling
- Additional zone - Heating
- Additional zone - Cooling
- Tank



INFORMATION

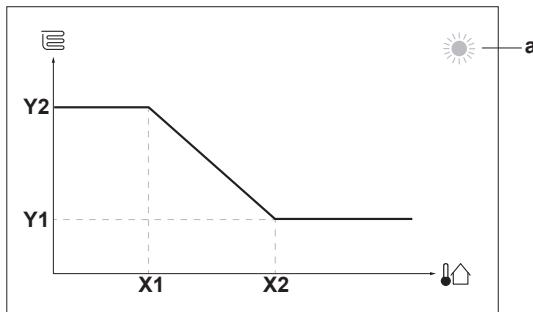
To operate weather dependent, correctly configure the setpoint of the main zone, additional zone or tank. See "[10.4.4 Using weather-dependent curves](#)" [▶ 144].

10.4.2 2-points curve

Define the weather-dependent curve with these two setpoints:

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

Example



| Item | Description |
|--|---|
| a | Selected weather dependent zone: ▪ ☀: Main zone or additional zone heating ▪ ☀: Main zone or additional zone cooling ▪ ⌂: Domestic hot water |
| X1, X2 | Examples of outdoor ambient temperature |
| Y1, Y2 | Examples of desired tank temperature or leaving water temperature. The icon corresponds to the heat emitter for that zone: ▪ ⌂: Underfloor heating ▪ ☁: Fan coil unit ▪ ⌂: Radiator ▪ ⌂: Domestic hot water tank |
| Possible actions on this screen | |
| ○...○ | Go through the temperatures. |
| ○...○: | Change the temperature. |
| ○...🕒 | Go to the next temperature. |
| 🕒...○ | Confirm changes and proceed. |

10.4.3 Slope-offset curve

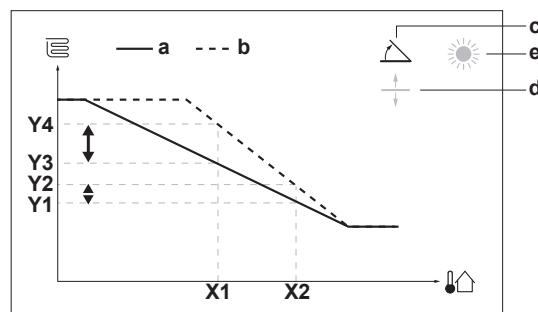
Slope and offset

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

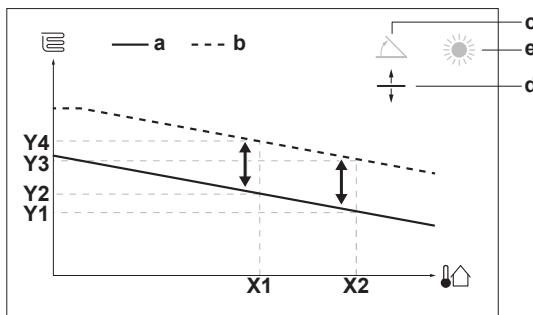
- Change the **slope** to differently increase or decrease the temperature of the leaving water for different ambient temperatures. For example, if leaving water temperature is in general fine but at low ambient temperatures too cold, raise the slope so that leaving water temperature is heated increasingly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

Examples

Weather-dependent curve when slope is selected:



Weather-dependent curve when offset is selected:



| Item | Description |
|-----------------------|--|
| a | WD curve before changes. |
| b | WD curve after changes (as example): <ul style="list-style-type: none"> When slope is changed, the new preferred temperature at X1 is unequally higher than the preferred temperature at X2. When offset is changed, the new preferred temperature at X1 is equally higher as the preferred temperature at X2. |
| c | Slope |
| d | Offset |
| e | Selected weather dependent zone: <ul style="list-style-type: none"> Main zone or additional zone heating Main zone or additional zone cooling Domestic hot water |
| X1, X2 | Examples of outdoor ambient temperature |
| Y1, Y2, Y3, Y4 | Examples of desired tank temperature or leaving water temperature. The icon corresponds to the heat emitter for that zone: <ul style="list-style-type: none"> Underfloor heating Fan coil unit Radiator Domestic hot water tank |

| Possible actions on this screen | |
|---|---|
| <input type="radio"/> ... <input type="radio"/> | Select slope or offset. |
| <input type="radio"/> ... <input type="radio"/> | Increase or decrease the slope/offset. |
| <input type="radio"/> ... <input type="radio"/> | When slope is selected: set slope and go to offset. When offset is selected: set offset. |
| <input type="radio"/> ... <input type="radio"/> | Confirm changes and return to the submenu. |

10.4.4 Using weather-dependent curves

Configure weather-dependent curves as following:

To define the setpoint mode

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

| Go to setpoint mode ... | Set the setpoint mode to ... |
|---------------------------------------|--|
| Main zone – Heating | |
| [2.4] Main zone > Setpoint mode | WD heating, fixed cooling OR Weather dependent |
| Main zone – Cooling | |
| [2.4] Main zone > Setpoint mode | Weather dependent |
| Additional zone – Heating | |
| [3.4] Additional zone > Setpoint mode | WD heating, fixed cooling OR Weather dependent |
| Additional zone – Cooling | |
| [3.4] Additional zone > Setpoint mode | Weather dependent |
| Tank | |
| [5.B] Tank > Setpoint mode | Weather dependent |

To change the type of weather-dependent curve

To change the type for all zones and for the tank, go to [2.E] Main zone > WD curve type.

Viewing which type is selected is also possible via:

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

To change the weather-dependent curve

| Zone | Go to ... |
|----------------------------------|--|
| Main zone – Heating | [2.5] Main zone > Heating WD curve |
| Main zone – Cooling | [2.6] Main zone > Cooling WD curve |
| Additional zone – Heating | [3.5] Additional zone > Heating WD curve |
| Additional zone – Cooling | [3.6] Additional zone > Cooling WD curve |
| Tank | [5.C] Tank > WD curve |



INFORMATION

Maximum and minimum setpoints

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

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

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

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

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

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

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

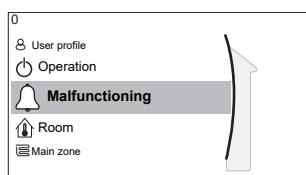
^(a) See "10.4.2 2-points curve" [▶ 142].

10.5 Settings menu

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

10.5.1 Malfunctioning

In case of a malfunction,  or  will appear on the home screen. To display the error code, open the menu screen and go to [0] **Malfunctioning**. Press **?** for more information about the error.



10.5.2 Room

Setpoint screen

Control the room temperature of the main zone via setpoint screen [1] Room.

See "[10.3.5 Setpoint screen](#)" [▶ 136].

Schedule

Indicate if the room temperature is controlled according to a schedule or not.

| # | Code | Description |
|-------|------|---|
| [1.1] | N/A | <p>Schedule</p> <ul style="list-style-type: none"> ▪ No: Room temperature is directly controlled by the user. ▪ Yes: Room temperature is controlled by a schedule and can be modified by the user. |

Heating schedule

Applicable for all models.

Define a heating schedule of the room temperature in [1.2] Heating schedule .

See "[10.3.7 Schedule screen: Example](#)" [▶ 137].

Antifrost

[1.4] **Antifrost** prevents the room from getting too cold. This setting is applicable when [2.9] **Control=Room thermostat**, but also offers functionality for leaving water temperature control and external room thermostat control. In case of the latter two, **Antifrost** can be activated by setting field setting [2-06]=1.

Room frost protection, when enabled, is not guaranteed when there is no room thermostat that can activate the heat pump. This is the case when:

- [2.9] **Control=External room thermostat** and [C.2] **Space heating/cooling=Off**, or if
- [2.9] **Control=Leaving water**.

In the above cases, **Antifrost** will heat the space heating water to a reduced setpoint when the outdoor temperature is lower than 4°C.

| Main zone unit control method [2.9] | Description |
|--|---|
| Leaving water temperature control ([C-07]=0) | Room frost protection is NOT guaranteed. |
| External room thermostat control ([C-07]=1) | <p>Allow for the external room thermostat to take care of room frost protection:</p> <ul style="list-style-type: none"> ▪ Set [C.2] Space heating/cooling=On. |
| Room thermostat control ([C-07]=2) | <p>Allow for the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat) to take care of room frost protection:</p> <ul style="list-style-type: none"> ▪ Set antifrost [1.4.1] Activation=Yes. ▪ Set the temperature of the antifrost function in [1.4.2] Room setpoint. |

**INFORMATION**

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

**NOTICE**

If the room **Antifrost** setting is active and a U4 error occurs, the unit will automatically start the **Antifrost** function via the backup heater. If the backup heater is not allowed, the room **Antifrost** setting MUST be disabled.

**NOTICE**

Room frost protection. Even if you turn OFF space heating/cooling operation ([C.2]: Operation > Space heating/cooling), room frost protection –if enabled– will remain active.

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 [2-06] 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. |
| Space heating/cooling is ON and the operation mode is "cooling" | There is no room frost protection. |

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

Under external room thermostat control, room frost protection is guaranteed by the external room thermostat, provided that:

- [C.2] **Space heating/cooling=On**, and
- [9.5.1] **Emergency=Automatic** or **auto SH normal/DHW off**.

However, if [1.4.1] **Antifrost** is activated, limited frost protection by the unit is possible.

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. |

| If... | Then... |
|---|--|
| 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. |
| 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. |
| Space heating/cooling is ON and the operation mode is "cooling" | There is no room frost protection. |

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

During room thermostat control, room frost protection [2-06] is guaranteed when activated. If so, 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: <ul style="list-style-type: none"> 4°C~16°C |



INFORMATION

When the dedicated Human Comfort Interface (BRC1HHDA used as room thermostat) is disconnected (because of incorrect wiring or damage of the cable), then room frost protection is NOT guaranteed.



NOTICE

If **Emergency** is set to **Manual** ([9.5.1]=0), and the unit is triggered to start emergency operation, the unit will stop and needs to be recovered manually via the user interface. To recover operation manually, go to the **Malfunctioning** main menu screen, and confirm emergency operation before starting.

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

Room sensor offset

Only applicable in room thermostat control.

To calibrate the (external) room temperature sensor, give an offset to the value of the room thermistor as measured by the Human Comfort Interface (BRC1HHDA used as room thermostat) or by the external room sensor. The setting can be used to compensate for situations where the Human Comfort Interface or the external room sensor cannot be installed at the ideal location.

See "[5.7 Setting up an external temperature sensor](#)" [▶ 50].

| # | Code | Description |
|-------|--------|--|
| [1.6] | [2-0A] | Room sensor offset (Human Comfort Interface (BRC1HHDA used as room thermostat)): Offset on the actual room temperature measured by the Human Comfort Interface. ▪ $-5^{\circ}\text{C} \sim 5^{\circ}\text{C}$, step 0.5°C |
| [1.7] | [2-09] | Room sensor offset (external room sensor option): Only applicable if the external room sensor option is installed and configured. ▪ $-5^{\circ}\text{C} \sim 5^{\circ}\text{C}$, step 0.5°C |

10.5.3 Main zone

Setpoint screen

Control the leaving water temperature for the main zone via setpoint screen [2] **Main zone**.

See "[10.3.5 Setpoint screen](#)" [▶ 136].

Schedule

Indicate if the temperature of the leaving water is defined according to a schedule or not.

Influence of the LWT setpoint mode [2.4] is as follows:

- In **Fixed** LWT setpoint mode, the scheduled actions consist of desired leaving water temperatures, either preset or custom.
- In **Weather dependent** LWT setpoint mode, the scheduled actions consist of desired shift actions, either preset or custom.

| # | Code | Description |
|-------|------|--|
| [2.1] | N/A | Schedule ▪ 0: No ▪ 1: Yes |

Heating schedule

Define a heating temperature schedule for the main zone via [2.2] **Heating schedule**.

See "[10.3.7 Schedule screen: Example](#)" [▶ 137].

Cooling schedule

Define a cooling temperature schedule for the main zone via [2.3] **Cooling schedule**.

See "[10.3.7 Schedule screen: Example](#)" [▶ 137].

Setpoint mode

Define the setpoint mode:

- **Fixed:** the desired leaving water temperature does not depend on the outdoor ambient temperature.
- In **WD heating, fixed cooling** mode, the desired leaving water temperature:
 - depends on the outdoor ambient temperature for heating
 - does NOT depend on the outdoor ambient temperature for cooling
- In **Weather dependent** mode, the desired leaving water temperature depends on the outdoor ambient temperature.

| # | Code | Description |
|-------|------|--|
| [2.4] | N/A | <p>Setpoint mode</p> <ul style="list-style-type: none"> ▪ Fixed ▪ WD heating, fixed cooling ▪ Weather dependent |

When weather dependent operation is active, low outdoor temperatures will result in warmer water and vice versa. During weather dependent operation, the user can shift the water temperature up or down by a maximum of 10°C.

WD curve type

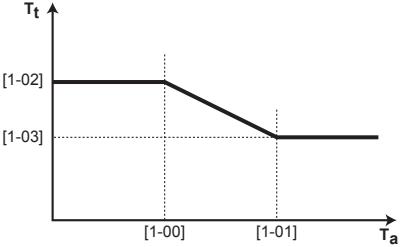
The weather dependent curve can be defined using the **2-points** method or the **Slope-Offset** method.

See "[10.4.2 2-points curve](#)" [▶ 142] and "[10.4.3 Slope-offset curve](#)" [▶ 143].

| # | Code | Description |
|-------|------|--|
| [2.E] | N/A | <ul style="list-style-type: none"> ▪ 2-points ▪ Slope-Offset |

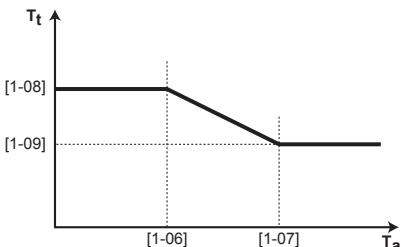
Heating WD curve

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> <p>Note: There are 2 methods to set the weather dependent curve. See "10.4.2 2-points curve" [▶ 142] and "10.4.3 Slope-offset curve" [▶ 143]. Both curve types require 4 field settings to be configured according to the figure below.</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. $[9-01]^{\circ}\text{C} \sim [9-00]^{\circ}\text{C}$ ▪ [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 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> <p>Note: There are 2 methods to set the weather dependent curve. See "10.4.2 2-points curve" [▶ 142] and "10.4.3 Slope-offset curve" [▶ 143]. Both curve types require 4 field settings to be configured according to the figure below.</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. $[9-03]^{\circ}\text{C} \sim [9-02]^{\circ}\text{C}$ ▪ [1-09]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. $[9-03]^{\circ}\text{C} \sim [9-02]^{\circ}\text{C}$ <p>Note: This value should be higher than [1-09] as for low outdoor temperatures less cold water is required.</p> <p>Note: This value should be lower than [1-08] as for high outdoor temperatures colder water is required.</p> |

Emitter type

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

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

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

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

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

The setting **Emitter type** influences 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 65°C | Variable (see [2.B]) |
| 2: Radiator | Maximum 65°C | Variable (see [2.B]) |



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

NOT configuring the system in the following way can cause damage to the heat emitters. If there are 2 zones, it is important that in heating:

- the zone with the lowest water temperature is configured as the main zone, and
- the zone with the highest water temperature is configured as the additional zone.



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

To prevent a wrong (i.e. too hot or too cold) leaving water temperature for the main leaving water temperature zone, limit its temperature range.



NOTICE

In case of a floor heating application it is important to limit the:

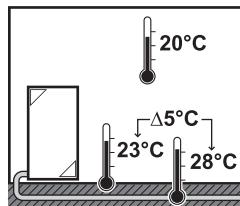
- maximum leaving water temperature at heating operation according to the specifications of the floor heating installation.
- the minimum leaving water temperature at cooling operation to 18~20°C to prevent condensation on the floor.



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: In heating mode, leaving water temperatures must be sufficiently higher than the room temperatures. To avoid that the room cannot heat up as desired, set the minimum leaving water temperature to 28°C.



| # | 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: <ul style="list-style-type: none"> ▪ 15°C~37°C |
| [2.8.2] | [9-00] | Heating maximum: <ul style="list-style-type: none"> ▪ [2-0C]=0 (emitter type main zone = underfloor heating) 37°C~55°C ▪ Otherwise: 37°C~65°C |
| [2.8.3] | [9-03] | Cooling minimum: <ul style="list-style-type: none"> ▪ 5°C~18°C |
| [2.8.4] | [9-02] | Cooling maximum: <ul style="list-style-type: none"> ▪ 18°C~22°C |

Control

Define how the operation of the unit is controlled.

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

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

Thermostat type

Only applicable in external room thermostat control.



NOTICE

If an external room thermostat is used, the external room thermostat will control the room frost protection. However, the room frost protection is only possible if [C.2] Space heating/cooling=On.

| # | Code | Description |
|-------|--------|---|
| [2.A] | [C-05] | <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 (EKRT1) room thermostat |

Leaving water temperature: Delta T

In heating for the main zone, the target delta T (temperature difference) depends on the selected emitter type for the main zone.

The difference delta T indicates, depends on the operation mode:

- In heating mode, delta T indicates the temperature difference between the leaving water setpoint and entering water.
- In cooling mode, delta T indicates the temperature difference between entering and leaving water temperature.

The unit is designed to support underfloor loops operation. The recommended leaving water temperature for underfloor loops is 35°C. In such case, the unit will realize a temperature difference of 5°C, which means that the entering water temperature is around 30°C.

Depending on the installed type of heat emitters (radiators, heat pump convector, underfloor loops) or situation, you can change the difference between entering and leaving water temperature.

Note: : The pump will regulate its flow to keep the delta T. In some special cases, the measured delta T can differ from the set value.



INFORMATION

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



INFORMATION

If the main zone or the additional zone has a heating demand, and this zone is equipped with radiators, then the target delta T that the unit will use in heating operation will be equal to the temperature set in [2.B].

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.

| # | Code | Description |
|---------|--------|---|
| [2.B.1] | [1-0B] | <p>Delta T heating: A minimum temperature difference is required for proper operation of heat emitters in heating mode.</p> <ul style="list-style-type: none"> ▪ 3°C~10°C |
| [2.B.2] | [1-0D] | <p>Delta T cooling: A minimum temperature difference is required for proper operation of heat emitters in cooling mode.</p> <ul style="list-style-type: none"> ▪ 3°C~10°C |

Leaving water temperature: Modulation

Only applicable in case of room thermostat control.

When using the room thermostat functionality, the customer needs to set the desired room temperature. The unit will supply hot water to the heat emitters and the room will be heated.

Additionally, also the desired leaving water temperature must be configured: if **Modulation** is enabled, the unit automatically calculates the desired leaving water temperature. These calculations are based on:

- the preset temperatures, or
- the desired weather-dependent temperatures (if weather-dependent is enabled)

Moreover, with **Modulation** enabled, 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)

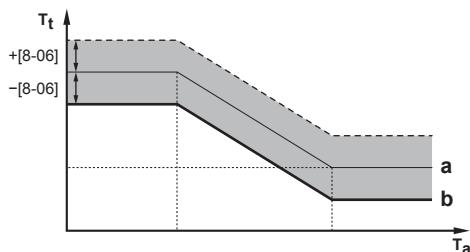
If **Modulation** is disabled, set the desired leaving water temperature via [2] **Main zone**.

| # | Code | Description |
|---------|--------|--|
| [2.C.1] | [8-05] | Modulation: <ul style="list-style-type: none"> ▪ 0 No (disabled) ▪ 1 Yes (enabled) Note: The desired leaving water temperature can only be read out on the user interface. |
| [2.C.2] | [8-06] | Max modulation: <ul style="list-style-type: none"> ▪ 0°C~10°C This is the temperature value by which the desired leaving water temperature is increased or decreased. |



INFORMATION

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



a Weather-dependent curve

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

Shut off valve

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

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



INFORMATION

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

During thermo: If [F-OB] 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.2] | [F-OC] | <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-OB] is only valid when there is a thermostat or external room thermostat request setting (NOT in case of leaving water temperature setting).

During cooling: If [F-OB] is enabled, the shut off valve closes when the unit is running in cooling operation mode. Enable this setting to avoid cold leaving water through the heat emitter and the forming of condensation (e.g. under floor heating loops or radiators).

| # | Code | Description |
|---------|--------|--|
| [2.D.2] | [F-OC] | <p>The shut off valve:</p> <ul style="list-style-type: none"> ▪ 0 No: is NOT influenced by changing the space operation mode to cooling. ▪ 1 Yes: closes when the space operation mode is cooling. |

10.5.4 Additional zone

Setpoint screen

Control the leaving water temperature for the additional zone via setpoint screen [3] **Additional zone**.

See "[10.3.5 Setpoint screen](#)" [▶ 136].

Schedule

Indicates if the desired leaving water temperature is according to a schedule.

See "[10.5.3 Main zone](#)" [▶ 150].

| # | Code | Description |
|-------|------|--|
| [3.1] | N/A | <p>Schedule</p> <ul style="list-style-type: none"> ▪ No ▪ Yes |

Heating schedule

Define a heating temperature schedule for the additional zone via [3.2] **Heating schedule**.

See "[10.3.7 Schedule screen: Example](#)" [▶ 137].

Cooling schedule

Define a cooling temperature schedule for the additional zone via [3.3] **Cooling schedule**.

See "[10.3.7 Schedule screen: Example](#)" [▶ 137].

Setpoint mode

The setpoint mode of the additional zone can be independently set from the setpoint mode of the main zone.

See "[Setpoint mode](#)" [▶ 150].

| # | Code | Description |
|-------|------|---|
| [3.4] | N/A | <p>Setpoint mode</p> <ul style="list-style-type: none"> ▪ Fixed ▪ WD heating, fixed cooling ▪ Weather dependent |

WD curve type

The weather dependent curve can be defined using the **2-points** method or the **Slope-Offset** method.

Also see "[10.4.2 2-points curve](#)" [▶ 142] and "[10.4.3 Slope-offset curve](#)" [▶ 143].

The curve type in the menu of the additional zone is read only. It corresponds to the curve type that is in use for the main zone. Thus, changing the curve type for the additional zone must be done in the menu of the main zone: [2.E] **WD curve type**.

Also see "[10.5.3 Main zone](#)" [▶ 150].

| # | Code | Description |
|-------|------|--|
| [2.E] | N/A | <ul style="list-style-type: none"> ▪ 2-points ▪ Slope-Offset |

Heating WD curve

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

| # | Code | Description |
|-------|--------------------------------------|--|
| [3.5] | [0-00] [0-01] [0-02] [0-03] | <p>Set weather-dependent heating:</p> <p>Note: There are 2 methods to set the weather dependent curve. See "10.4.2 2-points curve" [▶ 142] and "10.4.3 Slope-offset curve" [▶ 143]. Both curve types require 4 field settings to be configured according to the figure below.</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. $[9-05]^{\circ}\text{C} \sim [9-06]^{\circ}\text{C}$ ▪ [0-00]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. $[9-05]^{\circ}\text{C} \sim \min(45, [9-06])^{\circ}\text{C}$ <p>Note: This value should be higher than [0-00] as for low outdoor temperatures warmer water is required.</p> <p>Note: This value should be lower than [0-01] as for high outdoor temperatures less warm water is required.</p> |

Cooling WD curve

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

| # | Code | Description |
|-------|--------------------------------------|--|
| [3.6] | [0-04] [0-05] [0-06] [0-07] | <p>Set weather-dependent cooling:</p> <p>Note: There are 2 methods to set the weather dependent curve. See "10.4.2 2-points curve" [▶ 142] and "10.4.3 Slope-offset curve" [▶ 143]. Both curve types require 4 field settings to be configured according to the figure below.</p> <p>The graph illustrates the relationship between target leaving water temperature (T_t) and outdoor temperature (T_a). The vertical axis represents T_t with values [0-05] and [0-04]. The horizontal axis represents T_a with values [0-07] and [0-06]. A curve starts at [0-05] for $T_a = 0-07$, remains constant until $T_a = 0-06$, and then decreases linearly to [0-04] at $T_a = 0-06$, where it remains constant again.</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°C~25°C ▪ [0-06]: High outdoor ambient temperature. 25°C~43°C ▪ [0-05]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. [9-07]°C~[9-08]°C ▪ [0-04]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. [9-07]°C~[9-08]°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]°C~[9-08]°C ▪ Note: This value should be lower than [0-05] as for high outdoor temperatures colder water is required. |

Emitter type

For more information about **Emitter type**, see "[10.5.3 Main zone](#)" [▶ 150].

| # | 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 [3.B.1]) |
| 1: Fancoil unit | Maximum 65°C | Variable (see [3.B.1]) |
| 2: Radiator | Maximum 65°C | Variable (see [3.B.1]) |

Setpoint range

For more information about **Setpoint range**, see "[10.5.3 Main zone](#)" [▶ 150].

| # | Code | Description |
|--|--------|--|
| Leaving water temperature range for the additional leaving water temperature zone (= the leaving water temperature zone with the highest leaving water temperature in heating operation and the lowest leaving water temperature in cooling operation) | | |
| [3.8.1] | [9-05] | Heating minimum: 15°C~37°C |
| [3.8.2] | [9-06] | Heating maximum <ul style="list-style-type: none"> [2-0D]=0 (emitter type additional zone = underfloor heating) 37°C~55°C Else: 37°C~65°C |
| [3.8.3] | [9-07] | Cooling minimum: 5°C~18°C |
| [3.8.4] | [9-08] | Cooling maximum: 18°C~22°C |

Control

The control type for the additional zone is read only. It is determined by the control type of the main zone.

See "[10.5.3 Main zone](#)" [▶ 150].

| # | 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: <ul style="list-style-type: none"> External room thermostat, or Room thermostat. |

Thermostat type

Only applicable in external room thermostat control.

Also see "[10.5.3 Main zone](#)" [▶ 150].

| # | 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 "10.5.3 Main zone" [▶ 150].

| # | 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">▪ 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 |

10.5.5 Space heating/cooling

About space operation modes

Your unit can be a heating or a heating/cooling model:

- If your unit is a heating model, it can heat up a space.
- If your unit is a heating/cooling model, it can both heat up and cool down a space. You have to tell the system which 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 | <p>Select one of the following options:</p> <ul style="list-style-type: none"> ▪ Heating: Only heating mode ▪ Cooling: Only cooling mode ▪ Automatic: The operation mode changes automatically based on the outdoor temperature. Restricted according to the operation mode schedule. | ● |
|----------|---|---|

When **Automatic** is selected, the unit switches its operation mode, based on the **Operation mode schedule** [4.2]. In this schedule, the end user indicates which operation is allowed for each month.

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] | <p>Space heating off temperature: When the averaged outdoor temperature rises above this value, space heating is turned off.^(a)</p> <ul style="list-style-type: none"> ▪ 14°C~35°C |
| [4.3.2] | [F-01] | <p>Space cooling off temperature: When the averaged outdoor temperature drops below this value, space cooling is turned off.^(a)</p> <ul style="list-style-type: none"> ▪ 10°C~35°C |

^(a) This setting is also used in automatic heating/cooling changeover.

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 desired heating/cooling 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: A unit is configured as following:

- Desired room temperature in heating mode: 22°C
- Desired room temperature in cooling mode: 24°C
- Hysteresis value: 1°C
- Offset: 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 24+1=25°C) and the desired heating temperature added by the offset value (thus 22+4=26°C).

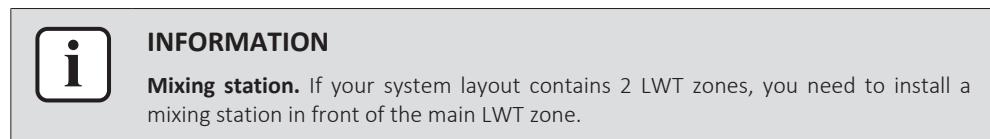
Oppositely, changeover from cooling to heating will occur when the room temperature drops below the minimum of the desired heating temperature subtracted by the hysteresis value (thus 22-1=21°C) and the desired cooling temperature subtracted by the offset value (thus 24-4=20°C)

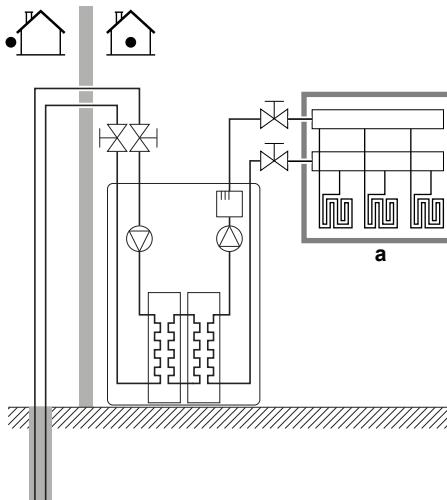
Guard timer to prevent too frequent changing from heating to cooling and vice versa.

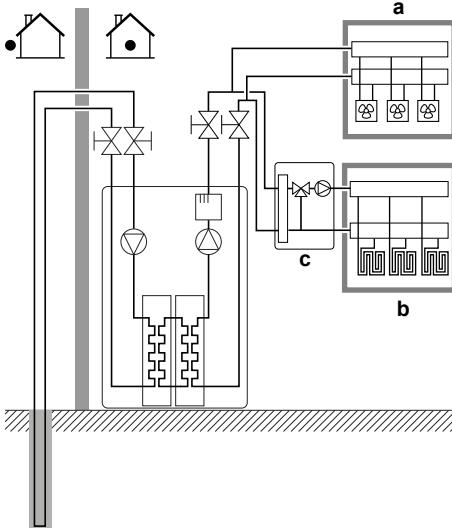
| # | Code | Description |
|--|--------|--|
| Changeover settings related to the indoor temperature. | | |
| Only applicable when Automatic is selected and the system is configured in room thermostat control with 1 leaving water temperature zone and quick heat emitters. | | |
| N/A | [4-0B] | <p>Hysteresis: ensures that changeover is only done when necessary.</p> <p>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.</p> <p>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:  <p>a Main LWT zone</p> |

| # | 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:  <p>a Additional LWT zone: Highest temperature b Main LWT zone: Lowest temperature c Mixing station</p> |



CAUTION

NOT configuring the system in the following way can cause damage to the heat emitters. If there are 2 zones, it is important that in heating:

- the zone with the lowest water temperature is configured as the main zone, and
- the zone with the highest water temperature is configured as the additional zone.



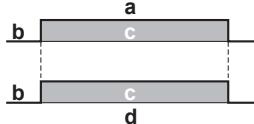
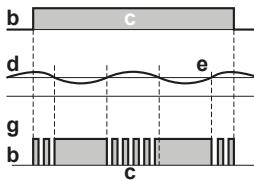
CAUTION

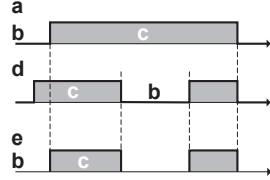
If there are 2 zones and the emitter types are wrongly configured, water of high temperature can be sent towards a low temperature emitter (underfloor heating). To avoid this:

- 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-OD] | <p>Pump operation mode:</p> <ul style="list-style-type: none"> 0 Continuous: Continuous pump operation, regardless of thermo ON or OFF condition. <p>Remark: Continuous pump operation requires more energy than sample or request pump operation.</p>  <p>a Space heating/cooling control b Off c On d Pump operation</p> |
| [4.5] | [F-OD] | <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.  <p>a Space heating/cooling control b Off c On d LWT temperature e Actual f Desired g Pump operation</p> |

| # | Code | Description |
|-------|--------|---|
| [4.5] | [F-0D] | <ul style="list-style-type: none"> ▪ 2 Request: Pump operation based on request. <p>Example: Using a room thermostat and thermostat creates thermo ON/OFF condition.</p> <p>Remark: NOT available in leaving water temperature control.</p>  <p>a Space heating/cooling control b Off c On d Heating demand (by external room thermostat or room thermostat) e Pump operation</p> |

Unit type

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

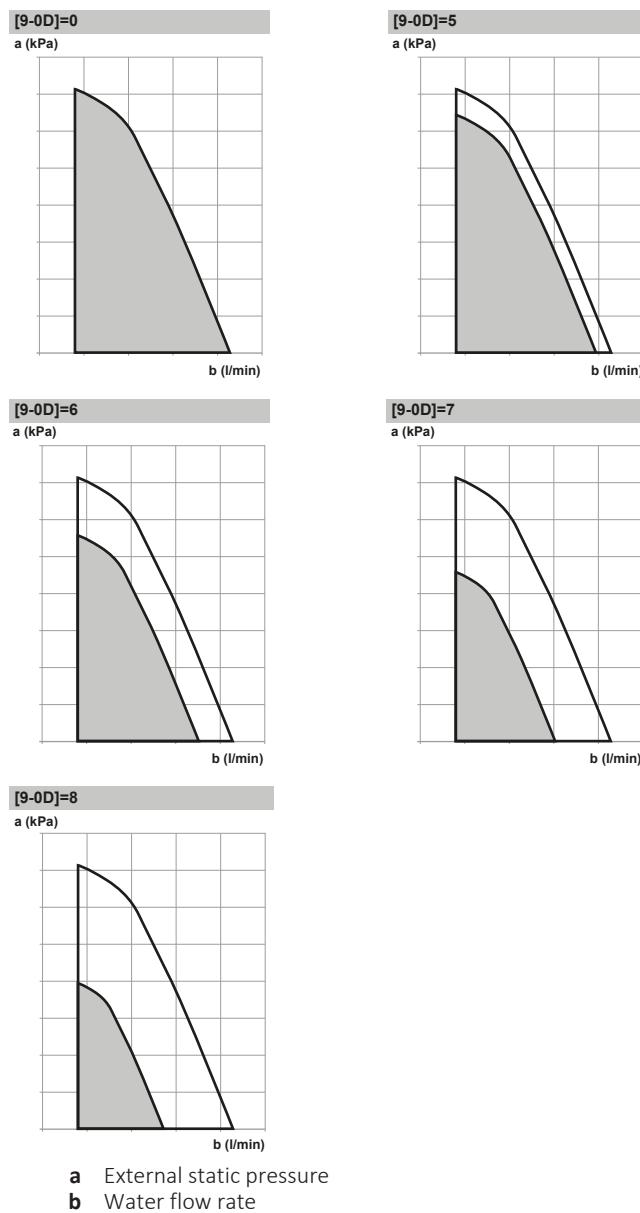
| # | Code | Description |
|-------|--------|---|
| [4.6] | [E-02] | <p>Unit type:</p> <ul style="list-style-type: none"> ▪ 0 Reversible ▪ 1 Heating only |

Pump limitation

Pump speed limitation [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] | <p>Pump limitation:</p> <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:



a External static pressure
b Water flow rate

Pump outside range

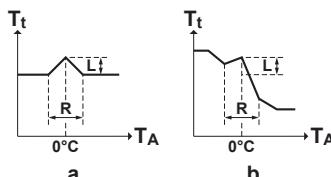
When the pump operation function is disabled the pump will stop if the outdoor temperature is higher than the value set by the **Space heating off temperature** [4-02] or if the outdoor temperature drops below the value set by the **Space cooling off temperature** [F-01]. When the pump operation is enabled,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

| # | Code | Description |
|-------|--------|---|
| [4.9] | [F-00] | <p>Pump operation:</p> <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] | <p>Increase around 0°C</p> <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.

A higher value will result in less start/stop cycles of the heat pump, but could also lead to lesser comfort. The opposite is valid if a lower value is chosen.

| # | Code | Description |
|-------|--------|--|
| [4.B] | [9-04] | <p>Overshoot</p> <ul style="list-style-type: none"> ▪ 1°C~4°C |

Antifrost

Antifrost [1.4] prevents the room from getting too cold. For more information about room frost protection, see "[10.5.2 Room](#)" [▶ 147].

10.5.6 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 "[10.3.5 Setpoint screen](#)" [▶ 136].

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/cooling and capacity shortage comfort problems is significant. In case of frequent domestic hot water operation, frequent and long space heating/cooling 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 "[10.3.7 Schedule screen: Example](#)" [▶ 137].

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] | <p>Heat up mode</p> <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.

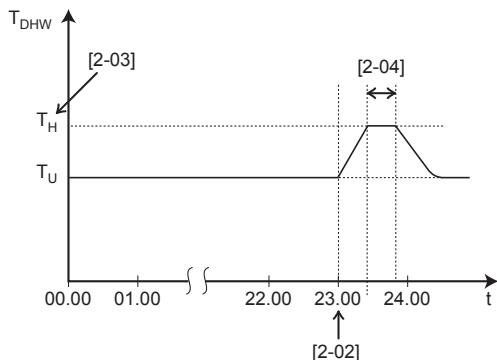


CAUTION

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

| # | Code | Description |
|---------|--------|---|
| [5.7.1] | [2-01] | <p>Activation</p> <ul style="list-style-type: none"> ▪ 0: No ▪ 1: Yes |
| [5.7.2] | [2-00] | <p>Operation day</p> <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] | <p>Tank setpoint 60°C</p> |

| # | Code | Description |
|---------|--------|----------------------------------|
| [5.7.5] | [2-04] | Duration 40~60 minutes |



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



WARNING

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

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



CAUTION

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



NOTICE

Disinfection mode. Even if you turn OFF tank heating operation ([C.3]: **Operation > Tank**), disinfection mode will remain active. However, if you turn it OFF while disinfection is running, an AH error occurs.



INFORMATION

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

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



INFORMATION

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

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] | <p>Maximum</p> <p>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.</p> <p>The maximum temperature is NOT applicable during disinfection function. See disinfection function.</p> |

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.

To avoid too much backup heater operation, the reheat temperature minus the heat pump ON hysteresis temperature must be below 45°C.

| # | Code | Description |
|-------|--------|---|
| [5.9] | [6-00] | <p>Heat pump ON hysteresis</p> <ul style="list-style-type: none"> ▪ 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] | <p>Reheat hysteresis</p> <ul style="list-style-type: none"> ▪ 2°C~20°C |

Setpoint mode

| # | Code | Description |
|-------|------|---|
| [5.B] | N/A | <p>Setpoint mode:</p> <ul style="list-style-type: none"> ▪ Fixed ▪ Weather dependent |

WD curve type

The weather dependent curve can be set using the **2-points** method or the **Slope-Offset** method. For more information about each method, see "["10.4.2 2-points curve"](#) [▶ 142] and "["10.4.3 Slope-offset curve"](#) [▶ 143]. The curve type in the menu is read only, and will correspond to the curve type set for the main zone. Changing the curve type for the additional zone must be done in the main zone **WD curve type** [2.E] menu. See "["10.5.3 Main zone"](#) [▶ 150] for more information.

| # | Code | Description |
|-------|------|--|
| [5.E] | N/A | <ul style="list-style-type: none"> ▪ 0: 2-points ▪ 1: Slope-Offset |

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 "["10.4.2 2-points curve"](#) [▶ 142] and "["10.4.3 Slope-offset curve"](#) [▶ 143].

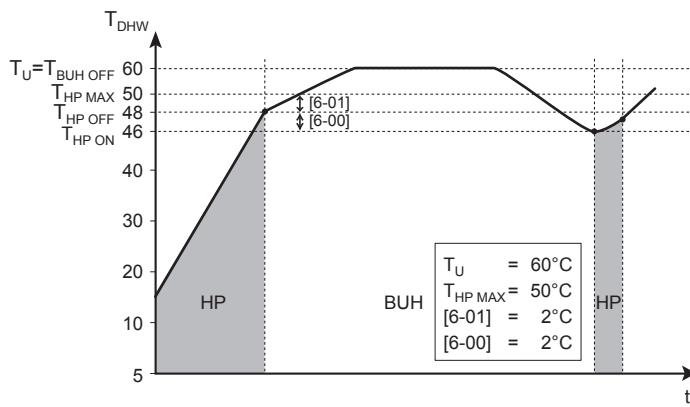
| # | Code | Description |
|-------|--------------------------------------|---|
| [5.C] | [0-0E] [0-0D] [0-0C] [0-0B] | <p>WD curve</p> <p>Note: There are 2 methods to set the weather dependent curve. See "10.4.2 2-points curve" [▶ 142] and "10.4.3 Slope-offset curve" [▶ 143] for more information about the different curve types. Both curve types require 4 field settings to be configured according to the figure below.</p> <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: $-40^{\circ}\text{C} \sim 5^{\circ}\text{C}$ ▪ [0-0D]: high outdoor ambient temperature: $10^{\circ}\text{C} \sim 25^{\circ}\text{C}$ ▪ [0-0C]: desired tank temperature when the outdoor temperature equals or drops below the low ambient temperature: $45^{\circ}\text{C} \sim [6-0E]^{\circ}\text{C}$ ▪ [0-0B]: desired tank temperature when the outdoor temperature equals or rises above the high ambient temperature: $35^{\circ}\text{C} \sim [6-0E]^{\circ}\text{C}$ |

Margin

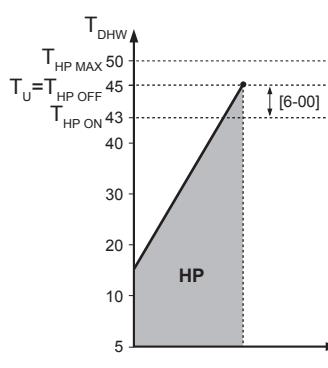
In domestic hot water operation, the following hysteresis value can be set for the heat pump operation:

| # | Code | Description |
|-------|--------|---|
| [5.D] | [6-01] | <p>The temperature difference determining the heat pump OFF temperature.</p> <p>Range: $0^{\circ}\text{C} \sim 10^{\circ}\text{C}$</p> |

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



Example: setpoint (T_u) \leq 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.

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

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/cooling operation and domestic hot water operation will be turned off. Room frost protection and anti-legionella operation will remain active.

Typical workflow

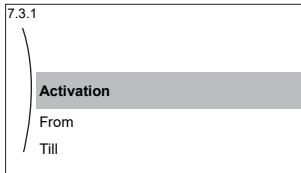
Using holiday mode typically consists of the following stages:

- 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 displayed on the home screen, holiday mode is active.

To configure the holiday

| | | |
|----------|---|--|
| 1 | Activate the holiday mode. | — |
| | <ul style="list-style-type: none"> ▪ Go to [7.3.1]: User settings > Holiday > Activation.  |  |
| | <ul style="list-style-type: none"> ▪ Select On. |  |
| 2 | Set the first day of your holiday. | — |
| | <ul style="list-style-type: none"> ▪ Go to [7.3.2]: From. |  |
| | <ul style="list-style-type: none"> ▪ Select a date. |   |
| | <ul style="list-style-type: none"> ▪ Confirm the changes. |  |
| 3 | Set the last day of your holiday. | — |
| | <ul style="list-style-type: none"> ▪ Go to [7.3.3]: Till. |  |
| | <ul style="list-style-type: none"> ▪ Select a date. |   |
| | <ul style="list-style-type: none"> ▪ Confirm the changes. |  |

Quiet

About quiet mode

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

The installer can:

- Completely deactivate quiet mode
- Manually activate a quiet mode level
- Enable the user to program a quiet mode schedule

If enabled by the installer, the user can program a quiet mode schedule.



INFORMATION

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

To check if quiet mode is active

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

To use quiet mode

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

| If you want to... | Then... | |
|--|--|---|
| Completely deactivate quiet mode | Select Off . Result: The unit never runs in quiet mode. The user cannot change this. |  |
| Manually activate a quiet mode level | Select Manual . Go to [7.4.3] Level and select the applicable quiet mode level. Example: Most quiet . Result: The unit always runs in the selected quiet mode level. The user cannot change this. |  |
| Enable the user to program a quiet mode schedule | Select Automatic . Result: The unit runs in quiet mode according to a schedule. The user (or you) can program the schedule in [7.4.2] Schedule . For more information about scheduling, see " 10.3.7 Schedule screen: Example " [▶ 137]. |  |

Electricity prices

Only applicable in combination with the bivalent function. See also "["Bivalent"](#) [▶ 193].

| # | 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 |



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 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 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" [▶ 181].

Example

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

| Data | Price/kWh |
|----------------------------------|-----------|
| Electricity price | 12.49 |
| Renewable heat incentive per kWh | 5 |

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 |
|-------------------------|---------------------|
| Electricity: 12.49 /kWh | [7.5.1]=17 |

10.5.8 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. |

Reset

Reset the configuration settings stored in the MMI (user interface of the indoor unit).

Example: Energy meterings, holiday settings.



INFORMATION

This does not reset the configuration settings and field settings of the indoor unit.

| # | Code | Description |
|-------|------|---|
| [8.A] | N/A | Reset the MMI EEPROM to factory default |

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 |

| In menu... | You can read out... |
|-------------------------|---|
| [8.8] Connection status | Information about the connection status of the unit, the room thermostat and the LAN adapter. |

10.5.9 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"> No DHW (domestic hot water) Integrated The backup heater will also be used for domestic hot water heating. |

(*) Menu structure setting [9.2.1] replaces the following 3 overview settings:

- [E-05] Can the system prepare domestic hot water?
- [E-06] Is a domestic hot water tank installed in the system?
- [E-07] What kind of domestic hot water tank is installed?

DHW pump

| # | Code | Description |
|---------|--------|---|
| [9.2.2] | [D-02] | <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. |

See also:

- "5.4.4 DHW pump for instant hot water" [▶ 41]
- "5.4.5 DHW pump for disinfection" [▶ 41]

DHW pump schedule

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 can be viewed but not changed.

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

Voltage

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

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

The available capacity of the backup heater is determined based on the **Voltage** setting:

| [5-0D] | Normal operation | Emergency or HP forced off |
|--------------|------------------|----------------------------|
| 0: 230V, 1ph | 3 kW | ▪ 6 kW |
| 2: 400V, 3ph | 6 kW | ▪ 9 kW |

See "[Emergency](#)" [▶ 185] for more information about **Emergency** operation and **HP forced off** mode.

Equilibrium

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

Operation

| # | Code | Description |
|---------|--------|---|
| [9.3.8] | [4-00] | <p>Backup heater operation:</p> <ul style="list-style-type: none"> ▪ 0: Restricted ▪ 1: Allowed ▪ 2: Only DHW Enabled for domestic hot water, disable for space heating |

Maximum capacity

During normal operation the maximum capacity is:

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

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

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

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

Emergency

Emergency

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

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

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

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

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

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

| # | Code | Description |
|---------|------|---|
| [9.5.1] | N/A | <ul style="list-style-type: none"> ▪ 0: Manual ▪ 1: Automatic ▪ 2: auto SH reduced/DHW on ▪ 3: auto SH reduced/DHW off ▪ 4: auto SH normal/DHW off |



INFORMATION

If a heat pump failure occurs and **Emergency** is not set to **Automatic** (setting 1), 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.

HP forced off

HP forced off mode can be activated to allow the backup heater to provide domestic hot water and space heating. This is, for example, useful when the brine circuit is not yet ready to be used. Cooling is NOT possible when this mode is activated.

| # | Code | Description |
|---------|--------|--|
| [9.5.2] | [7-06] | <p>Activation of the HP forced off mode</p> <ul style="list-style-type: none"> ▪ 0: disabled ▪ 1: enabled |



NOTICE

Activating **HP forced off** mode will NOT stop or prevent the brine pump from operating in the following conditions:

- 10 day brine pump operation is active
- The **Brine pump** test run has been started
- Passive cooling is active

Balancing

Priorities

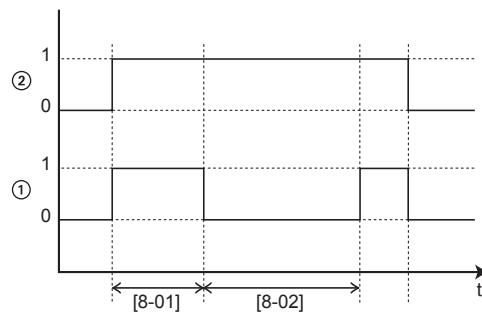
For systems with an integrated domestic hot water tank

| # | Code | Description |
|---------|--------|--|
| [9.6.1] | [5-02] | <p>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.</p> |

| # | Code | Description |
|---------|--------|---|
| [9.6.2] | [5-03] | <p>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.</p> <p>[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].</p> |

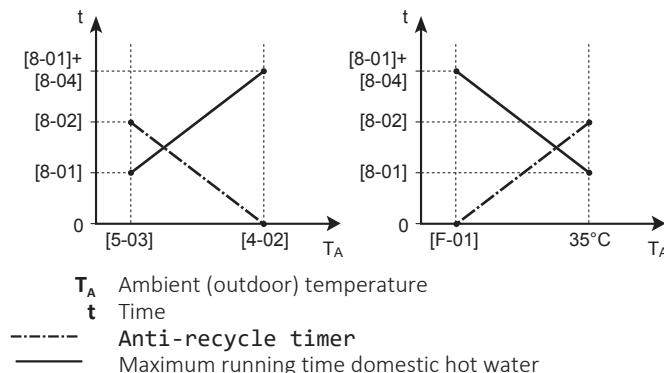
Timers for simultaneous space and domestic hot water operation request

[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] | <p>Anti-recycle timer: Minimum time between two cycles for domestic hot water. The actual anti-recycling time also depends on setting [8-04].</p> <p>Range: 0~10 hours</p> <p>Remark: The minimum time is 0.5 hours even when the selected value is 0.</p> |
| [9.6.5] | [8-00] | Minimum running timer: Do NOT change. |

| # | Code | Description |
|---------|--------|--|
| [9.6.6] | [8-01] | <p>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].</p> <ul style="list-style-type: none"> 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. <p>Range: 5~95 minutes</p> <p>Remark: It is NOT allowed to set [8-01] to a value below 10 minutes.</p> |
| [9.6.7] | [8-04] | <p>Additional timer: Additional running time for the maximum running time depending on the outdoor temperature [4-02] or [F-01].</p> <p>Range: 0~95 minutes</p> |

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] | <p>Water pipe freeze prevention:</p> <ul style="list-style-type: none"> 1: Off (read only) |

Preferential kWh rate power supply



INFORMATION

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

| # | Code | Description |
|---------|--------|---|
| [9.8.1] | [D-01] | <p>Connection to a Benefit kWh power supply or a Safety thermostat</p> <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) |
| [9.8.2] | [D-00] | <p>Allow heater: Which heaters are allowed to operate during preferential kWh rate power supply?</p> <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 <p>See table below.</p> <p>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.</p> |
| [9.8.3] | [D-05] | <p>Allow pump:</p> <ul style="list-style-type: none"> 0 No: Pump is forced off 1 Yes: No limitation |

Do NOT use 1 or 3. Setting [D-00] to 1 or 3 when [D-01] is set to 1 or 2 will reset [D-00] back to 0, as the system does not have a booster heater. Only set [D-00] to the values in the table below:

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

Power consumption control

Power consumption control

See "[5 Application guidelines](#)" [▶ 24] for detailed information about this functionality.

| # | Code | Description |
|---------|--------|---|
| [9.9.1] | [4-08] | <p>Power consumption control:</p> <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. 3 Current sensor: Enabled: You can set a current limitation value (in A) to which the household current will be limited. |

Continuous power consumption control and power consumption control with digital inputs

The type of limit needs to be set in combination with the continuous power consumption control and the power consumption control with digital inputs.

| # | Code | Description |
|---------|--------|--|
| [9.9.2] | [4-09] | <p>Type:</p> <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] | <p>Limit: Only applicable in case of full time current limitation mode.</p> <p>0 A~50 A</p> |

Limits when [9.9.1]=Inputs and [9.9.2]=Amp:

| # | Code | Description |
|---------|--------|--------------------------|
| [9.9.4] | [5-05] | Limit 1: 0 A~50 A |
| [9.9.5] | [5-06] | Limit 2: 0 A~50 A |
| [9.9.6] | [5-07] | Limit 3: 0 A~50 A |
| [9.9.7] | [5-08] | Limit 4: 0 A~50 A |

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

| # | Code | Description |
|---------|--------|---|
| [9.9.8] | [5-09] | Limit: Only applicable in case of full time power limitation mode. 0 kW~20 kW |

Limits when [9.9.1]=**Inputs** and [9.9.2]=**kW**:

| # | Code | Description |
|---------|--------|----------------------------|
| [9.9.9] | [5-09] | Limit 1: 0 kW~20 kW |
| [9.9.A] | [5-0A] | Limit 2: 0 kW~20 kW |
| [9.9.B] | [5-0B] | Limit 3: 0 kW~20 kW |
| [9.9.C] | [5-0C] | Limit 4: 0 kW~20 kW |

Power consumption control via current sensors

Limit when [9.9.1]=**Current sensor**:

| # | Code | Description |
|---------|--------|-----------------|
| [9.9.3] | [5-05] | Limit: 0 A~50 A |

In case the current sensors are calibrated, you can specify an offset for the output of the current sensors. This value will be added to the current output value of the current sensor.

| # | Code | Description |
|---------|--------|--|
| [9.9.E] | [4-0E] | Current sensor offset: Offset on the household current measured by the current sensors. -6 A~6 A, step 0.5 A |

Priority heater

This setting defines the priority of the electrical heaters depending on applicable limitation. As no booster heater is present, the backup heater will always be prioritised.

| # | Code | Description |
|---------|--------|--|
| [9.9.D] | [4-01] | Priority heater <ul style="list-style-type: none"> ▪ 0 None: The backup heater is prioritised. ▪ 1 Booster heater: After restart, the setting will be reverted back to 0=None and the backup heater will be prioritised. ▪ 2 Backup heater: The backup heater is prioritised. |

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] | External sensor : When an optional external ambient sensor is connected, the type of the sensor must be set. <ul style="list-style-type: none"> 0 None : NOT installed. The thermistor in the dedicated Human Comfort 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 dedicated Human Comfort 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-OB] | Ext. amb. sensor offset: Offset on the ambient temperature measured on the external outdoor temperature sensor. ▪ $-5^{\circ}\text{C} \sim 5^{\circ}\text{C}$, step 0.5°C |

Averaging time

The average timer corrects the influence of ambient temperature variations. The weather-dependent setpoint calculation is done on the average outdoor temperature.

The outdoor temperature is averaged over the selected time period.

| # | Code | Description |
|---------|--------|---|
| [9.B.3] | [1-0A] | Averaging time: ▪ 0: No averaging ▪ 1: 12 hours ▪ 2: 24 hours ▪ 3: 48 hours ▪ 4: 72 hours |

Brine low pressure switch

When a brine low pressure switch is installed, the unit must be configured to work with the switch. When the switch is removed or disconnected, this setting must be set to OFF.

| # | Code | Description |
|-----|--------|--|
| N/A | [C-0B] | Activation of the brine low pressure switch ▪ 0: OFF ▪ 1: On |

Bivalent

Alarm output

Alarm output

| # | Code | Description |
|-------|--------|--|
| [9.D] | [C-09] | Alarm output: Indicates the logic of the alarm output on the digital I/O PCB during malfunctioning. ▪ 0 Abnormal: The alarm output will be powered when an alarm occurs. By setting this value, a distinction is made between the detection of an alarm, and the detection of a power failure. ▪ 1 Normal: The alarm output will NOT be powered when an alarm occurs. See also table below (Alarm output logic). |

Alarm output logic

| [C-09] | Alarm | No alarm | No power supply to unit |
|--------|---------------|---------------|-------------------------|
| 0 | Closed output | Open output | Open output |
| 1 | Open output | Closed output | |

Auto restart

Auto restart

When power returns after a power supply failure, the auto restart function reapplies the remote controller settings at the time of the power failure. Therefore, it is recommended to always enable the function.

If the preferential kWh rate power supply is of the type that power supply is interrupted, always enable the auto restart function. Continuous indoor unit control can be guaranteed independent of the preferential kWh rate power supply status, by connecting the indoor unit to a normal kWh rate power supply.

| # | Code | Description |
|-------|--------|--|
| [9.E] | [3-00] | <p>Auto restart:</p> <ul style="list-style-type: none"> ▪ 0: Manual ▪ 1: Automatic |

Disable protections



INFORMATION

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

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

- **At first power-on:** The protective functions are disabled by default. After 36 h they will be automatically enabled.
- **Afterwards:** An installer can manually disable the protective functions by setting [9.G]: **Disable protections=Yes**. After his work is done, he can enable the protective functions by setting [9.G]: **Disable protections=No**.

| # | Code | Description |
|-------|------|---|
| [9.G] | N/A | <p>Disable protections</p> <ul style="list-style-type: none"> ▪ 0: No ▪ 1: Yes |

Brine freezing temperature

Brine freezing temperature

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

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

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

| # | Code | Description |
|-------|--------|---|
| [9.M] | [A-04] | <p>Brine freezing temperature</p> <ul style="list-style-type: none"> ▪ 0: 2°C ▪ 1: -2°C ▪ 2: -4°C ▪ 3: -6°C ▪ 4: -9°C ▪ 5: -12°C ▪ 6: -15°C ▪ 7: -18°C |



NOTICE

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

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

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

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

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](#)" [▶ 129].

10.5.10 Operation

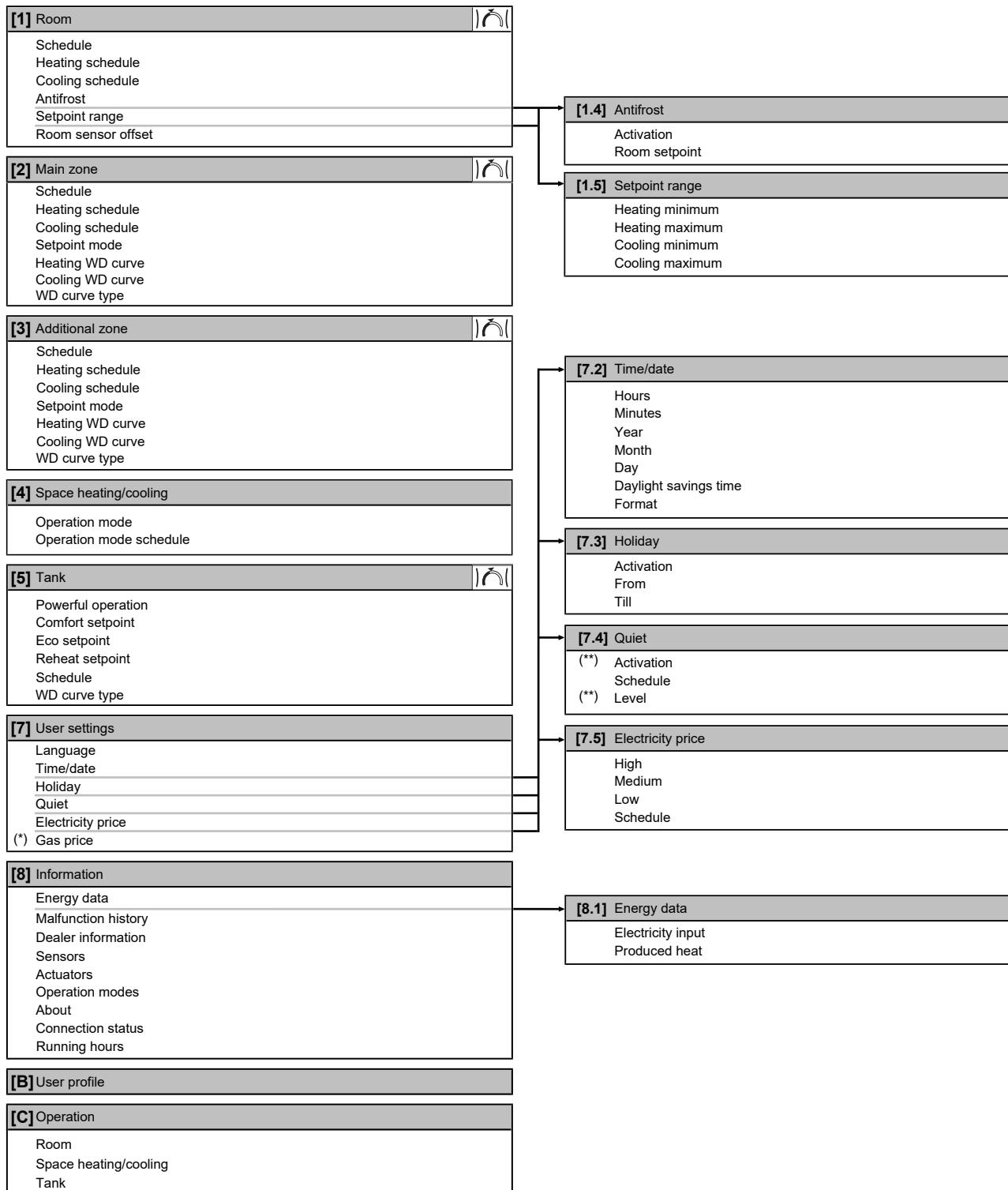
To enable or disable functionalities

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

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

| # | Code | Description |
|-------|------|--|
| [C.3] | N/A | Tank <ul style="list-style-type: none">▪ 0: Off▪ 1: On |

10.6 Menu structure: Overview user settings



 Setpoint screen

(*) Not applicable

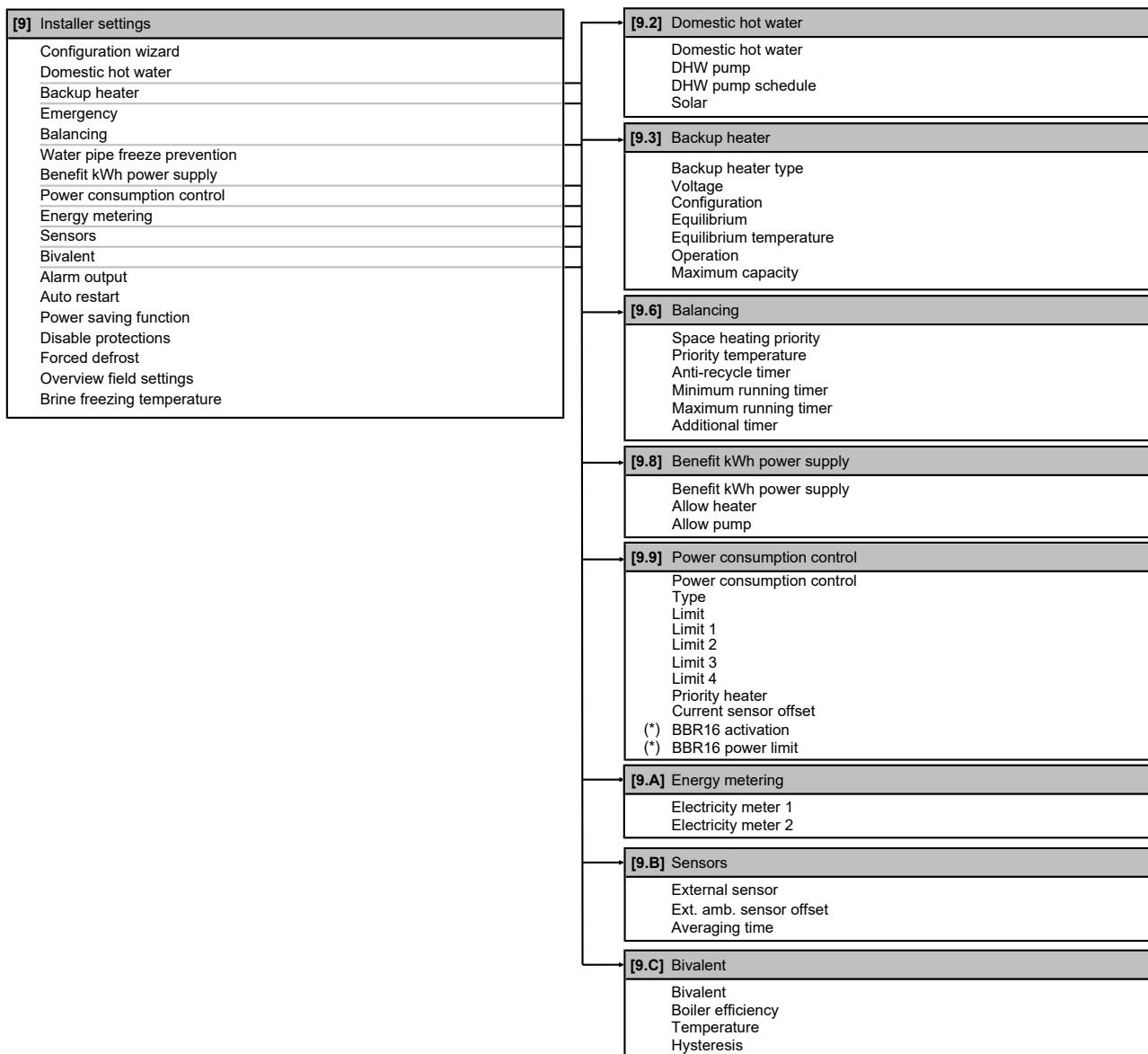
(**) Only accessible by installer



INFORMATION

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

10.7 Menu structure: Overview installer settings



INFORMATION

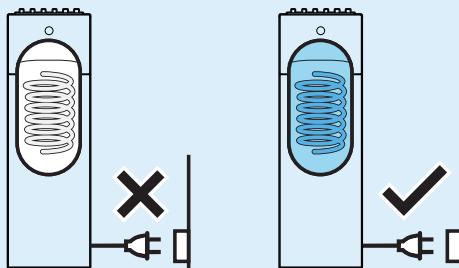
Depending on the selected installer settings and unit type, settings will be visible/invisible.

11 Commissioning



NOTICE

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



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



INFORMATION

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

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

- **At first power-on:** The protective functions are disabled by default. After 36 h they will be automatically enabled.
- **Afterwards:** An installer can manually disable the protective functions by setting [9.G]: **Disable protections=Yes**. After his work is done, he can enable the protective functions by setting [9.G]: **Disable protections=No**.

11.1 Overview: Commissioning

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

Typical workflow

Commissioning typically consists of the following stages:

- 1 Checking the "Checklist before commissioning".
- 2 Performing an air purge on the water circuit.
- 3 Performing an air purge on the brine circuit.
- 4 Performing a test run for the system.
- 5 If necessary, performing a test run for one or more actuators.
- 6 If necessary, performing an underfloor heating screed dryout.

11.2 Precautions when commissioning

| | |
|---|---|
|  | INFORMATION |
| | <p>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.</p> |
|  | NOTICE |
| | <p>ALWAYS operate the unit with thermistors and/or pressure sensors/switches. If NOT, burning of the compressor might be the result.</p> |

11.3 Checklist before commissioning

After the installation of the unit, first check the items listed below. Once all checks are fulfilled, the unit must be closed. Power-up the unit after it is closed.

| | |
|--------------------------|--|
| <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"/> | <p>The following field wiring has been carried out according to this document and the applicable legislation:</p> <ul style="list-style-type: none"> ▪ 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 earthing 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 unit. |
| <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 and/or brine leak inside the indoor unit. |
| <input type="checkbox"/> | There are no odour traces noticeable of the used brine. |
| <input type="checkbox"/> | The air purge valve is open (at least 2 turns). |
| <input type="checkbox"/> | The pressure relief valve purges water when opened. Clean water must come out. |
| <input type="checkbox"/> | The shut-off valves are properly installed and fully open. |
| <input type="checkbox"/> | The domestic hot water tank is filled completely. |
| <input type="checkbox"/> | The brine circuit and water circuit are filled correctly. |



NOTICE

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

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

11.4 Checklist during commissioning

| | |
|--------------------------|---|
| <input type="checkbox"/> | To perform an air purge on the water circuit. |
| <input type="checkbox"/> | To perform an air purge on the brine circuit via brine pump test run or 10-day brine operation function. |
| <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). |
| <input type="checkbox"/> | To start 10-day brine pump operation . |

11.4.1 Air purge function on the water circuit

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 remove 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 to purge air:

- Manually: the unit will operate 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 helpful feature to remove all air from the water circuit in space heating or domestic hot water heating mode. The operation speed of the pump (slow or quick) can also be set.
- Automatic: the unit change automatically the pump speed and the position of the 3-way valve between space heating or domestic hot water heating mode.

Typical workflow



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.

Make sure that the leaving water temperature home page, room temperature home page, and domestic hot water home page are turned OFF.

The air purge function stops automatically after 30 minutes.

To perform a manual air purge

Conditions: Make sure all operation is disabled. Go to [C]: **Operation** 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" [▶ 128]. | — | | | | | | |
| 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 stops automatically when ready. | | | | | | | | |
| 6 | During manual operation: <ul style="list-style-type: none"> ▪ You can change the pump speed. ▪ You must change the circuit. To change these settings during the air purge, open the menu and go to [A.3.1.5]: Settings . <ul style="list-style-type: none"> ▪ 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: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">1</td> <td>Open the menu and go to Stop air purge.</td> <td>●○...○</td> </tr> <tr> <td>2</td> <td>Select OK to confirm.</td> <td>●○...○</td> </tr> </table> | 1 | Open the menu and go to Stop air purge . | ●○...○ | 2 | Select OK to confirm. | ●○...○ | — |
| 1 | Open the menu and go to Stop air purge . | ●○...○ | | | | | | |
| 2 | Select OK to confirm. | ●○...○ | | | | | | |

To perform an automatic air purge

Conditions: Make sure all operation is disabled. Go to [C]: **Operation** 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" [▶ 128]. | — | | | | | | |
| 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: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px;">1</td> <td>In the menu, go to Stop air purge.</td> <td>●○...○</td> </tr> <tr> <td>2</td> <td>Select OK to confirm.</td> <td>●○...○</td> </tr> </table> | 1 | In the menu, go to Stop air purge . | ●○...○ | 2 | Select OK to confirm. | ●○...○ | — |
| 1 | In the menu, go to Stop air purge . | ●○...○ | | | | | | |
| 2 | Select OK to confirm. | ●○...○ | | | | | | |

11.4.2 Air purge function on the brine circuit

When installing and commissioning the unit, it is very important to remove all air from the brine circuit.



NOTICE

It is required that the brine circuit is filled BEFORE the brine pump test run is activated.

There are 2 ways to perform an air purge:

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

In both cases, follow the instructions included with the brine filling station. The second method should only be used when the air purge on the brine circuit was NOT successful using only a brine filling station.

In case a brine buffer vessel is present in the brine circuit, or if the brine circuit consists of a horizontal loop instead of a vertical borehole, further air purging may be required. You can make use of the **10 day brine pump operation**. See "[11.4.6 To start or stop 10-day brine pump operation](#)" [▶ 208] for more information.

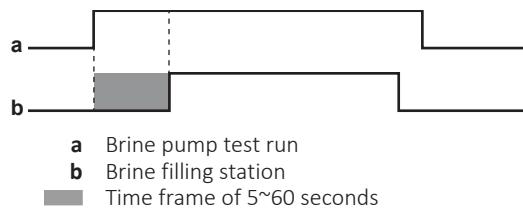
To perform an air purge with a brine filling station

Follow the instructions included with the brine filling station (field supply).

To perform an air purge with the brine pump and a brine filling station

Prerequisite: Performing an air purge on the brine circuit was NOT successful using a brine filling station only (see "[To perform an air purge with a brine filling station](#)" [▶ 203]). In this case, use a brine filling station and the unit's own brine pump simultaneously.

- 1 Fill the brine circuit.
- 2 Start the brine pump test run.
- 3 Start the brine filling station (MUST be started within a time frame of 5~60 seconds after starting the brine pump test run).



Result: The brine pump test run starts running, starting the removal of air from the brine circuit. During the test run, the brine pump operates without actual operation of the unit.



INFORMATION

For details on starting/stopping the brine pump test run, see "[11.4.4 To perform an actuator test run](#)" [▶ 204].

The brine pump test run stops automatically after 2 hours.

11.4.3 To perform an operation test run

Conditions: Make sure all operation is disabled. Go to [C]: **Operation** 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 " [▶ 128]. | — |
|---|--|---|

| | | |
|---|---|--------|
| 2 | Go to [A.1]: Commissioning > Operation test run. | IQ...O |
| 3 | Select a test from the list. Example: Heating. | IQ...O |
| 4 | Select OK to confirm. Result: The test run starts. It stops automatically when ready (± 30 min). To stop the test run manually: | IQ...O |
| 1 | In the menu, go to Stop test run. | IQ...O |
| 2 | Select OK to confirm. | IQ...O |

INFORMATION

If the outdoor temperature is outside the range of operation, the unit may NOT operate or may NOT deliver the required capacity.

To monitor leaving water and tank temperatures

During test run, the correct operation of the unit can be checked by monitoring its leaving water temperature (heating/cooling mode) and tank temperature (domestic hot water mode).

To monitor the temperatures:

| | | |
|---|-------------------------------------|--------|
| 1 | In the menu, go to Sensors. | IQ...O |
| 2 | Select the temperature information. | IQ...O |

11.4.4 To perform an actuator test run

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

Purpose

Perform an actuator test run to confirm the operation of the different actuators. For example, when you select Pump, a test run of the pump will start.

| | | |
|---|--|--------|
| 1 | Set the user permission level to Installer. See " To change the user permission level! " [▶ 128]. | — |
| 2 | Go to [A.2]: Commissioning > Actuator test run. | IQ...O |
| 3 | Select a test from the list. Example: Pump. | IQ...O |
| 4 | Select OK to confirm. Result: The actuator test run starts. It stops automatically when done (± 30 min for Pump, ± 120 min for Brine pump, ± 10 min for other test runs). To stop the test run manually: | IQ...O |
| 1 | Go to Stop test run. | IQ...O |
| 2 | Select OK to confirm. | IQ...O |

Possible actuator test runs

- **Backup heater 1** test (3 kW capacity, only available when no current sensors are used)
- **Backup heater 2** test (6 kW capacity, only available when no current sensors are used)

- Pump test



INFORMATION

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

- Shut off valve test
- Diverter valve test (3-way valve for switching between space heating and tank heating)
- Bivalent signal test
- Alarm output test
- C/H signal test
- DHW pump test
- Backup heater phase 1 test (3 kW capacity, only available when current sensors are used)
- Backup heater phase 2 test (3 kW capacity, only available when current sensors are used)
- Backup heater phase 3 test (3 kW capacity, only available when current sensors are used)
- Brine pump test

To perform a current sensor phase check

To make sure that the current sensors measure the current of the correct phase, perform a current sensor phase check. This can be done using the backup heater actuator tests.

Note: Make sure that **Power consumption control** is set to **Current sensor** ([4-08]=3). See "["Power consumption control"](#)" [▶ 190].

| | | |
|---|--|------|
| 1 | Set the user permission level to Installer. See " "To change the user permission level" " [▶ 128]. | — |
| 2 | Go to [A.2.C]: Commissioning > Actuator test run > Backup heater phase 1 | ✖✖✖○ |
| 3 | Select OK to confirm. Result: The Backup heater phase 1 test run starts. The current sensor values first show the values without the backup heater. After 10 seconds, one of the 3 values will change due to the backup heater becoming active on that phase. Remember or write down the current sensor of which the value increases. | ✖✖✖○ |
| 4 | Go to [A.2.D]: Commissioning > Actuator test run > Backup heater phase 2 | ✖✖✖○ |
| 5 | Select OK to confirm. Result: The Backup heater phase 2 test run starts. The current sensor values first show the values without the backup heater. After 10 seconds, one of the 3 values will change due to the backup heater becoming active on that phase. Remember or write down the current sensor of which the value increases. | ✖✖✖○ |
| 6 | Switch the terminals of the current sensor wires according to the table below. Perform steps 1 to 6 until no more wires have to be switched. | — |

| Current sensor of which value changed | | Action to take | |
|---------------------------------------|-----------------------|---------------------------|--------------------------|
| Backup heater phase 1 | Backup heater phase 2 | First switch terminals... | Then switch terminals... |
| CT1 | CT2 | Do nothing | — |
| | CT3 | 15 and 16 | — |
| CT2 | CT1 | 14 and 15 | — |
| | CT3 | 14 and 15 | 14 and 16 |
| CT3 | CT1 | 14 and 15 | 14 and 16 |
| | CT2 | 14 and 16 | — |

11.4.5 Underfloor heating screed dryout

The underfloor heating (UFH) screed dryout function is used for drying out the screed of an underfloor heating system during the construction of the building.

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



INFORMATION

- If **Emergency** is set to **Manual** ([9.5.1]=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 maximum allowed water temperature, to avoid cracking the screed,
- programming the underfloor heating screed dryout schedule according to the initial heating instructions of the screed manufacturer,
- checking the proper functioning of the setup on a regular basis,
- performing the correct program complying with the type of the used screed.



NOTICE

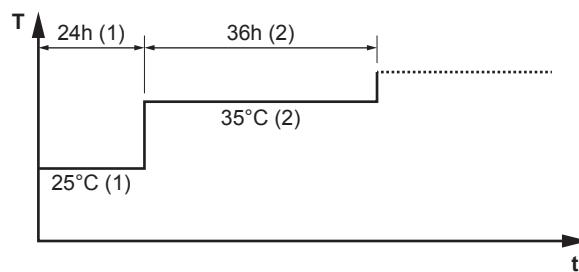
To perform an underfloor heating screed dryout, room frost protection needs to be disabled ([2-06]=0). By default, it is enabled ([2-06]=1). However, due to the "installer-on-site" mode (see "Commissioning"), room frost protection will be automatically disabled for 36 hours after the first power-on.

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.

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, up to 55°C.

Example:



T Desired leaving water temperature (15~55°C)

t Duration (1~72 h)

(1) Action step 1

(2) Action step 2

To program an underfloor heating screed dryout schedule

| | | |
|----------|--|--------------------|
| 1 | Set the user permission level to Installer . See " To change the user permission level " [▶ 128]. | — |
| 2 | Go to [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: An underfloor heating screed dryout schedule has been programmed. See "[To program an underfloor heating screed dryout schedule](#)" [▶ 207].

Conditions: Make sure all operation is disabled. Go to [C]: **Operation** 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 " [▶ 128]. | — |
| 2 | Go to [A.4]: Commissioning > UFH screed dryout . | ●○○○○ |
| 3 | Select Start UFH screed dryout . | ●○○○○ |
| 4 | Select OK to confirm. Result: The underfloor heating screed dryout starts. It stops automatically when done. | |
| 5 | To stop the underfloor heating screed dryout manually: 1 Open the menu and go to Stop UFH screed dryout . 2 Select OK to confirm. | — ●○○○○ ●○○○○ |

To read out the status of an underfloor heating screed dryout

Conditions: You are performing an underfloor heating screed dryout.

| | | |
|----------|--|-----|
| 1 | Press the back button. Result: A graph is displayed, highlighting the current step of the screed dryout schedule, the total remaining time, and the current desired leaving water temperature. | ◀ |
| 2 | Press the left dial to open the menu structure and to: 1 View the status of sensors and actuators. 2 Adjust the current program | ◀ ⓘ |
| | | — |
| | | — |

To stop an underfloor heating (UFH) screed dryout

U3-error

When the program is stopped by an error or an operation switch off, the U3 error will be displayed on the user interface. To resolve the error codes, see "[14.4 Solving problems based on error codes](#)" [▶ 222].

In case of a power failure, the U3 error is not generated. When power is restored, the unit automatically restarts the latest step and continues the program.

Stop UFH screed dryout

To manually stop underfloor heating screed dryout:

| | | |
|---|--|---|
| 1 | Go to [A.4.3]: Commissioning > UFH screed dryout | — |
| 2 | Select Stop UFH screed dryout . | ⓘ |
| 3 | Select OK to confirm. | ⓘ |
| Result: The underfloor heating screed dryout is stopped. | | ⓘ |

Read out UFH screed dryout status

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 ^(a) . | — |

^(a) If the UFH screed dryout program was stopped due to a power failure and the power resumes, the program will automatically restart the last implemented step.

11.4.6 To start or stop 10-day brine pump operation

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

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

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

| | | |
|----------|---|---|
| 1 | Set the user permission level to Installer. See "To change the user permission level" [▶ 128]. | — |
| 2 | Go to [A.6]: Commissioning > 10 day brine pump operation. | ● |
| 3 | Select On to start the 10 day brine pump operation. Result: The 10 day brine pump operation starts. | ● |

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



NOTICE

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

12 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.

13 Maintenance and service



NOTICE

Maintenance MUST be done by an authorized installer or service agent.

We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.



NOTICE

Applicable legislation on **fluorinated greenhouse gases** requires that the refrigerant charge of the unit is indicated both in weight and CO₂ equivalent.

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

13.1 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.

13.2 Yearly maintenance

13.2.1 Yearly maintenance: overview

- Brine leakage
- Chemical disinfection
- Descaling
- Drain hose
- Fluid pressure of space heating and brine circuit
- Pressure relief valves (1 at brine side, 1 at space heating side)
- Pressure relief valve of the domestic hot water tank
- Switch box
- Water and brine filters

13.2.2 Yearly maintenance: instructions

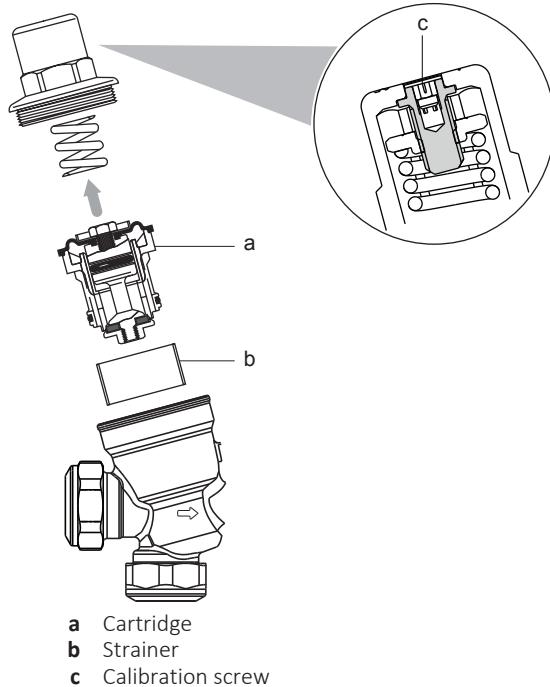
Brine leakage

Open the front panels and carefully check if brine leakage is noticeable inside the unit. See "[6.2.2 To open the indoor unit](#)" [▶ 55].

Check for correct operation of the temperature and pressure relief valve. Manually operate the temperature and pressure relief valve to ensure free water flow through discharge pipe. Turn knob left.

Pressure reducing valve

Depending on local water conditions, annual inspection of the integral line strainer, pressure reducing valve cartridge and seating may be necessary.



- 1 Unscrew the plastic cover of the pressure reducing valve.
- 2 Extract the cartridge with the aid of long nosed pliers to grip the head of the set screw.
- 3 Remove the strainer element.
- 4 Clean the strainer element and cartridge under clean running water.
- 5 Replace if the strainer or cartridge are damaged.
- 6 Refit the strainer, cartridge and cover.
- 7 If the cartridge has been replaced, calibrate the pressure reducing valve:
 - Close the downstream isolating valve (field supply).
 - Install an Allen key on the calibration screw in the centre of the plastic cover. Rotate it clockwise to increase the outlet pressure and anticlockwise to reduce it.

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 containing an aluminium anode. 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.

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.

Drain hose

Check the condition and routing of the drain hose. Water must drain appropriately from the hose. See "[6.3.4 To connect the drain hose to the drain](#)" [▶ 62].

Fluid pressure

Check whether the fluid pressure is above 1 bar. If it is lower, add fluid.

Pressure relief valve

Open the valve.



CAUTION

Discharge may be very hot.

- Check if nothing blocks the fluid in the valve or in between piping. The fluid flow coming from the relief valve must be high enough.
- Check if the fluid coming out from the relief valve is clean. If it contains debris or dirt:
 - Open the valve until the discharged water does NOT contain debris or dirt anymore.
 - Flush the system and install an additional water filter (preferably a magnetic cyclone filter).



INFORMATION

It is recommended to perform this maintenance more than once a year.

Pressure relief valve of the domestic hot water tank

Open the valve.



CAUTION

Water coming out of the valve may be very hot.

- Check if nothing blocks the water in the valve or in between piping. The water flow coming from the relief valve must be high enough.
- Check if the water coming out of the relief valve is clean. If it contains debris or dirt:
 - Open the valve until the discharged water does not contain debris or dirt anymore.
 - Flush and clean the complete tank, including the piping between the relief valve and cold water inlet.

To make sure this water originates from the tank, check after a tank heat up cycle.



INFORMATION

It is recommended to perform this maintenance more than once a year.

Switch box

Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.



WARNING

If the internal wiring is damaged, it has to be replaced by the manufacturer, its service agent or similarly qualified persons.

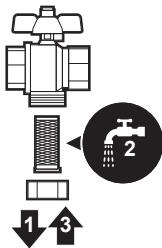
Water filter

Clean and rinse the water filter.



NOTICE

Handle the filter with care. To prevent damage to the mesh of the filter, do NOT use excessive force when you reinsert it.



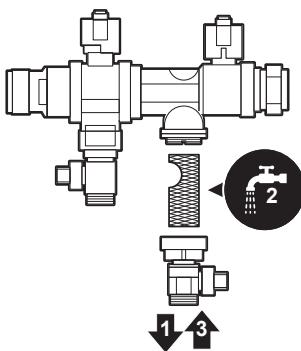
Brine filter

Clean and rinse the brine filter.



NOTICE

Handle the filter with care. To prevent damage to the mesh of the filter, do NOT use excessive force when you reinsert it.



13.3 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.

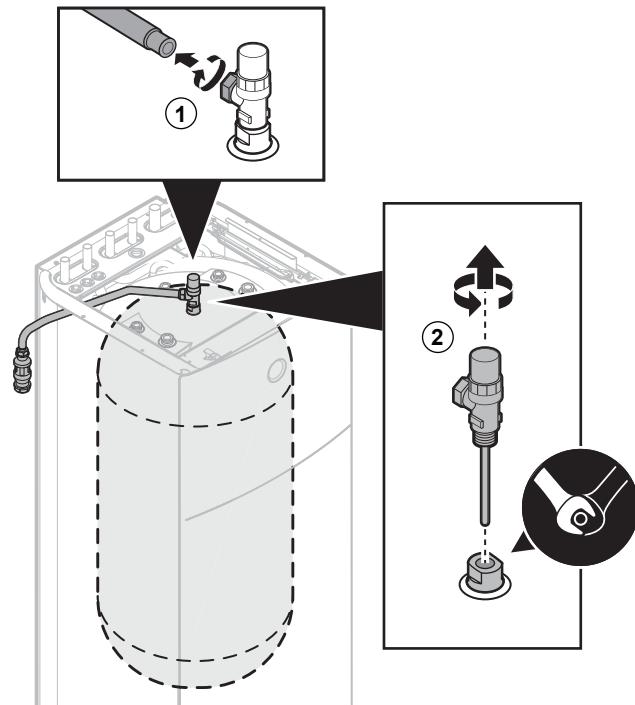
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Close the cold water supply.

Prerequisite: Open all the hot water tapping points to allow air to enter the system.

Prerequisite: Remove the top panel. See "6.2.2 To open the indoor unit" [▶ 55].

- 1 Remove the tube from the temperature and pressure relief valve that is located on top of the tank.
- 2 Remove the temperature and pressure relief valve from the tank.
- 3 Use a drain hose and a pump to drain the tank via the access point.



- 4 Tightening torques for installation:

| Item | Tightening torque |
|---------------------------------------|-------------------|
| Tube connection | 30 N•m |
| Temperature and pressure relief valve | 40 N•m |

13.4 To inspect the inside of 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.

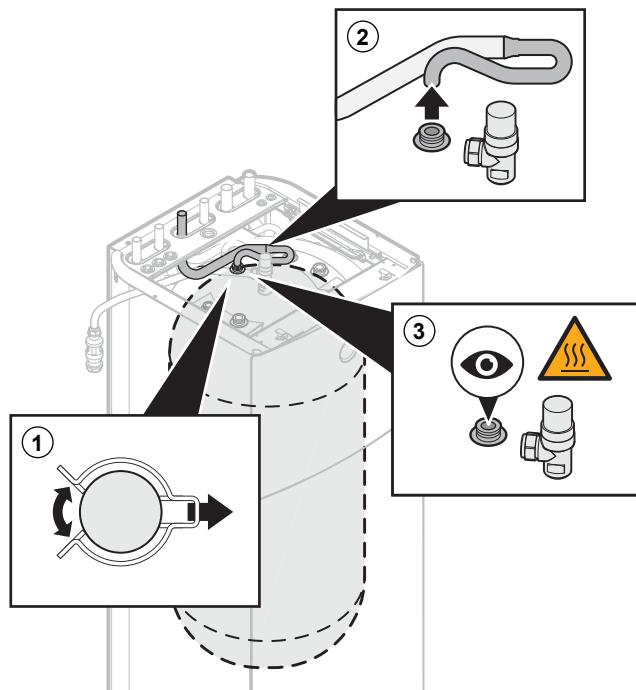
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Close the cold water supply.

Prerequisite: Open all the hot water tapping points to allow air to enter the system.

Prerequisite: Remove the top panel. See "6.2.2 To open the indoor unit" [▶ 55].

- 1 Remove the clip that fixes the domestic hot water OUT pipe.
- 2 Disconnect the pipe such that the tank is accessible for visual inspection (e.g. with an endoscope).



- 3 Reconnect the pipe to the tank.
- 4 Reinstall the clip to fix the domestic hot water OUT pipe.

See also

[6.2.2 To open the indoor unit \[55\]](#)

14 Troubleshooting

Contact

For the symptoms listed below, you can try to solve the problem yourself. For any other problem, contact your installer. You can find the contact/helpdesk number via the user interface.

1 Go to [8.3]: **Information > Dealer information.**



14.1 Overview: Troubleshooting

Before troubleshooting

Carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

14.2 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

14.3 Solving problems based on symptoms

14.3.1 Symptom: The unit is NOT heating as expected

| Possible causes | Corrective action |
|--|--|
| The temperature setting is NOT correct | Check the temperature setting on the remote controller. Refer to the operation manual. |

| Possible causes | Corrective action |
|---|---|
| The water or brine flow is too low | <p>Check and make sure that:</p> <ul style="list-style-type: none"> ▪ All shut-off valves of the water or brine circuit are completely open. ▪ The water and brine filters are clean. Clean if necessary (see "Yearly maintenance: instructions" [▶ 214]). ▪ There is no air in the system. Purge air if necessary (see "11.4.1 Air purge function on the water circuit" [▶ 201] and "11.4.2 Air purge function on the brine circuit" [▶ 202]). ▪ The water pressure is >1 bar. ▪ The expansion vessel is NOT broken. ▪ The resistance in the water circuit is NOT too high for the pump. <p>If the problem persists after you have conducted all of the above checks, contact your dealer. In some cases, it is normal that the unit decides to use a low water flow.</p> |
| The water volume in the installation is too low | <p>Make sure that the water volume in the installation is above the minimum required value (see "7.1.3 To check the water volume and flow rate of the space heating circuit and brine circuit" [▶ 67]).</p> |

14.3.2 Symptom: The compressor does NOT start (space heating or domestic water heating)

| Possible causes | Corrective action |
|--|---|
| The compressor cannot start if the water temperature is too low. The unit will use the backup heater to reach the minimum water temperature (5°C), after which the compressor can start. | <p>If the backup heater doesn't start either, 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 contactors are NOT broken. <p>If the problem persists, contact your dealer.</p> |
| The preferential kWh rate power supply settings and electrical connections do NOT match | <p>This should match with the connections as explained in "8.2.1 To connect the main power supply" [▶ 82].</p> |

| Possible causes | Corrective action |
|--|--|
| The preferential kWh rate signal was sent by the electricity company | In the user interface of the unit, go to [8.5.B] Information > Actuators > Forced off contact . If Forced off contact is On , the unit is operating under the preferential kWh rate. Wait for the power to return (maximum 2 hours). |

14.3.3 Symptom: The pump is making noise (cavitation)

| Possible causes | Corrective action |
|---|--|
| There is air in the system | Purge air (see " 11.4.1 Air purge function on the water circuit " [▶ 201] or " 11.4.2 Air purge function on the brine circuit " [▶ 202]). |
| The pressure at the pump inlet is too low | Check and make sure that: <ul style="list-style-type: none"> The pressure is >1 bar. The expansion vessel is NOT broken. The pre-pressure setting of the expansion vessel is correct (see "7.1.4 Changing the pre-pressure of the expansion vessel" [▶ 68]). |

14.3.4 Symptom: The pressure relief valve opens

| Possible causes | Corrective action |
|---|---|
| The expansion vessel is broken | Replace the expansion vessel. |
| The water or brine volume in the installation is too high | Make sure that the water or brine volume in the installation is below the maximum allowed value (see " 7.1.3 To check the water volume and flow rate of the space heating circuit and brine circuit " [▶ 67] and " 7.1.4 Changing the pre-pressure of the expansion vessel " [▶ 68]). |
| The water circuit head is too high | The water circuit head is the difference in height between the unit and the highest point of the water circuit. If the unit is located at the highest point of the installation, the installation height is considered 0 m. The maximum water circuit head is 10 m. Check the installation requirements. |

14.3.5 Symptom: The 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 or brine keeps running out of the unit, close both inlet and outlet shut-off valves first and then contact your dealer. |

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

| Possible causes | Corrective action |
|---|--|
| The backup heater operation is not activated | <p>Check the following:</p> <ul style="list-style-type: none"> ▪ The backup heater operation mode is enabled. Go to: [9.3.8]: Installer settings > Backup heater > Operation [4-00] ▪ The backup heater overcurrent circuit breaker is on. If not, turn it back on. ▪ The thermal protector of the backup heater is NOT activated. If it has, check the following, and then press the reset button in the switch box: <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.</p> <p>Go to: [9.3.7]: Installer settings > Backup heater > Equilibrium temperature [5-01]</p> |
| There is air in the system. | Purge air manually or automatically. See the air purge function in the chapter " "11 Commissioning" " [▶ 199]. |

| Possible causes | Corrective action |
|--|---|
| Too much heat pump capacity is used for heating domestic hot water | <p>Check if the Space heating priority settings have been configured appropriately:</p> <ul style="list-style-type: none"> Make sure that the Space heating priority has been enabled. Go to [9.6.1]: Installer settings > Balancing > Space heating priority [5-02] Increase the "space heating priority temperature" to activate backup heater operation at a higher outdoor temperature. Go to [9.6.3]: Installer settings > Balancing > Priority temperature [5-03] |

14.3.7 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. |

14.3.8 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>If in [5.6] Tank > Heat up mode the mode Reheat only or Schedule + reheat 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).</p> <p>If in [5.6] Tank > Heat up mode the 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. |

14.4 Solving problems based on error codes

If the unit runs into a problem, the user interface displays an error code. It is important to understand the problem and to take measures before resetting an error code. This should be done by a licensed installer or by your local dealer.

This chapter gives you an overview of all possible error codes and their descriptions as they appear on the user interface.

For detailed troubleshooting of each error, see the service manual.

14.4.1 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. | ? |

14.4.2 Error codes: Overview

Error codes of the unit

| Error code | Description |
|------------|---|
| 7H-01 | Water flow problem |
| 7H-04 | Water flow problem during domestic hot water production |
| 7H-05 | Water flow problem during heating/sampling |
| 7H-06 | Water flow problem during cooling/defrost |
| 7H-07 | Water flow problem. Pump deblocking active |
| 80-00 | Returning water temperature sensor problem |
| 81-00 | Leaving water temperature sensor problem |
| 81-04 | Leaving water temperature sensor not properly mounted |
| 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 | Description |
|------------|--|
| 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 |
| AH-00 | Tank disinfection function not completed correctly |
| AJ-03 | Too long DHW heat-up time required |
| C0-00 | Flow sensor malfunction |
| C1-10 | ACS communication malfunction |
| C1-11 | ACS communication malfunction |
| C4-00 | Heat exchanger temperature sensor problem |
| C5-00 | Heat exchanger thermistor abnormality |
| C8-01 | Current sensor abnormality |
| CJ-02 | Room temperature sensor problem |
| E1-00 | OU: PCB defect |
| 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 |
| E7-63 | Brine pump error |
| 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 |
| EJ-01 | Brine circuit pressure low |
| 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 |
| H1-00 | External temperature sensor problem |
| H3-00 | OU: Malfunction of high pressure switch (HPS) |
| H4-00 | Malfunction of low pressure switch |
| H5-00 | Malfunction of compressor overload protection |
| H6-00 | OU: Malfunction of position detection sensor |

| Error code | Description |
|------------|---|
| 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-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 |
| JC-00 | Low pressure sensor abnormality |
| JC-01 | Evaporator pressure sensor (S1NPL) 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 |
| PJ-09 | Brine pump type mismatch |
| U0-00 | OU: Shortage of refrigerant |
| U1-00 | Malfunction by reverse phase/open-phase |

| Error code | Description |
|------------|---|
| U2-00 | OU: Defect of power supply voltage |
| U3-00 | Underfloor heating screed dryout function not completed correctly |
| U4-00 | Indoor/outdoor unit communication problem |
| U5-00 | User interface communication problem |
| 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 |
| U8-07 | P1P2 communication error |
| UA-00 | Indoor unit, outdoor unit matching problem |
| UA-17 | Tank type problem |



INFORMATION

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

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



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.

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



INFORMATION

Error AJ-03 is reset automatically from the moment there is a normal tank heat-up.

15 Disposal



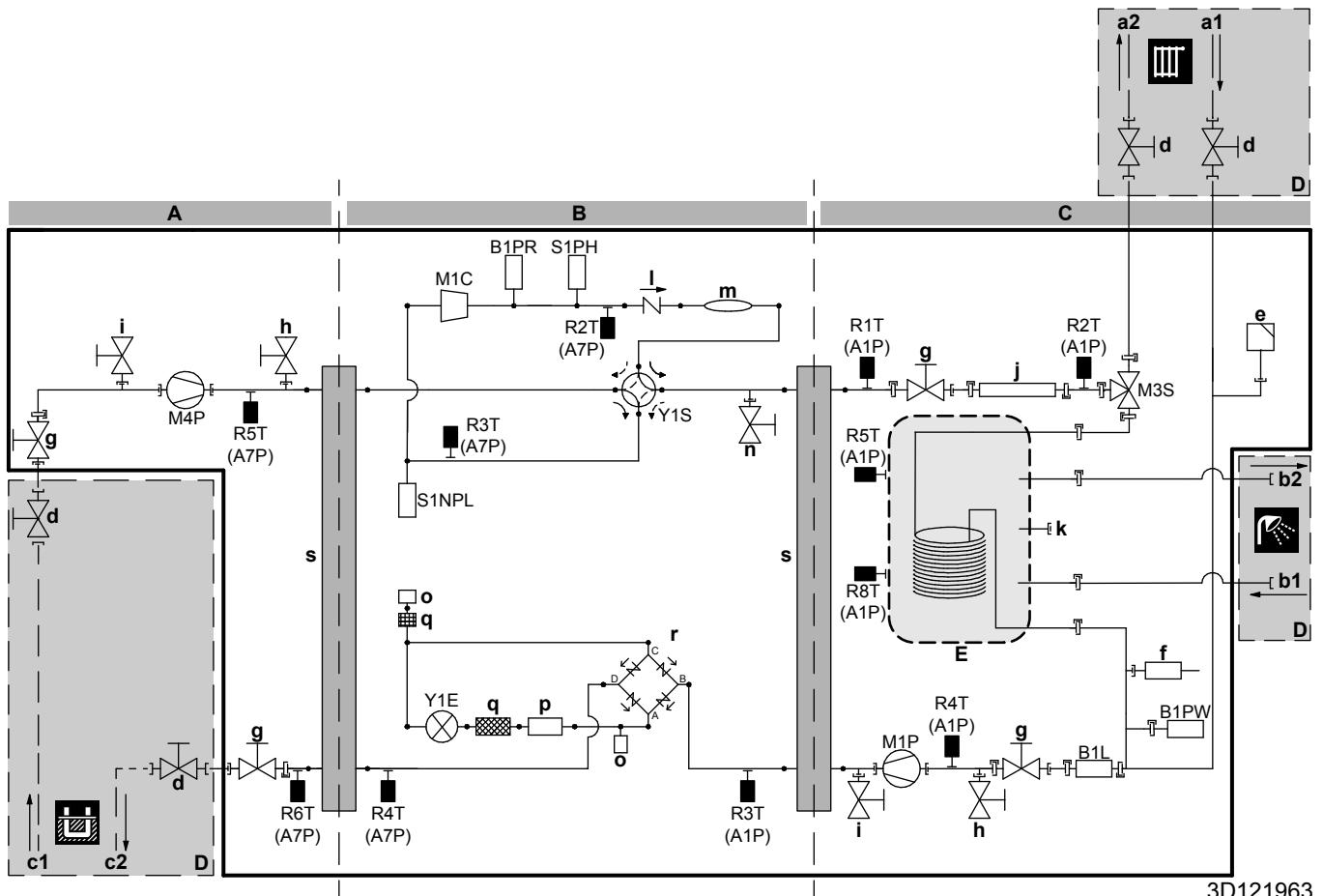
NOTICE

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.

16 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).

16.1 Piping diagram: Indoor unit



- A** Brine side
- B** Refrigerant side
- C** Water side
- D** Field installed
- E** DHW tank
- a1** Space heating water IN (Ø22 mm)
- a2** Space heating water OUT (Ø22 mm)
- b1** Domestic hot water: cold water IN (Ø22 mm)
- b2** Domestic hot water: hot water OUT (Ø22 mm)
- c1** Brine IN (Ø28 mm)
- c2** Brine OUT (Ø28 mm)
- d** Shut-off valve
- e** Automatic air purge valve
- f** Safety valve
- g** Shut-off valve
- h** Manual air purge valve
- i** Drain valve
- j** Backup heater
- k** Recirculation connection (3/4" G female)
- l** Check valve
- m** Muffler
- n** Refrigerant pressure relief valve
- o** Service port (5/16" flare)
- p** Heat sink
- q** Filter
- r** Rectifier

s Plate heat exchanger

Refrigerant flow:

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

Thermistors:

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

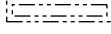
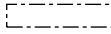
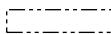
Connections:

-  Screw connection
-  Quick coupling
-  Brazed connection

16.2 Wiring diagram: Indoor unit

See the internal wiring diagram supplied with the unit (on the inside of the front panel). The abbreviations used are listed below.

Notes to go through before starting the unit

| English | Translation |
|---|--|
| Notes to go through before starting the unit | Notes to go through before starting the unit |
| X1M | Main terminal |
| X2M | Field wiring terminal for AC |
| X5M | Field wiring terminal for DC |
| ----- | Earth wiring |
| 15 | Wire number 15 |
| ----- | Field supply |
| → **/12.2 | Connection ** continues on page 12 column 2 |
| ① | Several wiring possibilities |
|  | Option |
|  | Mounted in switch box |
|  | Wiring depending on model |
|  | PCB |
| Backup heater power supply | Backup heater power supply |
| <input type="checkbox"/> 1N~, 230 V, 3/6 kW | <input type="checkbox"/> 1N~, 230 V, 3/6 kW |
| <input type="checkbox"/> 3N~, 400 V, 6/9 kW | <input type="checkbox"/> 3N~, 400 V, 6/9 kW |
| User installed options | User installed options |
| <input type="checkbox"/> Remote user interface | <input type="checkbox"/> Remote user interface (Human Comfort Interface) |
| <input type="checkbox"/> Ext. indoor thermistor | <input type="checkbox"/> External indoor 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"/> Brine low pressure switch | <input type="checkbox"/> Brine low pressure switch |
| 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 convector | <input type="checkbox"/> Heat pump convector |
| 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 |

| English | Translation |
|--|--|
| <input type="checkbox"/> Heat pump convector | <input type="checkbox"/> Heat pump convector |

Position in switch box

| English | Translation |
|------------------------|------------------------|
| Position in switch box | Position in switch box |

Legend

| | |
|--------------|--|
| A1P | Main PCB (hydro) |
| A2P | * User interface PCB |
| A3P | * On/OFF thermostat |
| A3P | * Heat pump convector |
| A4P | * Digital I/O PCB |
| A4P | * Receiver PCB (Wireless On/OFF thermostat, PC=power circuit) |
| A6P | Backup heater control PCB |
| A7P | Inverter PCB |
| A8P | * Demand PCB |
| A15P | LAN adapter |
| A16P | ACS digital I/O PCB |
| CN* (A4P) | * Connector |
| CT* | * Current sensor |
| DS1 (A8P) | * DIP switch |
| F1B | # Overcurrent fuse |
| F1U~F2U(A4P) | * Fuse (5 A, 250 V) |
| F2B | # Overcurrent fuse compressor |
| K*R (A4P) | Relay on PCB |
| K9M | Thermal protector backup heater relay |
| M2P | # Domestic hot water pump |
| M2S | # Shut-off valve |
| M3P | # Drain pump |
| PC (A4P) | * Power circuit |
| PHC1 (A4P) | * Optocoupler input circuit |
| Q*DI | # Earth leakage circuit breaker |
| Q1L | Thermal protector backup heater |
| Q4L | # Safety thermostat |
| R1T (A2P) | * Thermistor (ambient temperature of the user interface (Human Comfort Interface)) |
| R1T (A3P) | * Thermistor (ambient temperature of the On/OFF thermostat) |

| | | |
|-----------|---|---|
| R1T (A7P) | | Thermistor (outdoor ambient temperature) |
| R2T (A3P) | * | Thermistor (floor temperature or indoor ambient temperature) (in case of wireless On/OFF thermostat) |
| R6T (A1P) | * | Thermistor (indoor ambient temperature) (in case of external indoor ambient thermistor) |
| R1H (A3P) | * | Humidity sensor |
| S1L | # | Low level switch |
| S1PL | # | Brine low pressure switch |
| S1S | # | Preferential kWh rate power supply contact |
| S2S | # | Electricity meter pulse input 1 |
| S3S | # | Electricity meter pulse input 2 |
| S6S~S9S | # | Digital power limitation inputs |
| SS1 (A4P) | * | Selector switch |
| TR1, TR2 | | Power supply transformer |
| X*A | | Connector |
| X*M | | Terminal strip |
| X*Y | | Connector |
| Z*C | | Noise filter (ferrite core) |

* Optional

Field supply

Translation of text on wiring diagram

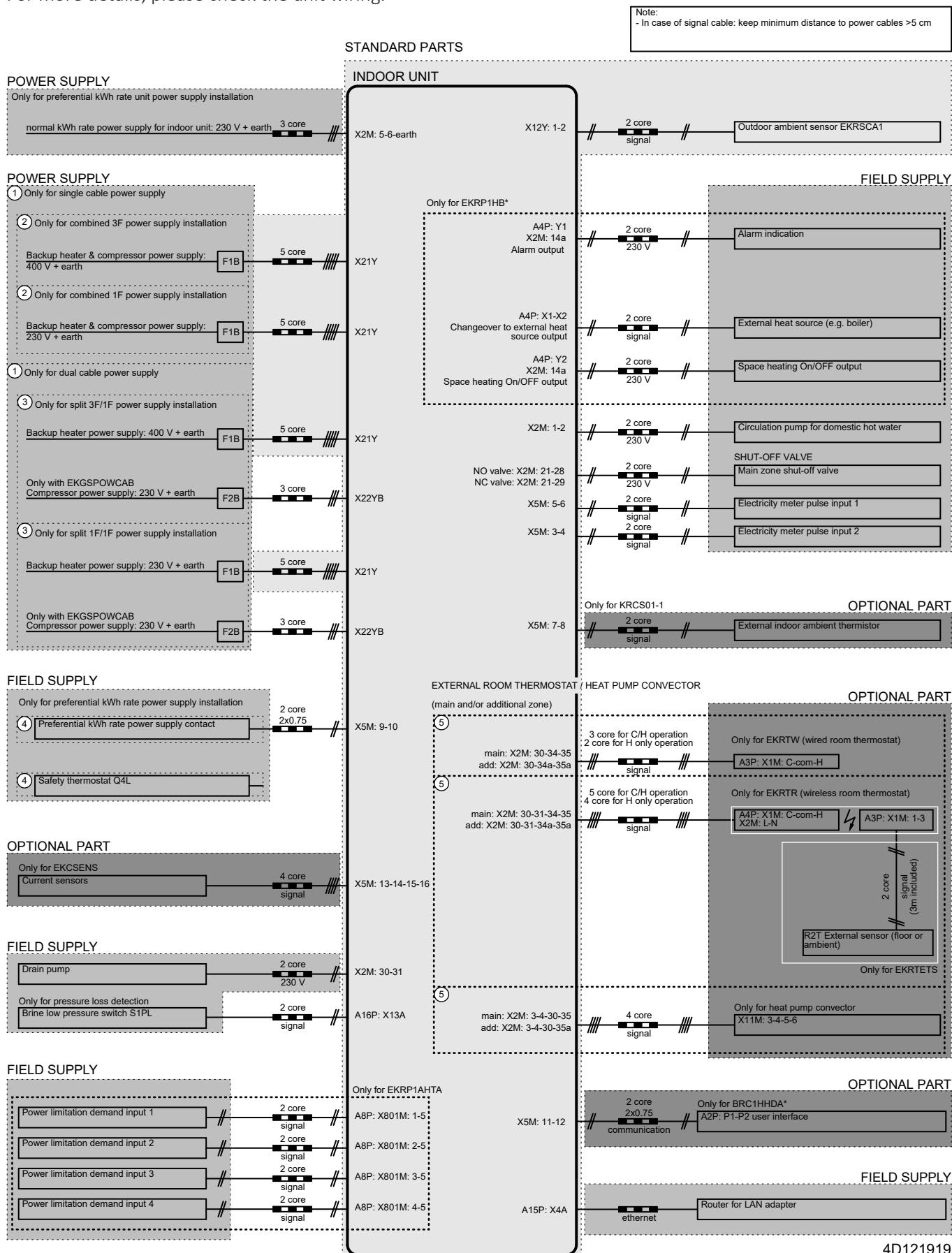
| English | Translation |
|---|---|
| (1) Main power connection | (1) Main power connection |
| For preferential kWh rate power supply | For preferential kWh rate power supply |
| Normal kWh rate power supply | Normal kWh rate power supply |
| Only for preferential kWh rate power supply with separate normal kWh rate power supply | Only for preferential kWh rate power supply with separate normal kWh rate power supply |
| Only for preferential kWh rate power supply without separate normal kWh rate power supply | Only for preferential kWh rate power supply without separate normal kWh rate power supply |
| Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB) | Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB) |
| SWB | Switch box |
| (2) Power supply BUH | (2) Backup heater power supply |
| BLK | Black |
| BLU | Blue |
| BRN | Brown |
| GRY | Grey |

| English | Translation |
|--|--|
| Only for combined 1F BUH/compressor power supply (3/6 kW) | Only for combined 1F backup heater/compressor power supply (3/6 kW) |
| Only for combined 3F BUH/compressor power supply (6/9 kW) | Only for combined 3F backup heater/compressor power supply (6/9 kW) |
| Only for dual cable power supply | Only for dual cable power supply |
| Only for single cable power supply | Only for single cable power supply |
| Only for split 1F BUH/1F compressor power supply (3/6 kW) | Only for split 1F backup heater/1F compressor power supply (3/6 kW) |
| Only for split 3F BUH/1F compressor power supply (6/9 kW) | Only for split 3F backup heater/1F compressor power supply (6/9 kW) |
| SWB | Switch box |
| YLW/GRN | Yellow/green |
| (3) User interface | (3) User interface |
| Only for remote user interface | Only for remote user interface |
| SWB | Switch box |
| (4) Drain pump | (4) Drain pump |
| SWB | Switch box |
| (5) Ext. indoor ambient thermistor | (5) External indoor ambient thermistor |
| SWB | Switch box |
| (6) Field supplied options | (6) Field supplied options |
| 12 V DC pulse detection (voltage supplied by PCB) | 12 V DC pulse detection (voltage supplied by PCB) |
| 230 V AC supplied by PCB | 230 V AC supplied by PCB |
| Continuous | Continuous current |
| DHW pump | Domestic hot water pump |
| DHW pump output | Domestic hot water pump output |
| Electrical meters | Electricity meters |
| For safety thermostat | For safety thermostat |
| Inrush | Inrush current |
| Max. load | Maximum load |
| Normally closed | Normally closed |
| Normally open | Normally open |
| 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 |

| English | Translation |
|--|--|
| Max. load | Maximum load |
| Min. load | Minimum load |
| Only for demand PCB option | Only for demand PCB option |
| Only for digital I/O PCB option | Only for digital I/O PCB option |
| Options: ext. heat source output, alarm output | Options: external heat source output, alarm output |
| Options: On/OFF output | Options: On/OFF output |
| Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB) | Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB) |
| Space C/H On/OFF output | Space cooling/heating On/OFF output |
| SWB | Switch box |
| (8) External On/OFF thermostats and heat pump convector | (8) External On/OFF thermostats and heat pump convector |
| Additional LWT zone | Additional leaving water temperature zone |
| Main LWT zone | Main leaving water temperature zone |
| Only for external sensor (floor/ambient) | Only for external sensor (floor or ambient) |
| Only for heat pump convector | Only for heat pump convector |
| Only for wired On/OFF thermostat | Only for wired On/OFF thermostat |
| Only for wireless On/OFF thermostat | Only for wireless On/OFF thermostat |
| (9) Current sensors | (9) Current sensors |
| SWB | Switch box |
| (10) Brine pressure loss detection | (10) Brine pressure loss detection |
| SWB | Switch box |
| With pressure loss detection | With pressure loss detection |
| Without pressure loss detection | Without pressure loss detection |
| (11) Ext. outdoor ambient thermistor | (11) External outdoor ambient thermistor |
| SWB | Switch box |
| (12) LAN adapter connection | (12) LAN adapter connection |
| Ethernet | Ethernet |
| LAN adapter | LAN adapter |
| SWB | Switch box |

Electrical connection diagram

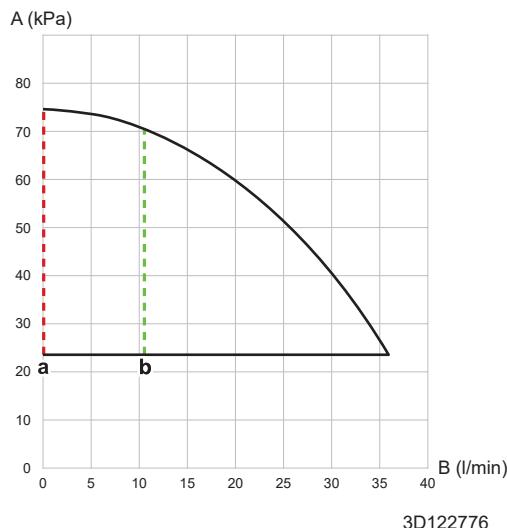
For more details, please check the unit wiring.



4D121919

16.3 ESP curve: Indoor unit

ESP for space heating/cooling circuit



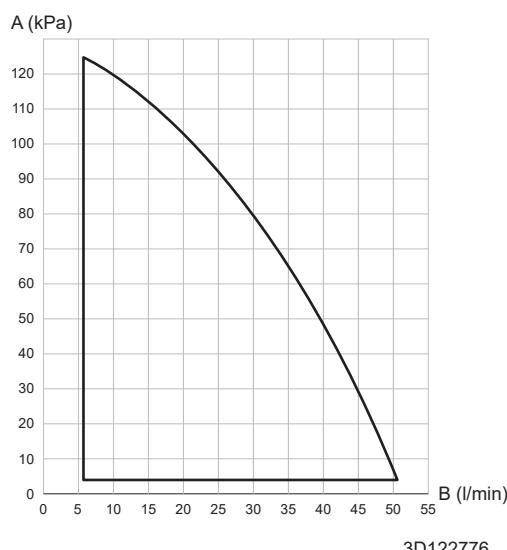
- A** External static pressure (ESP)
- B** Water flow rate
- a** Minimum water flow rate during heat pump operation
- b** Minimum water flow rate during cooling operation



NOTICE

Selecting a flow outside the operating area can damage the unit or cause the unit to malfunction.

ESP for brine circuit



- A** External static pressure (ESP)
- B** Brine flow rate



NOTICE

Selecting a flow outside the operating area can damage the unit or cause the unit to malfunction.

16.4 Technical specifications: Domestic hot water tank

16.4.1 Test results in accordance with EN12897 (2016)

| Description | Test result |
|--------------------|-------------|
| Hot water capacity | 160 l |
| Reheat time | 14 min |



INFORMATION

This unit has been tested and approved according to BS EN12897:2016

16.4.2 Warning label

WARNING TO USER

- Do not remove or adjust any component part of this installation.
Contact the installer.
- Should the system develop a fault, switch the system off and contact the installer.

WARNING TO INSTALLER

- This installation is subject to building regulation approval, notify Local Authority of intention to install.
- Use only manufacturer's recommended spare parts.
Contact your local Daikin dealer.
- Installed by

name
address
tel. No.
completion date

TECHNICAL SPECIFICATIONS EN12897: 2016

- Maximum water supply pressure to pressure reducing valve: **16 bar**
- Operating pressure/set pressure of pressure reducing valve: **3.5 bar**
- Maximum primary working pressure (heating): **2.5 bar**
- Maximum flow temperature: **65 °C**
- Expansion vessel pre-charge pressure: **3.5 bar**
- Expansion valve setting: **8 bar**
- Temperature and pressure relief valve replacement part No.: **302810P**
- Operating pressure of temperature and pressure relief valve: **10 bar**
- Operating temperature of temperature and pressure relief valve: **95 °C**
- Operating temperature of thermal cut-out (2 pieces): **89 °C**
- Primary heating power input: **4.4 kW**
- Primary flow rate to reach primary heating power input: **15 l/min**
- Standing heat loss: **1.35 kWh/24h**
- Storage capacity: **180 l**
- Mass of unit when full: **403 kg**
- Maximum design pressure: **10 bar**
- Rated volume heat exchanger: **9.1 l**

DAIKIN EUROPE N.V.

4P599463-1A

17 Glossary

Dealer

Sales distributor for the product.

Authorised installer

Technical skilled person who is qualified to install the product.

User

Person who is owner of the product and/or operates the product.

Applicable legislation

All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company

Qualified company which can perform or coordinate the required service to the product.

Installation manual

Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual

Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions

Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories

Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment

Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supply

Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field settings table[8.7.5] = **8691****Applicable indoor units**

| | |
|--------------|--------------|
| EGSAH06DA9W | EGSAH06UDA9W |
| EGSAH10DA9W | EGSAH10UDA9W |
| EGSAX06DA9W | EGSAX06UDA9W |
| EGSAX10DA9W | EGSAX10UDA9W |
| EGSAX06DA9WG | |
| EGSAX10DA9WG | |

Notes

(*1) *X*
(*2) *H*

| 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 antifrost temperature | 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 | | | |
| 1.5.4 | [3-08] | Cooling maximum | R/W 25~35°C, step: 0,5°C 35°C | | | |
| Room | | | | | | |
| 1.6 | [2-09] | Room sensor offset | R/W -5~5°C, step: 0,5°C 0°C | | | |
| 1.7 | [2-0A] | Room sensor offset | R/W -5~5°C, step: 0,5°C 0°C | | | |
| Main zone | | | | | | |
| 2.4 | | Setpoint mode | R/W 0: Fixed 1: WD heating, fixed cooling 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 -40°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 [2-0C]=0 45°C [2-0C]=1 55°C [2-0C]=2 65°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 [2-0C]=0 22°C [2-0C]=1 35°C [2-0C]=2 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 | | | |
| 2.6 | [1-07] | High ambient temp. for LWT main zone cooling WD curve. | R/W 25~43°C, step: 1°C 35°C | | | |
| 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 | | | |
| 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 | | | |
| 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 15°C | | | |
| 2.8.2 | [9-00] | Heating maximum | R/W [2-0C]=0 37~55, step: 1°C 55°C [2-0C]=0 37~65, step: 1°C 65°C | | | |
| 2.8.3 | [9-03] | Cooling minimum | R/W 5~18°C, step: 1°C 5°C | | | |
| 2.8.4 | [9-02] | Cooling maximum | R/W 18~22°C, step: 1°C 22°C | | | |
| Main zone | | | | | | |
| 2.9 | [C-07] | Control | R/W 0: LWT control 1: Ext RT control 2: RT control | | | |
| 2.A | [C-05] | Thermostat type | R/W 0: - 1: 1 contact 2: 2 contacts | | | |
| | └ Delta T | | | | | |
| 2.B.1 | [1-0B] | Delta T heating | R/W 3~10°C, step: 1°C 10°C | | | |
| 2.B.2 | [1-0D] | Delta T cooling | R/W 3~10°C, step: 1°C 5°C | | | |
| | └ Modulation | | | | | |
| 2.C.1 | [8-05] | Modulation | R/W 0: No 1: Yes | | | |
| 2.C.2 | [8-06] | Max modulation | R/W 0~10°C, step: 1°C 5°C | | | |
| | └ Shut off valve | | | | | |
| 2.D.1 | [F-0B] | During thermo | R/W 0: No 1: Yes | | | |
| 2.D.2 | [F-0C] | During cooling | R/W 0: No 1: Yes | | | |
| | └ WD mode type | | | | | |
| 2.E | | WD curve type | R/W 0: 2-points 1: Slope-Offset | | | |
| Additional zone | | | | | | |
| 3.4 | | Setpoint mode | R/W 0: Fixed 1: WD heating, fixed cooling 2: Weather dependent | | | |
| | └ Heating WD curve | | | | | |

| Field settings table | | | | Installer setting at variance with default value | |
|-------------------------|------------|---|--|--|-------|
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Value |
| 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 [2-0C]=0 22°C [2-0C]=1 35°C [2-0C]=2 25°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 [2-0C]=0 45°C [2-0C]=1 55°C [2-0C]=2 65°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 -40°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 | | |
| 3.6 | [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 | | |
| 3.6 | [0-06] | High ambient temp. for LWT add zone cooling WD curve. | R/W 25~43°C, step: 1°C 35°C | | |
| 3.6 | [0-07] | Low ambient temp. for LWT add zone cooling WD curve. | R/W 10~25°C, step: 1°C 20°C | | |
| Additional zone | | | | | |
| 3.7 | [2-0D] | Emitter type | R/W 0: Underfloor heating 1: Fancoil unit 2: Radiator | | |
| | | └ Selpoint range | | | |
| 3.8.1 | [9-05] | Heating minimum | R/W 15~37°C, step: 1°C 15°C | | |
| 3.8.2 | [9-06] | Heating maximum | R/W [2-0C]=0 37~55, step: 1°C 55°C [2-0C]=0 37~65, step: 1°C 65°C | | |
| 3.8.3 | [9-07] | Cooling minimum | R/W 5~18°C, step: 1°C 5°C | | |
| 3.8.4 | [9-08] | Cooling maximum | R/W 18~22°C, step: 1°C 22°C | | |
| Additional zone | | | | | |
| 3.A | [C-06] | Thermostat type | R/W 0: - 1: 1 contact 2: 2 contacts | | |
| | | └ Delta T | | | |
| 3.B.1 | [1-0C] | Delta T heating | R/W 3~10°C, step: 1°C 10°C | | |
| 3.B.2 | [1-0E] | Delta T cooling | R/W 3~10°C, step: 1°C 5°C | | |
| | | └ WD mode type | | | |
| 3.C | | WD curve type | R/W 0: 2-points 1: Slope-Offset | | |
| Space heating / cooling | | | | | |
| | | └ Operation range | | | |
| 4.3.1 | [4-02] | Space heating OFF temp | R/W 14~35°C, step: 1°C 16°C | | |
| 4.3.2 | [F-01] | Space cooling OFF temp | R/W 10~35°C, step: 1°C 20°C | | |
| Space heating / cooling | | | | | |
| 4.4 | [7-02] | Number of zones | R/W 0: 1 LWT zone 1: 2 LWT zones | | |
| 4.5 | [F-0D] | Pump operation mode | R/W 0: Continuous 1: Sample 2: Request | | |
| 4.6 | [E-02] | Unit type | R/O 0: Reversible (*1) 1: Heating only (*2) | | |
| 4.7 | [9-0D] | Pump limitation | 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 4°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 | | |

| Field settings table | | | | Installer setting at variance with default value | |
|------------------------|----------------------------|---|---|--|-------|
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Value |
| 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 3 | | |
| 5.7.4 | [2-03] | Tank setpoint | R/O 60°C 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 2~20°C, step: 1°C 6°C | | |
| 5.A | [6-08] | Hysteresis | R/W 2~20°C, step: 1°C 10°C | | |
| 5.B | | Setpoint mode | R/W 0: Fixed 1: Weather dependent | | |
| └ WD curve | | | | | |
| 5.C | [0-0B] | Leaving water value for high ambient temp. for DHW WD curve. | R/W 35~[6-0E]°C, step: 1°C 55°C | | |
| 5.C | [0-0C] | Leaving water value for low ambient temp. for DHW WD curve. | R/W 45~[6-0E]°C, step: 1°C 60°C | | |
| 5.C | [0-0D] | High ambient temp. for DHW WD curve. | R/W 10~25°C, step: 1°C 15°C | | |
| 5.C | [0-0E] | Low ambient temp. for DHW WD curve. | R/W -40~5°C, step: 1°C -10°C | | |
| Tank | | | | | |
| 5.D | [6-01] | Margin | R/W 0~10°C, step: 1°C 2°C | | |
| User settings | | | | | |
| └ Quiet | | | | | |
| 7.4.1 | | Activation | R/W 0: OFF 1: Quiet 2: More quiet 3: Most quiet 4: Automatic | | |
| └ Electricity price | | | | | |
| 7.5.1 | | High | R/W 0.00~990/kWh 1/kWh | | |
| 7.5.2 | | Medium | R/W 0.00~990/kWh 1/kWh | | |
| 7.5.3 | | Low | R/W 0.00~990/kWh 1/kWh | | |
| User settings | | | | | |
| 7.6 | | Gas price | R/W 0.00~990/kWh 0.00~290/MBtu 1.0/kWh | | |
| Installer settings | | | | | |
| └ Configuration wizard | | | | | |
| └ System | | | | | |
| 9.1.3.2 | [E-03] | BUH type | R/O 4: 9W | | |
| 9.1.3.3 | [E-05] [E-06] [E-07] | Domestic hot water | R/W No DHW Integrated | | |
| 9.1.3.4 | [4-06] | Emergency | R/W 0: Manual 1: Automatic (normal SH/ DHW ON) 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF | | |
| 9.1.3.5 | [7-02] | Number of zones | R/W 0: Single zone 1: Dual zone | | |
| └ Backup heater | | | | | |
| 9.1.4.1 | [5-0D] | Voltage | R/W 0: 230V, 1~ 2: 400V, 3~ | | |
| 9.1.4.5 | [4-07] | Maximum BUh capacity | R/W [5-0D]=2: 0~9 kW, step 1 kW 9 kW [5-0D]=2: 0~6 kW, step 1 kW 6 kW | | |
| └ Main zone | | | | | |
| 9.1.5.1 | [2-0C] | Emitter type | R/W 0: Underfloor heating 1: Fancoil unit 2: Radiator | | |
| 9.1.5.2 | [C-07] | Control | R/W 0: LWT control 1: Ext RT control 2: RT control | | |
| 9.1.5.3 | | Setpoint mode | R/W 0: Fixed 1: WD heating, fixed cooling 2: Weather dependent | | |
| 9.1.5.4 | | Schedule | R/W 0: No 1: Yes | | |
| 9.1.5.5 | | WD curve type | R/W 0: 2-points 1: Slope-Offset | | |
| 9.1.6 | [1-00] | Low ambient temp. for LWT main zone heating WD curve. | R/W -40~5°C, step: 1°C -40°C | | |
| 9.1.6 | [1-01] | High ambient temp. for LWT main zone heating WD curve. | R/W 10~25°C, step: 1°C 15°C | | |
| 9.1.6 | [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 [2-0C]=0 45°C [2-0C]≥1 55°C [2-0C]=2 65°C | | |

| Field settings table | | | | Installer setting at variance with default value | |
|----------------------|----------------------------|--|---|--|-------|
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Value |
| 9.1.6 | [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 [2-0C]=0 22°C [2-0C]=1 35°C [2-0C]=2 25°C | | |
| 9.1.7 | [1-06] | Low ambient temp. for LWT main zone cooling WD curve. | R/W 10~25°C, step: 1°C 20°C | | |
| 9.1.7 | [1-07] | High ambient temp. for LWT main zone cooling WD curve. | R/W 25~43°C, step: 1°C 35°C | | |
| 9.1.7 | [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 | | |
| 9.1.7 | [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 | | |
| └ Additional zone | | | | | |
| 9.1.8.1 | [2-0D] | Emitter type | R/W 0: Underfloor heating 1: Fancoil unit 2: Radiator | | |
| 9.1.8.3 | | Setpoint mode | R/W 0: Fixed 1: WD heating, fixed cooling 2: Weather dependent | | |
| 9.1.8.4 | | Schedule | R/W 0: No 1: Yes | | |
| 9.1.9 | [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 [2-0C]=0 22°C [2-0C]=1 35°C [2-0C]=2 25°C | | |
| 9.1.9 | [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 [2-0C]=0 45°C [2-0C]=1 55°C [2-0C]=2 65°C | | |
| 9.1.9 | [0-02] | High ambient temp. for LWT add zone heating WD curve. | R/W 10~25°C, step: 1°C 15°C | | |
| 9.1.9 | [0-03] | Low ambient temp. for LWT add zone heating WD curve. | R/W -40~5°C, step: 1°C -40°C | | |
| 9.1.A | [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 | | |
| 9.1.A | [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 | | |
| 9.1.A | [0-06] | High ambient temp. for LWT add zone cooling WD curve. | R/W 25~43°C, step: 1°C 35°C | | |
| 9.1.A | [0-07] | Low ambient temp. for LWT add zone cooling WD curve. | R/W 10~25°C, step: 1°C 20°C | | |
| └ Tank | | | | | |
| 9.1.B.1 | [6-0D] | Heat up mode | R/W 0: Reheat only 1: Reheat + sched. 2: Scheduled only | | |
| 9.1.B.2 | [6-0A] | Comfort setpoint | R/W 30~[6-0E]°C, step: 1°C 60°C | | |
| 9.1.B.3 | [6-0B] | Eco setpoint | R/W 30~min(50, [6-0E])°C, step: 1°C 45°C | | |
| 9.1.B.4 | [6-0C] | Reheat setpoint | R/W 30~min(50, [6-0E])°C, step: 1°C 45°C | | |
| 9.1.B.5 | [6-08] | Reheat hysteresis | R/W 2~20°C, step: 1°C 10°C | | |
| └ Domestic hot water | | | | | |
| 9.2.1 | [E-05] [E-06] [E-07] | Domestic hot water | R/W No DHW Integrated | | |
| 9.2.2 | [D-02] | DHW pump | R/W 0: No 1: Secondary rtrn 2: Disinf. Shunt | | |
| └ Back up heater | | | | | |
| 9.3.1 | [E-03] | BUH type | R/O 4: 9W | | |
| 9.3.2 | [5-0D] | Voltage | R/W 0: 230V, 1~ 2: 400V, 3~ | | |
| 9.3.6 | [5-00] | BUH allowed above the equilibrium temperature? | 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 | | |
| 9.3.9 | [4-07] | Maximum BUH capacity | R/W [5-0D]=2: 0~9 kW, step 1 kW 9 kW [5-0D]=2: 0~6 kW, step 1 kW 6 kW | | |
| Installer settings | | | | | |
| └ Emergency | | | | | |
| 9.5.1 | [4-06] | Emergency | R/W 0: Manual 1: Automatic (normal SH/ DHW ON) 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF | | |
| 9.5.2 | [7-06] | HP Forced OFF | R/W 0: Disabled 1: Enabled | | |
| └ 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 | | |
| 9.6.4 | [8-02] | Anti-recycle timer | R/W 0~10 hour, step: 0,5 hour 0,5 hour | | |
| 9.6.5 | [8-00] | Minimum running timer | R/W 0~20 min, step 1 min 1 min | | |

| Field settings table | | | | | Installer setting at variance with default value |
|-----------------------------|------------|------------------------------|---|------|--|
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Value |
| 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 1: continuous 2: Disabled | | |
| └ 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 3: Current sensors | | |
| 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 16 A | | |
| 9.9.4 | [5-05] | Limit 1 | R/W 0~50 A, step: 1 A 16 A | | |
| 9.9.5 | [5-06] | Limit 2 | R/W 0~50 A, step: 1 A 16 A | | |
| 9.9.6 | [5-07] | Limit 3 | R/W 0~50 A, step: 1 A 16 A | | |
| 9.9.7 | [5-08] | Limit 4 | R/W 0~50 A, step: 1 A 16 A | | |
| 9.9.8 | [5-09] | Limit | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.9.9 | [5-09] | Limit 1 | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.9.A | [5-0A] | Limit 2 | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.9.B | [5-0B] | Limit 3 | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.9.C | [5-0C] | Limit 4 | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.9.D | [4-01] | Priority heater | R/W 0: None 1: BSH 2: BUH | | |
| 9.9.E | [4-0E] | Current sensor offset | R/W -6~6A, step: 0,5 A 0 A | | |
| 9.9.F | [7-07] | BBR16 limit activated? | R/W 0: Disabled 1: Enabled | | |
| └ 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 | | | | | |

Field settings table

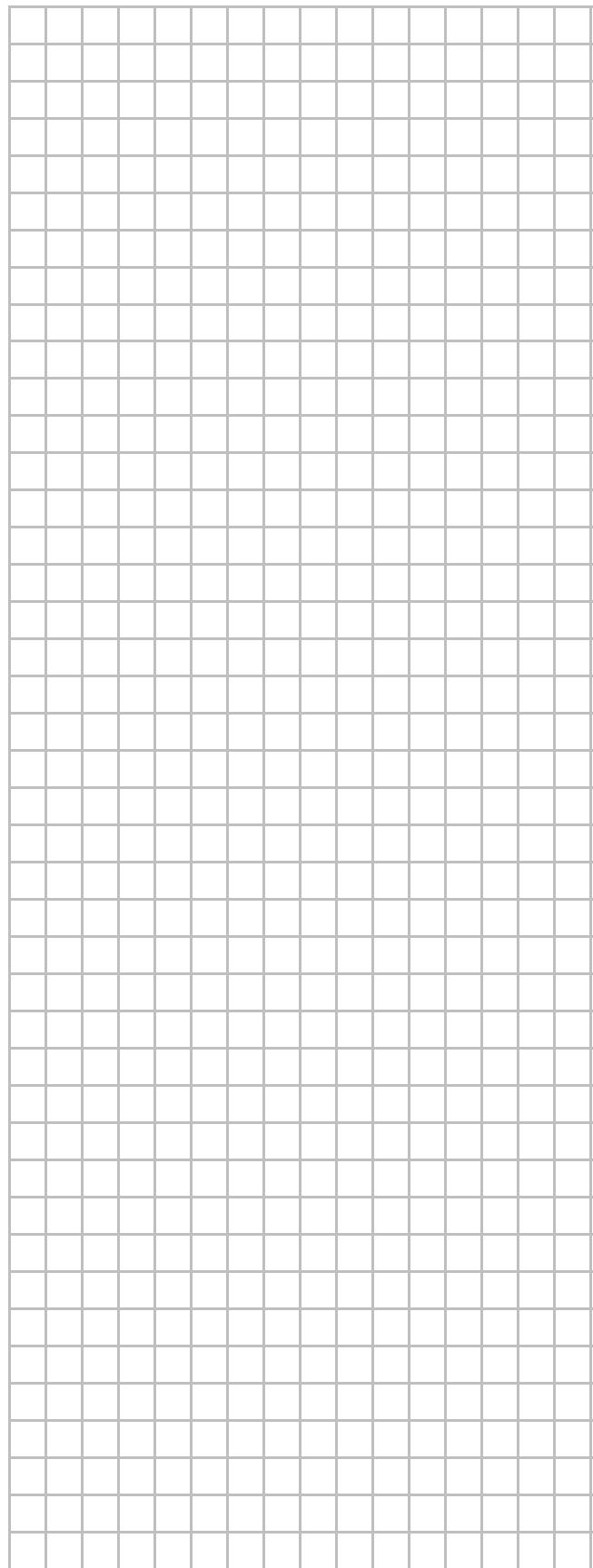
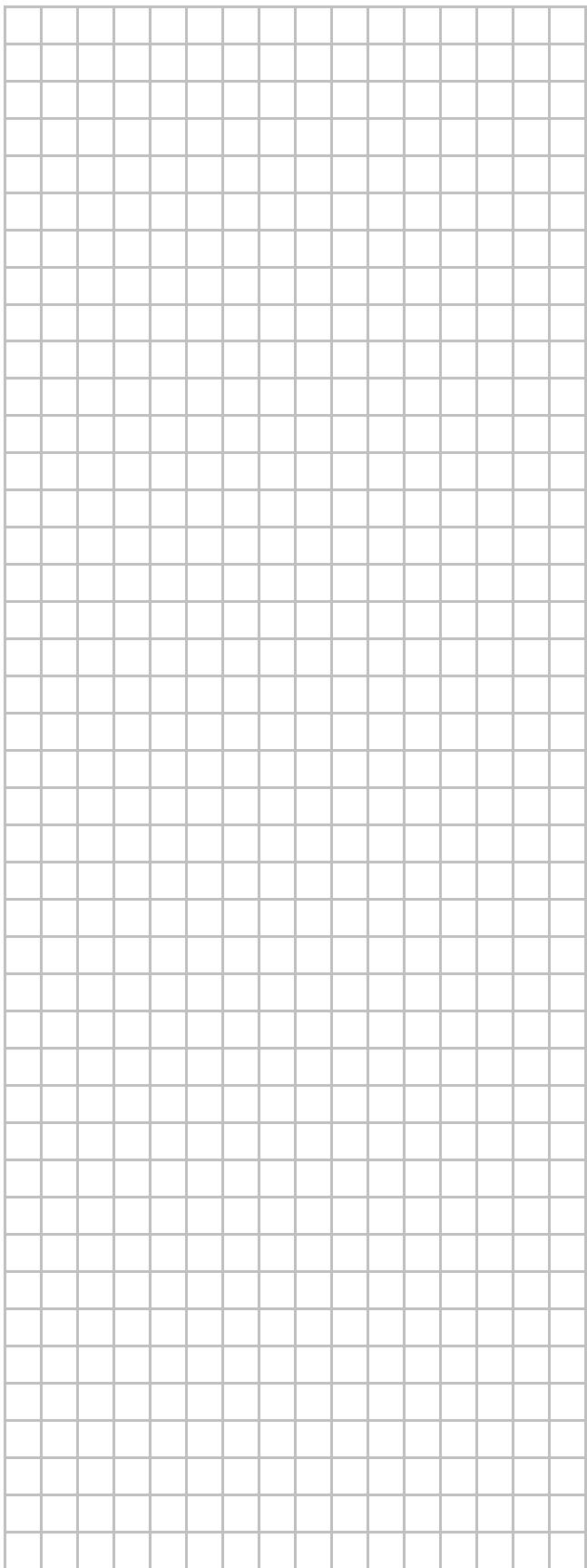
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Installer setting at variance with default value |
|------------|------------|--|---|------|---|
| 9.I | [0-00] | Leaving water value for high ambient temp. for LWT add zone heating WD curve. | R/W [9-05]~min(45,[9-06])°C, step: 1°C [2-0C]=0 22°C [2-0C]=1 35°C [2-0C]=2 25°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 [2-0C]=0 45°C [2-0C]=1 55°C [2-0C]=2 65°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 -40°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 | | |
| 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 | | |
| 9.I | [0-06] | High ambient temp. for LWT add zone cooling WD curve. | R/W 25~43°C, step: 1°C 35°C | | |
| 9.I | [0-07] | Low ambient temp. for LWT add zone cooling WD curve. | R/W 10~25°C, step: 1°C 20°C | | |
| 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 -40°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 [2-0C]=0 45°C [2-0C]=1 55°C [2-0C]=2 65°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 [2-0C]=0 22°C [2-0C]=1 35°C [2-0C]=2 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 | | |
| 9.I | [1-07] | High ambient temp. for LWT main zone cooling WD curve. | R/W 25~43°C, step: 1°C 35°C | | |
| 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 | | |
| 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 | | |
| 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 10°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 10°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 | | |
| 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 | | |
| 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 3 | | |
| 9.I | [2-03] | What is the disinfection target temperature? | R/O 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 | | |
| 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 | | |

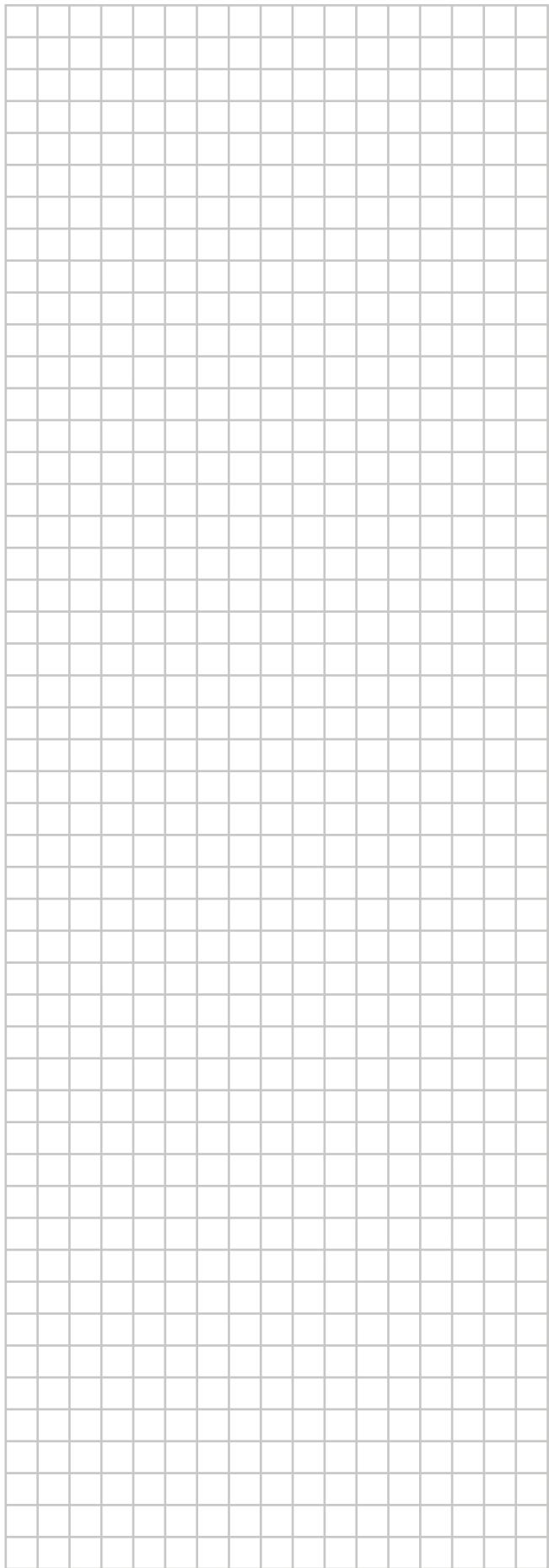
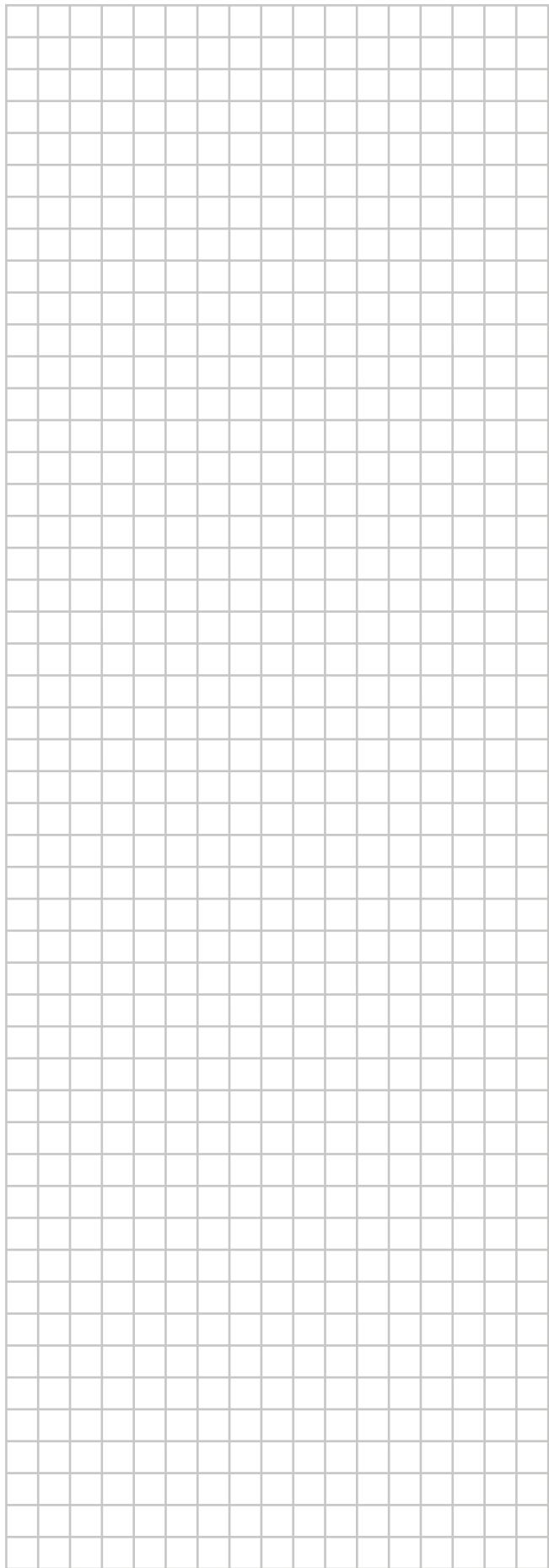
| Field settings table | | | | Installer setting at variance with default value | |
|----------------------|------------|--|--|--|-------|
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Value |
| 9.I | [2-0C] | What emitter type is connected to the main LWT zone? | R/W 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] | -- | R/W 0 | | |
| 9.I | [3-02] | -- | R/W 1 | | |
| 9.I | [3-03] | -- | R/W 4 | | |
| 9.I | [3-04] | -- | R/W 2 | | |
| 9.I | [3-05] | -- | R/W 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 | | |
| 9.I | [3-09] | What is the minimum desired room temperature in cooling? | R/W 15~25°C, step: 0,5°C 15°C | | |
| 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 16°C | | |
| 9.I | [4-03] | -- | R/W 3 | | |
| 9.I | [4-04] | Water pipe freeze prevention | R/O 0: Intermittent 1: continuous 2: Disabled | | |
| 9.I | [4-05] | -- | R/W 0 | | |
| 9.I | [4-06] | Emergency setting | R/W 0: Manual 1: Automatic (normal SH/ DHW ON) 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF | | |
| 9.I | [4-07] | Maximum BUH capacity | R/W [5-0D]=2: 0~9 kW, step: 1 kW 9 kW [5-0D]=2: 0~6 kW, step: 1 kW 6 kW | | |
| 9.I | [4-08] | Which power limitation mode is required on the system? | R/W 0: No limitation 1: Continuous 2: Digital inputs 3: Current sensors | | |
| 9.I | [4-09] | Which power limitation type is required? | R/W 0: Current 1: Power | | |
| 9.I | [4-0A] | -- | R/W 1 | | |
| 9.I | [4-0B] | Automatic cooling/heating changeover hysteresis. | R/W 1~10°C, step: 0,5°C 1°C | | |
| 9.I | [4-0D] | Automatic cooling/heating changeover offset. | R/W 1~10°C, step: 0,5°C 3°C | | |
| 9.I | [4-0E] | Current sensor offset | R/W -6~6 A, step: 0,5 A 0 A | | |
| 9.I | [5-00] | Is backup heater operation allowed above equilibrium temperature during space heating operation? | R/W 0: Allowed 1: Not allowed | | |
| 9.I | [5-01] | What is the equilibrium temperature for the building? | R/W -15~35°C, step: 1°C 0°C | | |
| 9.I | [5-02] | Space heating priority. | R/W 0: Disabled 1: Enabled | | |
| 9.I | [5-03] | Space heating priority temperature. | R/W -15~35°C, step: 1°C 0°C | | |
| 9.I | [5-04] | -- | R/W 10 | | |
| 9.I | [5-05] | What is the requested limit for DI1? | R/W 0~50 A, step: 1 A 16 A | | |
| 9.I | [5-06] | What is the requested limit for DI2? | R/W 0~50 A, step: 1 A 16 A | | |
| 9.I | [5-07] | What is the requested limit for DI3? | R/W 0~50 A, step: 1 A 16 A | | |
| 9.I | [5-08] | What is the requested limit for DI4? | R/W 0~50 A, step: 1 A 16 A | | |
| 9.I | [5-09] | What is the requested limit for DI1? | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.I | [5-0A] | What is the requested limit for DI2? | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.I | [5-0B] | What is the requested limit for DI3? | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.I | [5-0C] | What is the requested limit for DI4? | R/W 0~20 kW, step: 0,5 kW 5 kW | | |
| 9.I | [5-0D] | Backup heater voltage | R/W 0: 230V, 1~ 2: 400V, 3- | | |
| 9.I | [5-0E] | -- | R/W 1 | | |
| 9.I | [6-00] | The temperature difference determining the heat pump ON temperature. | R/W 2~20°C, step: 1°C 6°C | | |
| 9.I | [6-01] | The temperature difference determining the heat pump OFF temperature. | R/W 0~10°C, step: 1°C 2°C | | |
| 9.I | [6-02] | -- | R/W 0 | | |
| 9.I | [6-03] | -- | R/W 3 | | |
| 9.I | [6-04] | -- | R/W 6 | | |
| 9.I | [6-05] | -- | R/W 0 | | |
| 9.I | [6-06] | -- | R/W 0 | | |
| 9.I | [6-07] | -- | R/W 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] | -- | R/W 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 | | |

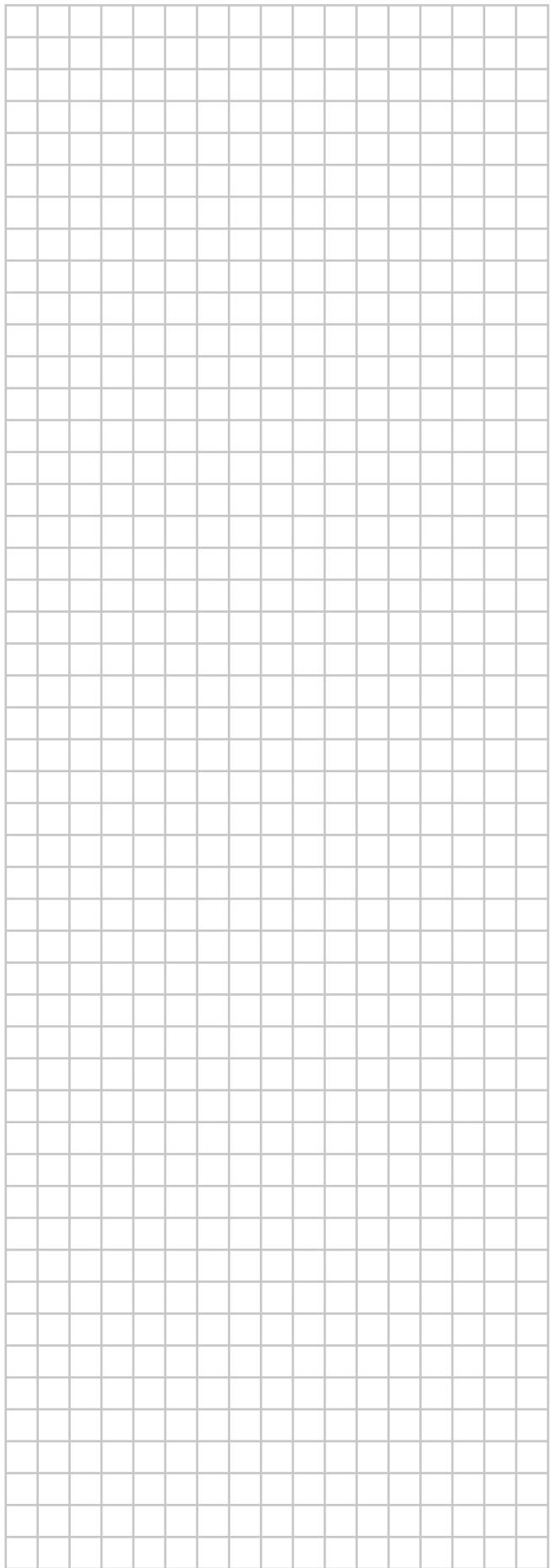
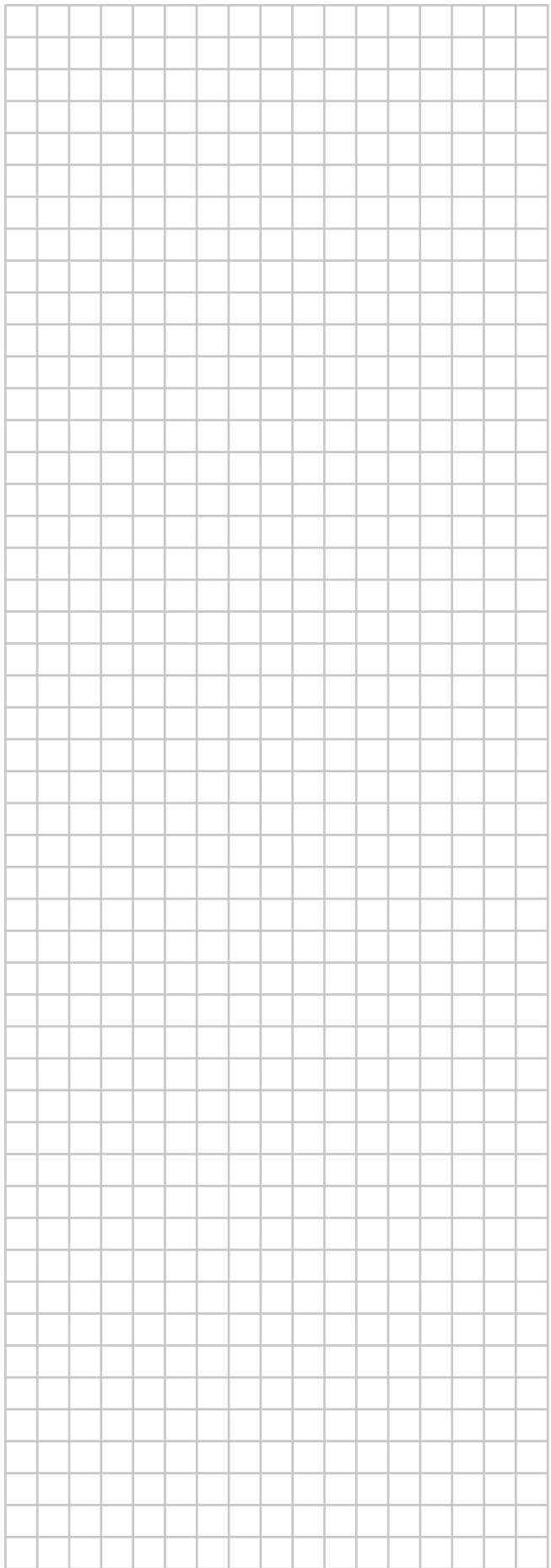
Field settings table

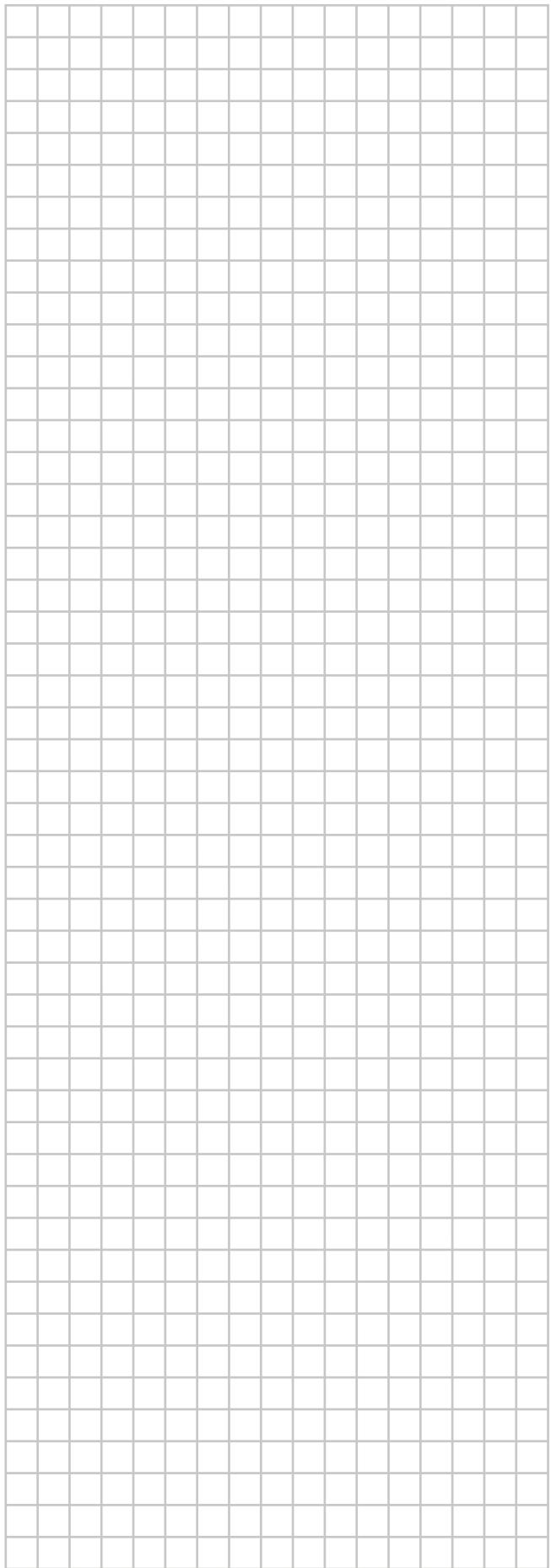
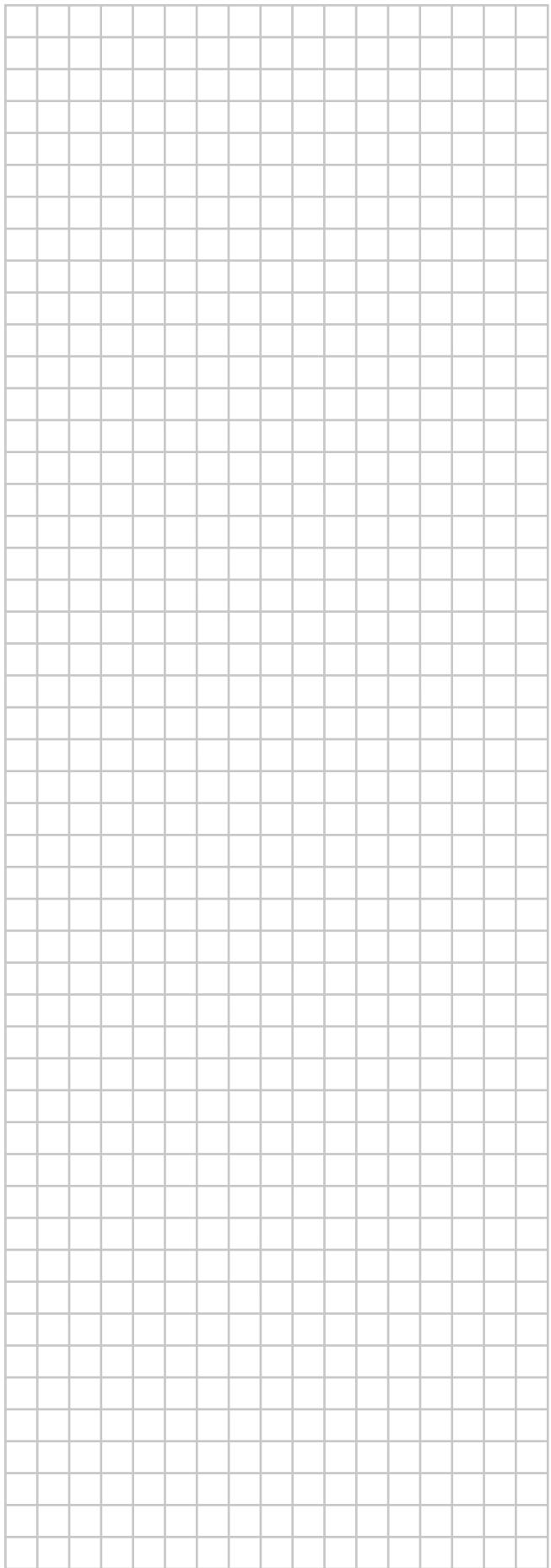
| Breadcrumb | Field code | Setting name | Range, step Default value | Installer setting at variance with default value | Date | Value |
|------------|------------|---|---|---|------|-------|
| 9.I | [6-0C] | What is the desired reheat temperature? | R/W 30~min(50, [6-0E])°C, step: 1°C 45°C | | | |
| 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] | -- | R/W 0 | | | |
| 9.I | [7-01] | -- | R/W 2 | | | |
| 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] | -- | R/W 2.5 | | | |
| 9.I | [7-04] | -- | R/W 0 | | | |
| 9.I | [7-05] | Boiler efficiency | R/W 0: Very high 1: High 2: Medium 3: Low 4: Very low | | | |
| 9.I | [7-06] | HP Forced OFF | R/W 0: Disabled 1: Enabled | | | |
| 9.I | [7-07] | BBR16 limit activated? | R/W 0: Disabled 1: Enabled | | | |
| 9.I | [8-00] | Minimum running time for domestic hot water operation. | R/W 0~20 min, step 1 min 1 min | | | |
| 9.I | [8-01] | Maximum running time for domestic hot water operation. | R/W 5~95 min, step: 5 min 30 min | | | |
| 9.I | [8-02] | Anti-recycling time. | R/W 0~10 hour, step: 0.5 hour 0.5 hour | | | |
| 9.I | [8-03] | -- | R/W 50 | | | |
| 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 | | | |
| 9.I | [8-08] | What is the desired eco main LWT in cooling? | R/W [9-03]~[9-02], step: 1°C 20°C | | | |
| 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] | -- | R/W 13 | | | |
| 9.I | [8-0C] | -- | R/W 10 | | | |
| 9.I | [8-0D] | -- | R/W 16 | | | |
| 9.I | [9-00] | What is the maximum desired LWT for main zone in heating? | R/W [2-0C]=0 37~55, step: 1°C 55°C [2-0C]≠0 37~65, step: 1°C 65°C | | | |
| 9.I | [9-01] | What is the minimum desired LWT for main zone in heating? | R/W 15~37°C, step: 1°C 15°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 | | | |
| 9.I | [9-03] | What is the minimum desired LWT for main zone in cooling? | R/W 5~18°C, step: 1°C 5°C | | | |
| 9.I | [9-04] | Leaving water temperature overshoot temperature. | R/W 1~4°C, step: 1°C 4°C | | | |
| 9.I | [9-05] | What is the minimum desired LWT for add. zone in heating? | R/W 15~37°C, step: 1°C 15°C | | | |
| 9.I | [9-06] | What is the maximum desired LWT for add. zone in heating? | R/W [2-0C]=0 37~55, step: 1°C 55°C [2-0C]≠0 37~65, step: 1°C 65°C | | | |
| 9.I | [9-07] | What is the minimum desired LWT for add. zone in cooling? | R/W 5~18°C, step: 1°C 5°C | | | |
| 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 | | | |
| 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 | R/W 0~8, step: 1 0: No limitation 1~4 : 50~80% 5~8 : 50~80% during sampling 6 | | | |
| 9.I | [9-0E] | -- | R/W 6 | | | |
| 9.I | [A-00] | -- | R/W 1 | | | |
| 9.I | [A-01] | -- | R/W 0 | | | |
| 9.I | [A-02] | -- | R/W 0 | | | |
| 9.I | [A-03] | -- | R/W 0 | | | |
| 9.I | [A-04] | What is the brine anti freeze temperature? | R/W 0: 2°C 1: -2°C 2: -4°C 3: -6°C 4: -9°C 5: -12°C 6: -15°C 7: -18°C | | | |
| 9.I | [B-00] | -- | R/W 0 | | | |
| 9.I | [B-01] | -- | R/W 0 | | | |
| 9.I | [B-02] | -- | R/W 0 | | | |
| 9.I | [B-03] | -- | R/W 0 | | | |
| 9.I | [B-04] | -- | R/W 0 | | | |
| 9.I | [C-00] | -- | R/W 0 | | | |
| 9.I | [C-01] | -- | R/W 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 | | | |

| Field settings table | | | | | Installer setting at variance with default value |
|------------------------------|------------|---|--|------|--|
| Breadcrumb | Field code | Setting name | Range, step Default value | Date | Value |
| 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 | [C-0B] | Brine pressure switch present? | R/W 0: Not present 1: Present | | |
| 9.I | [D-00] | Which heaters are permitted if prefer. kWh rate PS is cut? | R/W 0: None 1: BSH only 2: BUA 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 rtm 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] | -- | 0 | | |
| 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 5: GSHP | | |
| 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/O 0: Reversible (*1) 1: Heating only (*2) | | |
| 9.I | [E-03] | What kind of heater? | R/O 4: 9W | | |
| 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/W 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 | | |
| 9.I | [E-0B] | Is a bi-zone kit installed? | R/O 0 | | |
| 9.I | [E-0C] | -- | 0 | | |
| 9.I | [E-0D] | -- | 0 | | |
| 9.I | [E-0E] | -- | 0 | | |
| 9.I | [F-00] | Pump operation allowed outside range. | R/W 0: Disabled 1: Enabled | | |
| 9.I | [F-01] | Above which outdoor temperature is cooling allowed? | R/W 10~35°C, step: 1°C 20°C | | |
| 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 | | |
| └ Brine freezing temperature | | | | | |
| 9.M | [A-04] | What is the brine anti freeze temperature? | R/W 0: 2°C 1: -2°C 2: -4°C 3: -6°C 4: -9°C 5: -12°C 6: -15°C 7: -18°C | | |









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