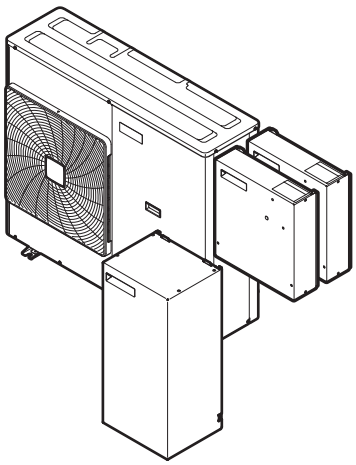
Installer reference guide

Packaged air-cooled water chillers and packaged air to water heat pumps



EWAQ006BAVP
EWAQ008BAVP

EWYQ006BAVP
EWYQ008BAVP

EKCB07CAV3
EK2CB07CAV3
EKMBUHCA3V3
EKMBUHCA9W1

Installer reference guide
Packaged air-cooled water chillers and packaged air to water heat pumps

English

Table of contents

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 the installer reference guide MUST be performed by an authorised installer.

1.1.1 Meaning of warnings and symbols

DANGER

Indicates a situation that results in death or serious injury.

DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.

DANGER: RISK OF BURNING

Indicates a situation that could result in burning because of extreme hot or cold temperatures.

DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.

WARNING

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

WARNING: FLAMMABLE MATERIAL

CAUTION

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

NOTICE

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

INFORMATION

Indicates useful tips or additional information.

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

1.2 For the installer

1.2.1 General

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

NOTICE

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

WARNING

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

CAUTION

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

WARNING

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

DANGER: RISK OF BURNING

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

WARNING

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

CAUTION

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

NOTICE

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

NOTICE

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

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

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

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

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

1.2.2 Installation site

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

Do NOT install the unit in the following places:

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

1.2.3 Refrigerant

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

NOTICE

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

NOTICE

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

WARNING

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

WARNING

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

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

DANGER: RISK OF EXPLOSION

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

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

WARNING

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

NOTICE

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

NOTICE

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

WARNING

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

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

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

Target audience

Authorised installers

INFORMATION

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

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 outdoor unit)
- **Outdoor unit installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor unit)
- **Control box installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the control box)
- **Option box installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the option box)
- **Backup heater installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the backup heater)
- **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 outdoor unit) + Digital files on http://www.daikineurope.com/support-and-manuals/product-information/
- **Instruction sheet for valve kit:**
  - Instructions for the integration of valve kit EKMBHBP1
  - Format: Paper (in the box of the outdoor unit)
- **Installation manual for bottom plate heater:**
  - Instructions for the integration of bottom plate heater EKBPH140L7
  - Format: Paper (in the box of the outdoor unit)

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

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

Technical engineering data

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

2.2 Installer reference guide at a glance

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

3 About the box

3.1 Overview: About the box

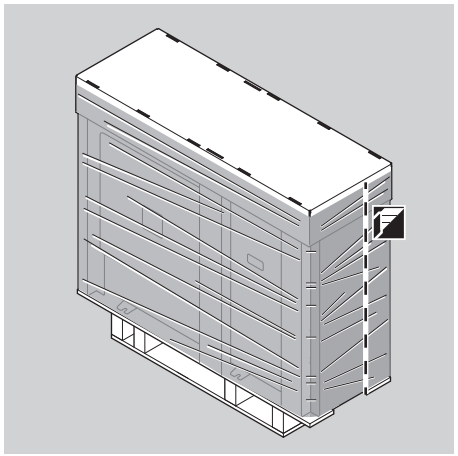
This chapter describes what you have to do after the boxes with the outdoor unit, control box, option box, and/or backup heater are delivered on-site.

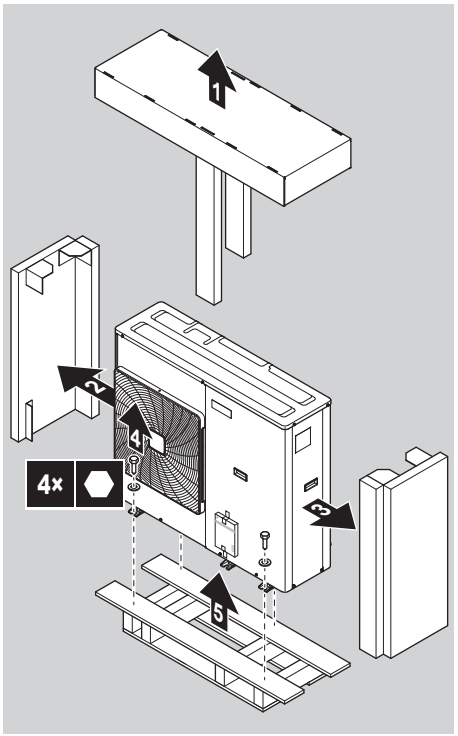
Keep the following in mind:

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

3.2 Outdoor unit

3.2.1 To unpack the outdoor unit



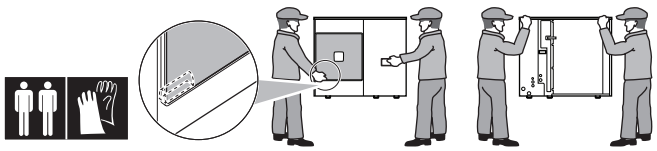


3.2.2 To handle the outdoor unit

CAUTION

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

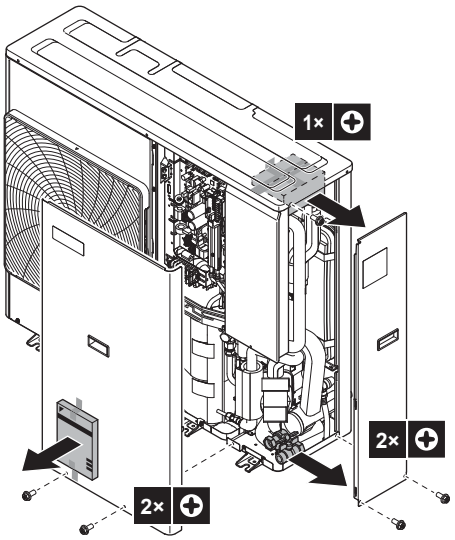
Carry the unit slowly as shown:

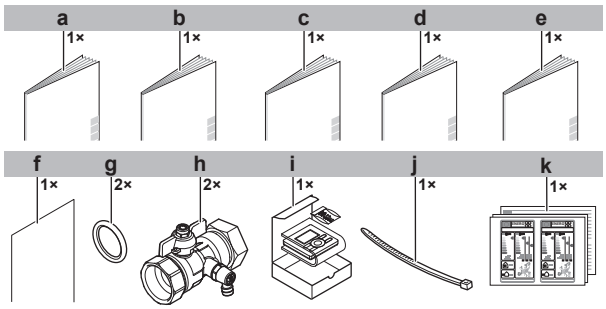


3.2.3 To remove the accessories from the outdoor unit

1 Open the outdoor unit. See "7.2.2 To open the outdoor unit" on page 27.

2 Remove the accessories.





a General safety precautions
b Addendum book for optional equipment
c Outdoor unit installation manual
d Operation manual
e Installation manual for bottom plate heater EKBPH140L7
f Instruction sheet for valve kit EKMBHBP1
g Sealing ring for shut-off valve
h Shut-off valve
i User interface
j Tie wrap
k Energy label

INFORMATION

The installation manual for bottom plate heater EKBPH140L7 only applies in case bottom plate heater EKBPH140L7 is part of the system. If so, do NOT take into account the installation manual delivered with the bottom plate heater; it is overruled by the one delivered with the outdoor unit.

INFORMATION

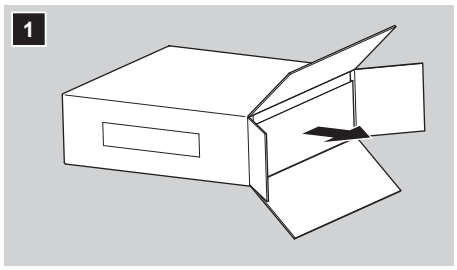
The instruction sheet for valve kit EKMBHBP1 only applies in case valve kit EKMBHBP1 is part of the system. If so, do NOT take into account the instruction sheet delivered with the valve kit; it is overruled by the one delivered with the outdoor unit.

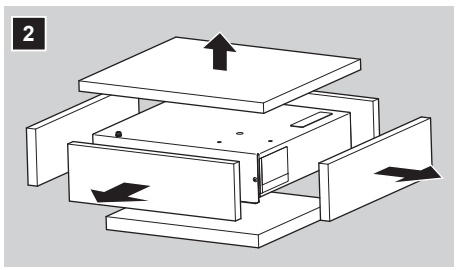
3.3 Control box

NOTICE

Control box EKCB07CAV3 is an option and cannot be used standalone.

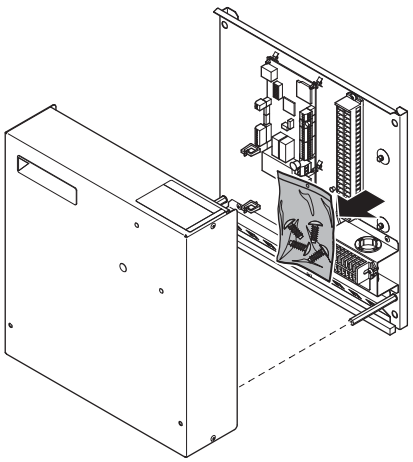
3.3.1 To unpack the control box



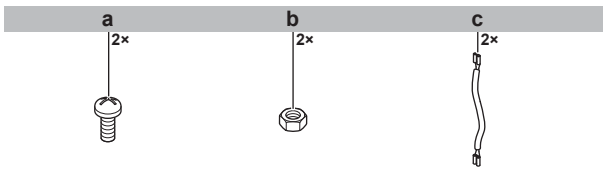


3.3.2 To remove the accessories from the control box

1 Open the control box.



2 Remove the accessories.



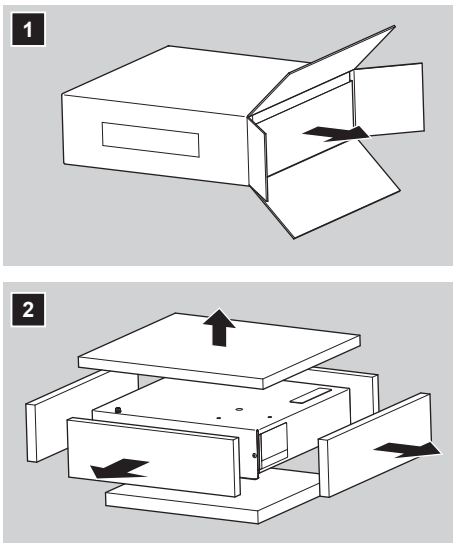
a M4 bolts for user interface
b M4 nuts for user interface
c Wires for domestic hot water booster heater relay (redundant accessory)

3.4 Option box

NOTICE

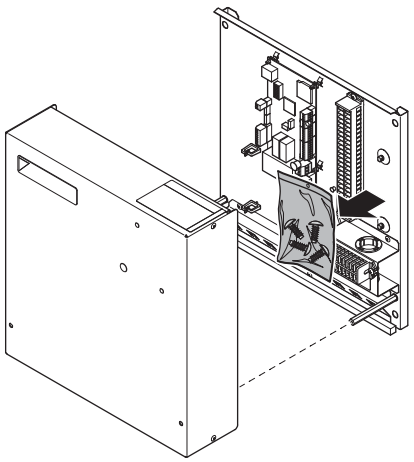
- Option box EK2CB07CAV3 is an option and cannot be used standalone.
- To be able to use the option box, it is required that optional control box EKCB07CAV3 is part of the system.

3.4.1 To unpack the option box

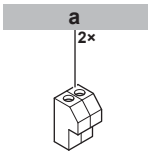


3.4.2 To remove the accessories from the option box

1 Open the option box.



2 Remove the accessories.



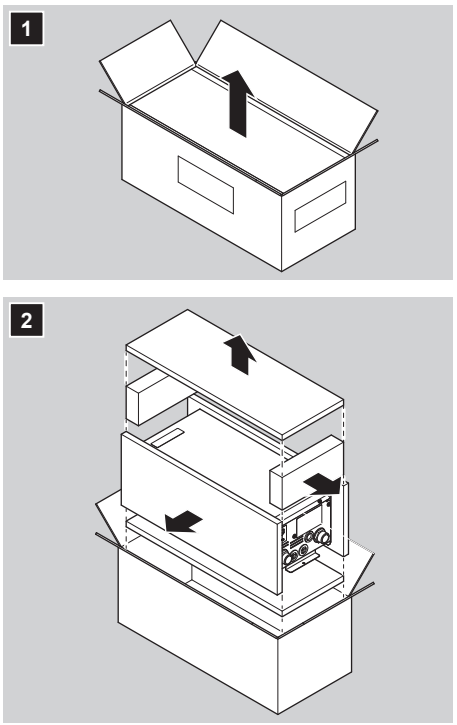
a Connectors for interconnection cable between the option box and control box EKCB07CAV3.

3.5 Backup heater

NOTICE

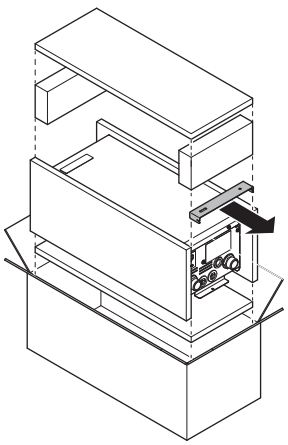
- The backup heater is an option and cannot be used standalone.
- To be able to use the backup heater, it is required that optional control box EKCB07CAV3 is part of the system.

3.5.1 To unpack the backup heater



3.5.2 To remove the accessories from the backup heater

1 Remove the wall bracket from the box.



4 About the units and options

4.1 Overview: About the units and options

This chapter contains information about:

- Identifying the outdoor unit
- Identifying the control box (if applicable)
- Identifying the option box (if applicable)
- Identifying the backup heater (if applicable)
- Combining the outdoor unit with options
- Combining the control box with options
- Combining the option box with options

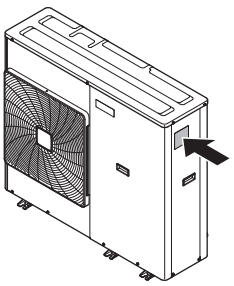
4.2 Identification

NOTICE

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

4.2.1 Identification label: Outdoor unit

Location



Model identification

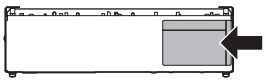
Example: EW A/Y Q 006 BA V P -H-

Code	Explanation
EW	European water chiller
A	Cooling only
Y	Reversible (heating+cooling)
Q	Refrigerant R410A
006	Capacity class
BA	Model series
V	Nominal voltage
P	Pump included
-H-	Heater tape included(a)

(a) Outdoor units that have -H- in their model name feature heater tape around their internal water piping, this to prevent the piping from freezing at negative ambient temperatures.

4.2.2 Identification label: Control box

Location



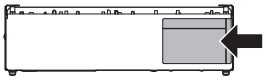
Model identification

Example: EK CB 07 CA V3

Code	Description
EK	European kit
CB	Control box
07	Capacity class
CA	Model series
V3	Power supply

4.2.3 Identification label: Option box

Location



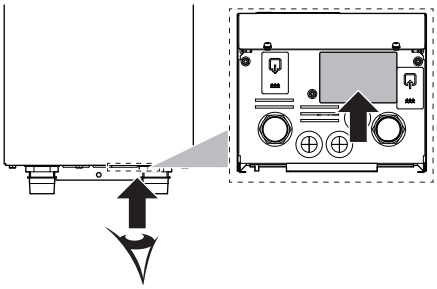
Model identification

Example: EK 2 CB 07 CA V3

Code	Description
EK	European kit
2	Optional
CB	Control box
07	Capacity class
CA	Model series
V3	Power supply

4.2.4 Identification label: Backup heater

Location



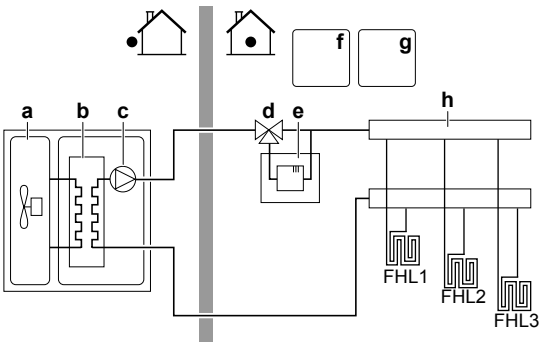
Model identification

Example: EK M BUH CA 3 V3

Code	Explanation
EK	European kit
M	Designed for low temperature monobloc and air-cooled water chiller
BUH	Backup heater
CA	Model series
3	Capacity of heater kit (kW)
V3	Power supply

4.3 Combining units and options

4.3.1 Possible combinations of outdoor unit and options



a Outdoor unit (EWAQ006+008BAVP or EWYQ006+008BAVP)
b Refrigerant part of the outdoor unit
c Hydro part of the outdoor unit
d Valve kit EKMBHBP1
e Backup heater kit (EKMBUHCA3V3 or EKMBUHCA9W1)
f Control box EKCB07CAV3
g Option box EK2CB07CAV3
h Space heating circuit

Option	System components required for that option			
	Outdoor unit EWAQ006+008BAVP or EWYQ006+008BAVP	Control box EKCB07CAV3	Option box EK2CB07CAV3	Valve kit EKMBHBP1
Optional equipment				
User interface (EKRUMCL1)(mandatory)	O			
Remote outdoor sensor (EKRSCA1)	O			
PC configurator (EKPCCAB)	O			
Bottom plate heater (EKBPH140L7)	O(a)			
Room thermostat (EKRTWA, EKRTR1)	O	O		
Remote sensor for wireless thermostat (EKRTETS)	O	O		
Backup heater kit (EKMBUHCA3V3, EKMBUHCA9W1)	O	O		O(a)
Remote indoor sensor (KRCS01-1)	O	O	O	
Field-supplied components				
Space heating/cooling operation control (or shut-off valve)	O			
Preferential kWh rate power supply (voltage-free contact)	O	O		
Electric meter	O	O	O	
Power consumption digital inputs	O	O	O	
Alarm output	O	O	O	
Space cooling/heating ON/OFF output	O	O	O	
Changeover to external heat source	O	O	O	

(a) Only for EWYQ006+008BAVP.

INFORMATION

This system does NOT support domestic hot water and heat pump convector functionalities.

4.3.2 Possible options for the outdoor unit

User interface (EKRUMCL1)

An additional user interface is available as an option. The additional user interface can be connected to have both close control the control box, and room thermostat functionality in the principal space to be heated.

EKRUMCL1 is standard available with a language pack that contains English, French, Italian, and Spanish. Other languages can be uploaded by PC software.

For installation instructions, see "7.8.6 To connect the user interface" on page 37.

INFORMATION

- If control box EKCB07CAV3 is NOT part of the system, connect the user interface directly to the outdoor unit.
- If control box EKCB07CAV3 is part of the system, you can also connect the user interface to the control box.

Remote outdoor sensor (EKRSCA1)

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

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

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

INFORMATION

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

Bottom plate heater (EKBPH140L7) (only for EWYQ006+008BAVP)

- Prevents freeze-up of the bottom plate.
- Recommended in areas with low ambient temperature and high humidity.
- For installation instructions, do NOT take into account the installation manual delivered with the bottom plate heater, it is overruled by the one delivered with the outdoor unit.

4.3.3 Possible options for the control box

User interface (EKRUMCL1)

An additional user interface is available as an option. The additional user interface can be connected to have both close control the control box, and room thermostat functionality in the principal space to be heated.

EKRUMCL1 is standard available with a language pack that contains English, French, Italian, and Spanish. Other languages can be uploaded by PC software.

For installation instructions, see "7.8.6 To connect the user interface" on page 37.

INFORMATION

- If control box EKCB07CAV3 is NOT part of the system, connect the user interface directly to the outdoor unit.
- If control box EKCB07CAV3 is part of the system, you can also connect the user interface to the control box.

Room thermostat (EKRTWA, EKRTR1)

You can connect an optional room thermostat to control box EKCB07CAV3. 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 intructions, see the installation manual of the room thermostat and addendum book for optional equipment.

PC configurator (EKPCCAB)

The PC cable makes a connection between the switch box of the outdoor unit (or that of control box EKCB07CAV3) and a PC. It gives the possibility to upload different language files to the user interface, and parameters to the outdoor unit. For the available language files, contact your local dealer.

The software and corresponding operating instructions are available on http://www.daikineurope.com/support-and-manuals/software-downloads/.

For installation instructions, see the installation manual of the PC cable, the "8 Configuration" on page 45 chapter, and the addendum book for optional equipment.

4.3.4 Possible options for the option box

Remote indoor sensor (KRCS01-1)

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

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

The remote indoor sensor is connected to option box EK2CB07CAV3. For installation instructions, see the installation manual of the remote indoor sensor and the 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.

5 Application guidelines

5.1 Overview: Application guidelines

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

NOTICE

- The illustrations in the application guidelines are meant for reference only, and are NOT to be used as detailed hydraulic diagrams. The detailed hydraulic dimensioning and balancing are NOT shown, and are the responsibility of the installer.
- For more information about the configuration settings to optimize heat pump operation, see "8 Configuration" on page 45.

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 energy metering
- Setting up the power consumption control
- Setting up an external temperature sensor

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 Daikin heat pump system?
- Which heat emitter types are used in each room and what is their design leaving water temperature?

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

NOTICE

If an external room thermostat is used, the external room thermostat will control the room frost protection. However, the room frost protection is only possible if the leaving water temperature control on the unit's user interface is turned ON.

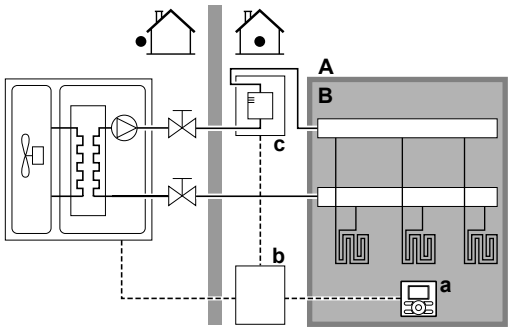
INFORMATION

In case an external room thermostat is used and room frost protection needs to be guaranteed in all conditions, then you have to set auto emergency [A.6.C] to 1.

5.2.1 Single room

Under floor heating or radiators – Wired room thermostat

Setup



A Main leaving water temperature zone
B One single room
a User interface used as room thermostat
b Control box
c Backup heater (option)

- The under floor heating or radiators are directly connected to the outdoor unit – or to the backup heater, if there is one.
- The room temperature is controlled by the user interface, that is connected to control box EKCB07CAV3. Possible installations:
  - Control box EKCB07CAV3 is installed in the room and the user interface is used as room thermostat.
  - Control box EKCB07CAV3 is installed indoors, close to the outdoor unit + user interface installed in the room and used as room thermostat.

Configuration

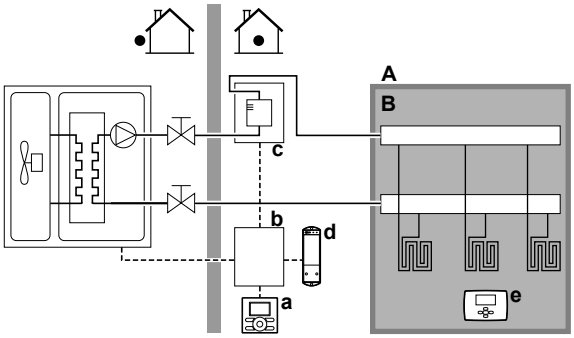
Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	2 (RT control): Unit operation is decided based on the ambient temperature of the user interface.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main

Benefits

- **Cost effective.** You do NOT need an additional external room thermostat.
- **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, use the holiday mode…

Under floor heating or radiators – Wireless room thermostat

Setup



A Main leaving water temperature zone
B One single room
a User interface
b Control box
c Backup heater (option)
d Receiver for wireless external room thermostat
e Wireless external room thermostat

- The under floor heating or radiators are directly connected to the outdoor unit – or to the backup heater, if there is one.
- The room temperature is controlled by the wireless external room thermostat (optional equipment EKRTR1).

Configuration

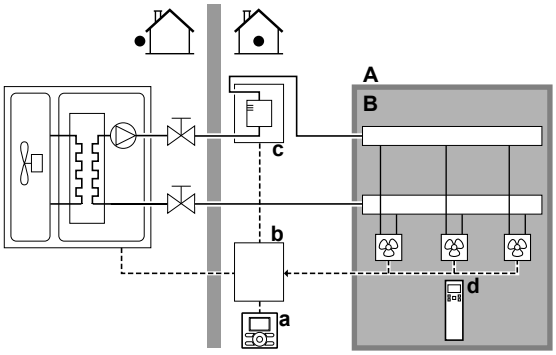
Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	1 (Ext RT control): Unit operation is decided by the external thermostat.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main
External room thermostat for the **main** zone: ▪ #: [A.2.2.E.5] ▪ Code: [C-05]	1 (Thermo ON/OFF): When the used external room thermostat can only send a thermo ON/OFF condition.

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 under floor heating, the wireless external room thermostat prevents condensation on the floor during cooling operation by measuring the room humidity.

Fan coil units

Setup



A Main leaving water temperature zone
B One single room
a User interface
b Control box
c Backup heater (option)
d Remote controller of the fan coil units

- Space cooling or heating is provided by the fan coil units.
- The desired room temperature is set via the remote controller of the fan coil units.
- A space heating/cooling demand signal is sent to one digital input on control box EKCB07CAV3 (X2M/1 and X2M/2) (if this signal is available on the fan coil units and compatible with the control box).
- The space operation mode can be sent to the fan coil units by one digital output on control box EKCB07CAV3 (X8M/6 and X8M/7) (if this signal is compatible with the fan coil units).
- The main user interface (connected to control box EKCB07CAV3) decides the space operation mode. Mind that the space operation mode of the additional user interfaces (used as room thermostat) must be set to match that of the main user interface.

INFORMATION

When using multiple fan coil units, make sure each one receives the infrared signal from the remote controller of the fan coil units.

Configuration

Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	1 (Ext RT control): Unit operation is decided by the external thermostat.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main
External room thermostat for the **main** zone: ▪ #: [A.2.2.E.5] ▪ Code: [C-05]	1 (Thermo ON/OFF): When the used external room thermostat or fan coil unit can only send a thermo ON/OFF condition.

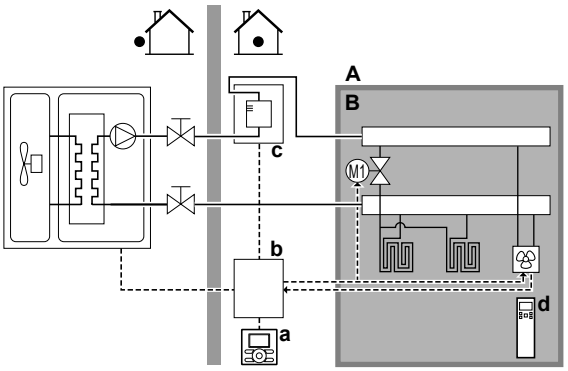
Benefits

- **Cooling.** The fan coil unit offers, besides heating capacity, also excellent cooling capacity.
- **Efficiency.** Optimal energy efficiency because of the interlink function.
- **Stylish.**

Combination: Under floor heating + Fan coil units

- Space heating is provided by:
  - The under floor heating
  - The fan coil units
- Space cooling is provided by the fan coil units only. The under floor heating is shut off by the shut-off valve.

Setup



A Main leaving water temperature zone
B One single room
a User interface
b Control box
c Backup heater (option)
d Remote controller of the fan coil units

- The fan coil units are directly connected to the outdoor unit – or to the backup heater, if there is one.
- A shut-off valve (field supply) is installed before the under floor heating to prevent condensation on the floor during cooling operation.
- The desired room temperature is set via the remote controller of the fan coil units.
- A space heating/cooling demand signal is sent to one digital input on control box EKCB07CAV3 (X2M/1 and X2M/2) (if this signal is available on the fan coil unit and compatible with the control box).
- The space operation mode can be sent by one digital output (X8M/6 and X8M/7) on control box EKCB07CAV3 to:
  - The fan coil units (if this signal is compatible with the fan coil units).
  - The shut-off valve

Configuration

Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	1 (Ext RT control): Unit operation is decided by the external thermostat.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main
External room thermostat for the **main** zone: ▪ #: [A.2.2.E.5] ▪ Code: [C-05]	1 (Thermo ON/OFF): When the used external room thermostat or fan coil unit can only send a thermo ON/OFF condition.

Benefits

- **Cooling.** Fan coil units provide, besides heating capacity, also excellent cooling capacity.
- **Comfort.** The combination of the two heat emitter types provides:
  - The excellent heating comfort of the under floor heating
  - The excellent cooling comfort of the fan coil units

5.2.2 Multiple rooms – One LWT zone

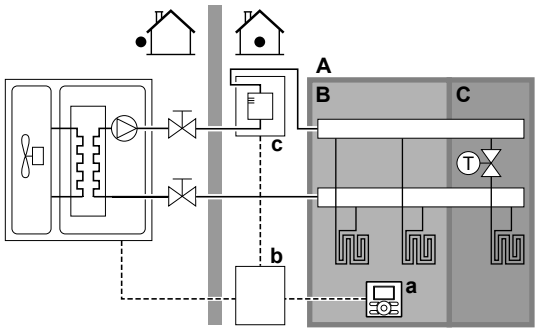
If only one leaving water temperature zone is needed because the design leaving water temperature of all heat emitters is the same, you do NOT need a mixing valve station (cost effective).

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

Under floor heating or radiators – Thermostatic valves

If you are heating up rooms with under floor 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 user interface connected to control box EKCB07CAV3, or an external room thermostat), while the other rooms are controlled by so-called thermostatic valves (field supply), which open or close depending on the room temperature.

Setup



A Main leaving water temperature zone
B Room 1
C Room 2
a User interface
b Control box
c Backup heater (option)

- The under floor heating of the main room is directly connected to the outdoor unit – or to the backup heater, if there is one.
- The room temperature of the main room is controlled by the user interface used as thermostat.
- A thermostatic valve is installed before the under floor heating in each of the other rooms.

INFORMATION

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

Configuration

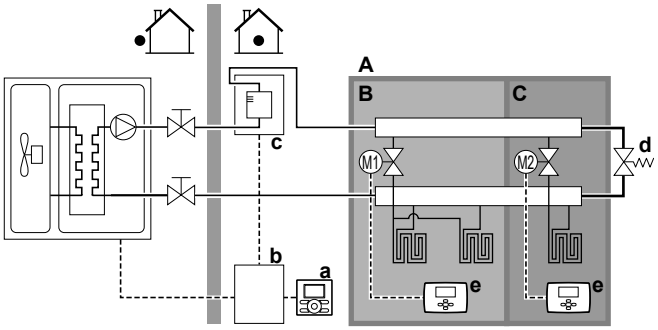
Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	2 (RT control): Unit operation is decided based on the ambient temperature of the user interface.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main

Benefits

- **Cost effective.** You do NOT need an additional external room thermostat.
- **Easy**. Same installation as for one room, but with thermostatic valves.

Under floor heating or radiators – Multiple external room thermostats

Setup



A Main leaving water temperature zone
B Room 1
C Room 2
a User interface
b Control box
c Backup heater (option)
d Bypass valve
e External room thermostat

- 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. To guarantee reliable operation, provide a minimum water flow as described in table "To check the water volume and flow rate" in "6.3 Preparing water piping" on page 22.
- The main user interface (connected to control box EKCB07CAV3) decides the space operation mode. Mind that the space operation mode of the additional user interfaces (used as room thermostat) must be set to match that of the main user interface.
- The room thermostats are connected to the shut-off valves, and do NOT have to be connected to the outdoor unit. The outdoor unit will supply leaving water all the time, with the possibility to program a leaving water schedule.

Configuration

Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	0 (LWT control): Unit operation is decided based on the leaving water temperature.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main

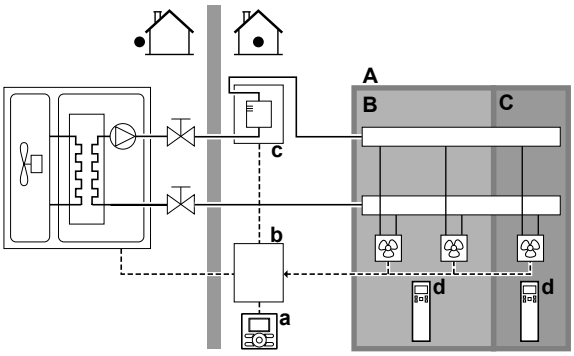
Benefits

Compared with under floor heating or radiators for one room:

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

Fan coil units – Multiple rooms

Setup



A Main leaving water temperature zone
B Room 1
C Room 2
a User interface
b Control box
c Backup heater (option)
d Remote controller of the fan coil units

- The desired room temperature is set via the remote controller of the fan coil units.
- The main user interface (connected to control box EKCB07CAV3) decides the space operation mode.
- The heating demand signals of each fan coil unit can be connected in parallel to the digital input on control box EKCB07CAV3 (X2M/1 and X2M/2) (if this signal is available on the fan coil units and compatible with the control box). The outdoor unit will only supply leaving water temperature when there is an actual demand.

Configuration

Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	1 (Ext RT control): Unit operation is decided by the external thermostat.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main

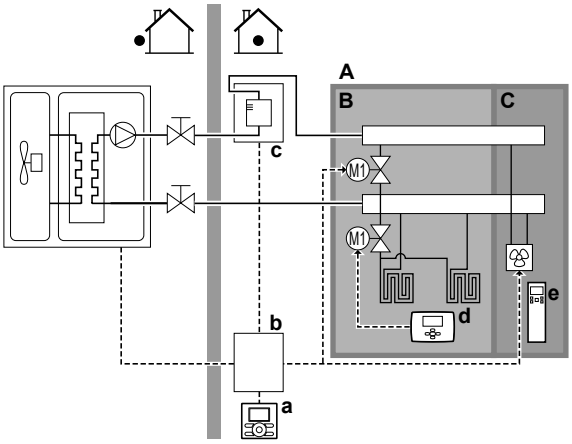
Benefits

Compared with fan coil units for one room:

- **Comfort.** You can set the desired room temperature, including schedules, for each room via the remote controller of the fan coil units.

Combination: Under floor heating + Fan coil units – Multiple rooms

Setup



A Main leaving water temperature zone
B Room 1
C Room 2
a User interface
b Control box
c Backup heater (option)
d External room thermostat
e Remote controller of the fan coil units

- For each room with fan coil units: The fan coil units are directly connected to the outdoor unit – or to the backup heater, if there is one.
- For each room with under floor heating: Two shut-off valves (field supply) are installed before the under floor 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 fan coil units.
- For each room with fan coil units: The desired room temperature is set via the remote controller of the fan coil units.
- For each room with under floor heating: The desired room temperature is set via the external room thermostat (wired or wireless).
- The main user interface (connected to control box EKCB07CAV3) decides the space operation mode. Mind that the operation mode of each external room thermostat and fan coil unit remote controller must be set to match that of the main user interface.

Configuration

Setting	Value
Unit temperature control: ▪ #: [A.2.1.7] ▪ Code: [C-07]	0 (LWT control): Unit operation is decided based on the leaving water temperature.
Number of water temperature zones: ▪ #: [A.2.1.8] ▪ Code: [7-02]	0 (1 LWT zone): Main

5.3 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 cooling
  - For space heating
- 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.

5.3.1 Produced heat

INFORMATION

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

INFORMATION

If glycol is present in the system ([E-0D]=1]), then the produced heat will NOT be calculated, nor will it be displayed on the user interface.

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

5.3.2 Consumed energy

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

- Calculating
- Measuring

INFORMATION

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

Calculating the consumed energy

- The consumed energy is calculated internally based on:
  - The actual power input of the outdoor unit
  - The set capacity of the optional backup heater
  - The voltage
- Setup and configuration: To get accurate energy data, measure the capacity (resistance measurement) and set the capacity via the user interface for the optional backup heater (step 1 and step 2).

Measuring the consumed energy

- Preferred method because of higher accuracy.
- Setup and configuration:
  - Requires option box EK2CB07CAV3.
  - Requires external power meters.
  - When using electrical power meters, set the number of pulses/kWh for each power meter via the user interface.

INFORMATION

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

5.3.3 Normal kWh rate power supply

General rule

One power meter that covers the entire system is sufficient.

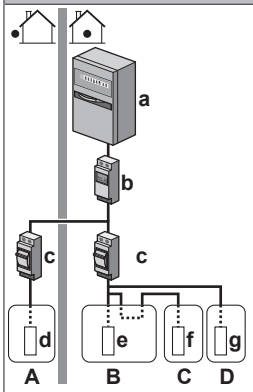
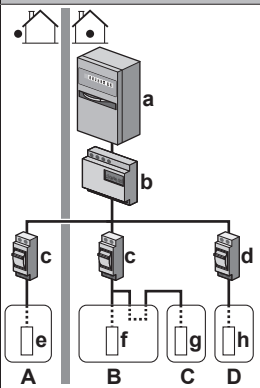
Setup

- Install control box EKCB07CAV3 and option box EK2CB07CAV3.
- Connect the power meter to X2M/7 and X2M/8 of option box EK2CB07CAV3.

Power meter type

In case of…	Use a… power meter
Backup heater supplied from a single-phase grid (i.e. the backup heater model is *3V or *9W connected to a single-phase grid)	Single-phase
In other cases (i.e. a *9W backup heater model connected to a three-phase grid)	Three-phase

Example

Single-phase power meter	Three-phase power meter
	
A Outdoor unit	**A** Outdoor unit
B Control box	**B** Control box
C Option box	**C** Option box
D Backup heater kit	**D** Backup heater kit
a Electrical cabinet (L_1/N)	**a** Electrical cabinet (L_1/L_2/L_3/N)
b Power meter (L_1/N)	**b** Power meter (L_1/L_2/L_3/N)
c Fuse (L_1/N)	**c** Fuse (L_1/N)
d Outdoor unit (L_1/N)	**d** Fuse (L_1/L_2/L_3/N)
e Control box (L_1/N)	**e** Outdoor unit (L_1/N)
f Option box (L_1/N)	**f** Control box (L_1/N)
g Backup heater (L_1/N)	**g** Option box (L_1/N)
	h Backup heater (L_1/L_2/L_3/N)

Exception

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

- Connection and setup:
  - Connect the second power meter to X2M/9 and X2M/10 of option box EK2CB07CAV3.
  - In the software the power consumption data of both meters is added so you do NOT have to set which meter covers which power consumption. You only need to set the number of pulses of each power meter.
- See "5.3.4 Preferential kWh rate power supply" on page 18 for an example with two power meters.

5.3.4 Preferential kWh rate power supply

General rule

- Power meter 1: Measures the refrigerant part of the outdoor unit.
- Power meter 2: Measures the rest (i.e. the hydro part of the outdoor unit, control box EKCB07CAV3, option box EK2CB07CAV3, and the backup heater kit).

Setup

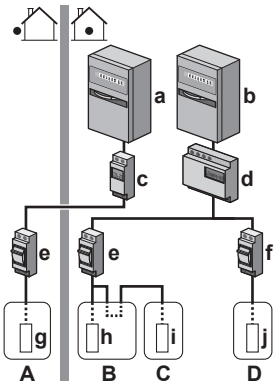
- Connect power meter 1 to X2M/7 and X2M/8 of option box EK2CB07CAV3.
- Connect power meter 2 to X2M/9 and X2M/10 of option box EK2CB07CAV3.

Power meter types

- Power meter 1: Single-phase power meter.
- Power meter 2:
  - In case of a single-phase backup heater configuration, use a single-phase power meter.
  - In other cases, use a three-phase power meter.

Example

Three-phase backup heater:



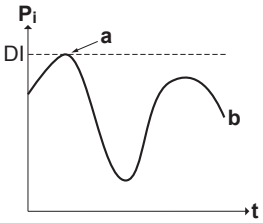
A Outdoor unit
B Control box
C Option box
D Backup heater kit
a Electrical cabinet (L_1/N): Preferential kWh rate power supply
b Electrical cabinet (L_1/L_2/L_3/N): Normal kWh rate power supply
c Power meter (L_1/N)
d Power meter (L_1/L_2/L_3/N)
e Fuse (L_1/N)
f Fuse (L_1/L_2/L_3/N)
g Outdoor unit (L_1/N)
h Control box (L_1/N)
i Option box (L_1/N)
j Backup heater (L_1/L_2/L_3/N)

5.4 Setting up the power consumption control

- The power consumption control:
  - Allows you to limit the power consumption of the entire system (sum of the outdoor unit, control box EKCB07CAV3, option box EK2CB07CAV3, and the backup heater kit).
  - Configuration: Set the power limitation level and how it has to be achieved via the user interface.
- The power limitation level can be expressed as:
  - Maximum running current (in A)
  - Maximum power input (in kW)
- The power limitation level can be activated:
  - Permanently
  - By digital inputs

5.4.1 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.



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 [A.6.3.1] via the user interface (for the description of all settings, see "8 Configuration" on page 45):
  - Select full time limitation mode
  - Select the type of limitation (power in kW or current in A)
  - Set the desired power limitation level

NOTICE

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

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

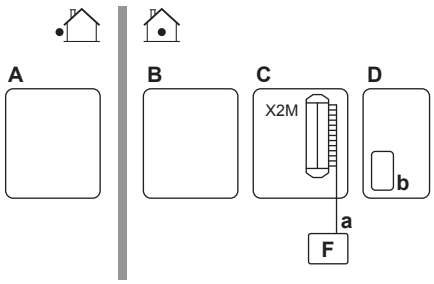
5.4.2 Power limitation activated by digital inputs

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

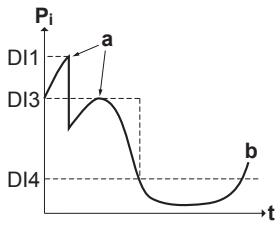
The power or current of the entire Daikin system is limited dynamically by digital inputs (maximum four steps). Each power limitation level is set via the user interface by limiting one of the following:

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

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



A Outdoor unit
B Control box
C Option box
D Backup heater kit
F 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

- Install control box EKCB07CAV3 and option box EK2CB07CAV3.
- 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 [A.6.3.1] via the user interface (for the description of all settings, see "8 Configuration" on page 45):
  - Select activation 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.

5.4.3 Power limitation process

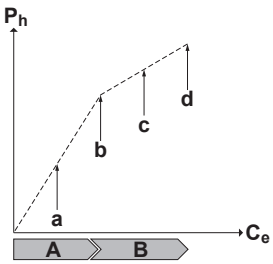
The outdoor unit has better efficiency than the backup heater. Therefore, the backup heater is limited and turned OFF first. The system limits power consumption in the following order:

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

Example

If the configuration is as follows: Power limitation level does NOT allow for backup heater operation (step 1 and step 2).

Then power consumption is limited as follows:



P_h Produced heat
C_e Consumed energy
A Outdoor unit
B Backup heater
a Limited outdoor unit operation
b Full outdoor unit operation
c Backup heater step 1 turned ON
d Backup heater step 2 turned ON

5.5 Setting up an external temperature sensor

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

Indoor ambient temperature

- In room thermostat control, the user interface is used as room thermostat and it measures the indoor ambient temperature. Therefore, the user 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, Daikin recommends to connect a remote indoor sensor (option KRCS01-1).
- Setup:
  - Requires control box EKCB07CAV3 and option box EK2CB07CAV3.
  - For installation instructions, see the installation manual of the remote indoor sensor and the addendum book for optional equipment.

Configuration: Select room sensor [A.2.2.F.5].

Outdoor ambient temperature

- In the outdoor unit, the outdoor ambient temperature is measured. Therefore, the outdoor unit must be installed on a location:
  - At the north side of the house or at the side of the house where the most heat emitters are located
  - That is NOT exposed to direct sunlight
- If this is NOT possible, Daikin recommends to connect a remote outdoor sensor (option EKRSCA1).
- Setup: For installation instructions, see the installation manual of the remote outdoor sensor and the addendum book for optional equipment.
- Configuration: Select outdoor sensor [A.2.2.B].
- When the power saving functionality of the outdoor unit is active (see "8 Configuration" on page 45), the outdoor unit is turned down to reduce standby energy losses. As a result, the outdoor ambient temperature is NOT read out.

- If the desired leaving water temperature is weather dependent, the full time outdoor temperature measurement is important. This is another reason to install the optional outdoor ambient temperature sensor.

INFORMATION

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

6 Preparation

6.1 Overview: Preparation

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

It contains information about:

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

6.2 Preparing the installation site

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

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

6.2.1 Installation site requirements of the outdoor unit

INFORMATION

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

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

INFORMATION

If shut-off valves are installed on the unit, provide a minimum space of 400 mm at the air inlet side. If shut-off valves are NOT installed on the unit, provide a minimum space of 250 mm.

NOTICE

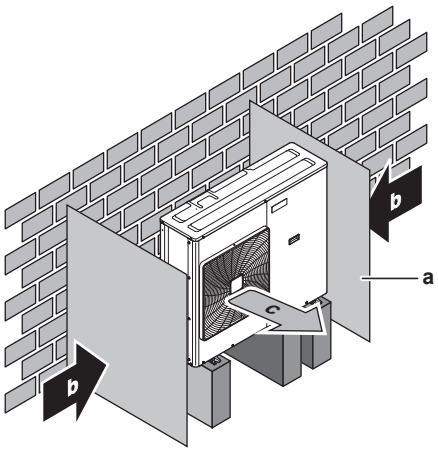
- Do NOT stack the units on each other.
- Do NOT hang the unit on a ceiling.

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

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

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

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



a Baffle plate
b Prevailing wind direction
c Air outlet

Do NOT install the unit in the following places:

- Sound sensitive areas (e.g. near a bedroom), so that the operation noise will cause no trouble.
  Note: If the sound is measured under actual installation conditions, the measured value might be higher than the sound pressure level mentioned in Sound spectrum in the data book due to environmental noise and sound reflections.

INFORMATION

The sound pressure level is less than 70 dBA.

- In places where a mineral oil mist, spray or vapour may be present in the atmosphere. Plastic parts may deteriorate and fall off or cause water leakage.

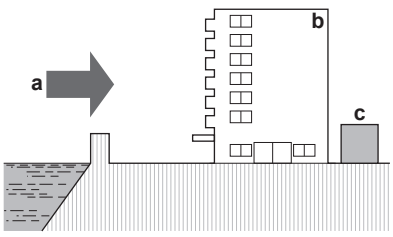
It is NOT recommended to install the unit in the following places because it may shorten the life of the unit:

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

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

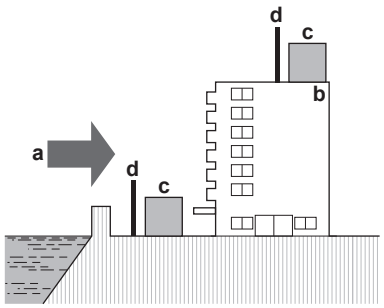
Install the outdoor unit away from direct sea winds.

Example: Behind the building.



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

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

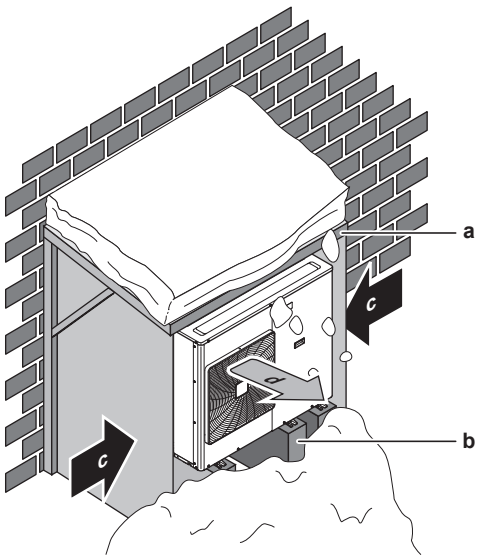


a Sea wind
b Building
c Outdoor unit
d Windbreaker

The outdoor unit is designed for outdoor installation only, and for ambient temperatures ranging 10~46°C in cooling mode and –15~25°C in heating mode.

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

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



a Snow cover or shed
b Pedestal
c Prevailing wind direction
d Air outlet

In any case, provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow. See "7.3 Mounting the outdoor unit" on page 28 for more details.

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

6.2.3 Installation site requirements of the control box

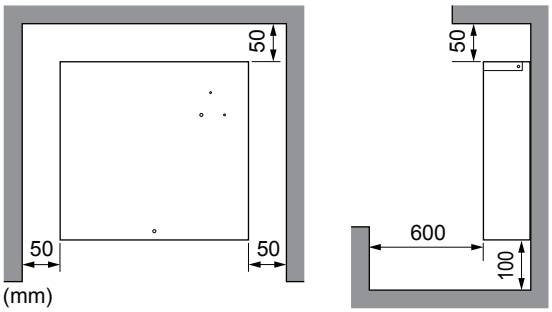
INFORMATION

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

- Mind the measurement guidelines:

Maximum distance between control box and outdoor unit	20 m
Maximum distance between control box and backup heater kit	10 m

- Mind the following spacing installation guidelines:



(mm)

- The control box is designed to be wall-mounted in indoor locations only. Make sure the installation surface is a flat and vertical non-combustible wall.
- The control box is designed to operate in ambient temperatures ranging from 5~35°C.

Do NOT install the control box in the following places:

- 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.

6.2.4 Installation site requirements of the option box

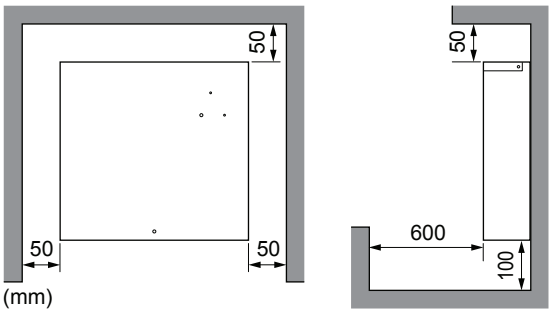
INFORMATION

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

- Mind the measurement guidelines:

Maximum distance between the option box and control box EKCB07CAV3	3 m

- Mind the following spacing installation guidelines:



(mm)

- The option box is designed to be wall-mounted in indoor locations only. Make sure the installation surface is a flat and vertical non-combustible wall.
- The option box is designed to operate in ambient temperatures ranging from 5~35°C.

Do NOT install the option box in the following places:

- 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.

6.2.5 Installation site requirements of the backup heater

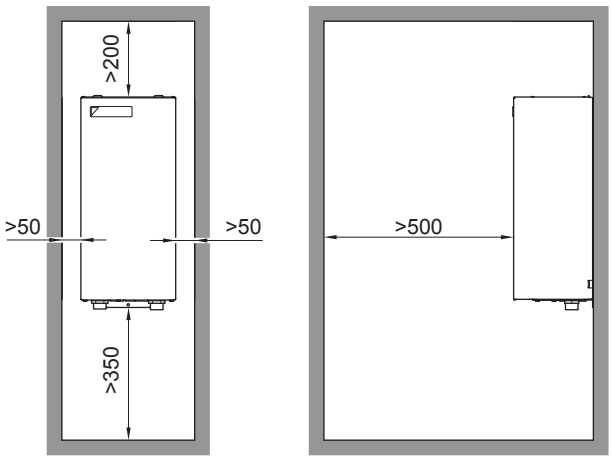
INFORMATION

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

- Mind the measurement guidelines:

Maximum distance between the backup heater and the outdoor unit	10 m

- Mind the following spacing installation guidelines:



INFORMATION

If the backup heater is installed in a reversible system (heating+cooling) and valve kit EKMBHBP1 is part of the system, it may be required to provide more space under the backup heater than indicated above. For more information, refer to "7.7.5 About the valve kit" on page 32.

- The backup heater is designed to be wall-mounted in indoor locations only. Make sure the installation surface is a flat and vertical non-combustible wall.
- The backup heater is designed to operate in ambient temperatures ranging from 5~30°C.

Do NOT install the backup heater in the following places:

- 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.

6.3 Preparing water piping

6.3.1 Water circuit requirements

INFORMATION

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

NOTICE

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

- **Connecting piping – Legislation.** Make all piping connections in accordance with the applicable legislation and the instructions in the "Installation" chapter, respecting the water inlet and outlet.
- **Connecting piping – Force.** Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit.
- **Connecting piping – Tools.** Only use appropriate tooling to handle brass, which is a soft material. If NOT, pipes will get damaged.
- **Connecting piping – Air, moisture, dust.** If air, moisture or dust gets into the circuit, problems may occur. To prevent this:
  - Only use clean pipes
  - Hold the pipe end downwards when removing burrs.
  - Cover the pipe end when inserting it through a wall, to prevent dust and/or particles entering the pipe.
  - Use a decent thread sealant to seal connections.

NOTICE

If glycol is present in the system, make sure the thread sealant used is resistant to glycol.

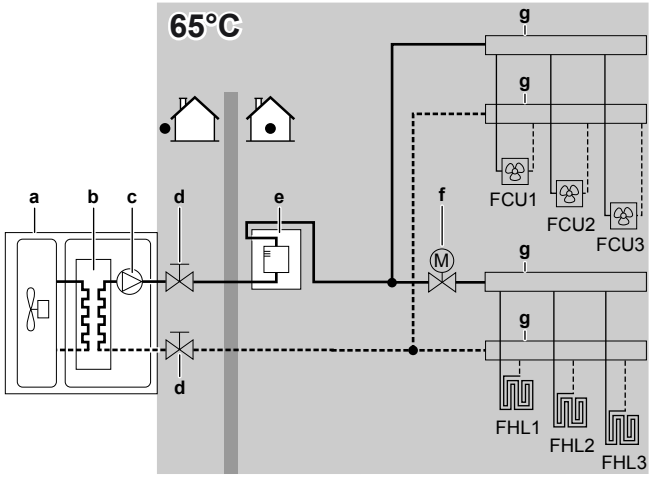
- **Closed circuit.** Use the outdoor unit ONLY in a closed water system. Using the system in an open water system will lead to excessive corrosion.
- **Piping diameter.** Select the water piping diameter in relation to the required water flow and the available external static pressure of the pump. See "14 Technical data" on page 74 for the external static pressure curves of the outdoor unit.
- **Water flow.** It is required to guarantee a minimum flow of 20 l/min. When the flow is lower, the system will stop operation and display error 7H.

Minimum required flow rate	
006+008 models	20 l/min

- **Field supply components – Freeze protection.** If negative ambient temperatures are expected, make sure the outdoor field piping is sufficiently protected against freezing. Depending on the outdoor unit model, add glycol to the water circuit, or add sufficient insulation and/or heater tape to the outdoor field piping. For details, see To protect the water circuit against freezing.
- **Field supply components – Water and glycol.** Only use materials that are compatible with the water (and, if applicable, glycol) used in the system, and with the materials used in the outdoor unit.
- **Field supply components – Water pressure and temperature.** Check that all components in the field piping can withstand the water pressure and water temperature.
- **Water pressure.** The maximum water pressure is 3 bar. Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded.
- **Water temperature.** All installed piping and piping accessories (valve, connections,…) MUST withstand the following temperatures:

INFORMATION

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



a	Outdoor unit
b	Heat exchanger
c	Pump
d	Shut-off valve
e	Backup heater
f	Motorised 2-way valve (field supply)
g	Collector
FCU1...3	Fan coil unit (optional) (field supply)
FHL1...3	Floor heating loop (field supply)

- **Drainage – Low points.** Provide drain taps at all low points of the system in order to allow complete drainage of the water circuit.
- **Drainage – Pressure relief valve.** Provide a proper drain for the pressure relief valve to avoid water coming into contact with electrical parts.
- **Air vents.** Provide air vents at all high points of the system, which must also be easily accessible for servicing. The outdoor unit has a manual air purge valve. The backup heater (option) has an automatic air purge valve. Check that automatic air purge valves are NOT tightened too much, so that the automatic release of air from the water circuit is possible.
- **Zn-coated parts.** Never use Zn-coated parts in the water circuit. Because the unit's internal water circuit uses copper piping, excessive corrosion may occur.
- **Non-brass metallic piping.** When using non-brass metallic piping, insulate the brass and non-brass properly so that they do NOT make contact with each other. This to prevent galvanic corrosion.
- **Valve – Change-over time.** When using a 2-way valve or a 3-way valve in the water circuit, the maximum change-over time of the valve must be 60 seconds.
- **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.
- **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.

6.3.2 Formula to calculate the expansion vessel pre-pressure

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

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

6.3.3 To check the water volume and flow rate

The outdoor unit has an expansion vessel of 7 litre with a factory-set pre-pressure of 1 bar.

To make sure that the unit operates properly:

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

Minimum water volume

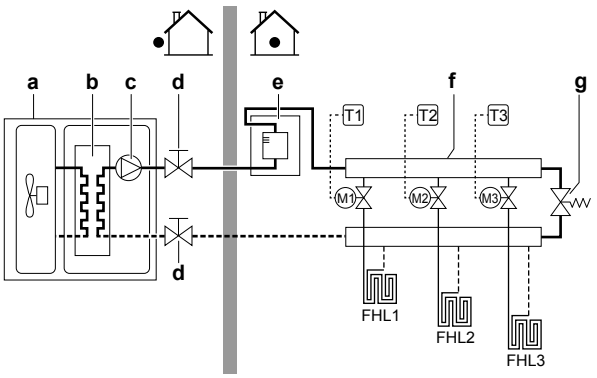
Check that the total water volume in the installation is minimum 20 l, the internal water volume of the outdoor unit NOT included.

INFORMATION

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

NOTICE

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



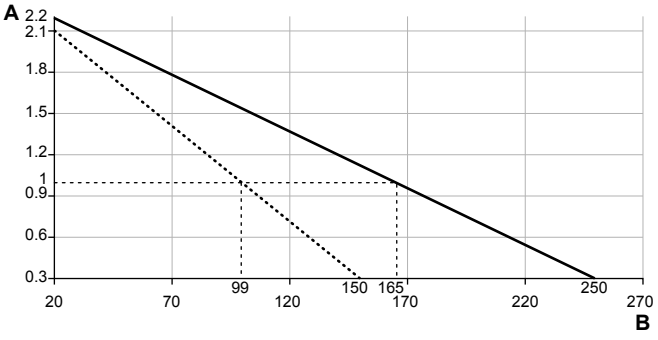
a	Outdoor unit
b	Heat exchanger
c	Pump
d	Shut-off valve
e	Backup heater kit (optional)
f	Collector (field supply)
g	By-pass valve (field supply)
FHL1...3	Floor heating loop (field supply)
T1...3	Individual room thermostat (optional)
M1...3	Individual motorised valve to control loop FHL1...3 (field supply)

Maximum water volume

NOTICE

The maximum water volume depends on whether glycol is added to the water circuit. For more information on the addition of glycol, refer to "7.7.6 To protect the water circuit against freezing" on page 33.

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



A	Pre-pressure (bar)
B	Maximum water volume (l)

Water
Water + glycol

Example: Maximum water volume and expansion vessel pre-pressure

Installation height difference[a]	Water volume	
	≤165/99 l[b]	>165/99 l[b]
≤7 m	No pre-pressure adjustment is required.	Do the following: ▪ Decrease the pre-pressure according to the required installation height difference. The pre-pressure should decrease by 0.1 bar for each metre below 7 m. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.
>7 m	Do the following: ▪ Increase the pre-pressure according to the required installation height difference. The pre-pressure should increase by 0.1 bar for each metre above 7 m. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.	The expansion vessel of the outdoor unit is too small for the installation. In this case, it is recommended to install an extra vessel outside the unit.

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

(b) The maximum water volume is 165 l in case the circuit is only filled with water, and 99 l in case the circuit is filled with water and glycol.

Minimum flow rate

Check that the minimum flow rate (required during defrost/backup heater operation) in the installation is guaranteed in all conditions.

NOTICE

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

NOTICE

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

Minimum required flow rate	
006+008 models	20 l/min

See the recommended procedure as described in "9.4 Checklist during commissioning" on page 63.

6.3.4 Changing the pre-pressure of the expansion vessel

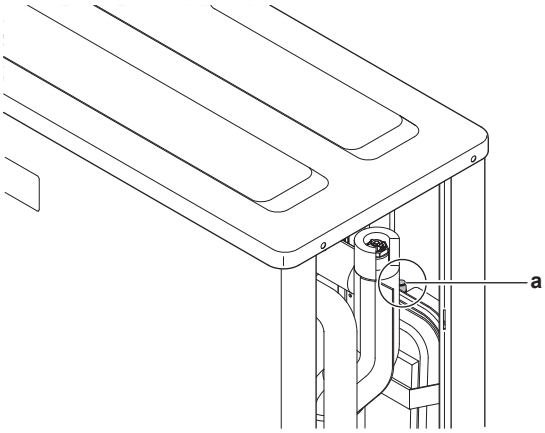
NOTICE

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

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

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

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



a Schrader valve

6.3.5 To check the water volume: Examples

Example 1

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

No actions or adjustments are required.

Example 2

The outdoor unit is installed at the highest point in the water circuit. The total water volume in the water circuit is 350 l. The concentration of propylene glycol is 35%.

Actions:

- Because the total water volume (350 l) is more than the default water volume (99 l), the pre-pressure must be decreased.
- The required pre-pressure is:
  Pg = (0.3+(H/10)) bar = (0.3+(0/10)) bar=0.3 bar.
- The corresponding maximum water volume at 0.3 bar is 150 l. (See the graph in the chapter above).
- Because 350 l is more than 150 l, the expansion vessel is NOT appropriate for the installation. Therefore the system requires an external expansion vessel.

6.4 Preparing electrical wiring

6.4.1 About preparing electrical wiring

INFORMATION

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

WARNING

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

WARNING

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

WARNING

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

WARNING

ALWAYS use multicore cable for power supply cables.

6.4.2 About preferential kWh rate power supply

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

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

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

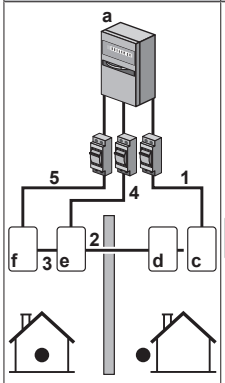
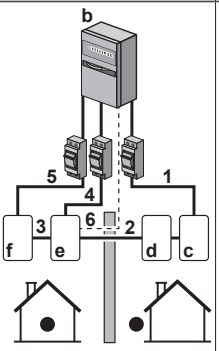
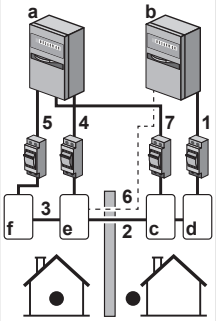
When the equipment is connected to such preferential kWh rate power supply, the electricity company is allowed to:

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

Control box EKCB07CAV3 is designed to receive an input signal by which it switches the outdoor unit into forced-off mode. At that moment, the compressor will not operate.

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

6.4.3 Overview of electrical connections except external actuators

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

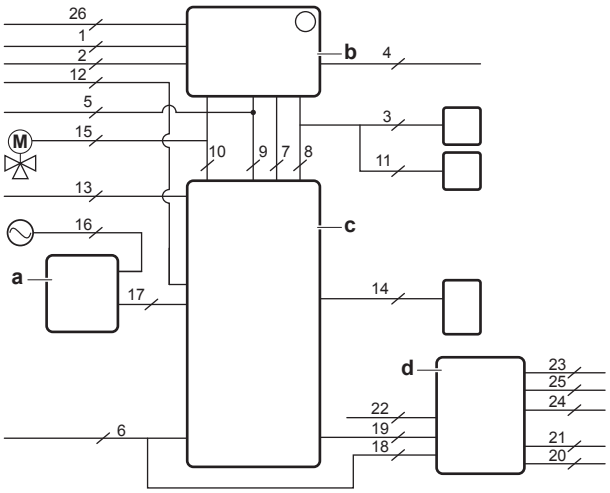
a Normal power supply
b Preferential kWh rate power supply
c Hydro part of the outdoor unit
d Refrigerant part of the outdoor unit
e Control box
f Backup heater kit
1 Power supply for outdoor unit
2 Interconnection cable to control box
3 Interconnection cable to backup heater kit
4 Power supply for control box
5 Power supply for backup heater kit
6 Preferential kWh rate power supply (voltage free contact)
7 Normal kWh rate power supply (to power the hydro part of the outdoor unit in the event of a power supply interruption of the preferential kWh rate power supply)

6.4.4 Overview of electrical connections for external and internal actuators

The following illustration shows the required field wiring.

INFORMATION

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



a Backup heater kit
b Outdoor unit
c Control box
d Option box

Outdoor unit

Item	Description	Wires	Maximum running current
Power supply			
1	Power supply for outdoor unit	2+GND	(a)
2	Normal kWh rate power supply	2	6.3 A
User interface			
3	User interface	2	(b)
Optional equipment			
4	Remote outdoor sensor	2	(c)
Field-supplied components			
5	Space heating/cooling operation control (or shut-off valve)	2	(c)

(a) Refer to name plate on outdoor unit.
(b) Cable section 0.75 mm² till 1.25 mm²; maximum length: 500 m. Applicable for both single user interface and dual user interface connection.
(c) Minimum cable section 0.75 mm².

Control box

Item	Description	Wires	Maximum running current
Power supply			
6	Power supply for control box	2+GND	(a)
Interconnection cable			
7	Interconnection cable between outdoor unit and control box	2	(b)
8	Interconnection cable for the user interface (between outdoor unit and control box)	2	(c)
9	Interconnection cable for the space heating/cooling operation control (or shut-off valve) (between outdoor unit and control box)	2	(h)
10	Interconnection cable for valve kit EKMBHBP1 (between outdoor unit and control box)	3 (of which 2 are shared with those of item 10)	(f)
User interface			
11	User interface	2	(c)
Optional equipment			
12	Preferential kWh rate power supply (voltage-free contact)	2	(d)
13	Space heating/cooling operation control (or shut-off valve)	2	(i)
14	Room thermostat	3 or 4	100 mA(e)
15	Valve kit EKMBHBP1	3	(g)
26	Bottom plate heater EKBPH140L7	2	(j)

(a) Cable section 2.5 mm².
(b) Cable section 0.75 mm² till 1.25 mm²; maximum length: 20 m.
(c) Cable section 0.75 mm² till 1.25 mm²; maximum length: 500 m. Applicable for both single user interface and dual user interface connection.
(d) Cable section 0.75 mm² till 1.25 mm²; maximum length: 50 m. Voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.
(e) If valve kit EKMBHBP1 is part of the system, then the required cable section is 0.75 mm². If valve kit EKMBHBP1 is NOT part of the system, then the minimum required cable section is 0.75 mm², and the maximum cable length is 10 m.
(f) Cable section 0.75 mm².
(g) The valve and connection wire (12 m) are delivered with the valve kit.
(h) If valve kit EKMBHBP1 is part of the system, then the required cable section is 0.75 mm². If valve kit EKMBHBP1 is NOT part of the system, then the required cable section is 1.5 mm².
(i) If valve kit EKMBHBP1 is part of the system, then the required cable section is 0.75 mm². If valve kit EKMBHBP1 is NOT part of the system, then the minimum required cable section is 0.75 mm².
(j) The connection wire is delivered with the bottom plate heater kit.

Backup heater kit

Item	Description	Wires	Maximum running current
Power supply			
16	Backup heater power supply	See table below.	—
Interconnection cable			
17	Interconnection cable between backup heater kit and control box	6 (3V3) 7 (6V3, 6W1, 9W1)	(a)

(a) Minimum cable section 0.75 mm²; maximum length: 10 m.

Backup heater	Power supply	Required number of conductors
EKMBUHCA3V3	1× 230 V	2+GND
EKMBUHCA9W1	1× 230 V	2+GND+2 bridges
	3× 400 V	4+GND

Option box

Item	Description	Wires	Maximum running current
Power supply			
18	Power supply for option box	2+GND	(a)
Interconnection cable			
19	Interconnection cable between option box and control box	3 (max 3 m)	(b)
Optional equipment			
20	Remote indoor sensor	2	(b)
Field-supplied components			
21	Electric meter	2 (per meter)	(b)
22	Power consumption digital inputs	2 (per input signal)	(b)
23	Alarm output	2	(b)
24	Space cooling/heating ON/OFF output	2	(b)
25	Changeover to external heat source	2	(b)

(a) Cable section 2.5 mm².
(b) Minimum cable section 0.75 mm².

NOTICE

- More technical specifications of the different connections are indicated on the inside of the units (outdoor unit, control box, option box and backup heater).
- For how to connect the electrical wiring to the outdoor unit (and if part of the system, the control box, option box, and backup heater), refer to "7.8 Connecting the electrical wiring" on page 35.

7 Installation

7.1 Overview: Installation

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

Typical workflow

Installation typically consists of the following stages:

1 Mounting the outdoor unit
2 Mounting the control box (if applicable)
3 Mounting the option box (if applicable)
4 Mounting the backup heater (if applicable)
5 Connecting the water piping
6 Connecting the electrical wiring
7 Finishing the installation of the outdoor unit
8 Finishing the installation of the control box (if applicable)
9 Finishing the installation of the option box (if applicable)
10 Finishing the installation of the backup heater (if applicable)

7.2 Opening the units

7.2.1 About opening the units

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

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

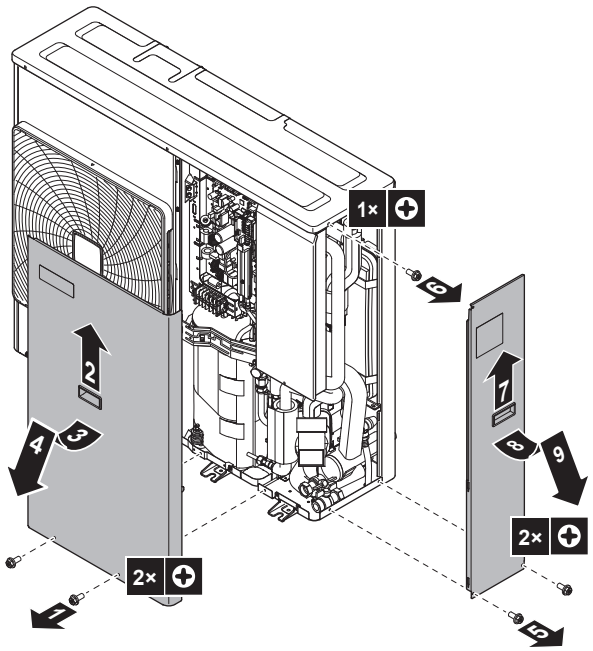
DANGER: RISK OF ELECTROCUTION

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

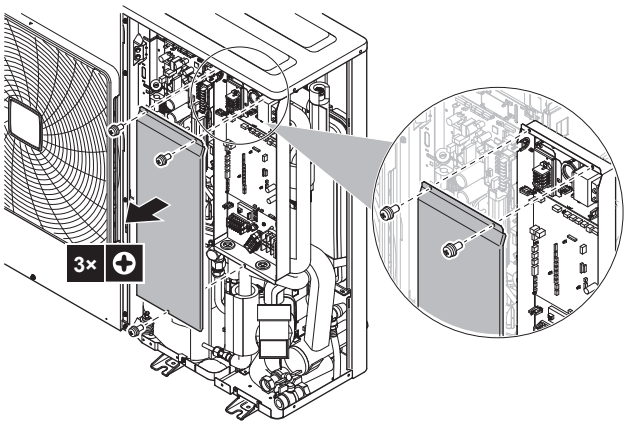
7.2.2 To open the outdoor unit

DANGER: RISK OF ELECTROCUTION

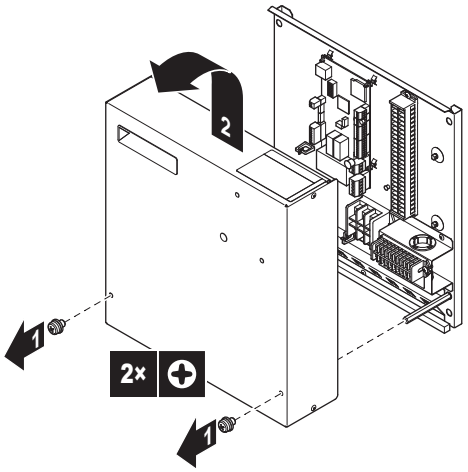
DANGER: RISK OF BURNING



7.2.3 To open the switch box cover of the outdoor unit



7.2.4 To open the control box



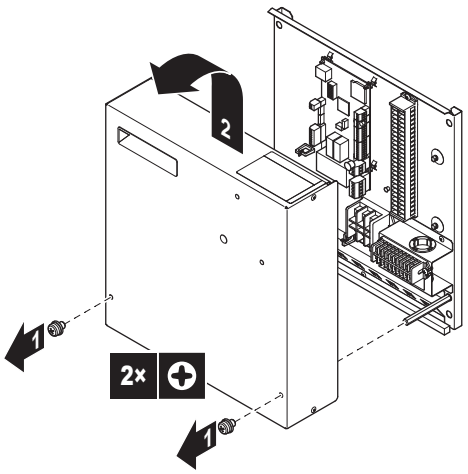
WARNING

The screws are delivered with toothed lock washers. ALWAYS use toothed lock washers, also when the screws need to be replaced. Failure to follow this warning may result in electric shock.

INFORMATION

The holes in the front plate are for the connection of the user interface to the control box. If you do NOT connect the user interface to the control box, do NOT remove the plugs from the holes.

7.2.5 To open the option box



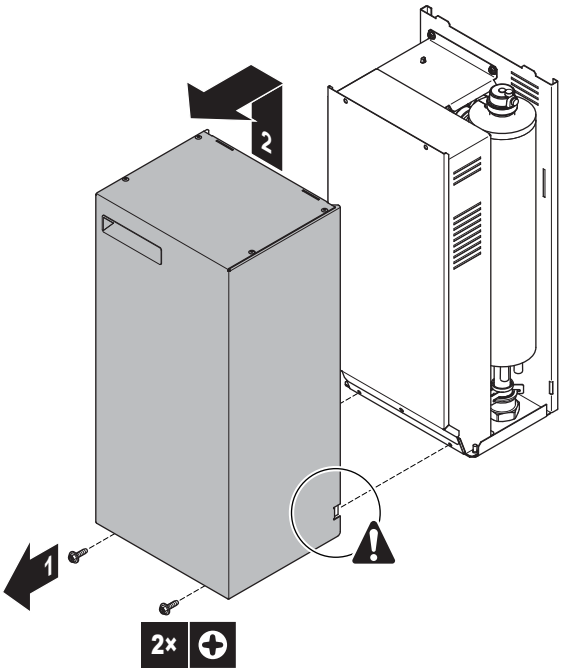
WARNING

The screws are delivered with toothed lock washers. ALWAYS use toothed lock washers, also when the screws need to be replaced. Failure to follow this warning may result in electric shock.

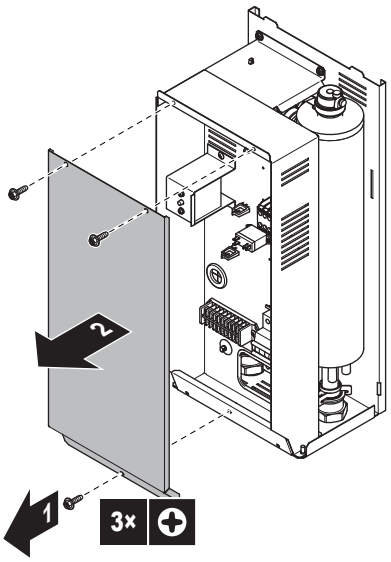
INFORMATION

Do NOT remove the plugs from the front plate of the option box.

7.2.6 To open the backup heater



7.2.7 To open the switch box cover of the backup heater



7.3 Mounting the outdoor unit

7.3.1 About mounting the outdoor unit

When

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

Typical workflow

Mounting the outdoor unit typically consists of the following stages:

1 Providing the installation structure.
2 Installing the outdoor unit.
3 Providing drainage.
4 Protecting the unit against snow and wind by installing a snow cover and baffle plates. See "Preparing installation site" in "6 Preparation" on page 20.

7.3.2 Precautions when mounting the outdoor unit

INFORMATION

Also read the precautions and requirements in the following chapters:

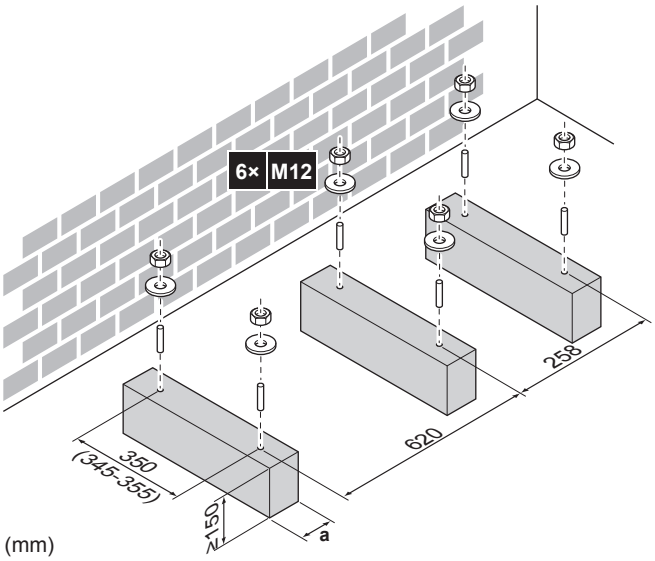
- General safety precautions
- Preparation

7.3.3 To provide the installation structure

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

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

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

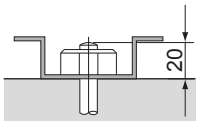


(mm)

a Make sure not to cover the drain holes.

INFORMATION

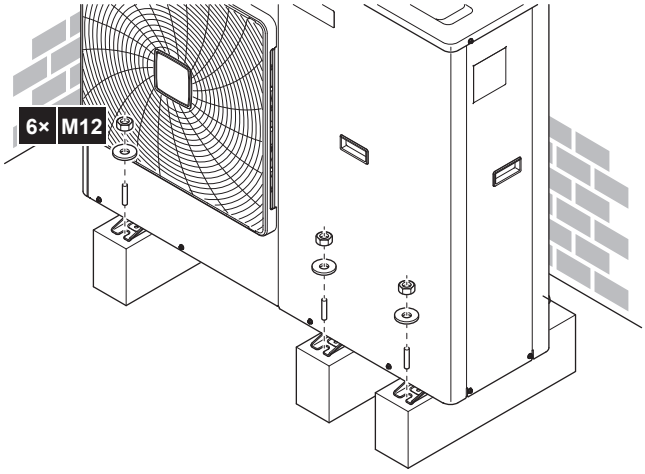
The recommended height of the upper protruding part of the bolts is 20 mm.



NOTICE

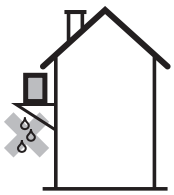
Fix the outdoor unit to the foundation bolts using nuts with resin washers (a). If the coating on the fastening area is stripped off, the nuts rust easily.

7.3.4 To install the outdoor unit



7.3.5 To provide drainage

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



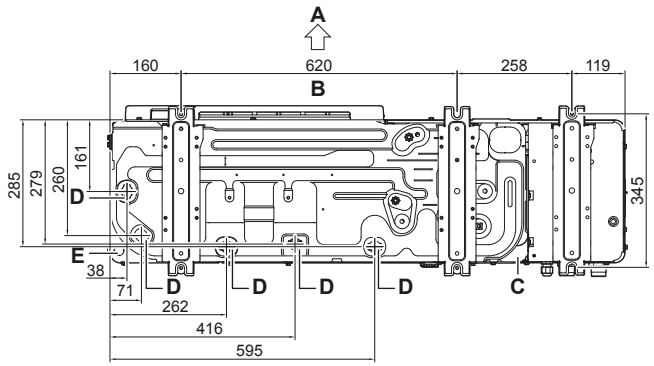
NOTICE

If the unit is installed in a cold climate, take adequate measures so that the evacuated condensate CANNOT freeze.

INFORMATION

If necessary, you can use a drain plug kit (field supply) to prevent drain water from dripping.

Drain holes (dimensions in mm)

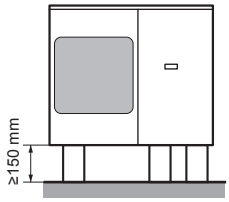


A Discharge side
B Distance between anchor points
C Bottom frame
D Drain holes

E Knockout hole for snow

NOTICE

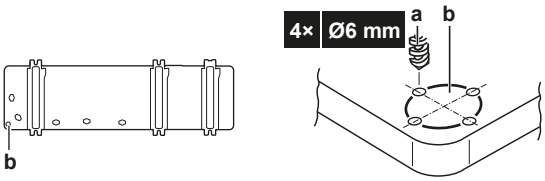
If drain holes of the outdoor unit are covered by a mounting base or by floor surface, raise the unit to provide a free space of more than 150 mm under the outdoor unit.



Snow

In regions with snowfall, snow might build up and freeze between the heat exchanger and the external plate. This might decrease the operating efficiency. To prevent this:

1 Drill (a, 4×) and remove the knockout hole (b).



2 Remove the burrs, and paint the edges and areas around the edges using repair paint to prevent rusting.

7.3.6 To prevent the outdoor unit from falling over

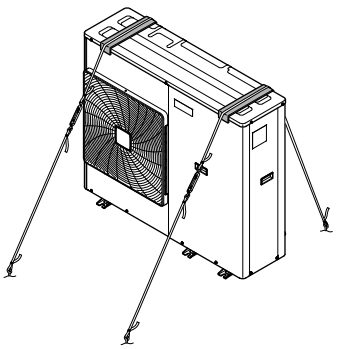
In case the unit is installed in places where strong wind can tilt the unit, take following measure:

1 Prepare 2 cables as indicated in the following illustration (field supply).

2 Place the 2 cables over the outdoor unit.

3 Insert a rubber sheet between the cables and the outdoor unit to prevent the cables from scratching the paint (field supply).

4 Attach the ends of the cables and tighten them.



7.4 Mounting the control box

7.4.1 Precautions when mounting the control box

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

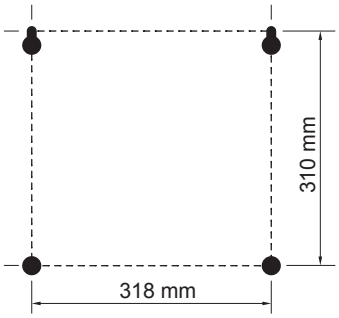
7.4.2 To install the control box

1 Remove the front plate.

2 Hold the back plate against the wall and mark the fixation points (2 on the top and 2 at the bottom).

NOTICE

Make sure that the marks (2 by 2) are completely level and that their dimensions correspond to the figure below.



3 Drill 4 holes and install 4 plugs (suitable for M5).

4 Put the screws in the top plugs and hang the box on the screws.

5 Put the screws in the bottom plugs.

6 Fix the 4 screws firmly.

INFORMATION

It is possible to connect the user interface to the control box. For more information, refer to "7.8.6 To connect the user interface" on page 37.

7.5 Mounting the option box

7.5.1 Precautions when mounting the option box

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

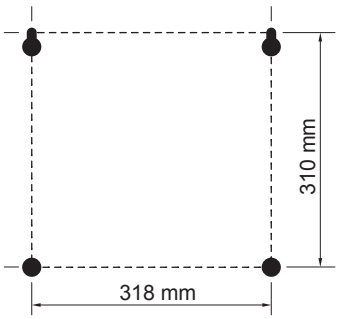
7.5.2 To install the option box

1 Remove the front plate.

2 Hold the back plate against the wall and mark the fixation points (2 on the top and 2 at the bottom).

NOTICE

Make sure that the marks (2 by 2) are completely level and that their dimensions correspond to the figure below.



3 Drill 4 holes and install 4 plugs (suitable for M5).

4 Put the screws in the top plugs and hang the box on the screws.

5 Put the screws in the bottom plugs.

6 Fix the 4 screws firmly.

7.6 Mounting the backup heater

7.6.1 About mounting the backup heater

NOTICE

- The backup heater can only be installed and used in combination with the outdoor unit and control box EKCB07CAV3.
- The backup heater can only be connected to the space heating water outlet of the outdoor unit. Other connections are NOT allowed.
- Only one backup heater can be connected to the outdoor unit. It is NOT allowed to combine multiple heater kits in series or parallel.

7.6.2 Precautions when mounting the backup heater

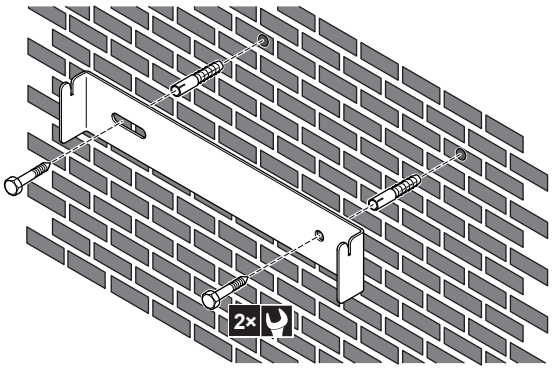
INFORMATION

Also read the precautions and requirements in the following chapters:

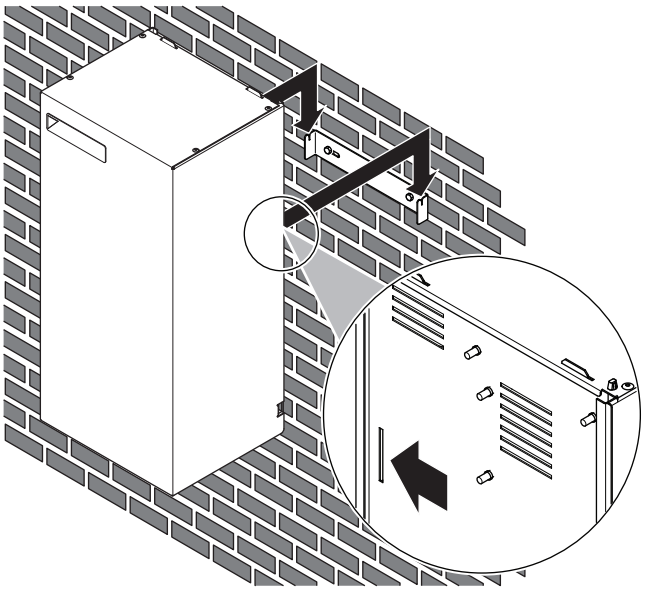
- General safety precautions
- Preparation

7.6.3 To install the backup heater

1 Fix the wall bracket to the wall with M5 screws.



2 Hang the backup heater onto the wall bracket.



3 Mark the position of the hole at the bottom of the backup heater.

4 Remove the backup heater from the wall bracket.

5 Drill a hole for the bottom screw and insert a plug.

6 Hang the backup heater onto the wall bracket. Make sure it is fixed properly.

7 Fix the bottom of the backup heater to the wall with an M5 screw.

7.7 Connecting the water piping

7.7.1 About connecting the water piping

Before connecting the water piping

Make sure the outdoor unit is mounted. If applicable, also make sure the control box and the backup heater are mounted.

Typical workflow

Connecting the water piping typically consists of the following stages:

1 Connecting the water piping of the outdoor unit.
2 Connecting the water piping of the backup heater (if applicable).
3 Filling the water circuit.
4 Protecting the water circuit against freezing (addition of glycol).
5 Insulating the water piping.

7.7.2 Precautions when connecting the water piping

INFORMATION

Also read the precautions and requirements in the following chapters:

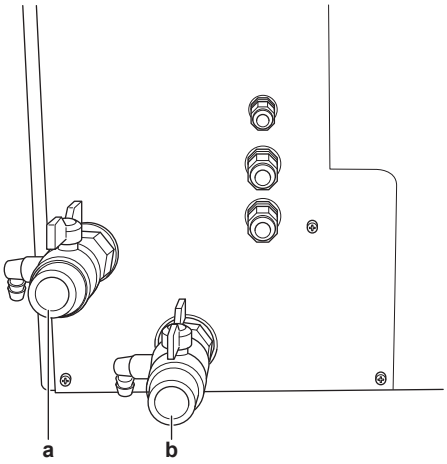
- General safety precautions
- Preparation

7.7.3 To connect the water piping

NOTICE

Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit. Make sure that the tightening torque does NOT exceed 30 N•m.

To facilitate service and maintenance, 2 shut-off valves are provided. Mount the valves on the space heating water inlet and space heating water outlet. Mind their position: the integrated drain valves will only drain the side of the circuit on which they are located. To be able to only drain the unit, make sure the drain valves are positioned between the shut-off valves and the unit.



a Water inlet
b Water outlet

1 Screw the outdoor unit nuts on the shut-off valves.

2 Connect the field piping on the shut-off valves.

NOTICE

Install a manometer in the system.

NOTICE

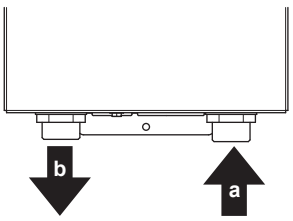
Install air purge valves at all local high points.

7.7.4 To connect the water piping to the backup heater

NOTICE

Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit. Make sure that the tightening torque does NOT exceed 30 N•m.

1 Connect the water piping (field supply) to the water in- and outlet of the backup heater.



a Water inlet
b Water outlet

NOTICE

When the backup heater is installed in a reversible system (heating+cooling), and the conditions of "14.4 Valve kit necessity" on page 81 are valid, condensation may occur inside the backup heater. To provide a bypass for the condensate, install valve kit EKMBHBP1. Do NOT install any other valve kit than EKMBHBP1.

INFORMATION

Inside the backup heater, an automatic air purge valve is installed. For instructions on how to perform an air purge, refer to "9.4.2 Air purge function" on page 64.

7.7.5 About the valve kit

INFORMATION

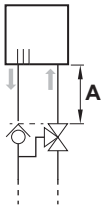
Only applicable to reversible systems (heating+cooling) in which a backup heater is installed.

When installing the backup heater in a reversible system (heating +cooling), and the conditions presented in "14.4 Valve kit necessity" on page 81 are met, condensation may occur inside the backup heater. It is required that a bypass for this condensate be provided.

NOTICE

In case of valve kit malfunction or if problems arise due to incorrect installation, the condensate that occurs inside the backup heater may not get properly bypassed. To prevent the condensate from doing damage, make sure all components installed under the backup heater are resistant to at least dripping water (IPX1).

The installation site requirements for the valve kit depend on the required leaving water temperature setpoint (underfloor heating: 18°C – fan coil units: 5°C) and the material of the piping (copper or Alpex). Provide sufficient space under the backup heater, according to the figure and table below.

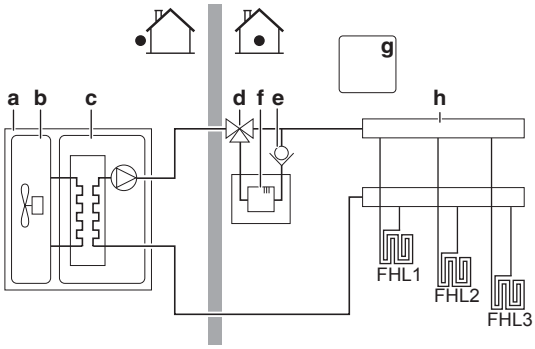


A Minimum required distance between backup heater and valve kit.

Leaving water temperature setpoint	Material of the piping	
	Copper	Alpex[a]
18°C	A=25 cm	A=10 cm
5°C	A=50 cm	A=20 cm

(a) Aluminium-reinforced polyethylene

Valve kit EKMBHBP1 contains a check valve and a 3-way valve, which need to be integrated into the system as follows:



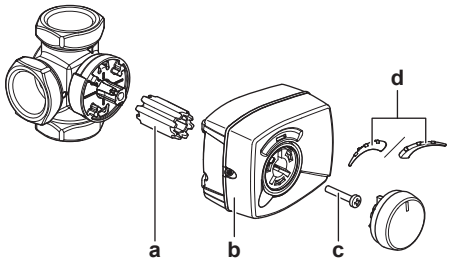
a Outdoor unit
b Refrigerant part of the outdoor unit
c Hydro part of the outdoor unit
d 3-way valve (of valve kit EKMBHBP1)
e Check valve (of valve kit EKMBHBP1)
f Backup heater kit
g Control box
h Space heating circuit

To connect the check valve

1 Connect the check valve to the water outlet of the backup heater.

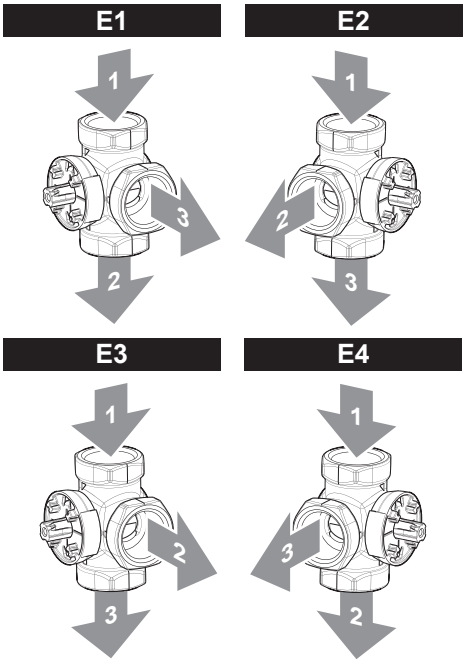
To connect the 3-way valve

1 Unpack the 3-way valve body and 3-way valve motor and verify that the following accessories are provided with the motor.



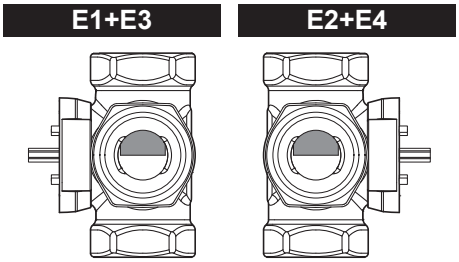
a Sleeve
b Valve motor cover
c Screw
d Scale

2 Connect the 3-way valve body to the water inlet of the backup heater, in accordance with one of the following four configurations. Position the shaft in such a way that the motor can be mounted and replaced.

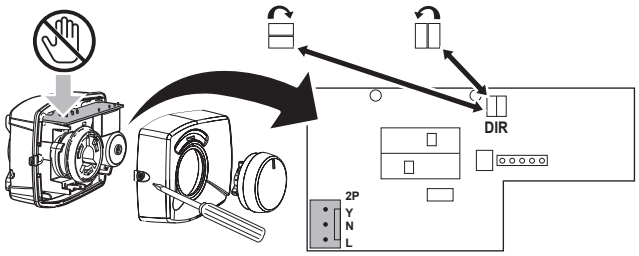


1 From outdoor unit
2 To bypass
3 To backup heater

3 Put the sleeve on the valve and turn it until the valve is positioned as in the figure below. It should be blocking the outlet connection to the bypass for 50% and the outlet connection to the backup heater for 50%.



4 When installing in accordance with configurations E3 or E4, open the valve motor cover by loosening the screw and change the jumper so as to change the rotation direction of the valve.



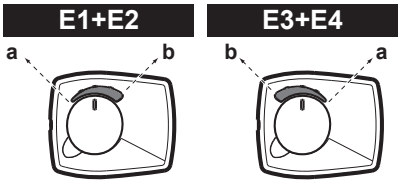
▯ Position of the jumper in case of installation according to configurations E1 and E2.
▭ Position of the jumper in case of installation according to configurations E3 and E4.

INFORMATION

The jumper is factory-set to apply for installation in accordance with configurations E1 and E2.

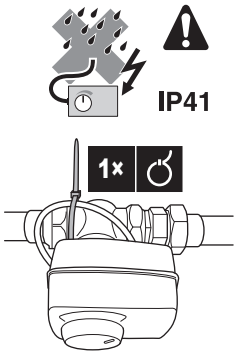
5 Put the knob on the motor in a 12 o'clock position and push the motor on the sleeve. Do NOT rotate the sleeve during this action, so as to maintain the valve position as set during step 4.

6 Put the scale on the valve according to the applicable configuration.



a Bypass
b Backup heater

7 To provide stress relief, fix the power supply cable to the 3-way valve body with a cable tie (field supply). Fix it so that possible condensate cannot enter the 3-way valve motor via the cable.



7.7.6 To protect the water circuit against freezing

Frost can damage the system. For this reason, if negative ambient temperatures are expected, make sure the water circuit is sufficiently protected against freezing. Freeze protection is model-dependent. Either add glycol to the water circuit, or provide the outdoor field piping with heater tape, according to the table below.

If …	… then
Standard model (no -H- in the model name)	Add glycol to the water circuit, according to the instructions below. In this way, you protect the internal water piping, as well as the outdoor field piping.

If …	… then
Heater tape model (-H- in the model name)	The internal water piping is factory-equipped with heater tape and additional insulation, this to prevent it from freezing. To prevent the outdoor field piping from freezing, provide it with sufficient insulation or heater tape (field supply), according to the instructions below.

Heater tape (field supply)

1 Install heater tape to the outdoor field piping.

2 Provide external power supply for the heater tape.

NOTICE

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

Glycol

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

INFORMATION

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

NOTICE

In case of reversible systems (heating+cooling), ALWAYS protect the piping and plate heat exchanger from freezing.

NOTICE

In case the lowest expected outdoor temperature is not mentioned in the table, select the worst case value.

Example: If the lowest expected outdoor temperature is –10°C, add 35% of glycol to the system.

Lowest expected outdoor temperature	Prevent from bursting[(a)]	Prevent from freezing
–8°C	15%	20%
–15°C	20%	35%

(a) For cooling-only systems only. In case of reversible systems (heating+cooling), ALWAYS prevent the piping and plate heat exchanger from freezing.

NOTICE

- It is the responsibility of the installer to add the correct glycol percentage, depending on the expected ambient temperatures.
- The addition of glycol applies to BOTH cooling-only models (EWAQ006+008BAVP) AND reversible models (EWYQ006+008BAVP), and is independent of cooling or heating operation.
- The required concentration might differ depending on the type of glycol. ALWAYS compare the requirements from the table above with the specifications provided by the glycol manufacturer. If necessary, meet the requirements set by the glycol manufacturer.
- The added concentration of glycol should NEVER exceed 35%.
- If the liquid in the system is frozen, the pump will NOT be able to start. Mind that if you only prevent the system from bursting, the liquid inside might still freeze.
- In case of a power supply failure or pump failure, and NO glycol was added to the system, drain the system.
- When water is at standstill inside the system, the system is very likely to freeze and get damaged.

The following types of glycol are allowed:

- **Ethylene glycol**;
- **Propylene glycol**, including the necessary inhibitors, classified as Category III according to EN1717.

WARNING

Ethylene glycol is toxic.

NOTICE

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

NOTICE

- If overpressure occurs, the system will release some of the liquid through the pressure relief valve. If glycol was added to the system, take adequate measures so as to safely recover it.
- In any case, make sure that the flexible hose of the pressure relief valve is ALWAYS free to release pressure. Prevent water from staying and/or freezing up inside the hose.

WARNING

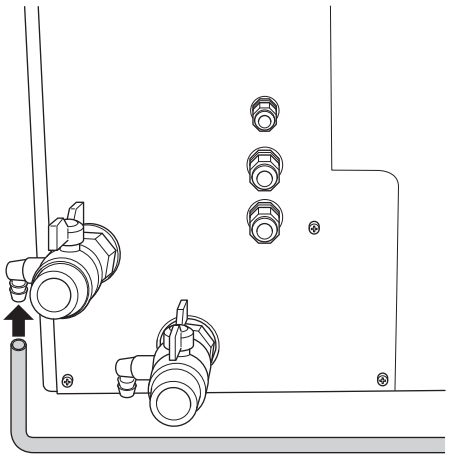
Due to presence of glycol, corrosion of the system is possible. Uninhibited glycol will turn acidic under the influence of oxygen. This process is accelerated by the presence of copper and high temperatures. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that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

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

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

7.7.7 To fill the water circuit

1 Connect the water supply hose to the drain and fill valve.



2 Open the drain and fill valve.

3 If an automatic air purge valve was installed, make sure it is open.

4 Fill the circuit with water until the manometer (field supply) indicates a pressure of ±2.0 bar.

5 Purge as much air as possible from the water circuit. For instructions, see "9 Commissioning" on page 63.

6 Refill the circuit until the pressure is ±2.0 bar.

7 Repeat steps 5 and 6 until no more air is purged and there are no more pressure drops.

8 Close the drain and fill valve.

9 Disconnect the water supply hose from the drain and fill valve.

NOTICE

The water pressure indicated on the manometer will vary depending on the water temperature (higher pressure at higher water temperature).

However, at all times water pressure shall remain above 1 bar to avoid air entering the circuit.

7.7.8 To insulate the water piping

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

To prevent the freezing of the outdoor water piping during winter time, the thickness of the sealing material MUST be at least 13 mm (with λ=0.039 W/mK).

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

During winter, protect the water piping and shut-off valves against freezing by adding heat tape (field supply). If the outdoor temperature can drop below –20°C and no heat tape is used, it is recommended to install the shut-off valves indoors.

7.8 Connecting the electrical wiring

7.8.1 About connecting the electrical wiring

Before connecting the electrical wiring

Make sure the water piping is connected.

Typical workflow

Connecting the electrical wiring typically consists of the following stages:

1 Making sure the power supply system complies with the electrical specifications of the units.
2 Connecting the electrical wiring to the outdoor unit (if applicable).
3 Connecting the electrical wiring to control box EKCB07CAV3 (if applicable).
4 Connecting the electrical wiring to option box EK2CB07CAV3 (if applicable).
5 Connecting the electrical wiring to the backup heater (if applicable).
6 Connecting the main power supply
7 Connecting the backup heater power supply (if applicable).
8 Connecting the user interface.
9 Connecting the shut–off valves (if applicable).
10 Connecting the electrical meters (if applicable).
11 Connecting the alarm output (if applicable).
12 Connecting the space cooling/heating ON/OFF output (if applicable).
13 Connecting the changeover to an external heat source (if applicable).
14 Connecting the power consumption digital inputs (if applicable).

7.8.2 Precautions when connecting the electrical wiring

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

DANGER: RISK OF ELECTROCUTION

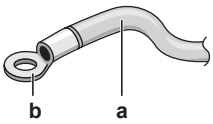
WARNING

ALWAYS use multicore cable for power supply cables.

7.8.3 Guidelines when connecting the electrical wiring

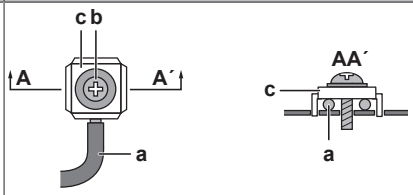
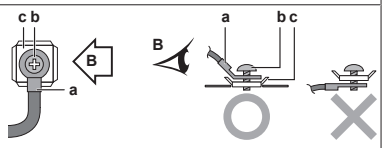
Keep the following in mind:

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



a Stranded conductor wire
b Round crimp-style terminal

- Use the following methods for installing wires:

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

Item	Tightening torque (N•m)
Outdoor unit	
X3M	0.8~0.9
X5M	0.8~0.9
X7M	
Control box / option box	
X1M	2.2~2.7
X2M	0.8~0.9
X4M	1.3~1.6
X8M	0.8~0.9
Backup heater	
X15M	0.8~0.9

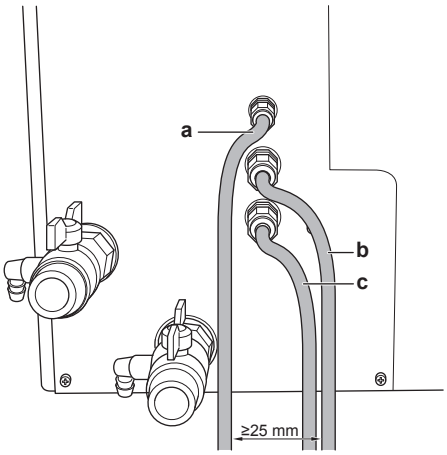
7.8.4 To connect the electrical wiring on the outdoor unit

1 Remove the switch box cover. See "7.2.2 To open the outdoor unit" on page 27.

2 Strip insulation (20 mm) from the wires.

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

3 Insert the wiring at the back of the unit:



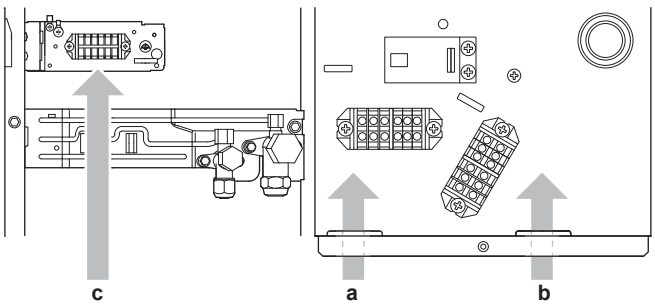
a Low voltage cable
b High voltage cable
c Power supply cable

NOTICE

The distance between the high voltage and low voltage cables should be at least 25 mm.

Routing	Possible cables (depends on the installed options)
a Low voltage	▪ User interface ▪ Interconnection cable to control box EKCB07CAV3 ▪ Remote outdoor sensor (option)
b High voltage	▪ Normal kWh rate power supply ▪ Preferential kWh rate power supply ▪ Shut-off valve (field supply) ▪ Space heat/cool operation control
c Main power supply	▪ Main power supply

4 Inside the unit, route the wiring as follows:



a Low voltage wiring
b High voltage wiring
c Power supply cable

5 Make sure that the cable does NOT come in contact with sharp edges or hot gas piping.

6 Install the switch box cover.

INFORMATION

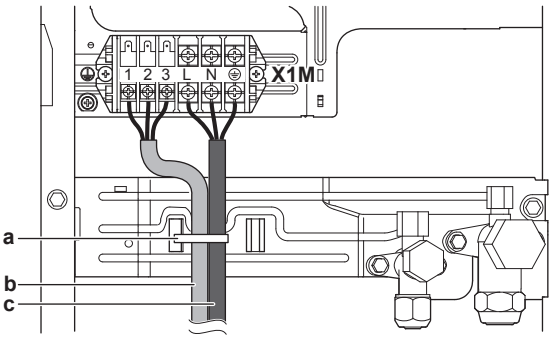
When installing field supply or option cables, foresee sufficient cable length. This will make it possible to remove/reposition the switch box and gain access to other components during service.

CAUTION

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

7.8.5 To connect the main power supply

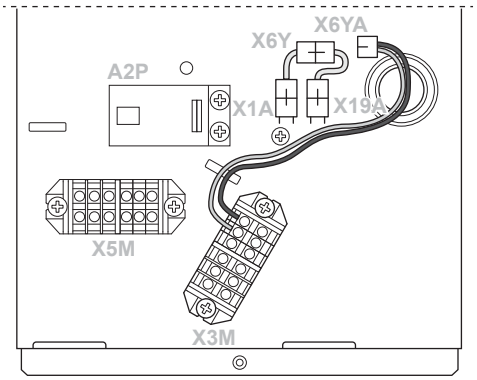
1 Connect the main power supply as follows:



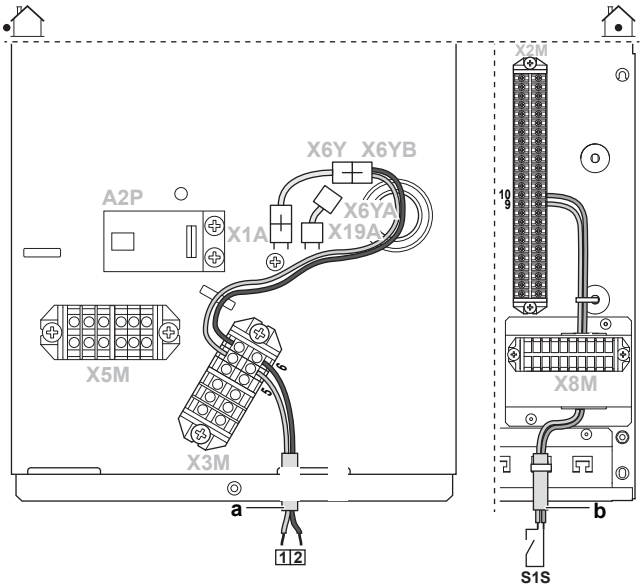
a Cable tie
b Interconnection cable to switch box
c Power supply cable (including earth)

2 Open the switch box and route the wiring as follows.

In case of normal kWh rate power supply



In case of preferential kWh rate power supply



1 L
2 N
a Normal kWh rate power supply
b Preferential power supply contact (on the control box)

3 Install the switch box cover.

INFORMATION

For the exact position of connectors X6Y, X6YA, and X6YB in the switch box, see the service manual.

INFORMATION

In case of preferential kWh rate power supply, the necessity of a separate normal kWh rate power supply to the hydro part of the outdoor unit X3M/5+6 depends on the type of preferential kWh rate power supply.

A separate connection to the hydro part of the outdoor unit is required:

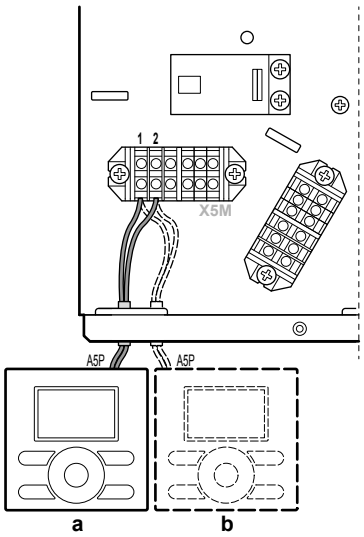
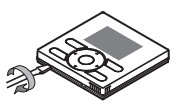
- if preferential kWh rate power supply is interrupted when active, OR
- if no power consumption by the hydro part of the outdoor unit is allowed at the preferential kWh rate power supply when active.

7.8.6 To connect the user interface

Connection to outdoor unit

INFORMATION

- If control box EKCB07CAV3 is NOT part of the system, connect the user interface directly to the outdoor unit according to the instructions below.
- If control box EKCB07CAV3 is part of the system, connect the user interface to the control box. For instructions, see "Connection to control box" below.

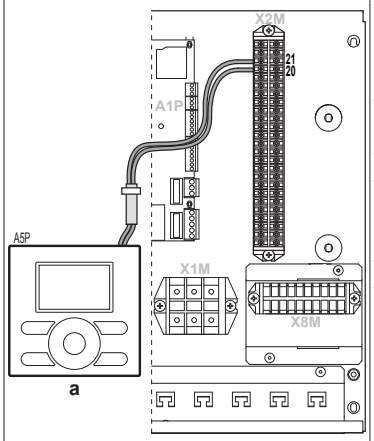
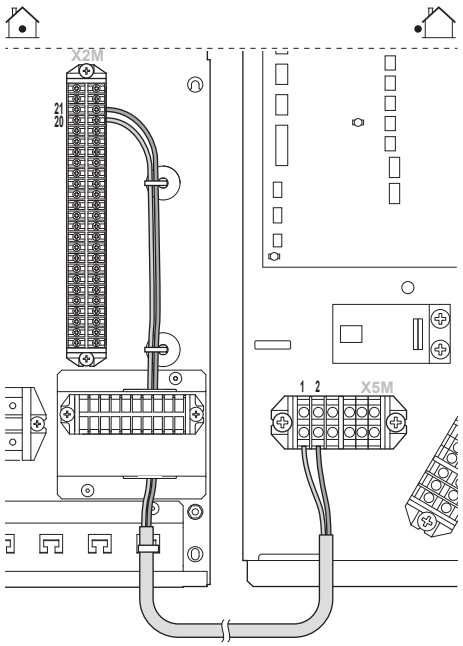
#	Action
1	Connect the user interface cable to the outdoor unit.  **a** Main user interface[(a)] **b** Optional user interface
2	Insert a screwdriver into the slots underneath the user interface and carefully separate the faceplate from the wallplate. The PCB is mounted in the faceplate of the user interface. Be careful NOT to damage it. 
3	Fix the wallplate of the user interface to the wall.
4	Connect as shown in 4A, 4B, 4C or 4D.

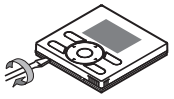
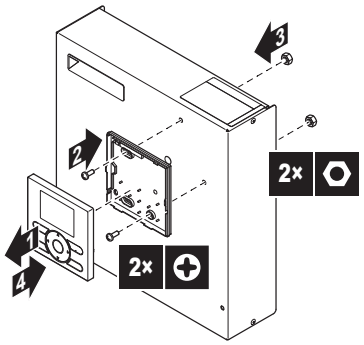
#	Action
5	Reinstall the faceplate onto the wallplate. Be careful NOT to pinch the wiring when attaching the frontplate to the unit.

(a) The main user interface is required for operation. It is delivered with the unit as accessory.

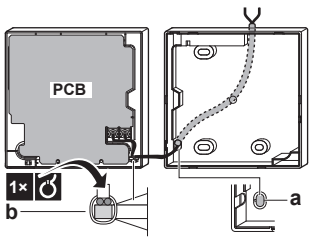
Connection to control box

- If you use 1 user interface, you can connect it onto control box EKCB07CAV3 (for control close to the control box), or in the room (where used as room thermostat).
- If you use 2 user interfaces, you can connect 1 user interface onto control box EKCB07CAV3 (for control close to the control box) + 1 user interface in the room (where used as room thermostat).

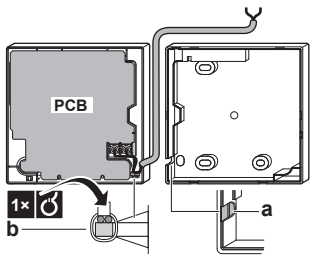
#	Onto control box	In the room
1	Connect the user interface cable to control box terminals X2M/20+21. Fix the cable with cable ties to the cable tie mountings.  **a** Main user interface	Connect the user interface cable to control box terminals X2M/20+21. Route the cable from the right-hand side of the terminals, fasten it to the cable tie mountings and route it through the hole of the low voltage wiring.
2	Connect the control box to the outdoor unit. Fix the cable with cable ties to the cable tie mountings. 	

#	Onto control box	In the room
3	Insert a screwdriver into the slots underneath the user interface and carefully separate the faceplate from the wall plate. The PCB is mounted in the faceplate of the user interface. Be careful NOT to damage it. 	
4	Fix the wall plate of the user interface to the front panel of the control box using the M4 bolts and nuts from the accessory bag. Be careful NOT to distort the shape of the backside of the user interface by overtightening the mounting screws. 	Fix the wall plate of the user interface to the wall. When NOT connecting a user interface to the control box, do NOT remove the plugs from the holes in the front plate.
5	Connect as shown in 4A.	Connect as shown in 4A, 4B, 4C or 4D.
6	Reconnect the faceplate to the wall plate. Be careful NOT to pinch the wiring when connecting the front panel to the control box.	

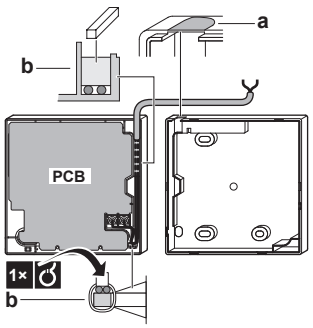
4A From the rear



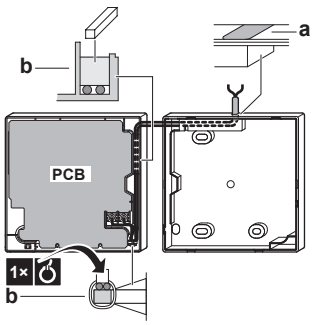
4B From the left



4C From the top



4D From the top centre



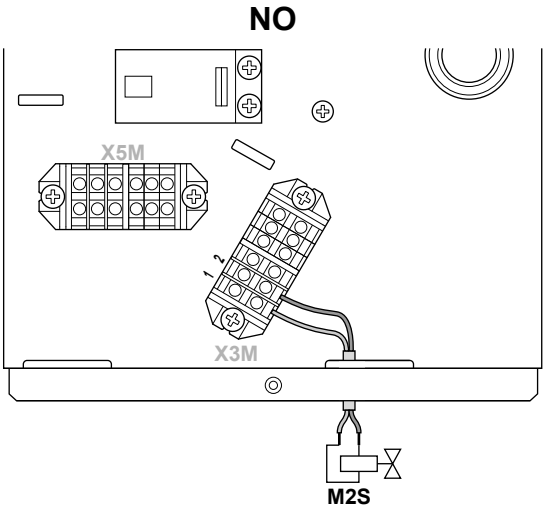
a Notch this part for the wiring to pass through with nippers etc.
b Secure the wiring to the front part of the casing using the wiring retainer and clamp.

7.8.7 To connect the shut-off valve

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

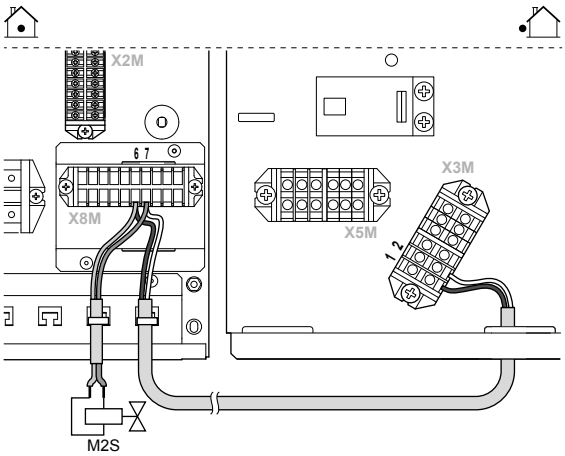
NOTICE

Only connect NO (normal open) valves.



INFORMATION

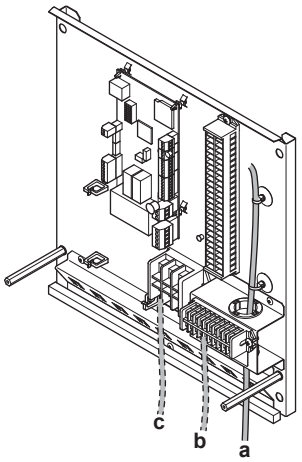
By default, the shut-off valve is to be connected to the outdoor unit. However, if control box EKCB07CAV3 is present in the system, you can also connect it to the control box. To do this, connect outdoor unit terminals X3M/1+2 to control box terminals X8M/6+7, and then connect the shut-off valve to control box terminals X8M/6+7.



7.8.8 To connect the electrical wiring on the control box

1 Insert the wiring from the bottom of the control box.

2 Make sure the low voltage wiring is located on the right. Route it through the intake hole and fasten it with cable ties.



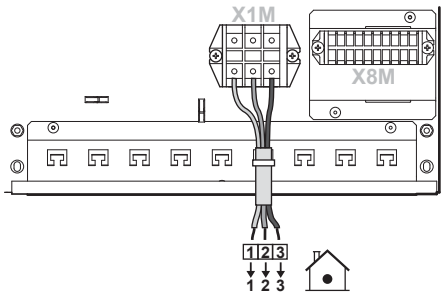
a Low voltage wiring
b High voltage wiring
c Main power supply

NOTICE

The distance between the high voltage and low voltage cables should be at least 25 mm.

7.8.9 To connect the control box power supply

1 Connect the power supply cable to the control box.



1 GND
2 L
3 N

2 Fix the cable with cable ties to the cable tie mountings to ensure strain relief and to make sure that it does NOT come in contact with sharp edges.

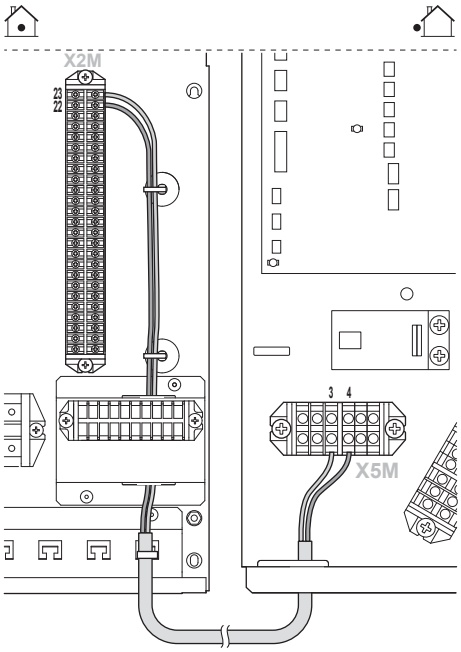
CAUTION

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

7.8.10 To connect the interconnection cable between control box and outdoor unit

1 Connect X2M/22 (control box) to X5M/4 (outdoor unit).

2 Connect X2M/23 (control box) to X5M/3 (outdoor unit).

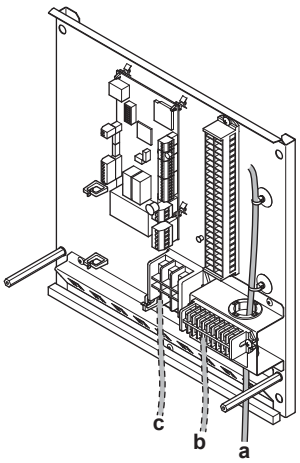


3 Tie the cable with cable ties to the cable tie mountings.

7.8.11 To connect the electrical wiring on the option box

1 Insert the wiring from the bottom of the option box.

2 Make sure the low voltage wiring is located on the right. Route it through the intake hole and fasten it with cable ties:



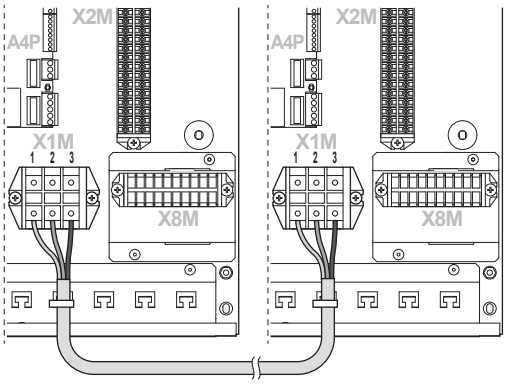
a Low voltage wiring
b High voltage wiring
c Main power supply

NOTICE

The distance between the high voltage and low voltage cables should be at least 25 mm.

7.8.12 To connect the option box power supply

1 Connect option box terminal X1M to control box terminal X1M.



1 GND
2 L
3 N

2 Fix the cable with cable ties to the cable tie mountings to ensure strain relief and to make sure that it does NOT come in contact with sharp edges.

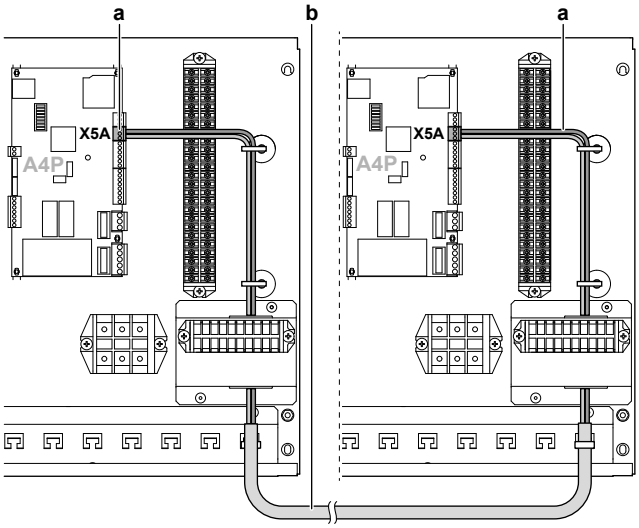
CAUTION

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

7.8.13 To connect the interconnection cable between option box and control box

1 Connect the connectors from the accessory bag to X5A on A1P of both the control box and the option box PCB.

2 Connect the connectors by way of a field-supplied cable.



a Connectors (accessory)
b Interconnection cable (field supply)

7.8.14 To connect the electrical meters

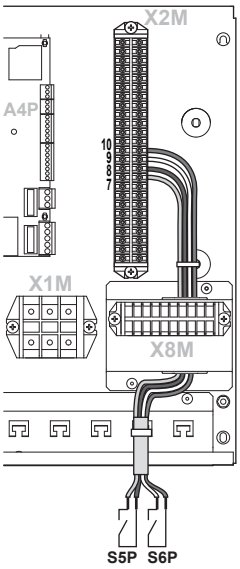
INFORMATION

- Requires option box EK2CB07CAV3.
- To be connected to option box EK2CB07CAV3.

INFORMATION

In case of an electrical meter with transistor output, check the polarity. The positive polarity MUST be connected to X2M/7 and X2M/9; the negative polarity to X2M/8 and X2M/10.

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



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

7.8.15 To connect the power consumption digital inputs

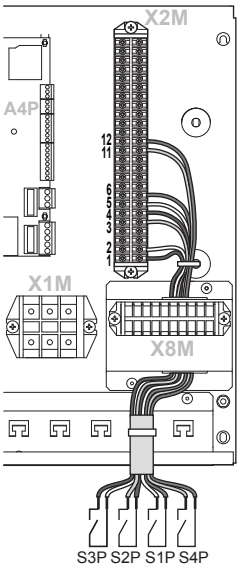
INFORMATION

- Requires option box EK2CB07CAV3.
- To be connected to option box EK2CB07CAV3.

INFORMATION

Power consumption control is not available for .

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



S3P Connect to terminals X2M/1+2
S2P Connect to terminals X2M/3+4
S1P Connect to terminals X2M/5+6
S4P Connect to terminals X2M/11+12

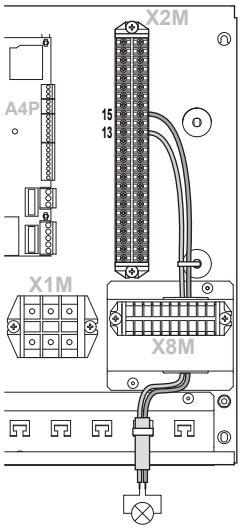
2 Fix the cable with cable ties to the cable tie mountings.

7.8.16 To connect the alarm output

INFORMATION

- Requires option box EK2CB07CAV3.
- To be connected to option box EK2CB07CAV3.

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



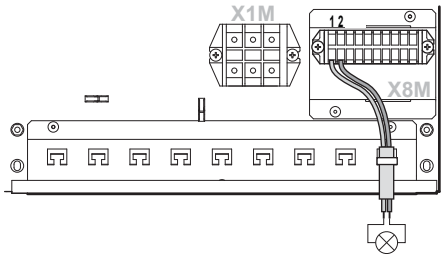
2 Fix the cable with cable ties to the cable tie mountings.

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

INFORMATION

- Requires option box EK2CB07CAV3.
- To be connected to option box EK2CB07CAV3.

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



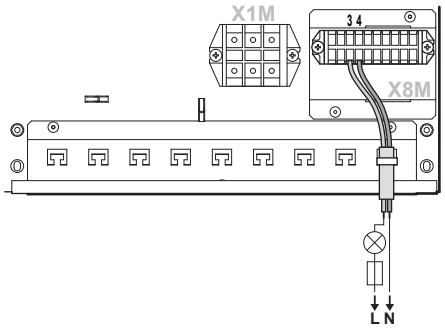
2 Fix the cable with cable ties to the cable tie mountings.

7.8.18 To connect the changeover to external heat source

INFORMATION

- Requires option box EK2CB07CAV3.
- To be connected to option box EK2CB07CAV3.

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



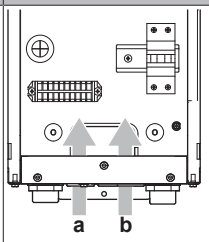
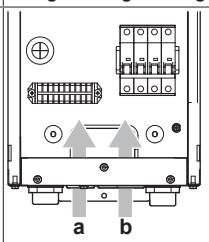
2 Fix the cable with cable ties to the cable tie mountings.

7.8.19 To connect the electrical wiring on the backup heater

Routing	Cables
a Low voltage	Interconnection cable (backup heater thermistor + backup heater thermal protector + backup heater connection)
b High voltage	Main power supply

1 Insert the wiring from the bottom of the backup heater.

2 Inside the backup heater, route the wiring as follows:

Backup heater type	Routing
*3V	 **a** Low voltage wiring **b** High voltage wiring
*9W	 **a** Low voltage wiring **b** High voltage wiring

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

NOTICE

The distance between the high voltage and low voltage cables should be at least 25 mm.

7.8.20 To connect the backup heater power supply

CAUTION

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

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

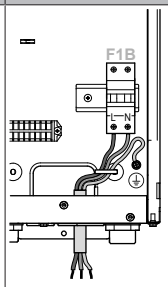
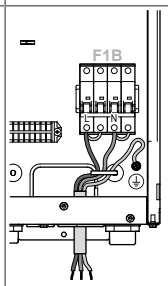
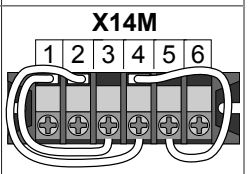
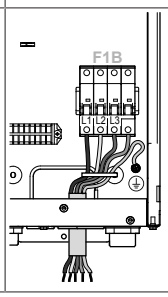
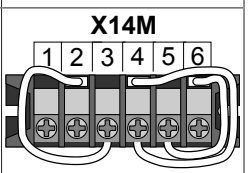
Backup heater type	Backup heater capacity	Power supply	Maximum running current	Z_{max}(Ω)
*3V	3 kW	1~ 230 V	13 A	—
*9W	3 kW	1~ 230 V	13 A	—
	6 kW	1~ 230 V	26 A[(a)(b)]	—
	6 kW	3N~ 400 V	8.6 A	—
	9 kW	3N~ 400 V	13 A	—

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

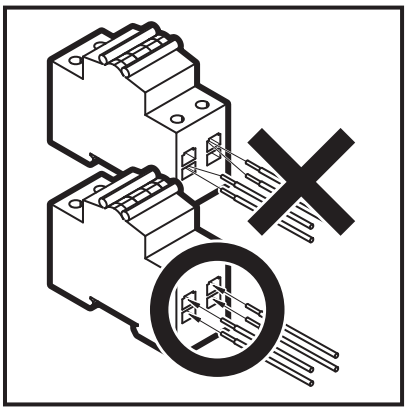
(b) This equipment complies with EN/IEC 61000-3-11 (European/International Technical Standard setting the limits for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤75 A) provided that the system impedance Z_{sys} is less than or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

1 Connect the backup heater power supply. For *3V models, a double-pole fuse is used for F1B. For *9W models, a 4-pole fuse is used for F1B.

2 If required, modify the connection on terminal X14M.

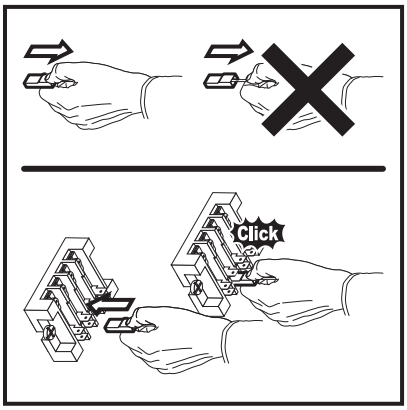
Backup heater type	Connections to backup heater power supply	Connections to terminals
3 kW 1~ 230 V (*3V)		—
3 kW 1~ 230 V (*9W) 6 kW 1~ 230 V (*9W)		
6 kW 3N~ 400 V (*9W) 9 kW 3N~ 400 V (*9W)		

Special remark for fuses:



Special remark for terminals:

As mentioned on the table above, the connections on the terminals X6M and X7M need to be changed to configure a backup heater. Refer to the illustration below as a caution about handling the terminals.



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

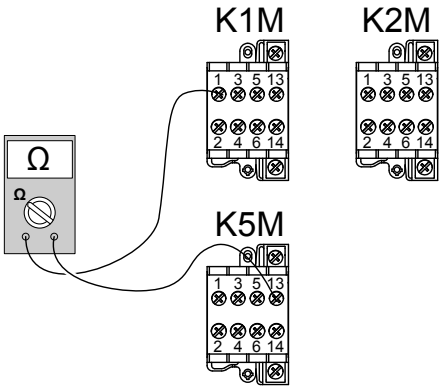
INFORMATION

For more information on the backup heater types, and for how to configure the backup heater, refer to the "Configuration" chapter of the installation manual of the outdoor unit.

During connection of the backup heater, miswiring is possible. To detect possible miswiring on the *9W model, it is highly recommended to measure the resistance value of the heater elements. Depending on the different backup heater types, following resistance values (see table below) should be measured. ALWAYS measure the resistance on the contactor clamps K1M, K2M, and K5M.

		3 kW 1~ 230 V	6 kW 1~ 230 V	6 kW 3N~ 400 V	9 kW 3N~ 400 V
K1M/1	K5M/13	52.9Ω	52.9Ω	∞	∞
	K1M/3	∞	105.8Ω	105.8Ω	105.8Ω
	K1M/5	∞	158.7Ω	105.8Ω	105.8Ω
K1M/3	K1M/5	26.5Ω	52.9Ω	105.8Ω	105.8Ω
K2M/1	K5M/13	∞	26.5Ω	∞	∞
	K2M/3	∞	∞	52.9Ω	52.9Ω
	K2M/5	∞	∞	52.9Ω	52.9Ω
K2M/3	K2M/5	52.9Ω	52.9Ω	52.9Ω	52.9Ω
K1M/5	K2M/1	∞	132.3Ω	∞	∞

Example measure resistance between K1M/1 and K5M/13:



7.8.21 To connect the backup heater kit to the control box

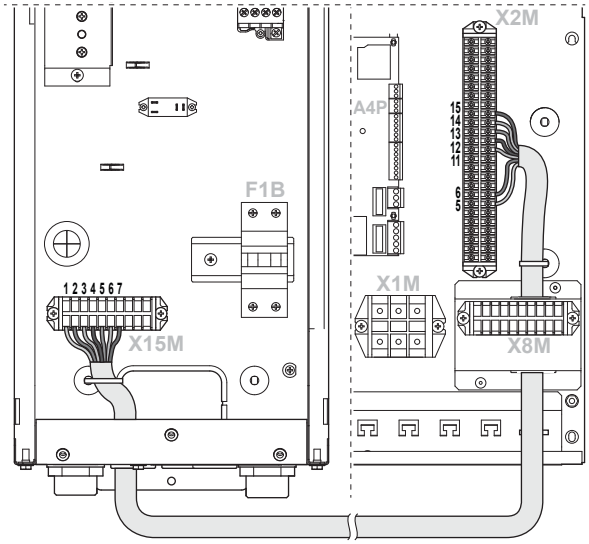
INFORMATION

- Requires to be connected to control box EKCB07CAV3.

1 For the thermistor, connect 2 wires between backup heater terminals X15M/1+2 and control box terminals X2M/5+6.

2 For the thermal protector, connect 2 wires between backup heater terminals X15M/3+4 and control box terminals X2M/11+12.

3 For the connection with the control box, connect 3 wires between backup heater terminals X15M/5+6+7 and control box terminals X2M/13+14+15.



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

INFORMATION

- For details about the connections, refer to the wiring diagram.
- Use a multi-core cable.
- For backup heater kit EKMBUHCA3V3, it is NOT required to make a connection between backup heater terminal X15M/6 and control box terminal X2M/14.

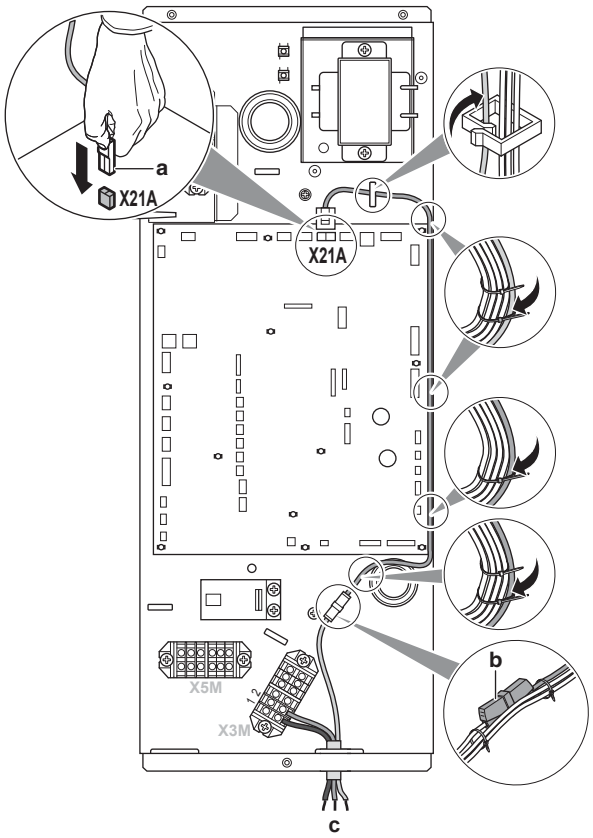
7.8.22 To connect the valve kit

INFORMATION

Only applicable to reversible systems (heating+cooling) in which a backup heater is installed.

1 Connect the connector that makes one end of the connector cable (a) to X21A of outdoor unit PCB A1P and route it according to the illustration below.

2 Using field wiring and the clamp terminal that makes the other end of the connector cable (b), make a connection to control box terminal X8M/10, and connect outdoor unit terminals X3M/1+2 to control box terminals X8M/6+7.



a Connector – one end of connector cable
b Clamp terminal – other end of connector cable
c To control box

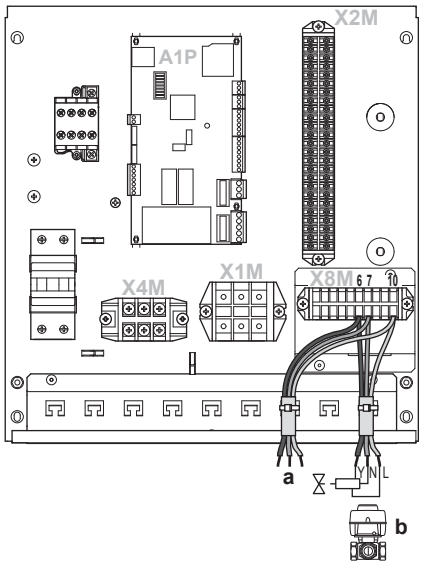
WARNING

Provide stress relief to the valve kit connector cable by attaching it to the cable bundle. Put tie wraps on both sides of the clamp terminal. Failure to follow this warning may lead to short-circuit and fire.

3 Connect the 3-way valve that is part of the valve kit to control box terminals X8M/6+7+10.

NOTICE

When connecting multiple wires to the same terminal, make sure they have the same thickness.



a From outdoor unit
b 3-way valve
Y To X8M/6
N To X8M/7
L To X8M/10

7.9 Finishing the outdoor unit installation

7.9.1 To close the outdoor unit

1 Close the switch box cover.

2 Mount the top plate and the front plate.

NOTICE

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

7.10 Finishing the control box installation

7.10.1 To close the control box

1 Close the front plate.

7.11 Finishing the option box installation

7.11.1 To close the option box

1 Close the front plate.

7.12 Finishing the backup heater installation

7.12.1 To close the backup heater

1 Close the switch box cover.

2 Close the front plate.

8 Configuration

8.1 Overview: Configuration

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

Why

If you do NOT configure the system correctly, it might NOT work as expected. The configuration influences the following:

- The calculations of the software
- What you can see on and do with the user interface

How

You can configure the system via the user interface.

- **First time – Quick wizard.** When you turn ON the user interface for the first time (via the indoor unit), a quick wizard starts to help you configure the system.
- **Afterwards.** If necessary, you can make changes to the configuration afterwards.

INFORMATION

When the installer settings are changed, the user interface will request to confirm. When confirmed, the screen will shortly turn OFF and "busy" will be displayed for several seconds.

Accessing settings – Legend for tables

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

Method	Column in tables
Accessing settings via the breadcrumb in the **menu structure**.	**#**
Accessing settings via the code in the **overview settings**.	**Code**

See also:

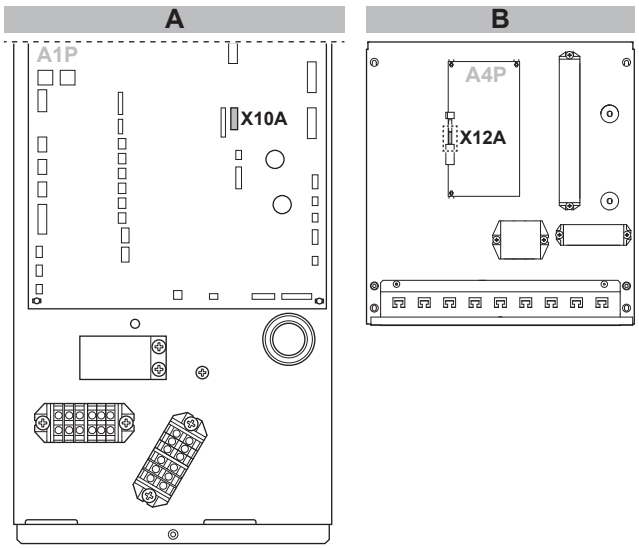
- "To access the installer settings" on page 45
- "8.5 Menu structure: Overview installer settings" on page 62

8.1.1 To connect the PC cable to the switch box

Prerequisite: The EKPCCAB kit is required.

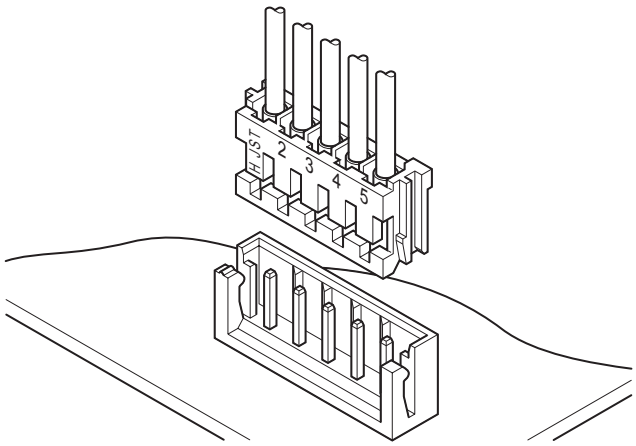
1 Connect the cable with USB connection to your PC.

2 Connect the plug of the cable to X10A on A1P of the switch box of the outdoor unit, or to X12A on A4P of the switch box of control box EKCB07CAV3.



A Outdoor unit switch box
B Control box switch box

3 Pay special attention to the position of the plug!



NOTICE

Another cable is already connected to X10A. To connect the PC cable to X10A, therefore temporarily disconnect this other cable. Do NOT forget to reconnect it afterwards.

8.1.2 To access the most used commands

To access the installer settings

1 Set the user permission level to Installer.

2 Go to [A]: ☰ > Installer settings.

To access the overview settings

1 Set the user permission level to Installer.

2 Go to [A.8]: ☰ > Installer settings > Overview settings.

To set the user permission level to Installer

1 Set the user permission level to Adv. end user.

2 Go to [6.4]: ☰ > Information > User permission level.

3 Press ☰ for more than 4 seconds.

Result: 🔧 is displayed on the home pages.

4 If you do NOT press any button for more than 1 hour or press ⓘ again for more than 4 seconds, the installer permission level switches back to End user.

To set the user permission level to Advanced end user

1 Go to the main menu or any of its submenus: ☰.

2 Press ⓘ for more than 4 seconds.

Result: The user permission level switches to Adv. end user. Additional information is displayed and "+" is added to the menu title. The user permission level will stay in Adv. end user until set otherwise.

To set the user permission level to End user

1 Press for more than 4 seconds.

Result: The user permission level switches to End user. The user interface will return to the default home screen.

To modify an overview setting

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

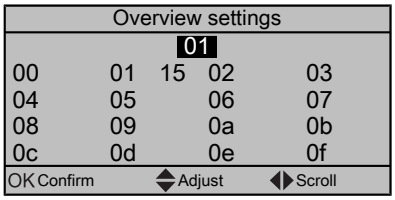
1 Go to [A.8]: > Installer settings > Overview settings.

2 Go to the corresponding screen of the first part of the setting by using the and button.

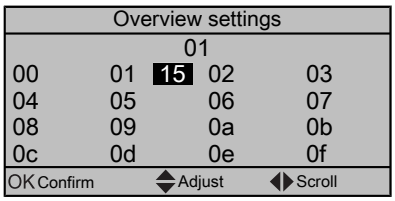
INFORMATION

An additional 0-digit is added to the first part of the setting when you access the codes in the overview settings.

Example: [1-01]: "1" will result in "**0**1".

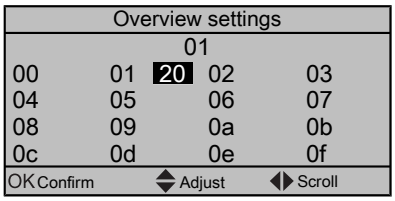


3 Go to the corresponding second part of the setting by using the and button.



Result: The value to be modified is now highlighted.

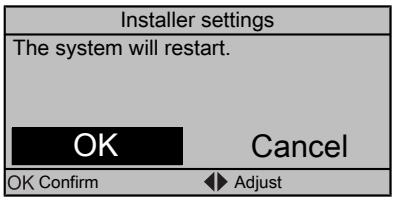
4 Modify the value by using the and button.



5 Repeat previous steps if you have to modify other settings.

6 Push OK to confirm the modification of the parameter.

7 At installer settings menu, press OK to confirm the settings.



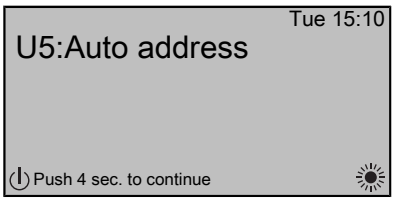
Result: The system will restart.

8.1.3 To copy the system settings from the first to the second user interface

If a second user interface is connected, the installer must first proceed below instructions for the proper configuration of the 2 user interfaces.

This procedure offers you also the possibility to copy the language set from one user interface to the other one: e.g. from EKRUCBL2 to EKRUCBL1.

1 When power is turned on for the first time, both user interfaces display:



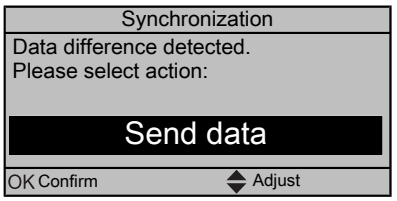
2 Push for 4 seconds on the user interface on which you want to proceed to the quick wizard. This user interface is now the main user interface.

INFORMATION

During the quick wizard, the second user interface displays Busy and will NOT be possible to operate.

3 The quick wizard will guide you.

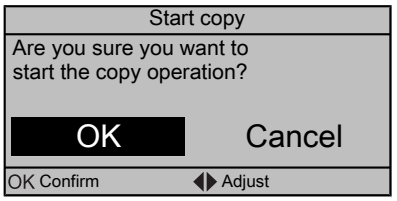
4 For proper operation of the system, the local data on the two user interfaces must be the same. If this is NOT the case, both user interfaces will display:



5 Select the required action:

- Send data: the user interface you are operating contains the correct data and the data on the other user interface will be overwritten.
- Receive data: the user interface you are operating does NOT contain the correct data and the data on the other user interface will be used to overwrite.

6 The user interface requests confirmation if you are sure to proceed.



7 Confirm the selection on the screen by pushing OK and all data (languages, schedules etc.) will be synchronised from the selected source user interface to the other one.

INFORMATION

- During the copying, both controllers will NOT allow operation.
- The copy operation can take up until 90 minutes.
- It is recommended to change installer settings, or the configuration of the unit, on the main user interface. If not, it can take up to 5 minutes before these changes are visible in the menu structure.

8 Your system is now set to be operated by the 2 user interfaces.

8.1.4 To copy the language set from the first to the second user interface

See "8.1.3 To copy the system settings from the first to the second user interface" on page 46.

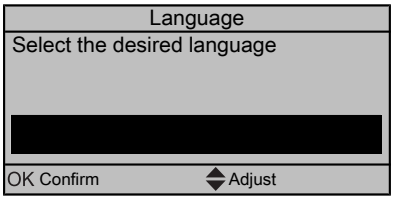
8.1.5 Quick wizard: Set the system layout after first power ON

After first power ON of the system, you are guided on the user interface to do initial settings:

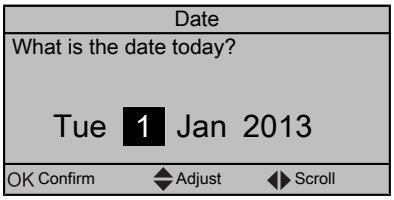
- language,
- date,
- time,
- system layout.

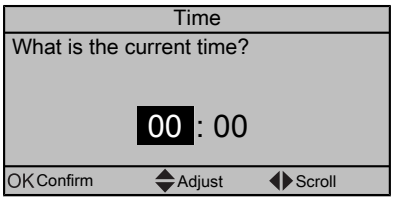
By confirming the system layout, you can proceed with the installation and commissioning of the system.

1 At power ON, the quick wizard starts as long as the system layout was NOT confirmed yet, by setting the language.

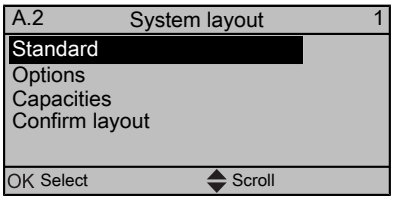


2 Set the current date and time.

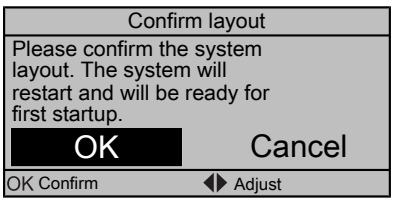




3 Set the system layout settings: Standard, Options, Capacities. For more details, see "8.2 Basic configuration" on page 47.



4 After configuration, select Confirm layout and press OK.



5 The user interface re-initialises and you can proceed the installation by setting the other applicable settings and commissioning of the system.

When the installer settings are changed, the system will request to confirm. When confirmation is complete, the screen will shortly turn OFF and "busy" will be displayed for several seconds.

8.2 Basic configuration

8.2.1 Quick wizard: Language / time and date

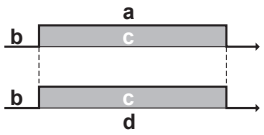
#	Code	Description
[A.1]	N/A	Language
[1]	N/A	Time and date

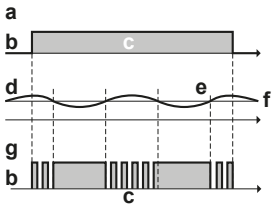
8.2.2 Quick wizard: Standard

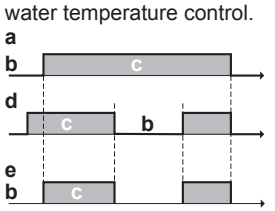
Space heating/cooling settings

The system can heat up or cool down a space. Depending on the type of application, the space heating/cooling settings must be made accordingly.

#	Code	Description
[A.2.1.7]	[C-07]	Unit control method: ▪ 0 (LWT control): Unit operation is decided based on the leaving water temperature regardless the actual room temperature and/or heating or cooling demand of the room. ▪ 1 (Ext RT control): Unit operation is decided by the external thermostat. ▪ 2 (RT control): Unit operation is decided based on the ambient temperature of the user interface.

#	Code	Description
[A.2.1.9]	[F-0D]	When the space heating/cooling control is OFF by the user interface, the pump is always OFF. When the space heating/cooling control is On, you can select the desired pump operation mode (only applicable during space heating/cooling) Pump operation mode: ▪ 0 (Continuous): Continuous pump operation, regardless of thermo ON or OFF condition. **Remark:** continuous pump operation requires more energy than sample or request pump operation.  ▪ a: Space heating/cooling control (user interface) ▪ b: OFF ▪ c: On ▪ d: Pump operation continued >>

#	Code	Description
[A.2.1.9]	[F-0D]	<< continuation ▪ 1 (Sample): The pump is ON when there is heating or cooling demand as the leaving water temperature has not reached the desired temperature yet. When thermo OFF condition occurs, the pump runs every 5 minutes to check the water temperature and demand heating or cooling if necessary. **Remark:** Sample is NOT available in external room thermostat control or room thermostat control.  ▪ a: Space heating/cooling control (user interface) ▪ b: OFF ▪ c: On ▪ d: LWT temperature ▪ e: Actual ▪ f: Desired ▪ g: Pump operation continued >>

#	Code	Description
[A.2.1.9]	[F-0D]	<< continuation ▪ 2 (Request)(default): Pump operation based on request. **Example:** Using a room thermostat creates thermo ON/OFF condition. When there is no such demand, the pump is OFF. **Remark:** Request is NOT available in leaving water temperature control.  ▪ a: Space heating/cooling control (user interface) ▪ b: OFF ▪ c: On ▪ d: Heating demand (by ext RT or RT) ▪ e: Pump operation

#	Code	Description
[A.2.1.B]	N/A	Only if there are 2 user interfaces (1 installed in the room, 1 installed at the indoor unit): ▪ a: At unit ▪ b: In room as room thermostat User interface location: ▪ At unit: the other user interface is automatically set to In room and if RT control is selected act as room thermostat. ▪ In room (default): the other user interface is automatically set to At unit and if RT control is selected to act as room thermostat.
[A.2.1.C]	[E-0D]	Glycol present: ▪ 0 (No) (default): No glycol was added to the water circuit. ▪ 1 (Yes): Glycol was added to the water circuit to protect it against freezing.

8.2.3 Quick wizard: Options

Remote outdoor sensor

See "5 Application guidelines" on page 12.

#	Code	Description
[A.2.2.B]	[C-08]	External sensor (outdoor): When an optional external ambient sensor is connected, the type of the sensor must be set. See "5 Application guidelines" on page 12. ▪ 0 (No)(default): NOT installed. The thermistor in the user interface and in the outdoor unit are used for measurement. ▪ 1 (Outdoor sensor): Remote outdoor sensor, connected to the outdoor unit. The outdoor sensor will be used to measure the outdoor ambient temperature. **Remark:** For some functionality, the temperature sensor in the outdoor unit is still used. ▪ 2 (Room sensor): Remote indoor sensor, connected to option box EK2CB07CAV3. The temperature sensor in the user interface is NOT used anymore. **Remark:** This value has only meaning in room thermostat control.

INFORMATION

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

Control box EKCB07CAV3

Modification of these settings is only required when optional control box EKCB07CAV3 is installed. Control box EKCB07CAV3 has multiple functionalities which need to be configured. See "5 Application guidelines" on page 12.

#	Code	Description
[A.2.2.E.1]	[E-03]	Backup heater steps: ▪ 0 (default) ▪ 1 ▪ 2
[A.2.2.E.2]	[5-0D]	BUH type: ▪ 1 (1P,(1/1+2)): 6 kW 1~ 230 V (default) ▪ 4 (3PN,(1/2)): 6 kW 3N~ 400 V (*9W) ▪ 5 (3PN,(1/1+2)): 9 kW 3N~ 400 V (*9W)

The system allows for the connection of 2 types of backup heater kits:

- EKMBUHCA3V3: 1~ 230 V - 3 kW backup heater
- EKMBUHCA9W1: Unified backup heater

Backup heater EKMBUHCA3V3 can only be configured to be a 3V3 backup heater. Unified backup heater EKMBUHCA9W1 can be configured in 4 ways:

- 3V3: 1~ 230 V, 1 step of 3 kW
- 6V3: 1~ 230 V, 1st step = 3 kW, 2nd step = 3+3 kW
- 6W1: 3N~ 400 V, 1st step = 3 kW, 2nd step = 3+3 kW
- 9W1: 3N~ 400 V, 1st step = 3 kW, 2nd step = 3+6 kW

To configure the backup heater (both EKMBUHCA3V3 and EKMBUHCA9W1), combine settings [E-03] and [5-0D]:

Backup heater configuration	[E-03]	[5-0D]
3V3	1	1 (1P,(1/1+2))
6V3	2	1 (1P,(1/1+2))
6W1	2	4 (3PN,(1/2))
9W1	2	5 (3PN,(1/1+2))

#	Code	Description
[A.2.2.E.5]	[C-05]	Contact type main In external room thermostat control, the contact type of the optional room thermostat for the main leaving water temperature zone must be set. See "5 Application guidelines" on page 12. ▪ 1 (Thermo ON/OFF) (default): The connected external room thermostat or heat pump convector sends the heating or cooling demand by the same signal as it is connected to only 1 digital input (preserved for the main leaving water temperature zone) on the control box (X2M/1). ▪ 2 (H/C request): The connected external room thermostat sends separate heating and cooling demand and is therefore connected to the 2 digital input (preserved for the main leaving water temperature zone) on the control box (X2M/1 and 1a). Select this value in case of connection with the wired (EKRTWA) or wireless (EKRTR1) room thermostat.

Option box EK2CB07CAV3

Modification of these settings is only required when option box EK2CB07CAV3 is installed. Option box EK2CB07CAV3 has multiple functionalities which need to be configured. See "5 Application guidelines" on page 12.

#	Code	Description
[A.2.2.F.1]	[C-02]	Ext. backup heat src Indicates if the space heating is also performed by means of another heat source than the system. ▪ 0 (default – read only)
[A.2.2.F.2]	[C-09]	Alarm output Indicates the logic of the alarm output on option box EK2CB07CAV3 during a malfunction. ▪ 0 (Normally open)(default): The alarm output will be powered when an alarm occurs. By setting this value, a distinction is made between malfunctioning and detection of a power failure of the unit. ▪ 1 (Normally closed): The alarm output will NOT be powered when an alarm occurs. This installer setting allows for a distinction between the detection of an alarm, and the detection of a power failure. Also see the table below (Alarm output logic).
[A.2.2.F.3]	[D-08]	Optional external kWh meter 1: ▪ 0 (No): NOT installed ▪ 1: Installed (0.1 pulse/kWh) ▪ 2: Installed (1 pulse/kWh) ▪ 3: Installed (10 pulse/kWh) ▪ 4: Installed (100 pulse/kWh) ▪ 5: Installed (1000 pulse/kWh)
[A.2.2.F.4]	[D-09]	Optional external kWh meter 2: ▪ 0 (No): NOT installed ▪ 1: Installed (0.1 pulse/kWh) ▪ 2: Installed (1 pulse/kWh) ▪ 3: Installed (10 pulse/kWh) ▪ 4: Installed (100 pulse/kWh) ▪ 5: Installed (1000 pulse/kWh)

#	Code	Description
[A.2.2.F.5]	[C-08]	External sensor (indoor): When an optional external ambient sensor is connected, the type of the sensor must be set. See "5 Application guidelines" on page 12. ▪ 0 (No): (default) NOT installed. The thermistor in the user interface and in the outdoor unit are used for measurement. ▪ 1 (Outdoor sensor): Remote outdoor sensor, connected to the outdoor unit. The outdoor sensor will be used to measure the outdoor ambient temperature. **Remark:** For some functionality, the temperature sensor in the outdoor unit is still used. ▪ 2 (Room sensor): Remote indoor sensor, connected to option box EK2CB07CAV3. The temperature sensor in the user interface is NOT used anymore. **Remark:** This value has only meaning in room thermostat control.

INFORMATION

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

#	Code	Description
[A.2.2.F.6]	[D-04]	PCC by digital inputs: ▪ 0 (No) ▪ 1 (Yes)

8.2.4 Quick wizard: Capacities (energy metering)

The capacities of all electrical heaters must be set for the energy metering and/or power consumption control feature to work properly. When measuring the resistance value of each heater, you can set the exact heater capacity and this will lead to more accurate energy data.

#	Code	Description
[A.2.3.2]	[6-03]	BUH: step 1: The capacity of the first step of the backup heater at nominal voltage. Nominal value 3 kW. Default: 3 kW. Range: 0~10 kW (in steps of 0.2 kW)
[A.2.3.3]	[6-04]	BUH: step 2: Only applies to a two-step backup heater (*9W). The capacity difference between the second and first step of the backup heater at nominal voltage. Nominal value depends on the backup heater configuration. Default: 0 kW. ▪ 3 kW, 1N~ 230 V: 0 kW ▪ 6 kW, 1N~ 230 V: 3 kW (6 kW-3 kW) ▪ 6 kW, 3N~ 400 V: 3 kW (6 kW-3 kW) ▪ 9 kW, 3N~ 400 V: 6 kW (9 kW-3 kW) Range: 0~10 kW (in steps of 0.2 kW)

8.2.5 Space heating/cooling control

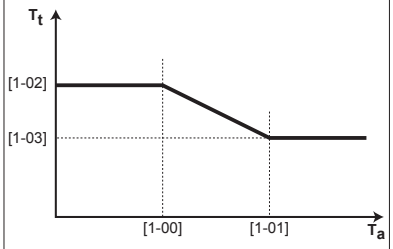
The basic required settings in order to configure the space heating/cooling of your system are described in this chapter. The weather-dependent installer settings define the parameters for the weather-dependent operation of the unit. When weather-dependent operation is active, the water temperature is determined automatically depending on the outdoor temperature. Low outdoor temperatures will result in warmer water and vice versa. During weather-dependent operation, the user has the possibility to shift up or down the target water temperature by a maximum of 5°C.

See the user reference guide and/or operation manual for more details about this function.

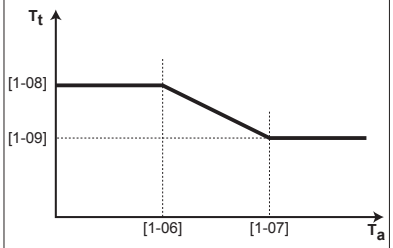
Leaving water temperature: Main zone

#	Code	Description
[A.3.1.1.1]	N/A	LWT setpoint mode: ▪ 0 (Fixed) The desired leaving water temperature is: ▪ NOT weather-dependent (i.e. does NOT depend on the outdoor ambient temperature) ▪ fixed in time (i.e., NOT scheduled) ▪ 1 (Weather dep.) (default): The desired leaving water temperature is: ▪ weather-dependent (i.e. depends on the outdoor ambient temperature) ▪ fixed in time (i.e., NOT scheduled) continued >>

#	Code	Description
[A.3.1.1.1]	N/A	<< continuation ▪ 2 (Fixed/scheduled): The desired leaving water temperature is: ▪ NOT weather-dependent (i.e., does NOT depend on the outdoor ambient temperature) ▪ according a schedule. The scheduled actions consists of desired shift actions, either preset or custom. **Remark:** This value can only be set in leaving water temperature control. ▪ 3 (WD/scheduled): The desired leaving water temperature is: ▪ weather-dependent (i.e., does depend on the outdoor ambient temperature) ▪ according a schedule. The scheduled actions consists of desired leaving water temperatures either preset or custom. **Remark:** This value can only be set in leaving water temperature control.

#	Code	Description
[7.7.1.1]	[1-00] [1-01] [1-02] [1-03]	Set weather-dependent heating:  ▪ T_t: Target leaving water temperature (main) ▪ T_a: Outdoor temperature continued >>

#	Code	Description
[7.7.1.1]	[1-00] [1-01] [1-02] [1-03]	<< continuation ▪ [1-00]: Low outdoor ambient temperature. –40°C~+5°C (default: –10°C) ▪ [1-01]: High outdoor ambient temperature. 10°C~25°C (default: 15°C) ▪ [1-02]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. [9-01]°C~[9-00]°C (default: 45°C) **Note:** This value should be higher than [1-03] as for low outdoor temperatures warmer water is required. ▪ [1-03]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. [9-01]°C~min(45, [9-00])°C (default: 35°C) **Note:** This value should be lower than [1-02] as for high outdoor temperatures less warm water is required.

#	Code	Description
[7.7.1.2]	[1-06] [1-07] [1-08] [1-09]	Set weather-dependent cooling:  ▪ T_t: Target leaving water temperature (main) ▪ T_a: Outdoor temperature continued >>

#	Code	Description
[7.7.1.2]	[1-06] [1-07] [1-08] [1-09]	<< continuation ▪ [1-06]: Low outdoor ambient temperature. 10°C~25°C (default: 20°C) ▪ [1-07]: High outdoor ambient temperature. 25°C~43°C (default: 35°C) ▪ [1-08]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. Between minimum and maximum leaving water temperature [9-03]°C~[9-02]°C (default: 22°C). **Note:** This value should be higher than [1-09] as for low outdoor temperatures less cold water suffices. ▪ [1-09]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. Between minimum and maximum leaving water temperature [9-03]°C~[9-02]°C (default: 18°C). **Note:** This value should be lower than [1-08] as for high outdoor temperatures colder water is required.

Leaving water temperature: Delta T source

Temperature difference for entering and leaving water. The unit is designed to support under floor loops operation. The recommended leaving water temperature (set by the user interface) for under floor loops is 35°C. In such case, the unit will be controlled to realize a temperature difference of 5°C which means that the entering water to the unit is around 30°C. Depending on the installed application (radiators, under floor loops) or situation, it can be possible to change the difference between entering and leaving water temperature. Note that the pump will regulate its flow to keep the Δt.

#	Code	Description
[A.3.1.3.1]	[9-09]	Heating: required temperature difference between entering and leaving water. In case a minimum temperature difference is required for the good operation of the heat emitters in heating mode. Range: 3°C~10°C (in steps of: 1°C; default value: 5°C)
[A.3.1.3.2]	[9-0A]	Cooling: required temperature difference between entering and leaving water. In case a minimum temperature difference is required for the good operation of the heat emitters in cooling mode. Range: 3°C~10°C (in steps of: 1°C; default value: 5°C)

Leaving water temperature: Modulation

Only applicable in case of room thermostat control. When using the room thermostat functionality, the customer needs to set the desired room temperature. The unit will supply hot water to the heat emitters and the room will be heated. Additionally, also the desired leaving water temperature must be configured: when turning on the

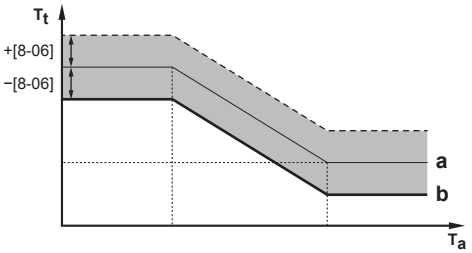
modulation, the desired leaving water temperature will be calculated automatically by the unit (based on the preset temperatures, if weather-dependent is selected, modulation will be done based on the desired weather-dependent temperatures); when turning off the modulation, you can set the desired leaving water temperature on the user interface. Moreover, with the modulation turned on, the desired leaving water temperature is lowered or raised in function of the desired room temperature and the difference between the actual and the desired room temperature. This results in:

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

#	Code	Description
[A.3.1.1.5]	[8-05]	Modulated LWT: ▪ 0 (No): disabled. **Note:** The desired leaving water temperature needs to be set on the user interface. ▪ 1 (Yes)(default): enabled. The leaving water temperature is calculated according to the difference between the desired and the actual room temperature. This creates a better match between the capacity of the heat pump and the actual required capacity, and results in less start/stop cycles and a more economic operation. **Note:** The desired leaving water temperature can only be read out on the user interface
N/A	[8-06]	Leaving water temperature maximum modulation: 0°C~10°C (default: 3°C) Requires modulation to be enabled. This is the value by which the desired leaving water temperature is increased or lowered.

INFORMATION

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



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

Leaving water temperature: Emitter type

Only applicable in case of room thermostat control. Depending on the system water volume and the heat emitters type, the heat up or cool down of a space can take longer. This setting can compensate for a slow or a quick heating/cooling system during the heat up/cool down cycle.

Note: The setting of the emitter type will influence 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.

Therefore it is important to set this correctly.

#	Code	Description
[A.3.1.1.7]	[9-0B]	Emitter type: Reaction time of the system: ▪ Quick **Example:** Small water volume and fan coils. ▪ Slow **Example:** Large water volume, floor heating loops.

8.2.6 Contact/helpdesk number

#	Code	Description
[6.3.2]	N/A	Number that users can call in case of problems.

8.3 Advanced configuration/ optimization

8.3.1 Space heating/cooling operation: advanced

Preset leaving water temperature

You can define preset leaving water temperatures:

- economic (denotes the desired leaving water temperature which results in the lowest energy consumption)
- comfort (denotes the desired leaving water temperature which results in the highest energy consumption).

Preset values make it easy to use the same value in the schedule or to adjust the desired leaving water temperature according to the room temperature (see modulation). If you later want to change the value, you ONLY have to do it in one place. Depending on whether the desired leaving water temperature is weather dependent or NOT, the desired shift values or the absolute desired leaving water temperature should be specified.

NOTICE

Select preset leaving water temperatures in accordance with the design and selected heat emitters to ensure the balance between desired room and leaving water temperatures.

#	Code	Description
Preset leaving water temperature for the main leaving water temperature zone in case of NOT weather dependent		
[7.4.2.1]	[8-09]	Comfort (heating) [9-01]°C~[9-00]°C (default: 45°C)
[7.4.2.2]	[8-0A]	Eco (heating) [9-01]°C~[9-00]°C (default: 40°C)
[7.4.2.3]	[8-07]	Comfort (cooling) [9-03]°C~[9-02]°C (default: 18°C)

#	Code	Description
[7.4.2.4]	[8-08]	Eco (cooling) [9-03]°C~[9-02]°C (default: 20°C)
Preset leaving water temperature (shift value) for the main leaving water temperature zone in case of weather dependent		
[7.4.2.5]	N/A	Comfort (heating) –10°C~+10°C (default: 0°C)
[7.4.2.6]	N/A	Eco (heating) –10°C~+10°C (default: –2°C)
[7.4.2.7]	N/A	Comfort (cooling) –10°C~+10°C (default: 0°C)
[7.4.2.8]	N/A	Eco (cooling) –10°C~+10°C (default: 2°C)

Temperature ranges (leaving water temperatures)

The purpose of this setting is to prevent selecting a wrong (i.e. too hot or too cold) leaving water temperature. Therefore the available desired heating temperature range and desired cooling temperature range can be configured.

NOTICE

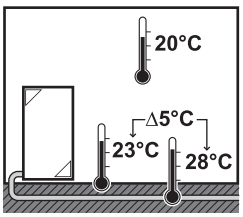
In case of a floor heating application it is important to limit the:

- maximum leaving water temperature at heating operation according to the specifications of the floor heating installation.
- 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: Set the minimum leaving water temperature to 28°C to avoid NOT to be able to heat up the room: leaving water temperatures MUST be sufficiently higher than the room temperatures (in heating).



#	Code	Description
Leaving water temperature range for the main leaving water temperature zone		
[A.3.1.1.2.2]	[9-00]	Maximum temp (heating) 37°C~55°C (default: 55°C)
[A.3.1.1.2.1]	[9-01]	Minimum temp (heating) 15°C~37°C (default: 25°C)
[A.3.1.1.2.4]	[9-02]	Maximum temp (cooling) 18°C~22°C (default: 22°C)
[A.3.1.1.2.3]	[9-03]	Minimum temp (cooling) 5°C~18°C (default: 5°C)

NOTICE

If the system does NOT contain a backup heater, then do NOT set [9-01] (Minimum temp (heating)) lower than 25°C.

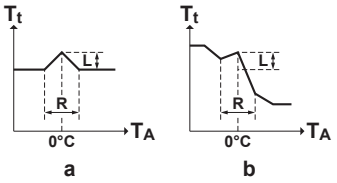
Leaving water temperature overshoot temperature

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

#	Code	Description
N/A	[9-04]	1°C~4°C (default: 1°C)

Leaving water temperature compensation around 0°C

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). 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).



a Absolute desired LWT
b Weather dependent desired LWT

#	Code	Description
N/A	[D-03]	▪ 0 (disabled) ▪ 1 (enabled) L=2°C, R=4°C (−2°C<T_A<2°C) ▪ 2 (enabled) L=4°C, R=4°C (−2°C<T_A<2°C) (default) ▪ 3 (enabled) L=2°C, R=8°C (−4°C<T_A<4°C) ▪ 4 (enabled) L=4°C, R=8°C (−4°C<T_A<4°C)

Leaving water temperature maximum modulation

ONLY applicable in room thermostat control and when modulation is enabled. The maximum modulation (=variance) on the desired leaving water temperature decided on the difference between the actual and desired room temperature, e.g. 3°C modulation means the desired leaving water temperature can be increased or lowered by 3°C. Increasing the modulation results in better performance (less On/OFF, faster heat up), but note that depending on the heat emitter, there MUST ALWAYS be a balance (refer to the design and selection of the heat emitters) between the desired leaving water temperature and the desired room temperature.

#	Code	Description
N/A	[8-06]	0°C~10°C (default: 3°C)

Weather dependent cooling allowance

ONLY applicable for EWYQ006+008BAVP. It is possible to disable weather dependent cooling, meaning the desired leaving water temperature in cooling operation does NOT depend on the outdoor ambient temperature and this regardless whether weather dependent is selected or NOT.

#	Code	Description
N/A	[1-04]	Weather dependent cooling of the main leaving water temperature zone is… ▪ 0 (disabled) ▪ 1 (enabled) (default)

Temperature ranges (room temperature)

ONLY applicable in room thermostat control. In order to save energy by preventing overheating or undercooling the room, you can limit the range of the room temperature, both for heating and/or cooling.

NOTICE

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

#	Code	Description
Room temp. range		
[A.3.2.1.2]	[3-06]	Maximum temp (heating) 18°C~30°C (default: 30°C)
[A.3.2.1.1]	[3-07]	Minimum temp (heating) 12°C~18°C (default: 16°C)
[A.3.2.1.4]	[3-08]	Maximum temp (cooling) 25°C~35°C (default: 35°C)
[A.3.2.1.3]	[3-09]	Minimum temp (cooling) 15°C~25°C (default: 15°C)

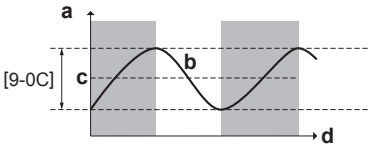
Room temperature step

ONLY applicable in room thermostat control and when the temperature is displayed in °C.

#	Code	Description
[A.3.2.4]	N/A	Room temp. step ▪ 1°C (default). The desired room temperature on the user interface is settable per 1°C. ▪ 0.5°C. The desired room temperature on the user interface is settable per 0.5°C. The actual room temperature is displayed with an accuracy of 0.1°C.

Room temperature hysteresis

ONLY applicable in case of room thermostat control. The hysteresis band around the desired room temperature is settable. It is recommended NOT to change the room temperature hysteresis as it is set for an optimal use of the system.



a Room temperature
b Actual room temperature
c Desired room temperature
d Time

#	Code	Description
N/A	[9-0C]	1°C~6°C (default: 1°C)

Room temperature offset

ONLY applicable in case of room thermostat control. You can calibrate the (external) room temperature sensor. It is possible to give an offset to the room thermistor value measured by the user interface or by the external room sensor. The settings can be used to compensate for situations where the user interface or external room sensor CANNOT be installed on the ideal installation location (see installation manual and/or installer reference guide).

#	Code	Description
Room temp. offset: Offset on the actual room temperature measured on the user interface sensor.		
[A.3.2.2]	[2-0A]	–5°C~5°C, step: 0.5°C (default: 0°C)
Ext. room sensor offset: ONLY applicable if the external room sensor option is installed and configured (see [C-08])		
[A.3.2.3]	[2-09]	–5°C~5°C, step: 0.5°C (default: 0°C)

Room frost protection

Room frost protection prevents the room from getting too cold. This setting behaves differently depending on the set unit control method ([C-07]). Perform actions according to the table below:

Unit control method ([C-07])	Room frost protection
Room thermostat control ([C-07]=2)	Allow for the room thermostat to take care of room frost protection: ▪ Set [2-06] to "1" ▪ Set the room antifrost temperature ([2-05]).
External room thermostat control ([C-07]=1)	Allow for the external room thermostat to take care of room frost protection: ▪ Turn ON the leaving water temperature home page.
Leaving water temperature control ([C-07]=0)	Room frost protection is NOT guaranteed.

NOTICE

If the system does NOT contain a backup heater, do NOT change the default room antifrost temperature.

INFORMATION

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

Refer to the sections below for detailed information on room frost protection in relation to the applicable unit control method.

[C-07]=2: room thermostat control

Under room thermostat control, room frost protection is guaranteed, even if the room temperature home page is OFF on the user interface. When room frost protection ([2-06]) is enabled 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
N/A	[2-06]	Room frost protection ▪ 0: disabled ▪ 1: enabled (default)
N/A	[2-05]	Room antifrost temperature 4°C~16°C (default: 16°C)

INFORMATION

If a U5 error occurs:

- when 1 user interface is connected, room frost protection is NOT guaranteed,
- when 2 user interfaces are connected and the second user interface used for room temperature control is disconnected (due to miswiring, damage of the cable), then room frost protection is NOT guaranteed.

NOTICE

If Emergency is set to Manual ([A.6.C]=0), and the unit is triggered to start emergency operation, the user interface will ask confirmation before starting. Room frost protection is active even if the user does NOT confirm emergency operation.

[C-07]=1: external room thermostat control

Under external room thermostat control, room frost protection is guaranteed by the external room thermostat, provided that the leaving water temperature home page is ON on the user interface, and the auto emergency setting ([A.6.C]) is set to "1".

Additionally, limited frost protection by the unit is possible:

- When the leaving water temperature home page is OFF and the outdoor ambient temperature drops below 4°C, then 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.
- When the leaving water temperature home page is ON, the external room thermostat is "Thermo OFF" and the outdoor ambient temperature drops below 4°C, then 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.
- When the leaving water temperature home page is ON and the external room thermostat is "Thermo ON", then room frost protection is guaranteed by the normal logic.

[C-07]=0: leaving water temperature control

Under leaving water temperature control, room frost protection is NOT guaranteed. However, if [2-06] is set to "1", limited frost protection by the unit is possible:

- When the leaving water temperature home page is OFF and the outdoor ambient temperature drops below 9°C, then 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.
- When the leaving water temperature home page is ON and the operation mode is "heating", then the unit will supply leaving water to the heat emitters to heat up the room according to normal logic.
- When the leaving water temperature home page is ON and the operation mode is "cooling", then there is no protection.

Water pipe freeze prevention

Water pipe freeze prevention is a protective function that tries to keep the water temperature of the system within the operation range of the heat pump.

#	Code	Description
N/A	[4-04]	▪ 0 (Intermittent pump operation): Protection enabled. ▪ 1 (Continuous pump operation): Protection enabled. ▪ 2 (No protection): Protection disabled.

NOTICE

If negative ambient temperatures are expected, do NOT disable this function.

Shut-off valve

The shut-off valve is in the main leaving water temperature zone, and is connected to the heating/cooling output.

NOTICE

The output of the shut-off valve is NOT configurable. Do NOT change the value of setting [F-0B]. Only connect NO (normal open) shut-off valves.

Operation range

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

Space heating OFF temp: When the averaged outdoor temperature rises above this value, space heating is turned OFF to avoid overheating.

#	Code	Description
[A.3.3.1]	[4-02]	14°C~35°C (default: 19°C) The same setting is also used in automatic heating/cooling changeover.

Space cooling On temp: ONLY applicable for EWYQ006+008BAVP. When the averaged outdoor temperature drops below this value, space cooling is turned OFF.

#	Code	Description
[A.3.3.2]	[F-01]	10°C~35°C (default: 20°C) The same setting is also used in automatic heating/cooling changeover.

Automatic heating/cooling changeover

ONLY applicable for EWYQ006+008BAVP. The end-user sets the desired operation mode on the user interface: Heating, Cooling or Automatic (see also operation manual/user reference guide). When Automatic is selected, the changing of the operation mode is based on:

- Monthly allowance for heating and/or cooling: the end-user indicates on a monthly base which operation is allowed ([7.5]: both heating/cooling or heating ONLY or cooling ONLY). If the allowed operation mode changes to cooling ONLY, the operation mode changes to cooling. If the allowed operation mode changes to heating ONLY, the operation mode changes to heating.
- Averaged outdoor temperature: the operation mode will be changed in order to ALWAYS be within range determined by the space heating OFF temperature for heating and the space cooling On temperature for cooling. If the outdoor temperature drops, the operation mode switches to heating and vice versa. Note that the outdoor temperature will be time-averaged (see "8 Configuration" on page 45).

When the outdoor temperature is between the space cooling On and the space heating OFF temperature, the operation mode remains unchanged unless the system is configured in room thermostat control with one leaving water temperature zone and quick heat emitters. In that case, the operation mode will change based on:

- Measured indoor temperature: besides the heating and the cooling desired room temperature, the installer sets a hysteresis value (e.g. when in heating, this value is related to the desired cooling temperature) and an offset value (e.g. when in heating, this value is related to the desired heating temperature). Example: the desired room temperature in heating is 22°C and in cooling 24°C, with a hysteresis value of 1°C and an offset of 4°C. Changeover from heating to cooling will occur when the room temperature rises above the maximum of the desired cooling temperature added by the hysteresis value (thus 25°C) and the desired heating temperature added by the offset value (thus 26°C). Oppositely, changeover from cooling to heating will occur when the room temperature drops below the minimum of the

desired heating temperature subtracted by the hysteresis value (thus 21°C) and the desired cooling temperature subtracted by the offset value (thus 20°C).

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

Changeover settings related to the outdoor temperature (ONLY when automatic is selected):

#	Code	Description
[A.3.3.1]	[4-02]	Space heating OFF temp. If the outdoor temperature rises above this value, the operation mode will change to cooling: 14°C~35°C (default: 19°C)
[A.3.3.2]	[F-01]	Space cooling On temp. If the outdoor temperature drops below this value, the operation mode will change to heating: 10°C~35°C (default: 20°C)
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]	Hysteresis: Ensures that changeover is ONLY done when necessary. **Example:** The space operation mode ONLY changes from cooling to heating when the room temperature drops below the desired heating temperature subtracted by the hysteresis. 1°C~10°C, step: 0.5°C (default: 1°C)
N/A	[4-0D]	Offset: Ensures that the active desired room temperature can be reached. Example: if heating to cooling changeover would occur below the desired room temperature in heating, this desired room temperature could never be reached. 1°C~10°C, step: 0.5°C (default: 3°C)

8.3.2 Heat source settings

Backup heater

Backup heater operation mode: defines when backup heater operation is enabled or disabled. This setting is only overruled when backup heating is required during defrost operation or malfunctioning of the outdoor unit (when [A.6.C] is enabled).

#	Code	Description
[A.5.1.1]	[4-00]	Backup heater operation: ▪ 0: Disabled ▪ 1 (default): Enabled
[A.5.1.3]	[4-07]	Defines whether backup heater second step is: ▪ 1: Allowed ▪ 0: NOT allowed In this way it is possible to limit the backup heater capacity.
N/A	[5-00]	Is backup heater operation allowed above equilibrium temperature during space heating operation? ▪ 1: NOT allowed ▪ 0: Allowed
[A.5.1.4]	[5-01]	Equilibrium temperature. Outdoor temperature below which operation of the backup heater is allowed. Range: –15°C~35°C (default: –4°C) (step: 1°C)

Auto emergency

When the heat pump fails to operate, the backup heater can serve as an emergency heater and either automatically or non-automatically take over the heat load.

- When auto emergency is set to Automatic and a heat pump failure occurs, the backup heater will automatically take over the heat load.
- When auto emergency is set to Manual and a heat pump failure occurs, space heating operation will stop and needs to be recovered manually. The user interface will then ask you to confirm whether the backup heater can take over the heat load or not.

When the heat pump fails, ⓘ will appear on the user interface. If the house is unattended for longer periods, we recommend to set [A.6.C] Emergency to Automatic.

#	Code	Description
[A.6.C]	N/A	Emergency: ▪ 0: Manual (default) ▪ 1: Automatic

INFORMATION

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

INFORMATION

If a heat pump failure occurs and [A.6.C] is set to Manual, the room frost protection function, the underfloor heating screed dryout function, and the water pipe antifreeze function will remain active even if the user does NOT confirm emergency operation.

8.3.3 System settings

Auto-restart

When power returns after a power supply failure, the auto restart function reapplies the user interface settings at the time of the power failure. Therefore, it is recommended to always enable this function.

If the power supply might get interrupted (e.g. preferential kWh rate power supply), always enable the auto restart function. Continuous control of the hydro part of the outdoor unit can be guaranteed independent of the preferential kWh rate power supply status, by connecting the hydro part of the outdoor unit to a normal kWh rate power supply.

#	Code	Description
[A.6.1]	[3-00]	Is the auto restart function of the unit allowed? ▪ 0: No ▪ 1 (default): Yes

Preferential kWh rate power supply

#	Code	Description
[A.2.1.6]	[D-01]	Connection to a preferential kWh rate power supply: ▪ 0 (default): The refrigerant part of the outdoor unit is connected to a normal power supply. ▪ 1: The refrigerant part of 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: The refrigerant part of 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.
[A.6.2.1]	[D-00]	Which heaters are allowed to operate during preferential kWh rate power supply? ▪ 0 (default): None ▪ 2: Backup heater only See table below. Setting 2 is only meaningful if the preferential kWh rate power supply is of type 1 or the hydro part of the outdoor unit is connected to a normal kWh rate power supply (via X3M/5+6) and the backup heater is NOT connected to the preferential kWh rate power supply.

[D-00]	Backup heater	Compressor
0 (default)	Forced OFF	Forced OFF
2	Permitted	

Power consumption control

See "5 Application guidelines" on page 12 for detailed information about this functionality.

Pwr consumpt. control

#	Code	Description
[A.6.3.1]	[4-08]	Mode: ▪ 0 (No limitation)(default): 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 (Digital 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.
[A.6.3.2]	[4-09]	Type: ▪ 0 (Current): The limitation values are set in A. ▪ 1 (Power)(default): The limitation values are set in kW.
[A.6.3.3]	[5-05]	Value: Only applicable in case of full time power limitation mode. 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.4]	[5-09]	Value: Only applicable in case of full time power limitation mode. 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
Amp. limits for DI: Only applicable in case of power limitation mode based on digital inputs and based on current values.		
[A.6.3.5.1]	[5-05]	Limit DI1 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.5.2]	[5-06]	Limit DI2 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.5.3]	[5-07]	Limit DI3 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.5.4]	[5-08]	Limit DI4 0 A~50 A, step: 1 A (default: 50 A)
kW limits for DI: Only applicable in case of power limitation mode based on digital inputs and based on power values.		
[A.6.3.6.1]	[5-09]	Limit DI1 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
[A.6.3.6.2]	[5-0A]	Limit DI2 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
[A.6.3.6.3]	[5-0B]	Limit DI3 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
[A.6.3.6.4]	[5-0C]	Limit DI4 0 kW~20 kW, step: 0.5 kW (default: 20 kW)

Average timer

The average timer corrects the influence of ambient temperature variations. The weather-dependent set point calculation is done on the average outdoor temperature.

The outdoor temperature is averaged over the selected time period.

#	Code	Description
[A.6.4]	[1-0A]	Outdoor average timer: ▪ 0: No averaging (default) ▪ 1: 12 hours ▪ 2: 24 hours ▪ 3: 48 hours ▪ 4: 72 hours

Offset temperature external outdoor ambient sensor

Only applicable in case of an external outdoor ambient sensor is installed and configured.

You can calibrate the external outdoor ambient temperature sensor. It is possible to give an offset to the thermistor value. The setting can be used to compensate for situations where the external outdoor ambient sensor cannot be installed on the ideal installation location (see installation).

#	Code	Description
[A.6.5]	[2-0B]	–5°C~5°C, step: 0.5°C (default: 0°C)

Forced defrost

You can manually start a defrost operation.

The decision to execute the manual defrost operation is made by the outdoor unit and depends on ambient and heat exchanger conditions. When the outdoor unit accepted the forced defrost operation, ♨ will be displayed on the user interface. If ♨ is NOT displayed within 6 minutes after forced defrost operation was enabled, the outdoor unit ignored the forced defrost request.

#	Code	Description
[A.6.6]	N/A	Do you want to start a defrost operation?

Pump operation

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

#	Code	Description
N/A	[F-00]	Pump operation: ▪ 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.

Pump operation during flow abnormality [F-09] defines whether the pump stops at flow abnormality or allow to continue operation when flow abnormality occurs. This functionality is only valid in specific conditions where it is preferable to keep the pump active when T_a<4°C (pump will be activated for 10 minutes and deactivated after 10 minutes). Daikin shall NOT be held liable for any damage resulting this functionality.

#	Code	Description
N/A	[F-09]	Pump continue operation when flow abnormality: ▪ 0: Pump will be deactivated. ▪ 1: Pump will be activated when T_a<4°C (10 minutes ON – 10 minutes OFF)

INFORMATION

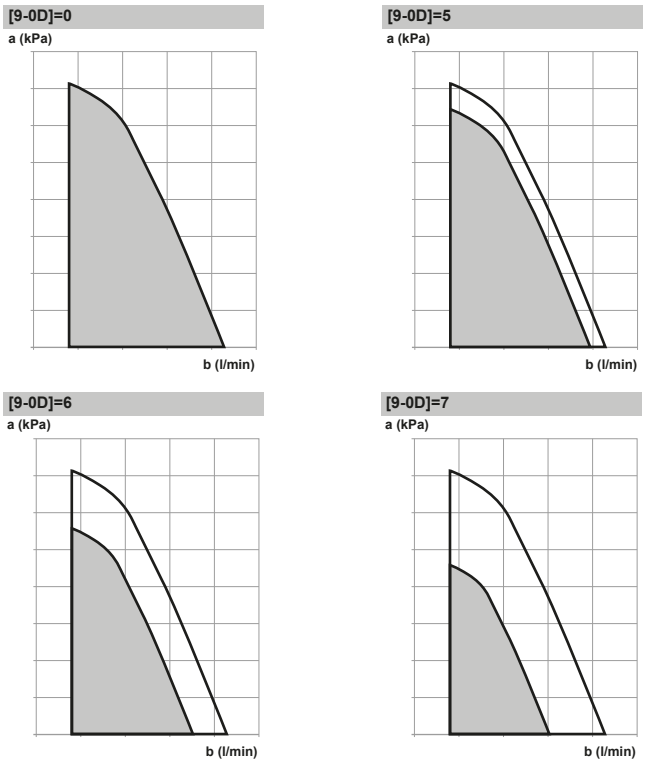
If glycol is present in the system ([E-0D] set to "1") and a flow abnormality occurs, then [F-09] will have NO effect, and the pump will continue operation (intervals of 20 minutes ON – 4 minutes OFF).

Pump speed limitation

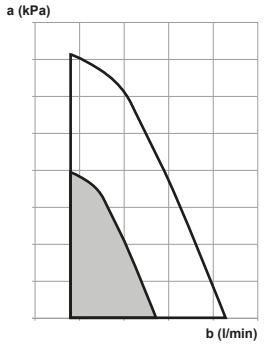
Pump speed limitation [9-0D] defines the maximum pump speed. In normal conditions, the default setting should NOT be modified. The pump speed limitation will be overruled when the flow rate is in the range of the minimum flow (error 7H).

#	Code	Description
N/A	[9-0D]	Pump speed limitation ▪ 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 (default: 6): Limitation when no actuators. When there is no heating/cooling output, the pump speed limitation is applicable. When there is heating/cooling output, the pump speed is only determined by delta T in relation to the required capacity. With this limitation range, delta T is possible and the comfort is guaranteed.

The maximum values depend on the unit type:

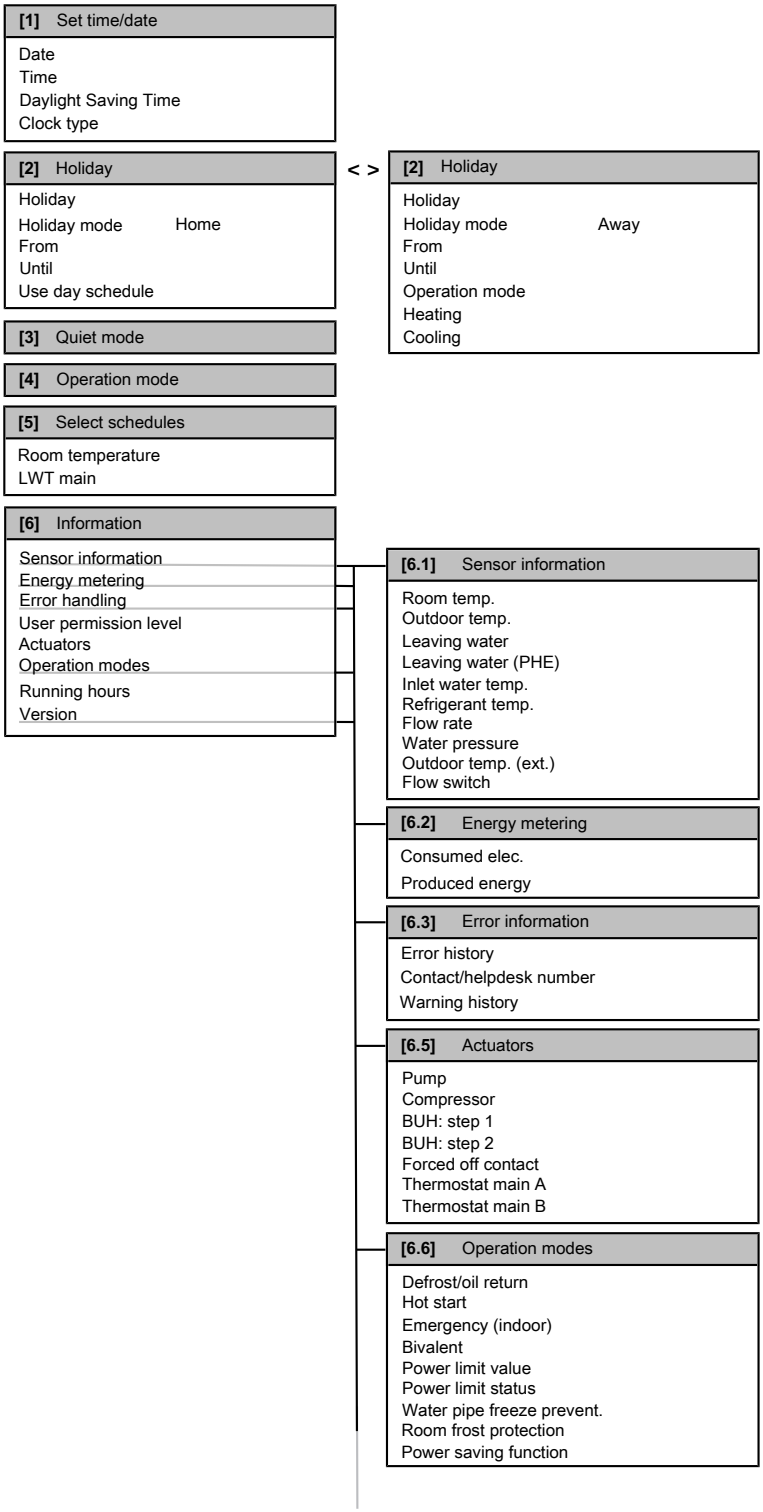


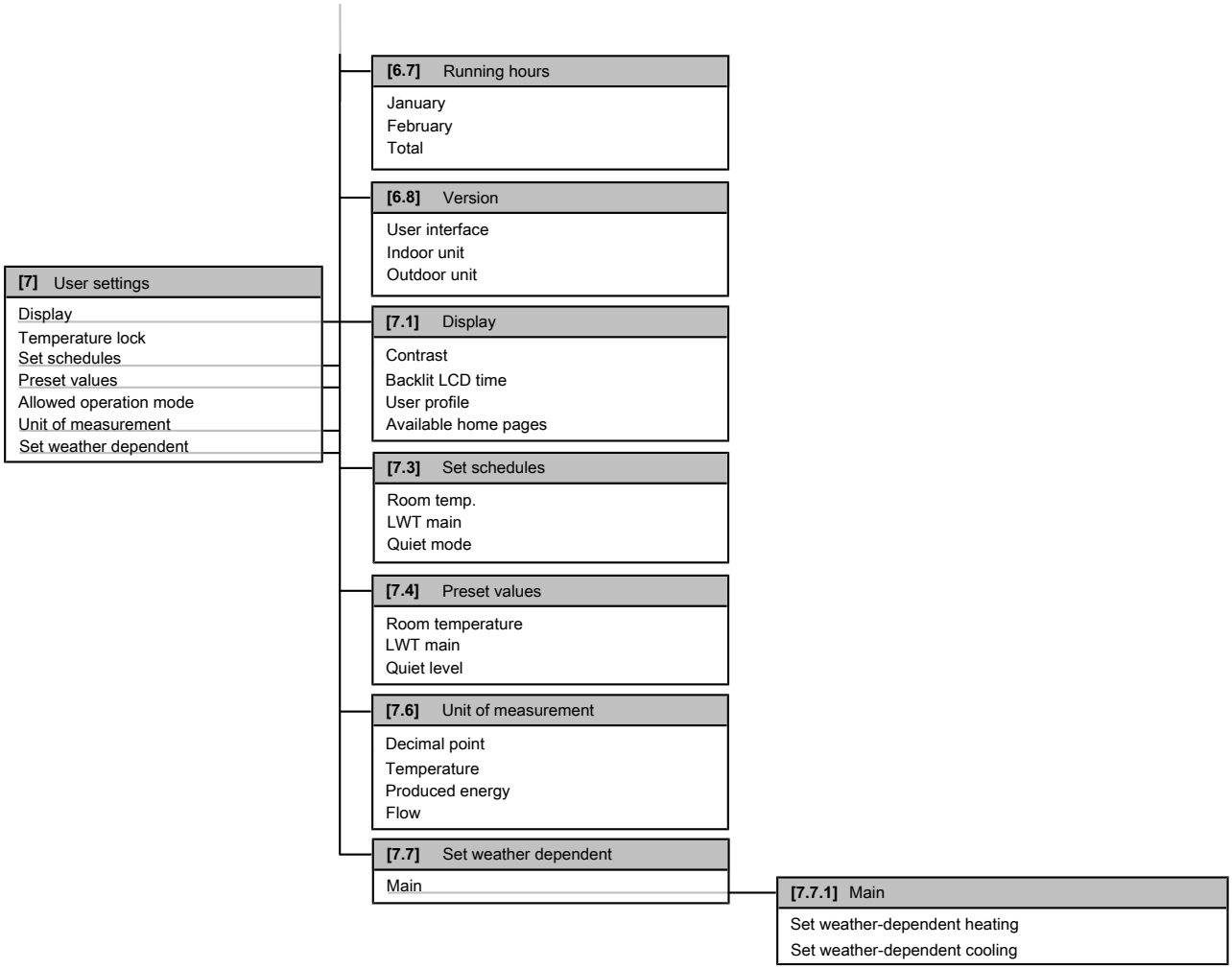
[9-0D]=8



a External static pressure
b Water flow rate

8.4 Menu structure: Overview user settings





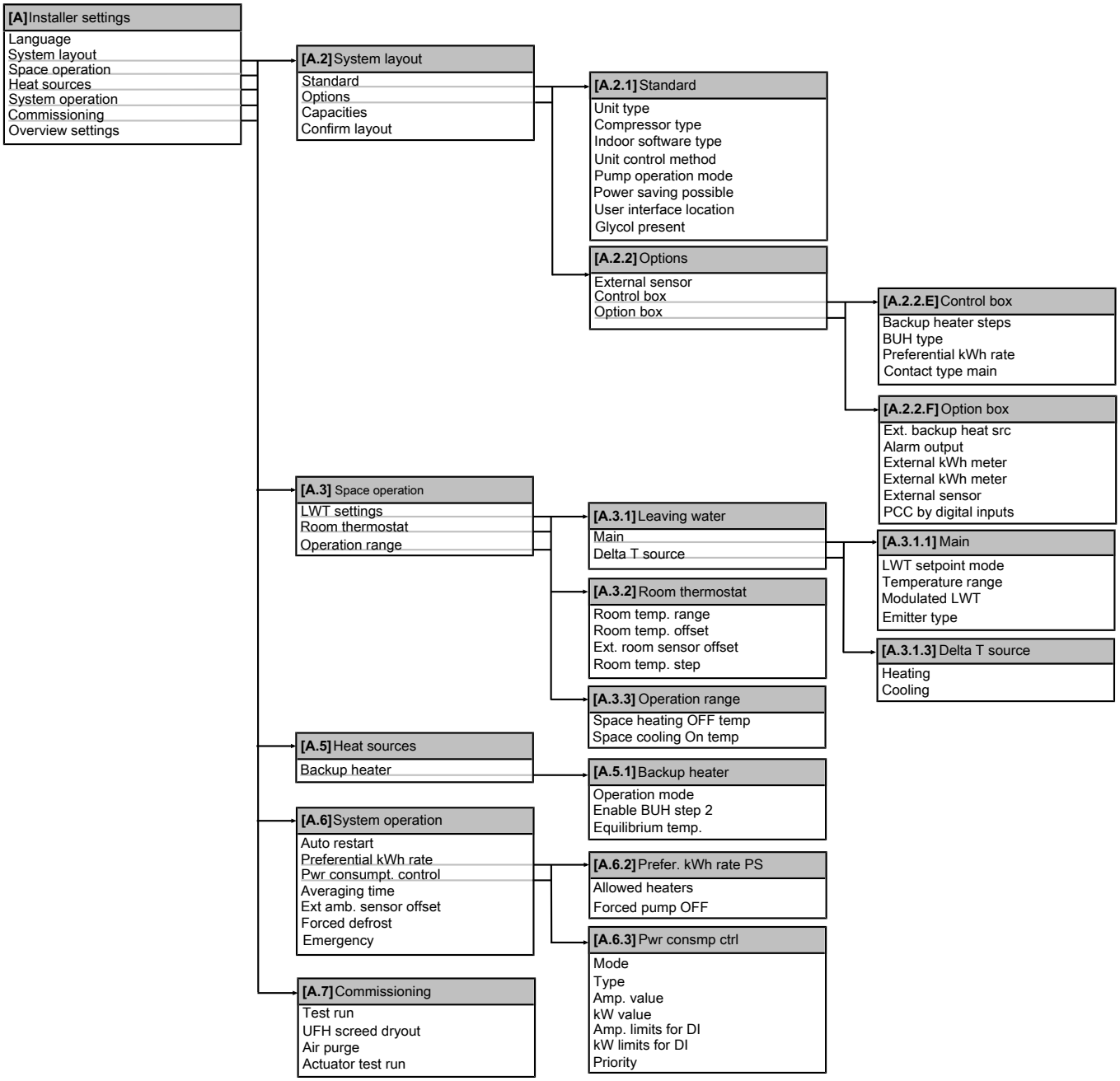
INFORMATION

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

INFORMATION

January and February in Running hours are just examples representing previous and current month respectively.

8.5 Menu structure: Overview installer settings



INFORMATION

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

9 Commissioning

9.1 Overview: Commissioning

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

Typical workflow

Commissioning typically consists of the following stages:

1 Checking the "Checklist before commissioning".
2 Performing an air purge.
3 Performing a test run for the system.
4 If necessary, performing a test run for one or more actuators.
5 If necessary, performing an underfloor heating screed dryout.

9.2 Precautions when commissioning

INFORMATION

During the first running period of the unit, the required power may be higher than stated on the nameplate of the unit. This phenomenon is caused by the compressor, that needs a continuous run time of 50 hours before reaching smooth operation and stable power consumption.

NOTICE

NEVER operate the unit without thermistors and/or pressure sensors/switches. Burning of the compressor might result.

9.3 Checklist before commissioning

After the installation of the unit, first check the following items. Once all below checks are fulfilled, the unit MUST be closed, ONLY then can the unit be powered up.

Depending on the system layout, not all components may be available.

☐	You read the complete installation instructions, as described in the **installer reference guide**.
☐	The **outdoor unit** is properly mounted.
☐	The **control box** is properly mounted.
☐	The **option box** is properly mounted.
☐	Only if you use the optional backup heater: The **backup heater** is properly mounted.
☐	The following **field wiring** has been carried out according to the available documentation and the applicable legislation: ▪ Between the local supply panel and the outdoor unit ▪ Between the outdoor unit and the control box ▪ Between the control box and the option box ▪ Between the control box and the backup heater ▪ Between the local supply panel and the control box ▪ Between the local supply panel and the option box ▪ Between the outdoor unit and the valves ▪ Between the control box and the room thermostat
☐	The system is properly **earthed** and the earth terminals are tightened.
☐	The **fuses** or locally installed protection devices are installed according to this document, and have NOT been bypassed.
☐	The **power supply voltage** matches the voltage on the identification label of the unit.
☐	There are NO **loose connections** or damaged electrical components in the switch box.
☐	There are NO **damaged components** or **squeezed pipes** on the inside of the outdoor unit.
☐	Only if you use the optional backup heater: Depending on the backup heater type, **backup heater circuit breaker** F1B (on the switch box of the backup heater) is turned ON.
☐	The correct pipe size is installed and the **pipes** are properly insulated.
☐	There are no **water leaks** inside the outdoor unit.
☐	The **shut-off valves** are properly installed and fully open.
☐	The **pressure relief valve** purges water when opened.
☐	The **minimum water volume** is guaranteed in all conditions. See "To check the water volume" in "6.3 Preparing water piping" on page 22.
☐	The **water circuit is properly protected against freezing**, according to the instructions set out in To protect the water circuit against freezing.
☐	If **glycol** was added to the system, confirm the correct glycol concentration, and check if glycol setting [E-0D]=1.

NOTICE

- Make sure glycol setting [E-0D] matches the liquid inside the water circuit (0=water only, 1=water+glycol). If the glycol setting is NOT set correctly, the liquid inside the piping can freeze.
- When glycol is added to the system, but the glycol concentration is lower than prescribed, the liquid inside the piping can still freeze.

INFORMATION

The software is equipped with an "installer-on-site" mode ([4-0E]), that disables automatic operation by the unit. At first installation, setting [4-0E] is by default set to "1", meaning automatic operation is disabled. All protective functions are then disabled. If the user interface home pages are off, the unit will NOT operate automatically. To enable automatic operation and the protective functions, set [4-0E] to "0".

36 hours after the first power-on, the unit will automatically set [4-0E] to "0", ending "installer-on-site" mode and enabling the protective functions. If – after first installation – the installer returns to the site, the installer has to set [4-0E] to "1" manually.

9.4 Checklist during commissioning

☐	The **minimum flow rate** is guaranteed in all conditions. See "To check the water volume and flow rate" in "6.3 Preparing water piping" on page 22.
☐	To perform an **air purge**.
☐	To perform a **test run**.
☐	To perform an **actuator test run**.
☐	**Underfloor screed dryout function** The underfloor screed dryout function is started (if necessary).

9.4.1 To check the minimum flow rate

1 Confirm according to the hydraulic configuration which space heating loops can be closed due to mechanical, electronic, or other valves.

2 Close all space heating loops that can be closed (see previous step).

3 Start the pump test run operation (see "9.4.4 To perform an actuator test run" on page 65).

4 Go to [6.1.8]: > Information > Sensor information > Flow rate to check the flow rate. During pump test run operation, the unit can operate below this minimum required flow rate.

Bypass valve foreseen?	
Yes	**No**
Modify the bypass valve setting to reach the minimum required flow rate + 2 l/min	In case the actual flow rate is below the minimum flow rate, modifications at the hydraulic configuration are required. Increase the space heating loops that can NOT be closed or install a pressure-controlled bypass valve.

9.4.2 Air purge function

When commissioning and installing the unit, it is very important to remove all air in the water circuit. When the air purge function is running, the pump operates without actual operation of the unit and the removal of air in the water circuit will start.

NOTICE

Before starting the air purge, open the safety valve and check if the circuit is sufficiently filled with water. Only if water escapes the valve after opening it, you can start the air purge procedure.

There are 2 modes for purging air:

- 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 the space heating mode. The operation speed of the pump (slow or quick) can also be set.
- Automatic: the unit automatically changes the pump speed.

Typical workflow

Purging the air from the system should consist of:

1 Performing a manual air purge

2 Performing an automatic air purge

NOTICE

The outdoor unit is equipped with a manual air purge valve. The air purge procedure requires manual action.

NOTICE

When purging air with the manual air purge valve of the unit, collect any fluid that might leak out of the valve. If this fluid is NOT collected, it might drip on internal components and damage the unit.

INFORMATION

- To purge air, use all air purge valves present in the system. This includes the manual air purge valve of the outdoor unit, as well as any field-supplied valves.
- If the system contains a backup heater, also use the air purge valve of the backup heater.
- If the system contains valve kit EKMBHBP1, it is required to – during the air purge – manually switch the position of the valve kit's 3-way valve by turning its knob, this to prevent air from remaining in the bypass. For more information, refer to the instruction sheet of the valve kit.

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 and room temperature home page are turned OFF.

The air purge function automatically stops after 30 minutes.

To perform a manual air purge

Prerequisite: Make sure that the leaving water temperature home page and room temperature home page are turned OFF.

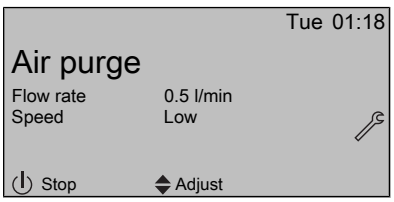
1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 45.

2 Set the air purge mode: go to [A.7.3.1] > Installer settings > Commissioning > Air purge > Type.

3 Select Manual and press OK.

4 Go to [A.7.3.4] > Installer settings > Commissioning > Air purge > Start air purge and press OK to start the air purge function.

Result: The manual air purge starts and the following screen appears.



5 Use the ◂ and ▸ buttons to scroll to Speed.

6 Use the ▴ and ▾ buttons to set the desired pump speed.

Result: Low

Result: High

To perform an automatic air purge

Prerequisite: Make sure that the leaving water temperature home page and room temperature home page are turned OFF.

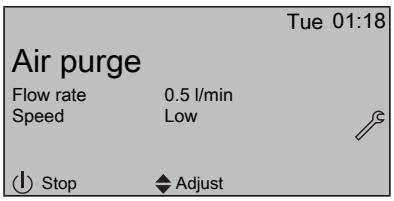
1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 45.

2 Set the air purge mode: go to [A.7.3.1] > Installer settings > Commissioning > Air purge > Type.

3 Select Automatic and press OK.

4 Go to [A.7.3.4] > Installer settings > Commissioning > Air purge > Start air purge and press OK to start the air purge function.

Result: Air purging will start and the following screen will be shown.



INFORMATION

If the temperature of the water circuit is low, and glycol was added to it, then the flow rate will NOT be displayed.

To interrupt air purge

1 Press ⏻ and press OK to confirm the interruption of the air purge function.

9.4.3 To perform a test run

Prerequisite: Make sure that the leaving water temperature home page and room temperature home page are turned OFF.

1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 45.

2 Go to [A.7.1]: ☰ > Installer settings > Commissioning > Test run.

3 Select a test and press OK. **Example:** Heating.

4 Select OK and press OK.

Result: The test run starts. It stops automatically when done (±30 min). To stop it manually, press ⏻, select OK and press OK.

INFORMATION

When starting up the system in a cold climate, and NO backup heater kit was installed, it may be required to start up with a small water volume. To do this, gradually open the heat emitters. As a result, the water temperature will gradually rise. Monitor the inlet water temperature ([6.1.6] in the menu structure) and make sure it does NOT drop below 15°C.

INFORMATION

If 2 user interfaces are present, you can start a test run from both user interfaces.

- The user interface used to start the test run displays a status screen.
- The other user interface displays a "busy" screen. You cannot use the user interface as long as the "busy" screen is shown.

If the installation of the unit has been done correctly, the unit will start up during test operation in the selected operation mode. During the test mode, the correct operation of the unit can be checked by monitoring the leaving water temperature (heating/cooling mode).

To monitor the temperature, go to [A.6] and select the information you want to check.

9.4.4 To perform an actuator test run

Purpose of the actuator test run is to confirm the operation of the different actuators (e.g., when you select pump operation, a test run of the pump will start).

Prerequisite: Make sure that the leaving water temperature home page and room temperature home page are turned OFF.

1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 45.

2 Make sure room temperature control and leaving water temperature control are turned OFF via the user interface.

3 Go to [A.7.4]: ☰ > Installer settings > Commissioning > Actuator test run.

4 Select an actuator and press OK. **Example:** Pump.

5 Select OK and press OK.

Result: The actuator test run starts. It automatically stops when finished. To stop it manually, press ⏻, select OK and press OK.

Possible actuator test runs

- Backup heater (step 1) test
- Backup heater (step 2) test
- Pump test

INFORMATION

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

- 2-way valve test
- Alarm output test
- Cooling/heating signal test
- Circulation pump test

9.4.5 Underfloor heating screed dryout

This function is used for drying out the screed of an underfloor heating system very slowly during the construction of a house. It allows the installer to program and execute this program.

Make sure that the leaving water temperature home page and room temperature home page are turned OFF.

If a backup heater kit is part of the system, this function can be executed without finishing the outdoor installation. In this case, the backup heater will perform the screed dryout and supply the leaving water without heat pump operation.

INFORMATION

- If Emergency is set to Manual ([A.6.C]=0), and the unit is triggered to start emergency operation, the user interface will ask confirmation before starting. The underfloor heating screed dryout function is active even if the user does NOT confirm emergency operation.
- During underfloor heating screed dryout, pump speed limitation [9-0D] is NOT applicable.

NOTICE

The installer is responsible for:

- contacting the screed manufacturer for the initial heating instructions to avoid cracking the screed,
- programming the underfloor heating screed dryout schedule according to the above instruction of the screed manufacturer,
- checking the proper functioning of the setup on a regular basis,
- selecting the correct program complying with the type of the used screed of the floor.

NOTICE

To perform an underfloor heating screed dryout, room frost protection needs to be disabled ([2-06]=0). By default, it is enabled ([2-06]=1). However, due to the "installer-on-site" mode (see "Checklist before commissioning"), room frost protection will be automatically disabled for 36 hours after the first power-on.

If the screed dryout still needs to be performed after the first 36 hours of power-on, manually disable room frost protection by setting [2-06] to "0", and KEEP it disabled until the screed dryout has finished. Ignoring this notice will result in cracking of the screed.

NOTICE

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

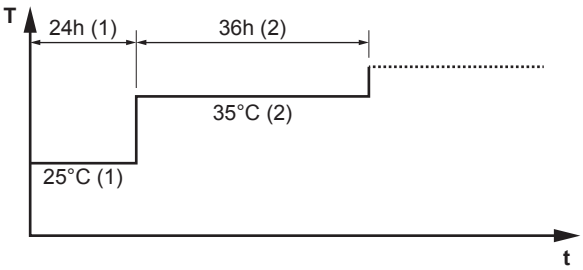
- [4-00]=1
- [C-02]=0
- [D-01]=0
- [4-08]=0
- [4-01]≠1

The installer can program up to 20 steps. For each step he needs to enter:

1 the duration in hours, up to 72 hours,

2 the desired leaving water temperature.

Example:



T Desired leaving water temperature (15~55°C)
t Duration (1~72 h)
(1) Action step 1
(2) Action step 2

To program an underfloor heating screed dryout schedule

1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 45.

2 Go to [A.7.2]: ☰ > Installer settings > Commissioning > UFH screed dryout > Set dryout schedule.

3 Use the ◀, ▶, ▲, and ▼ to program the schedule.
- Use ◀ and ▶ to scroll through the schedule.
- Use ▲ and ▼ to adjust the selection.
  If a time is selected, you can set the duration between 1 and 72 hours.
  If a temperature is selected, you can set the desired leaving water temperature between 15°C and 55°C.

4 To add a new step, select "–h" or "–" on an empty line and press ▲ ▼.

5 To delete a step, set the duration to "–" by pressing ▲ ▼.

6 Press OK to save the schedule.

It is important that there is no empty step in the program. The schedule will stop when a blank step is programmed OR when 20 consecutive steps have been executed.

To perform an underfloor heating screed dryout

INFORMATION

Preferential kWh rate power supply cannot be used in combination with underfloor heating screed dryout.

Prerequisite: Make sure there is ONLY 1 user interface connected to your system to perform an underfloor heating screed dryout.

Prerequisite: Make sure that the leaving water temperature home page and room temperature home page are turned OFF.

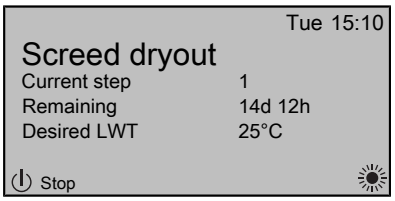
1 Go to [A.7.2]: ☰ > Installer settings > Commissioning > UFH screed dryout.

2 Set a dryout program.

3 Select Start dryout and press OK.

4 Select OK and press OK.

Result: The underfloor heating screed dryout starts and following screen will be shown. It stops automatically when done. To stop it manually, press ⏻, select OK and press OK.



To readout the status of an underfloor heating screed dryout

1 Press ⌂.

2 The current step of the program, the total remaining time, and the current desired leaving water temperature will be displayed.

INFORMATION

There is limited access to the menu structure. Only the following menus can be accessed:
- Information.
- Installer settings > Commissioning > UFH screed dryout.

To interrupt an underfloor heating screed dryout

When the program is stopped by an error, an operation switch off, or a power failure, the U3 error will be displayed on the user interface. To resolve the error codes, see "12.4 Solving problems based on error codes" on page 70. To reset the U3 error, your User permission level needs to be Installer.

1 Go to the underfloor heating screed dryout screen.

2 Press ⌂.

3 Press ⏻ to interrupt the program.

4 Select OK and press OK.

Result: The underfloor heating screed dryout program is stopped.

When the program is stopped due to an error, an operation switch-off, or a power failure, you can read out the underfloor heating screed dryout status.

5 Go to [A.7.2]: ☰ > Installer settings > Commissioning > UFH screed dryout > Dryout status > Stopped at and followed by the last executed step.

6 Modify and restart the execution of the program.

10 Hand-over to the user

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

- Fill in the installer setting table (in the operation manual) with the actual settings.
- Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he can find the complete documentation at the URL mentioned earlier in this manual.
- Explain the user how to properly operate the system and what to do in case of problems.
- Show the user what to do for the maintenance of the unit.
- Explain the user about energy saving tips as described in the operation manual.

10.1 About locking and unlocking

If required, it is possible to lock the buttons of the main user interface, making it impossible for the user to operate it. For the user to be able to change setpoint temperatures, the simplified user interface or an external room thermostat is then required.

You can use the following locking modes:

- Function lock: Locks a specific function to prevent people from changing its settings.
- Button lock: Locks all buttons to prevent users from changing settings.

Possible function locks

Lock	If active, people cannot…
Room On/OFF	Turn ON or OFF the room temperature control.
LWT On/OFF	Turn ON or OFF the leaving water temperature control.
Temperature up/down	Adjust temperatures.
Quiet mode	Use quiet mode.
Holiday	Use holiday mode.
Operation mode	Set the space operation mode.
User settings	Change settings in [7]: ☰ > User settings.

To check if locking is active

1 Press ⌂ to go to one of the home pages.

2 If 🔒 is displayed, button lock is active.

Note: If you are on a home page and try to use a function that is locked, 🔒 is displayed for 1 second.

To activate or deactivate a function lock

1 Press ☰ to go to the menu structure.

2 Press OK for more than 5 seconds.

3 Select a function and press OK.

4 Select Lock or Unlock, and press OK.

To activate or deactivate button lock

1 Press ⌂ to go to one of the home pages.

2 Press OK for more than 5 seconds.

11 Maintenance and service

NOTICE

Maintenance MUST be done by an authorized installer or service agent.

We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.

NOTICE

In Europe, the **greenhouse gas emissions** of the total refrigerant charge in the system (expressed as tonnes CO_2 equivalent) is used to determine the maintenance intervals. Follow the applicable legislation.

Formula to calculate the greenhouse gas emissions: GWP value of the refrigerant × Total refrigerant charge [in kg] / 1000

11.1 Overview: Maintenance and service

This chapter contains information about:

- The yearly maintenance of the outdoor unit
- The inspection of the backup heater switch box.
- The inspection of the control box switch box.

11.2 Maintenance safety precautions

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

NOTICE: Risk of electrostatic discharge

Before performing any maintenance or service work, touch a metal part of the unit in order to eliminate static electricity and to protect the PCB.

11.2.1 Opening the outdoor unit

See "7.2.2 To open the outdoor unit" on page 27 and "7.2.3 To open the switch box cover of the outdoor unit" on page 27.

11.2.2 Opening the control box

See "7.2.4 To open the control box" on page 28.

11.2.3 Opening the option box

See "7.2.5 To open the option box" on page 28.

11.2.4 Opening the backup heater

See "7.2.6 To open the backup heater" on page 28 and "7.2.7 To open the switch box cover of the backup heater" on page 28.

11.3 Checklist for yearly maintenance of the outdoor unit

Check the following at least once a year:

- Heat exchanger
  The heat exchanger of the outdoor unit can get blocked up due to dust, dirt, leaves, etc. It is recommended to clean the heat exchanger yearly. A blocked heat exchanger can lead to too low pressure or too high pressure leading to worse performance.

- Water pressure
- Water filter
- Water pressure relief valve
- Switch box
- Glycol concentration

Heat exchanger

The heat exchanger of the outdoor unit can get blocked up due to dust, dirt, leaves, etc. It is recommended to clean the heat exchanger yearly. A blocked heat exchanger can lead to too low pressure or too high pressure leading to worse performance.

Water pressure

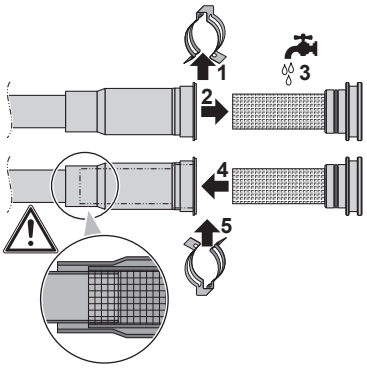
Keep water pressure above 1 bar. If it is lower, add water.

Water filter

Clean the water filter.

NOTICE

Handle the water filter with care. Do NOT use excessive force when you reinsert the water filter so as NOT to damage the water filter mesh.



Water pressure relief valve

Open the valve and check if it operates correctly. **The water may be very hot!**

Checkpoints are:

- The water flow coming from the relief valve is high enough, no blockage of the valve or in between piping is suspected.
- Dirty water coming out of the relief valve:
  - open the valve until the discharged water does NOT contain dirt anymore
  - flush the system and install an additional water filter (a magnetic cyclone filter is preferable).

It is recommended to do this maintenance more frequently.

Switch box

- Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring. If applicable, also inspect the switch box of the control box, option box, and backup heater.
- Using an ohmmeter, check if contactors K1M, K2M, and K5M in the switch box of the backup heater, and K3M in the switch box of the control box (depending on your installation) operate correctly. All contacts of these contactors must be in open position when the power is turned OFF.

WARNING

If the internal wiring is damaged, it has to be replaced by the manufacturer, its service agent or similarly qualified persons.

Glycol concentration

If glycol was added to the system and a system refill is required, make sure the final concentration of glycol is according to the requirements set out in " To protect the water circuit against freezing" on page 33. Make sure the water quality complies with EU directive 98/83 EC.

12 Troubleshooting

12.1 Overview: Troubleshooting

This chapter describes what you have to do in case of problems.

It contains information about:

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

Before troubleshooting

Carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

12.2 Precautions when troubleshooting

WARNING

- When carrying out an inspection on the switch box of the unit, ALWAYS make sure that the unit is disconnected from the mains. Turn off the respective circuit breaker.
- When a safety device was activated, stop the unit and find out why the safety device was activated before resetting it. NEVER shunt safety devices or change their values to a value other than the factory default setting. If you are unable to find the cause of the problem, call your dealer.

DANGER: RISK OF ELECTROCUTION

WARNING

Prevent hazards due to inadvertent resetting of the thermal cut-out: power to this appliance MUST NOT be supplied through an external switching device, such as a timer, or connected to a circuit that is regularly turned ON and OFF by the utility.

DANGER: RISK OF BURNING

12.3 Solving problems based on symptoms

12.3.1 Symptom: The unit is NOT heating or cooling as expected

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 flow is too low	Check and make sure that: ▪ All shut-off valves of the water circuit are completely open. ▪ The water filter is clean. Clean if necessary. ▪ There is no air in the system. Purge air if necessary. You can purge air manually (see "To perform a manual air purge" on page 64) or use the automatic air purge function (see "To perform an automatic air purge" on page 64). ▪ 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 (see the ESP curve in the "Technical data" chapter). ▪ The pump is NOT blocked. To check this, perform a pump test (see "9.4.4 To perform an actuator test run" on page 65). If it is blocked, the pump will perform a deblocking routine during this test. During the deblocking routine, the LED on the pump will blink red. From the moment the pump is deblocked, the LED will stay green. If the pump cannot be deblocked in 30 minutes, error 7H-05 will appear on the user interface. If this is the case, the pump needs to be checked and possibly replaced. If the problem persists after you have conducted all of the above checks, contact your dealer. In some cases, it is normal that the unit decides to use a low water flow.
The water volume in the installation is too low	Make sure that the water volume in the installation is above the minimum required value (see To check the water volume and flow rate).

INFORMATION

If an error occurs during the deblocking routine, the deblocking routine will stop and error 7H-05 will appear on the user interface (NOT the error that caused the deblocking routine to stop). To make this error appear, first accept the 7H-05 error.

12.3.2 Symptom: The compressor does NOT start

Possible causes	Corrective action
The unit must start up out of its operation range (the water temperature is too low)	**If the system contains a backup heater:** If the water temperature is too low, the unit uses the backup heater to reach the minimum water temperature first (15°C). Check and make sure that: ▪ The power supply to the backup heater is correctly wired. ▪ The backup heater thermal protector is NOT activated. ▪ The backup heater contactors are NOT broken. **If the system does NOT contain a backup heater**: It may be required to start up with a small water volume. To do this, gradually open the heat emitters. As a result, the water temperature will gradually rise. Monitor the inlet water temperature ([6.1.6] in the menu structure) and make sure it does NOT drop below 15°C. If the problem persists after you have conducted all of the above checks, contact your dealer.
The preferential kWh rate power supply settings and electrical connections do NOT match	This should match with the connections as explained in "6.4 Preparing electrical wiring" on page 24 and "7.8.5 To connect the main power supply" on page 37.
The preferential kWh rate signal was sent by the electricity company	Wait for the power to return (2 hours max.).

12.3.3 Symptom: The pump is making noise (cavitation)

Possible causes	Corrective action
There is air in the system	Purge air manually (see "To perform a manual air purge" on page 64) or use the automatic air purge function (see "To perform an automatic air purge" on page 64).
The water pressure at the pump inlet is too low	Check and make sure that: ▪ The water pressure is >1 bar. ▪ The manometer is not broken. ▪ The expansion vessel is NOT broken. ▪ The pre-pressure setting of the expansion vessel is correct (see "6.3.4 Changing the pre-pressure of the expansion vessel" on page 24).

12.3.4 Symptom: The pressure relief valve opens

Possible causes	Corrective action
The expansion vessel is broken	Replace the expansion vessel.
The water volume in the installation is too high	Make sure that the water volume in the installation is below the maximum allowed value (see "6.3.3 To check the water volume and flow rate" on page 23 and "6.3.4 Changing the pre-pressure of the expansion vessel" on page 24).
The water circuit head is too high	The water circuit head is the difference in height between the outdoor unit and the highest point of the water circuit. If the outdoor unit is located at the highest point of the installation, the installation height is considered 0 m. The maximum water circuit head is 10 m. Check the installation requirements.

12.3.5 Symptom: The water pressure relief valve leaks

Possible causes	Corrective action
Dirt is blocking the water pressure relief valve outlet	Check whether the pressure relief valve works correctly by turning the red knob on the valve counterclockwise: ▪ If you do NOT hear a clacking sound, contact your dealer. ▪ If the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your dealer.

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

Possible causes	Corrective action

If the system contains a backup heater: backup heater operation is not activated	Check and make sure that:
	▪ The backup heater operation mode is enabled. Go to:
	  ▪ [A.5.1.1] > Installer settings > Heat sources > Backup heater > Operation mode [4-00]
	▪ The backup heater overcurrent fuse has not been turned off. If it has, check the fuse and turn it back on.
	▪ The thermal protector of the backup heater has not been activated. If it has, check the following, and then press the reset button in the switch box:
	  ▪ The water pressure
	  ▪ Whether there is air in the system
	  ▪ The air purge operation

If the system contains a backup heater: the backup heater equilibrium temperature has not been configured correctly	Increase the "equilibrium temperature" to activate the backup heater operation at a higher outdoor temperature. Go to: ▪ [A.5.1.4] > Installer settings > Heat sources > Backup heater > Equilibrium temp. OR ▪ [A.8] > Installer settings > Overview settings [5-01]
There is air in the system.	Purge air manually or automatically. See the air purge function in the "Commissioning" chapter.

12.3.7 Symptom: The energy metering (produced heat) is NOT working correctly

Possible causes	Corrective action
The measured temperatures for produced heat calculation are NOT accurate.	Execute a calibration of the system by performing an actuator test run of the pump (see "9.4.4 To perform an actuator test run" on page 65).

12.4 Solving problems based on error codes

When a problem happens, an error code appears on the user interface. It is important to understand the problem and to take measures before resetting an error code. This should be done by a licensed installer or by your local dealer.

This chapter gives you an overview of all error codes and the content of the error code as it appears on the user interface.

For a more detailed troubleshooting guideline for each error, please see the service manual.

12.4.1 Error codes: Overview

Error codes of the outdoor unit

Refrigerant part

Error code	Detailed error code	Description
E1	00	OU: PCB defect. Power reset required. Please contact your dealer.
E3	00	OU: Actuation of high pressure switch (HPS) or low pressure switch (LPS) Please contact your dealer.
E5	00	OU: Overheat of inverter compressor motor. Please contact your dealer.
E7	00	OU: Malfunction of outdoor unit fan motor. Please contact your dealer.

Error code	Detailed error code	Description
H3	00	OU: Malfunction of high pressure switch (HPS) or low pressure switch (LPS) Please contact your dealer.
H7	00	OU: Malfunction of position detection sensor. Please contact your dealer.
H9	00	OU: Malfunction of outdoor air thermistor. Please contact your dealer.
F3	00	OU: Malfunction of discharge pipe temperature. Please contact your dealer.
JA	00	OU: Malfunction of high pressure sensor. Please contact your dealer.
J1	00	OU: Pressure sensor problem Please contact your dealer.
J3	00	OU: Malfunction of discharge pipe thermistor. Please contact your dealer.
J5	00	OU: Suction pipe temperature sensor problem Please contact your dealer.
J6	00	OU: Malfunction of heat exchanger thermistor. Please contact your dealer.
J7	00	OU: Malfunction of heat exchanger thermistor. Please contact your dealer.
J8	00	OU: Malfunction of outdoor liquid thermistor. Please contact your dealer.
L1	00	OU: PCB defect. Power reset required. Please contact your dealer.
L5	00	OU: Inverter instantaneous overcurrent (DC). Please contact your dealer.
L8	00	OU: Electrical box temperature rise problem. Please contact your dealer.
L9	00	OU: Compressor startup defect. Please contact your dealer.
U0	00	OU: Shortage of refrigerant. Please contact your dealer.
U2	00	OU: Defect of power supply voltage. Please contact your dealer.
UA	00	OU: Indoor/outdoor combination problem. Power reset required.

Hydro part

Error code	Detailed error code	Description
7H	01	Water flow problem. Auto restart.
7H	05	Water flow problem during heating/sampling, or after failed deblocking routine. Manual reset. Check the space heating/cooling circuit, or replace the water pump.
7H	06	Water flow problem during cooling/defrost. Manual reset. Check the plate heat exchanger.
7H	07	Water flow problem. Pump deblocking active
80	00	Returning water temperature sensor problem. Please contact your dealer.
81	00	Leaving water temperature sensor problem. Please contact your dealer.
89	01	Heat exchanger frozen.
89	02	Heat exchanger frozen.
89	03	Heat exchanger frozen.
8H	00	Abnormal increase outlet water temperature.
A1	00	Zero cross detection problem. Power reset required. Please contact your dealer.
A1	01	EEPROM reading error.

Error code	Detailed error code	Description
A1	00	EEPROM reading error.
AA	01	Backup heater overheated. Power reset required. Please contact your dealer.
C0	00	Flow sensor malfunction. Manual reset.
C0	01	Flow switch malfunction. Auto reset.
C0	02	Flow switch malfunction. Manual reset.
C4	00	Heat exchanger temperature sensor problem. Please contact your dealer.
CJ	02	Room temperature sensor problem. Please contact your dealer.
H1	00	External temperature sensor problem. Please contact your dealer.
U3	00	Under floor heating screed dryout function not completed correctly.
U4	00	Hydro part / refrigerant part communication problem
U5	00	User interface communication problem.
U8	01	Connection with adapter lost Please contact your dealer.
UA	00	Hydro part / refrigerant part matching problem. Power reset required.
UA	16	Communication problem between hydro part and control box.
UA	22	Communication problem between control box and option box.

NOTICE

When the minimum water flow is lower than described in the table below, the unit will temporarily stop operation and the user interface will display error 7H-01. After some time, this error will reset automatically and the unit will resume operation.

Minimum required flow	
06+08 models	19 l/min

If the 7H-01 error persists, the unit will stop operation and the user interface will display an error code that needs to be reset manually. Depending on the problem, this error code is different:

Error code	Detailed error code	Description
7H	05	The water flow problems mainly occurred during space heating operation, or after a failed water pump deblocking routine. Check the space heating circuit.
7H	06	The water flow problems mainly occurred during cooling/defrost operation. Check the space heating/cooling circuit. Additionally, this error code might be an indication of frost damage to the plate heat exchanger. In that case, contact your local dealer.

INFORMATION

When the user interface displays error 7H-05, it is possible that the pump is blocked. To check this, perform a pump test (see "9.4.4 To perform an actuator test run" on page 65). If it is blocked, the pump will perform a deblocking routine during this test. During the deblocking routine, the LED on the pump will blink red. From the moment the pump is deblocked, the LED will stay green. If the pump cannot be deblocked in 30 minutes, error 7H-05 will reappear on the user interface. If this is the case, the pump needs to be checked and possibly replaced.

INFORMATION

If an error occurs during the deblocking routine, the deblocking routine will stop and error 7H-05 will appear on the user interface (NOT the error that caused the deblocking routine to stop). To make this error appear, first accept the 7H-05 error.

INFORMATION

If the unit detects flow when the pump is not running, an external device might be causing flow, or there might be something wrong with the flow measuring devices (flow sensor and flow switch).

- If the flow sensor detects flow when the pump is not running, the unit will stop operation and the user interface will display error C0-00. For the unit to resume operation, this error needs to be reset manually.
- If the flow switch detects flow when the pump is not running, the unit will temporarily stop operation and the user interface will display error C0-01. After some time, the error will reset automatically and the unit will resume operation. If the problem persists, the unit will stop operation and the user interface will display error C0-02. For the unit to resume operation, this error needs to be reset manually.

13 Disposal

NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

13.1 Overview: Disposal

Typical workflow

Disposing of the system typically consists of the following stages:

1 Pumping down the system.

2 Bringing the system to a specialized treatment facility.

INFORMATION

For more details, see the service manual.

13.2 About pump down

The unit is equipped with an automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit.

Example: To protect the environment, pump down when disposing of the unit.

It is NOT required to pump down when relocating the unit.

NOTICE

The outdoor unit is equipped with a low pressure switch or a low pressure sensor to protect the compressor by turning it OFF. NEVER short-circuit the low pressure switch during pump down operation.

13.3 To pump down

DANGER: RISK OF EXPLOSION

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

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

NOTICE

During pump down operation, stop the compressor before removing the refrigerant piping. If the compressor is still running and the stop valve is open during pump down, air will be sucked into the system. Compressor breakdown or damage to the system can result due to abnormal pressure in the refrigerant cycle.

1 Turn ON the main power supply switch.

2 Make sure the liquid stop valve and the gas stop valve are open.

3 Press the pump down button (BS4) for at least 8 seconds. BS4 is located on the PCB in the outdoor unit (see wiring diagram).

Result: The compressor and outdoor unit fan start automatically.

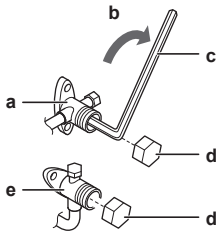
4 After 5~10 minutes (after only 1~2 minutes in case of very low ambient temperatures (≤–10 °C)), close the **liquid stop valve** with a hexagonal wrench.

5 Check with the manifold if the vacuum is reached.

6 After 2~3 minutes, close the **gas stop valve** and press the pump down button (BS4) again.

Result: The pump down operation is finished.

7 Turn OFF the main power supply switch.



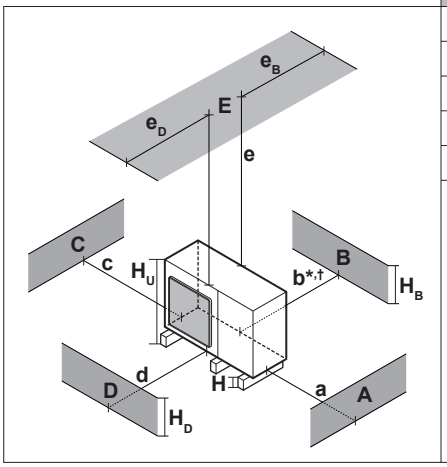
a Gas stop valve
b Closing direction
c Hexagonal wrench
d Valve lid
e Liquid stop valve

14 Technical data

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

14.1 Service space: Outdoor unit

Single unit



A~E	H_B H_D H_U	(mm)								
		a	b*	b†	c	d	e	e_B	e_D	H
A, B, C	—	≥100	≥250	≥400	≥100					≥150
A, B, C, E	—	≥150	≥250	≥400	≥150		≥1000		≤500	≥150
D	—					≥500				≥150
D, E	—					≥500	≥1000	≤500		≥150
B, D	$H_D<H_U$		≥250	≥400		≥500				≥150
B, D, E	$H_D<H_U$ & $H_B>H_U$		≥250	≥400		≥1000	≥1000		≤500	≥150
	$H_D>H_U$ & $H_B<H_U$		≥250	≥400		≥1000	≥1000	≤500		≥150

*,† ➡

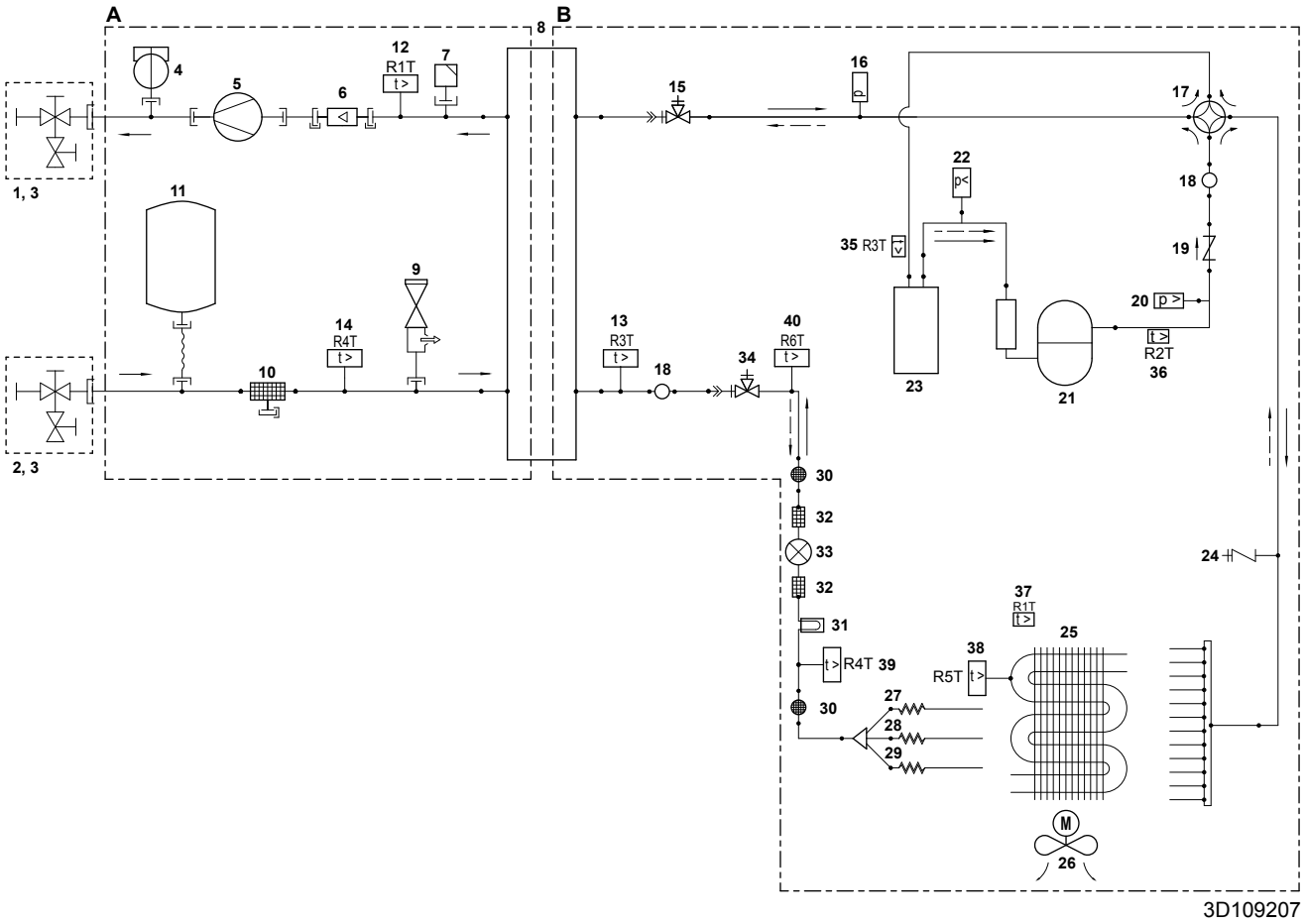
A,C Left side and right side obstacles (walls/baffle plates)
B Suction side obstacle (wall/baffle plate)
D Discharge side obstacle (wall/baffle plate)
E Top side obstacle (roof)
a,b,c,d,e Minimum service space between the unit and obstacles A, B, C, D and E
***** If shut-off valves are NOT installed on the unit
† If shut-off valves are installed on the unit
e_B Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle B
e_D Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle D
H_U Height of the unit including the installation structure
H_B,H_D Height of obstacles B and D
H Height of installation structure below the unit

INFORMATION

If shut-off valves are installed on the unit, provide a minimum space of 400 mm at the air inlet side. If shut-off valves are NOT installed on the unit, provide a minimum space of 250 mm.

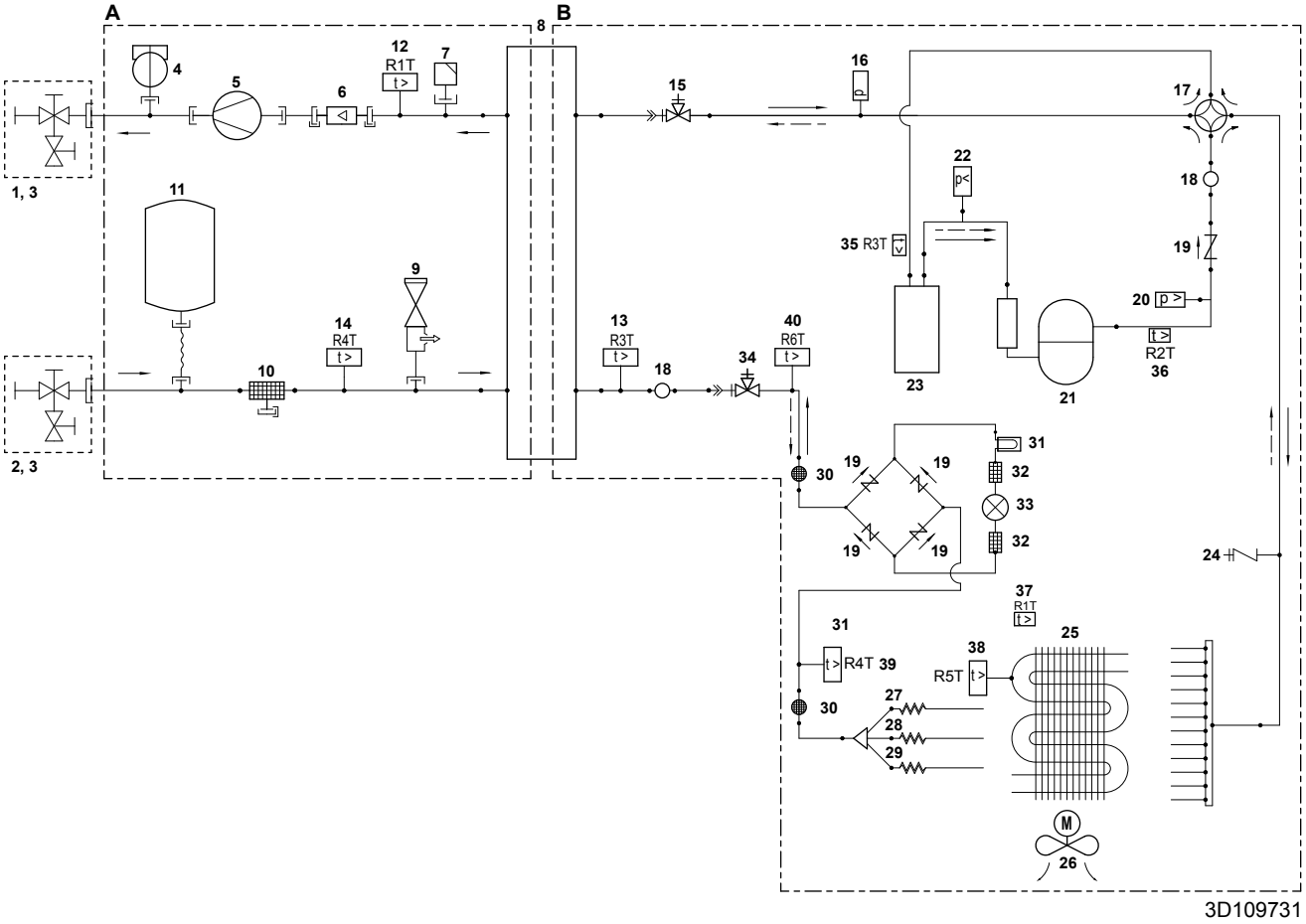
14.2 Piping diagram: Outdoor unit

EWAQ006+008BAVP



1 Outlet
2 Inlet
3 Shut-off valve with drain/fill valve
4 Flow switch
5 Pump
6 Flow sensor
7 Air purge
8 Plate heat exchanger
9 Safety valve
10 Water filter
11 Expansion vessel
12 R1T - Outlet water heat exchanger thermistor
13 R3T - Refrigerant liquid side thermistor
14 R4T - Inlet water thermistor
15 Gas stop valve with service port
16 Pressure sensor
17 4-way valve
18 Muffler
19 Check valve
20 High pressure switch
21 Compressor
22 Low pressure switch
23 Accumulator
24 Service port 5/16" flare
25 Heat exchanger
26 Propeller fan
27 Capillary tube 1
28 Capillary tube 2
29 Capillary tube 3
30 Muffler with filter
31 Inverter PCB heat sink
32 Refrigerant filter
33 Motor-operated valve
34 Liquid stop valve with service port
35 R3T Thermistor (suction)
36 R2T - Discharge pipe thermistor
37 R1T - Outdoor air temperature thermistor
35 R5T - Heat exchanger thermistor
39 R4T - Thermistor (heat exchanger, liquid pipe)
40 R6T - Thermistor (liquid)
A Water side
B Refrigerant side
Field installed
Refrigerant flow - cooling
Refrigerant flow – heating

EWYQ006+008BAVP



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1 Outlet
2 Inlet
3 Shut-off valve with drain/fill valve
4 Flow switch
5 Pump
6 Flow sensor
7 Air purge
8 Plate heat exchanger
9 Safety valve
10 Water filter
11 Expansion vessel
12 R1T - Outlet water heat exchanger thermistor
13 R3T - Refrigerant liquid side thermistor
14 R4T - Inlet water thermistor
15 Gas stop valve with service port
16 Pressure sensor
17 4-way valve
18 Muffler
19 Check valve
20 High pressure switch
21 Compressor
22 Low pressure switch
23 Accumulator
24 Service port 5/16" flare
25 Heat exchanger
26 Propeller fan
27 Capillary tube 1
28 Capillary tube 2
29 Capillary tube 3
30 Muffler with filter
31 Inverter PCB heat sink
32 Refrigerant filter
33 Motor-operated valve
34 Liquid stop valve with service port
35 R3T Thermistor (suction)
36 R2T - Discharge pipe thermistor
37 R1T - Outdoor air temperature thermistor
35 R5T - Heat exchanger thermistor
39 R4T - Thermistor (heat exchanger, liquid pipe)
40 R6T - Thermistor (liquid)
A Water side
B Refrigerant side
Field installed
Refrigerant flow - cooling
Refrigerant flow – heating

14.3 Wiring diagram: Outdoor unit

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

Outdoor unit: compressor module

Legend:

A1P	Printed circuit board (main)
A2P	Printed circuit board
BS1~BS4 (A2P)	Push-button switch
C1~C3 (A1P)	Capacitor
DS1 (A2P)	DIP switch
E1H	Bottom plate heater (optional)
F1U (A1P)	Fuse T 6.3 A 250 V
F2U (A1P)	Fuse T 31.5 A 250 V
F6U (A1P)	Fuse T 3.15 A 250 V
F7U, F8U	Fuse F 1 A 250 V (optional)
H1P~H7P (A2P)	Light-emitting diode (service monitor is orange)
HAP (A1P)	Light-emitting diode (service monitor is green)
K1R (A1P)	Magnetic relay (Y1S)
K11M (A1P)	Magnetic contactor
K2R, K10R, K13R~K15R (A1P)	Magnetic relay
L1R	Reactor
M1C	Compressor motor
M1F	Fan motor
PS (A1P)	Switching power supply
Q1DI	Earth leakage circuit breaker (30 mA) (field supply)
R1T	Thermistor (air)
R2 , R4~R6 (A1P)	Resistor
R2T	Thermistor (discharge)
R3T	Thermistor (suction)
R4T	Thermistor (heat exchanger)
R5T	Thermistor (heat exchanger middle)
R6T	Thermistor (liquid)
R7T~R9T (A1P)	Thermistor (positive temperature coefficient)
RC (A1P)	Signal receiver circuit
S1NPH	Pressure sensor
S1PH	High pressure switch
S1PL	Low pressure switch
TC (A1P)	Signal transmission circuit
V1D~V3D (A1P)	Diode
V1R (A1P)	IGBT power module
V2R (A1P)	Diode module
V1T, V2T (A1P)	Insulated gate bipolar transistor (IGBT)
X1M	Terminal strip
Y1E	Electronic expansion valve
Y1S	Solenoid valve (4-way valve)
Z1C~Z6C	Noise filter (ferrite core)
Z1F~Z3F (A1P)	Noise filter
LA, NA, HR1~HR4, U, V, W, X*A (A1P, A2P)	Connector

Symbols:

L	Live
N	Neutral
	Field wiring
	Terminal strip
	Connector
	Connector
	Connection
	Protective earth (screw)
	Noiseless earth
	Terminal
	Option
	Wiring dependent on model

Colours:

BLK	Black
BLU	Blue
BRN	Brown
GRN	Green
ORG	Orange
RED	Red
WHT	White
YLW	Yellow

Outdoor unit: hydro module

English	Translation
(1) Connection diagram	(1) Connection diagram
Outdoor	Outdoor
Hydro switch box	Hydro switch box
Compressor switch box	Compressor switch box
Only for normal power supply (standard)	Only for normal power supply (standard)
Hydro switch box supplied from compressor module	Hydro switch box supplied from compressor module
Normal kWh rate power supply	Normal kWh rate power supply
Only for preferential kWh rate power supply (compressor)	Only for preferential kWh rate power supply (compressor)
Use normal kWh rate power supply for hydro switch box	Use normal kWh rate power supply for hydro switch box
NO valve	Normal open valve
Indoor	Indoor
Control box	Control box
External outdoor ambient sensor option	External outdoor ambient sensor option
(2) Hydro switch box layout	(2) Hydro switch box layout
(3) Notes	(3) Notes
X4M	Main terminal
	Earth wiring
15	Wire number 15
	Field supply
①	Several wiring possibilities
	Option

English		Translation
		Wiring depending on model
		Switch box
		PCB
(4) Legend		(4) Legend
A1P		Printed circuit board (main) (compressor)
A1P		Main PCB (hydro)
A2P		Printed circuit board (compressor)
A2P		Current loop PCB (hydro)
M2S	#	Shut-off valve
Q*DI	#	Earth leakage circuit breaker
R6T	*	External outdoor ambient sensor option
TR1		Power supply transformer
X*M		Terminal strip
X*A, X*Y		Connector

*: Optional
#: Field supply

Control box

English		Translation
(1) Connection diagram		(1) Connection diagram
Option box		Option box
BUH option		Backup heater option
Preferential kWh rate power supply contact: 5 V DC detection (voltage supplied by PCB)		Preferential kWh rate power supply contact: 5 V DC detection (voltage supplied by PCB)
Hydro switch box		Hydro switch box
Control box		Control box
NO valve		Normal open valve
Only for wired On/OFF thermostat		Only for wired On/OFF thermostat
Only for wireless On/OFF thermostat		Only for wireless On/OFF thermostat
Only for ext. sensor (floor or ambient)		Only for external sensor (floor or ambient)
(2) Notes		(2) Notes
X1M		Main terminal
		Earth wiring
15		Wire number 15
		Field supply
①		Several wiring possibilities
		Option
		Wiring depending on model
		Switch box
		PCB
(3) Control switch box layout		(3) Control switch box layout
(4) Legend		(4) Legend
A3P	*	On/OFF thermostat (PC=power circuit)
A4P	*	Extension PCB (control, optional)
A5P		User interface PCB
A7P	*	Receiver PCB (wireless On/OFF thermostat)
K1A		Relay for heating
K2A		Relay for cooling
M2S	#	Shut-OFF valve
M4S	*	Valve kit
R1H (A3P)	*	Humidity sensor
PC (A7P)		Power circuit
Q*DI	#	Earth leakage circuit breaker
R1T (A3P)	*	Ambient sensor On/OFF thermostat
R2T	*	External sensor (floor or ambient)
S1S	#	Preferential kWh rate power supply contact
X*A, X*Y		Connector
X*M		Terminal strip

*: Optional
#: Field supply

Control box option: backup heater

English		Translation
(1) Connection diagram		(1) Connection diagram
BUH option		Backup heater option
Control box		Control box
Only for ***		Only for ***
(2) Notes		(2) Notes
		Earth wiring
15		Wire number 15
		Field supply
①		Several wiring possibilities
		Option
		Wiring depending on model
		Switch box
		PCB
(3) BUH kit switch box		(3) BUH kit switch box
(4) Legend		(4) Legend
F1B		Overcurrent fuse backup heater
K1M		Contactor backup heater (step 1)
K1R		Relay backup heater (step 1)
K2M		Contactor backup heater (step 2) (only for *9W)
K2R		Relay backup heater (step 2) (only for *9W)
K5M		Safety contactor backup heater (only for *9W)
Q*DI	#	Earth leakage circuit breaker
Q1L		Thermal protector backup heater
R2T		Outlet backup heater thermistor
X*M		Thermistor strip

*: Optional
#: Field supply

Control box option: option box

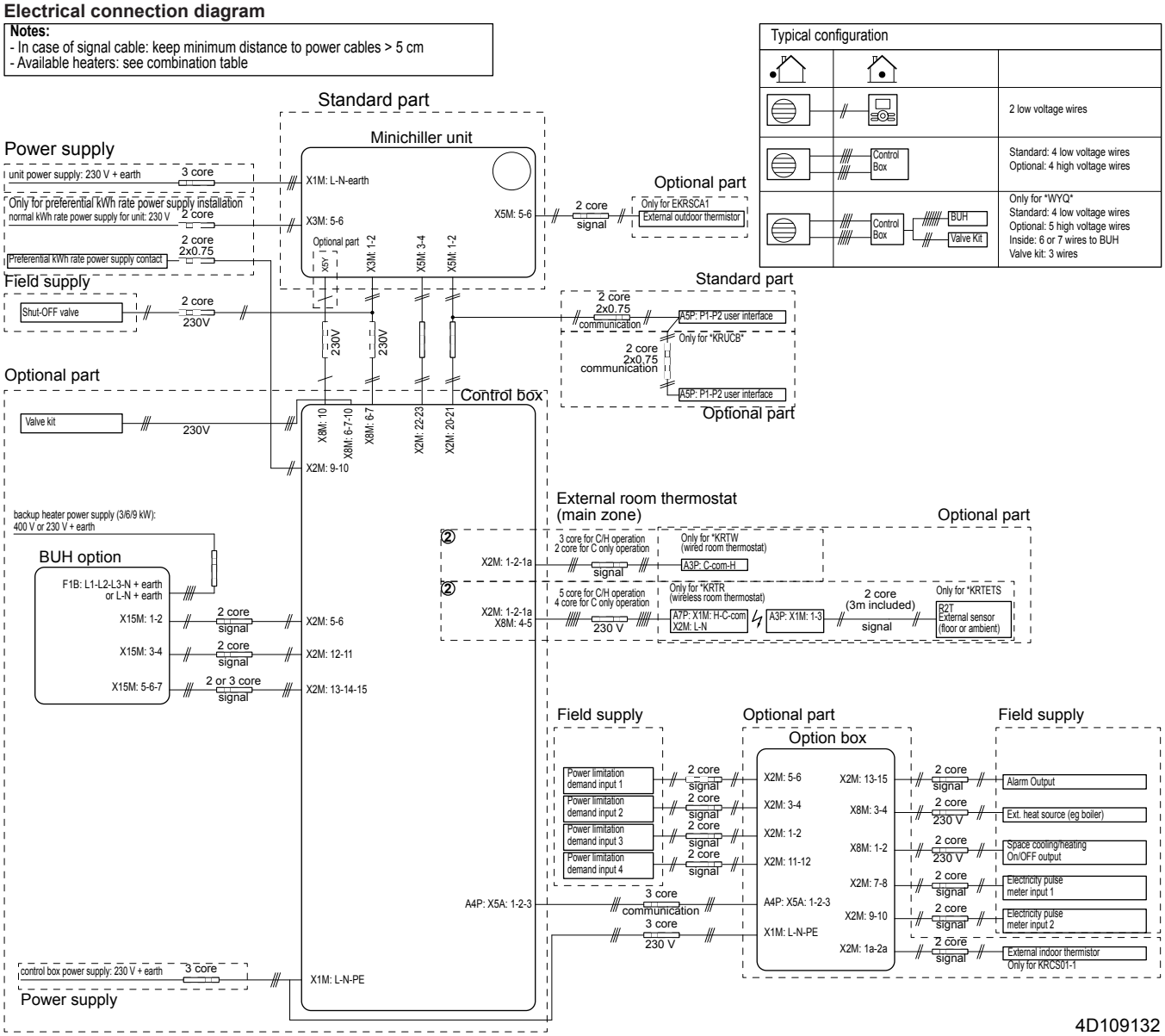
English	Translation
(1) Connection diagram	(1) Connection diagram
Control box	Control box
Option box	Option box
Indoor	Indoor
Alarm output	Alarm output

English		Translation
Space C/H On/OFF output		Space cooling/heating On/OFF output
Max. voltage		Maximum voltage
Max. load		Maximum load
Min. load		Minimum load
Ext. heat source		External heat source
Power limitation digital inputs: 5 V DC detection (voltage supplied by PCB)		Power limitation digital inputs: 5 V DC detection (voltage supplied by PCB)
External indoor ambient sensor option		External indoor ambient sensor option
Electric pulse meter inputs: 5 V DC pulse detection (voltage supplied by PCB)		Electric pulse meter inputs: 5 V DC pulse detection (voltage supplied by PCB)
(2) Legend		(2) Legend
A4P		Extension PCB (control, optional)
R6T	*	External indoor ambient sensor option
S1P	#	Digital power limitation input 1
S2P	#	Digital power limitation input 2
S3P	#	Digital power limitation input 3
S4P	#	Digital power limitation input 4
S5P-S6P	#	Electrical meters
X*A		Connector
X*M		Terminal strip
(3) Notes		(3) Notes
X1M		Main terminal
—·—·—·—		Earth wiring
15		Wire number 15
– – – – – – –		Field supply
①		Several wiring possibilities
		Option
		Wiring depending on model
		Switch box
		PCB
(4) Option switch box layout		(4) Option switch box layout

*: Optional
#: Field supply

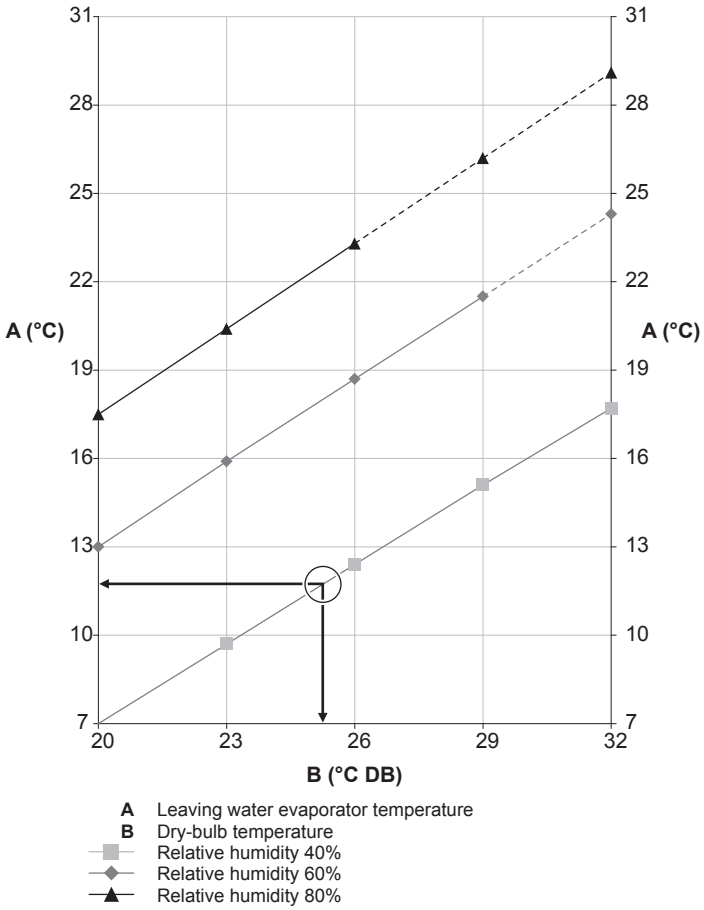
Electrical connection diagram

Notes:
- In case of signal cable: keep minimum distance to power cables > 5 cm
- Available heaters: see combination table



14.4 Valve kit necessity

For reversible systems (heating+cooling) in which a backup heater is installed, the installation of valve kit EKMBHBP1 is required if condensation is expected inside the backup heater.



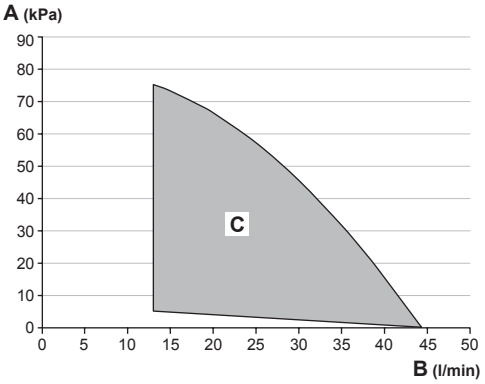
Example: Given are an ambient temperature of 25°C and a relative humidity of 40%. If the leaving water evaporator temperature is <12°C, condensation will occur.

Note: See the psychrometric chart for more information.

14.5 ESP curve: Outdoor unit

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

Only applicable for EWAQ006BAVP and EWAQ008BAVP:



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A External static pressure
B Water flow rate
C Operation range

Notes:

- The upper operation range is only valid if the flow medium is water. If glycol is added to the system, the operation range limit is lower.
- Selecting a flow outside the operating area can damage the unit or cause the unit to malfunction.

15 Glossary

Dealer

Sales distributor for the product.

Authorized installer

Technical skilled person who is qualified to install the product.

User

Person who is owner of the product and/or operates the product.

Applicable legislation

All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company

Qualified company which can perform or coordinate the required service to the product.

Installation manual

Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual

Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions

Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

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

[6.8.2] = ... **ID66F5**

Applicable units

EWAQ006BAVP
EWAQ008BAVP
EWYQ006BAVP
EWYQ008BAVP
EWAQ006BAVP-H-
EWAQ008BAVP-H-
EWYQ006BAVP-H-
EWYQ008BAVP-H-

Notes

(*1) EWYQ*
(*2) EWAQ*

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name			Range, step **Default value**	Date	Value
User settings							
└ Preset values							
└ Room temperature							
7.4.1.1		Comfort (heating)		R/W	[3-07]~[3-06], step: A.3.2.4 **21°C**		
7.4.1.2		Eco (heating)		R/W	[3-07]~[3-06], step: A.3.2.4 **19°C**		
7.4.1.3		Comfort (cooling)		R/W	[3-08]~[3-09], step: A.3.2.4 **24°C**		
7.4.1.4		Eco (cooling)		R/W	[3-08]~[3-09], step: A.3.2.4 **26°C**		
└ LWT main							
7.4.2.1	[8-09]	Comfort (heating)		R/W	[9-01]~[9-00], step: 1°C **45°C**		
7.4.2.2	[8-0A]	Eco (heating)		R/W	[9-01]~[9-00], step: 1°C **40°C**		
7.4.2.3	[8-07]	Comfort (cooling)		R/W	[9-03]~[9-02], step: 1°C **18°C**		
7.4.2.4	[8-08]	Eco (cooling)		R/W	[9-03]~[9-02], step: 1°C **20°C**		
7.4.2.5		Comfort (heating)		R/W	-10~10°C, step: 1°C **0°C**		
7.4.2.6		Eco (heating)		R/W	-10~10°C, step: 1°C **-2°C**		
7.4.2.7		Comfort (cooling)		R/W	-10~10°C, step: 1°C **0°C**		
7.4.2.8		Eco (cooling)		R/W	-10~10°C, step: 1°C **2°C**		
└ Quiet level							
7.4.4				R/W	0: Level 1 **1: Level 2** 2: Level 3		
└ Electricity price							
7.4.5.1	[C-0C] [D-0C]	High		R/W	0,00~990/kWh **0/kWh**		
7.4.5.2	[C-0D] [D-0D]	Medium		R/W	0,00~990/kWh **0/kWh**		
7.4.5.3	[C-0E] [D-0E]	Low		R/W	0,00~990/kWh **0/kWh**		
└ Fuel price							
7.4.6				R/W	0,00~990/kWh 0,00~290/MBtu **8,0/kWh**		
└ Set weather dependent							
└ Main							
└ Set weather-dependent heating							
7.7.1.1	[1-00]	Set weather-dependent heating	Low ambient temp. for LWT main zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
7.7.1.1	[1-01]	Set weather-dependent heating	High ambient temp. for LWT main zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
7.7.1.1	[1-02]	Set weather-dependent heating	Leaving water value for low ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~[9-00]°C, step: 1°C **45°C**		
7.7.1.1	[1-03]	Set weather-dependent heating	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 **35°C**		
└ Set weather-dependent cooling							
7.7.1.2	[1-06]	Set weather-dependent cooling	Low ambient temp. for LWT main zone cooling WD curve.	R/W	10~25°C, step: 1°C **20°C**		
7.7.1.2	[1-07]	Set weather-dependent cooling	High ambient temp. for LWT main zone cooling WD curve.	R/W	25~43°C, step: 1°C **35°C**		
7.7.1.2	[1-08]	Set weather-dependent cooling	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**		
7.7.1.2	[1-09]	Set weather-dependent cooling	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**		
Installer settings							
└ System layout							
└ Standard							
A.2.1.1	[E-00]	Unit type		R/O	0~5 **1: Minichiller**		
A.2.1.2	[E-01]	Compressor type		R/O	0~1 **1: 16**		
A.2.1.3	[E-02]	Indoor software type		R/O	**0: Type 1 (*1)** **1: Type 2 (*2)**		
A.2.1.7	[C-07]	Unit control method		R/W	0: LWT control 1: Ext RT control **2: RT control**		
A.2.1.8	[7-02]	Number of LWT zones		R/O	**0: 1 LWT zone**		
A.2.1.9	[F-0D]	Pump operation mode		R/W	0: Continuous 1: Sample **2: Request**		
A.2.1.A	[E-04]	Power saving possible		R/O	0: No **1: Yes**		
A.2.1.B		User interface location		R/W	0: At unit **1: In room**		
A.2.1.C	[E-0D]	Glycol present		R/W	**0: No** 1: Yes		
└ Options							
A.2.2.B	[C-08]	External sensor		R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
└ Control box							
A.2.2.E.1	[E-03]	Backup heater steps		R/W	**0: No BUH** 1: 1 step 2: 2 steps		
A.2.2.E.2	[5-0D]	BUH type		R/W	0~5 **1: 1P,(1/1+2)** 4: 3PN,(1/2) 5: 3PN,(1/1+2)		
A.2.2.E.3	[D-01]	Preferential kWh rate		R/W	**0: No** 1: Active open 2: Active closed		
A.2.2.E.5	[C-05]	Contact type main		R/W	**1: Thermo ON/OFF** 2: C/H request		
└ Option box							

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name			Range, step **Default value**	Date	Value
A.2.2.F.1	[C-02]	Ext. backup heat src		R/W	0~3 **0**		
A.2.2.F.2	[C-09]	Alarm output		R/W	**0: Normally open** 1: Normally closed		
A.2.2.F.3	[D-08]	External kWh 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		
A.2.2.F.4	[D-09]	External kWh 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		
A.2.2.F.5	[C-08]	External sensor		R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
A.2.2.F.6	[D-04]	PCC by digital inputs		R/W	**0: No** 1: Yes		
		└ Capacities					
A.2.3.2	[6-03]	BUH: step 1		R/W	0~10kW, step: 0,2kW **3kW**		
A.2.3.3	[6-04]	BUH: step 2		R/W	0~10kW, step: 0,2kW **0kW**		
└ Space operation							
└ LWT settings							
└ Main							
A.3.1.1.1		LWT setpoint mode		R/W	0: Fixed **1: Weather dep.** 2: Fixed + scheduled 3: WD + scheduled		
A.3.1.1.2.1	[9-01]	Temperature range	Minimum temp (heating)	R/W	15~37°C, step: 1°C **25°C**		
A.3.1.1.2.2	[9-00]	Temperature range	Maximum temp (heating)	R/W	37~55°C, step: 1°C **55°C**		
A.3.1.1.2.3	[9-03]	Temperature range	Minimum temp (cooling)	R/W	5~18°C, step: 1°C **5°C**		
A.3.1.1.2.4	[9-02]	Temperature range	Maximum temp (cooling)	R/W	18~22°C, step: 1°C **22°C**		
A.3.1.1.5	[8-05]	Modulated LWT		R/W	0: No **1: Yes**		
A.3.1.1.7	[9-0B]	Emitter type		R/W	**0: Quick** 1: Slow		
└ Delta T source							
A.3.1.3.1	[9-09]	Heating		R/W	3~10°C, step: 1°C **5°C**		
A.3.1.3.2	[9-0A]	Cooling		R/W	3~10°C, step: 1°C **5°C**		
		└ Room thermostat					
A.3.2.1.1	[3-07]	Room temp. range	Minimum temp (heating)	R/W	12~18°C, step: A.3.2.4 **16°C**		
A.3.2.1.2	[3-06]	Room temp. range	Maximum temp (heating)	R/W	18~30°C, step: A.3.2.4 **30°C**		
A.3.2.1.3	[3-09]	Room temp. range	Minimum temp (cooling)	R/W	15~25°C, step: A.3.2.4 **15°C**		
A.3.2.1.4	[3-08]	Room temp. range	Maximum temp (cooling)	R/W	25~35°C, step: A.3.2.4 **35°C**		
A.3.2.2	[2-0A]	Room temp. offset		R/W	-5~5°C, step: 0,5°C **0°C**		
A.3.2.3	[2-09]	Ext. room sensor offset		R/W	-5~5°C, step: 0,5°C **0°C**		
A.3.2.4		Room temp. step		R/W	0: 0,5 °C **1: 1 °C**		
		└ Operation range					
A.3.3.1	[4-02]	Space heating OFF temp		R/W	14~35 , step: 1°C **35°C**		
A.3.3.2	[F-01]	Space cooling On temp		R/W	10~35°C, step: 1°C **20°C**		
└ Heat sources							
└ Backup heater							
A.5.1.1	[4-00]	Operation mode		R/W	0~2 0: Disabled **1: Enabled**		
A.5.1.3	[4-07]	Enable BUH step 2		R/W	0: No **1: Yes**		
A.5.1.4	[5-01]	Equilibrium temp.		R/W	-15~35°C, step: 1°C **-4°C**		
└ System operation							
└ Auto restart							
A.6.1	[3-00]			R/W	0: No **1: Yes**		
		└ Preferential kWh rate					
A.6.2.1	[D-00]	Allowed heaters		R/W	0~3 **0: None** 2: BUH only 3: All heaters		
A.6.2.2	[D-05]	Forced pump OFF		R/W	0: Forced off **1: As normal**		
		└ Pwr consumpt. Control					
A.6.3.1	[4-08]	Mode		R/W	**0: No limitation** 1: Continuous 2: Digital inputs		
A.6.3.2	[4-09]	Type		R/W	0: Current **1: Power**		
A.6.3.3	[5-05]	Amp. value		R/W	0~50 A, step: 1 A **50 A**		
A.6.3.4	[5-09]	kW value		R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.5.1	[5-05]	Amp. limits for DI	Limit DI1	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.5.2	[5-06]	Amp. limits for DI	Limit DI2	R/W	0~50 A, step: 1 A **50 A**		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name			Range, step **Default value**	Date	Value
A.6.3.5.3	[5-07]	Amp. limits for DI	Limit DI3	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.5.4	[5-08]	Amp. limits for DI	Limit DI4	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.6.1	[5-09]	kW limits for DI	Limit DI1	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.6.2	[5-0A]	kW limits for DI	Limit DI2	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.6.3	[5-0B]	kW limits for DI	Limit DI3	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.6.4	[5-0C]	kW limits for DI	Limit DI4	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.7	[4-01]	Priority		R/W	0~2 **0: None** 2: BUH		
		└ Averaging time					
A.6.4	[1-0A]			R/W	**0: No averaging** 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours		
		└ Ext amb. sensor offset					
A.6.5	[2-0B]			R/W	-5~5°C, step: 0,5°C **0°C**		
		└ Boiler efficiency					
A.6.A	[7-05]			R/W	**0: Very high** 1: High 2: Medium 3: Low 4: Very low		
		└ Emergency					
A.6.C				R/W	**0: Manual** 1: Automatic		
└ Overview settings							
A.8	[0-00]	--			**35°C**		
A.8	[0-01]	--			**45°C**		
A.8	[0-02]	--			**15°C**		
A.8	[0-03]	--			**-10°C**		
A.8	[0-04]	--			**8°C**		
A.8	[0-05]	--			**12°C**		
A.8	[0-06]	--			**35°C**		
A.8	[0-07]	--			**20°C**		
A.8	[0-0B]	--			**55°C**		
A.8	[0-0C]	--			**60°C**		
A.8	[0-0D]	--			**15°C**		
A.8	[0-0E]	--			**-10°C**		
A.8	[1-00]	Low ambient temp. for LWT main zone heating WD curve.		R/W	-40~5°C, step: 1°C **-10°C**		
A.8	[1-01]	High ambient temp. for LWT main zone heating WD curve.		R/W	10~25°C, step: 1°C **15°C**		
A.8	[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 **45°C**		
A.8	[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 **35°C**		
A.8	[1-04]	Weather dependent cooling of the main leaving water temperature zone.		R/W	0: Disabled **1: Enabled**		
A.8	[1-05]	--			**1**		
A.8	[1-06]	Low ambient temp. for LWT main zone cooling WD curve.		R/W	10~25°C, step: 1°C **20°C**		
A.8	[1-07]	High ambient temp. for LWT main zone cooling WD curve.		R/W	25~43°C, step: 1°C **35°C**		
A.8	[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**		
A.8	[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**		
A.8	[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		
A.8	[2-00]	--			**5**		
A.8	[2-01]	--			**1**		
A.8	[2-02]	--			**23**		
A.8	[2-03]	--			**60**		
A.8	[2-04]	--			**40**		
A.8	[2-05]	Room antifrost temperature		R/W	4~16°C, step: 1°C **16°C**		
A.8	[2-06]	Room frost protection		R/W	0: Disabled **1: Enabled**		
A.8	[2-09]	Adjust the offset on the measured room temperature		R/W	-5~5°C, step: 0,5°C **0°C**		
A.8	[2-0A]	Adjust the offset on the measured room temperature		R/W	-5~5°C, step: 0,5°C **0°C**		
A.8	[2-0B]	What is the required offset on the measured outdoor temp.?		R/W	-5~5°C, step: 0,5°C **0°C**		
A.8	[3-00]	Is auto restart of the unit allowed?		R/W	0: No **1: Yes**		
A.8	[3-01]	--			**0**		
A.8	[3-02]	--			**1**		
A.8	[3-03]	--			**4**		
A.8	[3-04]	--			**2**		
A.8	[3-05]	--			**1**		
A.8	[3-06]	What is the maximum desired room temperature in heating?		R/W	18~30°C, step: A.3.2.4 **30°C**		
A.8	[3-07]	What is the minimum desired room temperature in heating?		R/W	12~18°C, step: A.3.2.4 **16°C**		
A.8	[3-08]	What is the maximum desired room temperature in cooling?		R/W	25~35°C, step: A.3.2.4 **35°C**		
A.8	[3-09]	What is the minimum desired room temperature in cooling?		R/W	15~25°C, step: A.3.2.4 **15°C**		
A.8	[4-00]	What is the BUH operation mode?		R/W	0~2 0: Disabled **1: Enabled**		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
A.8	[4-01]	Which electric heater has priority?	R/W	0~2 **0: None**		
A.8	[4-02]	Below which outdoor temperature is heating allowed?	R/W	14~35 °C, step: 1°C **35°C**		
A.8	[4-03]	--		**3**		
A.8	[4-04]	How to protect the water pipes from freezing	R/W	**0: Intermittent pump operation** 1: Continuous pump operation 2: No protection		
A.8	[4-05]	--		**0**		
A.8	[4-06]	-- (Do not change this value)		**0/1**		
A.8	[4-07]	Enable the second step of the backup heater?	R/W	0: No **1: Yes**		
A.8	[4-08]	Which power limitation mode is required on the system?	R/W	**0: No limitation** 1: Continuous 2: Digital inputs		
A.8	[4-09]	Which power limitation type is required?	R/W	0: Current **1: Power**		
A.8	[4-0A]	--		**0**		
A.8	[4-0B]	Automatic cooling/heating changeover hysteresis.	R/W	1~10°C, step: 0,5°C **1°C**		
A.8	[4-0D]	Automatic cooling/heating changeover offset.	R/W	1~10°C, step: 0,5°C **3°C**		
A.8	[4-0E]	Is the installer on site?	R/W	0: No **1: Yes**		
A.8	[5-00]	Is backup heater operation allowed above equilibrium temperature during space heating operation?	R/W	0: Allowed **1: Not allowed**		
A.8	[5-01]	What is the equilibrium temperature for the building?	R/W	-15~35°C, step: 1°C **-4°C**		
A.8	[5-02]	Space heating priority.	R/W	0: Disabled **1: Enabled**		
A.8	[5-03]	Space heating priority temperature.	R/W	-15~35°C, step: 1°C **0°C**		
A.8	[5-04]	--		**10**		
A.8	[5-05]	What is the requested limit for DI1?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-06]	What is the requested limit for DI2?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-07]	What is the requested limit for DI3?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-08]	What is the requested limit for DI4?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-09]	What is the requested limit for DI1?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0A]	What is the requested limit for DI2?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0B]	What is the requested limit for DI3?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0C]	What is the requested limit for DI4?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0D]	What type of backup heater installation is used?	R/W	0~5 **1: 1P,(1/1+2)** 4: 3PN,(1/2) 5: 3PN,(1/1+2)		
A.8	[5-0E]	--		**1**		
A.8	[6-00]	The temperature difference determining the heat pump ON temperature.	R/W	2~20°C, step: 1°C **2°C**		
A.8	[6-01]	The temperature difference determining the heat pump OFF temperature.	R/W	0~10°C, step: 1°C **2°C**		
A.8	[6-02]	--		**0**		
A.8	[6-03]	What is the capacity of the backup heater step 1?	R/W	0~10 kW, step: 0,2 kW **3 kW**		
A.8	[6-04]	What is the capacity of the backup heater step 2?	R/W	0~10 kW, step: 0,2 kW **0 kW**		
A.8	[6-05]	--		**0**		
A.8	[6-06]	--		**0**		
A.8	[6-07]	--		**0**		
A.8	[6-08]	--		**10**		
A.8	[6-09]	--		**0**		
A.8	[6-0A]	--		**55°C**		
A.8	[6-0B]	--		**45°C**		
A.8	[6-0C]	--		**45°C**		
A.8	[6-0D]	--		**1**		
A.8	[6-0E]	--		**60°C**		
A.8	[7-00]	--		**0°C**		
A.8	[7-01]	--		**2°C**		
A.8	[7-02]	How many leaving water temperature zones are there?	R/O	**0: 1 LWT zone**		
A.8	[7-03]	--		**2,5**		
A.8	[7-04]	--		**0**		
A.8	[7-05]	Boiler efficiency	R/W	**0: Very high** 1: High 2: Medium 3: Low 4: Very low		
A.8	[8-00]	--		**1 min**		
A.8	[8-01]	--		**30**		
A.8	[8-02]	--		**0,5**		
A.8	[8-03]	--		**50**		
A.8	[8-04]	Additional running time for the maximum running time.	R/W	0~95 min, step: 5 min **95 min**		
A.8	[8-05]	Allow modulation of the LWT to control the room temp?	R/W	0: No **1: Yes**		
A.8	[8-06]	Leaving water temperature maximum modulation.	R/W	0~10°C, step: 1°C **3°C**		
A.8	[8-07]	What is the desired comfort main LWT in cooling?	R/W	[9-03]~[9-02], step: 1°C **18°C**		
A.8	[8-08]	What is the desired eco main LWT in cooling?	R/W	[9-03]~[9-02], step: 1°C **20°C**		
A.8	[8-09]	What is the desired comfort main LWT in heating?	R/W	[9-01]~[9-00], step: 1°C **45°C**		
A.8	[8-0A]	What is the desired eco main LWT in heating?	R/W	[9-01]~[9-00], step: 1°C **40°C**		
A.8	[8-0B]	--		**13**		
A.8	[8-0C]	--		**10**		
A.8	[8-0D]	--		**16**		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
A.8	[9-00]	What is the maximum desired LWT for main zone in heating?	R/W	37~55°C, step: 1°C **55°C**		
A.8	[9-01]	What is the minimum desired LWT for main zone in heating?	R/W	15~37°C, step: 1°C **25°C**		
A.8	[9-02]	What is the maximum desired LWT for main zone in cooling?	R/W	18~22°C, step: 1°C **22°C**		
A.8	[9-03]	What is the minimum desired LWT for main zone in cooling?	R/W	5~18°C, step: 1°C **5°C**		
A.8	[9-04]	Leaving water temperature overshoot temperature.	R/W	1~4°C, step: 1°C **1°C**		
A.8	[9-05]	--		**25**		
A.8	[9-06]	--		**55**		
A.8	[9-07]	--		**5**		
A.8	[9-08]	--		**22**		
A.8	[9-09]	What is the desired delta T in heating?	R/W	3~10°C, step: 1°C **5°C**		
A.8	[9-0A]	What is the desired delta T in cooling?	R/W	3~10°C, step: 1°C **5°C**		
A.8	[9-0B]	What emitter type is connected to the main LWT zone?	R/W	**0: Quick** 1: Slow		
A.8	[9-0C]	Room temperature hysteresis.	R/W	1~6°C, step: 0,5°C **1 °C**		
A.8	[9-0D]	Pump speed limitation	R/W	0~8, step:1 0 : 100% 1~4 : 80~50% 5~8 : 80~50% **6**		
A.8	[9-0E]	--		**6**		
A.8	[A-00]	--		**0**		
A.8	[A-01]	--		**0**		
A.8	[A-02]	--		**0**		
A.8	[A-03]	--		**0**		
A.8	[A-04]	--		**0**		
A.8	[B-00]	--		**0**		
A.8	[B-01]	--		**0**		
A.8	[B-02]	--		**0**		
A.8	[B-03]	--		**0**		
A.8	[B-04]	--		**0**		
A.8	[C-00]	--		**0**		
A.8	[C-01]	--		**0**		
A.8	[C-02]	--		**0**		
A.8	[C-03]	Bivalent activation temperature.	R/W	-25~25°C, step: 1°C **0°C**		
A.8	[C-04]	Bivalent hysteresis temperature.	R/W	2~10°C, step: 1°C **3°C**		
A.8	[C-05]	What is the thermo request contact type for the main zone?	R/W	**1: Thermo ON/OFF** 2: C/H request		
A.8	[C-06]	--		**1**		
A.8	[C-07]	What is the unit control method in space operation?	R/W	0: LWT control 1: Ext RT control **2: RT control**		
A.8	[C-08]	Which type of external sensor is installed?	R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
A.8	[C-09]	What is the required alarm output contact type?	R/W	**0: Normally open** 1: Normally closed		
A.8	[C-0A]	--		**0**		
A.8	[C-0C]	High electricity price decimal (Do not use)	R/W	0~7 **0**		
A.8	[C-0D]	Medium electricity price decimal (Do not use)	R/W	0~7 **0**		
A.8	[C-0E]	Low electricity price decimal (Do not use)	R/W	0~7 **0**		
A.8	[D-00]	Which heaters are permitted if prefer. kWh rate PS is cut?	R/W	0~3 **0: None** 2: BUH only 3: All heaters		
A.8	[D-01]	Forced off contact type	R/W	0~3 **0: No** 1: Open tariff 2: Closed tariff		
A.8	[D-02]	--		**0**		
A.8	[D-03]	Leaving water temperature compensation around 0°C.	R/W	0: Disabled 1: Enabled, shift 2°C (from -2 to 2°C) **2: Enabled, shift 4°C (from -2 to 2°C)** 3: Enabled, shift 2°C (from -4 to 4°C) 4: Enabled, shift 4°C (from -4 to 4°C)		
A.8	[D-04]	Is the option box used for PCC ?	R/W	**0: No** 1: Yes		
A.8	[D-05]	Is the pump allowed to run if prefer. kWh rate PS is cut?	R/W	0: Forced off **1: As normal**		
A.8	[D-07]	--		**0**		
A.8	[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		
A.8	[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		
A.8	[D-0A]	--		**0**		
A.8	[D-0B]	--		**2**		
A.8	[D-0C]	What is the high electricity price (Do not use)	R/W	0~49 **0**		
A.8	[D-0D]	What is the medium electricity price (Do not use)	R/W	0~49 **0**		
A.8	[D-0E]	What is the low electricity price (Do not use)	R/W	0~49 **0**		
A.8	[E-00]	Which type of unit is installed?	R/O	**1: Minichiller**		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
A.8	[E-01]	Which type of compressor is installed?	R/O	0~1 **1: 16**		
A.8	[E-02]	What is the indoor unit software type?	R/O	**0: Type 1 (*1)** **1: Type 2 (*2)**		
A.8	[E-03]	What is the number of backup heater steps?	R/W	**0: No BUH** 1: 1 step 2: 2 steps		
A.8	[E-04]	Is the power saving function available on the outdoor unit?	R/O	**0: No** 1: Yes		
A.8	[E-05]	--		**0**		
A.8	[E-06]	--		**1**		
A.8	[E-07]	--		**0**		
A.8	[E-08]	Power saving function for outdoor unit.	R/W	**0: Disabled** 1: Enabled		
A.8	[E-09]	--		**0**		
A.8	[E-0A]	--		**0**		
A.8	[E-0B]	--		**0**		
A.8	[E-0C]	--		**0**		
A.8	[E-0D]	Is the system filled with glycol ?	R/W	**0: No** 1: Yes		
A.8	[E-0E]	--		**0**		
A.8	[F-00]	Pump operation allowed outside range.	R/W	**0: Disabled** 1: Enabled		
A.8	[F-01]	Above which outdoor temperature is cooling allowed?	R/W	10~35°C, step: 1°C **20°C**		
A.8	[F-02]	--		**3**		
A.8	[F-03]	--		**5**		
A.8	[F-04]	--		**0**		
A.8	[F-05]	--		**0**		
A.8	[F-06]	--		**0**		
A.8	[F-09]	Pump operation during flow abnormality.	R/W	**0: Disabled** 1: Enabled		
A.8	[F-0A]	--		**0**		
A.8	[F-0B]	--		**0**		
A.8	[F-0C]	--		**1**		
A.8	[F-0D]	What is the pump operation mode?	R/W	0: Continuous 1: Sample **2: Request**		

EAC

DAIKIN EUROPE N.V.

Zandvoordestraat 300, B-8400 Oostende, Belgium

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