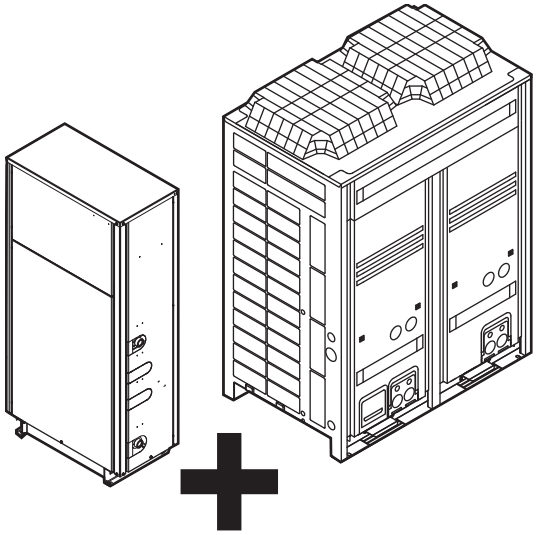
Installer and user reference guide

Split packaged air-cooled water chiller



SERHQ020BAW1
SERHQ032BAW1

SEHVX20BAW
SEHVX32BAW
SEHVX40BAW
SEHVX64BAW

Installer and user reference guide
Split packaged air-cooled water chiller

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 user

- If you are NOT sure how to operate the unit, contact your installer.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall NOT play with the appliance. Cleaning and user maintenance shall NOT be made by children without supervision.

WARNING

To prevent electric shocks or fire:

- Do NOT rinse the unit.
- Do NOT operate the unit with wet hands.
- Do NOT place any objects containing water on the unit.

NOTICE

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

- Units are marked with the following symbol:

This means that electrical and electronic products may NOT be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts must be done by an authorized installer and must comply with applicable legislation.
Units must be treated at a specialized treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

- Batteries are marked with the following symbol:

This means that the batteries may NOT be mixed with unsorted household waste. If a chemical symbol is printed beneath the symbol, this chemical symbol means that the battery contains a heavy metal above a certain concentration.
Possible chemical symbols are: Pb: lead (>0.004%).
Waste batteries must be treated at a specialized treatment facility for reuse. By ensuring waste batteries are disposed of correctly, you will help to prevent potential negative consequences for the environment and human health.

1.3 For the installer

1.3.1 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.

1.3.2 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.

1.3.3 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.

1.3.4 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.

1.3.5 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.

1.3.6 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.

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

WARNING

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

NOTICE

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

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

2 About the documentation

2.1 About this document

INFORMATION

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

Target audience

Authorised installers + end users

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)

- **Installation and operation manual:**
  - Installation and operation instructions
  - Format: Paper (in the box of the indoor unit)
- **Installer and user reference guide:**
  - Preparation of the installation, reference data,…
  - Detailed step-by-step instructions and background information for basic and advanced usage
  - Format: Digital files on http://www.daikineurope.com/support-and-manuals/product-information/

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 and user 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
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
Operation	Operation of the units
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
Field settings table	Table to be filled in by the installer, and kept for future reference
Glossary	Definition of terms

For the installer

3 About the box

3.1 Overview: About the box

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

It contains information about:

- Unpacking and handling the units
- Removing the accessories from the units

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.
- When handling the unit, take into account the following:

  Fragile, handle the unit with care.

  Keep the unit upright in order to avoid compressor damage.
- Prepare the path along which you want to bring the unit inside in advance.

3.2 Outdoor unit

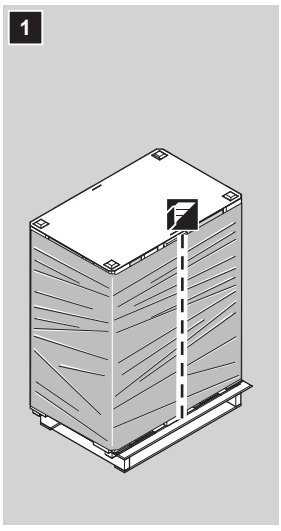
3.2.1 To unpack the outdoor unit

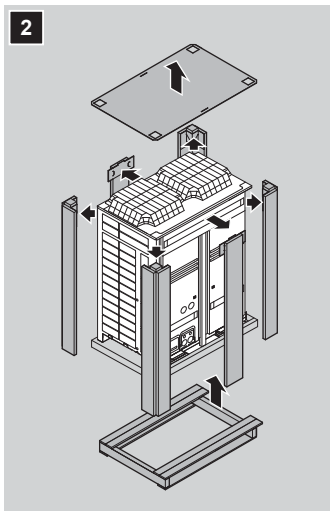
Remove the packaging material from the unit:

- Take care not to damage the unit when removing the shrink foil with a cutter.
- Remove the 4 bolts fixing the unit to its pallet.

WARNING

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



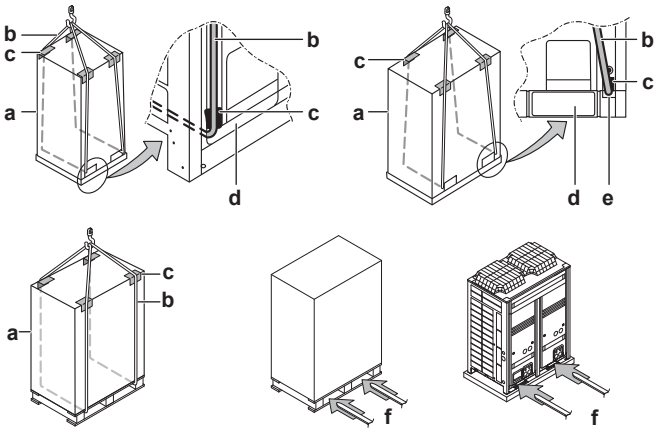


3.2.2 To handle the outdoor unit

CAUTION

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

- Lift the unit preferably with a crane and 2 belts of at least 8 m long as shown in the figure below. Always use protectors to prevent belt damage and pay attention to the position of the unit's centre of gravity.



a Packaging material
b Belt sling
c Protector
d Large opening
e Small opening (40×45)
f Forklift

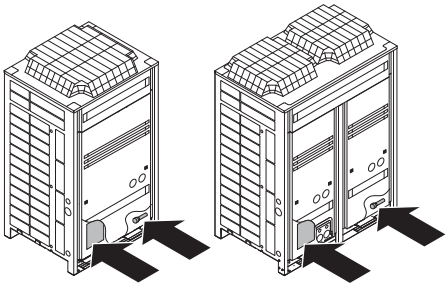
NOTICE

Use a belt sling of ≤20 mm wide that adequately bears the weight of the unit.

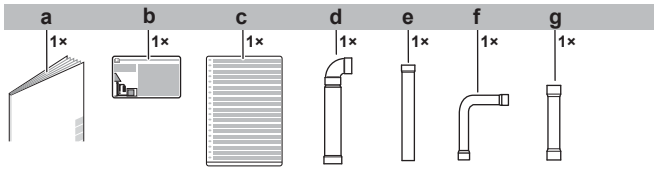
NOTICE

Cover the forklift arms with a cloth to prevent damaging the unit. If the paint on the bottom frame peels off, the anti-corrosion effect may decrease.

3.2.3 To remove the accessories from the outdoor unit



Make sure that all accessories are available in the unit.



a General safety precautions
b Fluorinated greenhouse gases label
c Multilingual fluorinated greenhouse gases label
d Gas side accessory pipe
e Gas side accessory pipe
f Liquid side accessory pipe
g Liquid side accessory pipes

3.3 Indoor unit

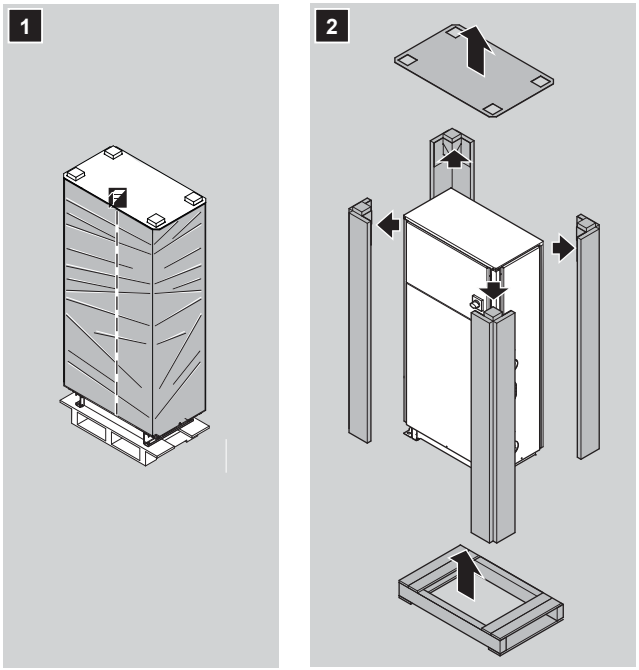
3.3.1 To unpack the indoor unit

Remove the packaging material from the unit:

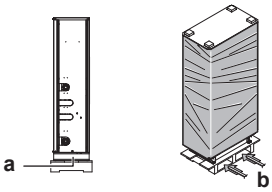
- Take care not to damage the unit when removing the shrink foil with a cutter.
- Remove the 4 bolts fixing the unit to its pallet.
- Take care not to drop the unit when removing it from the pallet. Lift the unit with at least 2 installers.

WARNING

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



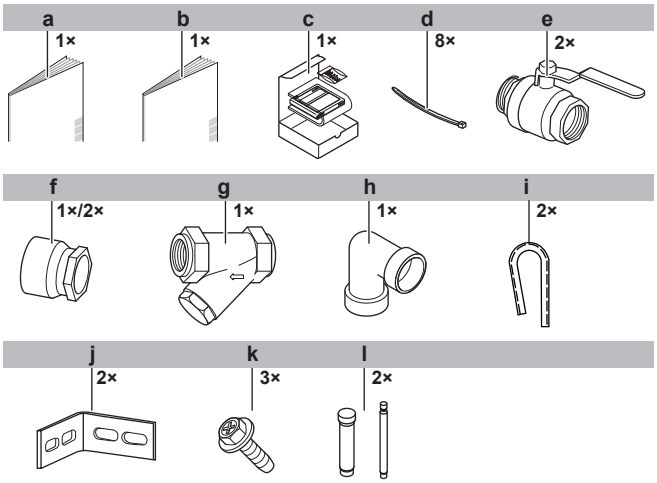
3.3.2 To handle the indoor unit



a Opening
b Forklift

- A forklift can only be used for transport as long as the unit remains on its pallet as shown above.

3.3.3 To remove the accessories from the indoor unit



a General safety precautions
b Installation manual and operation manual (panel 3)
c User interface (panel 3)
d Tie wraps (panel 3)
e Shut-off valves (panel 3)
f Threaded connection (panel 3) (1× for SEHVX20+32BAW, 2× for SEHVX40+64BAW)
g Filter (panel 3)
h Elbow (panel 3)
i Black grommet (2×)
j L-shaped support (2×)
k M5 screws (3×)
l Accessory pipes (Ø12.7→Ø9.52 and Ø25.4→Ø28.6)

4 About the units and options

4.1 Overview: About the units and options

This chapter contains information about:

- Identifying the outdoor unit
- Identifying the indoor unit
- About the outdoor unit
- About the indoor unit
- Combining the split system with options
- Where the outdoor and indoor units fit in the system layout

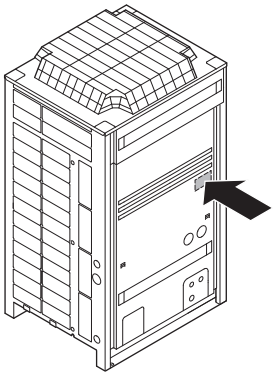
4.2 Identification

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



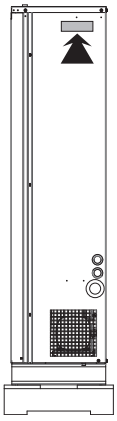
Model identification

Example: SE RH Q 020 BA W1

Code	Explanation
SE	Special European model
RH	Outdoor/low water temperature
Q	R410A refrigerant
020	Capacity class
BA	Model series
W1	Power supply: 3P, 400 V

4.2.2 Identification label: Indoor unit

Location



Model identification

Example: SE HVX 20 BA W

Code	Explanation
SE	Special European model
HVX	Indoor unit / Floor-standing
20	Capacity class
BA	Model series
W	Power supply: 3P, 400 V

4.2.3 About the outdoor unit

SERHQ outdoor units are designed for outdoor installation and are meant to be combined with SEHVX indoor units.

The outdoor units are designed to work in heating mode at ambient temperatures from –15°C WB to 35°C WB and in cooling mode at ambient temperatures from –5°C DB to 43°C DB.

4.2.4 About the indoor unit

The SEHVX indoor units are intended for indoor installation and can be used for air conditioning purposes or for supplying water for process cooling applications.

The units are available in 4 standard sizes with nominal capacities ranging from 21.2 to 63.3 kW.

The unit is designed to work in heating mode at ambient temperatures from –15°C to 35°C and in cooling mode at ambient temperatures from –5°C to 43°C.

The main component is the water heat exchanger.

The indoor unit is connected to the outdoor unit by field refrigerant piping and the compressor in the outdoor unit circulates refrigerant into the heat exchangers.

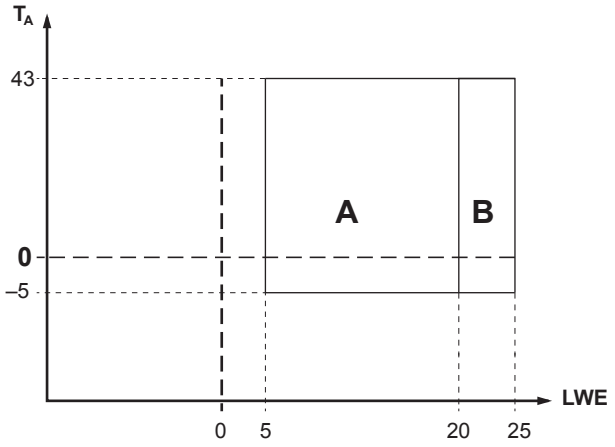
- In cooling mode, the refrigerant transports the heat taken from the water heat exchanger to the air heat exchanger where the heat is released to the air.
- In heating mode, the refrigerant transports the heat taken from the air heat exchanger to the water heat exchanger where the heat is released to the water.

4.2.5 About combining units and options

The indoor unit can be combined with fan coil units and is intended for R410A use only.

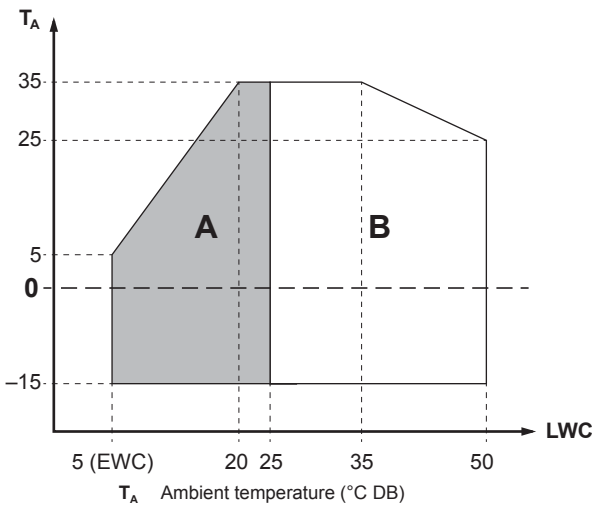
4.2.6 Operation range

Cooling



T_A Ambient temperature (°C DB)
LWE Leaving water evaporator temperature (°C)
A Standard water operation range
B Pull down area

Heating



T_A Ambient temperature (°C DB)
LWC Leaving water condenser temperature (°C)
EWC Entering water condenser temperature (°C)
A Pull up area
B Standard water operation range

4.3 Combining units and options

4.3.1 Possible options for the split system

INFORMATION

Refer to the technical engineering data for the latest option names.

Remote controller (EKRUAHTB)

A second remote controller to control the unit from 2 locations.

Demand PCB (EKRP1AHTA)

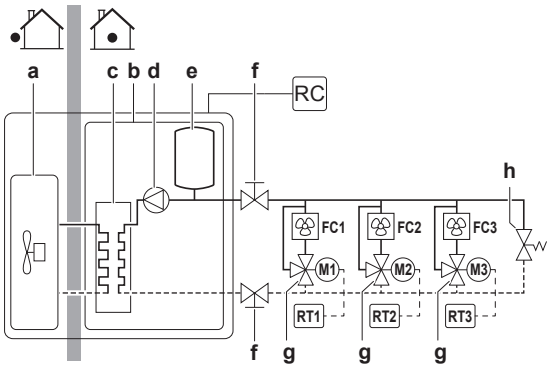
To enable the power saving consumption control by digital inputs you must install the demand PCB.

For installation instructions, see the installation manual of the demand PCB. In case of SEHVX40+64BAW, 2 sets of this option are required.

External control adaptor (DTA104A62)

To instruct specific operation with an external input coming from a central control, the external control adaptor can be used. Instructions (group or individual) can be given for low noise operation and power consumption limitation operation. In case of SEHVX40+64BAW, 2 sets of this option are required.

4.4 System layout



a Outdoor unit
b Indoor unit
c Plate heat exchanger
d Pump
e Expansion vessel
f Shut-off valve
g Motorized valve
h Bypass valve
FC1…3 Fancoil unit (field supply)
RC User interface
RT1…3 Room thermostat

5 Preparation

5.1 Overview: Preparation

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

It contains information about:

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

5.2 Preparing the installation site

5.2.1 Installation site requirements of the outdoor unit

INFORMATION

Also read the following requirements:

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

- 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 unit is level.
- Select a place where rain can be avoided as much as possible.
- Take care that in the event of a water leak, water cannot cause any damage to the installation space and surroundings.
- Select the location of the unit in such a way that the sound generated by the unit does not disturb anyone, and the location is selected according the applicable legislation.
- During installation, avoid the possibility that anybody can climb on the unit or place objects on the unit.
- All piping lengths and distances have been taken into consideration (see "5.3.3 About the piping length" on page 13).

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.
- 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.

NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CAUTION

Appliance NOT accessible to the general public, install it in a secured area, protected from easy access.

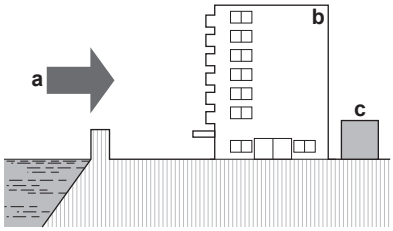
This unit is suitable for installation in a commercial and light industrial environment.

- When installing, take strong winds, typhoons or earthquakes into account, improper installation may result in the unit turning over.
- Be sure that the air inlet and outlet of the unit is not positioned towards the main wind direction. Frontal wind will disturb the operation of the unit. If necessary, use a screen to block the wind.
- Ensure that water cannot cause any damage to the location by adding water drains to the foundation and prevent water traps in the construction.
- In heavy snowfall areas, select an installation site where snow will not affect the operation of the unit.

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.

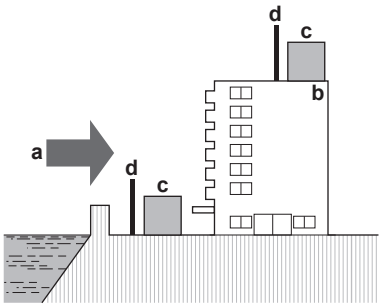
Install the outdoor unit away from direct sea winds.

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.

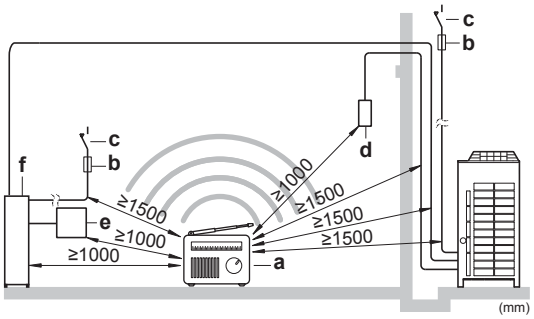


a Sea wind
b Building
c Outdoor unit
d Windbreaker

NOTICE

The equipment described in this manual may cause electronic noise generated from radio-frequency energy. The equipment complies to specifications that are designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation.

It is therefore recommended to install the equipment and electric wires keeping proper distances away from stereo equipment, personal computers, etc.



a Personal computer or radio
b Fuse
c Earth leakage breaker
d Cool/heat selector
e User interface
f Indoor unit

In places with weak reception, keep distances of 3 m or more to avoid electromagnetic disturbance of other equipment and use conduit tubes for power and transmission lines.

5.2.2 Installation site requirements of the indoor unit

INFORMATION

Also read the following requirements:

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

- 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 unit is level.
- Select the location of the unit in such a way that the sound generated by the unit does not disturb anyone, and the location is selected according the applicable legislation.
- Take care that in the event of a water leak, water cannot cause any damage to the installation space and surroundings.
- During installation, avoid the possibility that anybody can climb on the unit or place objects on the unit.
- All piping lengths and distances have been taken into consideration (see "5.3.3 About the piping length" on page 13).

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.
- 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.

NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

CAUTION

Appliance NOT accessible to the general public, install it in a secured area, protected from easy access.

This unit is suitable for installation in a commercial and light industrial environment.

5.3 Preparing refrigerant piping

5.3.1 Refrigerant piping requirements

NOTICE

The refrigerant R410A requires strict cautions for keeping the system clean, dry and tight.

- Clean and dry: foreign materials (including mineral oils or moisture) should be prevented from getting mixed into the system.
- Tight: R410A does not contain any chlorine, does not destroy the ozone layer, and does not reduce earth's protection against harmful ultraviolet radiation. R410A can contribute slightly to the greenhouse effect if it is released. Therefore pay special attention to check the tightness of the installation.

NOTICE

The piping and other pressure-containing parts shall be suitable for refrigerant. Use phosphoric acid deoxidised seamless copper for refrigerant.

- Foreign materials inside pipes (including oils for fabrication) must be ≤30 mg/10 m.
- Temper grade: use piping with temper grade in function of the pipe diameter as listed in table below.

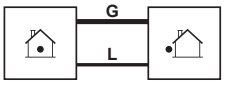
Pipe Ø	Temper grade of piping material
≤15.9 mm	O (annealed)
≥19.1 mm	1/2H (half hard)

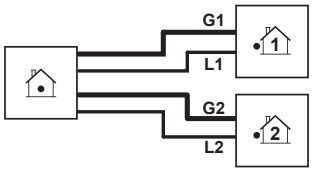
- The pipe thickness of the refrigerant piping shall comply with the applicable legislation. The minimal pipe thickness for R410A piping must be in accordance with the table below.

Pipe Ø	Minimal thickness t
6.4 mm/9.5 mm/12.7 mm	0.80 mm
15.9 mm	0.99 mm
19.1 mm/22.2 mm	0.80 mm
28.6 mm	0.99 mm
34.9 mm	1.21 mm
41.3 mm	1.43 mm

5.3.2 To select the piping size

Determine the proper size using the following tables and reference figure (only for indication).





- Piping connection sizes

Indoor unit	Gas	Liquid	Outdoor unit	Gas	Liquid
SEHVX20BAW	Ø25.4 mm	Ø12.7 mm	1× SERHQ020BAW1	Ø22.2 mm	Ø9.52 mm
SEHVX32BAW	Ø25.4 mm	Ø12.7 mm	1× SERHQ032BAW1	Ø28.6 mm	Ø12.7 mm
SEHVX40BAW	Ø25.4 mm	Ø12.7 mm	2× SERHQ020BAW1	Ø22.2 mm	Ø9.52 mm
SEHVX64BAW	Ø25.4 mm	Ø12.7 mm	2× SERHQ032BAW1	Ø28.6 mm	Ø12.7 mm

- Field piping sizes

Indoor unit	G/G1	L/L1	G2	L2
SEHVX20BAW	Ø28.6 mm	Ø9.52 mm	—	—
SEHVX32BAW	Ø28.6 mm	Ø12.7 mm	—	—
SEHVX40BAW	Ø28.6 mm	Ø9.52 mm	Ø28.6 mm	Ø9.52 mm
SEHVX64BAW	Ø28.6 mm	Ø12.7 mm	Ø28.6 mm	Ø12.7 mm

If the indoor unit connections do not match the diameter of the specified piping requirements, the piping diameter requirements must be met using reducers/expanders (field supply) on the indoor unit connections.

Other diameters (mm sizes) can also be used if the required pipe sizes (inch sizes) are not available, taking the following into account:

- select the pipe size nearest to the required size,
- use the suitable adapters for the change-over from inch to mm pipes (field supply).

5.3.3 About the piping length

Maximum piping length and height difference	
Maximum allowable piping length	30 m
Height difference between indoor and outdoor unit	<10 m
Height difference between outdoor unit 1 and outdoor unit 2 (if applicable)	0 m

5.4 Preparing water piping

5.4.1 Water circuit requirements

INFORMATION

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

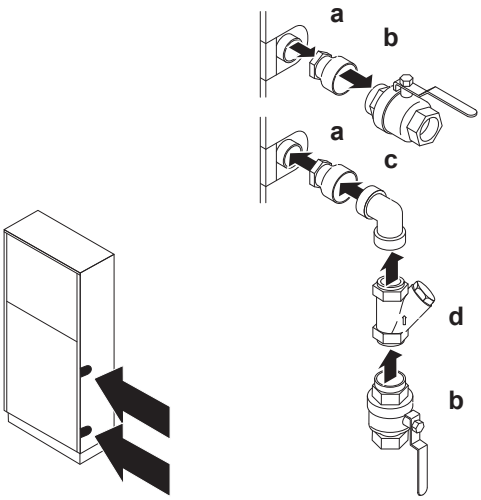
NOTICE

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

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

Capacity class	Minimum required flow rate
20	23 l/min
32	36 l/min
40	46 l/min
64	72 l/min

- **Field supply components – Water pressure and temperature.** Check that all components in the field piping can withstand the water pressure and water temperature.
- **Drainage – Low points.** Provide drain taps at all low points of the system in order to allow complete drainage of the water circuit.
- **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.
- **Shut-off valves.** Two shut-off valves are delivered with the unit. Install them as shown in the following figure.



a Adapter piece (on the inlet only in case of SEHVX40+64BAW)
b Shut-off valve
c Bend
d Filter

NOTICE

Before mounting the bend, attach the filter to it.

NOTICE

If the bend is not used during installation, replace it with an extension (5 cm long for a 1¼" filter, and 6 cm long for a 2" filter) to ensure proper cleaning operation of the filter.

NOTICE

Be sure to install the filter properly. Failure to install or incorrect installation will damage the plate heat exchanger permanently.

- **Drain taps.** Drain taps must be provided at all low points of the system to permit complete drainage of the circuit. A drain valve is provided inside the unit.
- **Air vents.** Provide air vents at all high points of the system, which must also be easily accessible for servicing. An automatic air purge valve is provided inside the unit. Check that this air purge valve is NOT tightened too much, so that automatic release of air from the water circuit is possible. Refer to field setting [E-04] in "7.2.9 Field settings on the user interface" on page 35.
- **Water pressure.** Take care that the components installed in the field piping can withstand the water pressure (maximum 3 bar + static pressure of the pump). Refer to "12.11 ESP curve: Indoor unit" on page 55.

WARNING

- For correct operation of the system, a regulating valve must be installed in the water system. The regulating valve is to be used to regulate the water flow in the system (field supply).
- Selecting a flow outside the curves can cause malfunction or damage to the unit. Also refer to the Technical specifications.

- The maximum water piping temperature is 50°C according to safety device setting.
- Always use materials which are compatible with the water used in the system and with the materials used in the unit. (The unit piping fittings are made of brass, the plate heat exchangers are made of stainless steel 316 plates brazed together with copper and the optional pump housing is made of cast iron.)
- Select the piping diameter in relation to the required water flow and available external static pressure (ESP) of the pump. See the following table for the recommended water piping diameter.

Capacity class	Water piping diameter
20+32	1-1/4"
40+64	2"

NOTICE

It is strongly recommended to install an additional filter on the water circuit. Especially to remove metallic particles from the field water piping, it is advised to use a magnetic or cyclone filter which can remove small particles. Small particles can damage the unit and will not be removed by the standard filter of the unit.

5.4.2 Formula to calculate the expansion vessel pre-pressure

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

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

5.4.3 To check the water volume and expansion vessel pre-pressure

The unit has an expansion vessel of 12 litre with a default 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

Model	Minimum total water volume (l)
20	76
32	110
40	152
64	220

INFORMATION

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

INFORMATION

The temperature step difference can be modified using settings [A-02] and [F-00]. This has an impact on the minimum water volume required when the unit operates in cooling.

By default, the unit is set to have a water temperature difference of 3.5 K which allows it to operate with the minimum volume mentioned in the previous table. However, if a smaller temperature differential is set, as in the case of process cooling applications where temperature fluctuations must be avoided, a larger minimum water volume will be required.

To ensure proper operation of the unit when changing the values of setting [F-00] (for cooling mode), the minimum water volume has to be corrected. If this volume exceeds the range allowed in the unit, an additional expansion vessel or a buffer tank must be installed in the field piping.

Example:

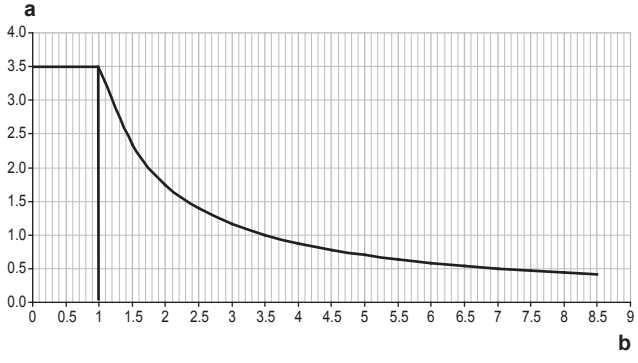
To illustrate the impact on the system when modifying the setting [F-00], we will consider a unit with a minimum allowable water volume of 66 l. The unit is installed 5 m below the highest point in the water circuit.

Assuming that the setting [F-00] is changed from 5°C (default value) to 0°C. From the below table we see that 5°C corresponds to a temperature differential of 3.5 K and 0°C to 1 K, which is actually the lowest value we can set.

[F-00] value (°C)	Temperature differential (K)
0	1
1	1.5
2	2
3	2.5
4	3
5	3.5
6	4
7	4.5
8	5
9	5.5
10	6
11	6.5
12	7
13	7.5
14	8
15	8.5

The water volume correction factor according to the curve shown in the below graph is 3.5; this means that the minimum volume will be 3.5 times larger.

Correction factor curve for minimum water volume



a Water volume correction factor
b Temperature differential (K)

When multiplying 64 l by the correction factor, we get 224 l, which will be the minimum water volume allowed in the installation if a temperature differential of 1 K is used.

Now it is very important to check that for the height difference of the system, the volume in the system is less than the maximum allowed value at that pre-pressure (Pg). If we take a look at the curve, for 1 bar of pre-pressure, the maximum volume allowed is 350 l.

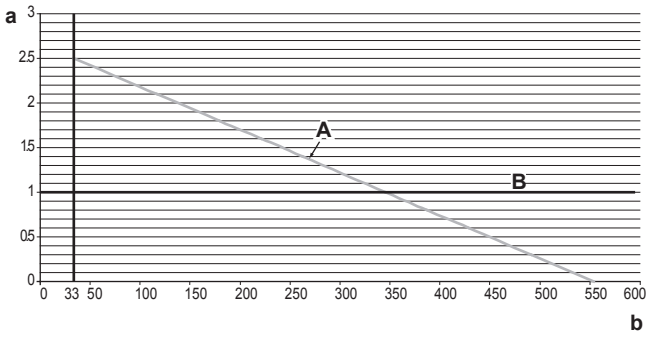
The total volume in the system will definitely be larger after adding the internal volume of the unit. In this case, some pre-pressure can be applied or an additional expansion vessel or buffer tank must be installed in the field piping.

The default value of pre-pressure (Pg) is for a height difference of 7 m.

If the height difference of the system is lower than 7 m AND the volume in the system is less than the maximum allowed value at that pre-pressure (Pg) (see graph), then NO pre-pressure (Pg) adjustment is required.

Maximum water volume

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



a Pre-pressure (bar)
b Maximum water volume (l)
A System
B Default

If the total water volume in the entire circuit exceeds the maximum allowed water volume (see graph), an additional expansion vessel must be installed in the field piping.

5.4.4 Changing the pre-pressure of the expansion vessel

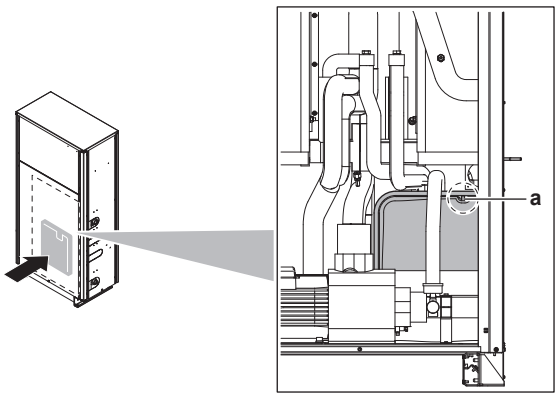
NOTICE

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

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

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

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



a Schrader valve

5.4.5 To check the water volume: Examples

Example 1

The unit is installed 5 m below the highest point in the water circuit. The total water volume in the water circuit is 250 l.

No actions or adjustments are required.

Example 2

The unit is installed at the highest point in the water circuit. The total water volume in the water circuit is 420 l.

Actions:

- Because the total water volume (420 l) is more than the default water volume (340 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 is approximately 490 l (see graph).
- Because 420 l is lower than 490 l, the expansion vessel is appropriate for the installation.

5.5 Preparing electrical wiring

5.5.1 About preparing electrical wiring

INFORMATION

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

WARNING

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

WARNING

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

WARNING

ALWAYS use multicore cable for power supply cables.

5.5.2 About electrical compliance

This equipment complies with:

- **EN/IEC 61000-3-11** 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.
  - 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.
  - 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}.
- **EN/IEC 61000-3-12** provided that the short-circuit power S_{sc} is greater than or equal to the minimum S_{sc} value at the interface point between the user's supply and the public system.
  - 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.
  - 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 short-circuit power S_{sc} greater than or equal to the minimum S_{sc} value.

Outdoor unit	Z_{max}(Ω)	Minimum S_{sc} value (kVA)
SERHQ020BAW1	0.27	838
SERHQ032BAW1	0.24	873

Indoor unit	Z_{max}(Ω)	Minimum S_{sc} value (kVA)
SEHVX20BAW	0.27	820
SEHVX32BAW	0.24	874
SEHVX40BAW	0.25	1639
SEHVX64BAW	0.22	1747

The local wiring power cord must comply with IEC60245.

The wiring type in protected pipes must be H05VV; H07RN-F must be used in unprotected pipes.

5.5.3 Cable requirements

Item	Cable bundle	Description	Required number of conductors	Maximum running current
1	PS	Indoor unit power supply	4+GND	(b)
2	LV	Communication cable between indoor unit and outdoor unit	2(d)	(d)
3	LV	Standard remote controller (F1/F2)	2	(c)
4	LV	Secondary remote controller (F1/F2)(a)	2	(c)
5	LV	Thermostat ON/OFF signal(a)	2	(c)
6	LV	Thermostat cooling/heating signal(a)	2	(c)
7	LV	Operation ON signal(a)	2	(c)
8	LV	Operation OFF signal(a)	2	(c)
9	HV	Cooling/heating output	2	0.3 A
10	HV	Operation ON/OFF output	2	0.3 A
11	HV	Error output	2	0.3 A
12	HV	Water piping heater output	2	1 A
13	HV	Pump ON/OFF output	2	0.3 A

(a) Optional
(b) Refer to the nameplate on the unit or to the technical data book.
(c) Minimum cable section 0.75 mm^2.
(d) Minimum cable section 1.5 mm^2.
PS Power supply
LV Low voltage
HV High voltage

5.5.4 Safety device requirements

The power supply must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage protector in accordance with the applicable legislation.

Selection and sizing of the wiring should be done in accordance with the applicable legislation based on the information mentioned in the table below.

INFORMATION

Multi units are standard combinations.

Outdoor unit	Recommended fuses
SERHQ020BAW1	32 A
SERHQ032BAW1	40 A

Indoor unit	Recommended fuses
SEHVX20BAW	6 A
SEHVX32BAW	10 A
SEHVX40BAW	
SEHVX64BAW	

NOTICE

When using residual current operated circuit breakers, be sure to use a high-speed type 300 mA rated residual operating current.

6 Installation

6.1 Overview: Installation

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

Typical workflow

Installation typically consists of the following stages:

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

6.2 Opening the units

6.2.1 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

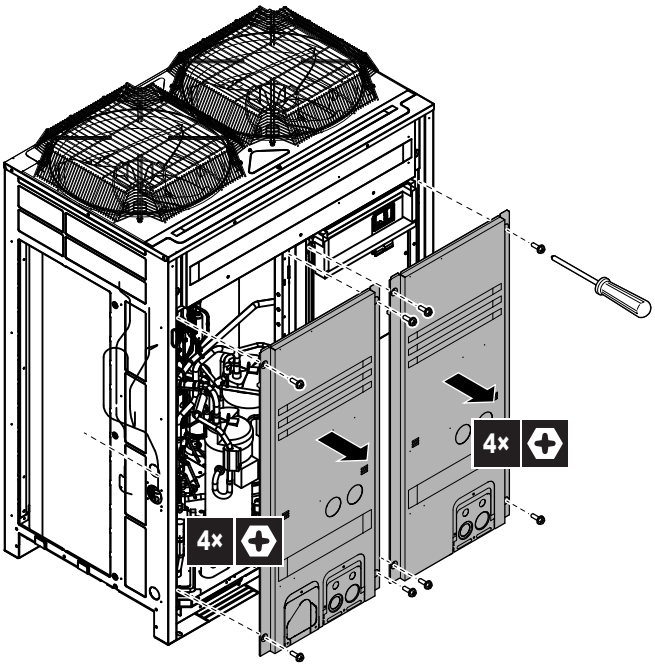
Do NOT leave the unit unattended when the service cover is removed.

6.2.2 To open the outdoor unit

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

To gain access to the unit, front plates need to be opened as follows:



Once the front plates open, the electrical component box can be accessed. See "6.2.4 To open the electrical component box of the outdoor unit" on page 17.

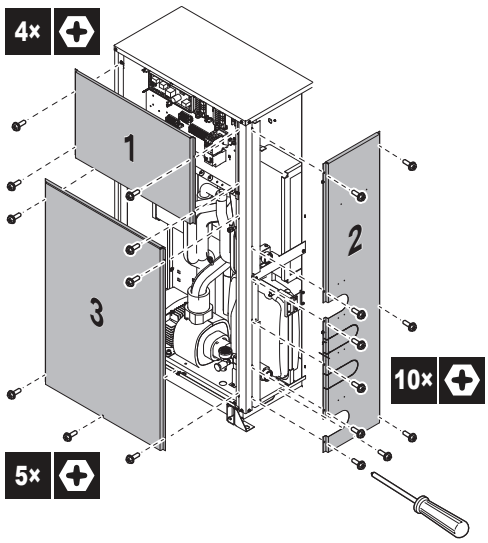
For service purposes, the pushbuttons on the main PCB need to be accessed. To access these pushbuttons, the electrical component box cover does not need to be opened. See "7.2.3 To access the field setting components" on page 32.

6.2.3 To open the indoor unit

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

To gain access to the unit, front plates need to be opened as follows:



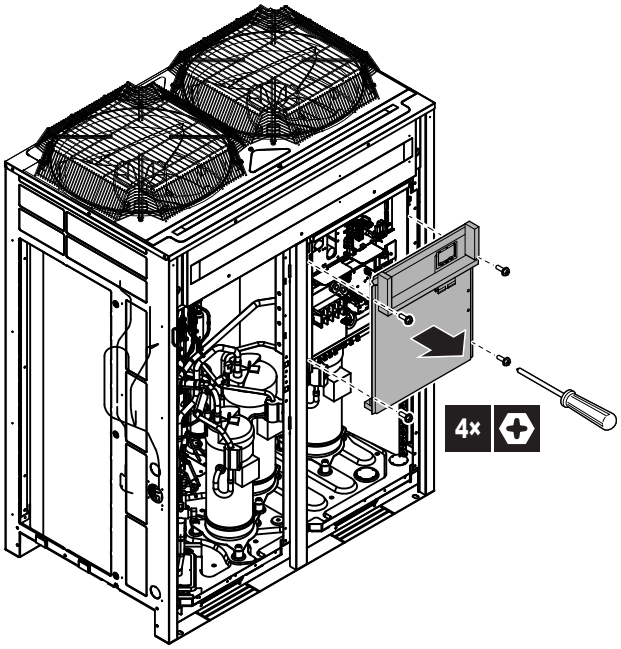
Panel	
1	Electrical parts of the indoor unit
2	Indoor unit (side panel)
3	Indoor unit (front panel)

Once the front plates open, the electrical component box can be accessed. See "6.2.5 To open the electrical component box of the indoor unit" on page 18.

6.2.4 To open the electrical component box of the outdoor unit

NOTICE

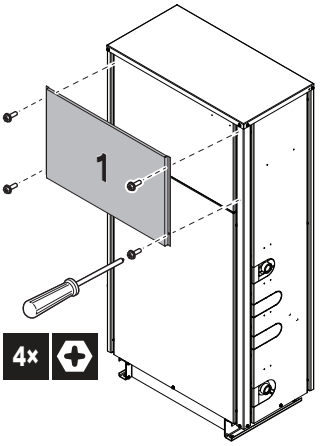
Do NOT apply excessive force when opening the electronic component box cover. Excessive force can deform the cover, resulting in entering of water to cause equipment failure.



6.2.5 To open the electrical component box of the indoor unit

NOTICE

Do NOT apply excessive force when opening the electronic component box cover. Excessive force can deform the cover, resulting in entering of water to cause equipment failure.



6.3 Mounting the outdoor unit

6.3.1 About mounting the outdoor unit

When

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

Typical workflow

Mounting the outdoor unit typically consists of the following stages:

1 Providing the installation structure.
2 Installing the outdoor unit.
3 Providing drainage.

6.3.2 Precautions when mounting the outdoor unit

INFORMATION

Also read the precautions and requirements in the following chapters:

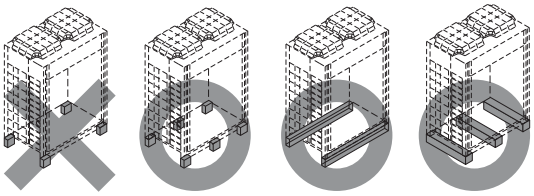
- General safety precautions
- Preparation

6.3.3 To provide the installation structure

Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise.

NOTICE

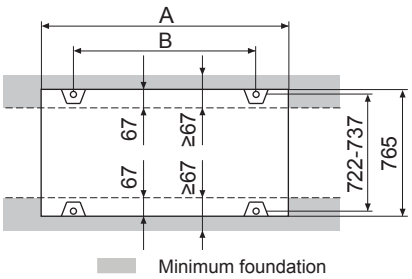
- When the installation height of the unit needs to be increased, do NOT use stands to only support the corners.
- Stands under the unit must be at least 100 mm wide.



X Not allowed

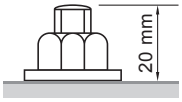
O Allowed

- The height of the foundation must at least be 150 mm from the floor. In heavy snowfall areas, this height should be increased, depending on the installation place and condition.
- The preferred installation is on a solid longitudinal foundation (steel beam frame or concrete).



Outdoor unit	A	B
SERHQ020	930	792
SERHQ032	1240	1102

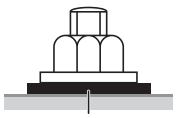
- Fasten the unit in place using four foundation bolts M12. It is best to screw in the foundation bolts until their length remains 20 mm above the foundation surface.



6.3.4 To provide drainage

NOTICE

- Prepare a water drainage channel around the foundation to drain waste water from around the unit.
- If the unit is to be installed on a roof, check the strength of the roof and its drainage facilities first.
- If the unit is to be installed on a frame, install the waterproofing board within a distance of 150 mm under the unit in order to prevent infiltration of water coming from under the unit.
- When installed in a corrosive environment, use a nut with plastic washer (a) to protect the nut tightening part from rust.



6.4 Mounting the indoor unit

6.4.1 About mounting the indoor unit

When

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

Typical workflow

Mounting the indoor unit typically consists of the following stages:

1 Providing the installation structure.
2 Installing the indoor unit.

6.4.2 Precautions when mounting the indoor unit

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

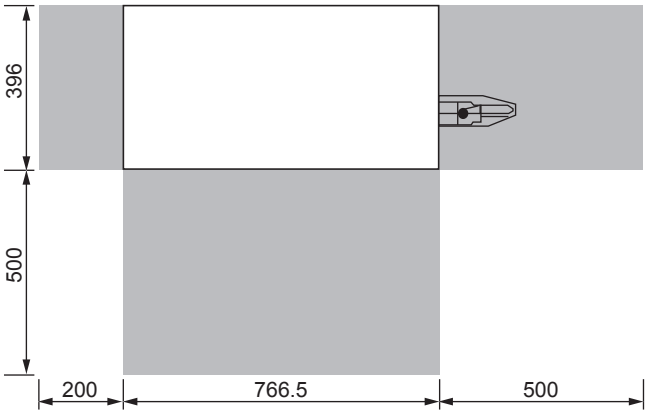
6.4.3 To provide the installation structure

Make sure the unit is installed level on a sufficiently strong base to prevent vibration and noise.

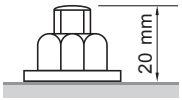
NOTICE

- When the installation height of the unit needs to be increased, do NOT use stands to only support the corners.
- Stands under the unit must be at least 100 mm wide.

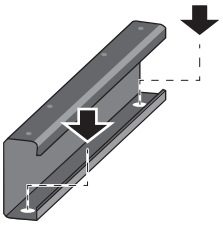
- The unit must be mounted against the wall.
- The unit must be fixed to prevent it from tilting.
- The preferred installation is on a solid longitudinal foundation (steel beam frame or concrete).
- Observe the minimum installation space requirements.



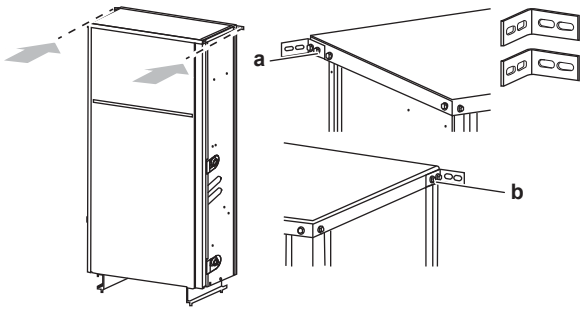
- Fasten the unit in place using four foundation bolts M12. It is best to screw in the foundation bolts until their length remains 20 mm above the foundation surface.



- Fasten the unit to the floor using the holes in the bottom beams.



- Fasten the unit to the wall using the 2 accessory L-shaped supports to prevent it from falling over. The supports can be fixed to the top panel of the indoor unit (2× M5 screws on either side, but one screw is already mounted on the right side of the top plate).



a Attach one L-shaped support to the left side of the top plate using 2 screws from the accessory bag

b Attach the other L-shaped support to the right side of the top plate using 1 screw from the accessory bag and 1 screw that is already attached to the unit

6.5 Connecting the refrigerant piping

6.5.1 Precautions when connecting the refrigerant piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

DANGER: RISK OF BURNING

NOTICE

Take the following precautions on refrigerant piping into account:

- Avoid anything but the designated refrigerant to get mixed into the refrigerant cycle (e.g. air).
- Only use R410A when adding refrigerant.
- Only use installation tools (e.g. manifold gauge set) that are exclusively used for R410A installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils and moisture) from mixing into the system.
- Protect the piping as described in the following table to prevent dirt, liquid or dust from entering the piping.
- Use caution when passing copper tubes through walls.

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

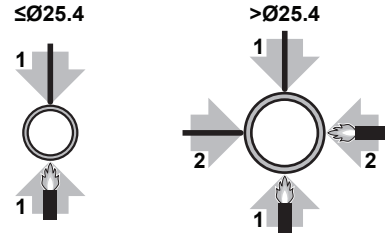
WARNING

Connect the refrigerant piping securely before running the compressor. If the refrigerant piping is NOT connected and the stop valve is open when the compressor is run, air will be sucked in. This will cause abnormal pressure in the refrigeration cycle, which may result in equipment damage and even injury.

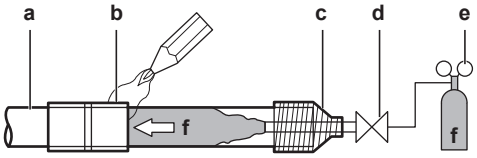
6.5.2 To braze the pipe end

NOTICE

Precautions when connecting field piping. Add brazing material as shown in the figure.



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



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

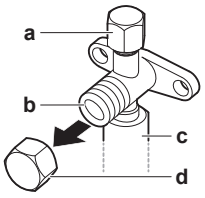
- Do NOT use anti-oxidants when brazing pipe joints.
  Residue can clog pipes and break equipment.
- Do NOT use flux when brazing copper-to-copper refrigerant piping. Use phosphor copper brazing filler alloy (BCuP), which does not require flux.
  Flux has an extremely harmful influence on refrigerant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

6.5.3 Using the stop valve and service port

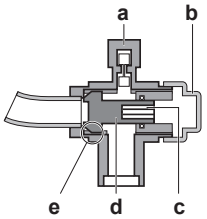
To handle the stop valve

Take the following guidelines into account:

- The stop valves are factory closed.
- The following illustrations show each part required in handling the valve.



a Service port and service port cover
b Stop valve
c Field piping connection
d Stop valve cover



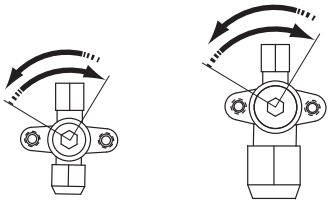
a Service port
b Stop valve cover
c Hexagon hole
d Shaft
e Seal

- Keep both stop valves open during operation.
- Do NOT apply excessive force to the stop valve. Doing so may break the valve body.

To open/close the stop valve

1 Remove the stop valve cover.

2 Insert a hexagon wrench (liquid side: 4 mm, gas side: 8 mm) into the stop valve and turn the stop valve:



Counterclockwise to open.
Clockwise to close.

3 When the stop valve CANNOT be turned any further, stop turning. The valve is now open/closed.

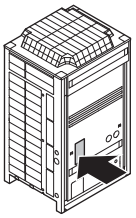
INFORMATION

- The SERHQ020 supports Ø22.2 field piping on the accessory pipe supplied with the unit.
- The SERHQ032 supports Ø28.6 field piping on the accessory pipe supplied with the unit.

To handle the service port

Location of service ports

For the service port location, refer to the "Caution" label attached on the front panel of the outdoor unit.



- Always use a charge hose equipped with a valve depressor pin, since the service port is a Schrader type valve.
- After handling the service port, make sure to tighten the service port cover securely. For the tightening torque, refer to the table below.
- Check for refrigerant leaks after tightening the service port cover.

Tightening torques

Stop valve size (mm)	Tightening torque N•m (turn clockwise to close)			
	Shaft			
	Valve body	Hexagonal wrench	Cap (valve lid)	Service port
Ø9.5	5.4~6.6	4 mm	13.5~16.5	11.5~13.9
Ø12.7	8.1~9.9		18.0~22.0	
Ø25.4	27.0~33.0	8 mm	22.5~27.5	

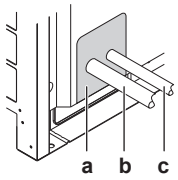
6.5.4 To connect the refrigerant piping to the outdoor unit

NOTICE

All field piping must be installed by a licensed refrigeration technician and must comply with the relevant local and national regulations.

Seal the piping and wiring intake holes using sealing material (field supply), otherwise the capacity of the unit will drop and small animals may enter the machine.

Example: passing piping out through the front



a Plug the grey areas (piping routed through the front panel)
b Gas side piping
c Liquid side piping

NOTICE

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

NOTICE

- Be sure to use the supplied accessory pipes when carrying out piping work in the field.
- Be sure that the field installed piping does not touch other pipes, the bottom panel or side panel. Especially for the bottom and side connection, be sure to protect the piping with suitable insulation, to prevent it from coming into contact with the casing.

NOTICE

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

WARNING

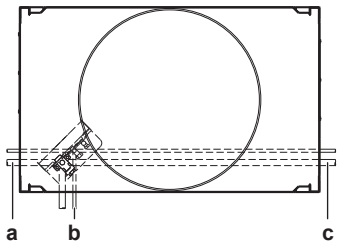
Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- 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.

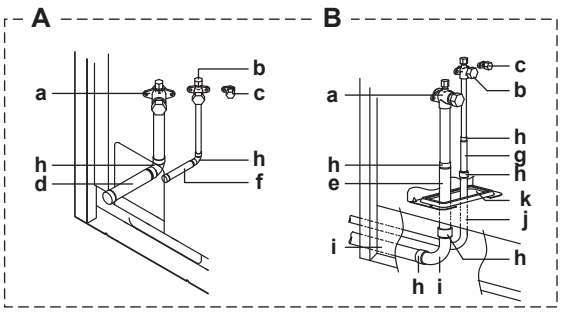
WARNING

NEVER directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.

The refrigerant piping can be installed from the front or from the side of the unit (when taken out from the bottom) as shown in the figure.



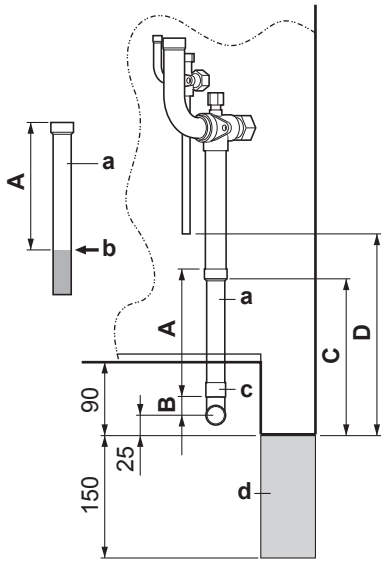
a Left-side connection
b Front connection
c Right-side connection



A For front connection, remove the stop valve cover to connect the refrigerant piping.
B For side connection, remove the knockouts in the bottom frame and route the piping under the bottom frame.
a Gas pipe stop valve
b Liquid pipe stop valve
c Service port for adding refrigerant
d Gas side accessory pipe (1)
e Gas side accessory pipe (2)
f Liquid side accessory pipe (1)
g Liquid side accessory pipe (2)
h Brazing
i Gas side piping (field supply)
j Liquid side piping (field supply)
k Open the knockout holes with a hammer

Cutting the gas side accessory pipe

When connecting the refrigerant piping from the side, cut the gas side accessory pipe as shown in the figure.



a Gas side accessory pipe
b Cut here
c Gas side piping (field supply)
d Unit base

Outdoor unit	A	B	C	D
SERHQ020	156	23	192	247
SERHQ032	150	29	192	251

NOTICE

- When connecting the piping on site, be sure to use the accessory piping.
- Make sure the onsite piping does not come into contact with other piping, the bottom frame or side panels of the unit.

NOTICE

Precautions when making knockout holes:

- Avoid damaging the casing.
- After making the knockout holes, we recommend you remove the burrs and paint the edges and areas around the edges using repair paint to prevent rusting.
- When passing electrical wiring through the knockout holes, wrap the wiring with protective tape to prevent damage.

WARNING

Never remove the pinched piping by brazing.

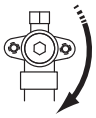
WARNING

Any gas or oil remaining inside the stop valve may blow off the pinched piping.

Failure to observe the instructions in procedure below properly may result in property damage or personal injury, which may be serious depending on the circumstances.

Use the following procedure to remove the pinched piping:

1 Remove the valve lid and make sure that the stop valves are fully closed.



2 Connect a charge hose to service ports of all stop valves.

3 Recover gas and oil from the pinched piping by using a recovery unit.

CAUTION

Do not vent gases into the atmosphere.

4 When all gas and oil is recovered from the pinched piping, disconnect the charge hose and close the service ports.

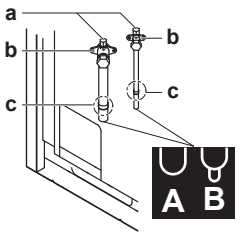
5 If the pinched piping lower part looks like detail A in the figure below, perform the last 2 steps of this procedure.

6 If the pinched piping lower part looks like detail B in the figure below, perform the last 3 steps of this procedure.

7 Cut off the lower part of the smaller pinched piping with an appropriate tool (e.g. a pipe cutter, a pair of nippers, …) so that a cross-section is open, allowing remaining oil to drip out in case the recovery was not complete. Wait until all oil has dripped out.

8 Cut the pinched piping off with a pipe cutter just above the brazing point or just above the marking if there is no brazing point.

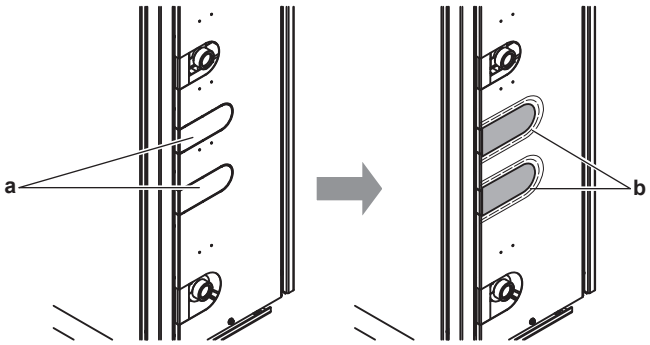
9 Wait until all oil is dripped out in case the recovery was not complete, and only then proceed with connection of the field piping.



a Service port
b Stop valve
c Point of pipe cutting just above brazing point or above marking
A+B Pinched piping

6.5.5 To connect the refrigerant piping to the indoor unit

- For the SEHVX20+32BAW, remove the top knockout hole in the side service plate and add the grommet (accessory) to cover any burrs. For the SEHVX40+64BAW, remove both top and bottom knockout holes in the side service plate and add the grommets (accessory) to cover any burrs.

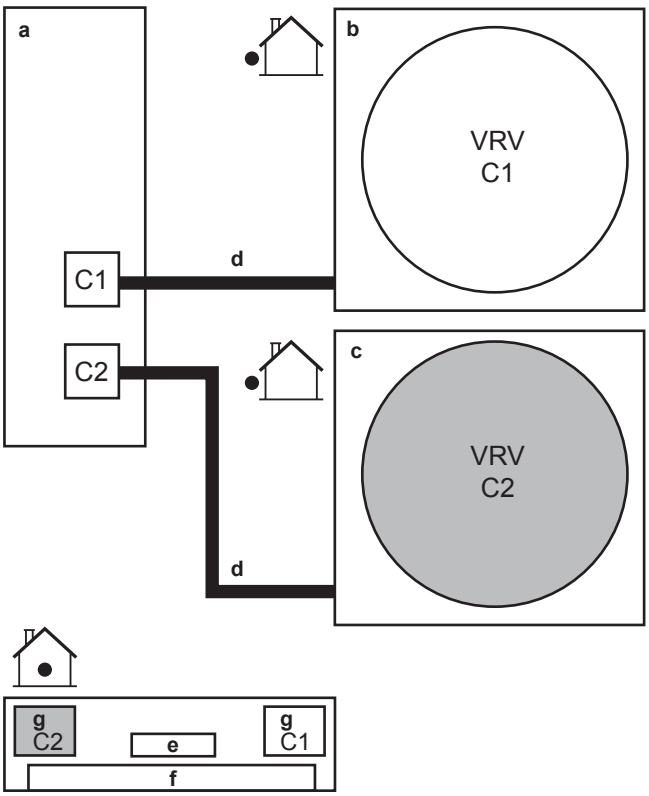


a Knockout hole
b Grommet

- First cut off the refrigerant liquid piping inside the unit approximately 7 cm before the clamp and the refrigerant gas piping 4 cm before the clamp. This is necessary in order to avoid the piping cutter tool from interfering with the piping. Remove any burrs from the piping.
- Use accessory pipes to connect field refrigerant piping to the piping connections on the indoor unit. For SEHVX20BAW, after cutting off the end of both the liquid and gas refrigerant piping, braze accessory pipe 1 to the liquid connection and accessory pipe 2 to the gas connection. For SEHVX32BAW, after cutting off the end of both the liquid and gas refrigerant piping, braze the field piping directly to the liquid connection and accessory pipe 2 to the gas connection. For SEHVX40BAW, perform the procedure for SEHVX20BAW twice. For SEHVX64BAW, perform the procedure for SEHVX32BAW twice.

NOTICE

After brazing, fix the pipes to the unit using the clamps in the pipe supports.



a Indoor unit
b Outdoor unit 1
c Outdoor unit 2 (only in case of SEHVX40+64BAW)
d Refrigerant piping
e Pump
f Switchbox
g Evaporator

NOTICE

When installing the piping between the outdoor and indoor units, also refer to the figure in "6.9.7 To connect the power supply and transmission cables" on page 30.

6.6 Checking the refrigerant piping

6.6.1 About checking the refrigerant piping

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

Before checking the refrigerant piping

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

Typical workflow

Checking the refrigerant piping typically consists of the following stages:

1 Checking for leaks in the refrigerant piping.
2 Performing vacuum drying to remove all moisture, air or nitrogen from the refrigerant piping.

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

6.6.2 Precautions when checking the refrigerant piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

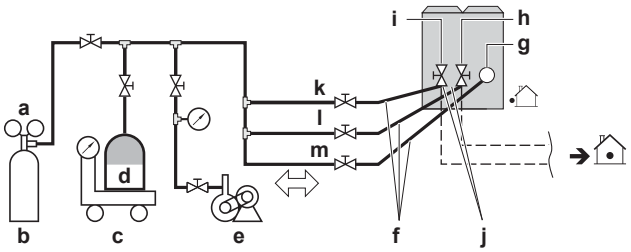
NOTICE

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

NOTICE

Use this vacuum pump for R410A exclusively. Using the same pump for other refrigerants may damage the pump and the unit.

6.6.3 Checking refrigerant piping: Setup



a Pressure reducing valve
b Nitrogen
c Weighing scales
d R410A refrigerant tank (siphon system)
e Vacuum pump
f Charge hose
g Service port for adding refrigerant
h Liquid line stop valve
i Gas line stop valve
j Stop valve service port
k Valve A
l Valve B
m Valve C

Valve	State of valve
Valve A	Close
Valve B	Open
Valve C	Close
Liquid line stop valve	Close
Gas line stop valve	Close

6.6.4 To check for leaks: Pressure leak test

NOTICE

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

1 Break the vacuum by pressurising with nitrogen gas to a gauge pressure of 4.0 MPa (40 bar). Never set the gauge pressure higher than the maximum operation pressure of the unit, i.e. 4.0 MPa (40 bar).

6.6.5 To perform vacuum drying

To remove all moisture from the system, proceed as follows:

1 Evacuate the system for at least 2 hours to a target vacuum of –100.7 kPa (–1.007 bar)(5 Torr absolute).

2 Check that, with the vacuum pump turned off, the target vacuum is maintained for at least 1 hour.

3 Should you fail to reach the target vacuum within 2 hours or maintain the vacuum for 1 hour, the system may contain too much moisture. In that case, break the vacuum by pressurising with nitrogen gas to a gauge pressure of 0.05 MPa (0.5 bar) and repeat steps 1 to 3 until all moisture has been removed.

NOTICE

In case of SEHVX40+64BAW, perform the operations on both units.

6.6.6 To insulate the refrigerant piping

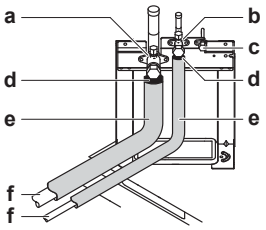
After finishing the leak test and vacuum drying, the piping must be insulated. Take into account the following points:

- Be sure to insulate the liquid and gas piping (for all units).
- Use heat resistant polyethylene foam which can withstand a temperature of 70°C for liquid piping and polyethylene foam which can withstand a temperature of 120°C for gas piping.
- Reinforce the insulation on the refrigerant piping according to the installation environment.

Ambient temperature	Humidity	Minimum thickness
≤30°C	75% to 80% RH	15 mm
>30°C	≥80% RH	20 mm

Condensation might form on the surface of the insulation.

- If there is a possibility that condensation on the stop valve might drip down into the indoor unit through gaps in the insulation and piping because the outdoor unit is located higher than the indoor unit, this must be prevented by sealing up the connections. See below figure.



a Gas line stop valve
b Liquid line stop valve
c Service port for adding refrigerant
d Sealing up treatment
e Insulation
f Piping between indoor and outdoor unit

DANGER: RISK OF BURNING

Be sure to insulate local pipes, as touching them can cause burns.

6.7 Charging refrigerant

6.7.1 About charging refrigerant

Once vacuum drying is finished, additional refrigerant charging can start.

6.7.2 Precautions when charging refrigerant

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

WARNING

- Only use R410A as refrigerant. Other substances may cause explosions and accidents.
- R410A contains fluorinated greenhouse gases. Its global warming potential (GWP) value is 2087.5. Do NOT vent these gases into the atmosphere.
- When charging refrigerant, always use protective gloves and safety glasses.

NOTICE

If the power of some units is turned off, the charging procedure cannot be finished properly.

NOTICE

Be sure to turn on the power 6 hours before operation in order to have power running to the crankcase heater and to protect the compressor.

NOTICE

If operation is performed within 12 minutes after the indoor and outdoor units are turned on, the H2P LED will be lit and the compressor will not operate before communication is established between outdoor unit(s) and indoor units.

NOTICE

Close the front panel before any refrigerant charge operation is executed. Without the front panel attached the unit cannot judge correctly whether it is operating properly or not.

NOTICE

In case of maintenance and the system (outdoor unit+field piping+indoor units) does not contain any refrigerant any more (e.g., after refrigerant reclaim operation), the unit has to be charged with its original amount of refrigerant (refer to the nameplate on the unit) by pre-charging before the automatic charging function can be started.

NOTICE

- The refrigerant charging port is connected to the piping inside the unit. The unit's internal piping is already factory charged with refrigerant, so be careful when connecting the charge hose.
- After adding the refrigerant, do not forget to close the lid of the refrigerant charging port. The tightening torque for the lid is 11.5 to 13.9 N•m.
- In order to ensure uniform refrigerant distribution, it may take the compressor ±10 minutes to start up after the unit has started operation. This is not a malfunction.

6.7.3 To determine the additional refrigerant amount

INFORMATION

For final charge adjustment in a test laboratory, contact your dealer.

The additional refrigerant charge calculation is based on the liquid piping size.

Formula:

$R=(X_{Ø9.52}\times 0.059)+(X_{Ø12.7}\times 0.12)$

R Additional refrigerant to be charged [in kg and rounded off to 1 decimal place]
$\mathbf{X_{1,2}}$ Total length [m] of liquid piping size at **Øa**

Example

SEHVX64BAW (indoor unit) + 2× SERHQ032BAW1 (outdoor unit)

$R=(L1+L2)_{Ø12.7}\times 0.12$

L1 Liquid pipe of circuit 1 (indoor → outdoor 1)
L2 Liquid pipe of circuit 2 (indoor → outdoor 2)

6.7.4 To charge refrigerant

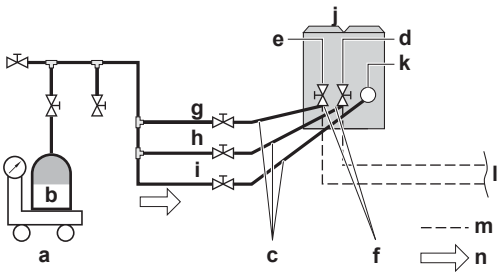
Pre-charging refrigerant

1 Calculate the additional amount of refrigerant to be added using the formula mentioned in "6.7.3 To determine the additional refrigerant amount" on page 24.

2 The amount to be pre-charged is 10 kg less than the calculated amount.

3 Open valve C (valves A and B and the stop valves must be left closed) and charge the refrigerant in liquid form via the liquid side stop valve service port.

4 Close valve C when the calculated amount for pre-charging is reached.



a Weighing scales
b Refrigerant R410A tank (siphon system)
c Charge hose
d Liquid line stop valve
e Gas line stop valve
f Stop valve service port
g Valve B
h Valve C
i Valve A
j Refrigerant charge port
k Interunit piping
l Refrigerant piping
m Field piping
n Gas flow

NOTICE

In case of maintenance and the system (outdoor unit+field piping+indoor units) does not contain any refrigerant any more (e.g., after refrigerant reclaim operation), the unit has to be charged with its original amount of refrigerant (refer to the nameplate on the unit).

6.7.5 Checks after charging refrigerant

- Are all stop valves open?
- Is the amount of refrigerant, that has been added, recorded on the refrigerant charge label?

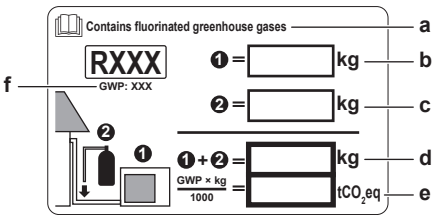
NOTICE

Make sure to open all stop valves after (pre-) charging the refrigerant.

Operating with the stop valves closed will damage the compressor.

6.7.6 To fix the fluorinated greenhouse gases label

1 Fill in the label as follows:



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

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

2 Fix the label on the inside of the unit near the charging port (e.g. on the inside of the service cover).

6.8 Connecting the water piping

6.8.1 About connecting the water piping

Typical workflow

Connecting the water piping typically consists of the following stages:

1 Connecting the water piping of the indoor unit.
2 Filling the water circuit.
3 Insulating the water piping.

6.8.2 Precautions when connecting the water piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

6.8.3 To connect the water piping

Water connections must be made in accordance with all applicable legislations and the outlook drawing delivered with the unit, respecting the water inlet and outlet.

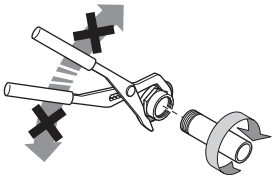
NOTICE

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

If dirt gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

- Use clean pipes only.
- Hold the pipe end downwards when removing burrs.
- Cover the pipe end when inserting it through a wall so that no dust and dirt enter.

- When using non-brass metallic piping, make sure to insulate both materials from each other to prevent galvanic corrosion.
- Make sure to provide a proper drain for the pressure relief valve.
- Because brass is a soft material, use appropriate tooling for connecting the water circuit. Inappropriate tooling will cause damage to the pipes.



- For correct operation of the system, a regulating valve must be installed in the water system. The regulating valve is to be used to regulate the water flow in the system (field supply).

6.8.4 To fill the water circuit

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

2 Make sure the automatic air purge valve is open (at least 2 turns).

3 Fill with water until the pressure gauge indicates a pressure of approximately 2.0 bar. Remove air in the circuit as much as possible using the air purge valves (refer to field setting [E-04] in "7.2.9 Field settings on the user interface" on page 35).

NOTICE

- Air in the water circuit can cause malfunctioning. During filling, it may not be possible to remove all the air from the circuit. Remaining air will be removed through the automatic air purge valves during the initial operating hours of the system. Additional filling with water afterwards may be required.
- To purge the system, use the special function as described in "8 Commissioning" on page 40.

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.

NOTICE

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

INFORMATION

The unit may dispose of some excessive water through the pressure relief valve.

6.8.5 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.

6.9 Connecting the electrical wiring

6.9.1 About connecting the electrical wiring

Before connecting the electrical wiring

Make sure:

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

Typical workflow

Connecting the electrical wiring typically consists of the following stages:

1 Making sure the power supply system complies with the electrical specifications of the units.

2 Connecting the electrical wiring to the outdoor unit.

3 Connecting the electrical wiring to the indoor unit.

4 Connecting the main power supply.

6.9.2 Precautions when connecting electrical wiring

DANGER: RISK OF ELECTROCUTION

WARNING

All field wiring and components MUST be installed by a licensed electrician and MUST comply with the applicable legislation.

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.

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

WARNING

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

NOTICE

Do NOT operate the unit until the refrigerant piping is complete. Running the unit before the piping is ready will break the compressor.

NOTICE

If the power supply has a missing or wrong N-phase, equipment will break down.

NOTICE

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.

NOTICE

NEVER remove a thermistor, sensor, etc., when connecting power wiring and transmission wiring. (If operated without thermistor, sensor, etc., the compressor may break down.)

NOTICE

- The reversed phase protection detector of this product only functions when the product starts up. Consequently reversed phase detection is not performed during normal operation of the product.
- The reversed phase protection detector is designed to stop the product in the event of an abnormality when the product is started up.
- Replace 2 of the 3 phases (L1, L2, and L3) during reverse-phase protection abnormality.

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.

NOTICE

- When using the option adapter, refer to the installation manual of the adapter.
- For connection wiring to indoor-outdoor transmission F1-F2, pushbuttons BS1~BS5 and DIP switches DS1~DS2, refer to "6.9.7 To connect the power supply and transmission cables" on page 30.

WARNING

Do not operate the unit by short-circuiting protection device S1PH.

NOTICE

For wiring to the central remote controller, refer to the installation manual of the central remote controller.

NOTICE

Use insulated wire for the power cord.

NOTICE

- Be sure to install an earth leakage breaker that is capable of handling high-frequency electrical noise generated by the inverter in order to prevent malfunctioning of the earth leakage breaker.
- The noise generated by the inverter must be reduced in order to avoid interfering with other devices.
- The outer casing of the product may take on an electrical charge due to leaked electrical current, which will have to be discharged with the grounding.

NOTICE

Improper connections or installation may result in fire.

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

Keep power imbalance within 2% of the supply rating.

Large imbalance will shorten the life of the smoothing capacitor. As a protective measure, the product will stop operating and an error indication will be made, when power imbalance exceeds 4% of the supply rating.

WARNING

- Always ground wires. (In accordance with national regulations of the pertinent country.)
- Do not connect the ground wire to gas pipes, sewage pipes, lightning rods, or telephone ground wires. This may cause electric shock.

6.9.3 Field wiring: Overview

- Most field wiring on the unit is to be made on the terminal blocks inside the electrical component boxes. To gain access to the terminal blocks, remove the electrical component box service panel. See "6.2 Opening the units" on page 17.
- Cable tie mountings are provided at the wiring entries of the electrical component box.

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

6.9.4 About the electrical wiring

NOTICE

- Be sure to keep the power line and transmission line apart from each other. Transmission wiring and power supply wiring may cross, but may not run parallel.
- Transmission wiring and power supply wiring may not touch internal piping (except the inverter PCB cooling pipe) in order to avoid wire damage due to high temperature piping.
- Firmly close the lid and arrange the electrical wires so as to prevent the lid or other parts from coming loose.

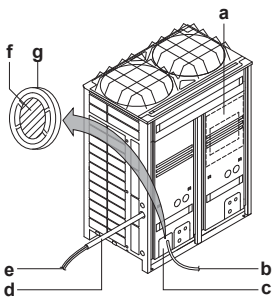
- Be sure to follow the limits below. If the unit-to-unit cables are beyond these limits, it may result in malfunction of transmission:
  - Maximum wiring length: 1000 m.
  - Total wiring length: 2000 m.
  - Transmission wiring to cool/heat selector: 500 m.
- Maximum number of independent interconnectable systems: 10.

For the above wiring, always use vinyl cords with 0.75 to 1.25 mm^2 sheath or cables (2-core wires). (3-core wire cables are allowable for the cooler/heater changeover user interface only.)

6.9.5 To route and fix the power supply

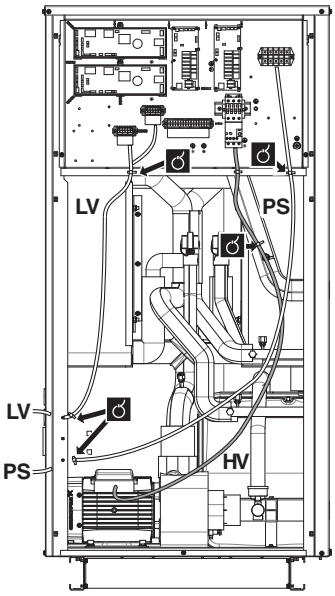
To route and fix the power supply of the outdoor unit

- Route the power wiring and the transmission wiring through a conduit hole.
- Route the power wiring though the upper hole in the left side plate, from the front position of the main unit (through the conduit hole of the wiring mounting plate), or from a knockout hole in the unit's bottom plate.



a Electric wiring diagram (printed on the back of the electrical component box lid)
b Transmission wiring
c Pipe opening
d Conduit
e Power wiring and ground wiring
f Remove this part before use.
g Through cover

To route and fix the power supply of the indoor unit

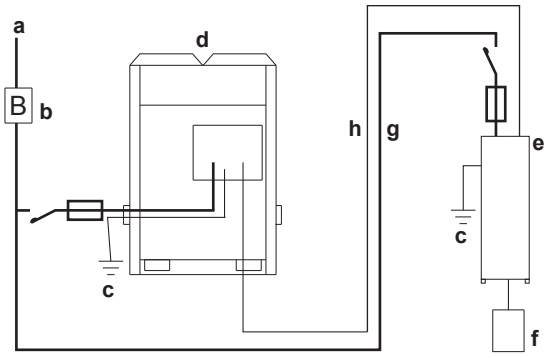


PS Power supply
HV High voltage
LV Low voltage

Guide the cables as much as possible through the provided cable entry glands.

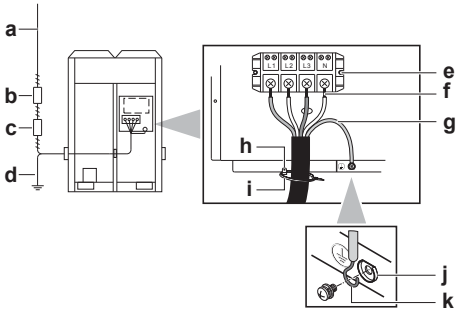
It is important to keep the power supply and the transmission wiring separated from each other. In order to avoid any electrical interference the distance between both wirings should ALWAYS be at least 50 mm.

System example



a Field power supply
b Main switch
c Earth leakage breaker
d Outdoor unit
e Indoor unit
f User interface
g Power supply wiring (sheathed cable) (230 V)
h Transmission wiring (sheathed cable) (16 V)

6.9.6 To connect the power supply of the outdoor unit



a Power supply (400 V, 3N~ 50 Hz)

- **b** Fuse
- **c** Earth leakage breaker
- **d** Grounding wire
- **e** Power supply terminal block
- **f** Connect each power wire
- **g** RED to L1, WHT to L2, BLK to L3 and BLU to N
- **h** Ground wire (GRN/YLW)
- **i** Clamp the power wire to the plastic bracket using a field supplied clamp to prevent external force being applied to the terminal.
- **j** Clamp (field supply)
- **k** Cup washer
- **l** When connecting the earth wire, it is recommended to perform curling.

CAUTION

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

NOTICE

When routing earth wires, secure clearance of 50 mm or more away from compressor lead wires. Failure to observe this instruction properly may adversely affect correct operation of other units connected to the same earth.

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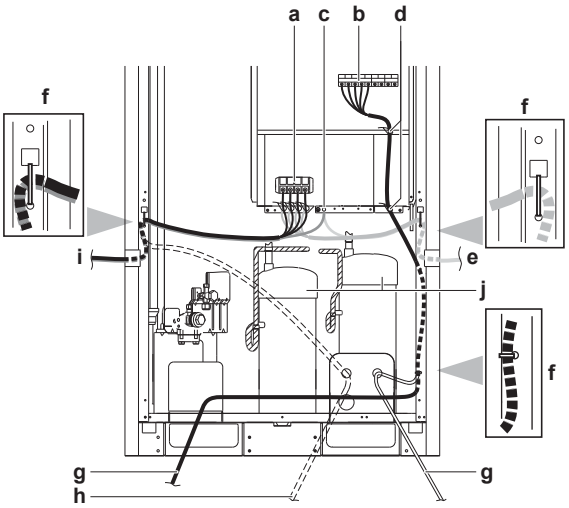

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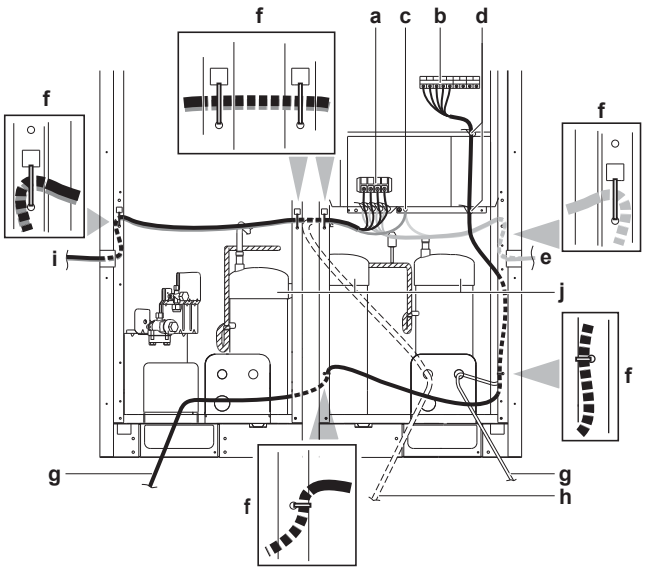


- **a** Electrical wiring
- **b** Wiring between units
- **c** Earth wire
- **d** Clamp to the electrical component box with field supplied clamps.
- **e** When routing out the power/ground wires from the right side
- **f** Clamp to the back of the column support with field supplied clamps.
- **g** When routing out the inter-unit wirings from the opening for piping
- **h** When routing out the power/ground wires from the front
- **i** When routing out the ground wires from the left side
- **j** When wiring, do not detach the acoustic insulators from the compressor.

NOTICE

When routing the remote control cord and inter-unit wiring, secure clearance of 50 mm or more away from the power wiring. Ensure that the power wiring does not contact any heated sections. When wiring, pay attention not to detach the acoustic insulators from the compressor.

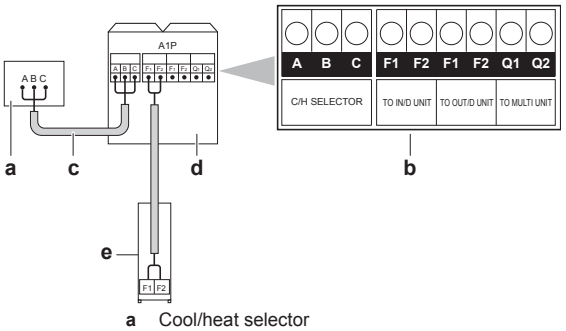
NOTICE

Recommendations when connecting the earth wire:

Wire it so that it comes through the cut out section of the cup washer. (An improper earth connection may prevent a good earthing from being achieved.)

Tightening torque for the terminal screws

Screw size	Tightening torque (N•m)
M8 (Power terminal block)	5.5~7.3
M8 (earth)	
M3 (Inter-unit wiring terminal block)	0.8~0.97

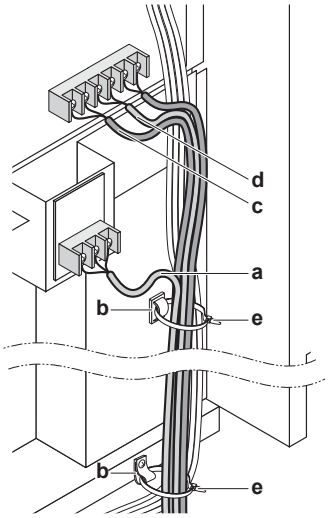


- **a** Cool/heat selector
- **b** Outdoor unit PCB (A1P)
- **c** Take care of the polarity
- **d** Outdoor unit

e Indoor unit

The wiring for the other systems must be connected to the F1/F2 (Out-Out) terminals of the PCB in the outdoor unit to which the interconnecting wiring for the indoor units is connected.

Fixing the transmission wiring



a Heating/cooling switching remote control cord (when a heating/cooling switch remote control (optional) is connected) (ABC)
b Fix to the indicated plastic brackets using field supplied clamping material.
c Wiring between the units (indoor - outdoor) (F1+F2 left)
d Wiring between the units (outdoor - outdoor) (F1+F2 right)
e Plastic bracket

NOTICE

Never connect the power supply to transmission wiring terminal block. Otherwise the entire system may break down.

NOTICE

Never connect 400 V to transmission wiring terminal block. Otherwise the entire system may break down.

The wiring from the indoor units must be connected to the F1/F2 (In-Out) terminals on the outdoor unit PCB.

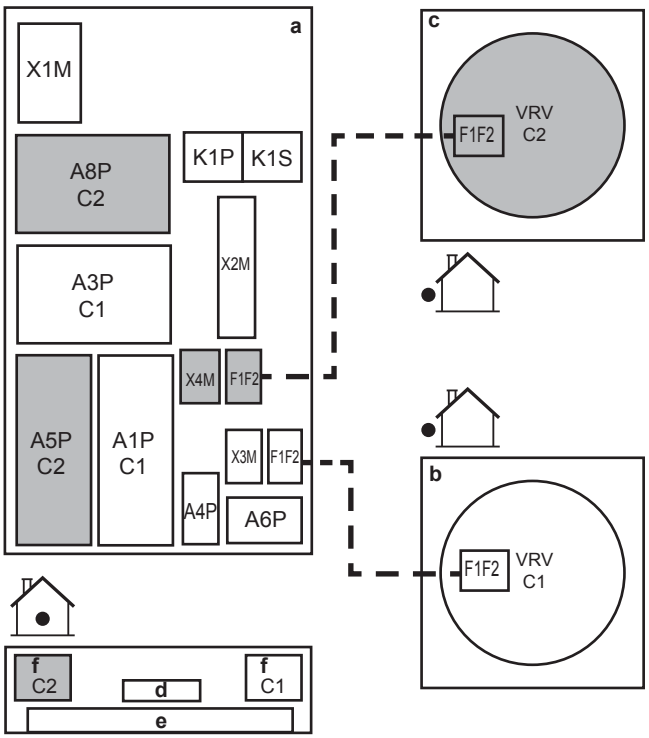
NOTICE

Take care of the polarity of the transmission wiring.

The outdoor unit PC board (A1P) is factory set to "Sequential start available".

6.9.7 To connect the power supply and transmission cables

1 Open the electrical component box cover.
2 Using the appropriate cable, connect the power supply and communication cable(s) to the appropriate terminals as shown on the wiring diagram.
3 Fix the cables with cable ties to the cable tie mountings to ensure strain relief and to make sure that they do not come in contact with the piping and sharp edges. Never squeeze bundled cables.
4 Close the electrical component box cover.



a Switchbox
b Outdoor unit 1
c Outdoor unit 2 (only in case of SEHVX40+64BAW)
d Pump
e Switchbox
f Evaporator

NOTICE

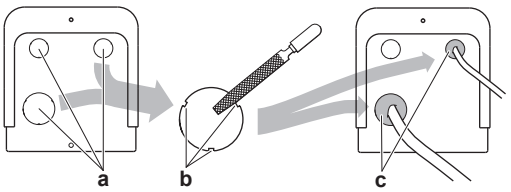
The power supply cable and the communication cable are not included.

NOTICE

When installing the power supply wiring, also refer to the figure in "6.5.5 To connect the refrigerant piping to the indoor unit" on page 22.

6.9.8 Guidelines when knocking out knockout holes

- To punch a knockout hole, hit on it with a hammer.
- After knocking out the holes, we recommend removing any burrs and paint the edges and areas around the holes using repair paint to prevent rusting.
- When passing electrical wiring through the knockout holes. prevent damage to the wires by wrapping the wiring with protective tape, putting the wires through field supplied protective wire conduits at that location, or install suitable field supplied wire nipples or rubber bushings into the knockout holes.
- When you do not use a wire conduit, protect the wires with vinyl tubes to prevent the edge of the knockout hole from cutting the wires.



a Knockout hole
b Burr
c If there are any possibilities that small animals enter the system through the knockout holes, plug the holes with packing materials (to be prepared on-site)

6.9.9 To install the user interface

The unit comes with a user interface offering a user-friendly way to set up, use and maintain the unit. Before operating the user interface, follow this installation procedure.

Wire specification	Value
Type	2 wire
Section	0.75~1.25 mm^2
Maximum length	500 m

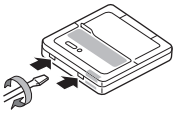
NOTICE

The wiring for connection is NOT included.

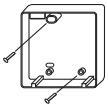
NOTICE

The user interface MUST be mounted indoors.

1 Insert a slotted screwdriver into the slots in the rear part of the user interface, and remove the front part of the user interface.



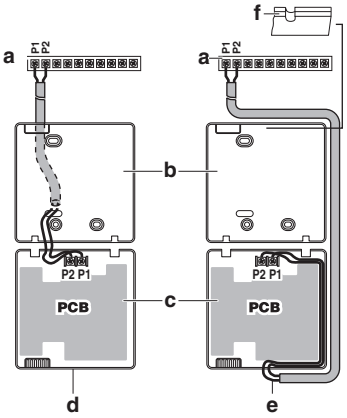
2 Fasten the user interface on a flat surface.



NOTICE

Be careful NOT to distort the shape of the lower part of the user interface by overtightening the mounting screws.

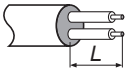
3 Connect the terminals of the user interface and the terminals inside the unit (P1 to P1, P2 to P2) as shown in the figure.



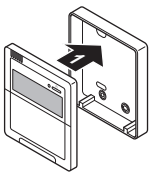
a Unit
b Rear part of the user interface
c Front part of the user interface
d Wired from the rear
e Wired from the top
f Use nippers to notch the part for the wiring to pass through

NOTICE

- When wiring, run the wiring away from the power supply wiring in order to avoid receiving electric noise (external noise).
- Peel the shield for the part that has to pass through the inside of the user interface case (L).



4 Reattach the upper part of the user interface, starting with the clips at the bottom.



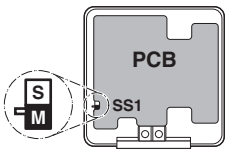
CAUTION

Do NOT pinch the wiring when attaching.

If, in addition to the standard user interface, an optional user interface (EKRUAHTB) is installed as well:

5 Connect the electrical wires of both user interfaces as described.

6 Select a master and a slave user interface using the SS1 selector switch.



S Slave
M Master

INFORMATION

Only the user interface set as master can be used as a room thermostat.

6.9.10 To install optional equipment

For the installation of optional equipment, refer to the installation manual which is delivered with the optional equipment or the addenda delivered with this unit.

7 Configuration

7.1 Overview: Configuration

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

It contains information about:

- Making field settings
- Using the leak detection function
- Switching between cooling and heating

INFORMATION

It is important that all information in this chapter is read sequentially by the installer and that the system is configured as applicable.

DANGER: RISK OF ELECTROCUTION

7.2 Making field settings

7.2.1 About making field settings

INFORMATION

The LEDs and buttons are located in the outdoor unit.

If required, carry out field settings according to the following instructions. Refer to the service manual for more details.

Pushbuttons and DIP switches

Item	Description
Pushbuttons	By operating the pushbuttons it is possible to: ▪ Change the mode. ▪ Perform field settings (demand operation, low noise, etc).
DIP switches	▪ DS1 (1): COOL/HEAT selector ▪ DS1 (2~4): NOT USED. DO NOT CHANGE THE FACTORY SETTING. ▪ DS2 (1~4): NOT USED. DO NOT CHANGE THE FACTORY SETTING. ▪ DS3 (1+2): NOT USED. DO NOT CHANGE THE FACTORY SETTING.

Mode 1 and 2

Mode	Description
Mode 1 (monitoring settings)	Mode 1 can be used to monitor the current situation of the outdoor unit. Some field setting contents can be monitored as well.
Mode 2 (field settings)	Mode 2 is used to change the field settings of the system. Consulting the current field setting value and changing the current field setting value is possible. In general, normal operation can be resumed without special intervention after changing field settings. Some field settings are used for special operation (e.g., 1 time operation, recovery/ vacuuming setting, manual adding refrigerant setting, etc.). In such a case, it is required to abort the special operation before normal operation can restart. It will be indicated in below explanations.

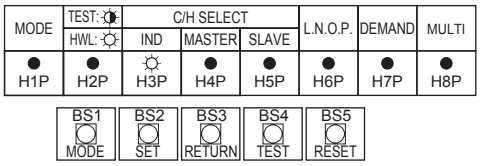
To continue the configuration of the system, it is required to give some input to the PCB of the unit. This chapter will describe how manual input is possible by operating the pushbuttons/DIP switches on the PCB and reading the feedback from the LEDs.

INFORMATION

If you get confused in the middle of the process, push BS1. Then it returns to setting mode 1 (H1P is off).

7.2.2 Field setting components

The components to make field settings are as follows:



H1P~H8P LEDs
BS1~BS5 Pushbuttons
DS1~DS3 DIP switches
ON (☼) OFF (●) Flashing (◑)

Pushbuttons

Use the pushbuttons to make the field settings.

BS1 MODE: For changing the set mode
BS2 SET: For field setting
BS3 RETURN: For field setting
BS4 TEST: For test operation
BS5 RESET: For resetting the address when the wiring is changed or when an additional indoor unit is installed

LEDs

The LEDs give feedback about the field settings, which are defined as [Mode-Setting]=Value.

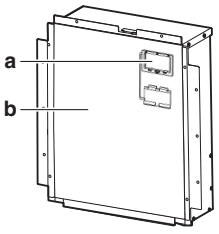
H1P Shows the mode
H2P~H7P Shows the settings and values, represented in binary code
H8P NOT used for field settings, but used during initialisation

Example:

[H1P- 32 + 16 + 8 + 4 + 2 + 1] H1P H2P H3P H4P H5P H6P H7P	Description
● ● ☼ ● ● ● ● (H1P OFF)	Default situation
◑ ● ☼ ● ● ● ● (H1P flashing)	Mode 1
☼ ● ● ● ● ● ● (H1P ON)	Mode 2
☼ ● ● ☼ ● ● ● 0 + 0 + 8 + 0 + 0 + 0 (H2P~H7P = binary 8)	Setting 8 (in mode 2)
☼ ● ● ● ◑ ● ● 0 + 0 + 0 + 4 + 0 + 0 (H2P~H7P = binary 4)	Value 4 (in mode 2)

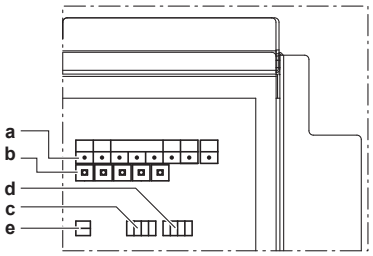
7.2.3 To access the field setting components

Remove the inspection cover to carry out field settings.



a Inspection cover
b Switch box cover

You can see the 5 pushbuttons, 8 LEDs and 3 DIP switches.



a H1P~H8P LEDs
b BS1~BS5 pushbuttons
c DS1 DIP switch 1
d DS2 DIP switch 2
e DS3 DIP switch 3

Operate the switches and pushbuttons with an insulated stick (such as a closed ball-point pen) to avoid touching of live parts.

Make sure to re-attach the inspection cover into the electrical component box cover after the job is finished.

NOTICE

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

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

7.2.4 To access mode 1 or 2

After the unit is turned ON, the display goes to its default situation. From there, you can access mode 1 and mode 2.

Initialisation: default situation

NOTICE

Be sure to turn on the power 6 hours before operation in order to have power running to the crankcase heater and to protect the compressor.

Turn on the power supply of the outdoor unit and the indoor unit. After initialisation, the display indication state will be as below (default situation when shipped from factory).

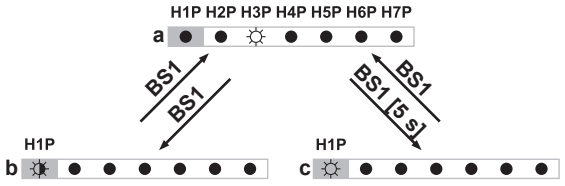
	H1P H2P H3P H4P H5P H6P H7P H8P
Outdoor unit	● ● ☼ ● ● ● ● ●

If the default situation is not displayed after 10~12 minutes, check the malfunction code. Solve the malfunction code accordingly.

The HAP LED flashes to indicate normal microcomputer operation.

Switching between modes

Use BS1 to switch between the default situation, mode 1 and mode 2.



a Default situation (H1P OFF)
b Mode 1 (H1P flashing)
c Mode 2 (H1P ON)
BS1 Press BS1.
BS1 [5 s] Press BS1 for at least 5 s.

INFORMATION

If you get confused in the middle of the process, press BS1 to return to the default situation.

7.2.5 To use mode 1

Mode 1 is used to monitor the status of the unit.

What	How
Accessing monitoring mode 1	Once mode 1 is selected (push BS1 one time), you can select the wanted setting. It is done by pushing BS2.
To quit and return to the initial status	Press BS1.

7.2.6 To use mode 2

The master unit should be used to input field settings in mode 2.

Mode 2 is used to set field settings of the outdoor unit and system.

What	How
Changing and accessing the setting in mode 2	Once mode 2 is selected (push BS1 for more than 5 seconds), you can select the wanted setting. It is done by pushing BS2. Accessing the selected setting's value is done by pushing BS3 1 time.
To quit and return to the initial status	Press BS1.
Changing the value of the selected setting in mode 2	▪ Once mode 2 is selected (push BS1 for more than 5 seconds) you can select the wanted setting. It is done by pushing BS2. ▪ Accessing the selected setting's value is done by pushing BS3 1 time. ▪ Now BS2 is used to select the required value of the selected setting. ▪ When the required value is selected, you can define the change of value by pushing BS3 1 time. ▪ Press BS3 again to start operation according to the chosen value.

7.2.7 Mode 1: Monitoring settings

In mode 1 (and in default situation) you can read out the following information:

	Value / Description	
H2P	Shows the present operation state.	
	OFF	● ● ☼ ● ● ● ● Normal operation state.
	ON	● ☼ ☼ ● ● ● ● Abnormal operation state.
	FLASHING	● ☼ ☼ ● ● ● ● Under preparation or under test preparation
H6P	Shows the status of low noise operation.	
	OFF	● ● ☼ ● ● ● ● Unit is currently not operating under low noise restrictions.
	ON	● ● ☼ ● ● ☼ ● Unit is currently operating under low noise restrictions.
	Low noise operation reduces the sound generated by the unit compared to nominal operating conditions. Low noise operation can be set in mode 2. There are two methods to activate low noise operation of the compressor unit and heat exchanger unit. ▪ The first method is to enable an automatic low noise operation during night time by field setting. The unit will operate at the selected low noise level during the selected time frames. ▪ The second method is to enable low noise operation based on an external input. For this operation an optional accessory is required.	

	Value / Description	
H7P	Shows the status of power consumption limitation operation.	
	OFF	● ● ☼ ● ● ● ● Unit is currently not operating under power consumption limitations.
	ON	● ● ☼ ● ● ● ☼ Unit is currently operating under power consumption limitation.
	Power consumption limitation reduces the power consumption of the unit compared to nominal operating conditions. Power consumption limitation can be set in mode 2. There are two methods to activate power consumption limitation of the compressor unit. ▪ The first method is to enable a forced power consumption limitation by field setting. The unit will always operate at the selected power consumption limitation. ▪ The second method is to enable power consumption limitation based on an external input. For this operation an optional accessory is required.	

7.2.8 Mode 2: Field settings

Press the BS2 button to make field settings to configure the system. The LEDs give a binary representation of the setting/value number.

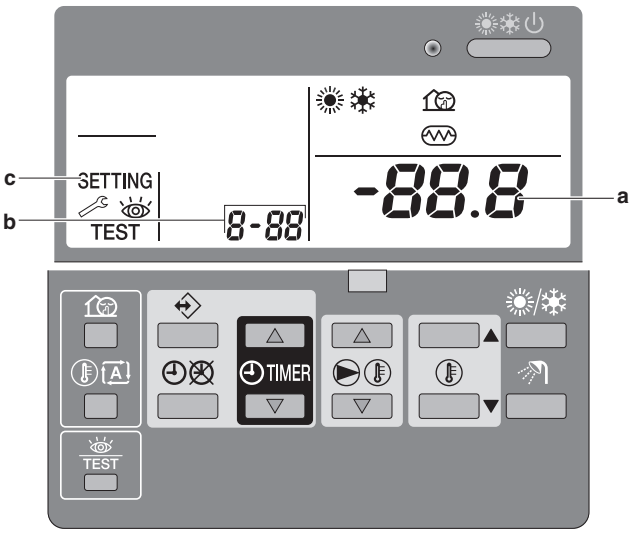
Setting H1P H2P H3P H4P H5P H6P H7P (= binary)	Value H1P H2P H3P H4P H5P H6P H7P	Description	
☼ ● ☼ ● ● ☼ ● Fan high static pressure setting. In order to increase the static pressure the outdoor unit fan is delivering, this setting should be activated.	☼ ● ● ● ● ● ◑ (default)	Deactivated.	
	☼ ● ● ● ● ◑ ●	Activated.	
☼ ● ☼ ● ☼ ☼ ● Automatic low noise setting and level during night time. By changing this setting, you activate the automatic low noise operation function of the unit and define the level of operation. Depending on the chosen level, the noise level will be lowered.	☼ ● ● ● ● ● ● (default)	Deactivated	
	☼ ● ● ● ● ● ◑	Level 1	Level 3<Level 2<Level 1
	☼ ● ● ● ● ◑ ●	Level 2	
	☼ ● ● ● ● ◑ ◑	Level 3	
☼ ● ☼ ☼ ● ● ☼ Low noise operation level via the external control adaptor. If the system needs to be running under low noise operation conditions when an external signal is sent to the unit, this setting defines the level of low noise that will be applied. This setting will only be effective when the optional external control adaptor (DTA104A62) is installed and setting [2-12] was activated.	☼ ● ● ● ● ● ◑	Level 1	Level 3<Level 2<Level 1
	☼ ● ● ● ● ◑ ● (default)	Level 2	
	☼ ● ● ● ◑ ● ●	Level 3	
☼ ● ☼ ☼ ☼ ☼ ● Power consumption limitation level via the external control adaptor (DTA104A62) If the system needs to be running under power consumption limitation conditions when an external signal is sent to the unit, this setting defines the level power consumption limitation that will be applied. The level is according to the table.	☼ ● ● ● ● ● ◑	Level 1	Level 3<Level 2<Level 1
	☼ ● ● ● ● ◑ ● (default)	Level 2	
	☼ ● ● ● ◑ ● ●	Level 3	
☼ ● ● ☼ ☼ ● ● Enable the low noise function and/or power consumption limitation via the external control adaptor (DTA104A62). If the system needs to be running under low noise operation or under power consumption limitation conditions when an external signal is sent to the unit, this setting should be changed. This setting will only be effective when the optional external control adaptor (DTA104A62) is installed in the indoor unit.	☼ ● ● ● ● ● ◑ (default)	Deactivated.	
	☼ ● ● ● ● ◑ ●	Activated.	

Setting	Value	
H1P H2P H3P H4P H5P H6P H7P (= binary)	H1P H2P H3P H4P H5P H6P H7P	Description
☼ ● ☼ ● ☼ ● ☼	☼ ● ● ● ● ● ● (default)	Deactivated
Refrigerant recovery/vacuuming mode. This is a field setting of the outdoor module. In case of SEHVX40+64BAW, perform the setting on both outdoor modules. In order to achieve a free pathway to reclaim refrigerant out of the system or to remove residual substances or to vacuum the system, it is necessary to apply a setting which will open the required valves in the refrigerant circuit so the reclaim of refrigerant or vacuuming process can be done properly. To stop the refrigerant recovery/vacuuming mode, push BS1. If BS1 is not pushed, the system will remain in refrigerant recovery/ vacuuming mode.	☼ ● ● ● ● ● ☼	Activated

7.2.9 Field settings on the user interface

The user can change the field settings using the user interface.

Each field setting is assigned a 3-digit number or code, e.g. [5-03], which is indicated on the user interface display. The first digit [5] is the 'first code' or field setting group. The second and third digit [03] together are the 'second code'.



1 Press TEST for a minimum of 5 seconds to enter the field setting mode.

Result: SETTING (c), the current selected field setting code 8-88 (b) and the set value -88.8 (a) are displayed.

2 Press ⏲/▲ to select the appropriate field setting first code.

3 Press ⏲/▲ to select the appropriate field setting second code.

4 Press ⏲/▲ and ⏲/▼ to change the value of the selected field setting.

5 Press ⊗/⏲ to save the new value.

6 Repeat the previous steps to change other field settings as required.

7 When finished, press TEST to exit the field setting mode.

INFORMATION

- Changes made to a specific field setting are only stored when ⊗/⏲ is pressed. Navigating to a new field setting code or pressing TEST will discard any changes.
- Field settings are grouped by their first code, e.g. field settings [0-00]; [0-01]; [0-02]; [0-03] are defined as "Group 0". When different values are changed within the same group, pressing ⊗/⏲ will save all the values changed within this group.

INFORMATION

- Before shipping, the set values have been set as shown in "7.2.9 Field settings on the user interface" on page 35.
- When exiting the field setting mode, "88" may be displayed on the user interface display while the unit initializes itself.

[0] Remote control setup

[0-00] User permission level

The user permission level defines which buttons and functions are available for the user. By default no level is defined, so all buttons and functions are operable.

[0-00]	Description
2	Permission level 2
3	Permission level 3

	Master	Slave	Permission level 2	Permission level 3
Operation ON/OFF	✓	✓	✓	✓
Setting the leaving water temperature	✓	✓	✓	—
Setting the room temperature	✓	✓	✓	✓
Quiet mode ON/OFF	✓	✓	—	—
Weather dependent setpoint operation ON/OFF	✓	✓	✓	—
Setting the clock	✓	✓	—	—
Programming the schedule timer	✓	—	—	—
Schedule timer operation ON/OFF	✓	—	✓	✓
Field settings	✓	—	—	—
Error code display	✓	✓	✓	✓
Test operation	✓	✓	—	—

After entering the field setting, the selected permission level must be enabled by simultaneously pressing ⏲▲ and ⏲▼, immediately followed by simultaneously pressing 🏠 and Ⓑ🄰. Keep all 4 buttons pressed for at least 5 seconds. Note that no indication on the user interface is given. After the procedure the blocked buttons will not be available anymore.

Deactivating the selected permission level is done in the same way.

[0-01] Room temperature compensation value

If necessary, it is possible to adjust some thermistor value of the unit by a correction value. This can be used as countermeasure for thermistor tolerances or capacity shortage.

The compensated temperature (= measured temperature plus compensation value) is then used to control the system and will be displayed in the temperature read-out mode. See also field setting [9] in this chapter for compensation values for leaving water temperature.

[0-02]

This setting is not applicable.

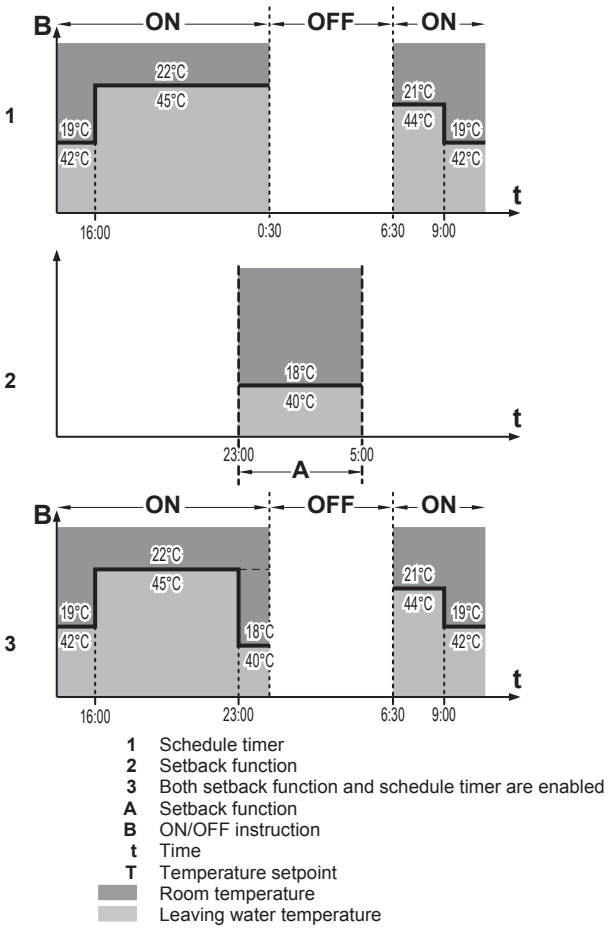
[0-03] Status

Defines whether the ON/OFF instruction can be used in the schedule timer for space heating.

[0-03]	Description
0	Space heating schedule timer based on ON/OFF instruction.
1 (default)	Space heating schedule timer based on temperature setpoint.

Space heating based on ON/OFF instruction	
During operation	When the schedule timer switches space heating OFF, the controller will be switched off (operation LED will stop working).
Press ❀✻⏻	The schedule timer for space heating will stop (when active at that moment) and will start again at the next scheduled ON function. The "last" programmed command overrules the "preceding" programmed command and will remain active until the "next" programmed command occurs. Example: imagine the actual time is 17:30 and actions are programmed at 13:00, 16:00 and 19:00. The "last" programmed command (16:00) overruled the "previous" programmed command (13:00) and will remain active until the "next" programmed command (19:00) occurs. So in order to know the actual setting, you should consult the last programmed command (this may date from the day before). The controller is switched off (operation LED off), but the schedule timer icon remains on.
Press ⊗/⏲	The schedule timer for space heating and the quiet mode stops and will not start again. The schedule timer icon is not displayed any more.

- Operation example: Schedule timer based on ON/OFF instruction. When the setback function (see field setting [2]) is enabled, the setback operation will have priority over the scheduled action in the schedule timer if ON instruction is active. If OFF instruction is active this will have priority over the setback function. At any time the OFF instruction will have the highest priority.



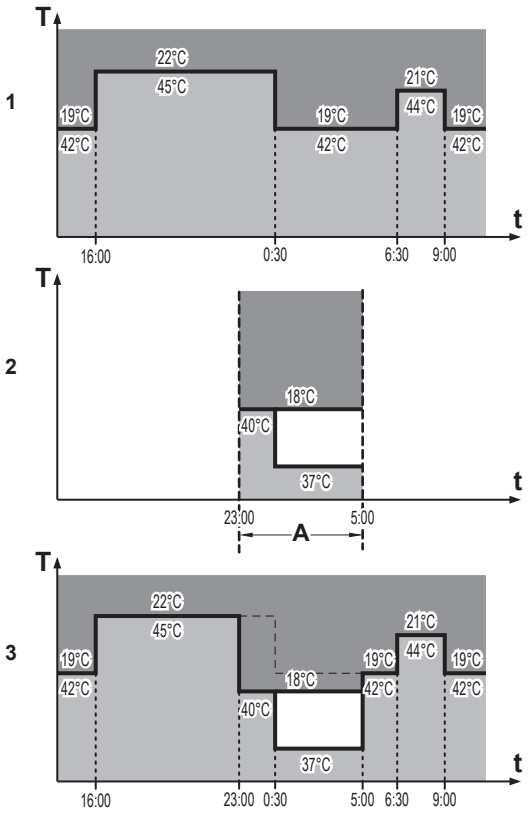
1 Schedule timer
2 Setback function
3 Both setback function and schedule timer are enabled
A Setback function
B ON/OFF instruction
t Time
T Temperature setpoint
Room temperature
Leaving water temperature

Space heating based on temperature setpoint[a]	
During operation	During schedule timer operation the operation LED is lit continuously.
Press ❀✻⏻	The schedule timer for space heating stops and will not start again. The controller is switched off (operation LED off).
Press ⊗/⏲	The schedule timer for space heating and the quiet mode stops and will not start again. The schedule timer icon is not displayed any more.

(a) For leaving water temperature and/or room temperature

- Operation example: Schedule timer based on temperature setpoint

When the setback function (see field setting [2]) is enabled, the setback operation will have priority over the scheduled action in the schedule timer.



1 Schedule timer
2 Setback function
3 Both setback function and schedule timer are enabled
A Setback function
t Time
T Temperature setpoint
Room temperature
Leaving water temperature

[0-04] Status

Defines whether the ON/OFF instruction can be used in the schedule timer for cooling.

This is the same as for space heating [0-03], but the setback function is not available.

[1] Settings are not applicable

[2] Automatic setback function

INFORMATION

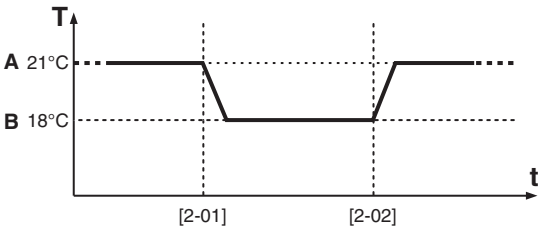
This function is available for heat pump units operating in heating mode ONLY. It does NOT exist for cooling.

The setback function provides the possibility to lower the room temperature. It can be activated e.g. during the night, because temperature demands during night and day are not the same.

INFORMATION

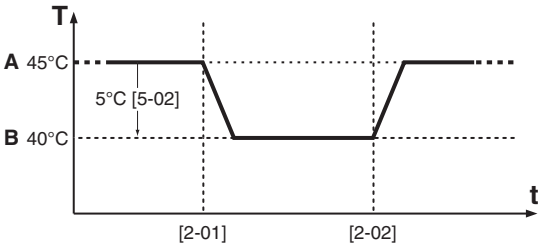
- The setback function is enabled by default.
- The setback function can be combined with the automatic weather dependent setpoint operation.
- Setback function is an automatic daily scheduled function.

Setback configured for room temperature control



A Normal room temperature setpoint
B Room setback temperature [5-03]
t Time
T Temperature

Setback configured for leaving water temperature control



A Normal leaving water temperature setpoint
B Leaving water setback temperature [5-02]
t Time
T Temperature

See field setting [5] in this chapter for temperature setpoints.

[2-00] Status

[2-00]	Description
0	The setback function is disabled.
1	The setback function is enabled.

[2-01] Start time

Time at which setback is started.

[2-02] Stop time

Time at which setback is stopped.

[3] Weather dependent setpoint

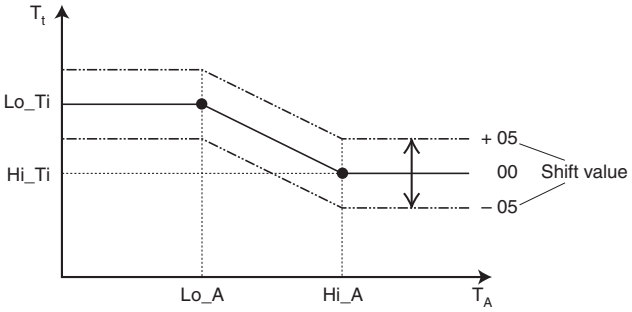
INFORMATION

This function is available for heat pump units operating in heating mode ONLY. It does NOT exist for cooling.

When weather dependent operation is active, the leaving water temperature is determined automatically depending on the outdoor temperature: colder outdoor temperatures will result in warmer water and vice versa. The unit has a floating setpoint. Activating this operation will result in a lower power consumption than use with a manually fixed leaving water setpoint.

During weather dependent operation, the user has the possibility to shift up or down the target water temperature by a maximum of 5°C. This "Shift value" is the temperature difference between the temperature setpoint calculated by the controller and the real setpoint. E.g. a positive shift value means that the real temperature setpoint will be higher than the calculated setpoint.

It is advised to use the weather dependent setpoint because it adjusts the water temperature to the actual needs for space heating. It will prevent the unit from switching too much between thermo ON operation and thermo OFF operation when using the user interface room thermostat or external room thermostat.



T_t Target water temperature
T_A Ambient (outdoor) temperature
Shift value Shift value

[3-00] Low ambient temperature (Lo_A)

Low outdoor temperature.

[3-01] High ambient temperature (Hi_A)

High outdoor temperature.

[3-02] Setpoint at low ambient temperature (Lo_Ti)

The target outgoing water temperature when the outdoor temperature equals or drops below the low ambient temperature (Lo_A).

Lo_Ti should be higher than Hi_Ti, as warmer water is required for colder outdoor temperatures.

[3-03] Setpoint at high ambient temperature (Hi_Ti)

The target outgoing water temperature when the outdoor temperature equals or rises above the high ambient temperature (Hi_A).

Hi_Ti should be lower than Lo_Ti, as less warm water suffices for warmer outdoor temperatures.

INFORMATION

If the value of [3-03] is mistakenly set higher than the value of [3-02], the value of [3-03] will always be used.

[4] Settings are not applicable

[5] Automatic setback

[5-00]

This setting is not applicable.

[5-01]

This setting is not applicable.

[5-02] Leaving water setback temperature

[5-03] Room setback temperature

[5-04]

This setting is not applicable.

[6] Option setup

[6-01] External room thermostat option

If an optional external room thermostat is installed, its operation must be enabled by this field setting.

The external room thermostat only gives an ON/OFF signal to the heat pump based on the room temperature. Because it does not give continuous feedback information to the heat pump, it is supplementary to the user interface room thermostat function. To have a good control of the system and avoid frequent ON/OFF it is advised to use the automatic weather dependent setpoint operation.

[6-01]	Description
0 (default)	External room thermostat not installed.
1	External room thermostat input 1 = heating operation ON (1)/OFF (0). External room thermostat input 2 = cooling operation ON (1)/OFF (0).
2	External room thermostat input 1 = operation ON (1)/OFF (0). External room thermostat input 2 = cooling (1)/ heating (0).

[7] Option setup

[7-00] Forced pump operation

[7-00]	Description
0	The pump performs intermittent sampling during thermo off conditions. This setting is often used when the unit is controlled by a room thermostat.
1 (default)	The pump continues operation during thermo off conditions.

[8] Option setup

[8-00] User interface temperature control

[8-00]	Description
0 (default)	The unit operates in leaving water temperature control.
1	The unit operates in room temperature control. This means that the user interface is used as a room thermostat, so the user interface can be placed in the living room to control the room temperature.

Note: When the unit is operated in room temperature control (by user interface or external room thermostat option), room temperature has priority over leaving water setpoint.

[8-01]

This setting is not applicable.

[8-03]

This setting is not applicable.

[8-04] Freeze-up prevention

Freeze-up prevention will be activated by starting up the pump to circulate the water, and if the leaving or return water temperature is <5°C for 5 minutes, the unit will start up in heating mode to prevent too low temperatures.

The freeze-up prevention is only active when the unit is in thermo OFF condition.

The option can be enabled when there is no optional heater tape or glycol in the system and when heat can be used from an application.

[8-04]	Description
0 (default)	No freeze-up prevention
1	Freeze-up prevention level 1 (outdoor temperature <4°C and leaving or return water temperature <7°C)
2	Freeze-up prevention level 2 (outdoor temperature <4°C)

[9] Automatic temperature compensation

If necessary, it is possible to adjust some thermistor value of the unit by a correction value. This can be used as countermeasure for thermistor tolerances or capacity shortage.

The compensated temperature (= measured temperature plus compensation value) is then used to control the system and will be displayed in the temperature read-out mode.

[9-00] Leaving water temperature compensation value for heating operation

[9-01] Leaving water thermistor auto corrective function

This function will take into account the outdoor ambient conditions and correct the measured value which will be used for the logic.

E.g. when the ambient temperature is high during cooling mode, the logic will correct the measured value of the leaving water thermistor to a lower value to take into account influence of high ambient temperatures in the measurement.

[9-02]

This setting is not applicable.

[9-03] Leaving water temperature compensation value for cooling operation

[9-04]

This setting is not applicable.

[A] Option setup

[A-00]

This setting is not applicable.

[A-01]

This setting is not applicable.

[A-02] Return water temperature undershoot value

This setting makes it possible to set the allowable undershoot when operating the unit during heating THERMO ON/OFF condition.

The unit will go in THERMO ON only if the return water temperature (RWT) goes below the setpoint minus the differential temperature:

Thermo ON: RWT<Setpoint–(([A-02]/2)+1)

The setting [A-02] has a variability range from 0 to 15 and the step is 1 degree. The default value is 5, meaning that the differential temperature default value is 3.5.

[A-03] Leaving water temperature overshoot/undershoot value

This setting makes it possible to set the allowable overshoot (heating)/undershoot (cooling) when operating the unit during leaving water control.

[b] Settings are not applicable

[C] Leaving water temperature limits

This setting is used to limit the selectable leaving water temperature on the user interface.

[C-00] Maximum leaving water setpoint in heating operation

[C-01] Minimum leaving water setpoint in heating operation

[C-02] Maximum leaving water setpoint in cooling operation

[C-03] Minimum leaving water setpoint in cooling operation

This depends on field setting [A-04].

[C-04]

This setting is not applicable.

[d] Settings are not applicable

[E] Service mode

[E-00]

This setting is not applicable.

[E-01]

This setting is not applicable.

[E-02]

This setting is not applicable.

[E-03]

This setting is not applicable.

[E-04] Pump only operation (air purge function)

When installing and commissioning the unit it is very important to remove all air from the water circuit.

This field setting operates the pump to improve air removal from the unit without actually operating the unit. The pump will run for 10 minutes, stop 2 minutes, etc.

[E-04]	Description
0 (default)	Normal operation of the unit
1	Automatic air purge operation during 108 minutes
2	Automatic air purge operation during 48 minutes

[F] Option setup

[F-00] Return water temperature overshoot value

This setting makes it possible to set the allowable overshoot when operating the unit during cooling THERMO ON/OFF condition.

The unit will go in THERMO ON only if the return water temperature (RWT) goes above the setpoint plus the differential temperature:

Thermo ON: RWT<Setpoint+(([F-00]/2)+1)

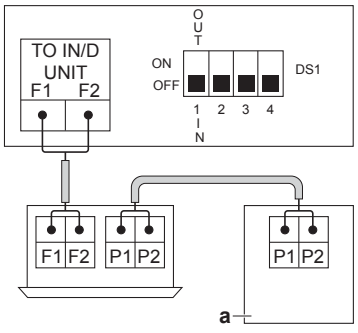
The setting [F-00] has a variability range from 0 to 15 and the step is 1 degree. The default value is 5, meaning that the differential temperature default value is 3.5.

7.3 Switching between cooling and heating

Switching the unit between cooling and heating can be done in 2 different ways, depending on how the temperature is controlled, i.e. based on room temperature or based on leaving water temperature.

Switching between cooling and heating with the user interface

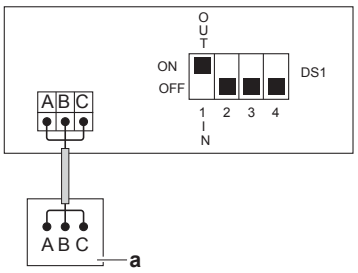
If unit control is based on room temperature (external room thermostat or user interface room thermostat), switching between cooling and heating is done by pushing the cooling/heating button on the user interface.



a User interface

Switching between cooling and heating with the cool/heat selector

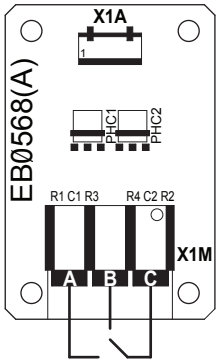
If unit control is based on leaving water temperature, we suggest using the ABC terminals on the outdoor unit. The location of the terminals is shown in the following figure.



a Cool/heat selector

1 Press BS5 for 5 seconds to re-initialise communication of the unit.

- Cooling: voltage free contact between terminals A and C is open
- Heating: voltage free contact between terminals A and C is closed



INFORMATION

Thermostat input has priority over leaving water temperature setpoint.

It is possible that the leaving water temperature becomes lower than the setpoint if the unit is controlled by room temperature.

8 Commissioning

8.1 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 the outdoor unit".
2 Checking the "Checklist before commissioning the indoor unit".
3 Performing a final check.
4 Performing a test run.
5 If necessary, correcting errors after abnormal completion of the test run.
6 Operating the system.

8.2 Precautions when commissioning

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING

CAUTION

Do NOT perform the test operation while working on the indoor units.

When performing the test operation, NOT only the outdoor unit, but the connected indoor unit will operate as well. Working on an indoor unit while performing a test operation is dangerous.

CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. Do NOT remove the fan guard. When the fan is rotating at high speed, it will cause injury.

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

Be sure to turn on the power 6 hours before operation in order to have power running to the crankcase heater and to protect the compressor.

CAUTION

- Make sure that the circuit breaker on the power supply panel of the installation is switched off.
- Make sure that the power wire is securely attached.
- Make sure there is no missing or wrong N-phase.

8.3 Checklist before commissioning the outdoor unit

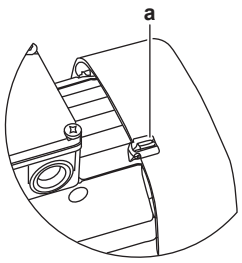
After the installation of the unit, first check the following items. Once all below checks are fulfilled, the unit MUST be closed, ONLY then can the unit be powered up.

☐	You read the complete installation and operation instructions, as described in the **installer and user reference guide**.
☐	**Installation** Check that the unit is properly installed, to avoid abnormal noises and vibrations when starting up the unit.
☐	**Field wiring** Be sure that the field wiring has been carried out according to the instructions described in the chapter "6.9 Connecting the electrical wiring" on page 26, according to the wiring diagrams and according to the applicable legislation.
☐	**Power supply voltage** Check the power supply voltage on the local supply panel. The voltage MUST correspond to the voltage on the identification label of the unit.
☐	**Earth wiring** Be sure that the earth wires have been connected properly and that the earth terminals are tightened.
☐	**Insulation test of the main power circuit** Using a megatester for 500 V, check that the insulation resistance of 2 MΩ or more is attained by applying a voltage of 500 V DC between power terminals and earth. NEVER use the megatester for the transmission wiring.

☐	**Fuses, circuit breakers, or protection devices** Check that the fuses, circuit breakers, or the locally installed protection devices are of the size and type specified in the chapter "5.5.4 Safety device requirements" on page 16. Be sure that neither a fuse nor a protection device has been bypassed.
☐	**Internal wiring** Visually check the electrical component box and the inside of the unit on loose connections or damaged electrical components.
☐	**Pipe size and pipe insulation** Be sure that correct pipe sizes are installed and that the insulation work is properly executed.
☐	**Damaged equipment** Check the inside of the unit on damaged components or squeezed pipes.
☐	**Brazing** Take care not to damage the piping insulation when brazing field piping.
☐	**Installation date and field setting** Be sure to keep record of the installation date on the sticker on the rear of the upper front panel according to EN60335-2-40 and keep record of the contents of the field setting(s).
☐	**Switches** Make sure that switches are set according to your application needs before turning the power supply on.
☐	**Power supply wiring and transmission wiring** Use a designated power supply and transmission wiring and make sure that it has been carried out according to the instructions described in this manual, according to the wiring diagrams and according to local and national regulations.
☐	**Additional refrigerant charge** The amount of refrigerant to be added to the unit shall be written on the included "Added refrigerant" plate and attached to the rear side of the front cover.
☐	**Airtightness test and vacuum drying** Make sure the airtightness test and vacuum drying were completed.

8.4 Checklist before commissioning the indoor unit

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

☐	You read the complete installation and operation instructions, as described in the **installer and user reference guide**.
☐	**Installation** Check that the unit is properly installed, to avoid abnormal noises and vibrations when starting up the unit.
☐	**Field wiring** Be sure that the field wiring has been carried out according to the instructions described in the chapter "6.9 Connecting the electrical wiring" on page 26, according to the wiring diagrams and according to the applicable legislation.
☐	**Power supply voltage** Check the power supply voltage on the local supply panel. The voltage MUST correspond to the voltage on the identification label of the unit.
☐	**Earth wiring** Be sure that the earth wires have been connected properly and that the earth terminals are tightened.
☐	**Insulation test of the main power circuit** Using a megatester for 500 V, check that the insulation resistance of 2 MΩ or more is attained by applying a voltage of 500 V DC between power terminals and earth. NEVER use the megatester for the transmission wiring.
☐	**Fuses, circuit breakers, or protection devices** Check that the fuses, circuit breakers, or the locally installed protection devices are of the size and type specified in the chapter "5.5.4 Safety device requirements" on page 16. Be sure that neither a fuse nor a protection device has been bypassed.
☐	**Internal wiring** Visually check the electrical component box and the inside of the unit on loose connections or damaged electrical components.
☐	**Pump rotation direction** If the 3-phase power input to the indoor unit is not correctly wired (X1M), the pump may rotate in the wrong direction. When this happens, the pump may slowly overheat due to reduced air flow, fan ventilation may be reduced and the motor may consume more power. The indicator on the pump motor fan cover indicates the direction of rotation of the pump. Check operation of this indicator before starting the unit for the first time or when the position of the indicator has changed. If the indicator is in the white/reflecting field, switch off the power supply and switch any two of the incoming supply wires at X1M. The correct direction of rotation is also shown by arrows on the pump motor fan cover.  **a** = pump rotation direction indicator
☐	**Pipe size and pipe insulation** Be sure that correct pipe sizes are installed and that the insulation work is properly executed.
☐	The **air purge** valve is open (at least 2 turns).
☐	**Shut-off valves** Be sure that the shut-off valves are correctly installed and fully open.
☐	**Filter** Make sure that the filter is installed correctly.
☐	**Damaged equipment** Check the inside of the unit on damaged components or squeezed pipes.
☐	**Brazing** Take care not to damage the piping insulation when brazing field piping.

☐	**Water leak** Check the inside of the unit for water leakage. If there is a water leak, try to repair the leak. If the repair is unsuccessful, close the water inlet and outlet shut-off valves and call your local dealer.
☐	**Installation date and field setting** Be sure to keep record of the installation date on the sticker on the rear of the upper front panel according to EN60335-2-40 and keep record of the contents of the field setting(s).
☐	**Schedule timer form** Fill out the form at the very end of this document. When programming the schedule timer, this form can help you define the required actions for each day.

NOTICE

Operating the system with closed valves will damage the pump.

Once all checks are fulfilled, the unit must be closed, only then can the unit be powered up. When the power supply to the unit is turned on, "88" is displayed on the user interface during its initialization, which may take up to 30 seconds. During this process, the user interface cannot be operated.

8.5 Final check

Before switching on the unit, read the following recommendations:

- When the complete installation and all necessary settings have been carried out, be sure that all panels of the unit are closed. If this is not the case, inserting your hand through the remaining openings can cause serious injury due to electrical and hot parts inside the unit.
- The service panel of the electrical component box may only be opened by a licensed electrician for maintenance purposes.

DANGER: RISK OF ELECTROCUTION

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

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 48 hours before reaching smooth operation and stable power consumption.

8.6 About the test run

INFORMATION

When the unit is powered on for the first time, an initialisation takes place. This will take maximum 12 minutes.

When using the remote controller during the initialisation, an error code (UH) can be displayed.

The installer is obliged to verify correct operation of the system after installation. Therefore, a test run must be performed according to the procedures described below. At any time it is possible to check correct operation and space heating.

INFORMATION

During the first start up of the unit (the first 48 hours of compressor running), the noise level of the unit may be higher than mentioned in the technical specifications. This is not an abnormal event.

8.6.1 To display the temperature on the remote controller

The actual temperatures can be displayed on the remote controller.

1 Press ⓑ🄰 for 5 seconds.

Result: The leaving water temperature is displayed (, , and blink).

2 Press ◷▲ and ◷▼ to display:

- The entering water temperature (and blink, and flashes slowly).
- The indoor temperature (and blink).
- The outdoor temperature (and blink).

3 Press ⓑ🄰 again to leave this mode. If no button is pressed, the remote controller leaves the display mode after 10 seconds.

8.6.2 To test space heating/cooling

1 Check the leaving water and entering water temperature using the remote controller read-out mode and write down the displayed values. See "8.6.1 To display the temperature on the remote controller" on page 42.

2 Select the operation mode (heating or cooling).

3 Press TEST 4 times.

Result: TEST is displayed.

4 To test the space heating/cooling operation, press to start the test run operation. When no action is performed, the remote controller will return to normal mode after 10 seconds or by pressing TEST once.

5 The test run operation will end automatically after 30 minutes or when reaching the set temperature. The test run operation can be stopped manually by pressing TEST once. If there are misconnections or malfunctions, an error code will be displayed on the remote controller. Otherwise, the remote controller will return to normal operation.

6 To resolve any error codes, see "10.2 Error codes: Overview" on page 45.

7 Check the leaving water and entering water temperature using the remote controller read-out mode and compare them with the values noted in step 1. After 20 minutes of operation an increase/decrease of the values should confirm the space heating/cooling operation.

INFORMATION

Press TEST once to display the last resolved error code. Press TEST again 4 times to return to normal mode.

INFORMATION

It is not possible to perform a test run if a forced operation from the unit is in progress. If forced operation is started during a test run, the test run will be aborted. 🄴 (external control) will appear.

8.7 Correcting after abnormal completion of the test run

The test operation is only completed if there is no malfunction code displayed on the user interface or the H2P LED is not lit.

Main code	Cause	Solution
E3 E4 F3 UF	The stop valve of the outdoor unit is left closed.	Open the stop valve on both the gas and liquid side.
E3 F6 UF	Refrigerant overcharge.	Recalculate the required amount of refrigerant from the piping length and correct the refrigerant charge level by recovering any excessive refrigerant with a refrigerant recovery machine.
E4 F3	Insufficient refrigerant.	Check if the additional refrigerant charge has been finished correctly. Recalculate the required amount of refrigerant from the piping length and add an adequate amount of refrigerant.
U1	Reversed power supply phase malfunction.	Correct phase order.
U1 U4	No power is supplied to the outdoor unit.	Check if the power wiring for the outdoor unit is connected correctly.
UF	The piping and wiring of the specified indoor unit are not connected correctly to the outdoor unit.	Confirm that the piping and wiring of the specified indoor unit are connected correctly to the outdoor unit.

After correcting the abnormality, press BS3 and reset the error code.

Carry out the test operation again and confirm that the abnormality is properly corrected.

8.8 Checklist handover to the user

Mark the following actions when the installation is finished and the test run is complete.

☐	Complete the model fill-in for each unit
☐	Ensure the user has a printed version of the installation and operation manual.
☐	Explain to the user what system is installed on site.
☐	Explain to the user how to properly operate the system and what to do in case of problems.
☐	Show the user what has to be done in relation to maintenance of the unit.

8.9 To complete the model fill-in

Complete the following fill-in for each unit:

Place of Installation:	
Model name (see nameplate of unit):	
Optional equipment:	
Date:	
Signature:	
Your product was installed by:	

9 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

9.1 Overview: Maintenance and service

This chapter contains information about:

- Preventing electrical hazards when maintaining and servicing the system
- Vacuuming the system
- The refrigerant recovery operation
- The yearly maintenance of the indoor unit

9.2 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.

WARNING

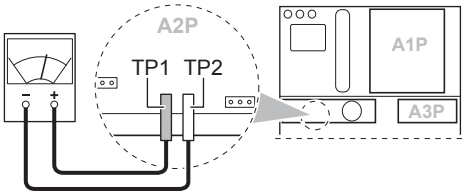
- Before carrying out any maintenance or repair activity, ALWAYS switch off the circuit breaker on the supply panel, remove the fuses or open the protection devices of the unit.
- Do NOT touch live parts for 10 minutes after the power supply is turned off because of high voltage risk.
- Please note that some sections of the electric component box are hot.
- Make sure you do NOT touch a conductive section.
- Do NOT rinse the unit. This may cause electric shocks or fire.

9.2.1 To prevent electrical hazards

When performing service to inverter equipment:

1 Do NOT open the electrical component box cover for 10 minutes after the power supply is turned off.

2 Measure the voltage between terminals on the terminal block for power supply with a tester and confirm that the power supply is shut off. In addition, measure points as shown in the figure, with a tester and confirm that the voltage of the capacitor in the main circuit is less than 50 V DC.



3 To prevent damaging the PCB, touch a non-coated metal part to eliminate static electricity before pulling out or plugging in connectors.

4 Pull out junction connectors X1A, X2A (X3A, X4A) for the fan motors in the outdoor unit before starting service operation on the inverter equipment. Be careful not to touch the live parts. (If a fan rotates due to strong wind, it may store electricity in the capacitor or in the main circuit and cause electric shock.)

5 After the service is finished, plug the junction connector back in. Otherwise the malfunction code E7 will be displayed on the user interface and normal operation will not be performed.

For details refer to the wiring diagram labelled on the back of the electrical component box cover.

9.3 About service mode operation

When the vacuuming/recovery mode is used, check very carefully what should be vacuumed/recovered before starting.

9.3.1 To use vacuum mode

1 With the unit at a standstill and setting mode 2 active, set the required field setting (refrigerant recovery operation/vacuuming operation) (see "7.2.8 Mode 2: Field settings" on page 34) to ON (ON). Do not reset setting mode 2 until vacuuming is finished.

Result: The H1P LED lights up. The user interface indicates test operation and operation is prohibited.

2 Evacuate the system with a vacuum pump.

3 Press BS1 and reset setting mode 2.

9.3.2 To recover refrigerant

This should be done by a refrigerant reclaimer. Follow the same procedure as for vacuuming method.

1 With the unit at a standstill and setting mode 2 active, set the required field setting (refrigerant recovery operation/vacuuming operation) (see "7.2.8 Mode 2: Field settings" on page 34) to ON (ON).

Result: The indoor unit and the outdoor unit expansion valves open completely and some solenoid valves are turned on. The H1P LED lights up. The user interface indicates test operation and operation is prohibited.

2 Cut off the power supply to the indoor units and the outdoor unit with the circuit breaker. After the power supply of one side is cut off, cut off the power supply of the other side within 10 minutes. Otherwise, communication between the indoor units and the outdoor unit may become abnormal and the expansion valves will be completely closed again.

3 Recover the refrigerant by a refrigerant reclaimer. For details, see the operation manual delivered with the refrigerant reclaimer.

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

Make sure to NOT recover any oil while recovering refrigerant. **Example:** By using an oil separator.

9.4 Checklist for yearly maintenance of the indoor unit

- Water pressure
- Water filter
- Water pressure relief valve
- Relief valve hose
- Switch box

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

Turn the red knob on the valve counter-clockwise and check if it operates correctly:

- If you do not hear a clacking sound, contact your local dealer.
- In case the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your local dealer.

Pressure relief valve hose

Check the condition and routing of the hose. Water must drain appropriately from the hose.

Switch box

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

WARNING

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

10 Troubleshooting

10.1 Overview: Troubleshooting

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

It contains information about:

- Solving problems based on error codes

10.2 Error codes: Overview

Main code	Cause	Solution
A1	Failure writing memory (EEPROM error)	Contact your local dealer.
A6	Water circuit malfunction	▪ Check that water flow is possible (open all valves in the circuit). ▪ Force clean water through the unit.
A9	R410A expansion valve error (K11E/K12E)	▪ Check wiring connections. ▪ Contact your local dealer.
AE	Water system warning	▪ Check filter. ▪ Make sure all valves are open. ▪ Contact your local dealer.
AJ	Capacity error	Contact your local dealer.
C1	Bad ACS communication	Contact your local dealer.
C4	R410A liquid thermistor error (R13T/R23T)	▪ Check wiring connections. ▪ Contact your local dealer.
C9	Returning water thermistor error (R12T/R22T)	▪ Check wiring connections. ▪ Contact your local dealer.
CA	Heating leaving water thermistor error (R11T/R12T)	▪ Check wiring connections. ▪ Contact your local dealer.
CJ	User interface thermostat thermistor error	Contact your local dealer.
E3	High pressure error (SENPH/S1PH)	▪ Check that the circuit does not contain any air. ▪ Check that water flow is possible (open all valves in the circuit). ▪ Check that the water filter is not blocked. ▪ Check that all refrigerant stop valves are open. ▪ Contact your local dealer.
E4	Low pressure error (SENPL)	Contact your local dealer.
J7	R410A suction thermistor error (R14T/R24T)	▪ Check wiring connections. ▪ Contact your local dealer.
U1	Reversed power supply phase malfunction	Correct phase order.
U2	Insufficient supply voltage	▪ Check wiring connections. ▪ Contact your local dealer.
U8	Two main user interfaces are connected (when using two user interfaces)	Check that SS1 of one controller is set to MAIN, and the other one to SUB. Turn the power supply off, and then back on.
UA	Type connection problem	▪ Wait until initialization between the indoor unit and outdoor unit is completed (wait at least 12 minutes after power ON). ▪ Contact your local dealer.
UH	Address error	Contact your local dealer.

11 Disposal

This unit uses hydrofluorocarbon. Contact your dealer when discarding this unit.

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.

12 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).

12.1 Overview: Technical data

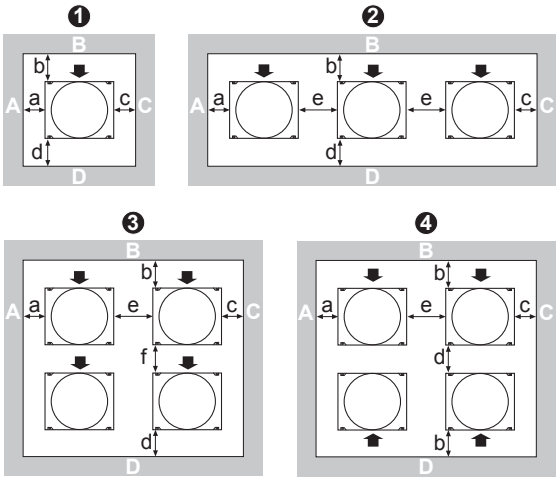
This chapter contains information about:

- Service space
- Piping diagram
- Wiring diagram
- Field settings
- ESP curves

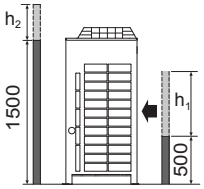
12.2 Service space: Outdoor unit

Make sure the space around the unit is adequate for servicing and the minimum space for air inlet and air outlet is available (refer to the figure below and choose one of the possibilities).

- In case of an installation site where sides A+B+C+D have obstacles, the wall heights of sides A+C have no impact on service space dimensions. Refer to the figure for impact of wall heights of sides B+D on service space dimensions.
- In case of an installation site where only sides A+B have obstacles, the wall heights have no influence on any indicated service space dimensions.



Layout	A+B+C+D		A+B
	Possibility 1	Possibility 2	
1	a≥10 mm	a≥50 mm	a≥200 mm
	b≥300 mm	b≥100 mm	b≥300 mm
	c≥10 mm	c≥50 mm	
	d≥500 mm	d≥500 mm	
2	a≥10 mm	a≥50 mm	a≥200 mm
	b≥300 mm	b≥100 mm	b≥300 mm
	c≥10 mm	c≥50 mm	
	d≥500 mm	d≥500 mm	
	e≥20 mm	e≥100 mm	e≥400 mm
3	a≥10 mm	a≥50 mm	—
	b≥300 mm	b≥100 mm	
	c≥10 mm	c≥50 mm	
	d≥500 mm	d≥500 mm	
	e≥20 mm	e≥100 mm	
	f≥600 mm	f≥500 mm	
4	a≥10 mm	a≥50 mm	
	b≥300 mm	b≥100 mm	
	c≥10 mm	c≥50 mm	
	d≥500 mm	d≥500 mm	
	e≥20 mm	e≥100 mm	



ABCD Sides along the installation site with obstacles
F Front side
Suction side

INFORMATION

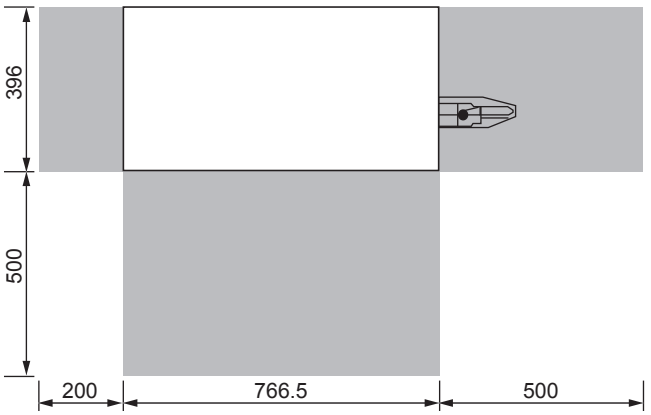
The service space dimensions in above figure are based on cooling operation at 35°C ambient temperature (standard conditions).

INFORMATION

Further specifications can be found in the technical engineering data.

12.3 Service space: Indoor unit

Make sure the space around the unit is adequate for servicing (refer to the figure below).



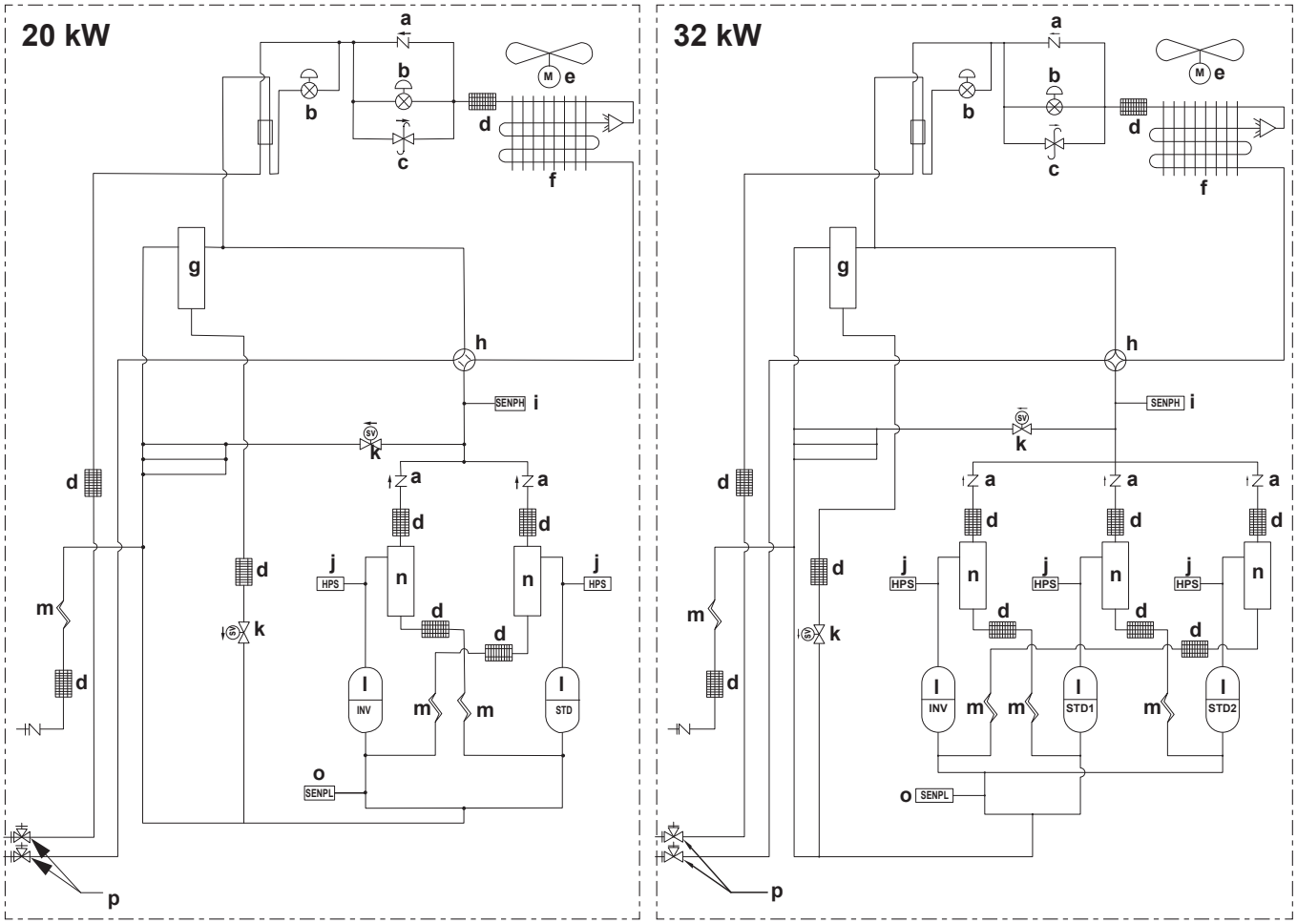
CAUTION

Make sure the right service panel can still be removed after installation of the piping.

INFORMATION

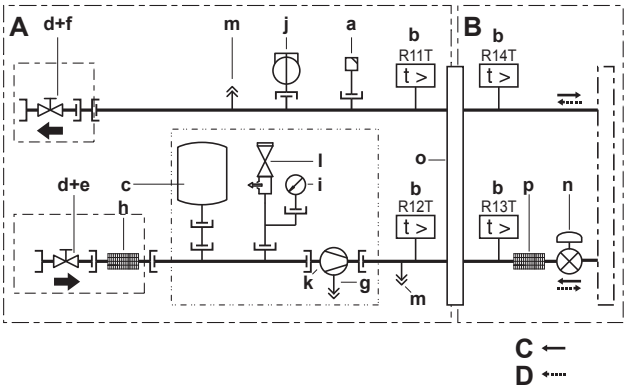
Further specifications can be found in the technical engineering data.

12.4 Piping diagram: Outdoor unit



a Check valve
b Electronic expansion valve
c Pressure regulating valve
d Filter
e Fan
f Heat exchanger
g Accumulator
h 4-way valve
i High pressure sensor
j High pressure switch
k Solenoid valve
l Compressor
m Capillary tube
n Oil separator
o Low pressure sensor
p Stop valve (with service port on on-site piping side 7.9 mm flare connection)

12.5 Piping diagram: Indoor unit



a Air purge valve
b Temperature sensors (R11T, R12T, R13T, R14T)
c Expansion vessel (12 l)
d Shut-off valve (field installed)
e Water inlet connection
f Water outlet connection
g Drain port
h Water filter
i Pressure gauge
j Flow switch
k Pump
l Safety valve
m Check valve
n Electronic expansion valve
o Heat exchanger
p Filter
A Water side
B Refrigerant side
C Refrigerant flow in cooling mode
D Refrigerant flow in heating mode

12.6 Wiring diagram: Outdoor unit

Refer to the wiring diagram sticker on the outdoor unit. The abbreviations used are listed below:

INFORMATION

The wiring diagram on the outdoor unit is only for the outdoor unit. For the indoor unit or optional electrical components, refer to the wiring diagram of the indoor unit.

L1,L2,L3	Live
N	Neutral
▪▪▪	Field wiring
□□□□	Terminal strip
⊠	Connector
-o-	Terminal
⏚	Protective earth (screw)
BLK	Black
BLU	Blue
BRN	Brown
GRN	Green
GRY	Grey
ORG	Orange
PNK	Pink
RED	Red
WHT	White
YLW	Yellow

A1P~A7P	Printed circuit board
BS1~BS5	Pushbutton switch (mode, set, return, test, reset)
C1, C63, C66	Capacitor
DS1, DS2	DIP switch
E1HC~E3HC	Crankcase heater
F1U	Fuse (650 V, 8 A, B) (A4P) (A8P)
F1U, F2U	Fuse (250 V, 3.15 A, T) (A1P)
F5U	Field fuse
F400U	Fuse (250 V, 6.3 A, T) (A2P)
H1P~H8P	Pilot lamp (service monitor - orange)
	H2P blinks: under preparation or in test operation
	H2P lights up: malfunction detection
HAP	Pilot lamp (service monitor - green)
K1	Magnetic relay
K2	Magnetic contactor (M1C)
K2M, K3M	Magnetic contactor (M2C, M3C)
K1R, K2R	Magnetic relay (K2M, K3M)
K3R~K5R	Magnetic relay (Y1S~Y3S)
K6R~K9R	Magnetic relay (E1HC~E3HC)
L1R	Reactor
M1C ~M3C	Motor (compressor)
M1F, M2F	Motor (fan)
PS	Switching power supply (A1P, A3P)
Q1DI	Earth leakage circuit breaker (field supply)
Q1RP	Phase reversal detection circuit
R1T	Thermistor (fin) (A2P)
R1T	Thermistor (air) (A1P)
R2T	Thermistor (suction)
R4T	Thermistor (coil-deicer)
R5T	Thermistor (coil-outlet)
R6T	Thermistor (liquid-pipe receiver)
R7T	Thermistor (accumulator)
R10	Resistor (current sensor) (A4P) (A8P)
R31T~R33T	Thermistor (discharge) (M1C ~M3C)
R50, R59	Resistor
R95	Resistor (current limiting)
S1NPH	Pressure sensor (high)
S1NPL	Pressure sensor (low)
S1PH, S3PH	Pressure switch (high)
S1S	Selector switch (fan, cool/heat) (optional cool/heat selector)
S2S	Selector switch (cool/heat) (optional cool/heat selector)
SD1	Safety devices input
T1A	Current sensor (A6P, A7P)
V1R	Power module (A4P, A8P)
V1R, V2R	Power module (A3P)
X1A, X4A	Connector (M1F, M2F)
X1M	Terminal strip (power supply)
X1M	Terminal strip (control) (A1P)
X1M	Terminal strip (A5P)
Y1E, Y2E	Expansion valve (electronic type) (main, subcool)
Y1S	Solenoid valve (hotgas bypass)
Y2S	Solenoid valve (oil return)
Y3S	Solenoid valve (4-way valve)
Y4S	Solenoid valve (injection)
Z1C~Z7C	Noise filter (ferrite core)
Z1F	Noise filter (with surge absorber)

12.7 Wiring diagram: Indoor unit

Refer to the wiring diagram sticker on the indoor unit. The abbreviations used are listed below:

L1,L2,L3	Live
N	Neutral
▪▪▪	Field wiring
□□□□	Terminal strip
⊠	Connector
-o-	Terminal
⏚	Protective earth (screw)
BLK	Black
BLU	Blue
BRN	Brown
GRN	Green
GRY	Grey
ORG	Orange
PNK	Pink
RED	Red
WHT	White
YLW	Yellow

A1P	Main PCB circuit 1

A2P	User interface PCB
A3P	Control PCB circuit 1
A4P	Demand PCB (optional)
A5P	Main PCB circuit 2
A6P	Demand PCB (optional)
A7P	Remote user interface PCB (optional)
A8P	Control PCB circuit 2
C1~C3	Filter capacitor
F1U (A*P)	Fuse (250 V, 3.15 A, T)
HAP (A*P)	PCB LED
K11E	Electronic expansion valve (circuit 1)
K21E	Electronic expansion valve (circuit 2)
K1P	Pump contactor
K1S	Pump overcurrent relay
K*R (A3P)	PCB relay
M1P	Pump
Q1T	Thermostat for expansion vessel heater
PS (A*P)	Switching power supply
Q1DI	Earth leakage circuit breaker (field supply)
R1T	Thermistor (air, fin)
R11T	Leaving water thermistor (circuit 1)
R12T	Returning water thermistor (circuit 1)
R13T	Refrigerant liquid thermistor (circuit 1)
R14T	Refrigerant gas thermistor (circuit 1)
R21T	Leaving water thermistor (circuit 2)
R22T	Returning water thermistor (circuit 2)
R23T	Refrigerant liquid thermistor (circuit 2)
R24T	Refrigerant gas thermistor (circuit 2)
S1L	Flow switch (circuit 1)
S2L	Flow switch (circuit 2)
S1S	Thermostat input 1 (field supply)
S2S	Thermostat input 2 (field supply)
S3S	Operation ON input (field supply)
S4S	Operation OFF input (field supply)
SS1 (A1P, A5P)	Selector switch (emergency)
SS1 (A2P)	Selector switch (master/slave)
SS1 (A7P)	Selector switch (master/slave) (optional)
V1C, V2C	Ferrite core noise filter
X1M~X4M	Terminal strip
X801M (A*P)	Printed circuit board terminal strip
Z1F, Z2F (A*P)	Noise filter

12.8 Technical specifications: Outdoor unit

INFORMATION

For technical and electrical details, see technical engineering data.

12.9 Field settings on the user interface – overview

1st code	2nd code	Setting name	Date	Value	Date	Value	Default value	Range	Step	Unit	❄	☀
0	User interface setup											
	00	User permission level					2	2~3	1	—	✓	✓
	01	Room temperature compensation value					0	–5~5	0.5	°C	✓	✓
	02	Not applicable. Do not change the default value.					1	—	—	—	—	—
	03	Status: space heating schedule timer mode (Method 1=1 / Method 2=0)					1 (ON)	0/1	—	—	—	✓
	04	Status: space cooling schedule timer mode (Method 1=1 / Method 2=0)					1 (ON)	0/1	—	—	✓	—
1	Settings are not applicable											
	00	Not applicable. Do not change the default value.					1	—	—	—	—	—
	01	Not applicable. Do not change the default value.					1:00	—	—	—	—	—
	02	Not applicable. Do not change the default value.					0	—	—	—	—	—
	03	Not applicable. Do not change the default value.					15:00	—	—	—	—	—
2	Automatic setback function											
	00	Status: setback operation					1 (ON)	0/1	—	—	—	✓
	01	Setback operation start time					23:00	0:00~23:00	1:00	hour	—	✓
	02	Setback operation stop time					5:00	0:00~23:00	1:00	hour	—	✓
3	Weather dependent setpoint											
	00	Low ambient temperature (Lo_A)					–10	–20~5	1	°C	—	✓
	01	High ambient temperature (Hi_A)					15	10~20	1	°C	—	✓
	02	Setpoint at low ambient temperature (Lo_Ti)					40	25~80	1	°C	—	✓
	03	Setpoint at high ambient temperature (Hi_Ti)					25	–20~5	1	°C	—	✓
4	Settings are not applicable											
	00	Not applicable. Do not change the default value.					1	—	—	—	—	—
	01	Not applicable. Do not change the default value.					Fri	—	—	—	—	—
	02	Not applicable. Do not change the default value.					23:00	—	—	—	—	—
5	Automatic setback and disinfection setpoint											
	00	Not applicable. Do not change the default value.					70	—	—	—	—	—
	01	Not applicable. Do not change the default value.					10	—	—	—	—	—
	02	Leaving water setback temperature					5	0~10	1	°C	—	✓
	03	Room setback temperature					18	17~23	1	°C	—	✓
	04	Not applicable. Do not change the default value.					1	—	—	—	—	—
6	Option setup											
	01	Optional room thermostat installed					0	0~2	—	—	✓	✓
7	Option setup											
	00	Forced pump operation					1 (ON)	0/1	—	—	✓	✓
8	Option setup											
	00	User interface temperature control					0 (OFF)	0/1	—	—	✓	✓
	01	Not applicable. Do not change the default value.					1	—	—	—	—	—
	03	Not applicable. Do not change the default value.					1	—	—	—	—	—
	04	Status: freeze-up prevention					0	0~2	1	—	✓	✓
9	Automatic temperature compensation											
	00	Leaving water temperature compensation value (heating)					0	–2~2	0.2	°C	—	✓
	01	Leaving water thermistor auto corrective function					1 (ON)	0/1	1	—	✓	✓
	02	Not applicable. Do not change the default value.					0	—	—	—	—	—
	03	Leaving water temperature compensation value (cooling)					0	–2~2	0.2	°C	✓	—
	04	Not applicable. Do not change the default value.					0	—	—	—	—	—
A	Option setup											
	00	Not applicable. Do not change the default value.					0	—	—	—	—	—
	01	Not applicable. Do not change the default value.					0	—	—	—	—	—
	02	Allowable undershoot value for return water					5	0~15	1	°C	—	✓
	03	Allowable overshoot value for leaving water					3	1~5	0.5	°C	✓	✓
b	Settings are not applicable											
	00	Not applicable. Do not change the default value.					35	—	—	—	—	—
	01	Not applicable. Do not change the default value.					45	—	—	—	—	—
	02	Not applicable. Do not change the default value.					1	—	—	—	—	—
	03	Not applicable. Do not change the default value.					70	—	—	—	—	—
	04	Not applicable. Do not change the default value.					70	—	—	—	—	—
C	Leaving water temperature limits											
	00	Setpoint: heating leaving water maximum temperature					50	37~50	1	°C	—	✓
	01	Setpoint: heating leaving water minimum temperature					25	25~37	1	°C	—	✓
	02	Setpoint: cooling leaving water maximum temperature					20	18~22	1	°C	✓	—
	03	Setpoint: cooling leaving water minimum temperature					5	Q[(a)]~18	1	°C	✓	—
	04	Not applicable. Do not change the default value.					0	—	—	—	—	—

1st code	2nd code	Setting name	Date	Value	Date	Value	Default value	Range	Step	Unit	❄	☀
d	Settings are not applicable											
	00	Not applicable. Do not change the default value.					10	—	—	—	—	—
	01	Not applicable. Do not change the default value.					30	—	—	—	—	—
	02	Not applicable. Do not change the default value.					15	—	—	—	—	—
	03	Not applicable. Do not change the default value.					15	—	—	—	—	—
	04	Not applicable. Do not change the default value.					40	—	—	—	—	—
E	Service mode											
	00	Not applicable. Do not change the default value.					0	—	—	—	—	—
	01	Not applicable. Do not change the default value.					0	—	—	—	—	—
	02	Not applicable. Do not change the default value.					0	—	—	—	—	—
	03	Not applicable. Do not change the default value.					1	—	—	—	—	—
	04	Pump only operation/Air purge					0	0~25	1	—	✓	✓
F	Settings are not applicable.											
	00	Allowable overshoot value for return water					5	0~15	1	°C	✓	—
	01	Not applicable. Do not change the default value.					0	—	—	—	—	—
	02	Not applicable. Do not change the default value.					1	—	—	—	—	—
	03	Not applicable. Do not change the default value.					10	—	—	—	—	—
	04	Not applicable. Do not change the default value.					50	—	—	—	—	—

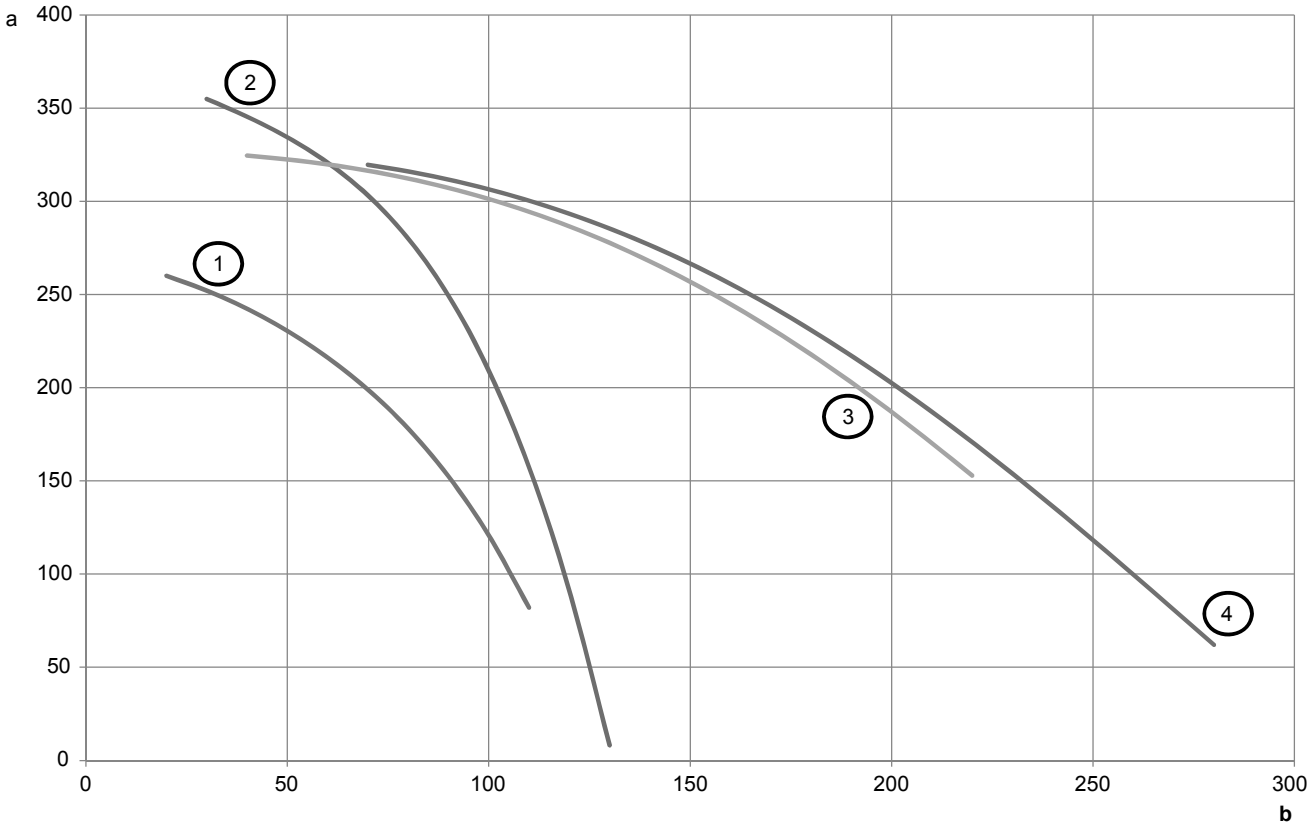
(a) See field setting [C-03] in "7.2.9 Field settings on the user interface" on page 35.

12.10 Field settings on the outdoor unit

Technical specifications

Setting no.	Setting contents	H1P H2P H3P H4P H5P H6P H7P	Contents	H1P H2P H3P H4P H5P H6P H7P	Factory setting	Selected condition	Date
12	Low noise/demand setting via external control adapter	☼ ● ● ☼ ☼ ● ●	NO	☼ ● ● ● ● ● ◐	✓		
			YES	☼ ● ● ● ● ◐ ●			
18	High static pressure setting	☼ ● ☼ ● ● ☼ ●	OFF	☼ ● ● ● ● ● ◐	✓		
			ON	☼ ● ● ● ● ◐ ●			
22	Automatic night-time low noise setting	☼ ● ☼ ● ☼ ☼ ●	OFF	☼ ● ● ● ● ● ●	✓		
			Level 1 (outdoor fan with step 6 or lower)	☼ ● ● ● ● ● ◐			
			Level 2 (outdoor fan with step 5 or lower)	☼ ● ● ● ● ◐ ●			
			Level 3 (outdoor fan with step 4 or lower)	☼ ● ● ● ● ◐ ◐			
25	Low noise setting via external control adapter	☼ ● ☼ ☼ ● ● ☼	Level 1 (outdoor fan with step 6 or lower)	☼ ● ● ● ● ● ◐			
			Level 2 (outdoor fan with step 5 or lower)	☼ ● ● ● ● ◐ ●	✓		
			Level 3 (outdoor fan with step 4 or lower)	☼ ● ● ● ◐ ● ●			
30	Demand setting via external control adapter	☼ ● ☼ ☼ ☼ ☼ ●	60% demand	☼ ● ● ● ● ● ◐			
			70% demand	☼ ● ● ● ● ◐ ●	✓		
			80% demand	☼ ● ● ● ◐ ● ●			

12.11 ESP curve: Indoor unit



a External static pressure (kPa)
b Water flow (l/min)
1 SEHVX20BAW
2 SEHVX32BAW
3 SEHVX40BAW
4 SEHVX64BAW

For the user

13 About the system

NOTICE

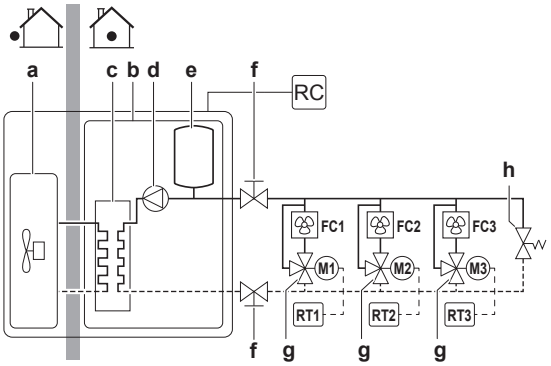
Do not use the system for other purposes. In order to avoid any quality deterioration, do not use the unit for cooling precision instruments or works of art.

NOTICE

For future modifications or expansions of your system:

A full overview of allowable combinations (for future system extensions) is available in technical engineering data and should be consulted. Contact your installer to receive more information and professional advice.

13.1 System layout



a Outdoor unit
b Indoor unit
c Plate heat exchanger
d Pump
e Expansion vessel
f Shut-off valve
g Motorized valve
h Bypass valve
FC1…3 Fancoil unit (field supply)
RC User interface
RT1…3 Room thermostat

14 User interface

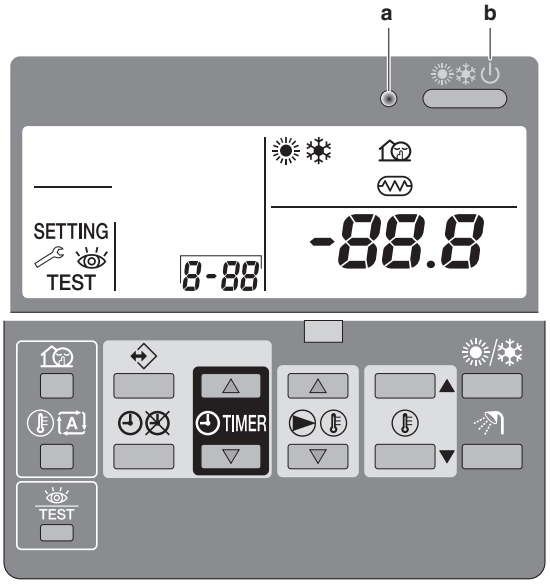
CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT remove the front panel. Some parts inside are dangerous to touch and appliance problems may happen. For checking and adjusting the internal parts, contact your dealer.

This operation manual will give a non-exhaustive overview of the main functions of the system.

Refer to the operation manual of the user interface for information about the display and the buttons of the user interface.

User interface



a Operation lamp
b ON/OFF button

15 Before operation

WARNING

Ask your dealer for improvement, repair, and maintenance. Incomplete improvement, repair, and maintenance may result in water leakage, electric shock and fire.

WARNING

Ask your dealer to move and reinstall the air conditioner. Incomplete installation may result in a water leakage, electric shock, and fire.

WARNING

If you detect any abnormality such as smell of fire, turn OFF the power supply and call your dealer for instructions.

WARNING

Never let the indoor unit or the remote controller get wet. It may cause an electric shock or a fire.

WARNING

Do not place objects in direct proximity of the outdoor unit and do not let leaves and other debris accumulate around the unit. Leaves are a hotbed for small animals which can enter the unit. Once in the unit, such animals can cause malfunctions, smoke or fire when making contact with electrical parts.

WARNING

Avoid placing the controller in a place where it can be splashed with water. Water entering the machine may cause an electric leak or may damage the internal electronic parts.

WARNING

This unit contains electrical and hot parts.

WARNING

Before operating the unit, be sure the installation has been carried out correctly by an installer.

NOTICE

Never inspect or service the unit by yourself. Ask a qualified service person to perform this work.

WARNING

Never use a flammable spray such as hair spray, lacquer or paint near the unit. It may cause a fire.

WARNING

Never touch the air outlet or the horizontal blades while the swing flap is in operation. Fingers may become caught or the unit may break down.

WARNING

Never replace a fuse with a fuse of a wrong ampere ratings or other wires when a fuse blows out. Use of wire or copper wire may cause the unit to break down or cause a fire.

WARNING

The refrigerant in the system is safe and normally does not leak. If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.

Turn off any combustible heating devices, ventilate the room and contact the dealer where you purchased the unit.

Do not use the system until a service person confirms that the portion where the refrigerant leaks is repaired.

DANGER: RISK OF ELECTROCUTION

Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord. Otherwise, an electric shock and injury may result.

DANGER: RISK OF ELECTROCUTION

Do not operate the air conditioner with wet hands. An electric shock may result.

WARNING

Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit. It may cause incomplete combustion or deformation of the unit due to the heat.

WARNING

Do NOT install the air conditioner at any place where flammable gas may leak out. If the gas leaks out and stays around the air conditioner, a fire may break out.

WARNING

In order to avoid electric shock or fire, make sure that an earth leak detector is installed.

CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT remove the front panel. Some parts inside are dangerous to touch and appliance problems may happen. For checking and adjusting the internal parts, contact your dealer.

CAUTION

Do NOT touch the heat exchanger fins. These fins are sharp and could result in cutting injuries.

CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. Do NOT remove the fan guard. When the fan is rotating at high speed, it will cause injury.

WARNING

Do NOT place a flammable spray bottle near the air conditioner and do NOT use sprays. Doing so may result in a fire.

CAUTION

It is not good for your health to expose your body to the air flow for a long time.

CAUTION

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the system.

CAUTION

Do NOT operate the system when using a room fumigation-type insecticide. Chemicals could collect in the unit, and endanger the health of people who are hypersensitive to chemicals.

CAUTION

NEVER expose little children, plants or animals directly to the airflow.

NOTICE

Never press the button of the remote controller with a hard, pointed object. The remote controller may be damaged.

NOTICE

Never pull or twist the electric wire of the user interface. It may cause the unit to malfunction.

NOTICE

Do not place the user interface in a place exposed to direct sunlight. The LCD display may get discoloured or fail to display the data.

NOTICE

Do not place items which might be damaged by moisture under the indoor unit. Condensation may form if the humidity is above 80%, if the drain outlet is blocked or the filter is polluted.

NOTICE

Arrange the drain hose to ensure smooth drainage. Incomplete drainage may cause the building, furniture, etc. to get wet.

NOTICE

Be sure to turn on the power 6 hours before operation in order to have power running to the crankcase heater and to protect the compressor.

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.

This operation manual is for the following systems with standard control. Before initiating operation, contact your dealer for the operation that corresponds to your system type and mark. If your installation has a customised control system, ask your dealer for the operation that corresponds to your system.

Operation modes (depending on indoor unit type):

- Heating and cooling.
- Fan only operation.
- Program dry.

16 Operation

16.1 Operation range

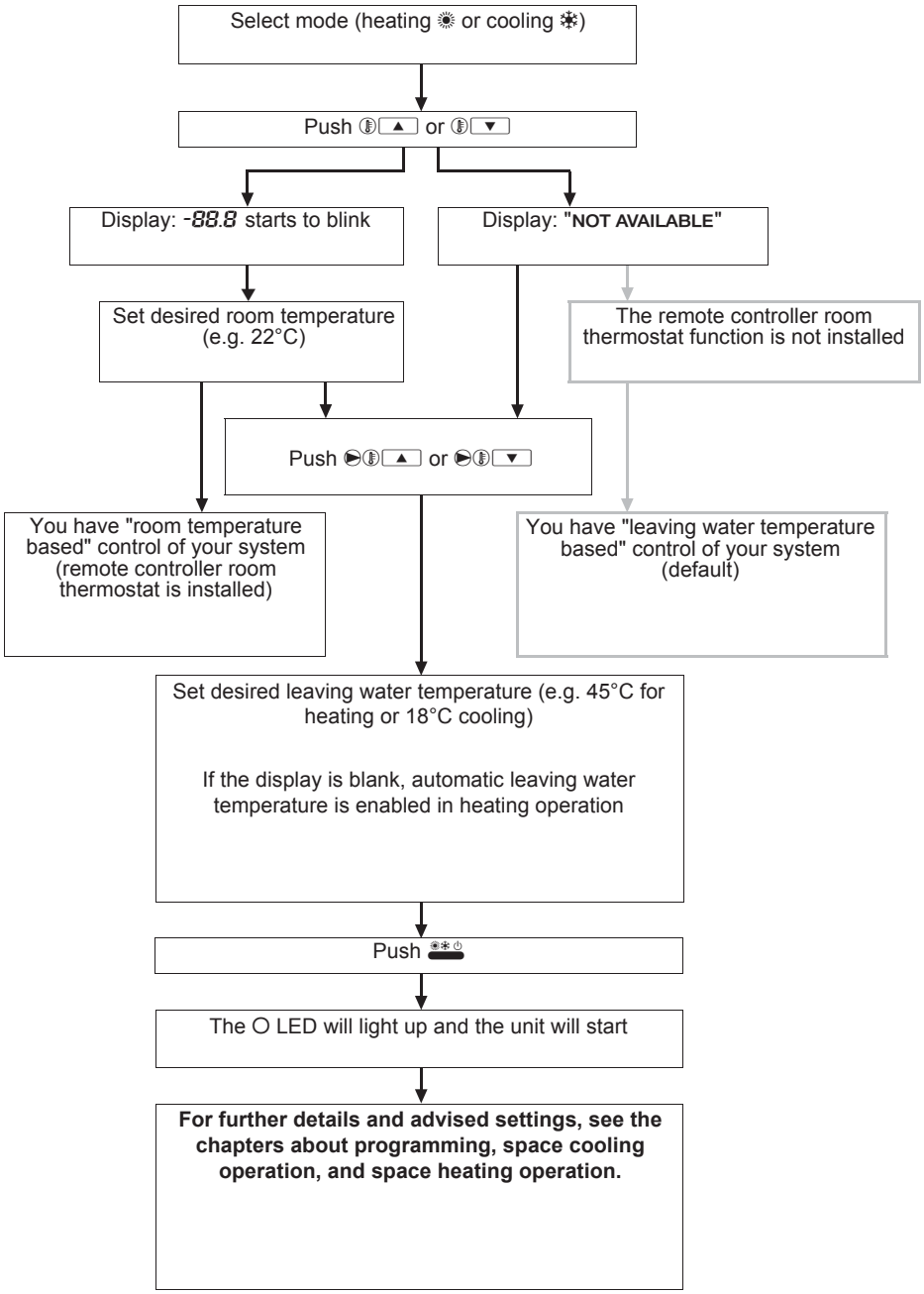
Use the system in the following temperature ranges for safe and effective operation.

	Cooling	Heating
Outdoor unit	–5~43°C DB	–15~35°C DB
Indoor unit	5~20°C DB	25~50°C DB

16.2 Quick start-up

The flow chart shows the steps required for starting up space cooling/heating and allows the user to start up the system before reading the entire manual.

See "16.3 Operating the system" on page 58 for more detailed information.



16.3 Operating the system

16.3.1 About the clock

INFORMATION

- The clock must be set manually. Adjust the setting when switching from summertime to wintertime and vice versa.
- The clock cannot be adjusted if the controller is set to permission level 2 or 3 (see field setting [0-00] in "7.2.9 Field settings on the user interface" on page 35).
- A power failure of more than 2 hours will reset the clock and the day of the week. The schedule timer will continue operation, but with a disordered clock. Correct the clock and the day of the week.

To set the clock

1 Hold down the ⊗/◴ button for 5 seconds.

Result: The clock read-out and the day of week indicator start flashing.

2 Press the ◴▲ or ◴▼ button to increase/decrease the time by 1 minute. Keep the button pressed to increase/decrease the time by 10 minutes.

3 Press the ▶▲ or ▶▼ button to display the previous or next day of the week.

4 Press the ◈ button to confirm the current set time and day of the week.

5 Press the ⊗/◴ button to cancel this procedure without saving.

Result: If no button is pressed for 5 minutes, the clock and day of the week will return to their previous setting.

16.3.2 About operating the system

If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.

16.3.3 Space cooling operation

Space cooling can be controlled in 2 different ways:

- based on room temperature
- based on leaving water temperature (default)

To switch space cooling on/off using room temperature control

In this mode, cooling will be activated as required by the room temperature setpoint. The setpoint can be set manually or through the schedule timer.

INFORMATION

- When using room temperature control, space cooling operation based on room temperature will have priority over leaving water control.
- It is possible that the leaving water temperature becomes higher than the setpoint if the unit is controlled by room temperature.

1 Press to switch space cooling (❄) on/off.

Result: ❄ and the corresponding actual room temperature setpoint appear on the display. The operation LED ○ lights up.

2 Set the desired room temperature using and . For setup of the schedule timer function, see "16.3.6 Schedule timer" on page 60.

INFORMATION

Temperature range for cooling: 16°C~32°C (room temperature)

3 Select the leaving water temperature which you want to be used to cool down your system using and . For detailed information, see "To switch space cooling on/off using leaving water temperature control" on page 59.

To switch space cooling on/off using leaving water temperature control

In this mode, cooling will be activated as required by the water temperature setpoint. The setpoint can be set manually or through the schedule timer.

1 Press to switch space cooling (❄) on/off.

Result: ❄ and the corresponding actual room temperature setpoint appear on the display. The operation LED ○ lights up.

2 Set the desired leaving water temperature using and .

INFORMATION

Temperature range for cooling: 5°C~20°C (leaving water temperature).

For setup of the schedule timer function, see "To program space cooling" on page 62, "To program space heating" on page 62, and "To program quiet mode" on page 63.

INFORMATION

- When an external room thermostat is installed, the thermo ON/OFF is determined by the external room thermostat. The remote controller is then operated in the leaving water control mode and is not functioning as a room thermostat.
- The remote controller ON/OFF status always has priority over the external room thermostat!

INFORMATION

Setback operation and weather dependent setpoint are not available in the cooling mode.

16.3.4 Space heating operation

Space heating is available for heat pump units only.

Space heating can be controlled in 2 different ways:

- based on room temperature
- based on leaving water temperature (default)

To switch space heating on/off using room temperature control

Room temperature control

In this mode, heating will be activated as required by the room temperature setpoint. The setpoint can be set manually or through the schedule timer.

INFORMATION

- When using room temperature control, space heating operation based on room temperature will have priority over leaving water control.
- It is possible that the leaving water temperature becomes higher than the setpoint if the unit is controlled by room temperature.

1 Press to switch space heating (☀) on/off.

Result: ☀ and the corresponding actual room temperature setpoint appear on the display. The operation LED ○ lights up.

2 Set the desired room temperature using and . In order to avoid overheating, space heating cannot be used when the outdoor ambient temperature rises above a certain temperature (see "16.1 Operation range" on page 57). For setup of the schedule timer function, see "16.3.6 Schedule timer" on page 60.

INFORMATION

Temperature range for heating: 16°C~32°C (room temperature)

3 Select the leaving water temperature which you want to be used to heat up your system using and . For detailed information, see "To switch space heating on/off using leaving water temperature control" on page 60.

Automatic setback function

For the automatic setback function settings, see field setting [2] in "7.2.9 Field settings on the user interface" on page 35.

INFORMATION

- flashes during setback operation.
- While room temperature setback function is active, leaving water setback operation is also performed (see "To switch space cooling on/off using leaving water temperature control" on page 59).
- Do not to set the setback value too low, especially during colder periods (e.g. winter time). It is possible that the room temperature cannot be reached (or it will take much longer) because of the big temperature difference.

The setback function provides the possibility to lower the room temperature. It can be activated e.g. during the night, because temperature demands during night and day are not the same.

To switch space heating on/off using leaving water temperature control

In this mode, heating will be activated as required by the water temperature setpoint. The setpoint can be set manually or through the schedule timer.

1 Press ☀ to switch space heating (☀) on/off.

Result: ☀ and the corresponding actual room temperature setpoint appear on the display. The operation LED ○ lights up.

2 Set the desired leaving water temperature using ▶ and ▶. In order to avoid overheating, space heating cannot be used when the outdoor ambient temperature rises above a certain temperature (see "16.1 Operation range" on page 57).

INFORMATION

Temperature range for heating: 25°C~50°C (leaving water temperature)

For setup of the schedule timer function, see "16.3.6 Schedule timer" on page 60.

INFORMATION

- When an external room thermostat is installed, the thermo ON/OFF is determined by the external room thermostat. The remote controller is then operated in the leaving water control mode and is not functioning as a room thermostat.
- The remote controller ON/OFF status always has priority over the external room thermostat!

INFORMATION

During this operation, instead of showing the water temperature setpoint, the controller shows the shift value which can be set by the user.

Automatic setback function

For the automatic setback function settings, see field setting [2] in "7.2.9 Field settings on the user interface" on page 35.

16.3.5 Other operation modes

Start up operation

During start up, ♨/◑/❄ on the display means that the heat pump is still starting up.

Defrost operation (♨/◑/❄)

INFORMATION

This function is available for heat pump units ONLY.

In space heating operation, freezing of the outdoor heat exchanger may occur due to low outdoor temperature. If this risk occurs, the system goes into defrost operation. It reverses the cycle and takes heat from the water system to prevent freezing of the outdoor system. After a maximum of 15 minutes of defrost operation, the system returns to space heating operation. Space heating operation is not possible during defrost operation.

Quiet mode operation (🤫)

Quiet mode operation means that the unit works at reduced compressor speed so that the noise produced by the unit drops. This implies that it will take longer until the required temperature setpoint is reached. Beware of this when a certain level of heating is required indoors.

There are 3 different levels of quiet mode operation. The desired quiet mode is set through a field setting.

1 Press 🤫 to activate quiet mode operation.

Result: 🤫 appears on the display. If the controller is set to permission level 2 or 3 (see "7.2 Making field settings" on page 31), the 🤫 button cannot be used.

2 Press 🤫 again to deactivate quiet mode operation.

Result: 🤫 disappears from the display.

The actual temperatures can be displayed on the remote controller.

3 Press ⓘ for 5 seconds.

Result: The leaving water temperature is displayed (☀, ☀/❄, and ▶ blink).

4 Press ▲ and ▼ to display:

- The entering water temperature (☀ and ☀/❄ blink, and ▶ flashes slowly).
- The indoor temperature (☀ and ☀/❄ blink).
- The outdoor temperature (☀ and ⌂ blink).

5 Press ⓘ again to leave this mode. If no button is pressed, the remote controller leaves the display mode after 10 seconds.

16.3.6 Schedule timer

Press ⊗/◷ to enable or disable the schedule timer (◷).

Four actions per day can be programmed, making a total of 28 actions per week.

The schedule timer can be programmed in 2 different ways:

- based on the temperature setpoint (leaving water temperature and room temperature)
- based on the ON/OFF instruction.

The programming method is set in the field settings. See "7.2 Making field settings" on page 31. Before programming, fill out the form at the very end of this document. This form can help you define the required actions for each day.

INFORMATION

- When power is restored after a power failure, the auto restart function reapplies the remote controller settings at the time of the power failure (if the power was interrupted for less than 2 hours). It is therefore recommended to leave the auto restart function enabled.
- As the programmed schedule is time driven, it is essential to set the clock and the day of the week correctly. See "16.3.1 About the clock" on page 58.
- Schedule timer actions will only be executed when the schedule timer is enabled (◷ visible on the display)!
- The programmed actions are not stored according to their time of execution, but according to the time of programming, i.e. action number 1 is the action that was programmed first, even though it may be executed after other programmed action numbers.
- If 2 or more actions are programmed for the same day and at the same time, only the action with the lowest action number will be executed.

CAUTION

For use of units in applications with schedule timer mode, it is advised to foresee a delay of 10 to 15 minutes for signalling the alarm in case the schedule timer is exceeded. The unit may stop for several minutes during normal operation for "defrosting of the unit" or when in "thermostat-stop" operation.

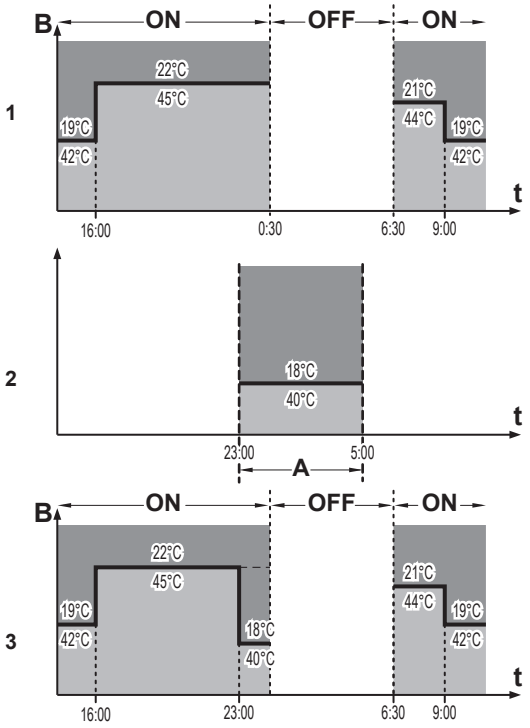
Space heating

[0-03] Status

Defines whether the ON/OFF instruction can be used in the schedule timer for space heating.

Space heating based on ON/OFF instruction	
During operation	When the schedule timer switches space heating OFF, the controller will be switched off (operation LED will stop working).
Press	The schedule timer for space heating will stop (when active at that moment) and will start again at the next scheduled ON function. The "last" programmed command overrules the "preceding" programmed command and will remain active until the "next" programmed command occurs. Example: imagine the actual time is 17:30 and actions are programmed at 13:00, 16:00 and 19:00. The "last" programmed command (16:00) overruled the "previous" programmed command (13:00) and will remain active until the "next" programmed command (19:00) occurs. So in order to know the actual setting, you should consult the last programmed command (this may date from the day before). The controller is switched off (operation LED off), but the schedule timer icon remains on.
Press	The schedule timer for space heating and the quiet mode stops and will not start again. The schedule timer icon is not displayed any more.

- Operation example: Schedule timer based on ON/OFF instruction. When the setback function (see field setting [2]) is enabled, the setback operation will have priority over the scheduled action in the schedule timer if ON instruction is active. If OFF instruction is active this will have priority over the setback function. At any time the OFF instruction will have the highest priority.



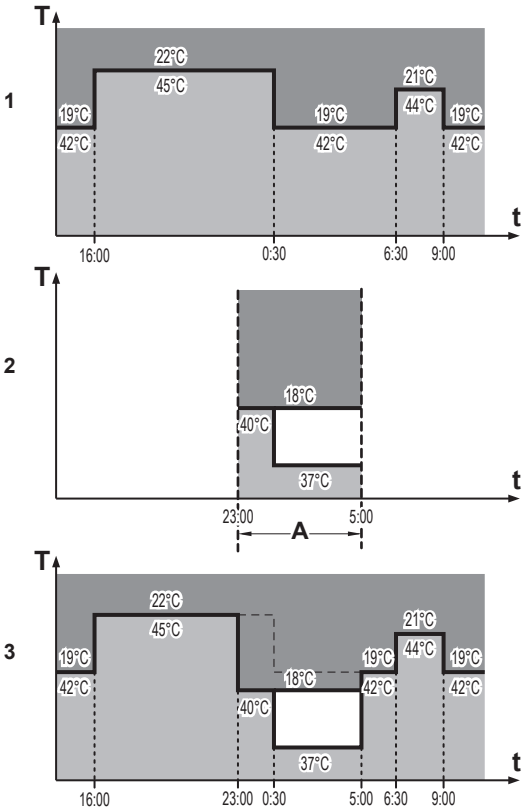
1 Schedule timer
2 Setback function
3 Both setback function and schedule timer are enabled
A Setback function
B ON/OFF instruction
t Time
T Temperature setpoint
Room temperature
Leaving water temperature

Space heating based on temperature setpoint[(a)]	
During operation	During schedule timer operation the operation LED is lit continuously.
Press	The schedule timer for space heating stops and will not start again. The controller is switched off (operation LED off).
Press	The schedule timer for space heating and the quiet mode stops and will not start again. The schedule timer icon is not displayed any more.

(a) For leaving water temperature and/or room temperature

- Operation example: Schedule timer based on temperature setpoint

When the setback function (see field setting [2]) is enabled, the setback operation will have priority over the scheduled action in the schedule timer.



1 Schedule timer
2 Setback function
3 Both setback function and schedule timer are enabled
A Setback function
t Time
T Temperature setpoint
Room temperature
Leaving water temperature

INFORMATION

Space heating based on temperature setpoint is enabled by default, so only temperature shifts are possible (no ON/OFF instruction).

Space cooling

[0-04] Status

Defines whether the ON/OFF instruction can be used in the schedule timer for cooling.

This is the same as for space heating [0-03], but the setback function is not available.

INFORMATION

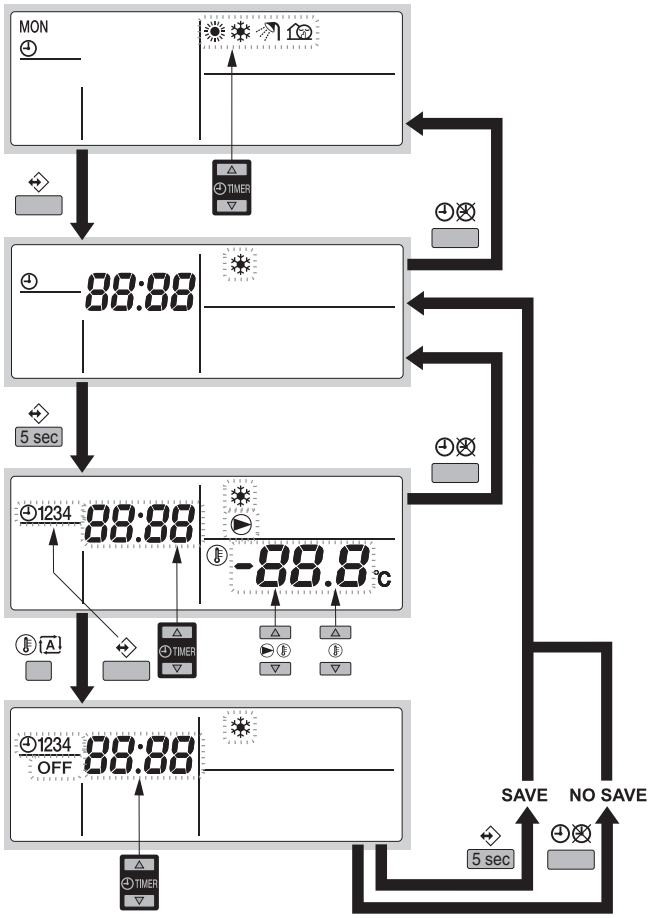
Space cooling based on temperature setpoint is enabled by default, so only temperature shifts are possible (no ON/OFF instruction).

Quiet mode

See "To program quiet mode" on page 63.

Switch the mode on or off at a scheduled time. Four actions can be programmed per day. These actions are repeated daily.

To program space cooling



INFORMATION

Press ⊠/◴ to return to previous steps in the programming procedure without saving modified settings.

1 Press ⬖ to enter the programming/consulting mode.

2 Select the operation mode you would like to program using ◴▲ and ◴▼.

Result: The actual mode is blinking.

3 Press ⬖ to confirm the selected mode.

Result: The time is blinking.

4 Consult the action(s) using ◴▲ and ◴▼.

5 Hold down ⬖ for 5 seconds to program the detailed actions.

Result: The first programmed action appears.

6 Select the action number you would like to program or to modify using ⬖.

7 Set the correct action time using ◴▲ and ◴▼.

8 Set the leaving water temperature using ▶🌡▲ and ▶🌡▼.

9 Set the room temperature using 🌡▲ and 🌡▼.

10 Select **OFF** using 🌡A to switch cooling and the remote controller off.

11 Repeat this procedure to program the other actions.

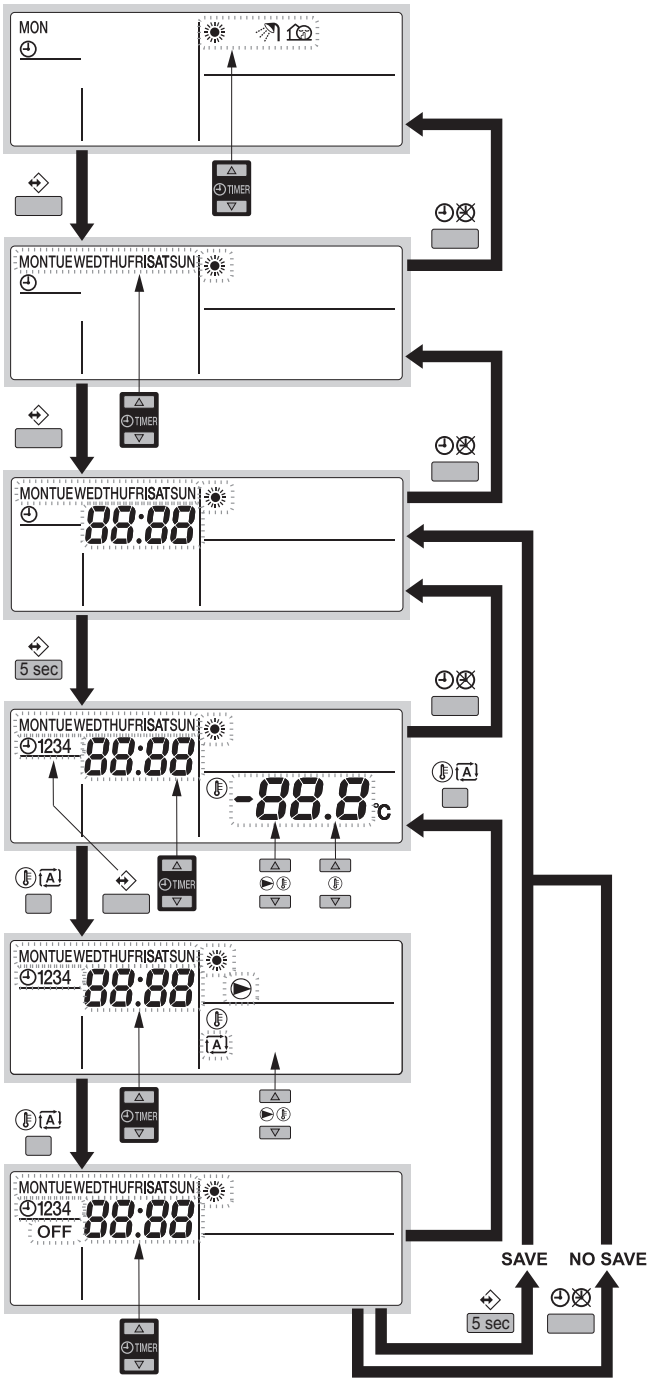
Result: When all actions have been programmed, make sure that the display shows the highest action number you would like to save.

12 Press ⬖ for 5 seconds to store the programmed actions.

Result: If ⬖ is pressed when action number 3 is displayed, actions 1, 2 and 3 are stored, but action 4 is deleted. You automatically return to step 6. Press ⊠/◴ several times to return to previous steps in this procedure and finally return to normal operation.

13 You automatically return to step 6; start again to program the following day.

To program space heating



INFORMATION

Press ⊗/◴ to return to previous steps in the programming procedure without saving modified settings.

1 Press ◈ to enter the programming/consulting mode.

2 Select the operation mode you would like to program using ◴▲ and ◴▼.

Result: The actual mode is blinking.

3 Press ◈ to confirm the selected mode.

Result: The actual day is blinking.

4 Select the day you would like to consult or to program using ◴▲ and ◴▼.

Result: The selected day is blinking.

5 Press ◈ to confirm the selected day.

6 Hold down ◈ for 5 seconds to program the detailed actions.

Result: The first programmed action of the selected day appears.

7 Select the action number you would like to program or to modify using ◈.

8 Set the correct action time using ◴▲ and ◴▼.

9 Set the leaving water temperature using ◣◴▲ and ◣◴▼.

10 Set the room temperature using ◴▲ and ◴▼.

11 Press ◴🅰 to select:

- OFF: to switch heating and the remote controller off.
- 🅰: to select automatic temperature calculation for leaving water temperature

12 Set the appropriate shift value using ◣◴▲ and ◣◴▼. For more information about weather dependent setpoint, see "16.3.6 Schedule timer" on page 60.

13 Repeat this procedure to program the other actions of the selected day.

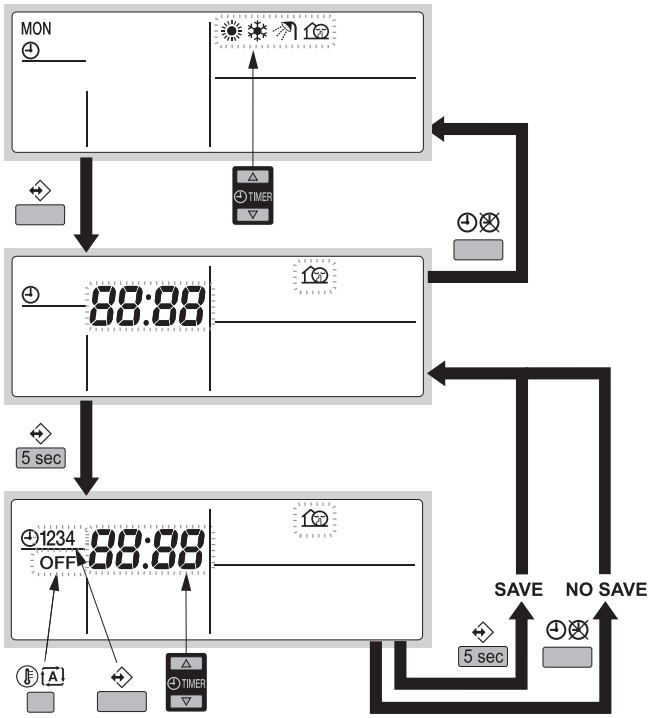
Result: When all actions have been programmed, make sure that the display shows the highest action number you would like to save.

14 Press ◈ for 5 seconds to store the programmed actions.

Result: If ◈ is pressed when action number 3 is displayed, actions 1, 2 and 3 are stored, but action 4 is deleted. You automatically return to step 6. Press ⊗/◴ several times to return to previous steps in this procedure and finally return to normal operation.

15 You automatically return to step 6; start again to program the following day.

To program quiet mode



INFORMATION

Press ⊗/◴ to return to previous steps in the programming procedure without saving modified settings.

1 Press ◈ to enter the programming/consulting mode.

2 Select the operation mode you would like to program using ◴▲ and ◴▼.

Result: The actual mode is blinking.

3 Press ◈ to confirm the selected mode.

4 Consult the action(s) using ◴▲ and ◴▼.

5 Hold down ◈ for 5 seconds to program the detailed actions.

Result: The first programmed action appears.

6 Select the action number you would like to program or to modify using ◈.

7 Set the correct action time using ◴▲ and ◴▼.

8 Select or deselect OFF as an action using ◴🅰.

9 Repeat this procedure to program the other actions of the selected mode.

Result: When all actions have been programmed, make sure that the display shows the highest action number you would like to save.

10 Press ◈ for 5 seconds to store the programmed actions.

Result: If ◈ is pressed when action number 3 is displayed, actions 1, 2 and 3 are stored, but action 4 is deleted. You automatically return to step 6. Press ⊗/◴ several times to return to previous steps in this procedure and finally return to normal operation.

11 You automatically return to step 6; start again to program the following day.

To consult programmed actions

INFORMATION

Press ⊗/◴ to return to previous steps in the consulting procedure.

1 Press ◈ to enter the programming/consulting mode.

2 Select the operation mode you would like to consult using ◷▲ and ◷▼.

Result: The actual mode is blinking.

3 Press ⇳ to confirm the selected mode.

Result: The actual day is blinking.

4 Select the day you would like to consult using ◷▲ and ◷▼ .

Result: The selected day is blinking.

5 Press ⇳ to confirm the selected day.

Result: The first programmed action of the selected day appears.

6 Consult the other programmed actions of that day using ◷▲ and ◷▼.

Result: This is called the readout mode. Empty program actions (e.g. 4) are not displayed. Press ⊗/◷ several times to return to previous steps in this procedure and finally return to normal operation.

Schedule timer tips and tricks

To program the next day(s)

1 After confirming the programmed actions of a specific day, press ⊗/◷ once.

Result: You can now select another day using ◷▲ and ◷▼ and restart consulting and programming.

To delete one or more programmed actions

Deleting one or more programmed actions is done at the same time as storing the programmed actions.

When all actions for one day have been programmed, make sure that the display shows the highest action number you would like to save. Pressing ⇳ for 5 seconds stores all actions except those with a higher action number than the one that is displayed.

Example: Pressing ⇳ when action number 3 is displayed, stores actions 1, 2 and 3, but deletes action 4.

To copy programmed actions to the next day

In space heating program it is possible to copy all programmed actions of a specific day to the next day (e.g. copy all programmed actions from "MON" to "TUE").

1 Press ⇳.

Result: The actual mode is blinking.

2 Select the mode you want to program using ◷▲ and ◷▼.

Result: The selected mode is blinking. You can leave programming by pressing ⊗/◷.

3 Press ⇳ to confirm the selected mode.

Result: The actual day is blinking.

4 Select the day you would like to copy to the next day using ◷▲ and ◷▼.

Result: The selected day is blinking. Press ⊗/◷ to return to step 2.

5 Press ⇳ and ⊗/◷ simultaneously for 5 seconds.

6 After 5 seconds the display will show the next day (e.g. "TUE" if "MON" was selected first). This indicates that the day has been copied.

7 Press ⊗/◷ to return to step 2.

To delete a mode

1 Press ⇳.

Result: The actual mode is blinking.

2 Select the mode you want to delete using ◷▲ and ◷▼.

Result: The selected mode is blinking.

3 Press ⇳ and ⊗/◷ simultaneously for 5 seconds to delete the selected mode.

To delete a day of the week

1 Press ⇳.

Result: The actual mode is blinking.

2 Select the mode you want to delete using ◷▲ and ◷▼.

Result: The selected mode is blinking.

3 Press ⇳ to confirm the selected mode.

Result: The actual day is blinking.

4 Select the day you would like to delete using ◷▲ and ◷▼.

Result: The selected day is blinking.

5 Press ⇳ and ⊗/◷ simultaneously for 5 seconds to delete the selected day.

16.3.7 Operating the optional demand PCB

An optional PCB EKRP1AHTA can be connected to the unit and be used to remotely control the unit.

The 3 inputs allow:

- remote switching between cooling and heating
- remote thermo on/off
- remote unit on/off

For more details about this option kit, refer to the wiring diagram of the unit.

INFORMATION

The signal (voltage free) must take at least 50 ms.

See also field setting [6-01] in "7.2.9 Field settings on the user interface" on page 35 for setting the function of your preference.

16.3.8 Operating the optional external control adapter

An optional control adapter PCB DTA104A62 can be connected to the unit and be used to remotely control 1 or more units.

By short-circuiting contacts on the option kit PCB, you can:

- reduce capacity to about 70%,
- reduce capacity to about 40%,
- force thermo off,
- capacity save (fan low speed turn, compressor frequency control).

For more details about this option kit, refer to a separate instruction that is delivered with the unit.

16.3.9 Operating the optional remote controller

If besides the main remote controller the optional remote controller is installed as well, the main remote controller (master) can access all settings while the second remote controller (slave) can not access schedule settings and parameter settings.

Refer to the installation manual for more details.

17 Maintenance and service

NOTICE

Never inspect or service the unit by yourself. Ask a qualified service person to perform this work.

WARNING

Never replace a fuse with a fuse of a wrong ampere ratings or other wires when a fuse blows out. Use of wire or copper wire may cause the unit to break down or cause a fire.

CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. Do NOT remove the fan guard. When the fan is rotating at high speed, it will cause injury.

CAUTION: Pay attention to the fan!

It is dangerous to inspect the unit while the fan is running.

Be sure to turn off the main switch before executing any maintenance task.

CAUTION

After a long use, check the unit stand and fitting for damage. If damaged, the unit may fall and result in injury.

17.1 About the refrigerant

This product contains fluorinated greenhouse gases. Do NOT vent gases into the atmosphere.

WARNING

The refrigerant in the system is safe and normally does not leak. If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.

Turn off any combustible heating devices, ventilate the room and contact the dealer where you purchased the unit.

Do not use the system until a service person confirms that the portion where the refrigerant leaks is repaired.

17.2 After-sales service and warranty

17.2.1 Warranty period

- This product includes a warranty card that was filled in by the dealer at the time of installation. The completed card has to be checked by the customer and stored carefully.
- If repairs to the product are necessary within the warranty period, contact your dealer and keep the warranty card at hand.

17.2.2 Recommended maintenance and inspection

Since dust collects when using the unit for several years, performance of the unit will deteriorate to some extent. As taking apart and cleaning interiors of units requires technical expertise and in order to ensure the best possible maintenance of your units, we recommend to enter into a maintenance and inspection contract on top of normal maintenance activities. Our network of dealers has access to a permanent stock of essential components in order to keep your unit in operation as long as possible. Contact your dealer for more information.

When asking your dealer for an intervention, always state:

- The complete model name of the unit.
- The manufacturing number (stated on the nameplate of the unit).
- The installation date.
- The symptoms or malfunction, and details of the defect.

17.2.3 Recommended maintenance and inspection cycles

Be aware that the mentioned maintenance and replacement cycles do not relate to the warranty period of the components.

Component	Inspection cycle	Maintenance cycle (replacements and/or repairs)
Electric motor	1 year	20,000 hours
PCB		25,000 hours
Heat exchanger		5 years
Sensor (thermistor, etc.)		5 years
User interface and switches		25,000 hours
Drain pan		8 years
Expansion valve		20,000 hours
Solenoid valve		20,000 hours

The table assumes the following conditions of use:

- Normal use without frequent starting and stopping of the unit. Depending on the model, we recommend not starting and stopping the machine more than 6 times/hour.
- Operation of the unit is assumed to be 10 hours/day and 2,500 hours/year.

NOTICE

- The table indicates main components. Refer to your maintenance and inspection contract for more details.
- The table indicates recommended intervals of maintenance cycles. However, in order to keep the unit operational as long as possible, maintenance work may be required sooner. Recommended intervals can be used for appropriate maintenance design in terms of budgeting maintenance and inspection fees. Depending on the content of the maintenance and inspection contract, inspection and maintenance cycles may in reality be shorter than listed.

18 Troubleshooting

If one of the following malfunctions occur, take the measures shown below and contact your dealer.

WARNING

Stop operation and shut off the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electric shock or fire. Contact your dealer.

The system MUST be repaired by a qualified service person:

Malfunction	Measure
If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates or the ON/OFF switch does NOT properly work.	Turn OFF the main power switch.
If water leaks from the unit.	Stop the operation.
The operation switch does NOT work well.	Turn OFF the power supply.
If the user interface display indicates the unit number, the operation lamp flashes and the malfunction code appears.	Notify your installer and report the malfunction code.

If the system does NOT properly operate except for the above mentioned cases and none of the above mentioned malfunctions is evident, investigate the system according to the following procedures.

Malfunction	Measure
The remote controller display is blank.	▪ Check if there is no power failure. Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after power is restored. ▪ Check if no fuse has blown or breaker is activated. Change the fuse or reset the breaker if necessary. ▪ Check if the benefit kWh rate power supply is active.
An error code is displayed on the remote controller.	Consult your local dealer. Refer to "10.2 Error codes: Overview" on page 45 for a detailed list of error codes.
The schedule timer works, but the programmed actions are executed at the wrong time.	Check if the clock and the day of the week are set correctly, and correct if necessary.
The schedule timer is programmed, but does not work.	In case ⏲ is not displayed, push ⊗/⏲ to enable the schedule timer.
Capacity shortage.	Consult your local dealer.
If the system does not operate at all.	▪ Check if there is no power failure. Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after power is restored. ▪ Check if no fuse has blown or breaker is activated. Change the fuse or reset the breaker if necessary.

If after checking all above items, it is impossible to fix the problem yourself, contact your installer and state the symptoms, the complete model name of the unit (with manufacturing number if possible) and the installation date (possibly listed on the warranty card).

18.1 Error codes: Overview

In case a malfunction code appears on the indoor unit user interface display, contact your installer and inform the malfunction code, the unit type, and serial number (you can find this information on the nameplate of the unit).

For your reference, a list with malfunction codes is provided. You can, depending on the level of the malfunction code, reset the code by pushing the ON/OFF button. If not, ask your installer for advice.

Main code	Contents
A1	EEPROM failure (indoor unit)
A6	Water circuit malfunction (indoor unit)
A9	Expansion valve malfunction (indoor unit)
AE	Water system warning (indoor unit)
AJ	Capacity setting malfunction (indoor unit)
C1	ACS communication malfunction (indoor unit)
C4	Refrigerant liquid thermistor malfunction (indoor unit)
C9	Returning water thermistor malfunction (indoor unit)
CA	Heating leaving water thermistor malfunction (indoor unit)
CJ	User interface thermistor malfunction (indoor unit)
E3	High pressure switch was activated (indoor unit)
E4	Low pressure malfunction (indoor unit)
J7	Refrigerant suction sensor (indoor unit)
U1	Reversed power supply phase malfunction (indoor unit)
U2	Insufficient supply voltage (indoor unit)
U8	Two user interfaces are connected and both are set to main (indoor unit)
UA	Type connection problem (indoor unit)
UH	Auto address malfunction (inconsistency) (indoor unit)

19 Relocation

Contact your dealer for removing and reinstalling the total unit. Moving units requires technical expertise.

20 Disposal

This unit uses hydrofluorocarbon. Contact your dealer when discarding this unit.

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.

21 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.

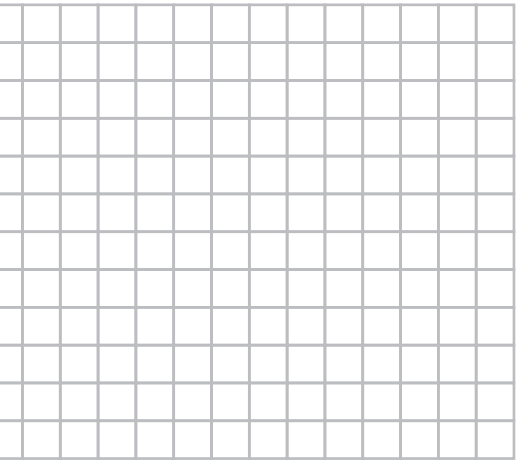
Field supply

Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

	[hh:mm]	[°C]	OFF [☑]
MON			
1	:		❑
2	:		❑
3	:		❑
4	:		❑
TUE			
1	:		❑
2	:		❑
3	:		❑
4	:		❑
WED			
1	:		❑
2	:		❑
3	:		❑
4	:		❑
THU			
1	:		❑
2	:		❑
3	:		❑
4	:		❑
FRI			
1	:		❑
2	:		❑
3	:		❑
4	:		❑
SAT			
1	:		❑
2	:		❑
3	:		❑
4	:		❑
SUN			
1	:		❑
2	:		❑
3	:		❑
4	:		❑

	[hh:mm]	ON [☑]	OFF [☑]
1	:	❑	❑
2	:	❑	❑
3	:	❑	❑
4	:	❑	❑

	[hh:mm]	[°C]	OFF [☑]
1	:		❑
2	:		❑
3	:		❑
4	:		❑



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