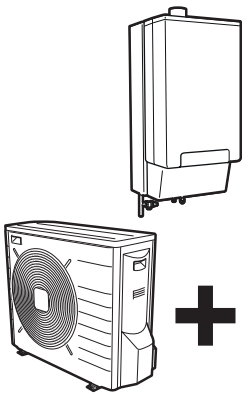
Installer reference guide

Daikin Altherma hybrid heat pump



EVLQ05+08CA

EHYHBH05AA
EHYHBH/X08AA

EHYKOMB33AA

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.

DANGER: RISK OF POISONING

Indicates a situation that could result in poisoning.

WARNING

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

WARNING: PROTECT AGAINST FROST

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

WARNING: FLAMMABLE MATERIAL

CAUTION

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

NOTICE

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

INFORMATION

Indicates useful tips or additional information.

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

1.2 For the installer

1.2.1 General

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

NOTICE

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

WARNING

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

CAUTION

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

WARNING

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

DANGER: RISK OF BURNING

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

WARNING

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

CAUTION

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

NOTICE

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

NOTICE

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

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

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

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

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

For Swiss market, domestic hot water operation should only be prepared in combination with a tank. Instant domestic hot water by the gas boiler is NOT allowed. Make the correct settings as described in this manual.

Please follow following Swiss regulations and directives:

- SVGW-gas principles G1 for gas installations,
- SVGW-gas principles L1 for liquid gas installations,
- cautional instances regulations (e.g., fire regulation).

1.2.2 Installation site

- Provide sufficient space around the unit for servicing and air circulation.
- Make sure the installation site withstands the total weight and vibration of the installation.

Module	Weight
Hybrid module	30 kg
Gas module	36 kg
Indoor part (Hybrid module + gas module)	Total weight: 66 kg

- Make sure the area is well ventilated. Do NOT block any ventilation openings.
- Make sure the unit is level.
- Make sure walls sensitive to heat (e.g. wood) are protected by suitable insulation.
- ONLY operate the gas boiler if a sufficient supply of combustion air is ensured. In case of a concentric air/flue gas system dimensioned according to the specifications of this manual, this is fulfilled automatically and there are no other conditions for the equipment installation room. This method of operation applies exclusively.
- This gas boiler is NOT designed for room air dependent operation.

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 bathrooms.
- In places where frost is possible. The ambient temperature around the indoor unit should be >5°C.

1.2.3 Refrigerant

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

NOTICE

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

NOTICE

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

WARNING

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

WARNING

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

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

DANGER: RISK OF EXPLOSION

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

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

WARNING

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

NOTICE

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

NOTICE

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

WARNING

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

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

If	Then
A siphon tube is present (i.e., the cylinder is marked with "Liquid filling siphon attached")	Charge with the cylinder upright. 

If	Then
A siphon tube is NOT present	Charge with the cylinder upside down. 

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

CAUTION

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

1.2.4 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.

Avoid damages caused by deposits and corrosion. To prevent corrosion products and deposits, observe the applicable regulations of technology.

Measures for desalination, softening or hardness stabilization are necessary if the filling and top-up water have a high total hardness (>3 mmol/l–sum of the calcium and magnesium concentrations, calculated as calcium carbonate).

Using filling water and top-up water which does NOT meet the stated quality requirements can cause a considerably reduced service life of the equipment. The responsibility for this is entirely that of the user.

1.2.5 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.

1.2.6 Gas

The gas boiler is factory-set to:

- the type of gas quoted on the type identification plate or on the setting type identification plate,
- the gas pressure quoted on the type identification plate.

Operate the unit ONLY with the gas type and gas pressure indicated on these type identification plates.

Installation and adaptation of the gas system MUST be conducted by:

- personnel qualified for this work,
- in compliance with valid gas installation related guidelines,
- in accordance with applicable regulations of the gas supply company,
- In accordance with local and national regulations.

Boilers that use natural gas MUST be connected to a governed meter.

Boilers that use liquid petroleum gas (LPG) MUST be connected to a regulator.

The size of the gas supply pipe should under no circumstance be less than 22 mm.

The meter or regulator and pipe work to the meter MUST be checked preferably by the gas supplier. This is to ensure that the equipment works good and meets the gas flow and pressure requirements.

DANGER

If you smell gas:

- call immediately your local gas supplier and your installer,
- call the suppliers's number on the side of the LPG tank (if applicable),
- turn off the emergency control valve at the meter/ regulator,
- do NOT turn electrical switches ON or OFF,
- do NOT strike matches or smoke,
- put out naked flames,
- open doors and windows immediately,
- keep people away from the affected area.

1.2.7 Gas exhaust

Flue systems must NOT be modified or installed in any way other than as described in the fitting instructions. Any misuses or unauthorized modifications to the appliance, flue or associated components and systems could invalidate the warranty. The manufacturer accepts no liability arising from any such actions, excluding statutory rights.

It is NOT allowed to combine flue system parts purchased from different suppliers.

1.2.8 Local legislation

See the local and national regulations.

Local regulations for UK

It is law that all gas appliances are installed by a gas safe registered competent engineer and in accordance with the following recommendations:

- Current Gas Safety (Installation and Use) Regulations
- All current building regulations
- Building Standards (Scotland) Consolidated
- This appliance MUST be installed in accordance with the Gas (Safety and Use) Regulations, current Building Regulations, Building Standards (Scotland), I.S.813 Installation of Gas Appliances (Ireland), IEE Wiring Regulations (BS 7671), Health and Safety Document No. 635 (Electricity at Work Regulations) and Local Water Authority Bye Laws
- UK Water Regulations and Bye Laws
- Health & Safety

The installation MUST comply with the following British Standards codes of practice:

- BS 5440: Flues and Ventilation for gas appliances of rated input NOT exceeding 70 kW (Part 1 Flues)
- BS 5440: Flues and Ventilation for gas appliances of rated input NOT exceeding 70 kW (Part 2 Air Supply)
- BS 5546: 2000 Installation of gas hot water supplies for domestic purposes.
- BS 5549: 1990 Forced circulation hot water systems.
- BS 6700: 1997 Design, Installation, testing and maintenance of services supplying hot water
- BS 6798: 2000 Specification for installation of gas fired hot water boilers of rated input NOT exceeding 70 kW
- BS 6891: 1998 Installation of low pressure gas pipe-work installation up to 35 mm (RI)
- BS 7593: 1992 Code of practice for treatment of water in heating systems
- BS 7671: 2001 Requirements for electrical installations, IEE Wiring regulations
- BS 7074: 1 Code of practice for domestic and hot water supply
- EN12828 Central heating for domestic premises

Potable water: all seals, joints and compounds (including flux and solder) and components used as part of the secondary domestic water system MUST be approved by WRAS.

2 About the product

Especially for UK:

The Benchmark Scheme

Benchmark places responsibilities on both manufacturers and installers. The purpose is to ensure that customers are provided with the correct equipment for their needs, that it is installed, commissioned and serviced in accordance with the manufacturer's instructions by competent persons and that it meets the requirements of the appropriate Building Regulations. The Benchmark Checklist can be used to demonstrate compliance with Building Regulations and should be provided to the customer for future reference.

Installers are required to carry out installation, commissioning and servicing work in accordance with the Benchmark Code of Practice which is available from the Heating and Hotwater Industry Council who manage and promote the Scheme. Visit http://www.centralheating.co.uk for more information.

Approvals

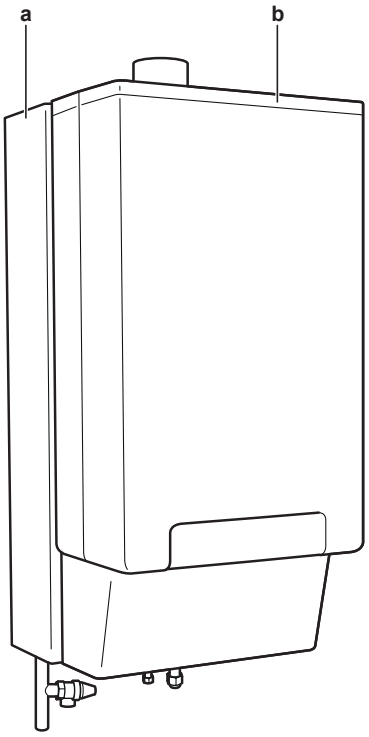
British Gas Service listing:

EHYKOMB33AA*: G.C.N. 47-464-01

The product (hybrid system) is composed of two modules:

- heat pump module,
- gas boiler module.

These modules MUST always be installed and used together.



a Heat pump module
b Gas boiler module

INFORMATION

This product is intended for domestic only.

3 About the documentation

3.1 About this document

Target audience

Authorised installers

Documentation set

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

- **General safety precautions:**
  - Safety instructions that you must read before installing
  - Format: Paper (in the box of the indoor unit)
- **Heat pump module installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)
- **Gas boiler module installation manual:**
  - Installation and operation instructions
  - Format: Paper (in the box of the gas boiler unit)
- **Outdoor unit installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor unit)
- **Installer reference guide:**
  - Preparation of the installation, reference data,…
  - Format: Digital files on http://www.daikineurope.com/support-and-manuals/product-information/
- **Addendum book for optional equipment:**
  - Additional info about how to install optional equipment
  - Format: Paper (in the box of the indoor unit) + Digital files on http://www.daikineurope.com/support-and-manuals/product-information/

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

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

Technical engineering data

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

3.2 Installer reference guide at a glance

Chapter	Description
General safety precautions	Safety instructions that you must read before installing
About the product	Required combination of heat pump module and gas boiler module
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 modes of the gas boiler module
Commissioning	What to do and know to commission the system after it is configured
Hand-over to the user	What to give and explain to the user
Maintenance and service	How to maintain and service the units
Troubleshooting	What to do in case of problems
Disposal	How to dispose of the system
Technical data	Specifications of the system
Glossary	Definition of terms
Field settings table	Table to be filled in by the installer, and kept for future reference **Note:** There is also an installer settings table in the user reference guide. This table has to be filled in by the installer and handed over to the user.

4 About the box

4.1 Overview: About the box

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

It contains information about:

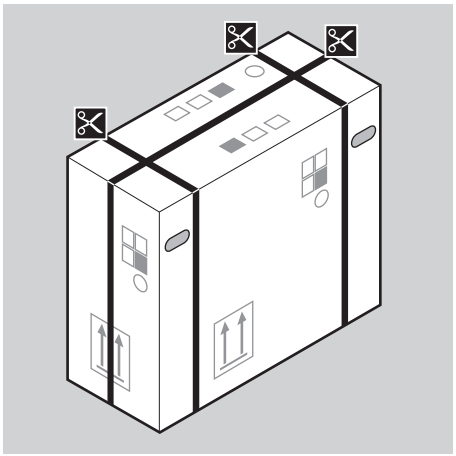
- Unpacking and handling the units
- Removing the accessories from the units

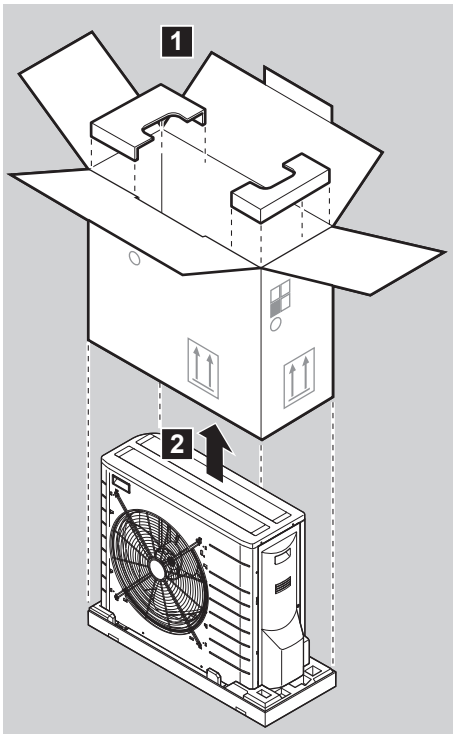
Keep the following in mind:

- 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.
- Prepare the path along which you want to bring the unit inside in advance.

4.2 Outdoor unit

4.2.1 To unpack the outdoor unit



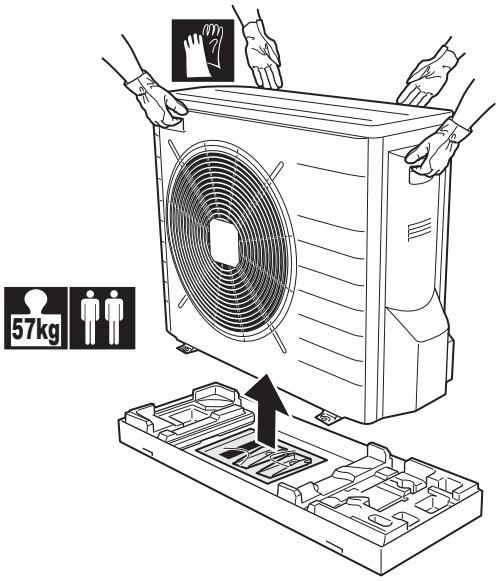


4.2.2 To remove the accessories from the outdoor unit

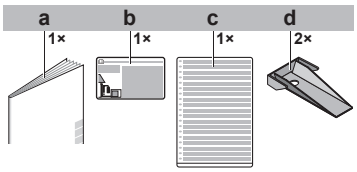
1 Lift the outdoor unit.

CAUTION

Only handle the outdoor unit as follows:



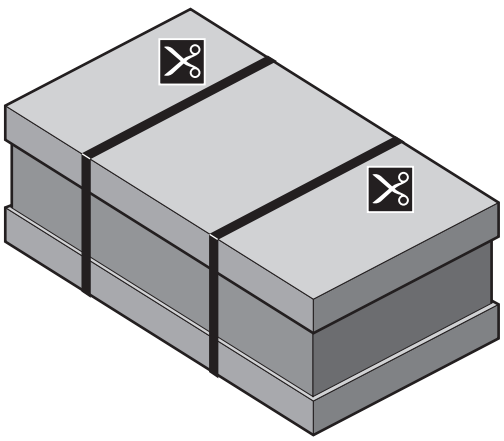
2 Remove the accessories at the bottom of the package.

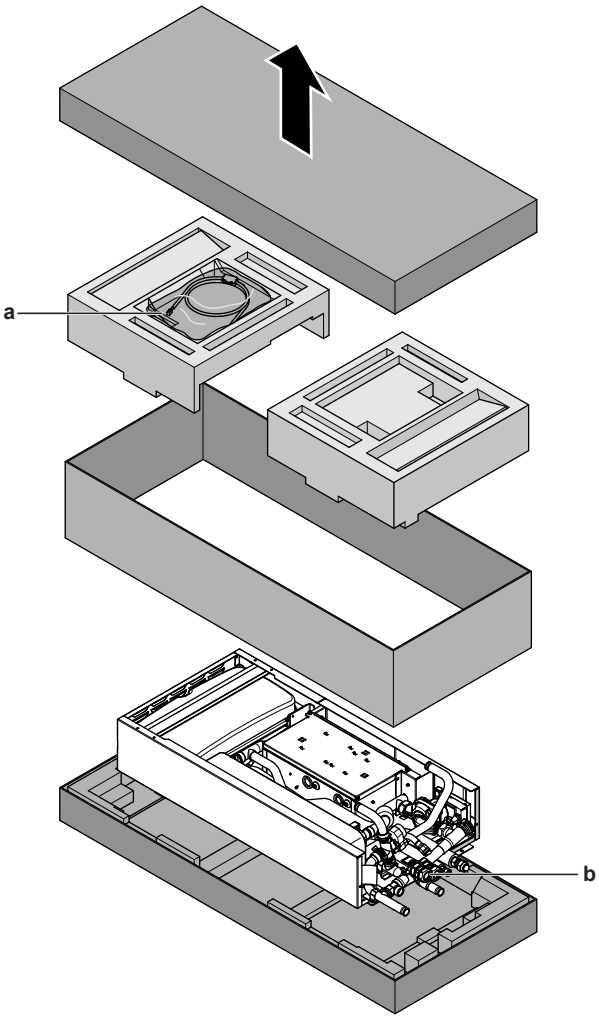


a Outdoor unit installation manual
b Fluorinated greenhouse gases label
c Multilingual fluorinated greenhouse gases label
d Unit mounting plate

4.3 Indoor unit

4.3.1 To unpack the indoor unit





a Installation manual, operation manual, addendum book for optional equipment, quick installation guide, general safety precautions, boiler communication cable, reducer accessory set.
b Connection pieces for the gas boiler

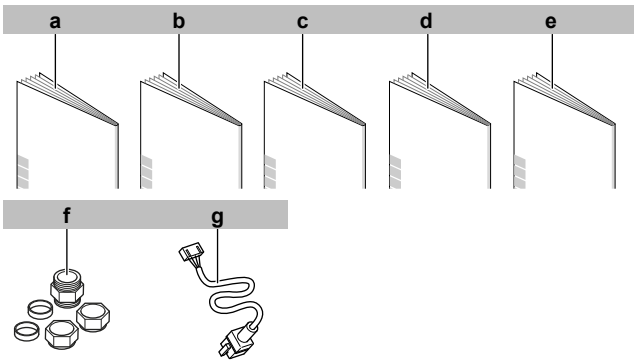
INFORMATION

Do NOT throw away the upper cardboard cover. On the outside of the cardboard cover, the installation pattern is printed.

4.3.2 To remove the accessories from the indoor unit

1 Remove the accessories as described in "4.3.1 To unpack the indoor unit" on page 9.

The installation manual, operation manual, addendum book for optional equipment, general safety precautions, quick installation guide, and boiler communication cable are located in the upper part of the box. The connection pieces for the gas boiler are attached to the water piping.

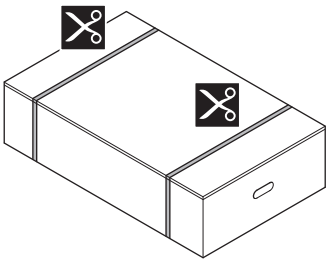


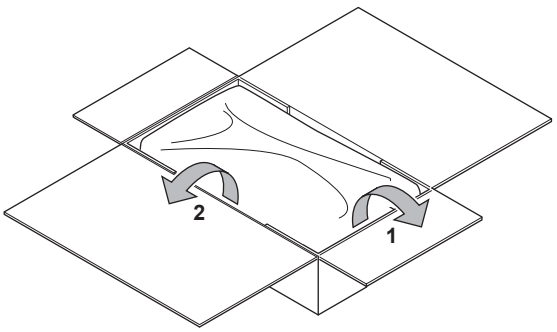
a General safety precautions
b Addendum book for optional equipment
c Indoor unit installation manual
d Operation manual
e Quick installation guide
f Connection pieces for gas boiler
g Boiler communication cable

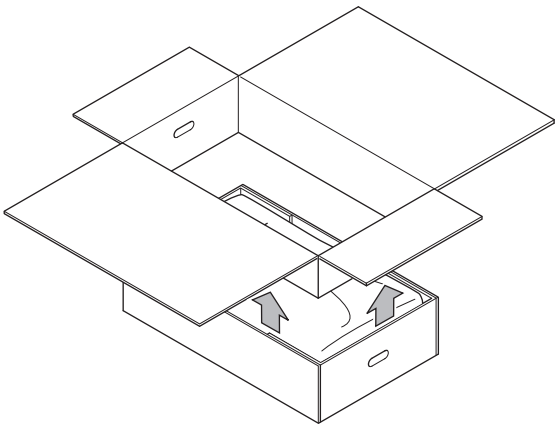
4.4 Gas boiler

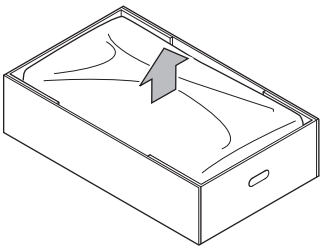
4.4.1 To unpack the gas boiler

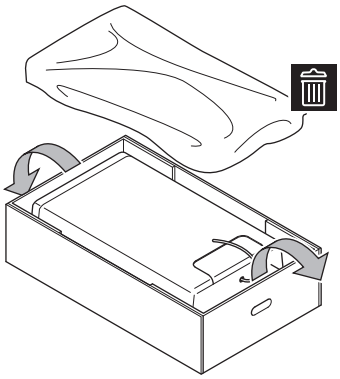
Before unpacking, move the gas boiler as close as possible to its installation position.

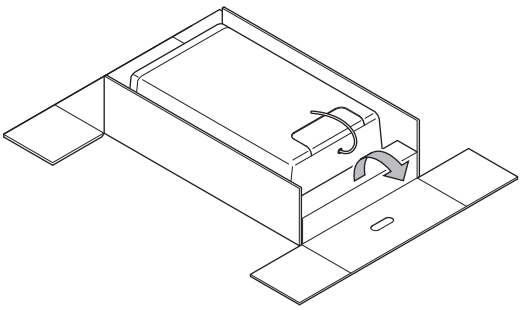










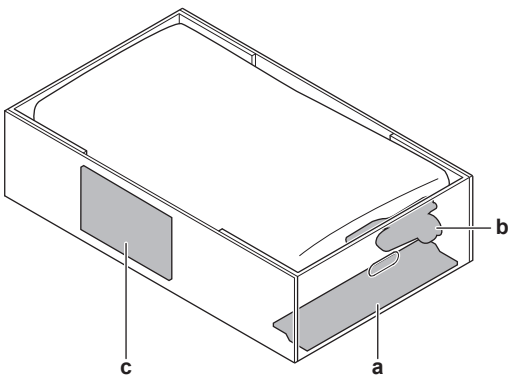


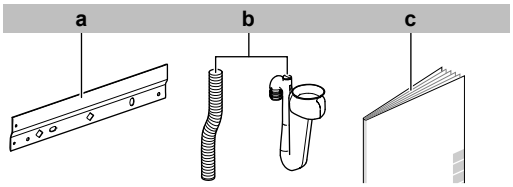
WARNING

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

4.4.2 To remove the accessories from the gas boiler

1 Remove the accessories.





a Mounting strip
b Condensate trap
c Installation manual and operation manual

5 About the units and options

5.1 Overview: About the units and options

This chapter contains information about:

- Identifying the outdoor unit
- Identifying the indoor unit
- Identifying the gas boiler
- Combining outdoor and indoor units
- Combining the outdoor unit with options
- Combining the indoor unit with options
- Combining the gas boiler with options

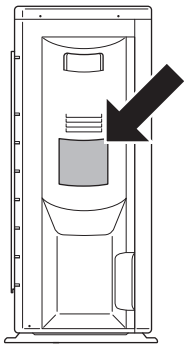
5.2 Identification

NOTICE

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

5.2.1 Identification label: Outdoor unit

Location



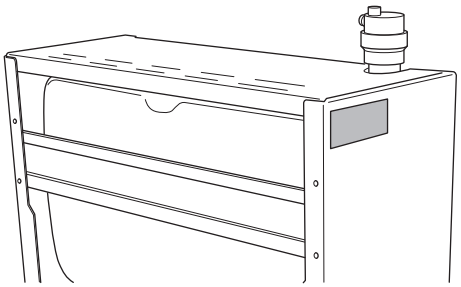
Model identification

Example: EV L Q 05 CA V3

Code	Explanation
EV	European split outdoor pair heat pump
L	Low water temperature – ambient zone: −10~−20°C
Q	Refrigerant R410A
05	Capacity class
CA	Model series
V3	Power supply

5.2.2 Identification label: Indoor unit

Location



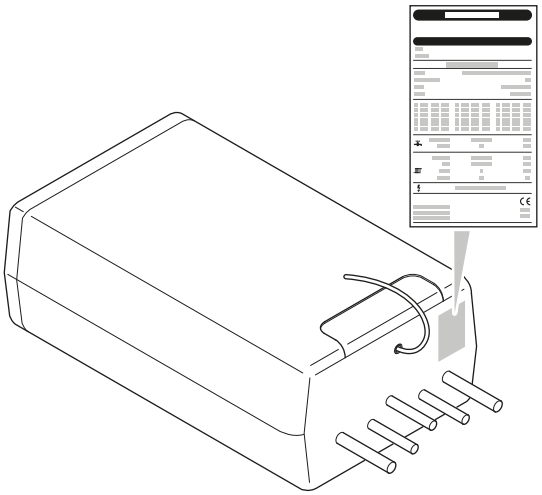
Model identification

Example: E HY HBH 05 AA V3

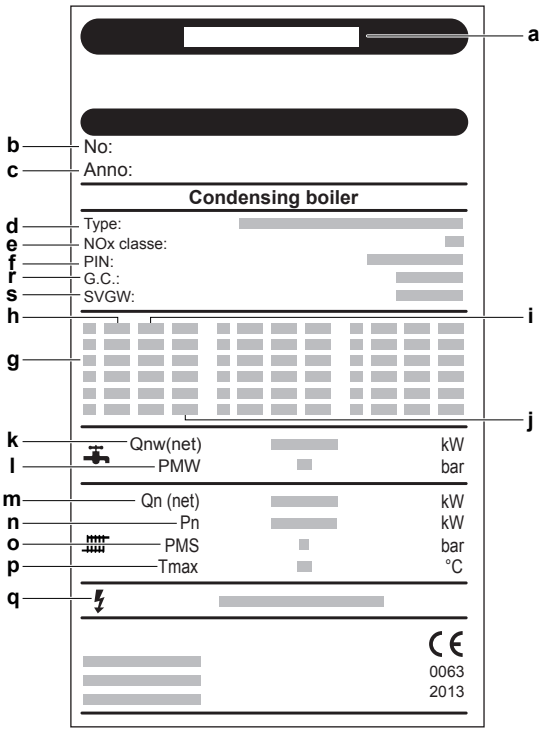
Code	Description
E	European model
HY	Hybrid indoor unit
HBH	HBH=Hydrobox heating only HBX=Hydrobox heating and cooling
05	Capacity class
AA	Model series
V3	Power supply

5.2.3 Identification label: Gas boiler

Location



Model identification



a Model
b Serial number
c Production year
d Appliance type
e NOx class
f PIN number: notified body reference
g Destination country
h Gas type
i Gas supply pressure (mbar)
j Appliance category
k Domestic hot water heat output (kW)
l Maximum domestic hot water pressure (bar)
m Heat output (space heating) (kW)
n Nominal power (kW)
o Maximum space heating pressure (bar)
p Maximum flow temperature (°C)
q Electrical supply
r GCN gas council number
s SVGW number

5.3 Combining units and options

5.3.1 Possible options for the outdoor unit

Drain pan (EKDP008CA)

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

- Drain pan
- Installation brackets

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

Drain pan heater (EKDPH008CA)

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

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

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

INFORMATION

In case the drain pan heater is used, the jumper JP_DP on the service PCB on the outdoor unit MUST be cut.

After cutting the jumper, you MUST reset the outdoor unit to activate this function.

U-beams (EKFT008CA)

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

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

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

5.3.2 Possible options for the indoor unit

User interface (EKRUCBL*)

The user interface and a possible additional user interface are available as an option.

The additional user interface can be connected:

- To have both:
  - control close to the indoor unit,
  - room thermostat functionality in the principal space to be heated.
- To have an interface containing other languages.

Following user interfaces are available:

- EKRUCBL1 contains following languages: German, French, Dutch, Italian.
- EKRUCBL2 contains following languages: English, Swedish, Norwegian, Finnish.
- EKRUCBL3 contains following languages: English, Spanish, Greek, Portuguese.
- EKRUCBL4 contains following languages: English, Turkish, Polish, Romanian.
- EKRUCBL5 contains following languages: German, Czech, Slovenian, Slovakian.
- EKRUCBL6 contains following languages: English, Croatian, Hungarian, Estonian.
- EKRUCBL7 contains following languages: English, German, Russian, Danish.

Languages on the user interface can be uploaded by PC software or copied from an user interface to the other.

For installation instructions, see "7.11.9 To connect the user interface" on page 42.

Simplified user interface (EKRUCBS)

- The simplified user interface can only be used in combination with the main user interface.
- The simplified user interface acts as room thermostat and needs to be installed in the room that you want it to control.

For installation instructions, see the installation and operation manual of the simplified user interface.

Room thermostat (EKRTWA, EKRTR1, RTRNETA)

You can connect an optional room thermostat to the indoor unit. This thermostat can either be wired (EKRTWA) or wireless (EKRTR1 and RTRNETA). Thermostat RTRNETA can only be used in heating-only systems.

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

Remote sensor for wireless thermostat (EKRTETS)

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

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

Digital I/O PCB (EKRP1HB)

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

- Alarm output
- Space heating/cooling On/OFF output

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

Demand PCB (EKRP1AHTA)

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

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

Remote indoor sensor (KRCS01-1)

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

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

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

INFORMATION

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

Remote outdoor sensor (EKRSCA1)

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

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

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

INFORMATION

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

PC configurator (EKPCCAB)

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

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

For installation instructions, see the installation manual of the PC cable and "8 Configuration" on page 54.

Heat pump convector (FWXV)

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

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

Solar kit (EKSRPS3)

The solar kit is required to connect the solar application with the domestic hot water tank.

For installation, see the installation manual of the solar kit and addendum book for optional equipment.

Domestic hot water tank

The domestic hot water tank can be connected to the indoor unit for providing domestic hot water. The polypropylene tank is available in 2 types:

- EKHWP300B: 300 l.
- EKHWP500B: 500 l.

Use the appropriate connection kit for the tank (EKEPHT3H), as described in the addendum book for optional equipment.

Connection kit for the tank (EKEPHT3H)

Use the connection kit to connect the domestic hot water tank to the indoor unit.

For installation instructions, see the installation manual of the connection kit.

Drain pan kit (EKHYDP1)

The drain pan kit is required for heating/cooling units. It does NOT have to be used with heating only units.

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

Mounting kit (EKHYMNT1A, EKHYMNT2A, EKHYMNT3A)

Mounting fixture for easy installation of the hybrid system (heat pump module + gas boiler module). For the selection of the correct kit, see the combination table.

For installation instructions, see the installation manual of the mounting kit.

Filling loop kit (EKFL1A)

Filling loop for easy filling of the water circuit. This kit can only be used in combination with mounting kit EKHYMNT1A.

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

Valve kit (EKVK1A, EKVK2A, EKVK3A)

A set of valves for the easy connection of the field piping. For the connection of the correct kit, see the combination table.

For installation instructions, see the installation manual of the valve kit.

Recirculation thermistor (EKTH2)

Kit for recirculating the water on the gas boiler. Only use this kit when there is no domestic hot water tank installed.

Connection kit for 3rd-party tank (EKHY3PART)

Use the connection kit to connect a 3rd-party tank to the system. The connection kit exists of a thermistor and a 3-way valve.

Connection kit for 3rd-party tank with built-in thermostat (EKHY3PART2)

Kit for the connection of a 3rd-party tank with built-in thermostat to the system. The kit converts a thermostat demand from the tank to a domestic hot water request for the indoor unit.

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

You can install this LAN adapter to:

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

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

LAN adapter for smartphone control (BRP069A62)

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

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

5.3.3 Possible options for the gas boiler

Main options

Boiler cover plate (EKHY093467)

Cover plate to protect the gas boiler's piping and valves.

For installation instructions, see the installation manual of the cover plate.

Gas conversion kit G25 (EKPS076227)

Kit for the conversion of the gas boiler for use with gas type G25.

Gas conversion kit G31 (EKHY075787)

Kit for the conversion of the gas boiler for use with gas type G31 (propane).

Dual pipe conversion kit (EKHY090707)

Kit for the conversion of a concentric flue gas system to a dual pipe system.

For installation instructions, see the installation manual of the dual pipe conversion kit.

80/125 concentric connection kit (EKHY090717)

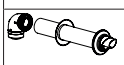
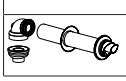
Kit for the conversion of 60/100 concentric flue gas connections to 80/125 concentric flue gas connections.

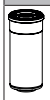
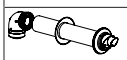
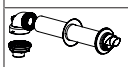
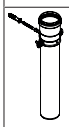
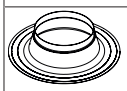
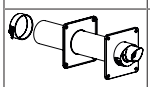
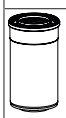
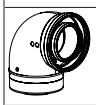
For installation instructions, see the installation manual of the concentric connection kit.

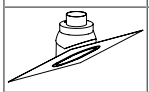
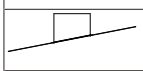
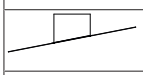
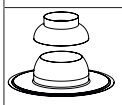
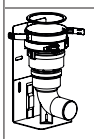
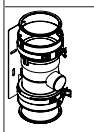
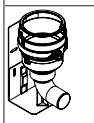
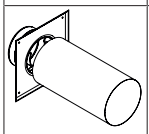
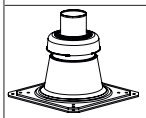
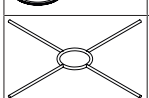
Flue gas flap valve (EKFGF1A)

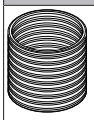
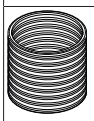
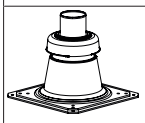
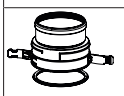
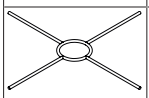
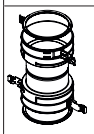
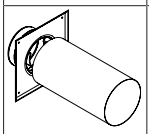
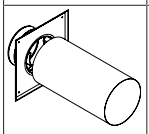
Non-return flap valve for use in multi-boiler flue gas systems. This valve can only be used in systems using natural gas (G20, G25), and CANNOT be used in systems using propane (G31).

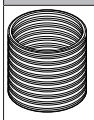
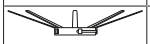
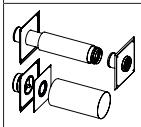
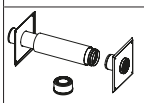
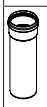
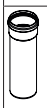
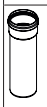
Other options

Accessories	Part number	Description
	EKFGP6837	Roof terminal PP/GLV 60/100 AR460
	EKFGS0518	Weather slate steep Pb/GLV 60/100 18°-22°
	EKFGS0519	Weather slate steep Pb/GLV 60/100 23°-17°
	EKFGP7910	Weather slate steep PF 60/100 25°-45°
	EKFGS0523	Weather slate steep Pb/GLV 60/100 43°-47°
	EKFGS0524	Weather slate steep Pb/GLV 60/100 48°-52°
	EKFGS0525	Weather slate steep Pb/GLV 60/100 53°-57°
	EKFGP1296	Weather slate flat Aluminium 60/100 0°-15°
	EKFGP6940	Weather slate flat Aluminium 60/100
	EKFGP2978	Wall terminal kit PP/GLV 60/100
	EKFGP2977	Wall terminal kit low profile PP/GLV 60/100

Accessories	Part number	Description
	EKFGP4651	Extension PP/GLV 60/100×500 mm
	EKFGP4652	Extension PP/GLV 60/100×1000 mm
	EKFGP4664	Elbow PP/GLV 60/100 30°
	EKFGP4661	Elbow PP/GLV 60/100 45°
	EKFGP4660	Elbow PP/GLV 60/100 90°
	EKFGP4667	Meas. tee with inspection panel PP/GLV 60/100
	EKFGP4631	Wall bracket Ø100
	EKFGP1292	Wall terminal Kit PP/GLV 60/100
	EKFGP1293	Wall terminal kit low profile PP/ GLV 60/100
	EKFGP1294	Plume management kit 60 (UK only)
	EKFGP1295	Flue deflector 60 (UK only)
	EKFGP1284	PMK elbow 60 90 (UK only)
	EKFGP1285	PMK elbow 60 45° (2 pieces) (UK only)
	EKFGP1286	PMK extension 60 L=1000 includes bracket (UK only)
	EKFGW5333	Weather slate flat aluminium 80/125
	EKFGW6359	Wall terminal kit PP/GLV 80/125
	EKFGP4801	Extension PP/GLV 80/125×500 mm
	EKFGP4802	Extension PP/GLV 80/125×1000 mm
	EKFGP4814	Elbow PP/GLV 80/125 30°
	EKFGP4811	Elbow PP/ALU 80/125 45°
	EKFGP4810	Elbow PP/ALU 80/125 90°
	EKFGP4820	Inspection elbow Plus PP/ALU 80/125 90° EPDM

Accessories	Part number	Description
	EKFGP6864	Roof Terminal PP/GLV 80/125 AR300 RAL 9011
	EKFGT6300	Weather slate steep Pb/GLV 80/125 18°-22°
	EKFGT6301	Weather slate steep Pb/GLV 80/125 23°-27°
	EKFGP7909	Weather slate steep PF 80/125 25°-45° RAL 9011
	EKFGT6305	Weather slate steep Pb/GLV 80/125 43°-47°
	EKFGT6306	Weather slate steep Pb/GLV 80/125 48°-52°
	EKFGT6307	Weather slate steep Pb/GLV 80/125 53°-57°
	EKFGP1297	Weather slate flat aluminium 80/125 0°-15°
	EKFGP6368	Tee flex 100 boiler connection set 1
	EKFGP6354	Flex 100-60 + support elbow
	EKFGP6215	Tee flex 130 boiler connection set 1
	EKFGS0257	Flex 130-60 + support elbow
	EKFGP4678	Chimney connection 60/100
	EKFGP5461	Extension PP 60×500
	EKFGP5497	Chimney top PP 100 with included flue pipe
	EKFGP6316	Adapter flex-fixed PP 100
	EKFGP6337	Support bracket top inox Ø100
	EKFGP6346	Extension flex PP 100 L=10 m

Accessories	Part number	Description
	EKFGP6349	Extension flex PP 100 L=15 m
	EKFGP6347	Extension flex PP 100 L=25 m
	EKFGP6325	Connector flex-flex PP 100
	EKFGP5197	Chimney top PP 130 with included flue pipe
	EKFGS0252	Adapter flex-fixed PP 130
	EKFGP6353	Support bracket top inox Ø130
	EKFGS0250	Extension flex PP 130 L=130 m
	EKFGP6366	Connector flex-flex PP 130
	EKFGP1856	Flex kit PP Ø60-80
	EKFGP4678	Chimney connection 60/100
	EKFGP2520	Flex kit PP Ø80
	EKFGP4828	Chimney connection 80/125
	EKFGP6340	Extension Flex PP 80 L=10 m
	EKFGP6344	Extension Flex PP 80 L=15 m
	EKFGP6341	Extension Flex PP 80 L=25 m

Accessories	Part number	Description
	EKFGP6342	Extension Flex PP 80 L=50 m
	EKFGP6324	Connector-flex-flex PP 80
	EKFGP6333	Spacer PP 80-100
	EKFGP4481	Fixation Ø100
	EKFGV1101	Chimney connection 60/10 air intake Dn.80 C83
	EKFGV1102	Connection set 60/10-60 Flue/ Air intake Dn.80 C53
	EKFGW4001	Extension P BM-Air 80×500
	EKFGW4002	Extension P BM-Air 80×1000
	EKFGW4004	Extension P BM-Air 80×2000
	EKFGW4085	Elbow PP BM-Air 80 90°
	EKFGW4086	Elbow PP BM-Air 80 45°
	EKGFP1289	Elbow PP/GALV 60/100 50°
	EKGFP1299	Kit horizontal low profile PP/ GLV 60/100 (UK only)

INFORMATION

For extra configuration options regarding the flue gas system, visit http://fluegas.daikin.eu/.

INFORMATION

For the installation of the flue and air supply duct material, see the manual included with the materials. Contact the manufacturer of the relevant flue and air supply duct materials for extensive technical information and specific assembly instructions.

5.3.4 Possible combinations of indoor unit and outdoor unit

Outdoor unit	Indoor unit		
	EHYHBH05	EHYHBH08	EHYHBX08
EVLQ05CAV3	O	—	—
EVLQ08CAV3	—	O	O

5.3.5 Possible combinations of indoor unit and domestic hot water tank

Indoor unit	Domestic hot water tank
	EKHWP300B + EKHWP500B
EHYHBH05	O
EHYHBH08	O
EHYHBX08	O

6 Preparation

6.1 Overview: Preparation

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

It contains information about:

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

6.2 Preparing the installation site

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

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

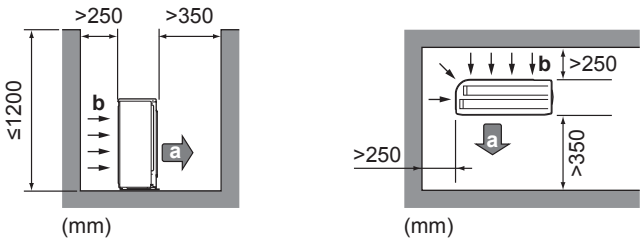
6.2.1 Installation site requirements of the outdoor unit

INFORMATION

Also read the following requirements:

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

Mind the following spacing guidelines:



a Air outlet
b Air inlet

NOTICE

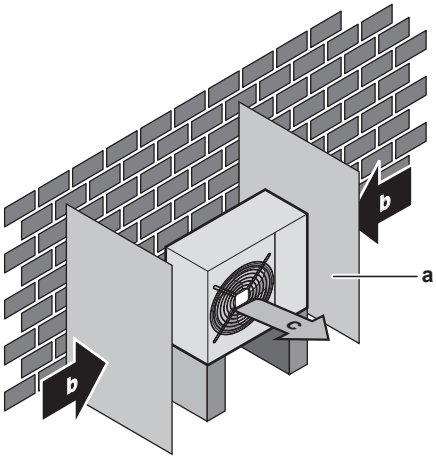
- Do NOT stack the units on each other.
- Do NOT hang the unit on a ceiling.

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

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

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

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



a Baffle plate
b Prevailing wind direction
c Air outlet

Do NOT install the unit in the following places:

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

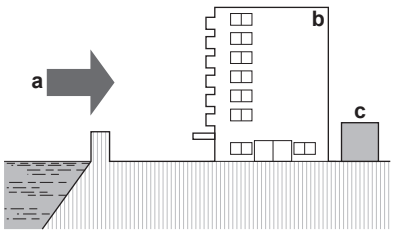
It is NOT recommended to install the unit in the following places because it may shorten the life of the unit:

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

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

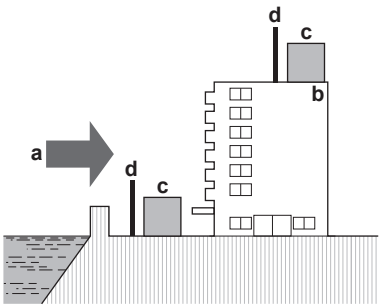
Install the outdoor unit away from direct sea winds.

Example: Behind the building.



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

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

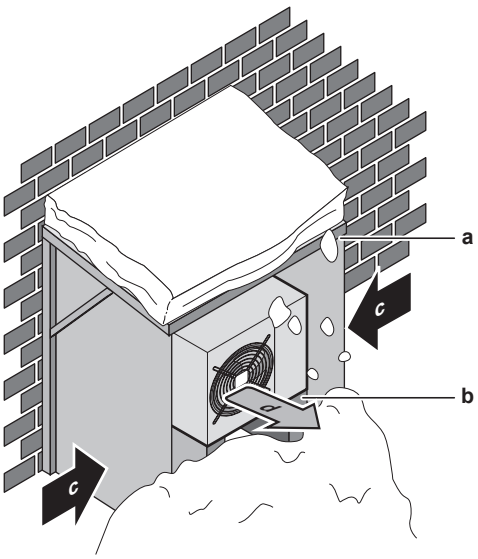


a Sea wind
b Building
c Outdoor unit
d Windbreaker

The outdoor unit is designed for outdoor installation only, and for ambient temperatures ranging 10~43°C in cooling mode and –25~25°C in heating mode.

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

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



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

In any case, provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow. See "7.3 Mounting the outdoor unit" on page 25 for more details.

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

6.2.3 Installation site requirements of the indoor unit

INFORMATION

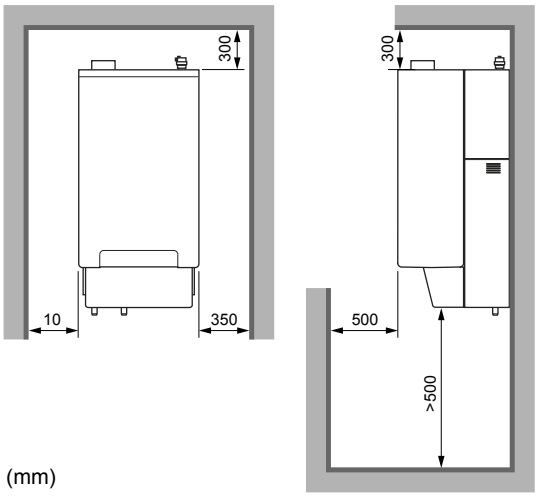
Also read the precautions and requirements in the "General safety precautions" chapter.

- Mind the measurement guidelines:

Maximum refrigerant piping length between indoor unit and outdoor unit	20 m
Minimum refrigerant piping length between indoor unit and outdoor unit	3 m
Maximum height difference between indoor unit and outdoor unit	20 m
Maximum equivalent piping length between the 3-way valve and the indoor unit (for installations with domestic hot water tank)	3 m(a)
Maximum equivalent piping length between the domestic hot water tank and the indoor unit (for installations with domestic hot water tank)	10 m(a)

(a) Piping diameter 0.75".

- Mind the following spacing installation guidelines:



(mm)

Do NOT install the unit in places such as:

- In places where a mineral oil mist, spray or vapour may be present in the atmosphere. Plastic parts may deteriorate and fall off or cause water leakage.
- Sound sensitive areas (e.g. near a bedroom), so that the operation noise will cause no trouble.
- In places with high humidity (max. RH=85%), for example a bathroom.
- In places where frost is possible. Ambient temperature around the indoor unit must be >5°C.
- The indoor unit is designed for indoor installation only and for ambient temperatures ranging 5~35°C in cooling mode and 5~30°C in heating mode.

6.3 Preparing refrigerant piping

6.3.1 Refrigerant piping requirements

INFORMATION

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

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

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

- **Piping temper grade and thickness:**

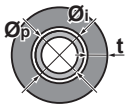
Outer diameter (Ø)	Temper grade	Thickness (t)[a]	
6.4 mm (1/4")	Annealed (O)	≥0.8 mm	
15.9 mm (5/8")	Annealed (O)	≥1.0 mm	

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

6.3.2 Refrigerant piping insulation

- Use polyethylene foam as insulation material:
  - with a heat transfer rate between 0.041 and 0.052 W/mK (0.035 and 0.045 kcal/mh°C)
  - with a heat resistance of at least 120°C
- Insulation thickness

Pipe outer diameter ($Ø_p$)	Insulation inner diameter ($Ø_i$)	Insulation thickness (t)
6.4 mm (1/4")	8~10 mm	10 mm
15.9 mm (5/8")	16~20 mm	13 mm



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

6.4 Preparing water piping

6.4.1 Water circuit requirements

INFORMATION

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

NOTICE

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

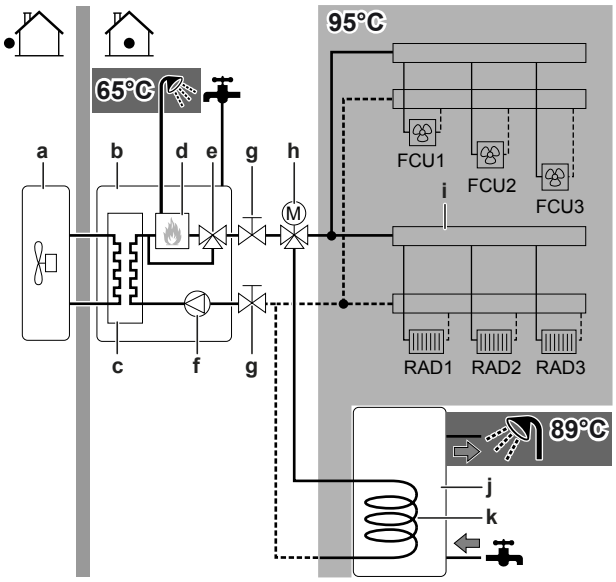
- **Connecting piping – Legislation.** Make all piping connections in accordance with the applicable legislation and the instructions in the "Installation" chapter, respecting the water inlet and outlet.
- **Connecting piping – Force.** Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit.
- **Connecting piping – Tools.** Only use appropriate tooling to handle brass, which is a soft material. If NOT, pipes will get damaged.
- **Connecting piping – Air, moisture, dust.** If air, moisture or dust gets into the circuit, problems may occur. To prevent this:
  - Only use clean pipes
  - Hold the pipe end downwards when removing burrs.
  - Cover the pipe end when inserting it through a wall, to prevent dust and/or particles entering the pipe.
  - Use a decent thread sealant to seal connections.
- **Closed circuit.** Use the indoor unit ONLY in a closed water system. Using the system in an open water system will lead to excessive corrosion.
- **Glycol.** For safety reasons, it is NOT allowed to add any kind of glycol to the water circuit.
- **Piping length.** It is recommended to avoid long runs of piping between the domestic hot water tank and the hot water end point (shower, bath,…) and to avoid dead ends.
- **Piping diameter.** Select the water piping diameter in relation to the required water flow and the available external static pressure of the pump. See "15 Technical data" on page 101 for the external static pressure curves of the indoor unit.
- **Water flow.** You can find the minimum required water flow for indoor unit operation in the following table. In all cases, this flow needs to be guaranteed. When the flow is lower, the indoor unit will stop operation and display error 7H.

Minimum required flow rate	
05 models	7 l/min
08 models	8 l/min

- **Field supply components – Water.** Only use materials that are compatible with water used in the system and with the materials used in the indoor unit.
- **Field supply components – Water pressure and temperature.** Check that all components in the field piping can withstand the water pressure and water temperature.
- **Water pressure.** The maximum water pressure is 3 bar. Provide adequate safeguards in the water circuit to ensure that the maximum pressure is NOT exceeded.
- **Water temperature – Heat pump convectors.** In case heat pump convectors are connected, the temperature of the water in the convectors should NOT exceed 65°C. If necessary, install a thermostatic controlled valve.
- **Water temperature – Underfloor heating loops.** In case underfloor heating loops are connected, install a mixing station to prevent water that is too hot from entering the underfloor heating circuit.
- **Water temperature.** All installed piping and piping accessories (valve, connections,…) MUST withstand the following temperatures:

INFORMATION

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

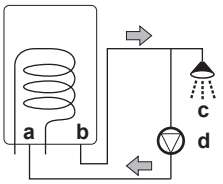


a Outdoor unit
b Indoor unit
c Heat exchanger
d Boiler
e Bypass valve
f Pump
g Shut-off valve (field supply)
h Motorised 3-way valve (in option kit)

i	Collector
j	Domestic hot water tank (optional)
k	Heat exchanger coil
FCU1...3	Fan coil unit (optional)
RAD1…3	Radiator (field supply)

- **Drainage – Low points.** Provide drain taps at all low points of the system in order to allow complete drainage of the water circuit.
- **Drainage – Pressure relief valve.** Provide a proper drain for the pressure relief valve to avoid water coming into contact with electrical parts.
- **Air vents.** Provide air vents at all high points of the system, which must also be easily accessible for servicing. An automatic air purge is provided in the indoor unit. Check that the air purge is NOT tightened too much, so that automatic release of air in the water circuit is possible.
- **Zn-coated parts.** Never use Zn-coated parts in the water circuit. Because the unit's internal water circuit uses copper piping, excessive corrosion may occur.
- **Non-brass metallic piping.** When using non-brass metallic piping, insulate the brass and non-brass properly so that they do NOT make contact with each other. This to prevent galvanic corrosion.
- **Valve – Separating circuits.** When using a 3-way valve in the water circuit make sure that the domestic hot water circuit and the floor heating circuit is fully separated.
- **Valve – Change-over time.** When using a 2-way valve or a 3-way valve in the water circuit, the maximum change-over time of the valve must be 60 seconds.
- **Filter.** It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic particles from foul heating piping, it is recommended to use a magnetic or cyclone filter, which can remove small particles. Small particles may damage the unit and will NOT be removed by the standard filter of the heat pump system.
- **Dirt separator – Old heating installations.** In case of old heating installations, it is recommended to use a dirt separator. Dirt or sediment from the heating installation can damage the unit and reduce its lifetime. The domestic hot water circuit can also be protected by a filter to prevent failure during domestic hot water operation.
- **Domestic hot water tank – Capacity.** To avoid stagnation of water, it is important that the storage capacity of the domestic hot water tank meets the daily consumption of domestic hot water.
- **Domestic hot water tank – After installation.** Immediately after installation, the domestic hot water tank must be flushed with fresh water. This procedure must be repeated at least once a day the first 5 consecutive days after installation.
- **Domestic hot water tank – Standstills.** In cases where during longer periods of time there is no consumption of hot water, the equipment MUST be flushed with fresh water before usage.
- **Domestic hot water tank – Disinfection.** For the disinfection function of the domestic hot water tank, see "Domestic hot water control: advanced" on page 70.
- **Domestic hot water tank – 3rd party tank installation.** When installing a 3rd party tank, take following requirements into account:
  - coil size should be ≥0.45 m^2,
  - water piping is ≥3/4" to avoid high pressure drops,
  - a sensor pocket is foreseen at a correct place (above the heating coil). The tank sensor should not be in contact with water.
  - maximum tank set point for a 3rd party tank is 60°C,
  - in case of an electrical heater in the tank, make sure it is installed correctly (above the heating coil).

  Refer to the installation manual of the domestic hot water tank for more information.
- **Thermostatic mixing valves.** In accordance with the applicable legislation, it may be necessary to install thermostatic mixing valves.
- **Hygienic measures.** The installation must be in compliance with the applicable legislation and may require additional hygienic installation measures.
- **Recirculation pump.** In accordance with the applicable legislation, it may be required to connect a recirculation pump in between the hot water end point and the recirculation connection of the domestic hot water tank.



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

6.4.2 Formula to calculate the expansion vessel pre-pressure

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

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

6.4.3 To check the water volume and flow rate

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

To make sure that the unit operates properly:

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

Minimum water volume

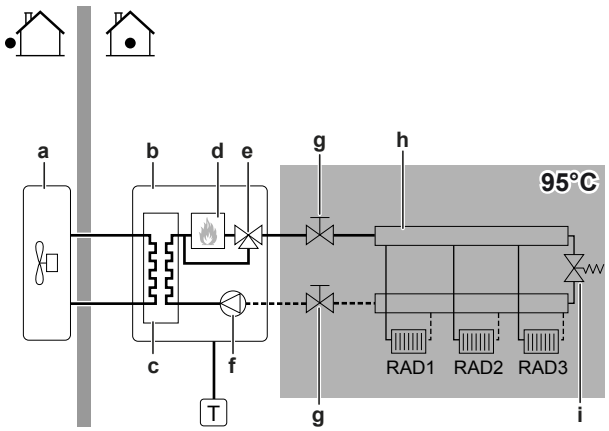
Check that the total water volume in the installation is minimum 13.5 litre, the internal water volume of the indoor unit NOT included.

INFORMATION

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

NOTICE

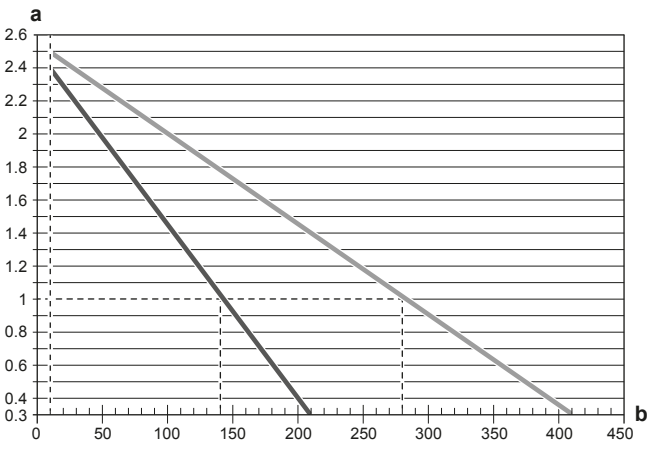
When circulation in each space heating/cooling loop is controlled by remotely controlled valves, it is important that the minimum water volume is guaranteed, even if all of the valves are closed.



a	Outdoor unit
b	Indoor unit
c	Heat exchanger
d	Boiler
e	Bypass valve
f	Pump
g	Shut-off valve (field supply)
h	Collector
i	Bypass valve (field supply)
RAD1…3	Radiator (field supply)

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)
	Maximum leaving water temperature of 55°C for underfloor heating applications
	Maximum leaving water temperature of 80°C for radiator applications

Example in case of an underfloor heating application: Maximum water volume and expansion vessel pre-pressure in case of 55°C

Installation height difference[(a)]	Water volume	
	≤280 l	>280 l
≤7 m	No pre-pressure adjustment is required.	Do the following: ▪ Decrease the pre-pressure. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.
>7 m	Do the following: ▪ Increase the pre-pressure. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.	The expansion vessel of the indoor unit is too small for the installation. In this case, it is recommended to install an extra vessel outside the unit.

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

Example in case of a radiator application: Maximum water volume and expansion vessel pre-pressure in case of 80°C

Installation height difference[(a)]	Water volume	
	≤140 l	>140 l
≤7 m	No pre-pressure adjustment is required.	Do the following: ▪ Decrease the pre-pressure. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.
>7 m	Do the following: ▪ Increase the pre-pressure. ▪ Check if the water volume does NOT exceed the maximum allowed water volume.	The expansion vessel of the indoor unit is too small for the installation. In this case, it is recommended to install an extra vessel outside the unit.

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

Minimum flow rate

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

NOTICE

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

Minimum required flow rate	
05 models	7 l/min
08 models	8 l/min

See the recommended procedure as described in "10.4 Checklist during commissioning" on page 86.

6.4.4 Changing the pre-pressure of the expansion vessel

NOTICE

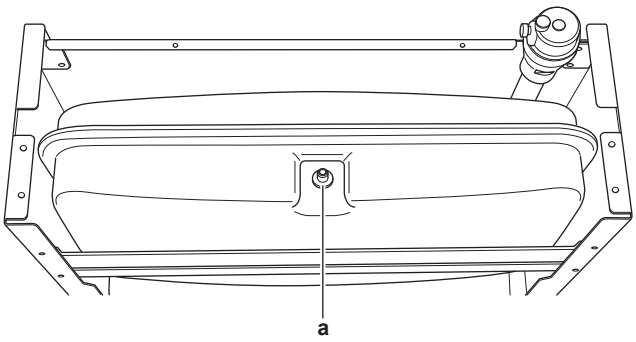
Only a licensed installer may adjust the pre-pressure of the expansion vessel.

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

- Only use dry nitrogen to set the expansion vessel pre-pressure.

- Inappropriate setting of the expansion vessel pre-pressure will lead to malfunction of the system.

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



a Schrader valve

6.4.5 To check the water volume: Examples

Example 1

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

No actions or adjustments are required for either underfloor heating loops or radiators.

Example 2

The indoor unit is installed at the highest point in the water circuit. The total water volume in the water circuit is 350 l. Radiators are installed, so use the graph of 80°C.

Actions:

- Because the total water volume (350 l) is more than the default water volume (140 l), the pre-pressure must be decreased.
- The required pre-pressure is:
  Pg = (0.3+(H/10)) bar = (0.3+(0/10)) bar=0.3 bar.
- The corresponding maximum water volume at 0.3 bar is 205 l. (See the graph in the chapter above).
- Because 350 l is more than 205 l, the expansion vessel is too small for the installation. Therefore install an extra vessel outside the installation.

6.5 Preparing electrical wiring

6.5.1 About preparing electrical wiring

INFORMATION

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

WARNING

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

WARNING

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

WARNING

ALWAYS use multicore cable for power supply cables.

6.5.2 About preferential kWh rate power supply

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

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

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

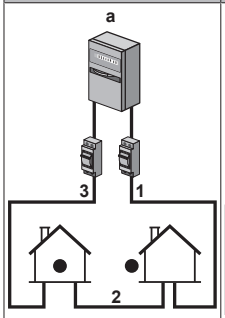
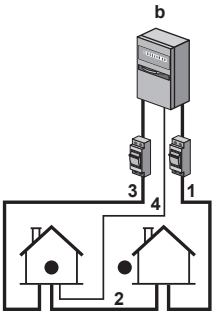
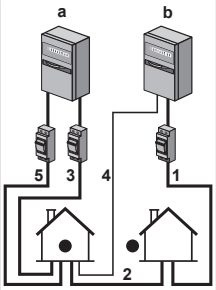
When the equipment is connected to such preferential kWh rate power supply, the electricity company is allowed to:

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

The indoor unit is designed to receive an input signal by which the unit switches into forced off mode. At that moment, the gas boiler can still operate to provide heating, but the outdoor unit compressor will NOT operate.

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

6.5.3 Overview of electrical connections except external actuators

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

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

The following applies ONLY for the French market: "Bleu Ciel tarif"

In France there is a preferential kWh rate called "Bleu Ciel tarif". This rate divides the days of the year in:

- blue days (preferential electricity rate, ideal for heat pump operation),
- white days (ideal for heat pump and hybrid operation),
- and red days (high electricity rate, boiler operation preferred).

It is recommended to use the preferential kWh rate power supply contact (4) to force boiler operation during red days. Note that sometimes it is required to set the meter on such that, it only closes the contact on red days. Please refer to the manual of the applicable meter.

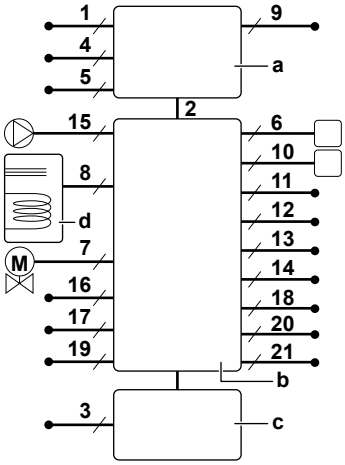
The indoor unit and gas boiler are NOT compatible with other combinations of contacts (e.g., closed contacts on white/blue days). Connect the indoor unit and gas boiler as follows: see illustration in column "Power supply is NOT interrupted" in the table above.

6.5.4 Overview of electrical connections for external and internal actuators

The following illustration shows the required field wiring.

INFORMATION

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



a Outdoor unit
b Indoor unit
c Gas boiler
d Domestic hot water tank

Item	Description	Wires	Maximum running current
Outdoor unit and indoor unit power supply			
1	Power supply for outdoor unit	2+GND	(a)
2	Power supply and interconnection cable to indoor unit	3+GND	(g)
3	Power supply gas boiler	2+GND	(c)
4	Preferential kWh rate power supply (voltage free contact)	2	(e)
5	Normal kWh rate power supply	2	6.3 A
User interface			
6	User interface	2	(f)
Optional equipment			
7	3-way valve	3	100 mA(b)
8	Domestic hot water tank thermistor	2	(d)
9	Power supply for drain pan heater	2	(b)
10	Room thermostat/heat pump convector	3 or 4	100 mA(b)
11	Outdoor ambient temperature sensor	2	(b)
12	Indoor ambient temperature sensor	2	(b)
Field supplied components			
13	Shut-off valve	2	100 mA(b)
14	Electricity meter	2	(b)
15	Domestic hot water pump	2	(b)
16	Alarm output	2	(b)
17	Changeover to external heat source control	2	(b)
18	Space cool/heat operation control	2	(b)

Item	Description	Wires	Maximum running current
19	Power consumption digital inputs	2 (per input signal)	(b)
20	Gas meter	2	(b)
21	Safety thermostat	2	(e)

(a) Refer to name plate on outdoor unit.
(b) Minimum cable section 0.75 mm².
(c) Use the cable supplied with the boiler.
(d) The thermistor and connection wire (12 m) are delivered with the domestic hot water tank.
(e) Cable section 0.75 mm² till 1.25 mm²; maximum length: 50 m. Voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.
(f) Cable section 0.75 mm² till 1.25 mm²; maximum length: 500 m. Applicable for both single user interface and dual user interface connection.
(g) Cable section 1.5 mm²; maximum length: 50 m.

NOTICE

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

7 Installation

7.1 Overview: Installation

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

Typical workflow

Installation typically consists of the following stages:

1 Mounting the outdoor unit.
2 Mounting the indoor unit.
3 Mounting the gas boiler.
4 Connecting the condensate pipe.
5 Connecting the refrigerant piping.
6 Checking the refrigerant piping.
7 Charging refrigerant.
8 Connecting the water piping.
9 Connecting the electrical wiring.
10 Connecting the gas piping.
11 Connecting the boiler to the flue gas system.
12 Finishing the outdoor installation.
13 Finishing the indoor installation.
14 Finishing the gas boiler installation.

INFORMATION

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

7.2 Opening the units

7.2.1 About opening the units

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

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

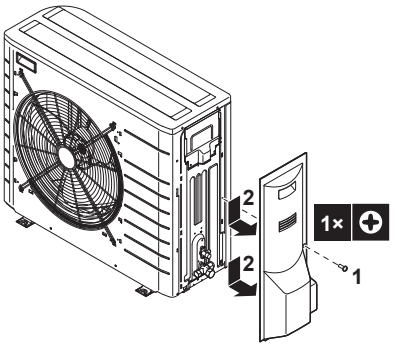
DANGER: RISK OF ELECTROCUTION

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

7.2.2 To open the outdoor unit

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING



7.2.3 To open the switch box cover of the indoor unit

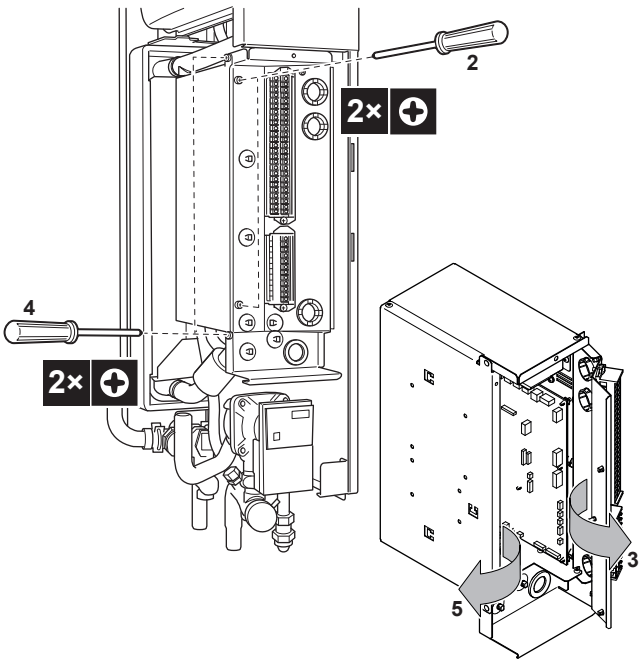
1 Remove the side panel at the right side of the indoor unit. The side panel is fixed at the bottom with 1 screw.

2 Remove the upper and lower screw on the side panel of the switch box.

3 The right panel of the switch box will open.

4 Remove the upper and lower screw on the front panel of the switch box.

5 The front panel of the switch box will open.

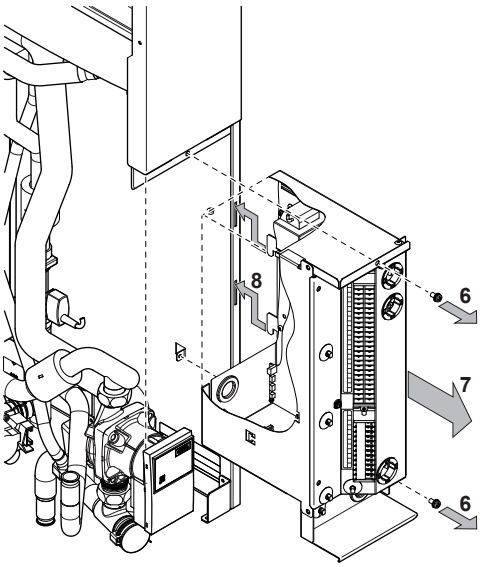


When the boiler is installed and access to the switch box is required, please follow the steps below.

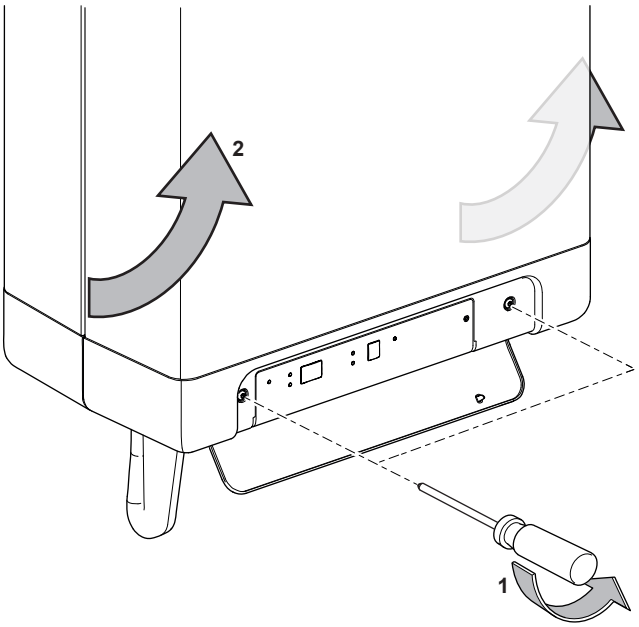
6 Remove the upper and lower screw on the side panel of the switch box.

7 Remove the switch box from the unit.

8 Hook the switch box to the side of the unit with the hooks foreseen on the switch box.



7.2.4 To open the gas boiler



1 Open the display cover.

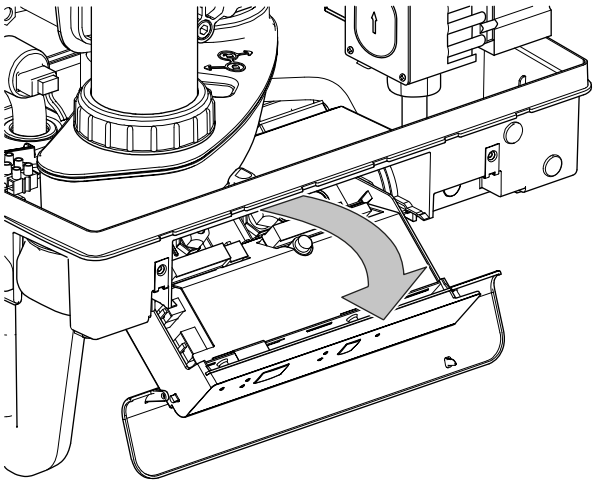
2 Unscrew both screws.

3 Tilt the front panel towards you and remove the front panel.

7.2.5 To open the switch box cover of the gas boiler

1 Open the gas boiler, see "7.2.4 To open the gas boiler" on page 25.

2 Pull the boiler controller unit forwards. The boiler controller will tip downwards to provide access.



7.3 Mounting the outdoor unit

7.3.1 About mounting the outdoor unit

When

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

Typical workflow

Mounting the outdoor unit typically consists of the following stages:

1 Providing the installation structure.

2 Installing the outdoor unit.

3 Providing drainage.

4 Protecting the unit against snow and wind by installing a snow cover and baffle plates. See "Preparing installation site" in "6 Preparation" on page 17.

7.3.2 Precautions when mounting the outdoor unit

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.3.3 To provide the installation structure

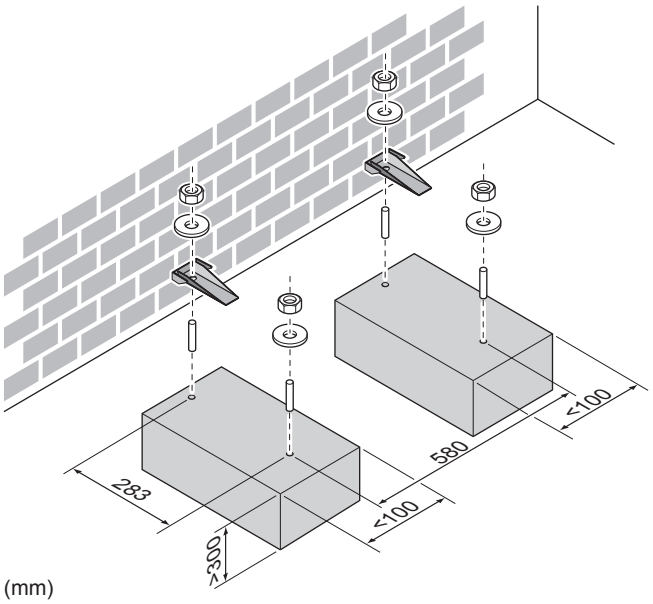
Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise.

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

If the unit is installed directly on the floor, prepare 4 sets of M8 or M10 anchor bolts, nuts and washers (field supply) as follows:

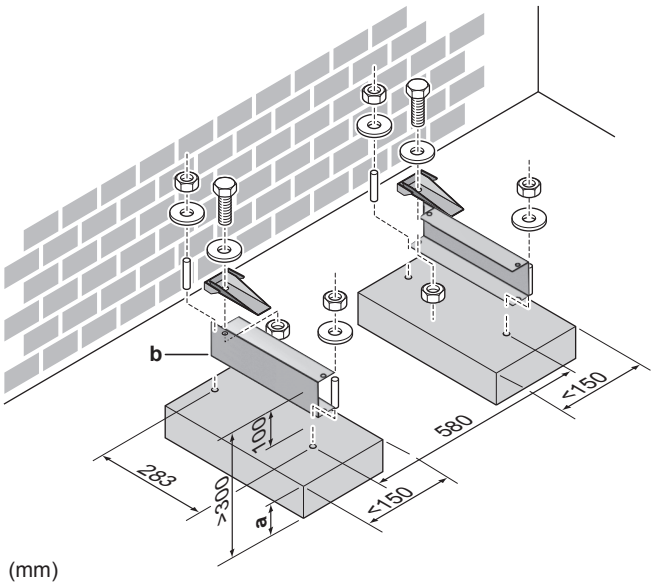
INFORMATION

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



(mm)

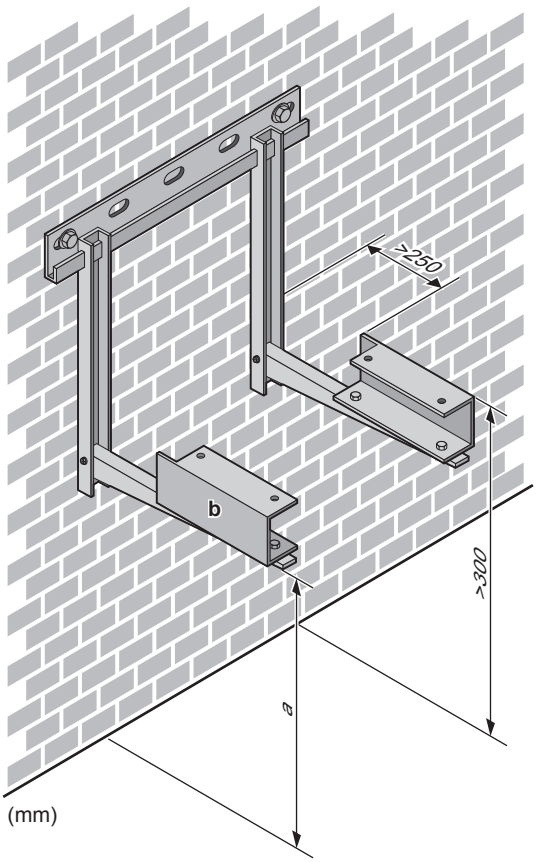
In any case, provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow. In this case, it is recommended to construct a pedestal, and on this pedestal install the EKFT008CA option kit.



(mm)

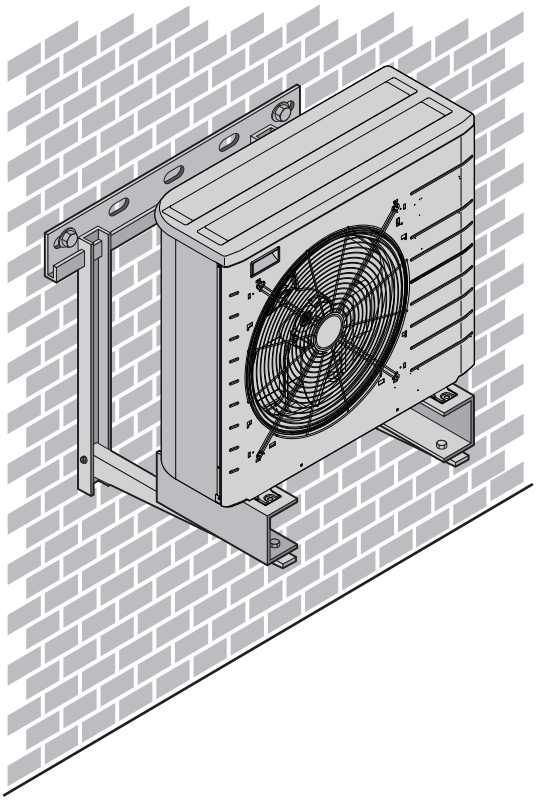
a Maximum snowfall height
b EKFT008CA option kit

If the unit is installed on brackets to the wall, it is recommended to use the EKFT008CA option kit and to install the unit as follows:



(mm)

a Maximum snowfall height
b EKFT008CA option kit



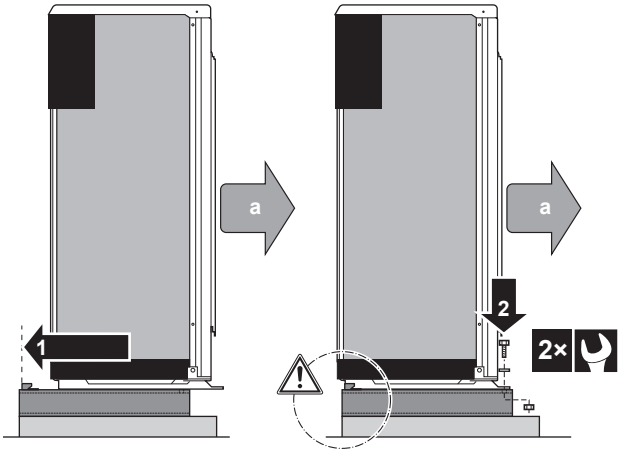
7.3.4 To install the outdoor unit

CAUTION

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

1 Lift the outdoor unit as described in "4.2.2 To remove the accessories from the outdoor unit" on page 9.

2 Install the outdoor unit as follows:

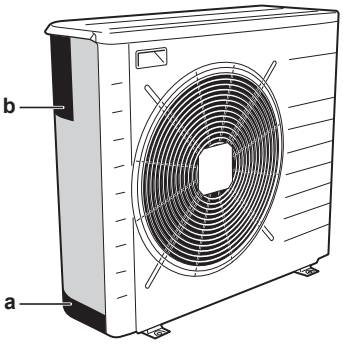


a Air outlet

NOTICE

The pedestal MUST be aligned with the backside of the U-beam.

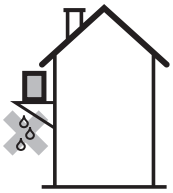
3 Remove the protective cardboard and instruction sheet.



a Protective cardboard
b Instruction sheet

7.3.5 To provide drainage

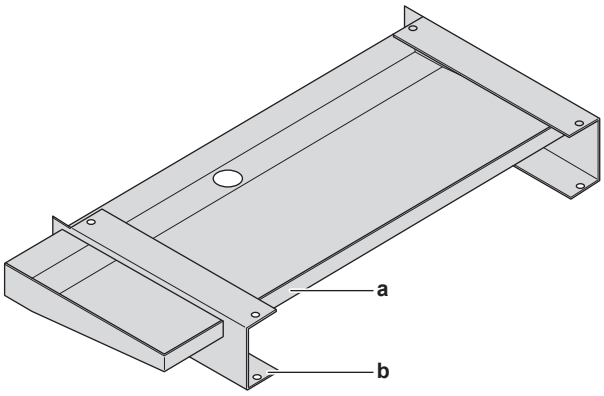
- Avoid installation places where water leaking from the unit due to a blocked drain pan can cause damage to the location.
- Make sure that condensation water can be evacuated properly.
- Install the unit on a base to make sure that there is proper drainage in order to avoid ice accumulation.
- Prepare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



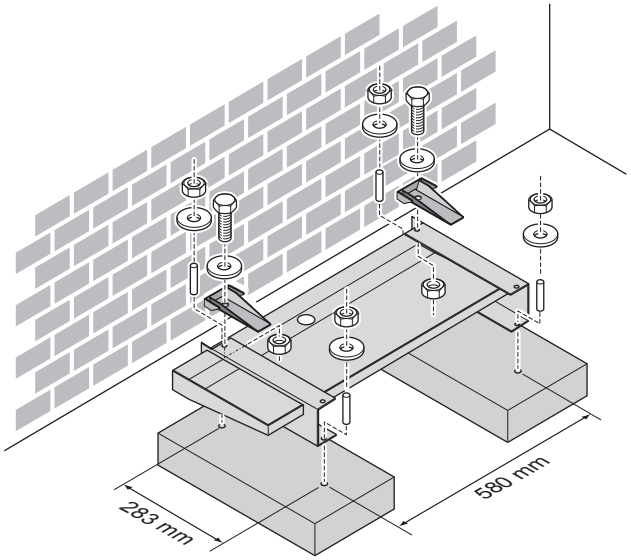
NOTICE

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

An additional drain pan kit (EKDP008CA) can be used to gather the drain water. The drain pan kit consists of:



a Drain pan
b U-beams



7.3.6 To prevent the outdoor unit from falling over

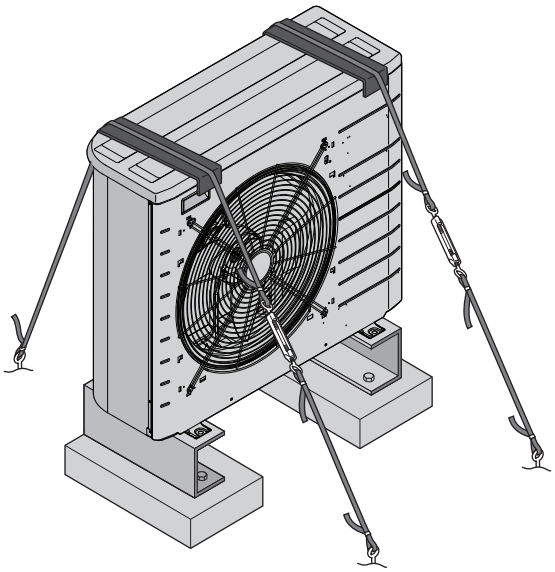
In case the unit is installed in places where strong wind can tilt the unit, take following measure:

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

2 Place the 2 cables over the outdoor unit.

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

4 Attach the ends of the cables and tighten them.



7.4 Mounting the indoor unit

7.4.1 About mounting the indoor unit

When

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

Typical workflow

Mounting the indoor unit typically consists of the following stages:

1 Installing the indoor unit.

7.4.2 Precautions when mounting the indoor unit

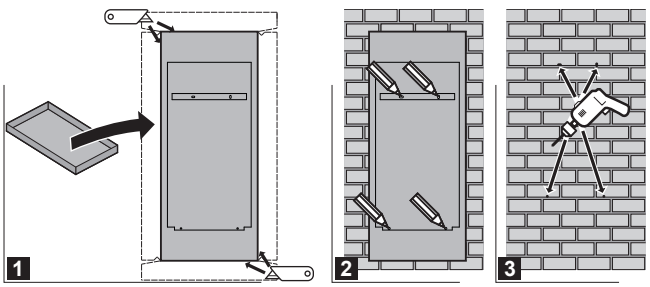
INFORMATION

Also read the precautions and requirements in the following chapters:

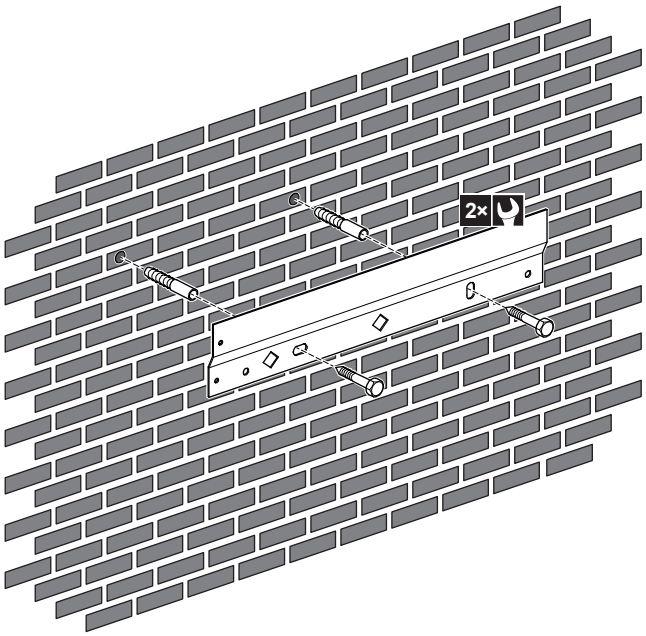
- General safety precautions
- Preparation

7.4.3 To install the indoor unit

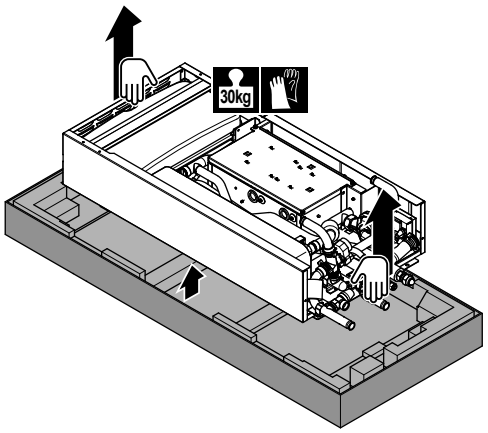
1 Put the installation pattern (see box) on the wall and follow the steps as shown below.



2 Fix the wall bracket to the wall with 2 M8 bolts.



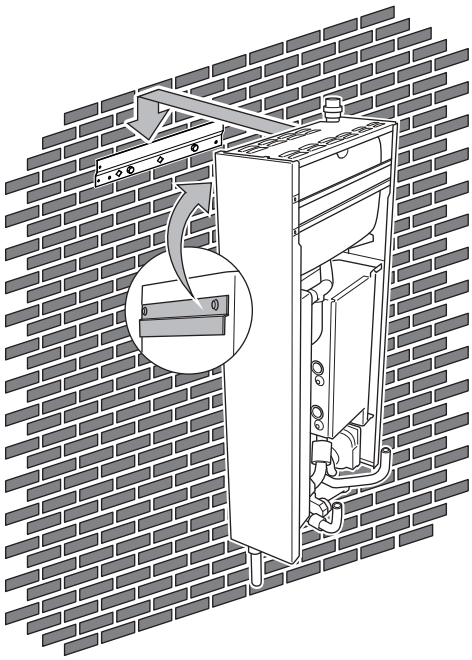
3 Lift the unit.



4 Tilt the top of the unit against the wall at the position of the wall bracket.

5 Slide the bracket on the back of the unit over the wall bracket. Make sure the unit is fixed properly. You can additionally fix the bottom side of the unit with 2 M8 bolts.

6 The unit is mounted to the wall.



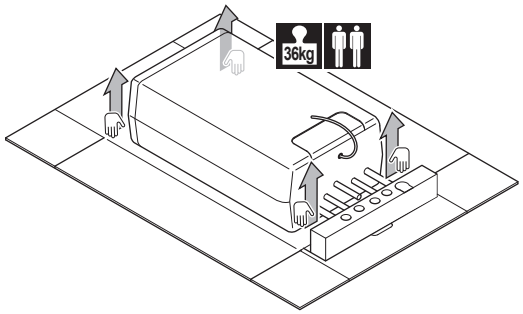
7.5 Mounting the gas boiler

INFORMATION

Removing the top plate of the indoor unit makes it easier to install the gas boiler.

7.5.1 To install the gas boiler

1 Lift the unit from the package.

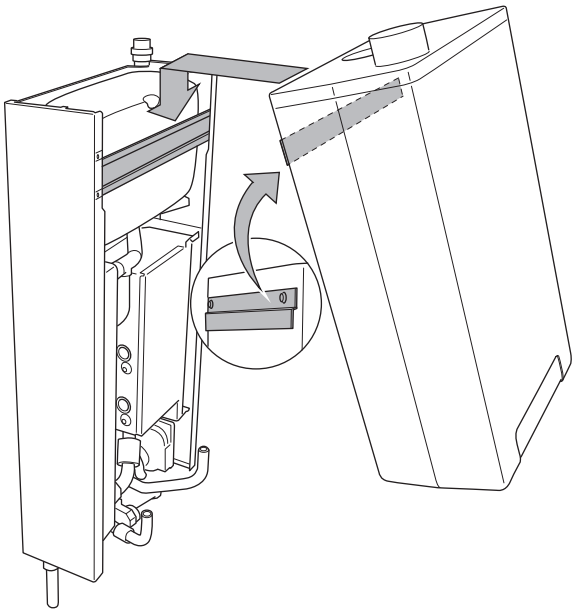


2 Remove the top plate from the indoor unit.

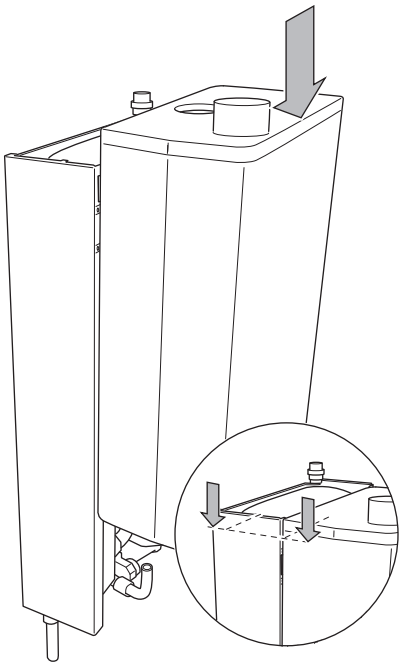
3 The bracket to mount the boiler on the heat pump module is already mounted to the backside of the gas boiler.

4 Lift the boiler. One person lifts the gas boiler on the left side (left hand on the top and right hand on the bottom) and another person lift the gas boiler on the right side (left hand on the bottom and right hand on the top).

5 Tilt the top of the unit at the position of the indoor unit mounting bracket.



6 Slide the boiler downwards to fix the boiler bracket onto the indoor unit mounting bracket.



7 Make sure the gas boiler is fixed properly and well aligned with the indoor unit.

7.5.2 To install the condensate trap

INFORMATION

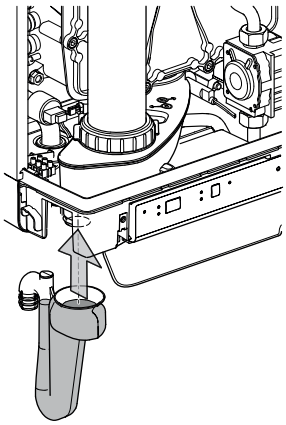
The boiler is provided with a 25 mm flexible pipe on the condensate trap.

Prerequisite: The boiler MUST be opened before installing the condensate trap.

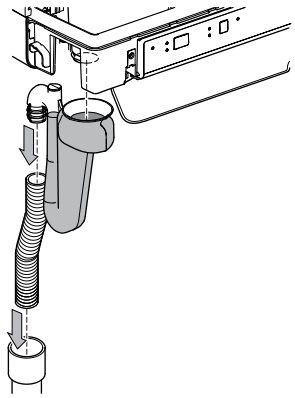
1 Fit the flexible tube (accessory) to the condensate trap outlet.

2 Fill the condensate trap with water.

3 Slide the condensate trap as far as possible upwards onto the condensate drain connector below the gas boiler.



4 Connect the flexible tube (where applicable with the overflow pipe from the pressure relief valve) to the drain via an open connection.



WARNING

- ALWAYS fill the condensate trap with water and place it on the boiler before powering up the boiler. See illustration below.
- NOT placing or filling up the condensate trap may cause flue gases to come into the installation room and can lead to dangerous situations!
- In order to place the condensate trap, the front cover MUST be pulled forward or removed entirely.

NOTICE

It is recommended that any external condensate pipe is insulated and increased to Ø32 mm in order to prevent the condensate from freezing.

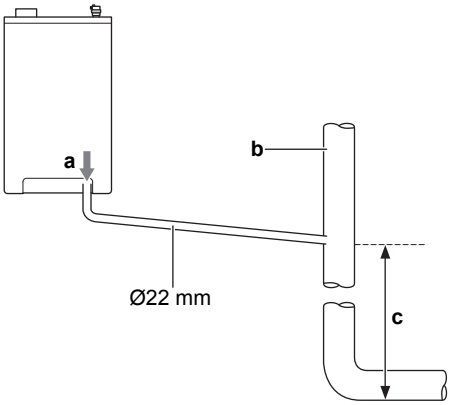
7.6 Condensate pipe work

INFORMATION

The condensate discharge system MUST be made of plastic, no other materials may be used. The discharge duct MUST have a minimum gradient of 5~20 mm/m. Condensate discharge via the gutter is NOT allowed due to risk of frost and the possible damage to the materials.

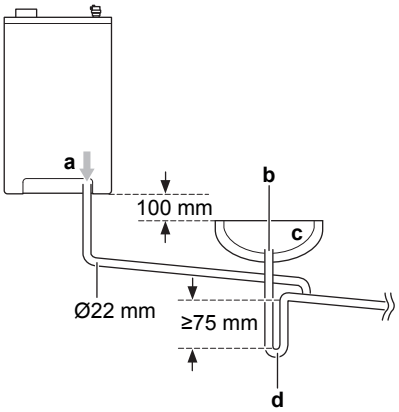
7.6.1 Internal connections

If possible, the condensate drain pipe should be routed and terminated so that the condensate drains away from the boiler under gravity to a suitable internal foul water discharge point such as an internal soil and vent stack. A suitable permanent connection to the foul waste pipe should be used.



a Condensate discharge from boiler
b Soil and vent stack
c Minimum 450 mm and up to 3 storeys

If the first option is NOT possible, an internal kitchen or bathroom waste pipe, washing machine pipe can be used. Make sure that the condensate drain pipe is connected downstream of the waste trap.

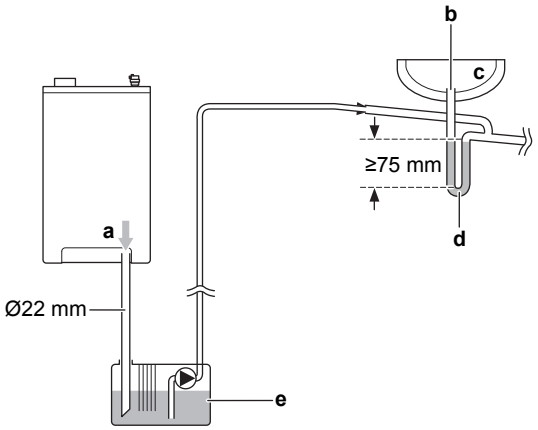


a Condensate discharge from boiler
b Soil and vent stack
c Sink or basin with integrate overflow
d 75 mm waste trap and air break

Condensate pump

Where gravity discharge to an internal termination is NOT physically possible or where very long internal runs of drainage pipe would be required to reach a suitable discharge point, condensate should be removed by using a proprietary condensate pump (field supply).

The pump outlet pipe should discharge to a suitable internal foul water discharge point such as an internal soil and vent stack, internal kitchen, bathroom waste pipe, or washing machine waste pipe. A suitable permanent connection to the foul waste pipe should be used.



a Condensate discharge from boiler
b Soil and vent stack
c Sink or basin with integrated overflow
d 75 mm waste trap and air break
e Condensate pump

7.6.2 External connections

If an externally condensate drainage pipe is used, following measures should be made to prevent freezing:

- The pipe should be run internally as far as possible before going to the outside. The pipe diameter should be increased to a minimum inner diameter of 30 mm (typically outer diameter of 32 mm) before it goes through the wall.
- The external run should be kept as short as possible, taking the most vertical route possible to the discharge point. Take into account that there are no horizontal section in which condensate might collect.
- The external pipe should be insulated. Use a suitable waterproof and weather proof insulation ("Class O" pipe insulation is suitable for this purpose).
- The use of fittings and elbows should be kept to a minimum. Any internal burrs should be removed so that the internal pipe section is as smooth as possible.

7.7 Connecting the refrigerant piping

7.7.1 About connecting the refrigerant piping

Before connecting the refrigerant piping

Make sure the outdoor and indoor unit are mounted.

Typical workflow

Connecting the refrigerant piping involves:

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

7.7.2 Precautions when connecting the refrigerant piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

DANGER: RISK OF BURNING

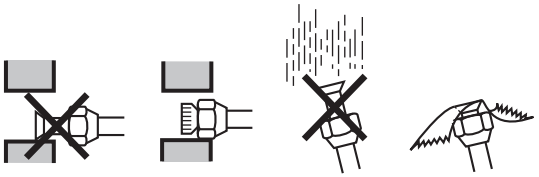
CAUTION

- Do NOT use mineral oil on flared part.
- Do NOT reuse piping from previous installations.
- NEVER install a drier to this R410A unit to guarantee its lifetime. The drying material may dissolve and damage the system.

NOTICE

Take the following precautions on refrigerant piping into account:

- Avoid anything but the designated refrigerant to get mixed into the refrigerant cycle (e.g. air).
- Only use 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.
- Install the piping so that the flare is NOT subjected to mechanical stress
- Protect the piping as described in the following table to prevent dirt, liquid or dust from entering the piping.
- Use caution when passing copper tubes through walls (see figure below).



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

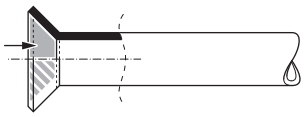
INFORMATION

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

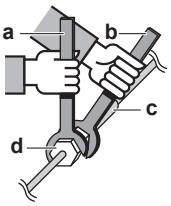
7.7.3 Guidelines when connecting the refrigerant piping

Take the following guidelines into account when connecting pipes:

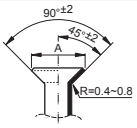
- Coat the flare inner surface with ether oil or ester oil when connecting a flare nut. Tighten 3 or 4 turns by hand, before tightening firmly.



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



a Torque wrench
b Spanner
c Piping union
d Flare nut

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

7.7.4 Pipe bending guidelines

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

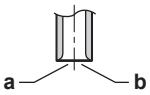
7.7.5 To flare the pipe end

CAUTION

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

1 Cut the pipe end with a pipe cutter.

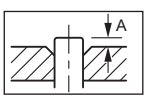
2 Remove burrs with the cut surface facing down so that the chips do NOT enter the pipe.



a Cut exactly at right angles.
b Remove burrs.

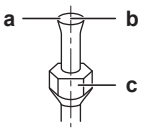
3 Remove the flare nut from the stop valve and put the flare nut on the pipe.

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



	Flare tool for R410A (clutch type)	Conventional flare tool	
		Clutch type (Ridgid-type)	Wing nut type (Imperial-type)
A	0~0.5 mm	1.0~1.5 mm	1.5~2.0 mm

5 Check that the flaring is properly made.

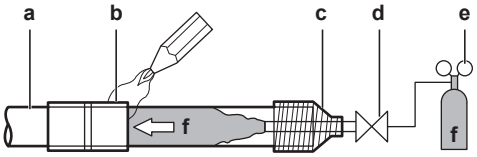


a Flare's inner surface MUST be flawless.
b The pipe end MUST be evenly flared in a perfect circle.
c Make sure the flare nut is fitted.

7.7.6 To braze the pipe end

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

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



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

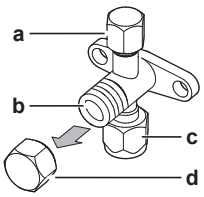
- Do NOT use anti-oxidants when brazing pipe joints.
  Residue can clog pipes and break equipment.
- Do NOT use flux when brazing copper-to-copper refrigerant piping. Use phosphor copper brazing filler alloy (BCuP), which does not require flux.
  Flux has an extremely harmful influence on refrigerant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

7.7.7 Using the stop valve and service port

To handle the stop valve

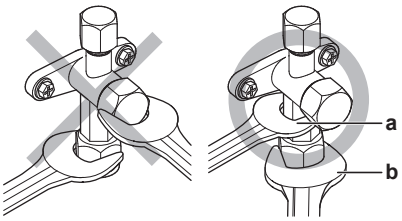
Take the following guidelines into account:

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



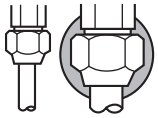
a Service port and service port cap
b Valve stem
c Field piping connection
d Stem cap

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



a Spanner
b Torque wrench

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

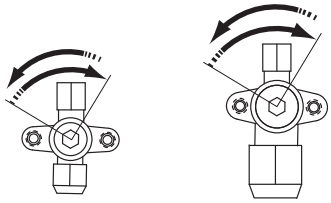


Silicon sealant; make sure there is no gap.

To open/close the stop valve

1 Remove the stop valve cover.

2 Insert a hexagon wrench (liquid side: 4 mm, gas side: 6 mm) into the valve stem and turn the valve stem:

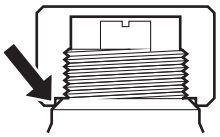


Counterclockwise to open.
Clockwise to close.

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

To handle the stem cap

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



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

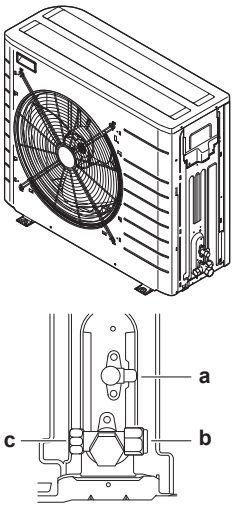
To handle the service cap

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

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

7.7.8 To connect the refrigerant piping to the outdoor unit

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



a Liquid stop valve
b Gas stop valve
c Service port

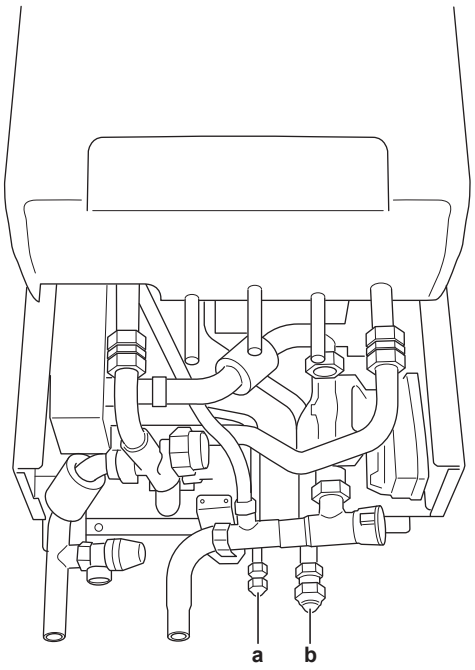
2 Connect the gas refrigerant connection from the indoor unit to the gas stop valve of the outdoor unit.

NOTICE

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

7.7.9 To connect the refrigerant piping to the indoor unit

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



a Refrigerant liquid connection
b Refrigerant gas connection

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

NOTICE

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

7.8 Checking the refrigerant piping

7.8.1 About checking the refrigerant piping

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

Before checking the refrigerant piping

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

Typical workflow

Checking the refrigerant piping typically consists of the following stages:

1 Checking for leaks in the refrigerant piping.

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

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

7.8.2 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.

NOTICE

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

7.8.3 To check for leaks

NOTICE

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

NOTICE

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

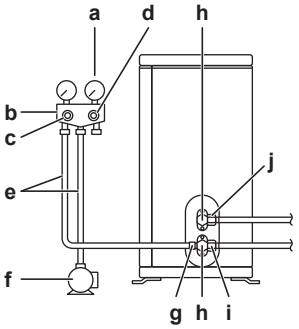
1 Charge the system with nitrogen gas up to a gauge pressure of at least 200 kPa (2 bar). It is recommended to pressurize to 3000 kPa (30 bar) in order to detect small leaks.

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

3 Discharge all nitrogen gas.

7.8.4 To perform vacuum drying

Connect the vacuum pump and manifold as follows:



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

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

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

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

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

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

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

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

NOTICE

Be sure to open the gas stop valve after piping installation and vacuuming. Running the system with the valve closed, the compressor may break down.

INFORMATION

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

7.9 Charging refrigerant

7.9.1 About charging refrigerant

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

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

Charging additional refrigerant

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

INFORMATION

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

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

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

Completely recharging refrigerant

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

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

NOTICE

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

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

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

7.9.2 Precautions when charging refrigerant

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.9.3 To determine the additional refrigerant amount

If the total liquid piping length is…	Then…
≤10 m	Do NOT add additional refrigerant.
>10 m	R=(total length (m) of liquid piping–10 m)×0.020 R=Additional charge (kg) (rounded in units of 0.1 kg)

INFORMATION

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

7.9.4 To determine the complete recharge amount

7.9.5 To charge additional refrigerant

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.

CAUTION

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

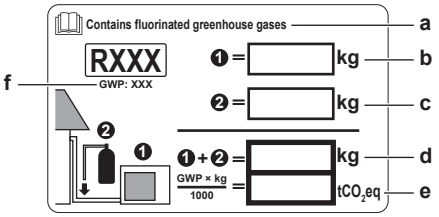
Prerequisite: Before charging refrigerant, make sure the refrigerant piping is connected and checked (leak test and vacuum drying).

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

If pump down is needed in case of dismantling or relocating the system, see "14.2 To pump down" on page 101 for more details.

7.9.6 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 outdoor unit near the gas and liquid stop valves.

7.10 Connecting the water piping

7.10.1 About connecting the water piping

Before connecting the water piping

Make sure the outdoor unit, indoor unit and gas boiler are mounted.

Typical workflow

Connecting the water piping typically consists of the following stages:

1 Connecting the water piping of the indoor unit.
2 Connecting the water piping of the gas boiler.
3 Filling the space heating circuit.
4 Filling the domestic water circuit of the gas boiler.
5 Filling the domestic hot water tank.
6 Insulating the water piping.

7.10.2 Precautions when connecting the water piping

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

7.10.3 Connecting the water piping of the indoor unit

To connect the water piping for space heating

NOTICE

In case of old heating installations, it is recommended to use a dirt separator. Dirt or sediment from the heating installation can damage the unit and reduce its lifetime.

NOTICE

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

NOTICE

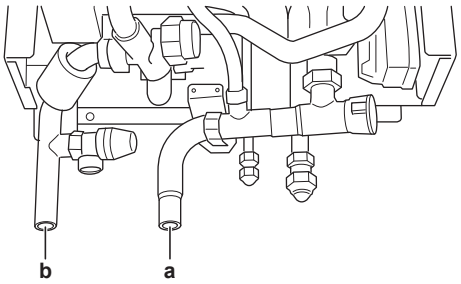
- It is recommended to install shut-off valves to space heating in and space heating out connections. Shut-off valves are field supplied. They allow service to the unit without draining the whole system.
- Foresee a drain/fill point to drain or fill the space heating circuit

NOTICE

Do NOT install valves to shut down the entire emitter system (radiators, floor heating loops, fan coil units, ...) instantly if this can result in an immediate short circuit of the water flow between the outlet and the inlet of the unit (for example via a bypass valve). This may trigger an error.

1 Connect the water inlet connection (Ø22 mm).

2 Connect the water outlet connection (Ø22 mm).



a Water inlet
b Water outlet

3 In case of connection with the optional domestic hot water tank, see the installation manual of the domestic hot water tank.

NOTICE

Install air purge valves at all local high points.

NOTICE

In case an optional domestic hot water tank is installed: A pressure relief valve (field supply) with an opening pressure of maximum 10 bar must be installed on the domestic cold water inlet connection in accordance with the applicable legislation.

NOTICE

In case an optional domestic hot water tank is installed:

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

7.10.4 Connecting the water piping of the gas boiler

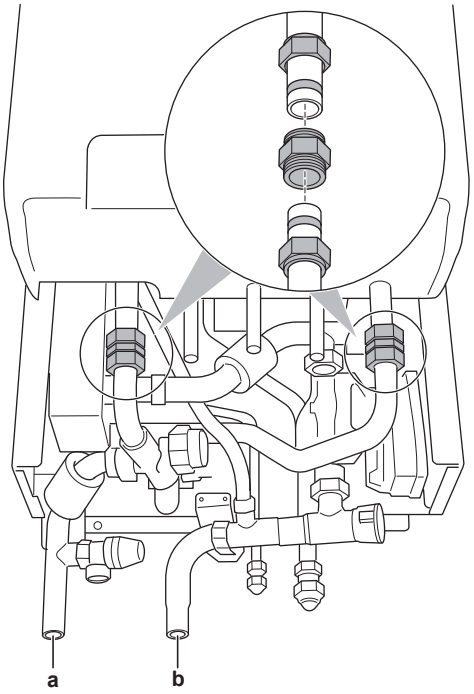
To connect the water piping for space heating

Use the straight brass fitting connections (accessory of the heat pump unit).

1 The space heating piping of the boiler will be connected to the indoor unit.

2 Install the straight brass fitting connections so that they perfectly match the connection of both modules.

3 Tighten the straight brass fitting connections.



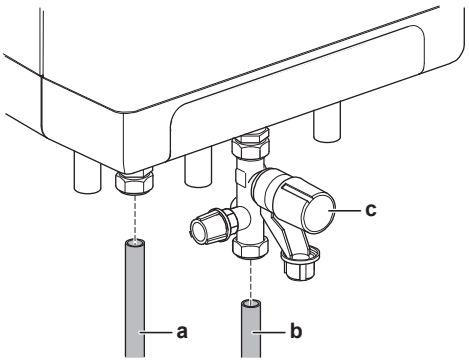
a Outlet space heating
b Inlet space heating

NOTICE

Make sure that the straight brass fitting connections are tightened thoroughly to prevent leakage. Maximum torque is 30 N·m.

To connect the water piping for domestic hot water (not applicable for Switzerland)

1 Flush the installation thoroughly to clean.



a Domestic hot water outlet
b Cold water inlet
c Pressure relief valve (field supply)

2 Install a pressure relief valve according to local and national regulations (if required).

3 Connect the hot water connection (Ø15 mm).

4 Connect the main cold water connection (Ø15 mm).

DANGER: RISK OF BURNING

In case of high leaving water set points for space heating (either a high fixed set point or a high weather-dependent set point at low ambient temperatures), the heat exchanger of the boiler can be heated up to temperatures higher than 60°C.

In case of a tapping demand, it is possible that a small volume of water tapping (<0.3 l) has a temperature higher than 60°C.

To connect the water piping for domestic hot water (applicable for Switzerland)

For Switzerland, domestic hot water should be made by a domestic hot water tank. The domestic hot water tank must be installed with a 3-way valve to the space heating piping. Refer to the manual of the domestic hot water tank for more details.

7.10.5 To fill the space heating circuit

Before filling the space heating circuit, the gas boiler MUST be installed.

1 Flush the installation thoroughly to clean the circuit.

2 Connect the water supply hose to the drain point (field supply).

3 Power up the gas boiler to see the pressure indication on the boiler display.

4 Make sure that the air purge valves of the gas boiler and the heat pump module are open (at least 2 turns).

5 Fill the circuit with water until the boiler display indicates a pressure of ±2 bar (with a minimum of 0.5 bar).

6 Purge air from the water circuit as much as possible.

7 Disconnect the water supply hose from the drain point.

NOTICE

The water pressure indicated on the boiler display 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

- 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 the chapter "10 Commissioning" on page 85. This function should be used to purge the heat exchanger coil of the domestic hot water tank.

7.10.6 To fill the domestic water circuit of the gas boiler

1 Open the main tap to pressurize the hot water section.

2 Vent the exchanger and the pipe system by opening a hot water tap.

3 Leave the tap open until all air has disappeared from the system.

4 Check all connections for leaks including internal connections.

7.10.7 To fill the domestic hot water tank

For installation instructions, see the installation manual of the domestic hot water tank.

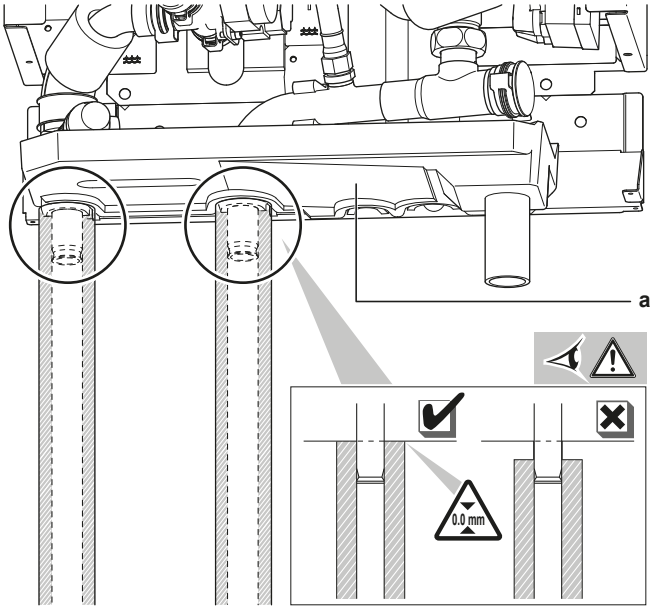
7.10.8 To insulate the water piping

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

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.

When the drain pan is installed, make sure to insulate the water piping up to the drain pan to avoid condensation.

In case of EHYHBX



a Drain pan kit

7.11 Connecting the electrical wiring

7.11.1 About connecting the electrical wiring

Before connecting the electrical wiring

Make sure:

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

Typical workflow

Connecting the electrical wiring typically consists of the following stages:

1 Making sure the power supply system complies with the electrical specifications of the heat pump.
2 Connecting the electrical wiring to the outdoor unit.
3 Connecting the electrical wiring to the indoor unit.
4 Connecting the main power supply of the indoor unit.
5 Connecting the main power supply of the gas boiler.
6 Connecting the communication cable between the gas boiler and the indoor unit.
7 Connecting the user interface.
8 Connecting the shut–off valves.
9 Connecting the electrical meters.
10 Connecting the gas meter.
11 Connecting the domestic hot water pump.
12 Connecting the alarm output.
13 Connecting the space cooling/heating ON/OFF output.
14 Connecting the power consumption digital inputs.
15 Connecting the safety thermostat.

7.11.2 Precautions when connecting the electrical wiring

INFORMATION

Also read the precautions and requirements in the following chapters:

- General safety precautions
- Preparation

DANGER: RISK OF ELECTROCUTION

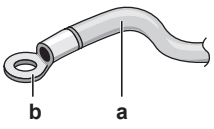
WARNING

ALWAYS use multicore cable for power supply cables.

7.11.3 Guidelines when connecting the electrical wiring

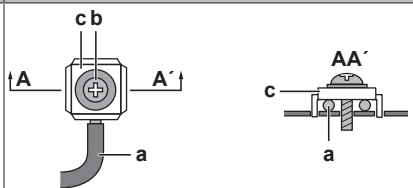
Keep the following in mind:

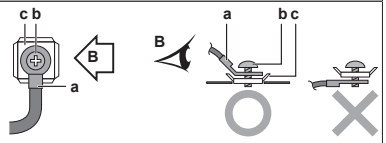
- If stranded conductor wires are used, install a round crimp-style terminal on the end of the wire. Place the round crimp-style terminal on the wire up to the covered part and fasten the terminal with the appropriate tool.



a Stranded conductor wire
b Round crimp-style terminal

- Use the following methods for installing wires:

Wire type	Installation method
Single-core wire	 **a** Curled single-core wire **b** Screw **c** Flat washer

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

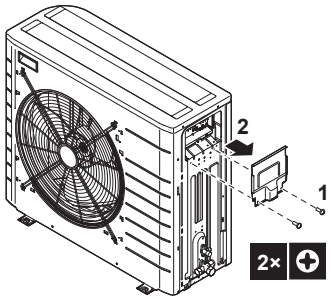
Tightening torques

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

7.11.4 To connect the electrical wiring on the outdoor unit

1 Remove the 2 switch box cover screws.

2 Remove the switch box cover.

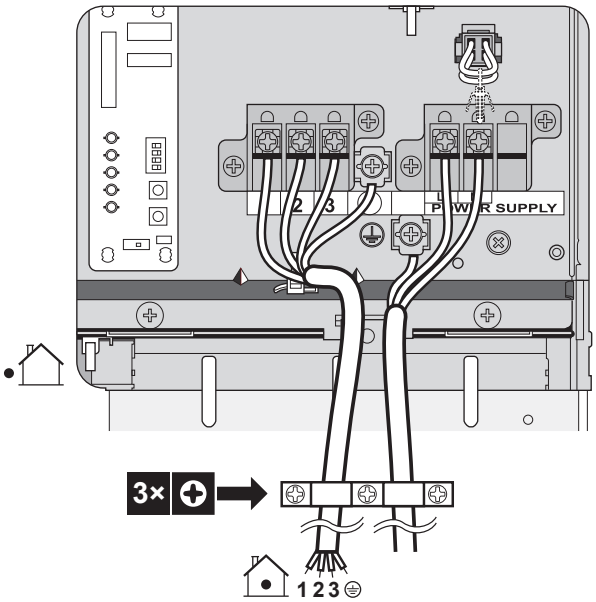


3 Strip insulation (20 mm) from the wires.

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

4 Open the wire clamp.

5 Connect the interconnection cable and power supply as follows:



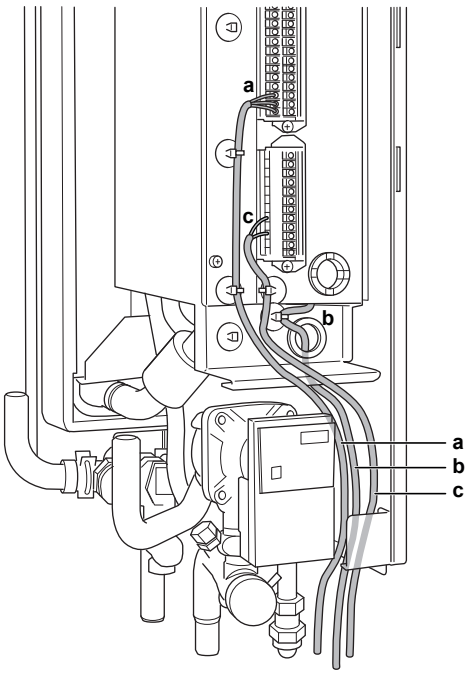
6 Install the switch box cover.

7.11.5 To connect the electrical wiring on the indoor unit

It is recommended to install all electrical wiring to the hydro box before installing the boiler.

1 Wiring should enter the unit from the bottom.

2 Routing of the wiring inside the unit should be as follows:



INFORMATION

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

Routing	Possible cables (depending on unit type and installed options)
a	▪ Interconnection cable between indoor and outdoor unit ▪ Normal kWh rate power supply ▪ Preferential kWh rate power supply ▪ Heat pump convector (option) ▪ Room thermostat (option) ▪ 3-way valve (option in case of tank) ▪ Shut-off valve (field supply) ▪ Domestic hot water pump (field supply)
b	▪ Interconnection cable between indoor unit and gas boiler (see boiler manual for connection instructions)
c	▪ Outdoor ambient temperature sensor (option) ▪ User interface ▪ Indoor ambient temperature sensor (option) ▪ Electrical meter (field supply) ▪ Preferential power supply contact ▪ Safety thermostat (field supply) ▪ Gas meter (field supply)

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

CAUTION

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

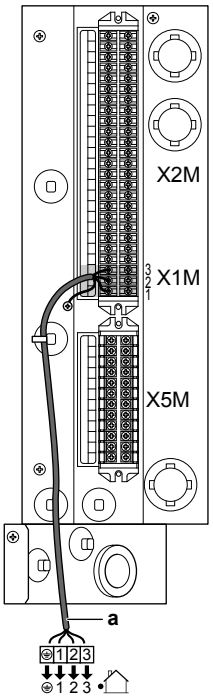
NOTICE

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

7.11.6 To connect the main power supply of the indoor unit

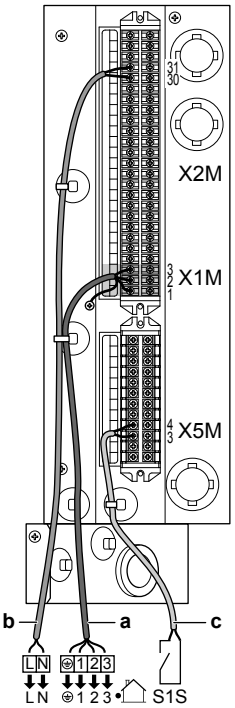
1 Connect the main power supply.

In case of normal kWh rate power supply



Legend: see illustration below.

In case of preferential kWh rate power supply



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

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

INFORMATION

If the system is connected to a preferential kWh rate power supply, a separate normal kWh rate power supply is required. Change connector X6Y according to the wiring diagram on the inside of the indoor unit.

INFORMATION

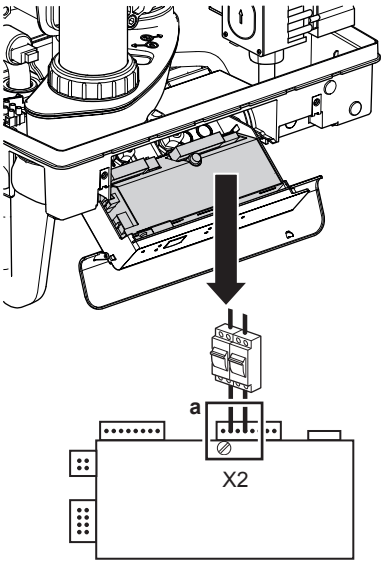
The preferential kWh rate power supply contact is connected to the same terminals (X5M/3+4) as the safety thermostat. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat.

7.11.7 To connect the main power supply of the gas boiler

1 Connect the power supply cable of the gas boiler to a fuse (a) (L: X2-2 (BRN), N: X2-4 (BLU)).

2 Connect the earthing of the gas boiler to an earthing terminal.

Result: The gas boiler performs a test. 2 appears on the service display. After the test, - appears on the service display (wait mode). The pressure in bar is shown on the main display.



DANGER: RISK OF ELECTROCUTION

A fused spur or an unswitched socket MUST be located no more than 1 m from the appliance.

CAUTION

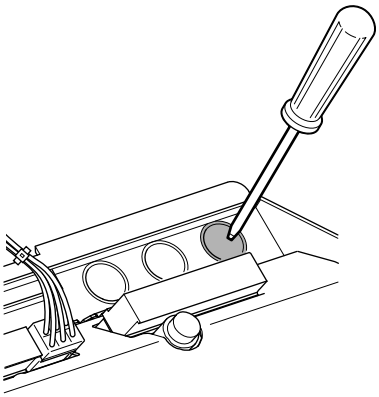
For installation in damp rooms, a fixed connection is obligatory. When working on the electrical circuit ALWAYS isolate the electric supply.

7.11.8 To connect the communication cable between gas boiler and indoor unit

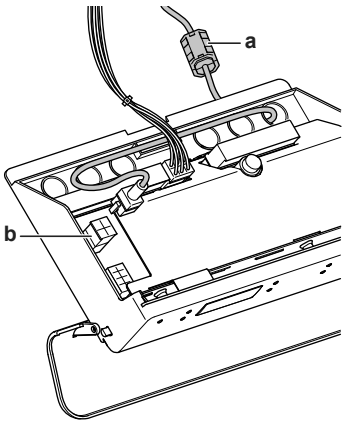
1 Open the gas boiler.

2 Open the switch box cover of the gas boiler.

3 Remove one of the bigger knockout holes on the right side of the switch box of the gas boiler.

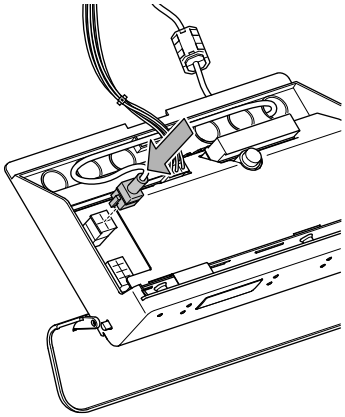


4 Put the (larger) boiler connector through the knockout hole. Fix the cable in the switch box by routing it behind the pre-mounted wires.

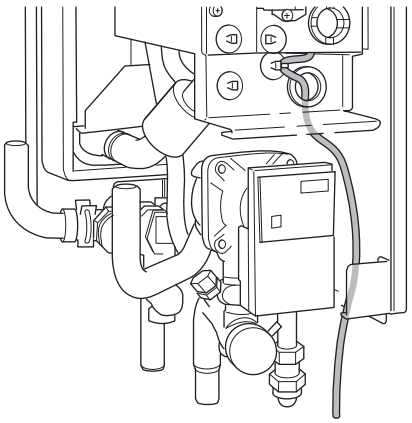


a Solenoid coil
b Connector X5

5 Plug the gas boiler connector into connector X5 of the gas boiler PCB. Make sure the solenoid coil is outside the gas boiler switch box.

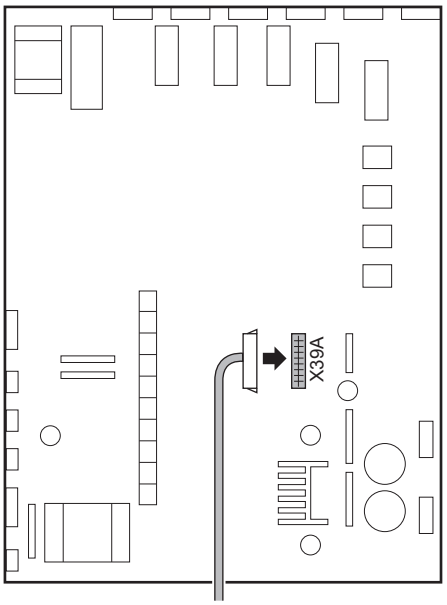


6 Route the communication cable from the gas boiler to the indoor unit as in figure below.



7 Open the switch box cover of the indoor unit.

8 Plug the indoor unit connector into X39A of the indoor unit PCB.



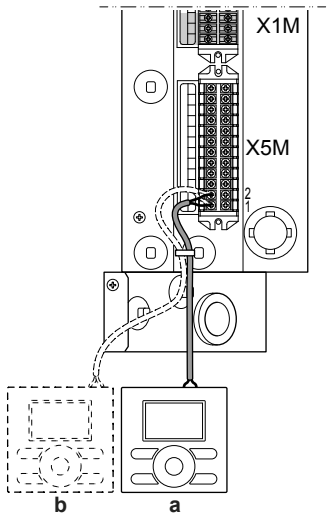
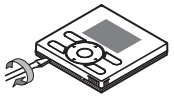
9 Close the switch box cover of the indoor unit.

10 Close the switch box cover of the gas boiler.

11 Close the gas boiler.

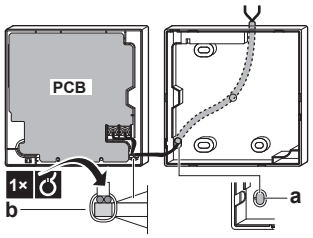
7.11.9 To connect the user interface

- If you use 1 user interface, you can install it at the indoor unit (for control close to the indoor unit), or in the room (when used as room thermostat).
- If you use 2 user interfaces, you can install 1 user interface at the indoor unit (for control close to the indoor unit) + 1 user interface in the room (used as room thermostat).

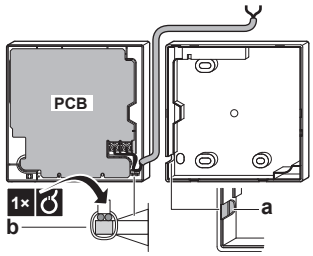
#	Action
1	Connect the user interface cable to the indoor unit. Fix the cable with cable ties to the cable tie mountings.  **a** Main user interface[(a)] **b** Optional user interface
2	Insert a screwdriver into the slots underneath the user interface and carefully separate the faceplate from the wallplate. The PCB is mounted in the faceplate of the user interface. Be careful NOT to damage it. 
3	Fix the wallplate of the user interface to the wall.
4	Connect as shown in 4A, 4B, 4C or 4D.
5	Reinstall the faceplate onto the wallplate. Be careful NOT to pinch the wiring when attaching the frontplate to the unit.

(a) The main user interface is required for operation, but has to be ordered separately (mandatory option).

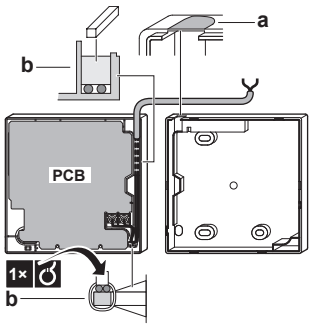
4A From the rear



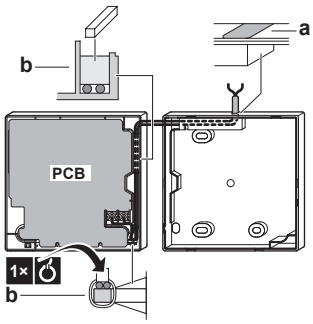
4B From the left



4C From the top



4D From the top centre



a Notch this part for the wiring to pass through with nippers etc.

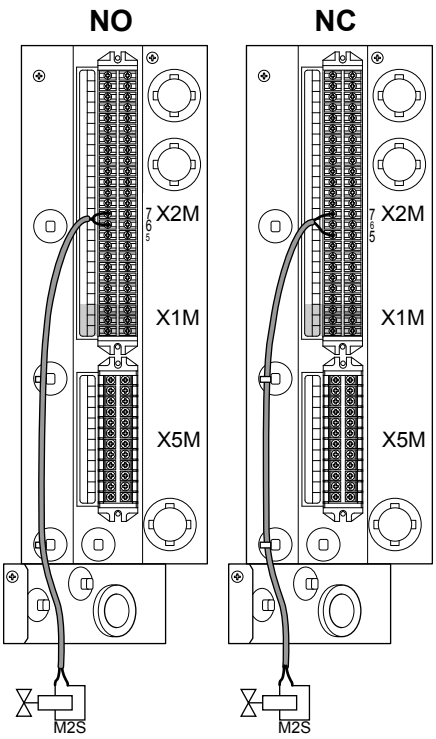
b Secure the wiring to the front part of the casing using the wiring retainer and clamp.

7.11.10 To connect the shut-off valve

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

NOTICE

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



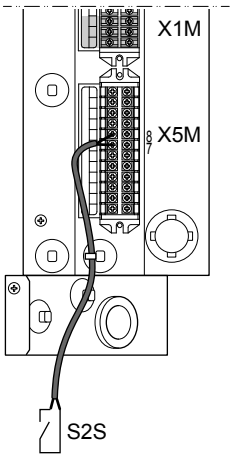
2 Fix the cable with cable ties to the cable tie mountings.

7.11.11 To connect the electrical meter

INFORMATION

In case of an electrical meter with transistor output, check the polarity. The positive polarity MUST be connected to X5M/7; the negative polarity to X5M/8.

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



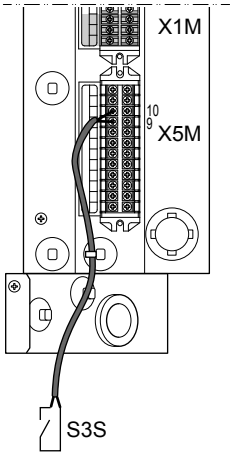
2 Fix the cable with cable ties to the cable tie mountings.

7.11.12 To connect the gas meter

INFORMATION

In case of a gas meter with transistor output, check the polarity. The positive polarity MUST be connected to X5M/9; the negative polarity to X5M/10.

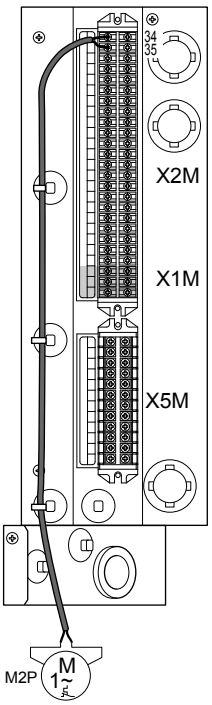
1 Connect the gas meter cable to the appropriate terminals as shown in the illustration below.



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

7.11.13 To connect the domestic hot water pump

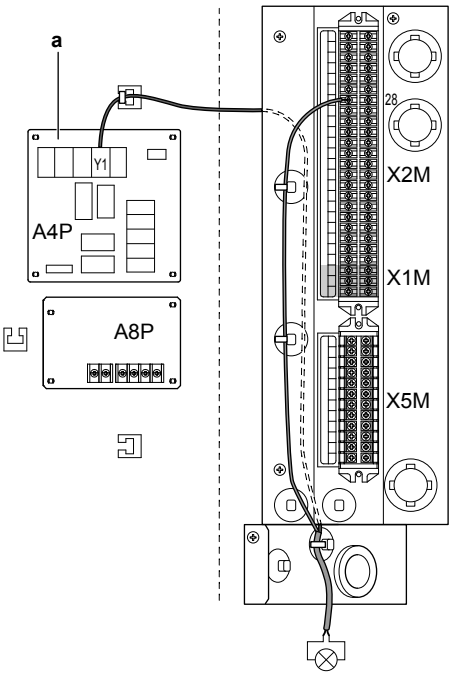
1 Connect the domestic hot water pump cable to the appropriate terminals as shown in the illustration below.



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

7.11.14 To connect the alarm output

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

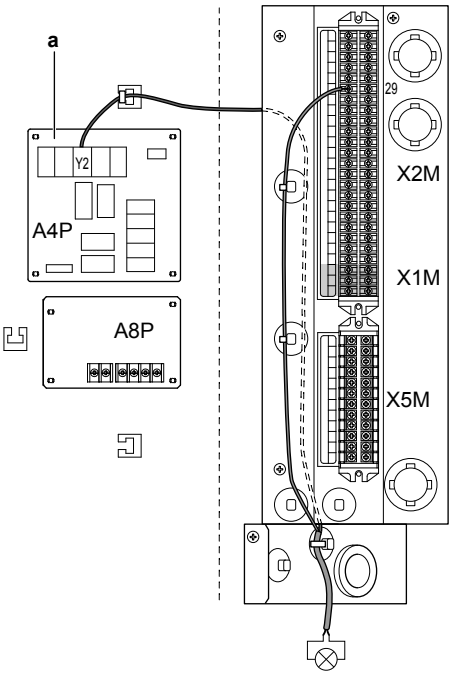


a Installation of EKRP1HB is required.

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

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

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

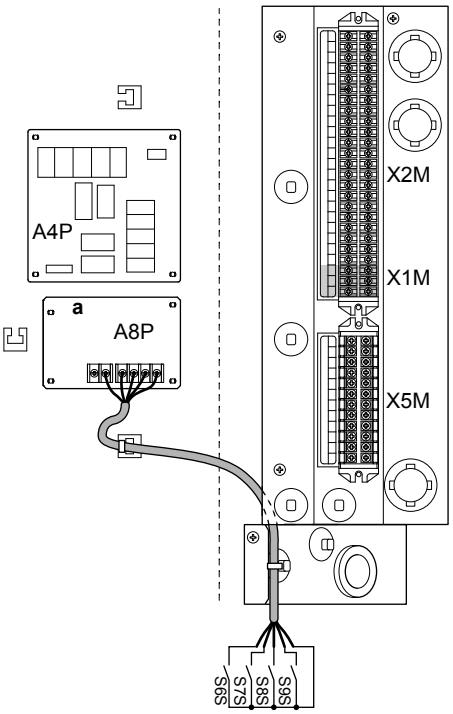


a Installation of EKRP1HB is required.

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

7.11.16 To connect the power consumption digital inputs

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

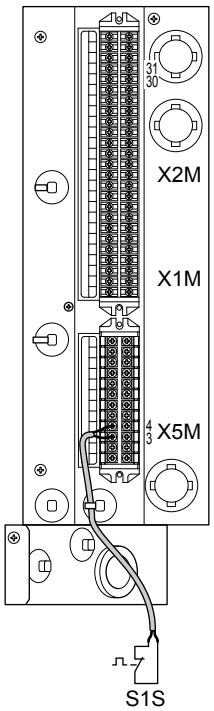


a Installation of EKRP1AHTA is required.

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

7.11.17 To connect the safety thermostat (normal closed contact)

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



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

NOTICE

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

In any case, to prevent unnecessary tripping of the safety thermostat, it is recommended that …

- … the safety thermostat is automatically resettable.
- … the safety thermostat has a maximum temperature variation rate of 2°C/min.
- … there is a minimum distance of 2 m between the safety thermostat and the motorised 3-way valve delivered with the domestic hot water tank.
- … the safety thermostat setpoint is at least 15°C greater than the maximum leaving water temperature setpoint.

INFORMATION

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

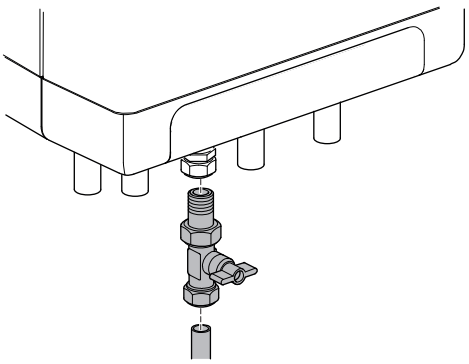
INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/3+4) as the safety thermostat. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat.

7.12 Connecting the gas piping

7.12.1 To connect the gas pipe

1 Connect a gas valve to the 15 mm gas connection of the gas boiler and connect it to the field pipe according to local regulations.



2 Install a gas mesh filter in the gas connection if the gas may be contaminated.

3 Connect the gas boiler to the gas supply.

4 Check all parts for gas leaks on a pressure of maximum 50 mbar (500 mm H_2O). There may be no stress on the gas supply connection.

7.13 Connecting the boiler to the flue gas system

WARNING

- Make sure that the socket connections of the flue and air supply duct materials are correctly sealed. Improper fastening of the flue and air supply duct can lead to hazardous situations or result in personal injury.
- Check all flue components for tightness.
- Do NOT use screws or parkers to mount the flue system as leakage can occur.
- Sealing rubbers can be negatively affected when grease is applied, use water instead.
- Do NOT mix any components, materials or ways of coupling from different manufacturers.

The gas boiler is designed ONLY for operation independent of room air.

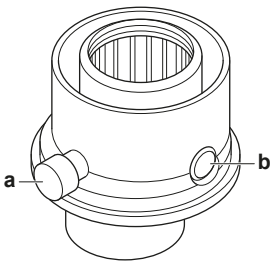
The gas boiler is delivered with a 60/100 concentric flue gas/air intake connection. Fit the concentric pipe thoughtfully in the adapter. The built-in gaskets ensure there is an air tight seal.

An adapter piece 80/125 concentric connection is also available. Fit the concentric pipe thoughtfully in the adapter. The built-in gaskets ensure there is an air tight seal.

INFORMATION

Carefully follow the instructions as described in the adapter set.

The concentric adapter piece is equipped with a measuring point for the gas exhaust and one for the air intake.



a Gas exhaust measuring point
b Air intake measuring point

The air supply and the flue pipe can also be connected separately as a dual pipe connection. An option to change the gas boiler from a concentric to a dual pipe connection is available.

NOTICE

When installing the gas exhaust take the installation of the outdoor unit into account. Make sure the exhaust gases are not sucked into the evaporator.

When installing the gas exhaust and the air intake, take into account the serviceability of the indoor unit. When the gas exhaust/air intake goes backwards over the indoor unit, the expansion vessel cannot be accessed and, if necessary, will have to be replaced outside the unit.

7.13.1 To change the gas boiler to 80/125 concentric connection

The concentric connection can be changed from Ø60/100 to Ø80/125 by an adapter set.

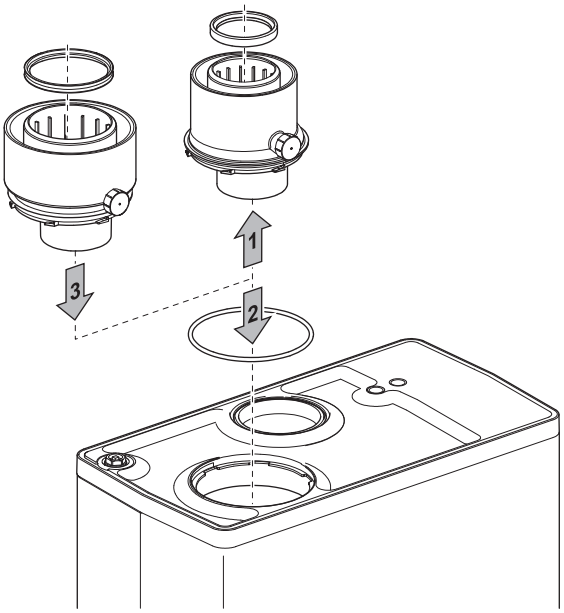
1 Remove the concentric pipe from the air supply and combustion gas pipe at the top of the gas boiler by turning counterclockwise.

2 Remove the O-ring from the concentric pipe and fit it around the flange of the concentric adapter Ø80/125.

3 Place the concentric adapter in the top of the appliance and turn it clockwise so that the measurement nipple points straight forward.

4 Fit the concentric pipe for the air supply and combustion gas flue into the adapter. The integral sealing ring ensures an airtight connection.

5 Check the connection of the internal flue pipe and the condensate collector. Make sure it is properly connected.



7.13.2 To change the 60/100 concentric connection to a dual pipe connection

The concentric connection can be changed from Ø60/100 to a dual pipe connection 2× Ø80 by an adapter set.

1 Remove the concentric pipe from the air supply and combustion gas pipe at the top of the gas boiler by turning counterclockwise.

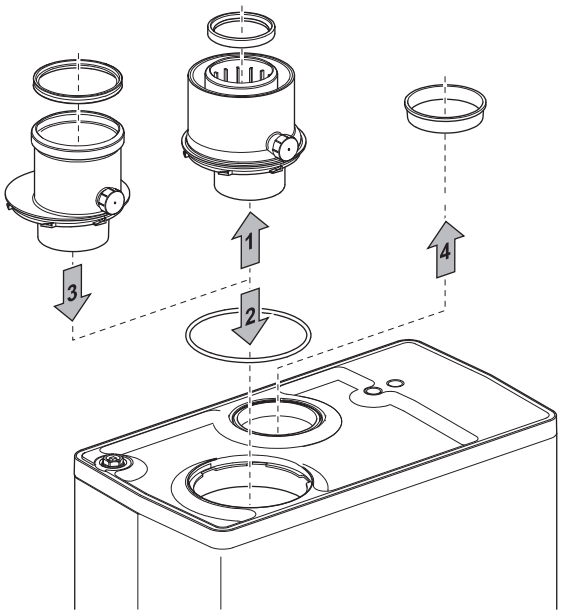
2 Remove the O-ring from the concentric pipe and fit it around the flange of the dual pipe adapter Ø80.

3 Place the combustion gas connection (Ø80) in the top of the appliance and turn it clockwise so that the measurement nipple points straight forward. The integral sealing ring ensures an airtight connection.

4 Remove the lid from the air supply connection. Make sure to properly connect the air intake. Room air dependent installation is NOT allowed.

5 Fit the pipes for the air supply and flue gas thoughtfully in the air inlet opening and flue gas adapter of the unit. The built-in gaskets ensure there is an air tight seal. Make sure that the connections are not mixed.

6 Check the connection of the internal flue pipe and the condensate collector. Make sure it is properly connected.



INFORMATION

Carefully follow the instructions as described in the adapter set.

7.13.3 Calculate the total piping length

When the resistance of the flue pipe and air supply pipe increase, the appliance power will decrease. The maximum permitted reduction in power is 5%.

The resistance of the air supply pipe and combustion gas flue depends on:

- the length,
- the diameter,
- all components (bends, elbows,…).

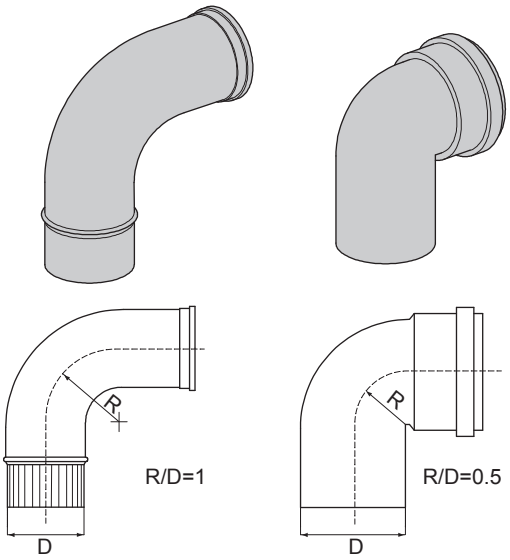
The total permitted pipe length of the air supply and the combustion gas flue is indicated for each appliance category.

Equivalent length for concentric installation (60/100)

	Length (m)
Bend 90°	1.5
Bend 45°	1

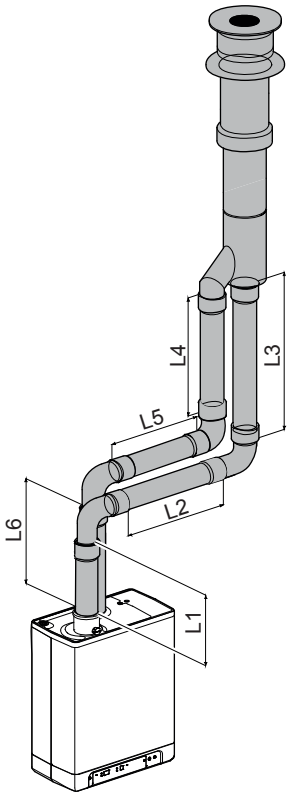
Equivalent length for dual pipe installation

		Length (m)
R/D=1	Bend 90°	2 m
	Bend 45°	1 m
R/D=0.5	Elbow 90°	4 m
	Elbow 45°	2 m



For a dual pipe connection, all defined lengths assume a diameter of 80 mm.

Sample calculation for dual pipe application



Pipe	Pipe length	Total pipe length
Flue pipe	L1+L2+L3+(2×2) m	13 m
Air supply	L4+L5+L6+(2×2) m	12 m

Total piping length = sum of the straight pipe lengths + sum of the equivalent pipe length of bends/elbows.

7.13.4 Appliance categories and pipe lengths

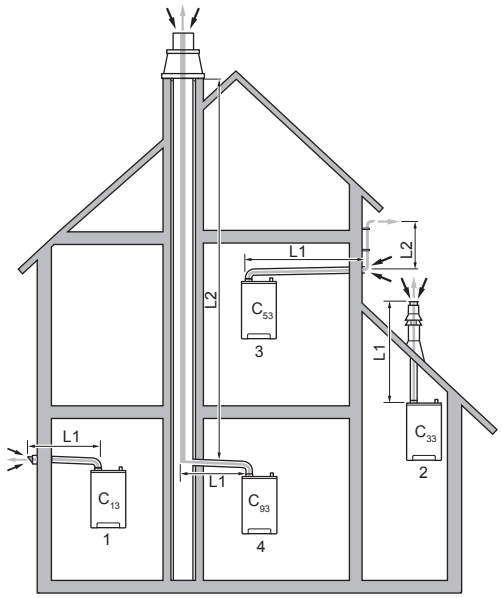
Following installation methods are supported by the manufacturer.

Single boiler installation

Please note that NOT all flue gas configurations as described below are allowed in all countries. Please follow the local and national regulations.

INFORMATION

All piping lengths in the tables below are maximum equivalent piping lengths.



INFORMATION

The above installation examples are just examples and can differ on some details.

Explanation of the flue systems		
Category in accordance with CE		
C_{13}	Horizontal flue system. Discharge in the outside wall. Inlet opening for the air supply is in the same pressure zone as the discharge.	For example: a wall terminal through the facede.
C_{33}	Vertical flue system. Flue gas discharge via the roof. Inlet opening for the air supply is in the same pressure zone as the discharge.	For example: a vertical roof terminal.
C_{43}	Joint air supply and flue gas discharge duct (CLV system). Twin pipe or concentric.	—
C_{53}	Separate air supply and separate flue gas discharge duct. Discharge into different pressure zones.	—
C_{63}	Free in the market available flue material with CE approval.	Do NOT mix flue materials from different suppliers.

Explanation of the flue systems		
Category in accordance with CE		
C_{83}	Joint air supply and flue gas discharge duct (CLV system). Discharging into different pressure zones.	Only as twin pipe system.
C_{93}	Air supply and flue gas discharge duct in shaft or ducted: concentric. Air supply from existing duct. Flue gas discharge via the roof. Air supply and flue gas discharge are in the same pressure zone.	Concentric flue system between the gas boiler and the duct.

The horizontal flue MUST be installed under a 3° fall towards the boiler (50 mm per metre) and MUST be supported with a minimum of 1 bracket at each meter length. Best recommended position of the bracket is just before the joint.

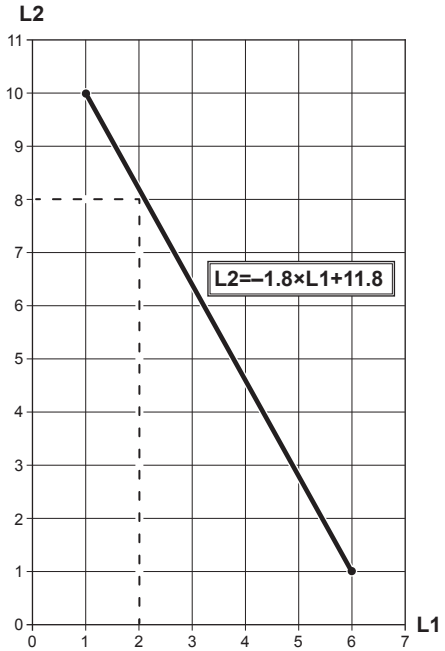
INFORMATION

Flexible flue gas lines may NOT be used in horizontal connection sections.

C_{13} (1)	C_{33} (2)	C_{13} (1)	C_{33} (2)
60/100	**60/100**	**Twin-80**	**Twin-80**
L1 (m)	**L1 (m)**	**L1 (m)**	**L1 (m)**
10	10	80	21

C_{13} (1)	C_{33} (2)	C_{93} (4)		C_{53} (3)	
80/125	**80/125**	**80/125**	**80**	**60/100**	**60**
L1 (m)	**L1 (m)**	**L1 (m)**	**L2 (m)**	**L1 (m)**	**L2 (m)**
29	29	10	25	6	1
				1	10

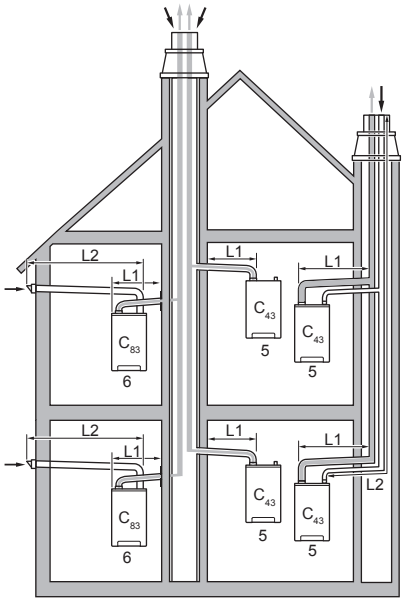
Special remark regarding C_{53}: The maximum lengths for L1 and L2 are related to each other. First determine the length of L1; then make use of the graph below to determine the maximum length of L2. For example: if the length of L1 is 2 m, L2 can maximally be 8 m long.



Multi-boiler installation

INFORMATION

All piping lengths in the tables below are maximum equivalent piping lengths.



The horizontal flue MUST be installed under a 3° fall towards the boiler (50 mm per metre) and MUST be supported with a minimum of 1 bracket at each meter length. Best recommended position of the bracket is just before the joint.

INFORMATION

Flexible flue gas lines may NOT be used in horizontal connection sections.

INFORMATION

The maximum lengths in the table below apply to each gas boiler separately.

C_{83} (6)	C_{43} (5)		
Twin-80	**60/100**	**80/125**	**Twin-80**
L1+L2 (m)	**L1 (m)**	**L1 (m)**	**L1+L2 (m)**
80	10	29	80

Special remark regarding C_{83}: Refer to the table below for the minimum diameters of the combined gas exhaust system.

Number of units	Minimum Ø
2	130
3	150
4	180
5	200
6	220
7	230
8	250
9	270
10	280
11	290
12	300

Special remark regarding C_{43}: Refer to the table below for the minimum diameters of the combined gas exhaust/air intake system.

Number of units	Concentric		Dual pipe	
	Gas exhaust	Air intake	Gas exhaust	Air intake
2	161	302	161	255
3	172	322	172	272
4	183	343	183	290
5	195	366	195	309
6	206	386	206	326
7	217	407	217	344
8	229	429	229	363
9	240	449	240	380
10	251	470	251	398
11	263	493	263	416
12	274	513	274	434
13	286	536	286	453
14	297	556	297	470
15	308	577	308	488
16	320	599	320	507
17	331	620	331	524
18	342	641	342	541
19	354	663	354	560
20	365	683	365	578

Special remark regarding C_{93}: The minimum inner dimensions of the chimney have to be 200×200 mm.

INFORMATION

In case of a C_{13} type flue gas system, a flue gas flap valve (EKFGF1A) is recommended.

7.13.5 Applicable materials

Materials for the installation of the gas exhaust and/or air intake MUST be bought according to the table below.

	D	BG	BA	IT	HR	HU	SK	CZ	SI	ES	PT	PL	GR	CY	IE	TR	CH	AT	MT	LT	LV	UK	FR	B
C_{13}	Daikin																							
C_{33}	Daikin																							
C_{43}	Daikin																							
C_{53}	Daikin																							
C_{63}	(a)											(b)	(a)	(b)								(a)		(b)
C_{83}	Daikin																							
C_{93}	Daikin																							

(a) Gas exhaust/air intake parts can be bought from the 3rd party. All parts purchased from an external supplier MUST comply with EN14471.

(b) NOT allowed.

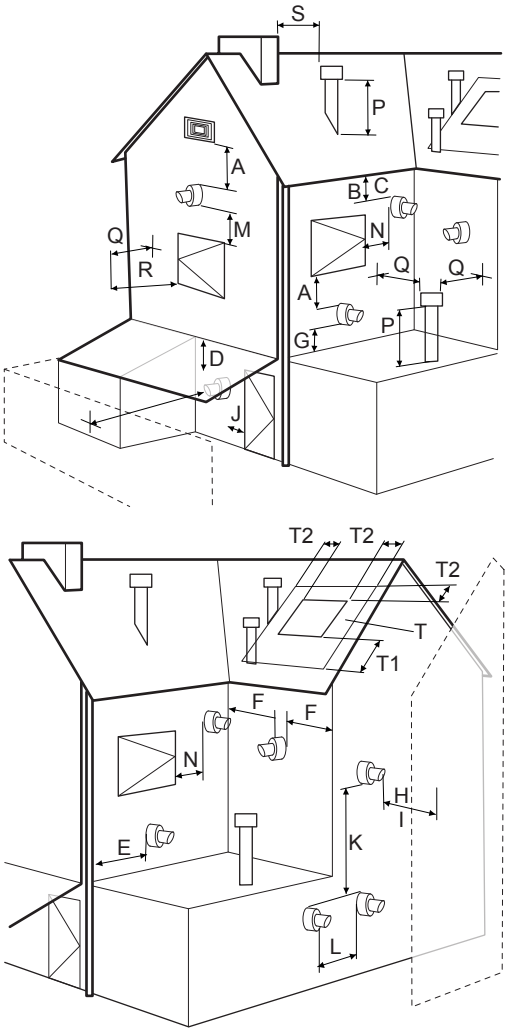
7.13.6 Flue pipe position

See the local and national regulations.

Especially for UK:

Only use flue products approved by the boiler manufacturer, which can be bought from the supplier of your boiler.

Refer to the field supplied accessories for all available accessories.



	Terminal position	Minimum distance (mm)
A	Directly below an open able window or other opening (e.g. air brick)	300
B	Below gutters, soil pipes or drain pipes	75
C	Below eaves	200
D	Below balconies or car front roofs	
E	From vertical drain pipes and soil pipe	150
F	From internal or external corners	300
G	Above ground, roof or balcony level	
H	From a surface facing a terminal	600
I	From a terminal discharging towards another terminal	1200
J	From an opening in a car port (e.g. door, window) into a dwelling	
K	Vertically from a terminal on the same wall	1500
L	Horizontally from a terminal on the same wall	300
M	Above an opening, air brick, opening windows, etc.	
N	Horizontally to an opening, air brick, opening windows, etc.	
P	Above roof level (to base terminal)	
Q	From an adjacent wall to flue	
R	From an adjacent opening window	1000

	Terminal position	Minimum distance (mm)
S	From another roof terminal	600
-	From an external boundary. Note: If the terminal is facing a boundary, it is recommended that an anti-plume kit be fitted.	
T T1 T2	Terminals adjacent to windows or openings on pitched and flat roofs: The flue should NOT penetrate this area.	 2000 600

NOTICE

The boiler manufacturer cannot be held responsible for atmospheric conditions when siting flue terminals.

CAUTION

Once the flue system has been installed and the appliance commissioned, the installer should observe the plume direction. Particular attention should be drawn to plume vapour reentering the gas boiler via the air intake. If this occurs, it is highly possible the flue is fitted with a negative pressure area and therefore a plume management kit MUST be fitted.

7.13.7 Insulation of the gas exhaust and air intake

Condensation may occur on the outside of the pipe material when the material temperature is low and the environment temperature is high with a high humidity. Use 10 mm damp-proof insulation material when there is a risk of condensation.

7.13.8 Fitting a horizontal flue system

The 60/100 mm horizontal flue system may be extended up to a maximum length as specified in the table indicating the maximum pipe lengths. Calculate the equivalent length according to the specifications in this manual.

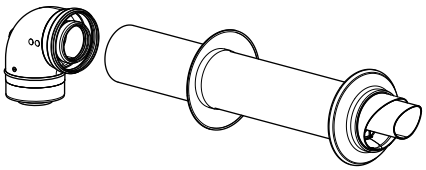
CAUTION

Read the installation manuals of the field supplied parts.

The horizontal flue MUST be installed under a 3° fall towards the boiler (50 mm per metre) and MUST be supported with a minimum of 1 bracket at each meter length. Best recommended position of the bracket is just before the joint.

INFORMATION

Flexible flue gas lines may NOT be used in horizontal connection sections.

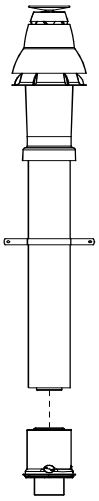


7.13.9 Fitting a vertical flue system

A vertical 60/100 mm flue kit is also available. By using additional components available from your boiler supplier, the kit can be extended up to a maximum length as specified in the table indicating the maximum pipe lengths (excluding the initial boiler connection).

CAUTION

Read the installation manuals of the field supplied parts.



7.13.10 Plume management kit

See the local and national regulations.

Especially for UK:

The plume management kit comprises of a 710 mm horizontal section elbow to connect the 500 mm vertical condensing tube, which has a horizontal or vertical terminal dependant on your requirements. The maximum length of the horizontal flue including the terminal but excluding the initial elbow from the boiler and 500 mm vertical condensing tube is 7 m.

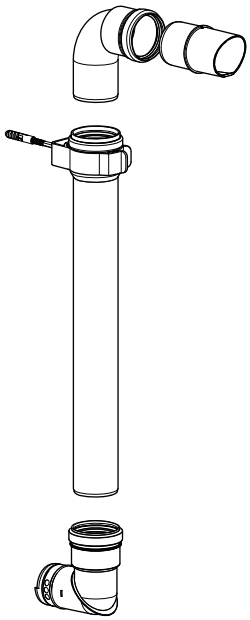
NOTICE

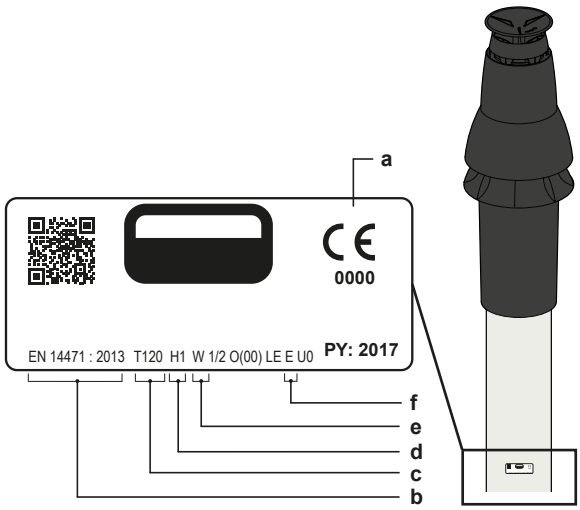
For each additional 90° elbow used the maximum flue length MUST be reduced by 1.5 m whilst the use of 2× 45° bends warrants a reduction of 2 m.

The horizontal part of the flue MUST be installed under a 3° fall towards the boiler (5 mm per m) and MUST be supported with a minimum of 1 bracket at each 1 m length. Best recommended position of the bracket is just before the joint.

CAUTION

- Sealing rings should ONLY be moisturized with water before use. Do NOT use soap or other detergents.
- When installing flues in voids, make sure that they are connected and fixed correctly. If in an existing situation a visual inspection is NOT possible, the boiler must NOT be commissioned and remain disconnected from the gas supply until suitable access has been realised.
- Make sure to follow the manufacturer's instructions regarding maximum length of the flue system, the appropriate flue material, correct jointing methods and the maximum distance between flue support.
- Make sure that all joints and seams are gastight and watertight.
- Make sure that the flue system has a uniform gradient back to the boiler.





a CE marking
b In case of metal, the standard must comply to EN 1856-2. In case of plastic, the standard must comply to EN 14471

The identification string needs to contain the following information:

c Temperature class: T120
d Pressure class: Pressure (P) or high pressure (Hi)
e Resistance class: Wet (W)
f Resistance class in case of fire: E

Dimensions C63 of the flue system (external dimensions in mm)

Parallel	Concentric 80/125		Concentric 60/100	
	Flue pipe	Air inlet	Flue pipe	Air inlet
Ø80	Ø80	Ø125	Ø60	Ø100
(+0.3 / –0.7)	(+0.3 / –0.7)	(+2 / –0)	(+0.3 / –0.7)	(+2 / –0)

WARNING

Flue materials of different markings must NOT be combined.

7.13.11 Flues in voids

Especially for UK:

The flue system must be connected in accordance with the manufacturers instructions before firing the boiler.

The term void includes ceiling voids, floor voids, purpose built enclosures, service risers, roof spaces or any other enclosure that will restrict access to inspect the flue.

To allow visual inspection, without reliance on devices such as endoscopes, cameras and mirrors, inspection hatches must be provided along the entire length of the flue.

Hatches must be a minimum of 300 mm×300 mm and positioned with the edge of the inspection hatch to 1.5 m of any joint and at changes of direction. Bends should be viewable from both directions where the inspection hatch cannot be positioned at the bend.

Where suitable access is not provided the appliance must NOT be commissioned and must be disconnected from the gas supply.

Additionally the entire flue and all flue seals must be installed in accordance with the requirements of BS5440:

- Check if the condensate trap is filled with water and correctly connected to the boiler.
- All flue joints are correctly made, unstressed and adequately supported.
- All parts of the flue can be visually inspected. Ensure suitable access where flue is positioned within voids.

7.13.12 Flue gas materials (C63) available on the market

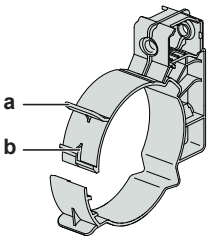
The properties of the combustion determine the choices for the flue material. The standards EN 1443 and EN 1856-1 provide the necessary information for choosing the flow material by means of a sticker including an identification string. The identification string contains the following information:

7.13.13 About securing the flue system

CAUTION

- These regulations are typical for both concentric and parallel flue systems.
- The flue system MUST be secured to a solid structure.
- The flue system should have a continuous fall back to the boiler (1.5°~3°). Wall terminals MUST be installed levelled.
- Only use accompanying brackets.
- Every elbow MUST be secured by using the bracket. Exception at connecting on boiler: if the length of the pipes before and after the first elbow are ≤250 mm, the second element after the first elbow has to contain a bracket. The bracket MUST be positioned on the elbow.
- Every extension MUST be secured per meter with a bracket. This bracket MUST not be clamped around the pipe ensuring free movement of the pipe.
- Make sure that the bracket is locked into the correct position depending on the position of the bracket on the pipe or elbow.
- Do NOT mix flue parts or clamps of different suppliers.

Which fixation position to use



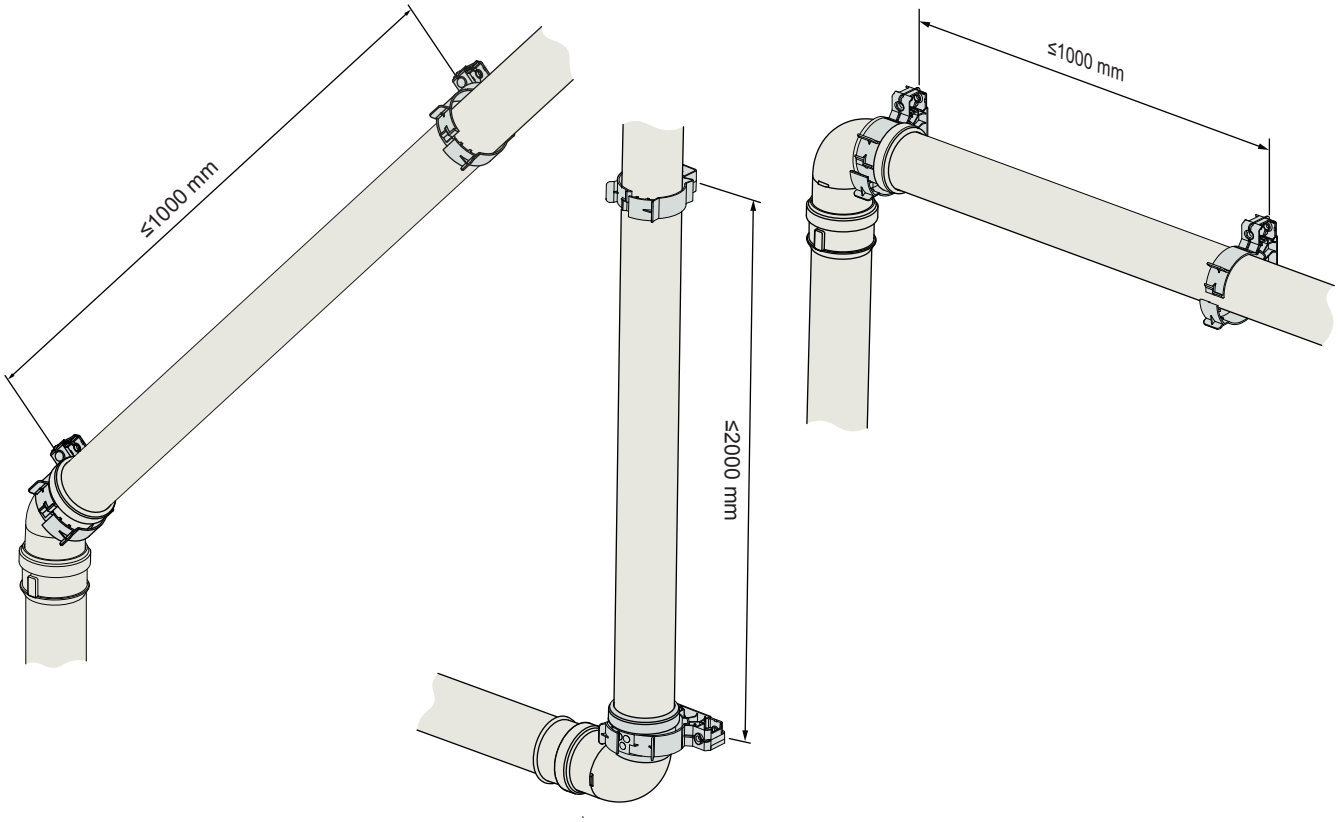
a In case to fix on the pipe

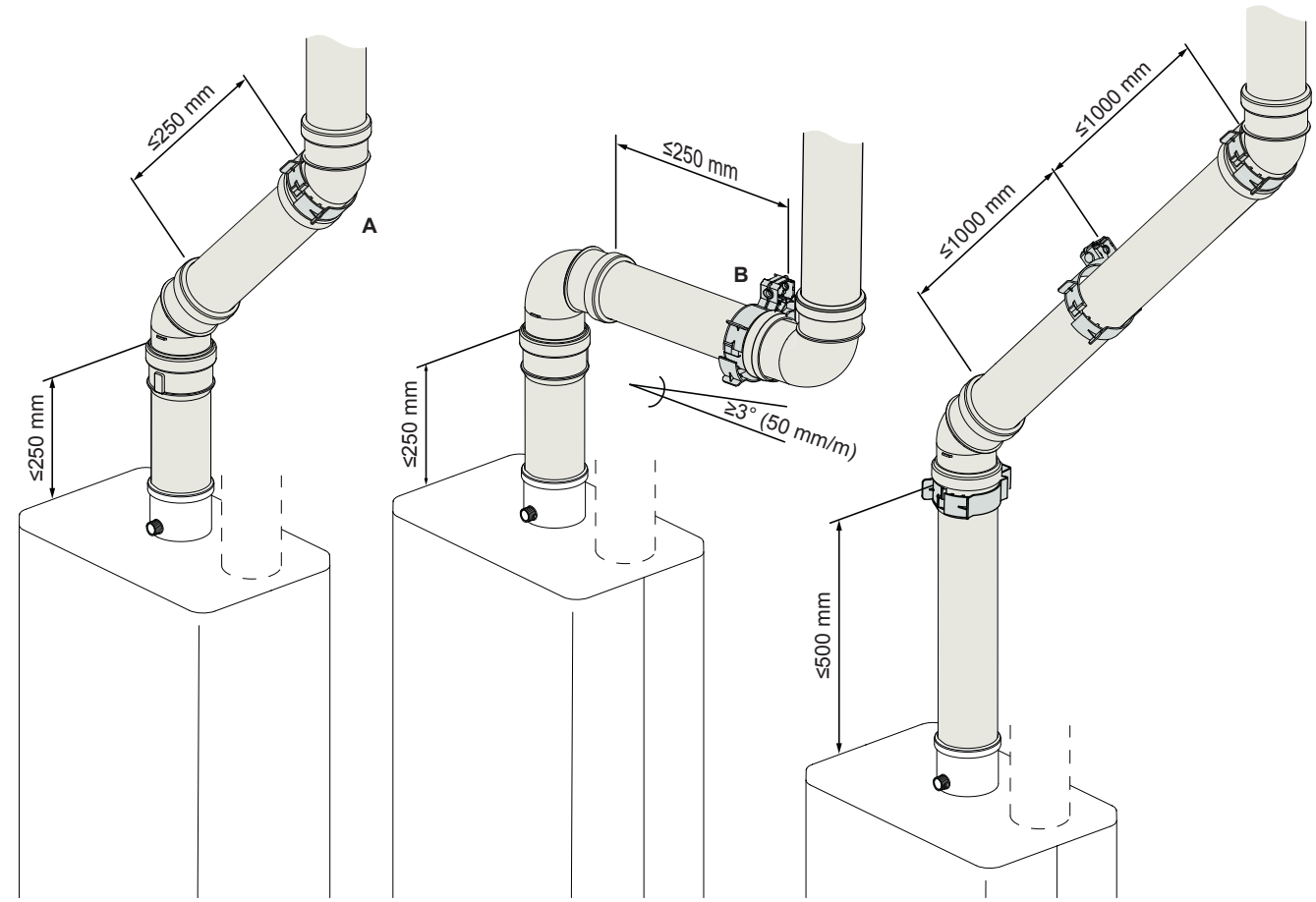
b In case to fix on the sleeve

Maximum distance between clamps

Vertical position of pipe	Other position of pipe
2000 mm	1000 mm

- Divide the length between the brackets evenly.
- Every system MUST contain at least 1 bracket.
- Position the first clamp at a maximum of 500 mm from the gasboiler.



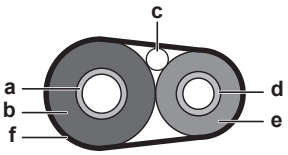


A Second clamp after the second elbow
B First clamp after the second elbow

7.14 Finishing the outdoor unit installation

7.14.1 To finish the outdoor unit installation

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



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

2 Install the service cover.

7.14.2 To close the outdoor unit

1 Close the switch box cover.

2 Close the service cover.

NOTICE

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

7.15 Finishing the indoor unit installation

7.15.1 To close the indoor unit

1 Close the switch box.

2 Mount the side plate to the unit.

3 Mount the top plate.

NOTICE

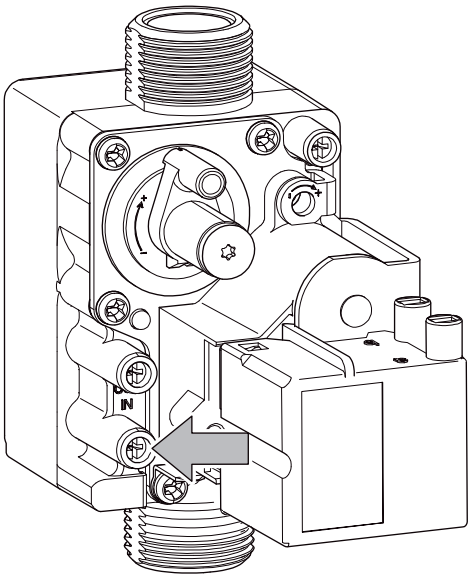
When closing the indoor unit cover, make sure that the tightening torque does NOT exceed 4.1 N•m.

Before doing the configuration of the heat pump module, make sure that the hybrid module and gas boiler are installed correctly.

7.16 Finishing the gas boiler installation

7.16.1 To purge the gas supply

1 Turn once the screw counterclockwise.



Result: Gas supply will purge air.

2 Check all connections for leakage.

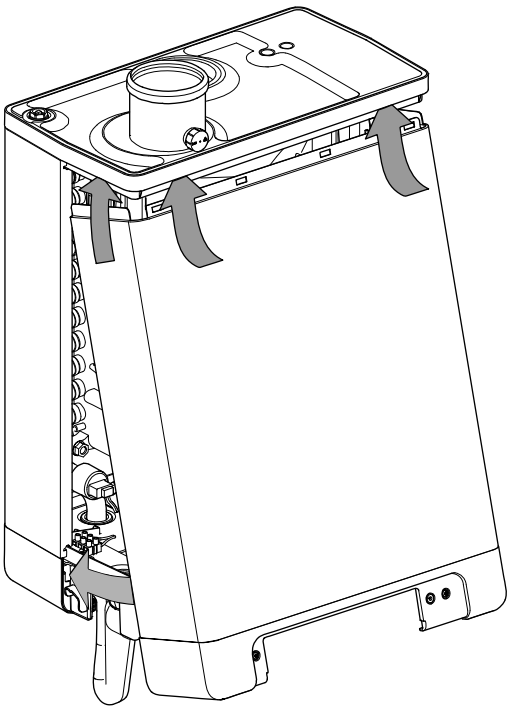
3 Check the gas supply pressure.

INFORMATION

Make sure the working inlet pressure does NOT interfere with other gas appliances installed.

7.16.2 To close the gas boiler

1 Hook the top of the front panel into the top of the gas boiler.

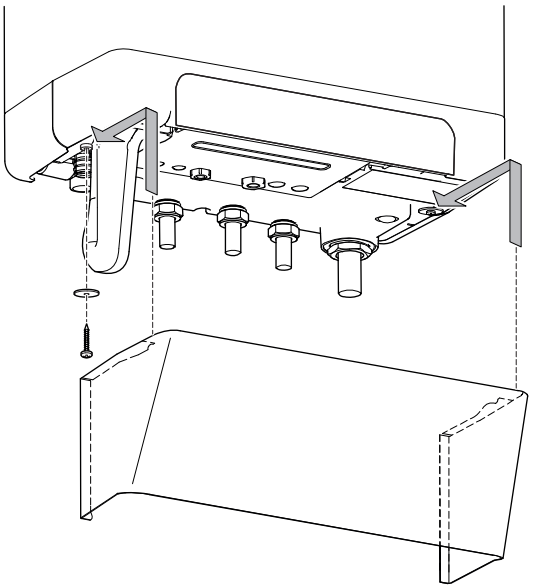


2 Tilt the bottom side of the front panel towards the gas boiler.

3 Screw both screws of the cover.

4 Close the display cover.

7.16.3 To install the cover plate



8 Configuration

8.1 Indoor unit

8.1.1 Overview: Configuration

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

Why

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

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

How

You can configure the system using two different methods.

Method	Description
Configuring via the user interface	**First time – Quick wizard.** When you turn ON the user interface for the first time (via the indoor unit), a quick wizard starts to help you configure the system. **Afterwards.** If necessary, you can make changes to the configuration afterwards.
Configuring via the PC configurator	You can prepare the configuration off-site on PC and afterwards upload the configuration to the system with the PC configurator. See also: "To connect the PC cable to the switch box" on page 55.

INFORMATION

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

Accessing settings – Legend for tables

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

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

See also:

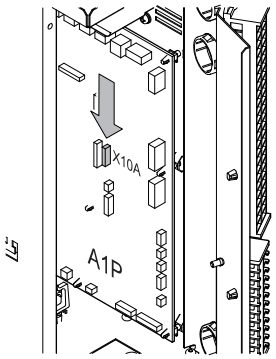
- "To access the installer settings" on page 55
- "8.1.5 Menu structure: Overview installer settings" on page 78

To connect the PC cable to the switch box

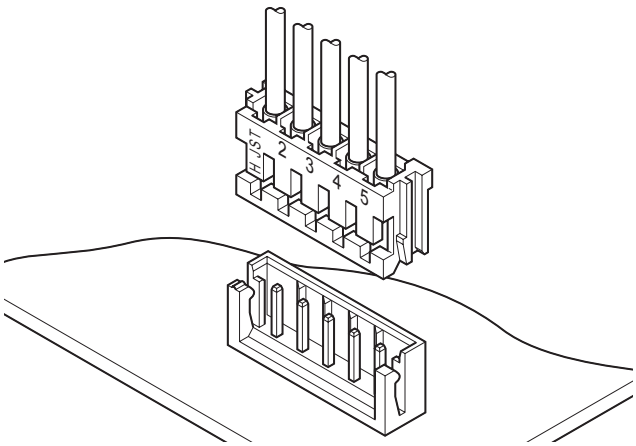
Prerequisite: The EKPCCAB kit is required.

1 Connect the cable with USB connection to your PC.

2 Connect the plug of the cable to X10A on A1P of the switch box of the indoor unit.



3 Pay special attention to the position of the plug!



To access the most used commands

To access the installer settings

1 Set the user permission level to Installer.

2 Go to [A]: ☰ > Installer settings.

To access the overview settings

1 Set the user permission level to Installer.

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

To set the user permission level to Installer

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

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

3 Press ☰ for more than 4 seconds.

Result: 🔧 is displayed on the home pages.

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

To set the user permission level to Advanced end user

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

2 Press ⓘ for more than 4 seconds.

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

To set the user permission level to End user

1 Press ⓘ for more than 4 seconds.

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

To modify an overview setting

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

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

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

INFORMATION

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

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

Overview settings				
		01		
00	01	15	02	03
04	05		06	07
08	09		0a	0b
0c	0d		0e	0f
OK Confirm		▲▼ Adjust		◀▶ Scroll

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

Overview settings				
		01		
00	01	15	02	03
04	05		06	07
08	09		0a	0b
0c	0d		0e	0f
OK Confirm		▲▼ Adjust		◀▶ Scroll

Result: The value to be modified is now highlighted.

4 Modify the value by using the ▲ and ▼ button.

Overview settings				
		01		
00	01	20	02	03
04	05		06	07
08	09		0a	0b
0c	0d		0e	0f
OK Confirm		▲▼ Adjust		◀▶ Scroll

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

6 Push OK to confirm the modification of the parameter.

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

Installer settings	
The system will restart.	
OK	Cancel
OK Confirm	◀▶ Adjust

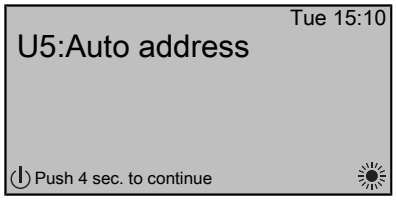
Result: The system will restart.

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

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

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

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



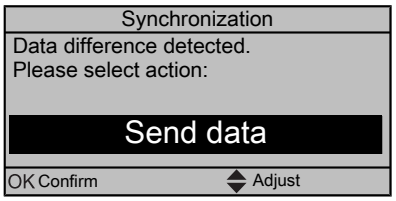
2 Push ⏻ for 4 seconds on the user interface on which you want to proceed to the quick wizard. This user interface is now the main user interface.

INFORMATION

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

3 The quick wizard will guide you.

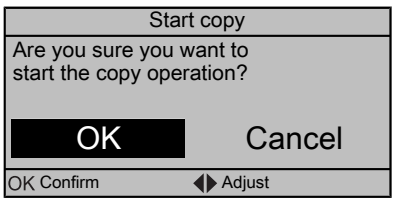
4 For proper operation of the system, the local data on the two user interfaces must be the same. If this is NOT the case, both user interfaces will display:



5 Select the required action:

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

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



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

INFORMATION

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

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

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

See "To copy the system settings from the first to the second user interface" on page 56.

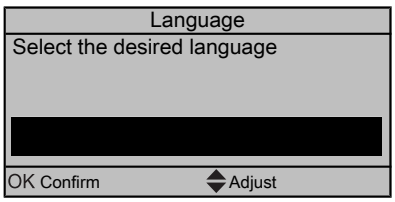
Quick wizard: Set the system layout after first power ON

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

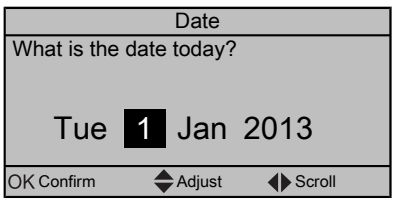
- language,
- date,
- time,
- system layout.

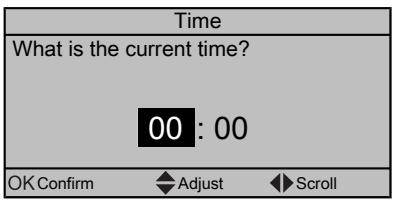
By confirming the system layout, you can proceed with the installation and commissioning of the system.

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

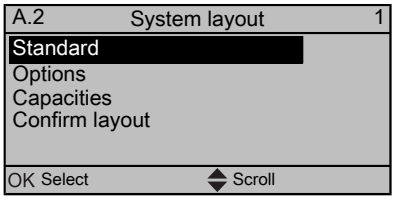


2 Set the current date and time.

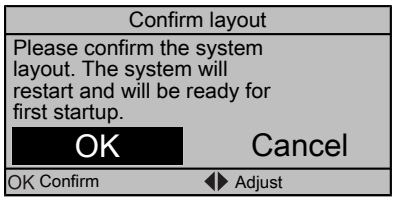




3 Set the system layout settings: Standard, Options, Capacities. For more details, see "8.1.2 Basic configuration" on page 57.



4 After configuration, select Confirm layout and press OK.



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

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

8.1.2 Basic configuration

Quick wizard: Language / time and date

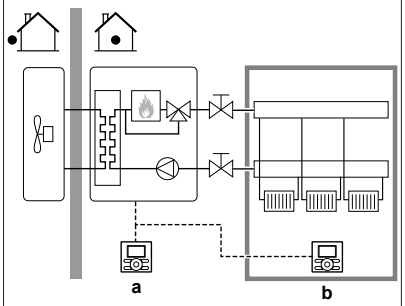
#	Code	Description
[A.1]	N/A	Language
[1]	N/A	Time and date

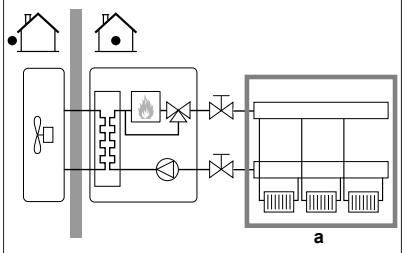
Quick wizard: Standard

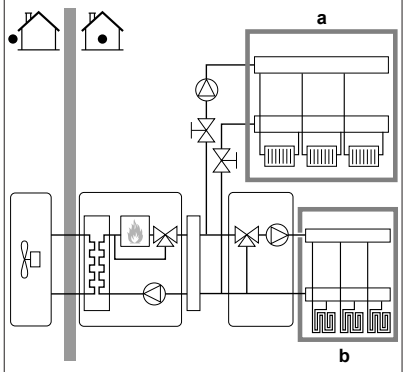
Space heating/cooling settings

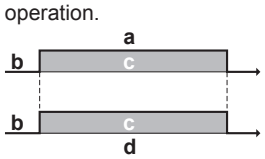
The system can heat up or cool down a space. Depending on the type of application, the space heating/cooling settings must be made accordingly.

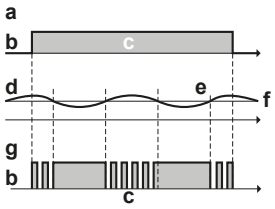
#	Code	Description
[A.2.1.7]	[C-07]	Unit temperature control: ▪ 0 (LWT control): Unit operation is decided based on the leaving water temperature regardless the actual room temperature and/or heating or cooling demand of the room. ▪ 1 (Ext RT control): Unit operation is decided by the external thermostat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

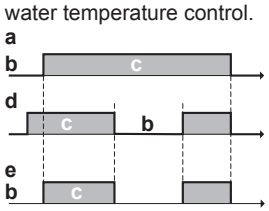
#	Code	Description
[A.2.1.B]	N/A	Only if there are 2 user interfaces (1 installed in the room, 1 installed at the indoor unit):  ▪ a: At unit ▪ b: In room as room thermostat User interface location: ▪ At unit: this user interface is used to control the unit. The other user interface is automatically set to In room. ▪ In room (default): this user interface acts as room thermostat. The other user interface is automatically set to At unit

#	Code	Description
[A.2.1.8]	[7-02]	The system can supply leaving water to up to 2 water temperature zones. During configuration, the number of water zones must be set. Number of LWT zones: ▪ 0 (1 LWT zone)(default): Only 1 leaving water temperature zone. This zone is called the main leaving water temperature zone.  ▪ a: Main LWT zone continued >>

#	Code	Description
[A.2.1.8]	[7-02]	<< continuation ▪ 1 (2 LWT zones): 2 leaving water temperature zones. The zone with the lowest leaving water temperature (in heating) is called the main leaving water temperature zone. The zone with the highest leaving water temperature (in heating) is called the additional leaving water temperature zone. In practice, the main leaving water temperature zone consists of the higher load heat emitters and a mixing station is installed to achieve the desired leaving water temperature.  ▪ a: Add LWT zone ▪ b: Main LWT zone

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

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

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

Quick wizard: Options

Domestic hot water settings

Following settings must be made accordingly.

#	Code	Description
[A.2.2.1]	[E-05]	Domestic hot water preparation: ▪ 0 (No): NOT possible ▪ 1 (Yes)(default): Possible

#	Code	Description
[A.2.2.2]	[E-06]	Domestic hot water tank installed in the system? ▪ 0 (No)(default): the domestic hot water will be produced by the boiler when there is a demand. ▪ 1 (Yes): the domestic hot water will be produced by the tank. **Note:** For Switzerland, setting MUST be "1".
[A.2.2.3]	[E-07]	What kind of domestic hot water tank is installed? ▪ 4 (Type 5). EKHWP. ▪ 6 (Type 7) Third-party tank. Range: 0~6.
[A.2.2.A]	[D-02]	In case a tank is installed, the indoor unit offers the possibility to connect a field supplied domestic hot water pump (On/OFF type). Depending on the installation and configuration on the user interface, we distinguish its functionality. Not applicable for Switzerland. In case of [E-06]=0 ▪ 0 (No)(default): NOT installed ▪ 1 (Secondary rtrn): Installed for instant hot water when hot water is tapped. The end-user sets the operation timing (weekly schedule time of the domestic hot water pump when it should run. Control of this pump is possible through the indoor unit. The target temperature of the recirculation function is a minimum of 45°C, or the domestic hot water setpoint set in the domestic hot water home screen (provided it is >45°C). In case of [E-06]=1 ▪ 0 (No)(default): NOT installed ▪ 1 (Secondary rtrn): Installed for instant hot water when water is tapped. The end-user sets the operation timing (weekly schedule time) of the domestic hot water pump when it should run. Control of this pump is possible through the indoor unit. ▪ 2 (Disinf. shunt): Installed for disinfection. It runs when the disinfection function of the domestic hot water function is running. No further settings are needed. See also illustrations below.

INFORMATION

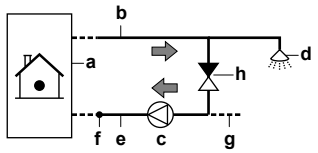
The tank can be heated via the gas boiler or heat pump.

NOTICE

If a domestic hot water pump for instant hot water is present in the system ([D-02]=1), scaling of the boiler heat exchanger can occur faster due to more frequent domestic hot water operation.

In case of [E-06]=0 (not applicable for Switzerland)

Domestic hot water pump installed for instant hot water

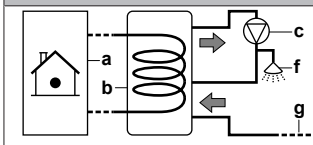


a Indoor unit
b Hot water connection on boiler
c Domestic hot water pump (field supply)
d Shower (field supply)
e Inlet on boiler
f Recirculation thermistor (EKTH2) (field supply)
g Water supply
h Non-return valve (field supply)

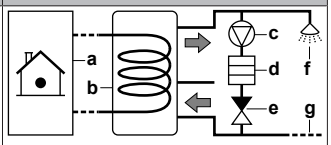
In case of [E-06]=1

Domestic hot water pump installed for…

Instant hot water



Disinfection



a Indoor unit
b Tank
c Domestic hot water pump (field supply)
d Heater element (field supply)
e Non-return valve (field supply)
f Shower (field supply)
g Cold water

INFORMATION

The correct domestic hot water default settings become only applicable when domestic hot water operation is activated ([E-05]=1).

Thermostats and external sensors

NOTICE

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

#	Code	Description
[A.2.2.4]	[C-05]	Contact type main In external room thermostat control, the contact type of the optional room thermostat or heat pump convector for the main leaving water temperature zone must be set. ▪ 1 (Thermo ON/OFF): The connected external room thermostat or heat pump convector sends the heating or cooling demand by the same signal as it is connected to only 1 digital input (preserved for the main leaving water temperature zone) on the indoor unit (X2M/1). Select this value in case of a connection to the heat pump convector (FWXV). ▪ 2 (H/C request)(default): The connected external room thermostat sends separate heating and cooling demand and is therefore connected to the 2 digital input (preserved for the main leaving water temperature zone) on the indoor unit (X2M/1 and 2). Select this value in case of connection with the wired (EKRTWA) or wireless (EKRTR1) room thermostat.
[A.2.2.5]	[C-06]	Contact type add. In external room thermostat control with 2 leaving water temperature zones, the type of the optional room thermostat for the additional leaving water temperature zone must be set. ▪ 1 (Thermo ON/OFF): See Contact type main. Connected on the indoor unit (X2M/1a). ▪ 2 (H/C request)(default): See Contact type main. Connected on the indoor unit (X2M/1a and 2a).
[A.2.2.B]	[C-08]	External sensor When an optional external ambient sensor is connected, the type of the sensor must be set. ▪ 0 (No)(default): NOT installed. The thermistor in the user interface and in the outdoor unit are used for measurement. ▪ 1 (Outdoor sensor): Installed. The outdoor sensor will be used to measure the outdoor ambient temperature. **Remark:** For some functionality, the temperature sensor in the outdoor unit is still used. ▪ 2 (Room sensor): Installed. The temperature sensor in the user interface is NOT used anymore. **Remark:** This value has only meaning in room thermostat control.

Digital I/O PCB

Modification of these settings is only needed when the optional digital I/O PCB is installed. The digital I/O PCB has multiple functionality which need to be configured.

#	Code	Description
[A.2.2.6.2]	[D-07]	Solar kit Indicates if the domestic hot water tank is also heated by thermal solar panels. ▪ 0 (No)(default): NOT installed. ▪ 1 (Yes): Installed. The domestic hot water tank can –besides by the boiler– also be heated by thermal solar panels. Set this value if thermal solar panels are installed.
[A.2.2.6.3]	[C-09]	Alarm output Indicates the logic of the alarm output on the digital I/O PCB during malfunctioning. ▪ 0 (Normally open): The alarm output will be powered when an alarm occurs. By setting this value, a distinction is made between the detection of an alarm, and the detection of a power failure. ▪ 1 (Normally closed): The alarm output will NOT be powered when an alarm occurs. See also table below (Alarm output logic).

Alarm output logic

[C-09]	Alarm	No alarm	No power supply to unit
0 (default)	Closed output	Open output	Open output
1	Open output	Closed output	

Demand PCB

The demand PCB is used to enable the power consumption control by digital inputs.

#	Code	Description
[A.2.2.7]	[D-04]	Demand PCB Indicates if the optional demand PCB is installed. ▪ 0 (No)(default) ▪ 1 (Pwr consmp ctrl)

Energy metering

When energy metering is performed by the use of an external power or gas meter (field supply), configure the settings as described below. Select the pulse frequency output of each meter in accordance with the meter specifications. It is possible to connect a power meter and a gas meter with different pulse frequencies. When no power meter or gas meter is used, select No to indicate the corresponding pulse input is NOT used.

#	Code	Description
[A.2.2.8]	[D-08]	Optional external kWh meter 1: ▪ 0 (No)(default): NOT installed ▪ 1: Installed (0.1 pulse/kWh) ▪ 2: Installed (1 pulse/kWh) ▪ 3: Installed (10 pulse/kWh) ▪ 4: Installed (100 pulse/kWh) ▪ 5: Installed (1000 pulse/kWh)

#	Code	Description
[A.2.2.C]	[D-0A]	Optional gas meter: ▪ 0 (No)(default): NOT installed ▪ 1: Installed (1 pulse/m³) ▪ 2: Installed (10 pulse/m³) ▪ 3: Installed (100 pulse/m³)

Savings mode

The user can choose whether switching between operation modes is either economically or ecologically optimised. Set to Economical, the system will in all operating conditions select the energy source (gas or electricity) based on energy prices, resulting in a minimisation of energy costs. Set to Ecological, the heat source will be selected based on ecological parameters, resulting in a minimisation of primary energy consumption.

#	Code	Description
[A.6.7]	[7-04]	Defines whether switching between operation modes is either economically or ecologically optimised. ▪ 0 (Economical)(default): reduction of energy costs ▪ 1 (Ecological): reduction of primary energy consumption, but not necessarily energy costs

Primary energy factor

The primary energy factor indicates how many units of primary energy (natural gas, crude oil, or other fossil fuels, prior to undergoing any human-made conversions or transformations) are needed to obtain 1 unit of a certain (secondary) energy source, such as electricity. The primary energy factor for natural gas is 1. Assuming an average electricity production efficiency (including transportation losses) of 40%, the primary energy factor for electricity equals 2.5 (=1/0.40). The primary energy factor allows you to compare 2 different energy sources. In this case, the primary energy use of the heat pump is compared to the natural gas use of the gas boiler.

#	Code	Description
N/A	[7-03]	Compares the primary energy use of the heat pump with that of the boiler. Range: 0~6, step: 0.1 (default: 2.5)

INFORMATION

- The primary energy factor can always be set, but is only used in case the savings mode is set to Ecological.
- To set electricity price values, do NOT use overview settings. Set them in the menu structure instead ([7.4.5.1], [7.4.5.2], and [7.4.5.3]). For more information on how to set the energy prices, see the operation manual and the user reference guide.

Space heating/cooling control

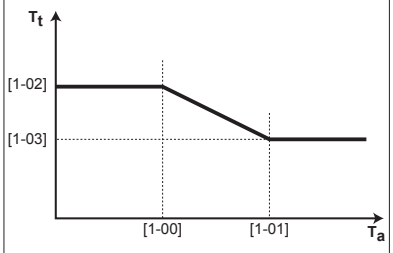
The basic required settings in order to configure the space heating/cooling of your system are described in this chapter. The weather-dependent installer settings define the parameters for the weather-dependent operation of the unit. When weather-dependent operation is active, the water temperature is determined automatically depending on the outdoor temperature. Low outdoor temperatures will result in warmer water and vice versa. During weather-dependent operation, the user has the possibility to shift up or down the target water temperature by a maximum of 10°C.

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

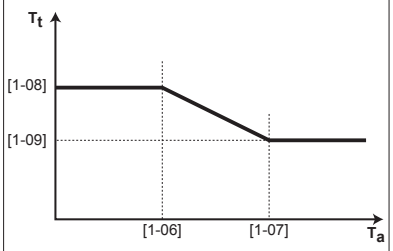
Leaving water temperature: Main zone

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

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

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

#	Code	Description
[7.7.1.1]	[1-00] [1-01] [1-02] [1-03]	<< continuation ▪ [1-00]: Low outdoor ambient temperature. –40°C~+5°C (default: –10°C) ▪ [1-01]: High outdoor ambient temperature. 10°C~25°C (default: 15°C) ▪ [1-02]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. [9-01]°C~[9-00]°C (default: 60°C). **Note:** This value should be higher than [1-03] as for low outdoor temperatures warmer water is required. ▪ [1-03]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. [9-01]°C~min(45, [9-00])°C (default: 35°C). **Note:** This value should be lower than [1-02] as for high outdoor temperatures less warm water is required.

#	Code	Description
[7.7.1.2]	[1-06] [1-07] [1-08] [1-09]	Only for EHYHBX08. Set weather-dependent cooling:  ▪ T_t: Target leaving water temperature (main) ▪ T_a: Outdoor temperature continued >>

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

INFORMATION

In order to optimise comfort as well as running costs, it is recommended to choose weather-dependent setpoint operation. Set the settings carefully; they have significant influence on heat pump as well as boiler operation. Too high leaving water temperature can result in constant boiler operation.

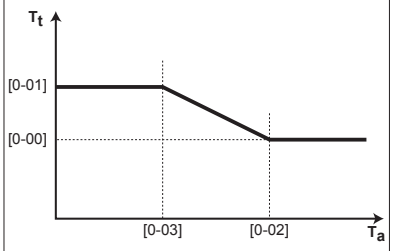
Leaving water temperature: Additional zone

Only applicable if 2 leaving water temperature zones are present.

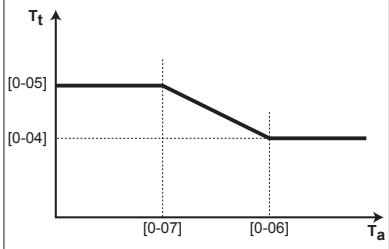
#	Code	Description

[A.3.1.2.1]	N/A	LWT setpoint mode:
		▪ Fixed: The desired leaving water temperature is:
		  ▪ NOT weather-dependent (i.e. does NOT depend on the outdoor ambient temperature)
		  ▪ fixed in time (i.e., NOT scheduled)
		▪ Weather dep. (default): The desired leaving water temperature is:
		  ▪ weather-dependent (i.e. depends on the outdoor ambient temperature)
		  ▪ fixed in time (i.e., NOT scheduled)
		continued >>

#	Code	Description
[A.3.1.2.1]	N/A	<< continuation ▪ Fixed/scheduled: The desired leaving water temperature is: ▪ NOT weather-dependent (i.e., does NOT depend on the outdoor ambient temperature) ▪ according a schedule. The scheduled actions are On or OFF. **Remark:** This value can only be set in leaving water temperature control. ▪ WD/scheduled: The desired leaving water temperature is: ▪ weather-dependent (i.e., does depend on the outdoor ambient temperature) ▪ according a schedule. The scheduled actions are On or OFF. **Remark:** This value can only be set in leaving water temperature control.

#	Code	Description
[7.7.2.1]	[0-00] [0-01] [0-02] [0-03]	Set weather-dependent heating:  ▪ T_t: Target leaving water temperature (additional) ▪ T_a: Outdoor temperature continued >>

#	Code	Description
[7.7.2.1]	[0-00] [0-01] [0-02] [0-03]	<< continuation ▪ [0-03]: Low outdoor ambient temperature. –40°C~+5°C (default: –10°C) ▪ [0-02]: High outdoor ambient temperature. 10°C~25°C (default: 15°C) ▪ [0-01]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. [9-05]°C~[9-06]°C (default: 60°C). **Note:** This value should be higher than [0-00] as for low outdoor temperatures warmer water is required. ▪ [0-00]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. [9-05]°C~min(45, [9-06])°C (default: 35°C). **Note:** This value should be lower than [0-01] as for high outdoor temperatures less warm water is required.

#	Code	Description
[7.7.2.2]	[0-04] [0-05] [0-06] [0-07]	Only for EHYHBX08. Set weather-dependent cooling:  ▪ T_t: Target leaving water temperature (additional) ▪ T_a: Outdoor temperature continued >>

#	Code	Description
[7.7.2.2]	[0-04] [0-05] [0-06] [0-07]	<< continuation ▪ [0-07]: Low outdoor ambient temperature. 10°C~25°C (default: 20°C) ▪ [0-06]: High outdoor ambient temperature. 25°C~43°C (default: 35°C) ▪ [0-05]: Desired leaving water temperature when the outdoor temperature equals or drops below the low ambient temperature. Between minimum and maximum leaving water temperature [9-07]°C~[9-08]°C (default: 12°C). **Note:** This value should be higher than [0-04] as for low outdoor temperatures less cold water suffices. ▪ [0-04]: Desired leaving water temperature when the outdoor temperature equals or rises above the high ambient temperature. Between minimum and maximum leaving water temperature [9-07]°C~[9-08]°C (default: 8°C). **Note:** This value should be lower than [0-05] as for high outdoor temperatures colder water is required.

Pump control: Flow target

The hybrid module is designed to operate with a fixed flow. This means that the pump is controlled to work at a flow target set by the installer. The installer can set the flow target for:

- heat pump only operation,
- hybrid operation,
- gas boiler only operation.

#	Code	Description
N/A	[8-0B]	Target flow rate during heat pump operation. The default value is set to deliver the nominal capacity of the heat pump with a ΔT over the emitter of 5°C. Decrease this value if the room temperature is constantly higher than the desired room temperature. Increase this value if you feel discomfort in heat pump only operation. Range: 10~20 l/min ▪ For EHYHBH05: 13 l/min (default) ▪ For EHYHBH/X08: 15 l/min (default) The default values have been set to optimise comfort and performance. Take care when changing them.
N/A	[8-0C]	Target flow rate during hybrid operation. The default value is chosen the same as the target flow rate during boiler operation. Decrease this value if the room temperature is constantly higher than the desired room temperature. Increase this value if you feel discomfort in hybrid operation. Range: 10~20 l/min ▪ For EHYHBH05: 13 l/min (default) ▪ For EHYHBH/X08: 15 l/min (default) The default values have been set to optimise comfort and performance. Take care when changing them.
N/A	[8-0D]	Target flow rate during gas boiler operation. The default value is chosen to deliver the nominal capacity of the gas boiler with a ΔT over the emitter of 20°C. Decrease this value if the room temperature is constantly higher than the desired room temperature. Increase this value if you feel discomfort in gas boiler only operation. 10~20 l/min (default: 16 l/min) The default value has been set to optimise comfort and performance. Take care when changing them.

Leaving water temperature: Modulation

Modulation lowers or raises the desired leaving water temperature in function of the desired room temperature and the difference between this temperature and the actual room temperature. This results in:

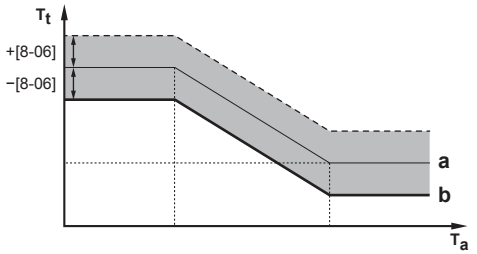
- stable room temperatures exactly matching the desired temperature (high comfort level),
- less On/OFF cycles (low noise level, high comfort and efficiency levels)
- as low as possible leaving water temperatures (high efficiency).

This function is only applicable in case of room thermostat control and is used to calculate the leaving water temperature. After activation, the leaving water temperature can only be read on the user interface, but not changed. Turn OFF modulation to change it. The leaving water temperature can either be a fixed setpoint, or an offset in case of weather-dependent setpoint.

#	Code	Description
[A.3.1.1.5]	[8-05]	Modulated LWT: ▪ No: disabled. **Note:** The desired leaving water temperature needs to be set on the user interface. ▪ Yes (default): enabled. **Note:** The desired leaving water temperature can only be read out on the user interface
N/A	[8-06]	Leaving water temperature maximum modulation: 0°C~10°C (default: 5°C) Requires modulation to be enabled. This is the value by which the desired leaving water temperature is increased or lowered.

INFORMATION

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



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

Leaving water temperature: Emitter type

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

Note: The setting of the emitter type will influence the maximum modulation of the desired leaving water temperature and the possibility for usage of the automatic cooling/heating changeover based on the indoor ambient temperature.

Therefore it is important to set this correctly.

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

Quick heat up function

Only applicable in case of room thermostat control. The function will start up the gas boiler when the actual room temperature is 3°C lower than the desired room temperature. The large boiler capacity can boost up the room temperature quickly to the desired temperature. This can be useful after a long period of absence or after a break-down of the system. During the quick heat up function, the setpoint of the gas boiler will be the maximum heating setpoint: [9-00].

#	Code	Description
N/A	[C-0A]	Indoor quick heat up function ▪ 0 (default): OFF. ▪ 1: On.

Domestic hot water control

Only applicable in case an optional domestic hot water tank is installed.

This is always applicable for Switzerland.

Configuring the desired tank temperature

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

#	Code	Description
[A.4.1]	[6-0D]	Domestic hot water Type: ▪ 0 (Reheat only): Only reheat operation is allowed. ▪ 1 (Reheat + sched.): The domestic hot water tank is heated according to a schedule and between the scheduled heatup cycles, reheat operation is allowed. ▪ 2 (Scheduled only)(default): The domestic hot water tank can ONLY be heated according to a schedule.

See "Domestic hot water control: advanced" on page 70 for more details.

INFORMATION

If a third-party tank is present in the system ([E-07]=6), it is recommended to set [6-0D] to "0" (i.e. Reheat only).

Maximum DHW temperature setpoint

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

INFORMATION

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

INFORMATION

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

#	Code	Description
[A.4.5]	[6-0E]	Maximum setpoint The maximum temperature that users can select for the domestic hot water. You can use this setting to limit the temperature at the hot water taps. The maximum temperature is NOT applicable during disinfection function. See disinfection function. In case of [E-06]=1 (tank installed): ▪ [E-07]≠6: 40~75°C (default: 75°C) ▪ [E-07]=6: 40~60°C (default: 60°C) In case of [E-06]=0 (no tank installed): ▪ 40~65°C (default: 65°C)

Contact/helpdesk number

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

8.1.3 Advanced configuration/optimization

Space heating/cooling operation: advanced

Preset leaving water temperature

You can define preset leaving water temperatures:

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

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

NOTICE

The preset leaving water temperatures are ONLY applicable for the main zone, as the schedule for the additional zone consists of On/OFF actions.

NOTICE

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

#	Code	Description
Preset leaving water temperature for the main leaving water temperature zone in case of NOT weather dependent		
[7.4.2.1]	[8-09]	Comfort (heating) [9-01]°C~[9-00]°C (default: 45°C)
[7.4.2.2]	[8-0A]	Eco (heating) [9-01]°C~[9-00]°C (default: 40°C)
[7.4.2.3]	[8-07]	Comfort (cooling) [9-03]°C~[9-02]°C (default: 18°C)
[7.4.2.4]	[8-08]	Eco (cooling) [9-03]°C~[9-02]°C (default: 20°C)
Preset leaving water temperature (shift value) for the main leaving water temperature zone in case of weather dependent		
[7.4.2.5]	N/A	Comfort (heating) –10°C~+10°C (default: 0°C)
[7.4.2.6]	N/A	Eco (heating) –10°C~+10°C (default: –2°C)
[7.4.2.7]	N/A	Comfort (cooling) –10°C~+10°C (default: 0°C)
[7.4.2.8]	N/A	Eco (cooling) –10°C~+10°C (default: 2°C)

Temperature ranges (leaving water temperatures)

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

NOTICE

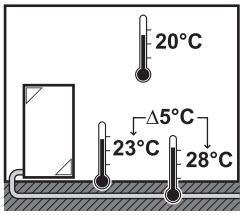
In case of a floor heating application it is important to limit the:

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

NOTICE

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

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



#	Code	Description
Leaving water temperature range for the main leaving water temperature zone (= the leaving water temperature zone with the lowest leaving water temperature in heating operation and the highest leaving water temperature in cooling operation)		
[A.3.1.1.2.2]	[9-00]	Maximum temp (heating) 37°C~80°C (default: 80°C)
[A.3.1.1.2.1]	[9-01]	Minimum temp (heating) 15°C~37°C (default: 25°C)
[A.3.1.1.2.4]	[9-02]	Maximum temp (cooling) 18°C~22°C (default: 22°C)
[A.3.1.1.2.3]	[9-03]	Minimum temp (cooling) 5°C~18°C (default: 5°C)
Leaving water temperature range for the additional leaving water temperature zone (= the leaving water temperature zone with the highest leaving water temperature in heating operation and the lowest leaving water temperature in cooling operation)		
[A.3.1.2.2.2]	[9-06]	Maximum temp (heating) 37°C~80°C (default: 80°C)
[A.3.1.2.2.1]	[9-05]	Minimum temp (heating) 15°C~37°C (default: 25°C)
[A.3.1.2.2.4]	[9-08]	Maximum temp (cooling) 18°C~22°C (default: 22°C)
[A.3.1.2.2.3]	[9-07]	Minimum temp (cooling) 5°C~18°C (default: 5°C)

Leaving water temperature overshoot temperature

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

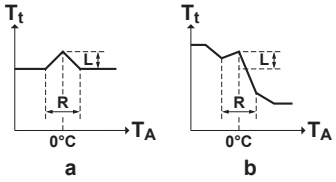
#	Code	Description
N/A	[9-04]	1~4°C (default: 1°C)

INFORMATION

This overshoot temperature applies to the heat pump leaving water temperature. Note that when the gas boiler is operating, there can be a 5°C overshoot over the desired boiler leaving water temperature.

Leaving water temperature compensation around 0°C

In heating operation, the desired leaving water temperature is locally increased around an outdoor temperature of 0°C. This compensation can be selected when using an absolute or a weather dependent desired temperature (see illustration below). Use this setting to compensate for possible heat losses of the building due to the evaporation of melted ice or snow (e.g. in cold region countries).



a Absolute desired LWT
b Weather dependent desired LWT

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

Leaving water temperature maximum modulation

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

#	Code	Description
N/A	[8-06]	0°C~10°C (default: 5°C)

Weather dependent cooling allowance

ONLY applicable for EHYHBX. It is possible to disable weather dependent cooling, meaning the desired leaving water temperature in cooling operation does NOT depend on the outdoor ambient temperature and this regardless whether weather dependent is selected or NOT. Both for the main leaving water temperature zone as for the additional leaving water temperature zone, this can be set separately.

#	Code	Description
N/A	[1-04]	Weather dependent cooling of the main leaving water temperature zone is… ▪ 0 (disabled) ▪ 1 (enabled) (default)
N/A	[1-05]	Weather dependent cooling of the additional leaving water temperature zone is… ▪ 0 (disabled) ▪ 1 (enabled) (default)

Temperature ranges (room temperature)

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

NOTICE

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

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

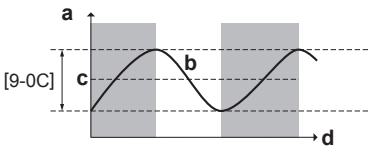
Room temperature step

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

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

Room temperature hysteresis

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



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

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

Room temperature offset

ONLY applicable in case of room thermostat control. You can calibrate the (external) room temperature sensor. It is possible to give an offset to the room thermistor value measured by the user interface or by the external room sensor. The settings can be used

to compensate for situations where the user interface or external room sensor CANNOT be installed on the ideal installation location (see installation manual and/or installer reference guide).

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

Room frost protection

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

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

NOTICE

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

INFORMATION

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

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

[C-07]=2: room thermostat control

Under room thermostat control, room frost protection is guaranteed, even if the room temperature home page is OFF on the user interface. When room frost protection ([2-06]) is enabled and the room temperature drops below the room antifrost temperature ([2-05]), the unit will supply leaving water to the heat emitters to heat up the room again.

#	Code	Description
N/A	[2-06]	Room frost protection ▪ 0: disabled ▪ 1: enabled (default)
N/A	[2-05]	Room antifrost temperature 4°C~16°C (default: 8°C)

INFORMATION

If a U5 error occurs:

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

NOTICE

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

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

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

Additionally, limited frost protection by the unit is possible:

In case of…	…then the following applies:
One leaving water temperature zone	▪ When the leaving water temperature home page is OFF and the outdoor ambient temperature drops below 4°C, then the unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered. ▪ When the leaving water temperature home page is ON, the external room thermostat is "Thermo OFF" and the outdoor ambient temperature drops below 4°C, then the unit will supply leaving water to the heat emitters to heat up the room again and the leaving water temperature setpoint will be lowered. ▪ When the leaving water temperature home page is ON and the external room thermostat is "Thermo ON", then room frost protection is guaranteed by the normal logic.

In case of…	…then the following applies:
Two leaving water temperature zones	▪ When the leaving water temperature home page is OFF, and the outdoor ambient temperature drops below 4°C, then the unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered. ▪ When the leaving water temperature home page is ON, the operation mode is "heating", and the outdoor ambient temperature drops below 4°C, then the unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered. ▪ The selection of "cooling" or "heating" is done via the user interface. When the leaving water temperature home page is ON and the operation mode is "cooling", then there is no protection.

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

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

- When the leaving water temperature home page is OFF and the outdoor ambient temperature drops below 4°C, then the unit will supply leaving water to the heat emitters to heat up the room again, and the leaving water temperature setpoint will be lowered.
- When the leaving water temperature home page is ON and the operation mode is "heating", then the unit will supply leaving water to the heat emitters to heat up the room according to normal logic.
- When the leaving water temperature home page is ON and the operation mode is "cooling", then there is no protection.

Shut-off valve

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

The shut-off valve, which is in the main leaving water temperature zone, output is configurable.

INFORMATION

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

Thermo On/OFF: the valve closes, depending on [F-0B] when there is no heating demand from the main zone. Enable this setting to:

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

#	Code	Description
[A.3.1.1.6.1]	[F-0B]	The shut-off valve: ▪ 0 (No)(default): is NOT influenced by heating or cooling demand. ▪ 1 (Yes): closes when there is NO heating or cooling demand.

INFORMATION

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

Cooling: ONLY applicable for EHYHBX. The shut-off valve closes, depending on [F-0C] when the unit is running in cooling operation mode. Enable this setting to avoid cold leaving water through the heat emitter and the forming of condensation (e.g. under floor heating loops or radiators).

#	Code	Description
[A.3.1.1.6.2]	[F-0C]	The shut-off valve: ▪ 0 (No): is NOT influenced by changing the space operation mode to cooling. ▪ 1 (Yes)(default): closes when the space operation mode is cooling.

Operation range

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

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

#	Code	Description
[A.3.3.1]	[4-02]	14°C~35°C (default: 25°C) The same setting is also used in automatic heating/cooling changeover.

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

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

Automatic heating/cooling changeover

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

- Monthly allowance for heating and/or cooling: the end-user indicates on a monthly base which operation is allowed ([7.5]: both heating/cooling or heating ONLY or cooling ONLY). If the allowed operation mode changes to cooling ONLY, the operation mode changes to cooling. If the allowed operation mode changes to heating ONLY, the operation mode changes to heating.
- Averaged outdoor temperature: the operation mode will be changed in order to ALWAYS be within range determined by the space heating OFF temperature for heating and the space cooling On temperature for cooling. If the outdoor temperature drops, the operation mode switches to heating and vice versa. Note that the outdoor temperature will be time-averaged (see "8 Configuration" on page 54).

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

- Measured indoor temperature: besides the heating and the cooling desired room temperature, the installer sets a hysteresis value (e.g. when in heating, this value is related to the desired cooling temperature) and an offset value (e.g. when in heating, this value is related to the desired heating temperature). Example: the desired room temperature in heating is 22°C and in cooling 24°C, with a hysteresis value of 1°C and an offset of 4°C. Changeover from heating to cooling will occur when the room temperature raises above the maximum of the desired cooling temperature added by the hysteresis value (thus 25°C) and the desired heating temperature added by the offset value (thus 26°C). Oppositely, changeover from cooling to heating will occur when the room temperature drops below the minimum of the desired heating temperature subtracted by the hysteresis value (thus 21°C) and the desired cooling temperature subtracted by the offset value (thus 20°C).
- Guard timer to prevent too frequent changing from heating to cooling and vice versa.

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

#	Code	Description
[A.3.3.1]	[4-02]	Space heating OFF temp. If the outdoor temperature raises above this value, the operation mode will change to cooling: Range: EHYHBX: 14°C~35°C (default: 25°C)
[A.3.3.2]	[F-01]	Space cooling On temp. If the outdoor temperature drops below this value, the operation mode will change to heating: Range: 10°C~35°C (default: 20°C)
Changeover settings related to the indoor temperature. ONLY applicable when Automatic is selected and the system is configured in room thermostat control with 1 leaving water temperature zone and quick heat emitters.		
N/A	[4-0B]	Hysteresis: Ensures that changeover is ONLY done when necessary. **Example:** The space operation mode ONLY changes from cooling to heating when the room temperature drops below the desired heating temperature subtracted by the hysteresis. Range: 1°C~10°C, step: 0.5°C (default: 1°C)
N/A	[4-0D]	Offset: Ensures that the active desired room temperature can be reached. Example: if heating to cooling changeover would occur below the desired room temperature in heating, this desired room temperature could never be reached. Range: 1°C~10°C, step: 0.5°C (default: 3°C)

Domestic hot water control: advanced

Preset tank temperatures

Only applicable when domestic hot water preparation is scheduled or scheduled + reheat.

You can define preset tank temperatures:

- storage economic
- storage comfort
- reheat
- reheat hysteresis

Preset values make it easy to use the same value in the schedule. If you later want to change the value, you only have to do it in 1 place (see also operation manual and/or user reference guide).

Storage comfort

When programming the schedule, you can make use of the tank temperatures set as preset values. The tank will then heat up until these setpoint temperatures have been reached. Additionally, a storage stop can be programmed. This feature puts a stop to tank heating even if the setpoint has NOT been reached. Only program a storage stop when tank heating is absolutely undesirable.

#	Code	Description
[7.4.3.1]	[6-0A]	30°C~[6-0E]°C (default: 60°C)

Storage eco

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

#	Code	Description
[7.4.3.2]	[6-0B]	30°C~min(50, [6-0E])°C (default: 50°C)

Reheat

The desired reheat tank temperature is used:

- in reheat mode of scheduled + reheat mode: The guaranteed minimum tank temperature is set by $T_{HP\ OFF}$–[6-08], which is either [6-0C] or the weather dependent setpoint, minus the reheat hysteresis. If the tank temperature drops below this value, the tank is heated up.

#	Code	Description
[7.4.3.3]	[6-0C]	30°C~min(50, [6-0E])°C (default: 50°C)

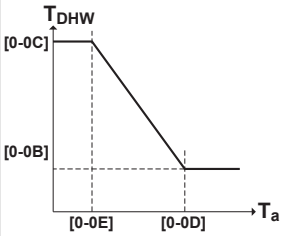
Reheat hysteresis

Only applicable when domestic hot water preparation is scheduled + reheat.

#	Code	Description
N/A	[6-08]	2°C~20°C (default: 5°C)

Weather dependent

The weather dependent installer settings define the parameters for the weather dependent operation of the unit. When weather dependent operation is active the desired tank temperature is determined automatically depending on the averaged outdoor temperature: low outdoor temperatures will result in higher desired tank temperatures as the cold water tap is colder and vice versa. In case of scheduled or scheduled+reheat domestic hot water preparation, the storage comfort temperature is weather dependent (according to the weather dependent curve), the storage economic and reheat temperature are NOT weather dependent. In case of reheat only domestic hot water preparation, the desired tank temperature is weather dependent (according to the weather dependent curve). During weather dependent operation, the end-user cannot adjust the desired tank temperature on the user interface.

#	Code	Description
[A.4.6]	N/A	Desired temperature mode: ▪ Fixed (default): disabled. All desired tank temperature are NOT weather dependent. ▪ Weather dep.: enabled. In scheduled or scheduled+reheat mode, the storage comfort temperature is weather dependent. Storage economic and reheat temperatures are NOT weather dependent. In reheat mode, the desired tank temperature is weather dependent. **Note:** When the displayed tank temperature is weather dependent, it cannot be adjusted on the user interface.
[A.4.7]	[0-0E] [0-0D] [0-0C] [0-0B]	Weather-dependent curve  ▪ T_{DHW}: The desired tank temperature. ▪ T_a: The (averaged) outdoor ambient temperature ▪ [0-0E]: low outdoor ambient temperature: –40°C~5°C (default: –10°C) ▪ [0-0D]: high outdoor ambient temperature: 10°C~25°C (default: 15°C) ▪ [0-0C]: desired tank temperature when the outdoor temperature equals or drops below the low ambient temperature: 45°C~[6-0E]°C (default: 60°C) ▪ [0-0B]: desired tank temperature when the outdoor temperature equals or rises above the high ambient temperature: 35°C~[6-0E]°C (default: 55°C)

Timers for simultaneous request space and domestic hot water operation

When the unit starts heating the domestic hot water tank, it continuous until the setpoint has been reached. However, if it takes too long (decided by the unit), the unit will balance between heating of the domestic hot water tank and space heating.

Disinfection

Applies only to installations with a domestic hot water tank.

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

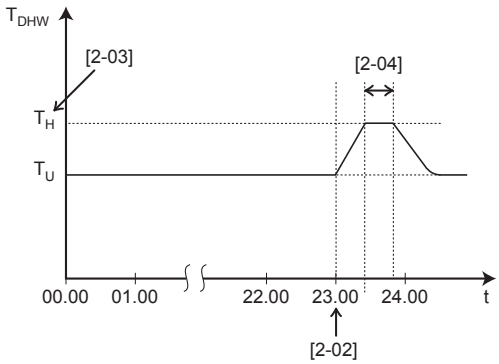
CAUTION

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

CAUTION

Make sure to activate the disinfection function when a 3rd party tank is installed.

#	Code	Description
[A.4.4.2]	[2-00]	Operation day: ▪ 0: Each day ▪ 1: Monday ▪ 2: Tuesday ▪ 3: Wednesday ▪ 4: Thursday ▪ 5: Friday (default) ▪ 6: Saturday ▪ 7: Sunday
[A.4.4.1]	[2-01]	Disinfection ▪ 0: No (default) ▪ 1: Yes
[A.4.4.3]	[2-02]	Start time: 00~23:00, step: 1:00 (default: 23:00).
[A.4.4.4]	[2-03]	Temperature target: fixed value (default: 60°C)
[A.4.4.5]	[2-04]	Duration Range: 40~60 minutes (default: 40 minutes)



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

WARNING

Be aware that the domestic hot water temperature at the hot water tap will be equal to the value selected in field setting [2-03] after a disinfection operation.

When the high domestic hot water temperature can be a potential risk for human injuries, a mixing valve (field supply) shall be installed at the hot water outlet connection of the domestic hot water tank. This mixing valve shall secure that the hot water temperature at the hot water tap never rise above a set maximum value. This maximum allowable hot water temperature shall be selected according to the applicable legislation.

CAUTION

Be sure that the disinfection function start time [A.4.4.3] with defined duration [A.4.4.5] is NOT interrupted by possible domestic hot water demand.

INFORMATION

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

- When the Domestic hot water > Type > Reheat or Reheat + sched. is selected, it is recommended to program the start-up of the disinfection function at least 4 hours later than the last expected large hot water tapping. This start-up can be set by installer settings (disinfection function).
- When the Domestic hot water > Type > Scheduled only is selected, it is recommended to program a Storage eco 3 hours before the scheduled start-up of the disinfection function to preheat the tank.

INFORMATION

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

INFORMATION

An AH error occurs if you do the following during disinfection:

- Set the user permission level to Installer.
- Go to the DHW tank temperature home page (Tank).
- Press ⏻ to interrupt the disinfection.

Heat source settings

Auto emergency

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

- When auto emergency is set to Automatic and a heat pump failure occurs, the boiler will automatically take over the heat load.
- When auto emergency is set to Manual and a heat pump failure occurs, the domestic hot water and space heating operations will stop and need to be recovered manually. The user interface will then ask the user to confirm whether the boiler can take over the entire heat load or not.

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

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

INFORMATION

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

INFORMATION

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

Equilibrium temperature

Based on the ambient temperature, energy prices and the required leaving water temperature, the user interface is able to calculate which heat source can deliver the required heating capacity most efficiently. However, to maximise the energy output of the heat pump, it is possible to prevent the gas boiler from operating when the ambient temperature exceeds a certain point (e.g. 5°C). This can be useful to avoid too much gas boiler operation in case of incorrect settings. When an equilibrium temperature is set, domestic hot water operation is NEVER prohibited.

#	Code	Description
N/A	[5-00]	Defines if gas boiler operation is allowed when the ambient temperature exceeds the set equilibrium temperature during space heating operation. ▪ 0: allowed (default). ▪ 1: NOT allowed.
N/A	[5-01]	Equilibrium temp. When the ambient temperature is higher than this temperature, the gas boiler is NOT allowed to work. Only applicable if [5-00] is set to 1. Range: –15°C~35°C (default: 5°C)

System settings

Auto-restart

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

If the preferential kWh rate power supply is of the type that power supply is interrupted, always enable the auto restart function. Continuous indoor unit control can be guaranteed independent of the preferential kWh rate power supply status, by connecting the indoor unit to a normal kWh rate power supply.

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

Preferential kWh rate power supply

INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/3+4) as the safety thermostat. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat.

#	Code	Description
[A.2.1.6]	[D-01]	Connection to a preferential kWh rate power supply: ▪ 0 (default): The outdoor unit is connected to a normal power supply. ▪ 1: The outdoor unit is connected to a preferential kWh rate power supply. When the preferential kWh rate signal is sent by the electricity company, the contact will open and the unit will go in forced off mode. When the signal is released again, the voltage-free contact will close and the unit will restart operation. Therefore, always enable the auto restart function. ▪ 2: The outdoor unit is connected to a preferential kWh rate power supply. When the preferential kWh rate signal is sent by the electricity company, the contact will close and the unit will go in forced off mode. When the signal is released again, the voltage-free contact will open and the unit will restart operation. Therefore, always enable the auto restart function. **Remark:** 3 is related to safety thermostat.

Safety thermostat

INFORMATION

The preferential kWh rate power supply contact is connected to the same terminals (X5M/3+4) as the safety thermostat. It is only possible for the system to have EITHER preferential kWh rate power supply OR a safety thermostat.

#	Code	Description
[A.2.1.6]	[D-01]	Connection to a safety thermostat voltage free contact: ▪ 0 (default): No safety thermostat. ▪ 3: Safety thermostat normal closed contact. **Remark:** 1+2 are related to preferential kWh rate power supply.

INFORMATION

Make sure the safety thermostat setpoint is at least 15°C greater than the maximum leaving water temperature setpoint.

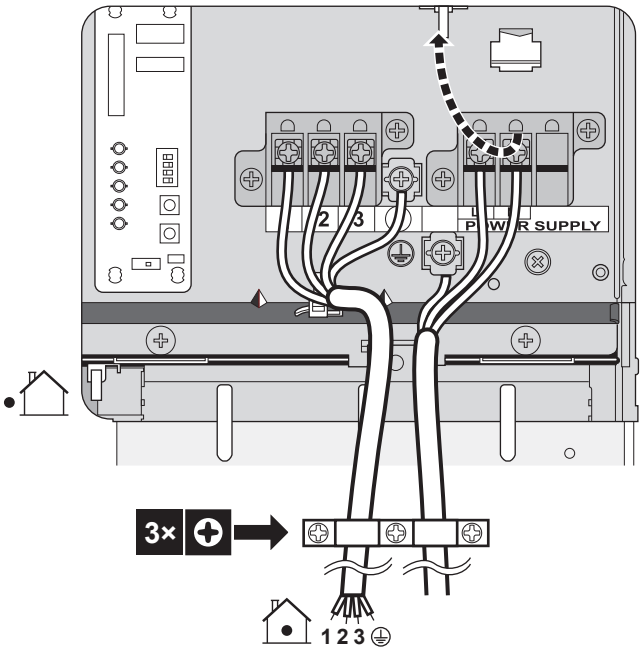
Power saving function

Defines whether the outdoor unit power supply can be interrupted (internally by indoor unit control) during stand-still conditions (no space heating/cooling by the heat pump). The final decision to allow power interruption of the outdoor unit during standstill depends on the ambient temperature, compressor conditions and minimum internal timers.

To enable the power saving function setting, [E-08] needs to be enabled on the user interface in combination with the removal of the power saving connector at the outdoor unit.

NOTICE

The power saving connector at the outdoor unit shall only be removed when the main power supply to the application is switched OFF.



#	Code	Description
N/A	[E-08]	Power saving function for outdoor unit: ▪ 0: Disabled ▪ 1 (default): Enabled

Power consumption control

Pwr consumpt. control

#	Code	Description
[A.6.3.1]	[4-08]	Mode: ▪ 0 (No limitation)(default): Disabled. ▪ 1 (Continuous): Enabled: You can set one power limitation value (in A or kW) to which the system power consumption will be limited for all the time. ▪ 2 (Digital inputs): Enabled: You can set up to four different power limitation values (in A or kW) to which the system power consumption will be limited when the corresponding digital input asks.
[A.6.3.2]	[4-09]	Type: ▪ 0 (Current): The limitation values are set in A. ▪ 1 (Power)(default): The limitation values are set in kW.
[A.6.3.3]	[5-05]	Value: Only applicable in case of full time power limitation mode. 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.4]	[5-09]	Value: Only applicable in case of full time power limitation mode. 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
Amp. limits for DI: Only applicable in case of power limitation mode based on digital inputs and based on current values.		
[A.6.3.5.1]	[5-05]	Limit DI1 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.5.2]	[5-06]	Limit DI2 0 A~50 A, step: 1 A (default: 50 A)

#	Code	Description
[A.6.3.5.3]	[5-07]	Limit DI3 0 A~50 A, step: 1 A (default: 50 A)
[A.6.3.5.4]	[5-08]	Limit DI4 0 A~50 A, step: 1 A (default: 50 A)
kW limits for DI: Only applicable in case of power limitation mode based on digital inputs and based on power values.		
[A.6.3.6.1]	[5-09]	Limit DI1 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
[A.6.3.6.2]	[5-0A]	Limit DI2 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
[A.6.3.6.3]	[5-0B]	Limit DI3 0 kW~20 kW, step: 0.5 kW (default: 20 kW)
[A.6.3.6.4]	[5-0C]	Limit DI4 0 kW~20 kW, step: 0.5 kW (default: 20 kW)

Average timer

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

The outdoor temperature is averaged over the selected time period.

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

INFORMATION

If the power saving function is activated (see [E-08]), the average outdoor temperature calculation is only possible in case the external outdoor temperature sensor is used.

Offset temperature external outdoor ambient sensor

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

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

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

Forced defrost

You can manually start a defrost operation.

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

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

Pump operation

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

#	Code	Description
N/A	[F-00]	Pump operation: ▪ 0 (default): Disabled if outdoor temperature is higher than [4-02] or lower than [F-01] depending on heating operation mode. ▪ 1: Possible at all outdoor temperatures.

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

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

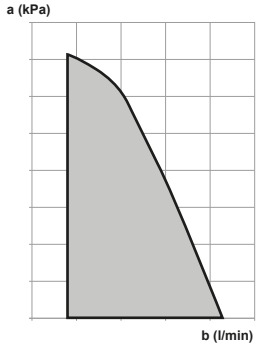
Pump speed limitation

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

#	Code	Description
N/A	[9-0D]	Pump speed limitation ▪ 0: No limitation. ▪ 1~4: General limitation. There is limitation in all conditions. The required delta T control and comfort are **NOT** guaranteed. ▪ 5~8 (default: 6): Limitation when no actuators. When there is no heating/cooling output, the pump speed limitation is applicable. When there is heating/cooling output, the pump speed is only determined by delta T in relation to the required capacity. With this limitation range, delta T is possible and the comfort is guaranteed.

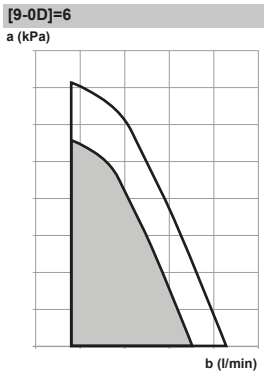
The maximum values depend on the unit type:

[9-0D]=0

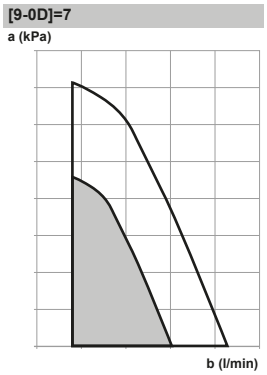


[9-0D]=5

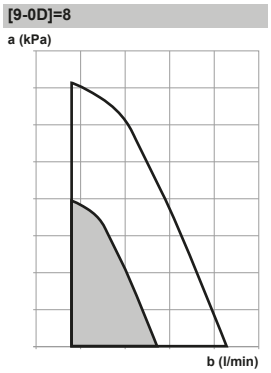
[9-0D]=6



[9-0D]=7

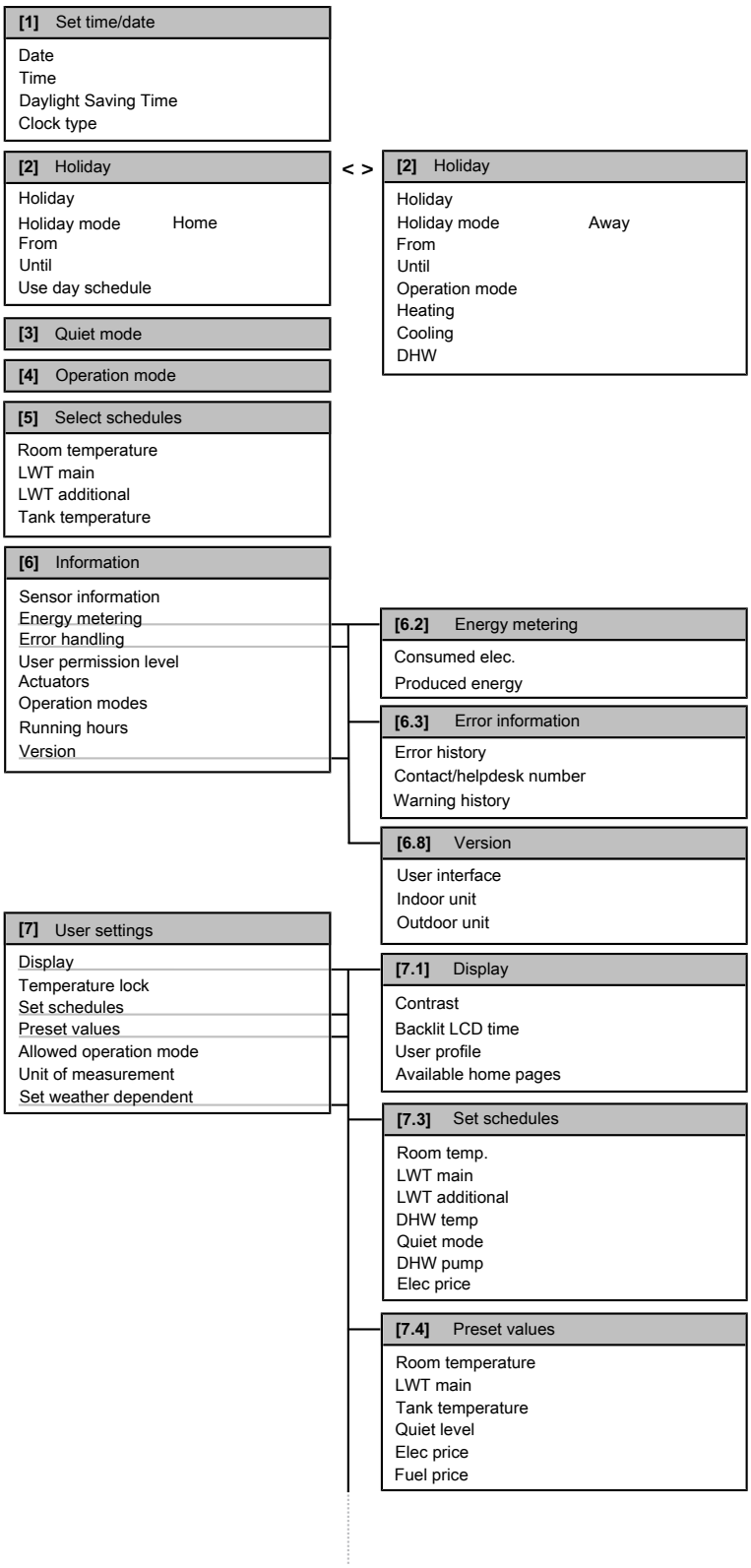


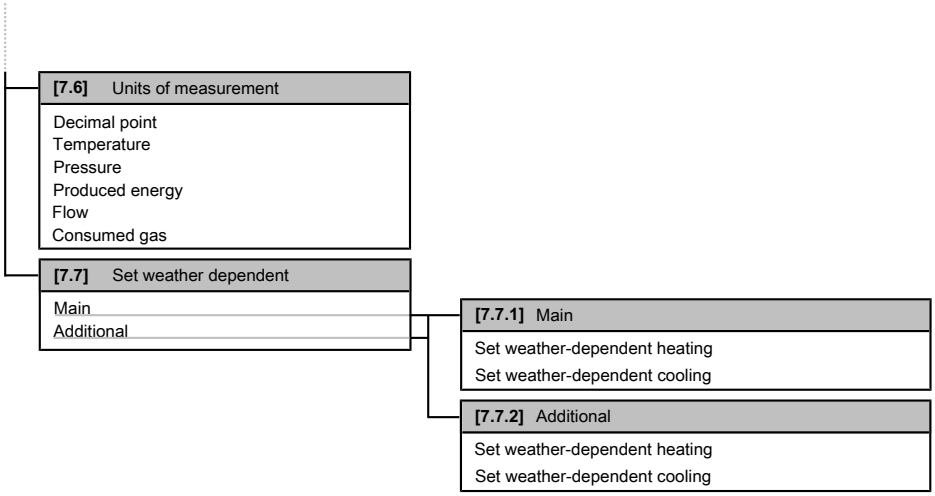
[9-0D]=8



a External static pressure
b Water flow rate

8.1.4 Menu structure: Overview user settings

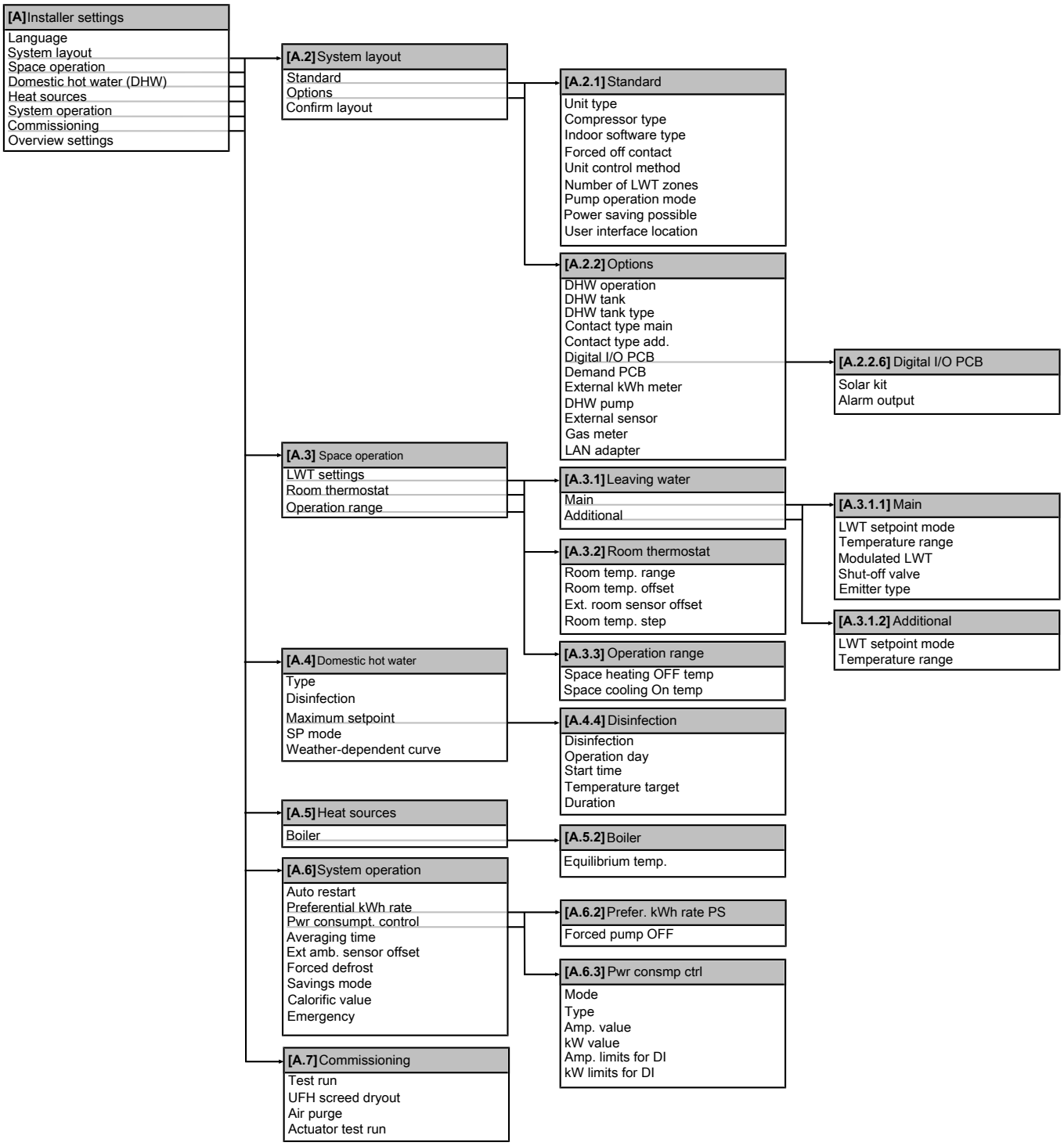




INFORMATION

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

8.1.5 Menu structure: Overview installer settings

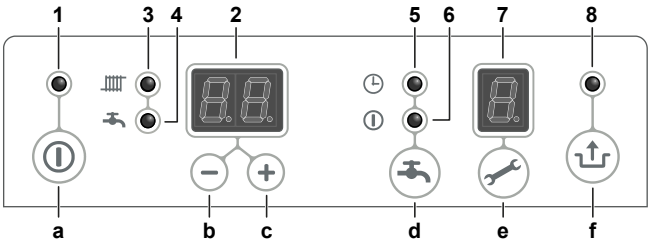


INFORMATION

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

8.2 Gas boiler

8.2.1 Overview: Configuration



Read out

1	On/off
2	Main display
3	Space heating operation
4	Domestic hot water operation
5	Domestic hot water comfort function eco
6	Domestic hot water comfort function on (continuous)
7	Service display
8	Flashes to indicate a fault

Operation

a	On/off button
b	− button
c	+ button
d	Domestic hot water function off/eco/on
e	Service button
f	Reset button

8.2.2 Basic configuration

To turn on/off the gas boiler

1 Push the ⏻ button.

Result: The green LED above the ⏻ button will light up when the boiler is ON.

When the gas boiler is OFF, ‑ is displayed on the service display to indicate that the power is ON. In this mode, the pressure in the space heating installation will also be displayed on the main display (bar).

Domestic hot water comfort function

Not applicable for Switzerland

This function can be operated with the domestic hot water comfort key (🚿). The following functions are available:

- On: The ⏻ LED lights up. The domestic hot water comfort function is switched on. The heat exchanger will be kept on temperature to assure instant delivery of hot water.
- Eco: The 🕒 LED lights up. The domestic hot water comfort function is self-learning. The appliance will learn to adapt to the pattern of use of hot tap water. For example: the temperature of the heat exchanger will NOT be maintained during the night or in case of long absence.
- Off: Both LED's are OFF. The temperature of the heat exchanger is NOT maintained. For example: It will take a while to deliver hot water to the hot water taps. If there is no need for immediate hot water delivery, the domestic hot water comfort function can be turned off.

To reset the gas boiler

Resetting is only possible when an error occurs.

Prerequisite: Flashing LED above the ↺ button and an error code on the main display.

Prerequisite: Check the meaning of the error code (see "Error codes of the gas boiler" on page 100) and resolve the cause.

1 Press ↺ to restart the gas boiler.

Maximum space heating supply temperature

See the user reference guide of the indoor unit for more details.

Domestic hot water temperature

See the user reference guide of the indoor unit for more details.

Keep hot function

The reversible heat pump features a keep hot function that keeps the heat exchanger hot continuously to prevent sweat from occurring in the gas boiler switch box.

In case of heating only models, this function can be deactivated through the parameter settings of the gas boiler.

INFORMATION

Do NOT deactivate the keep hot function if the gas boiler is connected to a reversible indoor unit. It is recommended to always deactivate the keep hot function if the gas boiler is connected to a heating only indoor unit.

Frost protection function

The boiler is equipped with an internal frost protection function that automatically operates when necessary, even if the boiler is turned off. If the heat exchanger temperature drops too low, the burner will switch on until the temperature is sufficiently high again. When frost protection is active, ❄ is displayed on the service display.

To set the parameters via the service code

The gas boiler is factory set in accordance with the default settings. Take into account the remarks in the table below when changing the parameters.

1 Press simultaneously on 🔧 and ↺ until 0 appears on the main and the service display.

2 Use the + and − buttons to set 15 (service code) on the main display.

3 Press the 🔧 button to set the parameter on the service display.

4 Use the + and − buttons to set the parameter to the desired value on the service display.

5 When all settings are done, press ↺ until P appears on the service display.

Result: The gas boiler has now been reprogrammed.

INFORMATION

- Press the ⏻ button to exit the menu without storing the parameter changes.
- Press the 🔧 button to load the default settings of the gas boiler.

Parameters on the gas boiler

Parameter	Setting	Range	Default settings	Description
0	Service code	—	—	To access the installer settings, enter the service code (=15)

Parameter	Setting	Range	Default settings	Description
1	Installation type	0~3	0	▪ 0=Combi ▪ 1=Heating only + external domestic hot water tank ▪ 2=Domestic hot water only (no heating system required) ▪ 3=Heating only It is recommended not to modify this setting.
2	Space heating pump continuous	0~3	0	▪ 0=Post purge period only ▪ 1=Pump continuously active ▪ 2=Pump continuously active with MIT switch ▪ 3=Pump on with external switch This setting has no effect.
3	Maximum space heating power set	c~85%	70%	Maximum power in heating. This is a percentage of the maximum set in parameter h. We strongly recommend not modifying this setting.
3.	Maximum capacity space heating pump	—	80	There is no space heating pump in the gas boiler. Changing this setting has no effect.
4	Maximum domestic hot water power set (not applicable for Switzerland)	d~100%	100%	Maximum power in instant domestic hot water. This is a percentage of the maximum set in parameter h. Because of the 2-digit display, the highest displayable value is 99. It is however possible to set this parameter to 100% (default setting). We strongly recommend not modifying this setting.
5	Minimum supply temperature of the heat curve	10°C~25°C	15°C	Do NOT modify this setting on the boiler. Use the user interface instead.
5.	Maximum supply temperature of the heat curve	30°C~90°C	90°C	Do NOT modify this setting on the boiler. Use the user interface instead.
6	Minimum outside temperature of the heat curve	–30°C~10°C	–7°C	Do NOT modify this setting on the boiler. Use the user interface instead.
7	Maximum outside temperature of the heat curve	15°C~30°C	25°C	Do NOT modify this setting on the boiler. Use the user interface instead.
8	Space heating pump post purge period	0~15 min	1 min	Changing this setting has no effect on the operation of the unit.
9	Space heating pump post purge period after domestic hot water operation	0~15 min	1 min	Changing this setting has no effect on the operation of the unit.
A	Position 3-way valve or electric valve	0~3	0	▪ 0=Powered during space heating ▪ 1=Powered during domestic hot water ▪ 2=Powered during every heat demand (space heating, domestic hot water, eco/comfort) ▪ 3=Zone regulation ▪ 4 and higher=Not applicable
b	Booster	0~1	0	Changing this setting has no effect on the operation of the unit.
C	Step modulation	0~1	1	▪ 0=OFF during space heating operation ▪ 1=ON during space heating operation It is recommended not to modify this setting.

Parameter	Setting	Range	Default settings	Description
c	Minimal space heating rpm	23%~50%	23%	Adjustment range 23~50% (40=propane). It is recommended not to modify this setting in case of natural gas.
c.	Minimum capacity space heating pump	—	40	There is no space heating pump in the gas boiler. Changing this setting has no effect.
d	Minimal domestic hot water rpm (not applicable for Switzerland)	23%~50%	23%	Adjustment range 23~50% (40=propane). It is recommended not to modify this setting in case of natural gas.
E	Minimal supply temperature during OT demand. (OpenTherm thermostat)	10°C~16°C	40°C	Changing this setting has no effect on the operation of the unit.
E.	Reversible setting	0~1	1	This setting activates the keep hot function of the gas boiler. It is only used with reversible heat pump models and should NEVER be deactivated. It MUST be deactivated for heating only models (set to 0). ▪ 0=disabled ▪ 1=enabled
F	Start rpm space heating	50%~99%	50%	This is the fan rpm before heating ignition. It is recommended not to modify this setting.
F.	Start rpm domestic hot water (not applicable for Switzerland)	50%~99%	50%	This is the fan rpm before instant domestic hot water ignition. It is recommended not to modify this setting.
h	Maximum fan rpm	45~50	48	Use this parameter to set the maximum fan rpm. It is recommended not to modify this setting.
n	Set point space heating (flow temperature) during heating external domestic hot water tank	60°C~90°C	85°C	Do NOT modify this setting on the boiler. Use the user interface instead.
n.	Comfort temperature	0°C / 40°C~65°C	0°C	Temperature used for eco/comfort function. When the value is 0°C, the eco/comfort temperature is the same as the domestic hot water setpoint. Otherwise, the eco/comfort temperature is between 40°C and 65°C.
o.	Waiting time after a space heating demand from a thermostat.	0 min~15 min	0 min	Changing this setting has no effect on the operation of the unit.
o	Waiting time after a domestic hot water demand before a space heating demand is answered.	0 min~15 min	0 min	Amount of time the boiler waits before answering a space heating demand after a domestic hot water demand.
o.	Number of eco days.	1~10	3	Number of eco days.
P	Anti-cycling period during space heating operation	0 min~15 min	5 min	Minimal switch-off time in space heating operation. It is recommended not to modify this setting.
P.	Reference value for domestic hot water	24-30-36	36	▪ 24: Not applicable. ▪ 30: Not applicable. ▪ 36: Only for EHYKOMB33AA*.

Maximum space heating power setting

The maximum space heating power setting (3) is factory set to 70%. If more or less power is required, you can change the fan rpm. The table below shows the relationship between the fan rpm and the appliance power. It is strongly recommended NOT to modify this setting.

Desired power (kW)	Setting on service display (% of max. rpm)
26.2	83
25.3	80
22.0	70
19.0	60
15.9	50

Desired power (kW)	Setting on service display (% of max. rpm)
12.7	40
9.6	30
7.0	25

Note that for the gas boiler the power during burning is increased slowly and is reduced as soon as the supply temperature is reached.

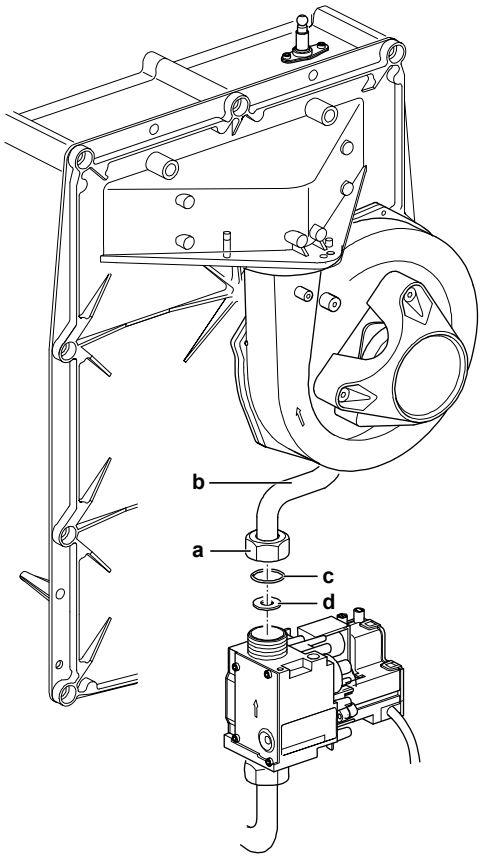
To change to a different type of gas

CAUTION

Work on gas carrying parts may ONLY be carried out by a qualified competent person. ALWAYS comply with local and national regulations. The gas valve is sealed. In Belgium, any modifications to the gas valve MUST be performed by a certified representative of the manufacturer. For more information, contact your dealer.

If a different type of gas is connected to the appliance than that for which the appliance has been set by the manufacturer, the gas metering MUST be replaced. Conversion sets for other types of gas are available to order. See "5.3.3 Possible options for the gas boiler" on page 14.

1 Switch the boiler off and isolate the boiler from the mains power.
2 Close the gas tap.
3 Remove the front panel from the appliance.
4 Unscrew the coupling (a) above the gas valve and twist the gas mixing tube towards the rear (b).
5 Replace the O-ring (c) and the gas restriction (d) with the rings from the conversion set.
6 Reassemble in reverse sequence.
7 Open the gas tap.
8 Check the gas connections before the gas valve for gastightness.
9 Switch on the mains power.
10 Check the gas connections after the gas valve for gastightness (during operation).
11 Now check the setting of the CO_2 percentage at high setting (H in display) and low setting (L in display).
12 Put a sticker indicating the new gas type on the bottom of the gas boiler, next to the nameplate.
13 Put a sticker indicating the new gas type next to the gas valve, over the existing one.
14 Put the front panel back in its place.



a Coupling
b Gas mixing tube
c O-ring
d Gas metering ring

INFORMATION

The gas boiler is configured for operation with gas type G20 (20 mbar). However, if the gas type present is G25 (25 mbar), the gas boiler can still be operated without modification.

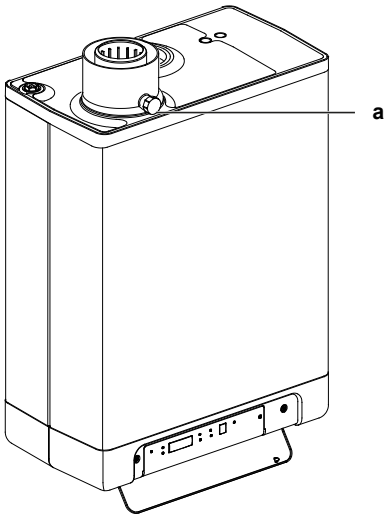
About the carbon dioxide setting

The CO_2 setting has been set in the factory and in principle requires no adjustments. The setting can be checked by measuring the CO_2 percentage in the combustion gases. In case of possible disturbance of the adjustment, replacement of the gas valve or conversion to another gas type the adjustment must be checked and if necessary set according to the instructions below.

Always check the CO_2 percentage when the cover is open.

To check the carbon dioxide setting

1 Switch off the heat pump module with the user interface.
2 Switch off the gas boiler with the ⏻ button. - appears on the service display.
3 Remove the front panel from the gas boiler.
4 Remove the sampling point (a) and insert a suitable flue gas analyser probe.



INFORMATION

Make sure the start-up procedure of the analyser is completed before inserting the probe into the sampling point.

INFORMATION

Allow the gas boiler to operate steadily. Connecting the measuring probe before stable operation can give incorrect readings. It is recommended to wait at least 30 minutes.

5 Switch on the gas boiler with the ⏻ button and create a space heating demand.

6 Select High setting by simultaneously pressing 🔧 and + twice. Capital H will appear on the service display. The user interface will display Busy. Do NOT test when lowercase h is displayed. If this is the case, press 🔧 and + again.

7 Allow readings to stabilise. Wait for at least 3 minutes and compare the CO_2 percentage with the values in the table below.

CO_2 value at maximum power	Natural gas G20	Natural gas G25 (in Belgium)	Propane P G31 (30/50 mbar)	Propane P G31 (37 mbar)
Maximum value	9.6	8.3	10.8	
Minimum value	8.6	7.3	9.8	

8 Note down the CO_2 percentage at maximum power. This is important with regard to the next steps.

CAUTION

It is NOT possible to adjust the CO_2 percentage when test program H is running. When the CO_2 percentage deviates from the values in the table above, please contact your local service department.

9 Select Low setting by simultaneously pressing 🔧 and − buttons once. L will appear on the service display. The user interface will display Busy.

10 Allow readings to stabilise. Wait for at least 3 minutes and compare the CO_2 percentage with the values in the table below.

CO_2 value at minimum power	Natural gas G20	Natural gas G25 (in Belgium)	Propane P G31 (30/50 mbar)	Propane P G31 (37 mbar)
Maximum value	(a)			
Minimum value	8.4	7.4	9.4	9.4

(a) CO_2 value at maximum power recorded at High setting.

11 If the CO_2 percentage at maximum and minimum power is within the range expressed in the tables above, the CO_2 setting of the boiler is correct. If NOT, adjust the CO_2 setting according to the instructions in the chapter below.

12 Switch off the appliance by pressing the ⏻ button and put the sampling point back in its place. Make sure it is gastight.

13 Put the front panel back in its place.

CAUTION

Work on gas carrying parts may only be carried out by a qualified competent person.

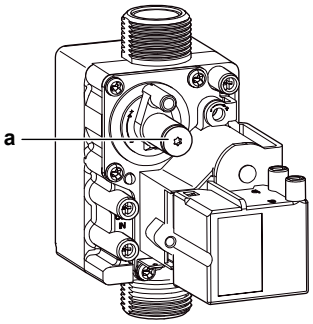
To adjust the carbon dioxide setting

INFORMATION

Only adjust the CO_2 setting when you have checked it first and are sure adjustment is necessary. In Belgium, any modifications to the gas valve MUST be performed by a certified representative of the manufacturer. For more information, contact your dealer.

1 Remove the cap that covers the adjustment screw. In the illustration, the cover cap is already removed.

2 Turn the screw (a) to increase (clockwise) or decrease (counterclockwise) the CO_2 percentage. See the table below for the desired value.



a Adjusting screw with cover

Measured value at maximum power	Adjustment values CO_2 (%) at minimum power (front cover opened)	
	Natural gas 2H (G20, 20 mbar)	Propane 3P (G31, 30/50/37 mbar)
10.8	—	10.5±0.1
10.6		10.3±0.1
10.4		10.1±0.1
10.2		9.9±0.1
10.0		9.8±0.1
9.8		9.6±0.1
9.6	9.0±0.1	—
9.4	8.9±0.1	
9.2	8.8±0.1	
9.0	8.7±0.1	
8.8	8.6±0.1	
8.6	8.5±0.1	

3 After measuring the CO_2 percentage and adjusting the setting, put the cover cap and the sampling point back in their place. Make sure they are gastight.

4 Select High setting by simultaneously pressing 🔧 and + twice. Capital H will appear on the service display.

5 Measure the CO_2 percentage. If the CO_2 percentage still deviates from the values in the table indicating the CO_2 percentage at maximum power, contact your local dealer.

6 Press + and − simultaneously to exit the test program.

7 Put the front panel back in its place.

9 Operation

9.1 Overview: Operation

The gas boiler is a modulating, high-efficiency boiler. This means that the power is adjusted in line with the desired heat requirement. The aluminium heat exchanger has 2 separate copper circuits. As a result of the separately constructed circuits for space heating and domestic hot water, the heating and the hot water supply can operate independently, but not simultaneously.

The gas boiler has an electronic boiler controller which does the following when heating or hot water supply is required:

- starting the fan,
- opening the gas valve,
- igniting the burner,
- constantly monitoring and controlling the flame.

It is possible to use the boiler's domestic hot water circuit without connecting and filling the central heating system.

9.2 Heating

Heating is controlled by the indoor unit. The boiler will start-up the heating process when there is a request from the indoor unit.

9.3 Domestic hot water

Not applicable for Switzerland

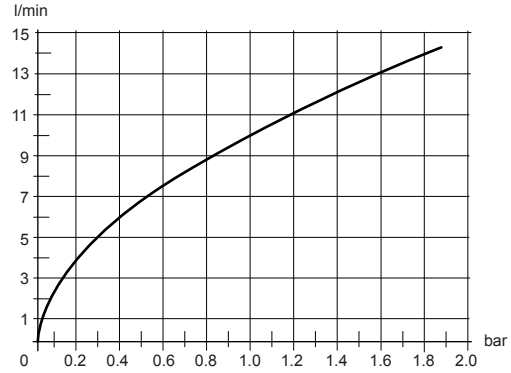
Instant domestic hot water is supplied by the boiler. Because supplying domestic hot water has priority over space heating, the boiler will switch to domestic hot water mode whenever there is a hot water demand. When a simultaneous space heating and domestic hot water demand occurs:

- during heat pump only operation (space heating mode), the heat pump will provide heat while the boiler is bypassed and switches to domestic hot water mode to provide domestic hot water.
- during boiler only operation, and with the boiler in domestic hot water mode, space heating will NOT be provided, but domestic hot water will.
- during simultaneous heat pump and boiler operation, the heat pump will provide heat and the boiler will be bypassed and switch to domestic hot water mode to provide domestic hot water.

This manual only explains the domestic hot water making without having a domestic hot water tank combined with the system. For the operation and needed settings of domestic hot water in combination with a domestic hot water tank needed for Switzerland, please refer to the manual of the heat pump module.

9.3.1 Flow resistance graph for appliance domestic hot water circuit

Not applicable for Switzerland



The minimum flow for domestic hot water operation is 1.5 l/min. The minimum pressure is 0.1 bar. A low flow (<5 l/min) can reduce comfort. Make sure to set the setpoint high enough.

9.4 Operation modes

The following codes on the service display indicate the following operating modes.

- Off

The gas boiler is out of operation but is supplied with electric power. There will be no response on space heating and/or domestic hot water demands. Frost protection is active. This means that the exchanger is heated up if the water temperature in the gas boiler is too low. If applicable, the keep hot function will also be active.

If frost protection or keep hot function is activated, 7 will be displayed (heating the exchanger). In this mode, the pressure (bar) in the space heating installation can be read on the main display.

Waiting mode (blank service display)

The LED at the ⏻ button is lit and possibly also one of the LEDs for the domestic hot water comfort function. The gas boiler is waiting for a space heating and/or domestic hot water demand.

0 Pump overrun of space heating

After each space heating operation, the pump continues to run. This function is controlled by the indoor unit.

1 Boiler shutdown when the required temperature is reached

The boiler controller can temporarily stop the requested space heating demand. The burner will stop. The shutdown occurs because the requested temperature is reached. When the temperature drops too fast and the anti-cycle time has passed, the shutdown will be cancelled.

2 Self-test

The sensors check the boiler controller. During the check-up, the boiler controller does NOT perform any other tasks.

3 Ventilation

When the appliance is started, the fan goes to starting speed. When the starting speed is reached, the burner is lit. The code will also be visible when post-ventilation is taking place after the burner has stopped.

4 Ignition

When the fan has reached its starting speed, the burner is ignited by means of electric sparks. During ignition the code will be visible on the service display. If the burner does NOT ignite, a new ignition attempt occurs after 15 seconds. If after 4 ignition attempts the burner is NOT yet burning, the boiler will go into fault mode.

Domestic hot water operation

Not applicable for Switzerland

The domestic hot water supply has priority over space heating performed by the gas boiler. If the flow sensor detects a domestic hot water demand of more than 2 l/min, space heating by the gas boiler will be interrupted. After the fan has reached speed code and ignition is done, the boiler controller goes into domestic hot water mode.

During the domestic hot water operation, the fan speed and hence the appliance power are controlled by the gas boiler controller so that the domestic hot water temperature reaches the domestic hot water temperature setting.

The domestic hot water supply temperature must be set on the user interface of the hybrid module. See the user reference guide for more details.

Domestic hot water comfort function/Frost protection/Keep hot function

Not applicable for Switzerland

appears on the display when either the domestic hot water comfort function, the frost protection function or the keep hot function is active.

space heating operation

When a space heating request is received from the indoor module, the fan is started, followed by the ignition, and the space heating operation mode. During the space heating operation, the fan speed and hence the appliance power are controlled by the gas boiler controller so that the space heating water temperature reaches the desired space heating supply temperature. During the space heating operation, the requested space heating supply temperature is indicated on the operating panel.

The space heating supply temperature must be set on the user interface of the hybrid module. See the user reference guide for more details.

10 Commissioning

Especially for UK:

At the time of commissioning, complete all relevant sections of the Benchmark Checklist on the backpages of this document.

10.1 Overview: Commissioning

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

Typical workflow

Commissioning typically consists of the following stages:

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

10.2 Precautions when commissioning

INFORMATION

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

NOTICE

Before starting up the system, the unit MUST be energised for at least 2 hours. The crankcase heater needs to heat up the compressor oil to avoid oil shortage and compressor breakdown during startup.

NOTICE

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

NOTICE

Do NOT operate the unit until the refrigerant piping is complete (when operated this way, the compressor will break).

10.3 Checklist before commissioning

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

☐	You read the complete installation instructions, as described in the **installer reference guide**.
☐	The **indoor unit** is properly mounted.
☐	The **outdoor unit** is properly mounted.
☐	The **gas boiler** is properly mounted.
☐	The following **field wiring** has been carried out according to this document and the applicable legislation: ▪ Between the local supply panel and the outdoor unit ▪ Between indoor unit and outdoor unit ▪ Between the local supply panel and the indoor unit ▪ Between the indoor unit and the valves (if applicable) ▪ Between the indoor unit and the room thermostat (if applicable) ▪ Between the indoor unit and the domestic hot water tank (if applicable) ▪ Between the gas boiler and the local supply panel (only applicable in case of hybrid system)
☐	The **communication cable** between the gas boiler and the indoor unit is properly mounted.
☐	The system is properly **earthed** and the earth terminals are tightened.
☐	The **fuses** or locally installed protection devices are installed according to this document, and have NOT been bypassed.
☐	The **power supply voltage** matches the voltage on the identification label of the unit.
☐	There are NO **loose connections** or damaged electrical components in the switch box.
☐	There are NO **damaged components** or **squeezed pipes** on the inside of the indoor and outdoor units.
☐	There are NO **refrigerant leaks**.
☐	The **refrigerant pipes** (gas and liquid) are thermally insulated.
☐	The correct pipe size is installed and the **pipes** are properly insulated.
☐	There is NO **water leak** inside the indoor unit.

☐	There is NO **water leak** inside the gas boiler.
☐	There is NO **water leak** in the connection between the gas boiler and the indoor unit.
☐	The **shut-off valves** are properly installed and fully open (field supply).
☐	The **stop valves** (gas and liquid) on the outdoor unit are fully open.
☐	The **air purge** valve is open (at least 2 turns).
☐	The **pressure relief valve** purges water when opened.
☐	The **gas boiler** is switched ON.
☐	Setting E. is correctly set on the gas boiler. ▪ 0=for EHYHBH05 + EHYHBH08 ▪ 1=for EHYHBX08
☐	The **minimum water volume** is guaranteed in all conditions. See "To check the water volume" in "6.4 Preparing water piping" on page 19.

INFORMATION

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

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

10.4 Checklist during commissioning

☐	The **minimum flow rate** is guaranteed in all conditions. See "To check the water volume and flow rate" in "6.4 Preparing water piping" on page 19.
☐	To perform an **air purge**.
☐	To perform a **test run**.
☐	To perform an **actuator test run**.
☐	**Underfloor screed dryout function** The underfloor screed dryout function is started (if necessary).
☐	To perform an air purge on the **gas supply**.
☐	To perform a test run on the **gas boiler**.

10.4.1 To check the minimum flow rate

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

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

3 Start the pump test run operation (see "10.4.4 To perform an actuator test run" on page 88).

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

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

Minimum required flow rate	
05 models	7 l/min
08 models	8 l/min

10.4.2 Air purge function

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

NOTICE

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

There are 2 modes for purging air:

There are 2 modes for purging air:

- Manually: the unit will operate with a fixed pump speed (high or low), which can be set. The position of the 3-way valve for the optional domestic hot water tank as well as that of the gas boiler's bypass valve can also be set. To ensure all air will be removed, however, it is recommended NOT to adjust their custom position.
- Automatic: the pump alternates between high speed, low speed and standstill position. The position of the 3-way valve automatically alternates between that for space heating and that for domestic hot water heating. The gas boiler is continuously bypassed. To remove air from the gas boiler, perform a manual air purge on the gas boiler.

Typical workflow

Purging the air from the system should consist of:

1 Performing a manual air purge

2 Performing an automatic air purge

INFORMATION

Start by performing a manual air purge. When almost all the air is removed, perform an automatic air purge. If necessary, repeat performing the automatic air purge until you are sure that all air is removed from the system. During air purge function, pump speed limitation [9-0D] is NOT applicable.

Air purge prerequisites

3 Install air purges on each part of the installation where the pipe work goes down. (For example on a tank with connections on top.)

4 Fill the circuit to ±2 bar.

5 Purge all radiators and all other air purges installed on the circuit.

6 Repeat steps 2 and 3 until purging the radiators and the other points does NOT longer lead to a pressure drop.

7 Make sure that the leaving water temperature home page, room temperature home page, and domestic hot water home page are turned OFF.

When an air bubble blocks the pump and there is no flow, a 7H error can occur. In this case, stop the air purge function and restart the operation. This will cause the bubble to leave the pump. Make sure the pressure in the circuit is ±2 bar and refill if necessary.

To check if the air purge function is finished, monitor the flow rate. If it stays constant when the pump is running at high or low speed, the unit is properly purged. To monitor the flow rate, go to [6.1.8].

The air purge function automatically stops after 42 minutes.

To perform a manual air purge

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

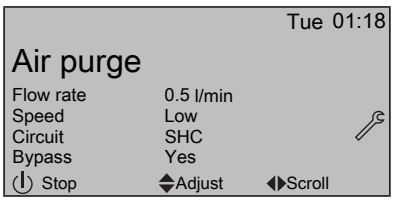
1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 55.

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

3 Select Manual and press OK.

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

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



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

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

Result: Low

Result: High

7 If applicable, set the desired position of the 3-way valve (space heating/domestic hot water). Use the ◂ and ▸ buttons to scroll to Circuit.

8 Use the ▴ and ▾ buttons to set the desired position of the 3-way valve.

Result: SHC or Tank

9 Set the desired position of the bypass valve. Use the ◂ and ▸ buttons to scroll to Bypass.

10 Use the ▴ and ▾ buttons to set the desired position of the bypass valve.

Result: No (boiler not bypassed)

Result: Yes (boiler bypassed)

To perform an automatic air purge

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

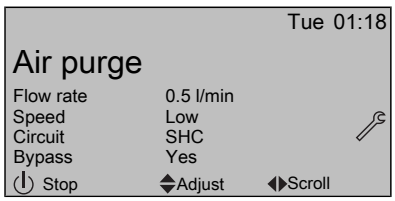
1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 55.

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

3 Select Automatic and press OK.

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

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



To interrupt air purge

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

10.4.3 To perform a test run

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

1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 55.

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

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

4 Select OK and press OK.

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

INFORMATION

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

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

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

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

During a heating test run, the unit will start up in hybrid operation. The setpoint of the gas boiler during a heating test run is 40°C. Keep in mind the 5°C overshoot that is possible during boiler operation, especially in combination with floor heating loops.

10.4.4 To perform an actuator test run

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

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

1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 55.

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

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

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

5 Select OK and press OK.

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

Possible actuator test runs

- Pump test

INFORMATION

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

- Solar pump test
- Shut-off valve test
- 3-way valve test
- Alarm output test
- Cooling/heating signal test
- Quick heat-up test
- DHW pump test
- Gas boiler test
- Bypass valve test

INFORMATION

The setpoint during a boiler test run is 40°C. Keep in mind the 5°C overshoot that is possible during boiler operation, especially in combination with floor heating loops.

10.4.5 Underfloor heating screed dryout

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

This function can be executed without finishing the outdoor installation. In this case, the gas boiler will perform the screed dryout and supply the leaving water without heat pump operation.

When no outdoor unit is installed yet, then connect the main power supply cable to the indoor unit via X2M/30 and X2M/31. See "7.11.6 To connect the main power supply of the indoor unit" on page 40.

INFORMATION

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

NOTICE

The installer is responsible for:

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

NOTICE

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

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

NOTICE

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

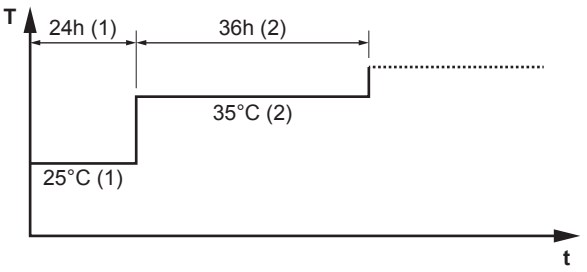
- [4-00]=1
- [C-02]=0
- [D-01]=0
- [4-08]=0
- [4-01]≠1

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

1 the duration in hours, up to 72 hours,

2 the desired leaving water temperature.

Example:



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

To program an underfloor heating screed dryout schedule

1 Set the user permission level to Installer. See "To set the user permission level to Installer" on page 55.

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

3 Use the ◀, ▶, ▲, and ▼ to program the schedule.

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

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

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

6 Press OK to save the schedule.

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

To perform an underfloor heating screed dryout

INFORMATION

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

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

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

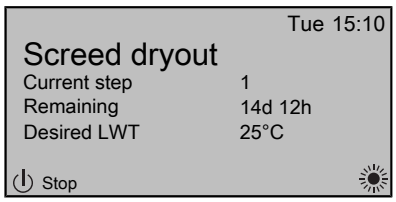
1 Go to [A.7.2]: ☰ > Installer settings > Commissioning > UFH screed dryout.

2 Set a dryout program.

3 Select Start dryout and press OK.

4 Select OK and press OK.

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



INFORMATION

In case no outdoor unit is installed, the user interface will ask if the gas boiler can take over the entire load. After allowing this, restart the screed dryout program to make sure all actuators are operating.

To readout the status of an underfloor heating screed dryout

1 Press ⌂.

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

INFORMATION

There is limited access to the menu structure. Only the following menus can be accessed:

- Information.
- Installer settings > Commissioning > UFH screed dryout.

To interrupt an underfloor heating screed dryout

When the program is stopped by an error, an operation switch off, or a power failure, the U3 error will be displayed on the user interface. To resolve the error codes, see "13.4 Solving problems based on error codes" on page 97. To reset the U3 error, your User permission level needs to be Installer.

1 Go to the underfloor heating screed dryout screen.

2 Press ⌂.

3 Press ⏻ to interrupt the program.

4 Select OK and press OK.

Result: The underfloor heating screed dryout program is stopped.

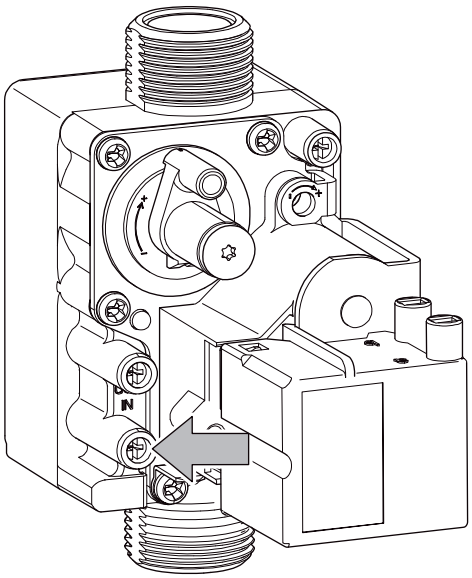
When the program is stopped due to an error, an operation switch-off, or a power failure, you can read out the underfloor heating screed dryout status.

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

6 Modify and restart the execution of the program.

10.4.6 To perform an air purge on the gas supply

1 Connect a suitable gauge on the gas valve. Static pressure MUST be 20 mbar.



2 Select test program "H". See "10.4.7 To perform a test run on the gas boiler" on page 89. Static pressure MUST be 20 mbar (+ or – 1 mbar). If the working pressure is <19 mbar, the gas boiler output will be reduced and the correct combustion reading may NOT be obtained. Do NOT adjust the air and/or gas ratio. To obtain sufficient working pressure, gas supply MUST be correct.

INFORMATION

Make sure the working inlet pressure does NOT interfere with other gas appliances installed.

10.4.7 To perform a test run on the gas boiler

The gas boiler has a test run function. Activating this function results in the activation of the indoor unit pump, as well as the gas boiler (with a fixed fan speed), without the control functions being actuated. The safety functions remain active. The test run can be stopped by pressing + and – simultaneously or will end automatically after 10 minutes. To perform a test run, switch off the system with the user interface.

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

There may be no error on the gas boiler or the heat pump module. During a gas boiler test run, "busy" will be displayed on the user interface.

Program	Button combination	Display
Burner ON at minimum power	and	L
Burner ON, maximum space heating power setting	and + (1×)	H
Burner ON, maximum domestic hot water setting	and + (2×)	H
Stop test program	+ and	Actual situation

NOTICE

If an 81-04 error occurs, then do NOT perform a test run on the gas boiler.

11 Hand-over to the user

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

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

12 Maintenance and service

Especially for UK:

After servicing, complete the relevant Service Interval Record section of the Benchmark Checklist located on the backpages of this document.

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.

12.1 Overview: Maintenance and service

This chapter contains information about:

- The yearly maintenance of the outdoor unit
- The yearly maintenance of the indoor unit
- Cleaning the gas boiler

12.2 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.

12.2.1 Opening the indoor unit

See "7.2.3 To open the switch box cover of the indoor unit" on page 24.

12.3 Checklist for yearly maintenance of the outdoor unit

Check the following at least once a year:

- Water pressure
- Water filter
- Water pressure relief valve
- Pressure relief valve of the domestic hot water tank
- Switch box

Water pressure

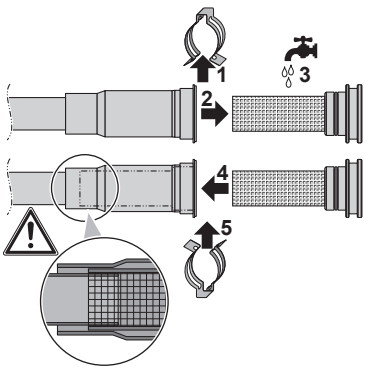
Keep water pressure above 1 bar. If it is lower, add water.

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

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

Checkpoints are:

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

To make sure this water originates from the tank, check after a tank heat up cycle.

It is recommended to do this maintenance more frequently.

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

Open the valve and check the correct operation. **Water may be very hot!**

Checkpoints are:

- The water flow coming from the relief valve is high enough, no blockage of the valve or in between piping is suspected.
- Dirty water coming out of the relief valve:
  - open the valve until the discharged water does not contain dirt anymore
  - flush and clean the complete tank, including the piping between the relief valve and cold water inlet.

To make sure this water originates from the tank, check after a tank heat up cycle.

It is recommended to do this maintenance more frequently.

Switch box

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

WARNING

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

12.4 Checklist for yearly maintenance of the indoor unit

Check the following at least once a year:

- Water pressure
- Water filter
- Water pressure relief valve
- Pressure relief valve of the domestic hot water tank
- Switch box

Water pressure

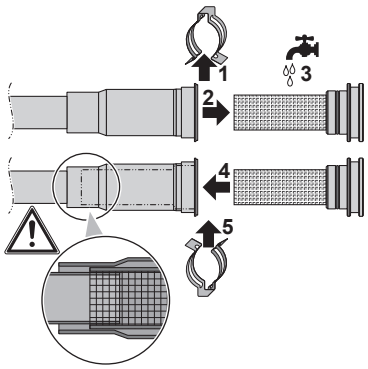
Keep water pressure above 1 bar. If it is lower, add water.

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

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

Checkpoints are:

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

To make sure this water originates from the tank, check after a tank heat up cycle.

It is recommended to do this maintenance more frequently.

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

Open the valve and check the correct operation. **Water may be very hot!**

Checkpoints are:

- The water flow coming from the relief valve is high enough, no blockage of the valve or in between piping is suspected.
- Dirty water coming out of the relief valve:
  - open the valve until the discharged water does not contain dirt anymore
  - flush and clean the complete tank, including the piping between the relief valve and cold water inlet.

To make sure this water originates from the tank, check after a tank heat up cycle.

It is recommended to do this maintenance more frequently.

Switch box

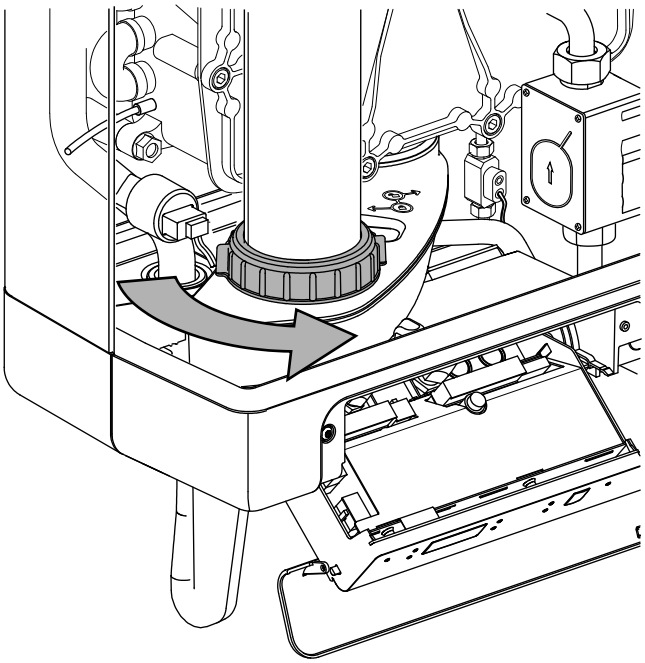
Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.

WARNING

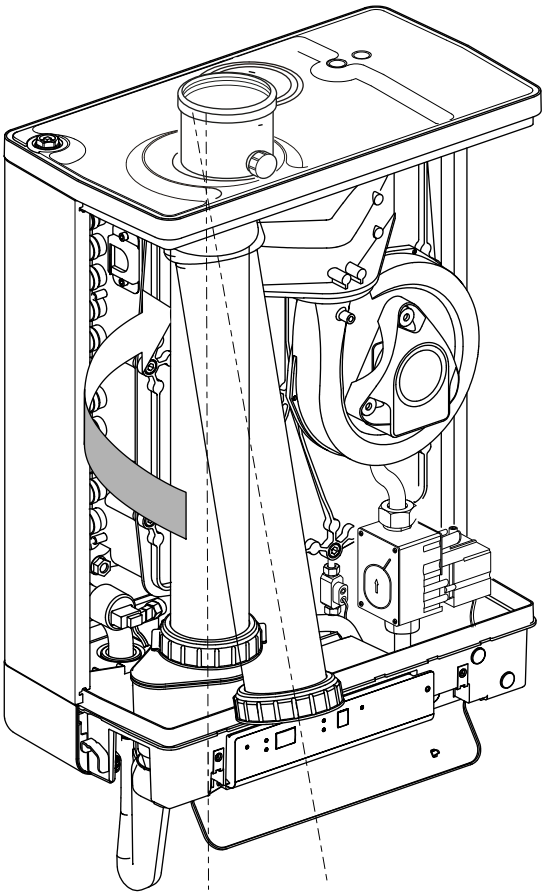
If the internal wiring is damaged, it has to be replaced by the manufacturer, its service agent or similarly qualified persons.

12.5 To disassemble the gas boiler

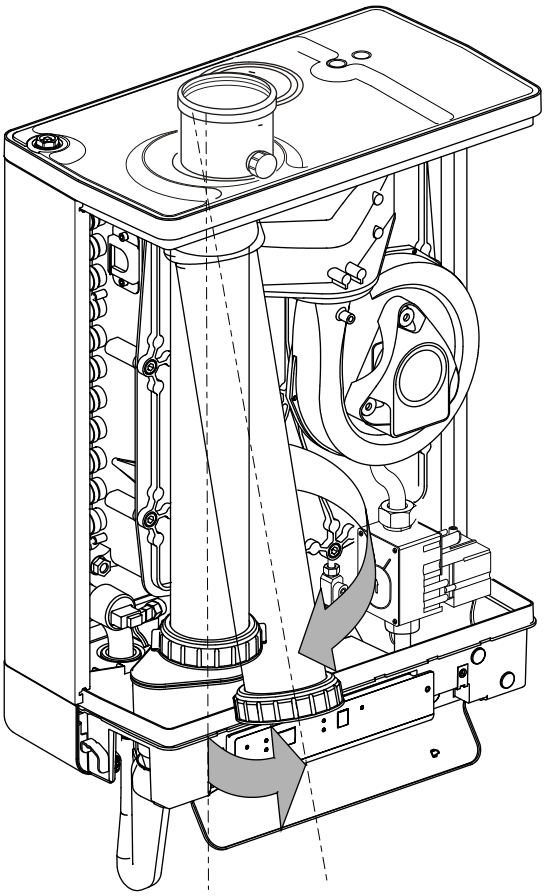
1. Turn off the appliance.
2. Turn off the main power supply of the appliance.
3. Close the gas tap.
4. Remove the front panel.
5. Wait until the appliance has cooled down.
6. Unscrew the coupling nut at the base of the flue pipe by turning counterclockwise.



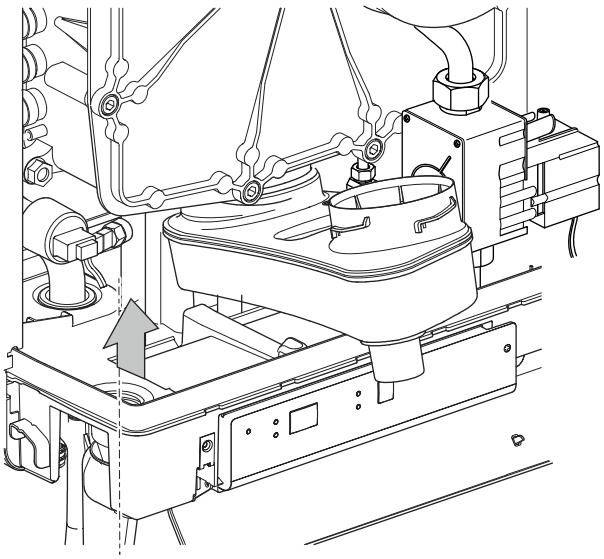
7 Slide the flue pipe upwards by turning it clockwise until the bottom of the pipe is above the condensate drain pan connection.



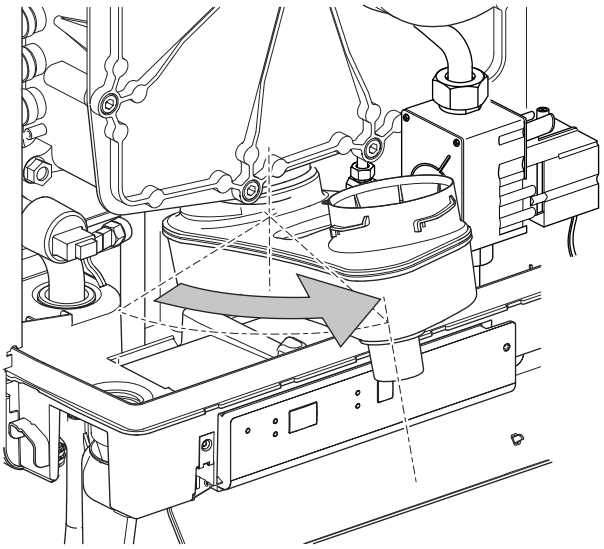
8 Pull the bottom of the pipe forwards and remove the pipe downwards by turning the pipe alternately clockwise and counterclockwise.



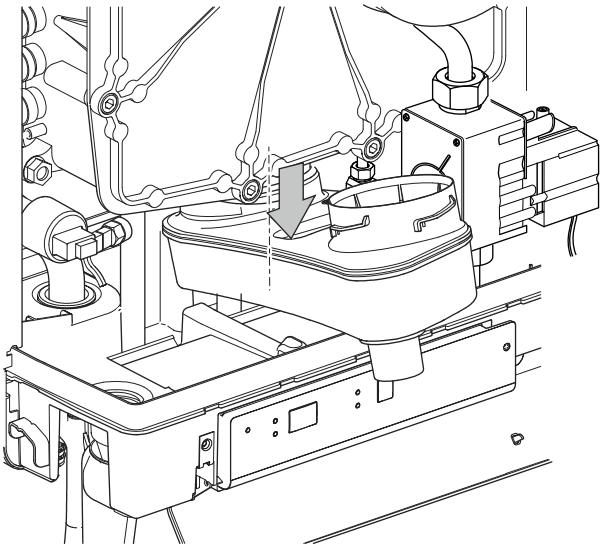
9 Lift the condensate drain pan on the left-hand side from the connection to the condensate trap.



10 Turn it to the right with the condensate trap connection over the edge of the base tray.



11 Push the backside of the condensate drain pan downwards from the connection to the heat exchanger and remove it.



12 Remove the connector from the fan and the ignition unit from the gas valve.

13 Unscrew the coupling below the gas valve.

14 Unscrew the socket head screws from the front cover and remove the socket complete with gas valve and fan to the front.

NOTICE

Make sure that the burner, insulation plate, gas valve, gas supply and fan do NOT get damaged.

12.6 To clean the inside of the gas boiler

1 Clean the heat exchanger from top to bottom with a plastic brush or compressed air.

2 Clean the underside of the heat exchanger.

3 Clean the condensate drain pan with water.

4 Clean the condensate trap with water.

12.7 To assemble the gas boiler

CAUTION

- When fitting the various seals, check them for damage, hardening, tears or hairline tears, and/or discolouration. Replace them when necessary.
- Check the position of the seals.
- Failure to fit the sensors S1 and/or S2 or to fit them correctly can result in serious damage
- Warranty will be void by NOT correctly replacing the removed parts.

1 Check the correct position of the seal around the front cover.

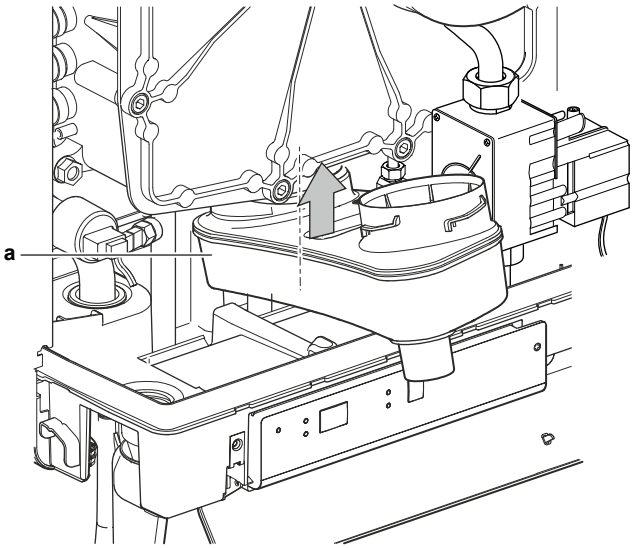
2 Place the front cover on the heat exchanger and secure by using the socket head screws plus serrated lock washers.

3 Tighten the socket head screws equally hand-tight by turning the hex key clockwise.

4 Fit the gas connection below the gas valve.

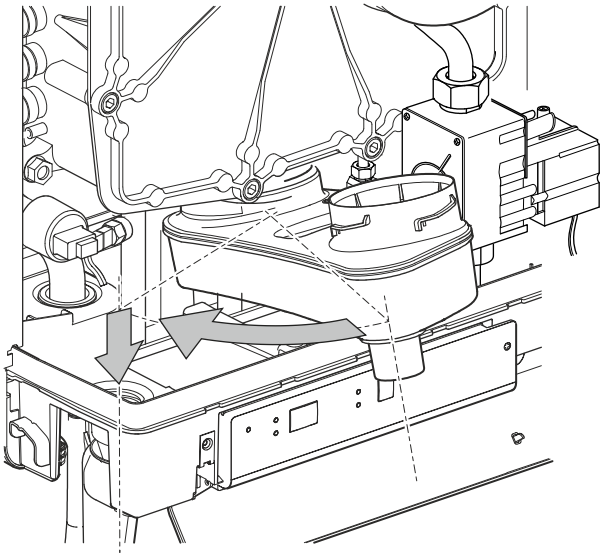
5 Fit the connector to the fan and the ignition unit to the gas valve.

6 Fit the condensate drain by sliding on the exchanger outlet stump with the condensate trap connection still in front of the base tray.



a Base tray

7 Turn the condensate drain to the left and push it downwards into the condensate trap connection. Make sure in doing this that the back of the condensate drain pan comes to rest on the lug of the back of the base tray.



8 Fill the condensate trap with water and fit it to the connection below the condensate drain pan.

9 Slide the flue pipe, turning it counterclockwise, with the top around the flue adapter into the top cover.

10 Insert the bottom into the condensate drain pan and tighten the coupling nut clockwise.

11 Open the gas tap and check the gas connections below the gas valve and on the mounting bracket for leakage.

12 Check the space heating and the water pipes for leakages.

13 Turn on the main power supply.

14 Turn on the appliance by pushing on the ⏻ button.

15 Check the front cover, the fan connection on the front cover and the flue pipe components for leakage.

16 Check the gas/air adjustment.

17 Fit the casing, tighten the 2 screws on the left and right side of the display.

18 Close the display cover.

19 Check the heating and hot water supply.

13 Troubleshooting

13.1 Overview: Troubleshooting

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

It contains information about:

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

Before troubleshooting

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

13.2 Precautions when troubleshooting

WARNING

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

DANGER: RISK OF ELECTROCUTION

WARNING

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

DANGER: RISK OF BURNING

13.3 Solving problems based on symptoms

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

Possible causes	Corrective action
The temperature setting is NOT correct	Check the temperature setting on the remote controller. Refer to the operation manual.
The water flow is too low	Check and make sure that: ▪ All shut-off valves of the water circuit are completely open. ▪ The water filter is clean. Clean if necessary. ▪ There is no air in the system. Purge air if necessary. You can purge air manually (see "To perform a manual air purge" on page 87) or use the automatic air purge function (see "To perform an automatic air purge" on page 87). ▪ The water pressure is >1 bar. ▪ The expansion vessel is NOT broken. ▪ The resistance in the water circuit is NOT too high for the pump (see the ESP curve in the "Technical data" chapter). If the problem persists after you have conducted all of the above checks, contact your dealer. In some cases, it is normal that the unit decides to use a low water flow.

Possible causes	Corrective action
The water volume in the installation is too low	Make sure that the water volume in the installation is above the minimum required value (see "6.4.3 To check the water volume and flow rate" on page 20).

13.3.2 Symptom: The compressor does NOT start (space heating or domestic water heating)

Possible causes	Corrective action
The unit must start up out of its operation range (the water temperature is too low)	If the water temperature is too low, the unit uses the gas boiler to reach the minimum water temperature first (15°C). Check and make sure that: ▪ The power supply to the gas boiler is correctly wired. ▪ The communication cable between the gas boiler and the indoor unit is properly mounted. If the problem persists after you have conducted all of the above checks, contact your dealer.
The preferential kWh rate power supply settings and electrical connections do NOT match	This should match with the connections as explained in "6.5 Preparing electrical wiring" on page 22 and "7.11.6 To connect the main power supply of the indoor unit" on page 40.
The preferential kWh rate signal was sent by the electricity company	Wait for the power to return (2 hours max.).

13.3.3 Symptom: The pump is making noise (cavitation)

Possible causes	Corrective action
There is air in the system	Purge air manually (see "To perform a manual air purge" on page 87) or use the automatic air purge function (see "To perform an automatic air purge" on page 87).
The water pressure at the pump inlet is too low	Check and make sure that: ▪ The water pressure is >1 bar. ▪ The pressure sensor of the gas boiler is not broken. ▪ The expansion vessel is NOT broken. ▪ The pre-pressure setting of the expansion vessel is correct (see "6.4.4 Changing the pre-pressure of the expansion vessel" on page 21).

13.3.4 Symptom: The pressure relief valve opens

Possible causes	Corrective action
The expansion vessel is broken	Replace the expansion vessel.
The water volume in the installation is too high	Make sure that the water volume in the installation is below the maximum allowed value (see "6.4.3 To check the water volume and flow rate" on page 20 and "6.4.4 Changing the pre-pressure of the expansion vessel" on page 21).
The water circuit head is too high	The water circuit head is the difference in height between the indoor unit and the highest point of the water circuit. If the indoor unit is located at the highest point of the installation, the installation height is considered 0 m. The maximum water circuit head is 7 m. Check the installation requirements.

13.3.5 Symptom: The water pressure relief valve leaks

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

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

Possible causes	Corrective action
Gas boiler operation is not activated	Check and make sure that: ▪ The gas boiler is switched On and is NOT in standby mode. ▪ The communication cable between the gas boiler and the indoor unit is properly mounted. ▪ There is no error code on the gas boiler display.
The gas boiler equilibrium temperature has not been configured correctly	Increase the "equilibrium temperature" to activate gas boiler operation at a higher outdoor temperature. Go to: ▪ [A.5.2.2] > Installer settings > Heat sources > Boiler > Equilibrium temp. OR ▪ [A.8] > Installer settings > Overview settings [5-01]
There is air in the system.	Purge air manually or automatically. See the air purge function in the "Commissioning" chapter.

Possible causes	Corrective action
Too much heat pump capacity is used for heating domestic hot water (applies only to installations with a domestic hot water tank)	Check and make sure that the "space heating priority" settings have been configured appropriately: ▪ Make sure that the "space heating priority status" has been enabled. Go to [A.8] > Installer settings > Overview settings [5-02] ▪ Increase the "space heating priority temperature" to activate backup heater operation at a higher outdoor temperature. Go to [A.8] > Installer settings > Overview settings [5-03]

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

Possible causes	Corrective action
Failing or blocked pressure relief valve.	▪ Flush and clean the complete tank including the piping between pressure relief valve and the cold water inlet. ▪ Replace the pressure relief valve.

13.3.8 Symptom: Tank disinfection function is NOT completed correctly (AH-error)

Possible causes	Corrective action
The disinfection function was interrupted by domestic hot water tapping	Program the start-up of the disinfection function when the coming 4 hours NO domestic hot water tapping is expected.
Large domestic hot water tapping happened recently before the programmed start-up of the disinfection function	When the Domestic hot water > Type > Reheat or Reheat + sched. is selected, it is recommended to program the start-up the disinfection function at least 4 hours later than the last expected large hot water tapping. This start-up can be set by installer settings (disinfection function). When the Domestic hot water > Type > Scheduled only is selected, it is recommended to program a Storage eco 3 hours before the scheduled start-up of the disinfection function to preheat the tank.
The disinfection operation was stopped manually: with the user interface displaying the DHW home page and its user permission level set to Installer, the ⏻ button was pressed during disinfection operation.	Do NOT press the ⏻ button while the disinfection function is active.

13.3.9 Symptom: Boiler abnormality detection (HJ-11 error)

Possible causes	Corrective action
Communication cable problem	Mount the communication cable between the gas boiler and the indoor unit properly.
Boiler error	Check the boiler display for error information.

13.3.10 Symptom: Boiler/hydrobox combination abnormality (UA52 error)

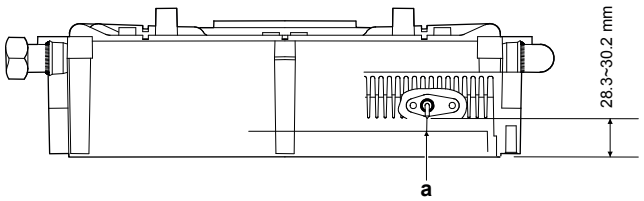
Possible causes	Corrective action
Boiler/hydrobox mismatch	Make sure that the E. setting is the following for: ▪ 0=for EHYHBH05 + EHYHBH08 ▪ 1=for EHYHBX08
Incompatibility of software	Update the boiler and hydrobox software to the latest version.

13.3.11 Symptom: The burner does NOT ignite

Possible causes	Corrective action
Gas tap is closed.	Open the gas tap.
Air in the gas tap.	Remove air from the gas pipe.
Gas supply pressure too low.	Contact the gas supply company.
No ignition.	Replace the ignition electrode.
No spark. Ignition unit on gas valve faulty.	▪ Check the cabling. ▪ Check the spark plug cap. ▪ Replace the ignition unit.
Gas/air adjustment NOT correctly set.	Check the adjustment. See "To check the carbon dioxide setting" on page 82.
Fan faulty.	▪ Check the wiring. ▪ Check the fuse. If necessary, replace the fan.
Fan dirty.	Clean the fan.
Gas valve faulty.	▪ Replace the gas valve. ▪ Re-adjust the gas valve, see "To check the carbon dioxide setting" on page 82.

13.3.12 Symptom: The burner ignites noisily

Possible causes	Corrective action
Gas supply pressure too high.	The house pressure switch may be faulty. Contact the gas company.
Incorrect ignition gap.	▪ Replace the ignition pin. ▪ Check the ignition electrode gap.
Gas/air adjustment NOT correctly set.	Check the setting. See "To check the carbon dioxide setting" on page 82.
Weak spark.	Check the ignition gap. Replace the ignition electrode. Replace the ignition unit on the gas valve.



a Spark gap (±4.5 mm)

13.3.13 Symptom: The burner resonates

Possible causes	Corrective action
Gas supply pressure too low.	The house pressure switch may be faulty. Contact the gas company.
Recirculation of combustion gasses.	Check the flue gas and the air supply.
Gas/air adjustment NOT correctly set.	Check the adjustment. See "To check the carbon dioxide setting" on page 82.

13.3.14 Symptom: No space heating by the gas boiler

Possible causes	Corrective action
Heat pump error	Check the user interface.
Communication problem with the heat pump.	Make sure the communication cable is properly installed.
Incorrect heat pump settings.	Check the settings in the heat pump manual.
The service display displays "-", the gas boiler is switched off.	Switch on the gas boiler with ⏻.
No current (24 V)	▪ Check the wiring. ▪ Check the connector X4.
The burner does NOT fire on space heating: sensor S1 or S2 faulty.	Replace sensor S1 or S2. See "Error codes of the gas boiler" on page 100.
Burner does NOT ignite.	See "13.3.11 Symptom: The burner does NOT ignite" on page 96.

13.3.15 Symptom: The power is reduced

Possible causes	Corrective action
At high rpm, the power has fallen by more than 5%.	▪ Check the appliance and flue system for fouling. ▪ Clean the appliance and flue system.

13.3.16 Symptom: Space heating does NOT reach the temperature

Possible causes	Corrective action
Weather-dependent setpoint setting is incorrect.	Check the setting on the user interface and adjust if necessary.
Temperature is too low.	Increase the space heating temperature.
No circulation in the installation.	Check whether there is circulation. At least 2 or 3 radiators MUST be open.
The boiler power has NOT been correctly set for the installation.	Adjust the power. See "Maximum space heating power setting" on page 81.
No heat transfer as a result of lime scale or fouling in the heat exchanger.	Descale or flush the heat exchanger on the space heating side.

13.3.17 Symptom: Hot water does NOT reach the temperature (no tank installed)

Not applicable for Switzerland

Possible causes	Corrective action
Domestic hot water flow is too high.	Adjust the inlet assembly.
Temperature setting for water circuit is too low.	Increase the domestic hot water setpoint on the domestic hot water homepage of the user interface.
No heat transfer as a result of lime scale or fouling in the heat exchanger domestic hot water side.	Descale or flush the exchanger domestic hot water side.
Cold water temperature <10°C.	The water inlet temperature is too low.
The domestic hot water temperature fluctuates between hot and cold.	▪ The flow is too low. To guarantee comfort, a minimum water flow of 5 l/min is recommended. ▪ Increase the domestic hot water setpoint on the domestic hot water homepage of the user interface.

13.3.18 Symptom: Hot water does NOT reach the temperature (tank installed)

Possible causes	Corrective action
The gas boiler has an error code.	Check the display of the gas boiler for more information.
The indoor unit has an error code.	Check for possible errors on the indoor unit.
The 3-way valve is not working correctly.	▪ Check the installation of the 3-way valve. ▪ In case of domestic hot water operation, the flow should be directed to the tank.

13.4 Solving problems based on error codes

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

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

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

13.4.1 Error codes: Overview

Error codes of the indoor unit

Error code	Detailed error code	Description
7H	01	Water flow problem.
7H	04	Water flow problem during domestic hot water production. Manual reset. Check the domestic hot water circuit.
7H	05	Water flow problem during heating/sampling. Manual reset. Check the space heating/cooling circuit.
7H	06	Water flow problem during cooling/defrost. Manual reset. Check the plate heat exchanger.
80	00	Returning water temperature sensor problem. Please contact your dealer.
81	05	Loosehanging tank temperature sensor
81	00	Leaving water temperature sensor problem. Please contact your dealer.
81	04	Leaving water temperature sensor not properly mounted.
89	01	Heat exchanger frozen.
89	02	Heat exchanger frozen.
89	03	Heat exchanger frozen.
8F	00	Abnormal increase outlet water temperature (DHW).
8H	00	Abnormal increase outlet water temperature.
8H	03	Overheating water circuit (thermostat).
A1	00	Zero cross detection problem. Power reset required. Please contact your dealer.
A1	01	EEPROM reading error.
AA	01	Backup heater overheated. Power reset required. Please contact your dealer.
AH	00	Tank disinfection function not completed correctly.
AJ	03	Too long DHW heat-up time required.
C0	00	Flow sensor/switch malfunction. Please contact your dealer.
C4	00	Heat exchanger temperature sensor problem. Please contact your dealer.
CJ	02	Room temperature sensor problem. Please contact your dealer.
EC	00	Abnormal increase tank temperature.
EC	04	Tank preheating
H1	00	External temperature sensor problem. Please contact your dealer.
HC	00	Tank temperature sensor problem. Please contact your dealer.
HJ	11	Boiler abnormality detection Check boiler Refer to boiler manual
HJ	12	Bypass valve turning error Please contact your dealer.
U3	00	Under floor heating screed dryout function not completed correctly.
U4	00	Indoor/outdoor unit communication problem.

Error code	Detailed error code	Description
U5	00	User interface communication problem.
U6	36	Boiler standby abnormality Check boiler Refer to boiler manual
U8	01	Connection with adapter lost Please contact your dealer.
UA	00	Indoor unit, outdoor unit matching problem. Power reset required.
UA	52	Boiler, indoor unit matching problem. Please contact your dealer.

INFORMATION

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

- When the Domestic hot water > Type > Reheat or Reheat + sched. is selected, it is recommended to program the start-up of the disinfection function at least 4 hours later than the last expected large hot water tapping. This start-up can be set by installer settings (disinfection function).
- When the Domestic hot water > Type > Scheduled only is selected, it is recommended to program a Storage eco 3 hours before the scheduled start-up of the disinfection function to preheat the tank.

NOTICE

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

Minimum required flow during heat pump operation		
05 models		7 l/min
08 models	Heating	8 l/min
	Cooling	8 l/min

Minimum required flow during defrost operation	
05 models	7 l/min
08 models	8 l/min

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

Error code	Detailed error code	Description
7H	04	The water flow problems mainly occurred during domestic hot water operation. Check the domestic hot water circuit.
7H	05	The water flow problems mainly occurred during space heating operation. Check the space heating circuit.
7H	06	The water flow problems mainly occurred during cooling/defrost operation. Check the space heating/cooling circuit. Additionally, this error code might be an indication of frost damage to the plate heat exchanger. In that case, contact your local dealer.

INFORMATION

Error AJ-03 is reset automatically from the moment there is a normal tank heat-up.

INFORMATION

Error EC-04 is reset automatically from the moment the domestic hot water tank is preheated to a sufficiently high temperature.

INFORMATION

If a U6-36 error occurs, press the gas boiler's On/off button.

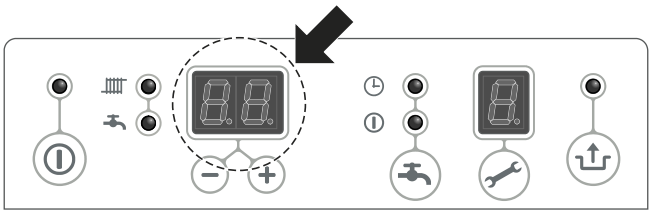
Error codes of the outdoor unit

Error code	Detailed error code	Description
A5	00	OU: High pressure cooling/Peak cut/ freeze protection problem. Please contact your dealer.
E1	00	OU: PCB defect. Power reset required. Please contact your dealer.
E3	00	OU: Actuation of high pressure switch (HPS). Please contact your dealer.
E5	00	OU: Overheat of inverter compressor motor. Please contact your dealer.
E6	00	OU: Compressor startup defect. Please contact your dealer.
E7	00	OU: Malfunction of outdoor unit fan motor. Please contact your dealer.
E8	00	OU: Power input overvoltage. Please contact your dealer.
EA	00	OU: Cool/heat switchover problem. Please contact your dealer.

Error code	Detailed error code	Description
H0	00	OU: Voltage/current sensor problem. Please contact your dealer.
H3	00	OU: Malfunction of high pressure switch (HPS) Please contact your dealer.
H6	00	OU: Malfunction of position detection sensor. Please contact your dealer.
H8	00	OU: Malfunction of compressor input (CT) system. Please contact your dealer.
H9	00	OU: Malfunction of outdoor air thermistor. Please contact your dealer.
F3	00	OU: Malfunction of discharge pipe temperature. Please contact your dealer.
F6	00	OU: Abnormal high pressure in cooling. Please contact your dealer.
FA	00	OU: Abnormal high pressure, actuation of HPS. Please contact your dealer.
JA	00	OU: Malfunction of high pressure sensor. Please contact your dealer.
J3	00	OU: Malfunction of discharge pipe thermistor. Please contact your dealer.
J6	00	OU: Malfunction of heat exchanger thermistor. Please contact your dealer.
L3	00	OU: Electrical box temperature rise problem. Please contact your dealer.
L4	00	OU: Malfunction of inverter radiating fin temperature rise. Please contact your dealer.
L5	00	OU: Inverter instantaneous overcurrent (DC). Please contact your dealer.
P4	00	OU: Malfunction of radiating fin temperature sensor. Please contact your dealer.
U0	00	OU: Shortage of refrigerant. Please contact your dealer.
U2	00	OU: Defect of power supply voltage. Please contact your dealer.
U7	00	OU: Transmission malfunction between main CPU- INV CPU. Please contact your dealer.
UA	00	OU: Indoor/outdoor combination problem. Power reset required.

Error codes of the gas boiler

The controller on the gas boiler detects faults and indicates them on the display by error codes.



If the LED is flashing, the controller has detected a problem. Once the problem is rectified, the controller can be restarted by pressing the ⏏ button.

Following table shows a list of error codes and the possible solutions.

Error code	Cause	Possible solution
10, 11, 12, 13, 14	Sensor fault S1	▪ Check wiring ▪ Replace S1
20, 21, 22, 23, 24	Sensor fault S2	▪ Check wiring ▪ Replace S2
0	Sensor fault after self-check	Replace S1 and/or S2
1	Temperature too high	▪ Air in installation ▪ Pump is NOT running ▪ Insufficient flow in installation ▪ Radiators are closed ▪ Pump setting is too low
2	S1 and S2 interchanged	▪ Check cable set ▪ Replace S1 and S2
4	No flame signal	▪ Gas tap is closed ▪ No or incorrect ignition gap ▪ Gas supply pressure is too low or fails ▪ Gas valve or ignition unit is NOT powered
5	Poor flame signal	▪ Condensate drain blocked ▪ Check adjustment of gas valve
6	Flame detection fault	▪ Replace ignition cable and spark plug cap ▪ Replace ignition unit ▪ Replace boiler controller

Error code	Cause	Possible solution
8	Incorrect fan speed	▪ Fan catching on casing ▪ Wiring between fan and casing ▪ Check wiring for poor wire contact ▪ Replace fan
29, 30	Gas valve relay fault	Replace boiler controller

14 Disposal

NOTICE

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

14.1 Overview: Disposal

Typical workflow

Disposing of the system typically consists of the following stages:

1 Pumping down the system.

2 Bringing the system to a specialized treatment facility.

INFORMATION

For more details, see the service manual.

14.2 To pump down

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

DANGER: RISK OF EXPLOSION

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

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

NOTICE

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

Pump down operation will extract all refrigerant from the system into the outdoor unit.

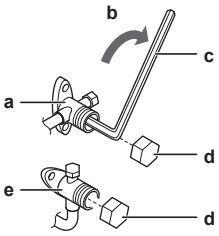
1 Remove the valve cap from the liquid stop valve and the gas stop valve.

2 Carry out forced cooling. See "14.3 To start and stop forced cooling" on page 101.

3 After 5 to 10 minutes (after only 1 or 2 minutes in case of very low ambient temperatures (<−10°C)), close the liquid stop valve with a hexagonal wrench.

4 Check on the manifold if the vacuum is reached.

5 After 2-3 minutes, close the gas stop valve and stop forced cooling.



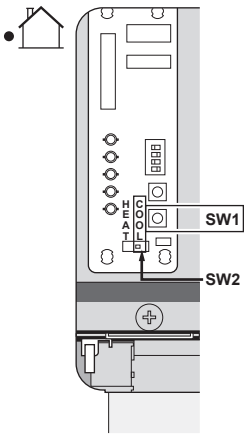
a Gas stop valve
b Closing direction
c Hexagonal wrench
d Valve cap
e Liquid stop valve

14.3 To start and stop forced cooling

Confirm that DIP switch SW2 is in COOL mode.

1 Press the forced cooling operation switch SW1 to begin forced cooling.

2 Press the forced cooling operation switch SW1 to stop forced cooling.



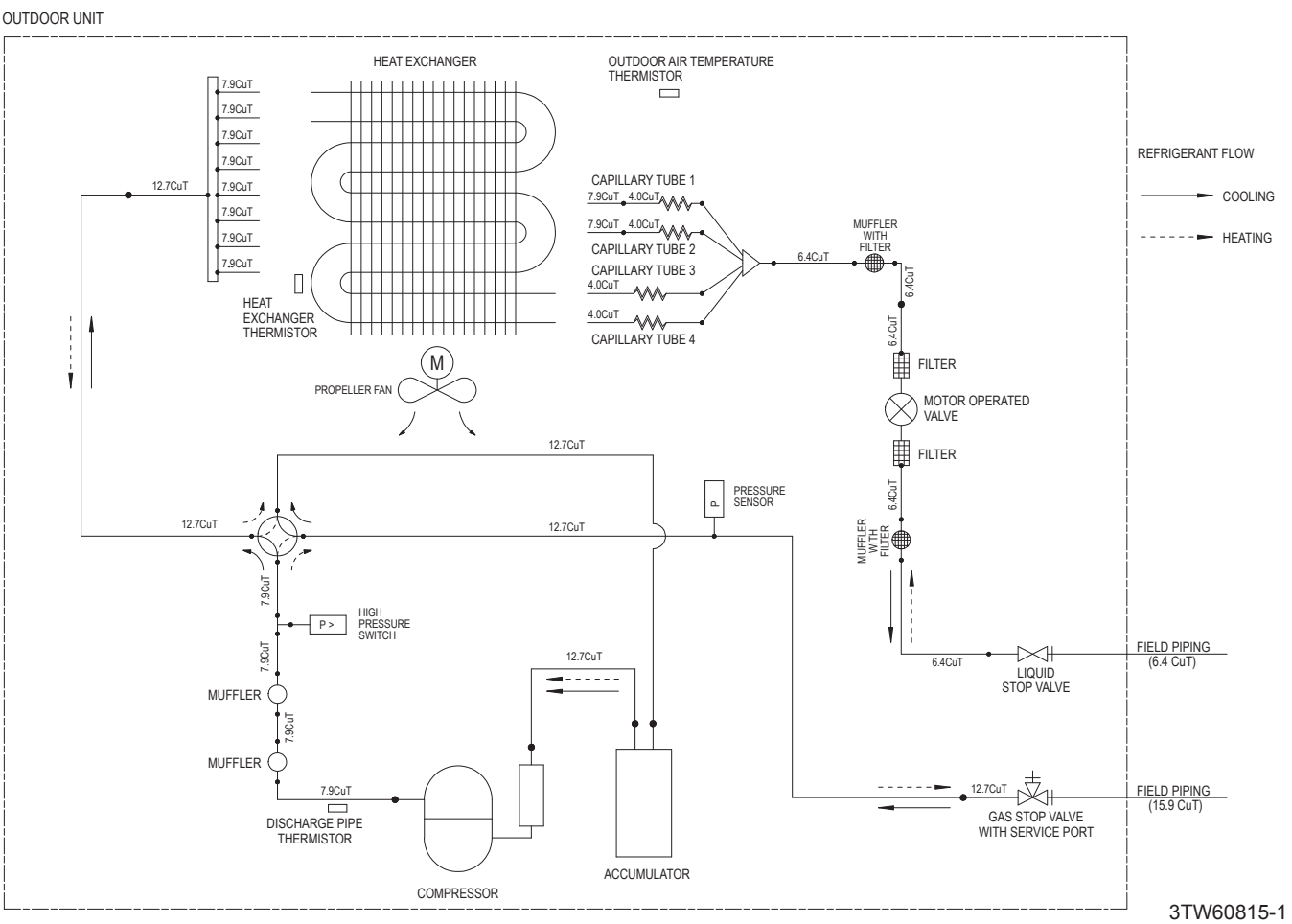
NOTICE

Take care that while running forced cooling operation, the water temperature remains higher than 5°C (see temperature read out of the indoor unit). You can achieve this, for example, by activating all fans of the fan coil units.

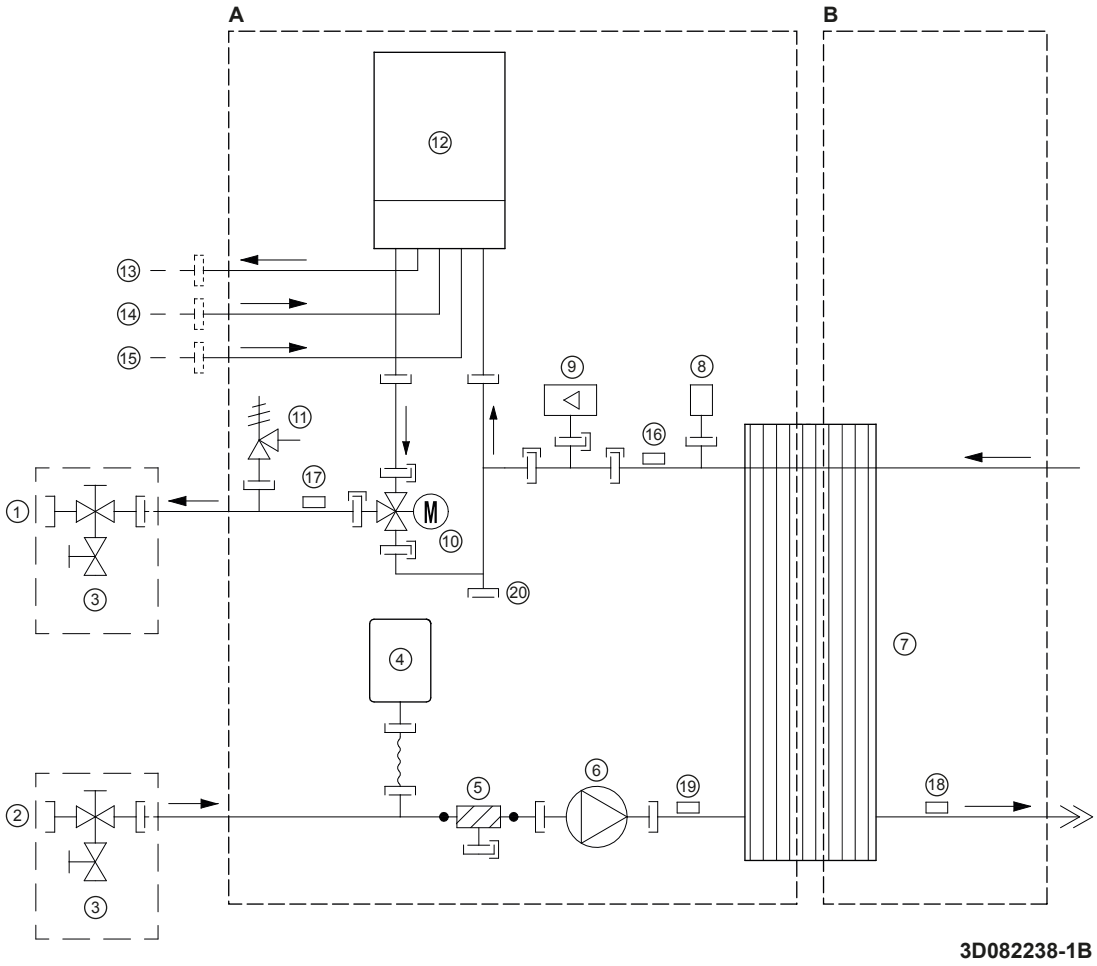
15 Technical data

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).

15.1 Piping diagram: Outdoor unit



15.2 Piping diagram: Indoor unit



3D082238-1B

A Water side
B Refrigerant side
1 Space heating/cooling water IN
2 Space heating/cooling water OUT
3 Shut-off valve with drain/fill valve
4 Expansion vessel
5 Filter
6 Pump
7 Plate heat exchanger
8 Air purge
9 Flow sensor
10 3-way valve
11 Safety valve
12 Gas boiler
13 Domestic hot water: hot water OUT
14 Gas pipe
15 Domestic hot water: hot water IN
16 R1T – Plate heat exchanger outlet water thermistor
17 R2T – Outlet water thermistor
18 R3T – Heat exchanger liquid pipe thermistor
19 R4T – Inlet water thermistor
20 Screw connection (only for EHYHBH05+EHYHBH08)
Screw connection
Quick coupling
Brazed connection
Flare connection

15.3 Wiring diagram: Outdoor unit

See the internal wiring diagram supplied with the unit (on the inside of the top plate). The abbreviations used are listed below.

C110~C112	Capacitor	DCM1, DCM2	Connector
DB1, DB2, DB401	Rectifier bridge	DP1, DP2	Connector
DC_N1, DC_N2	Connector	E1, E2	Connector
DC_P1, DC_P2	Connector	E1H	Drain pan heater
DCP1, DCP2,	Connector	FU1~FU5	Fuse

HL1, HL2, HL402	Connector
HN1, HN2, HN402	Connector
IPM1	Intelligent power module
L	Live
LED 1~LED 4	Indication lamps
LED A, LED B	Pilot lamp
M1C	Compressor motor
M1F	Fan motor
MR30, MR306, MR307, MR4	Magnetic relay
MRM10, MRM20	Magnetic relay
MR30_A, MR30_B	Connector
N	Neutral
PCB1	Printed circuit board (main)
PCB2	Printed circuit board (inverter)
PCB3	Printed circuit board (service)
Q1DI	Earth leakage circuit breaker
Q1L	Overload protector
R1T	Thermistor (discharge)
R2T	Thermistor (heat exchanger)
R3T	Thermistor (air)
S1NPH	Pressure sensor
S1PH	High pressure switch
S2~S503	Connector
SA1	Surge arrestor
SHEET METAL	Terminal strip on fixed plate
SW1, SW3	Push buttons
SW2, SW5	DIP switches
U	Connector
V	Connector
V2, V3, V401	Varistor
W	Connector
X11A, X12A	Connector
X1M, X2M	Terminal strip
Y1E	Electronic expansion valve coil
Y1R	Reversing solenoid valve coil
Z1C~Z4C	Ferrite core
	Field wiring
	Terminal strip
	Connector
	Terminal
	Protective earth
BLK	Black
BLU	Blue
BRN	Brown
GRN	Green
ORG	Orange
PPL	Purple
RED	Red
WHT	White
YLW	Yellow

15.4 Wiring diagram: Indoor unit

See the internal wiring diagram supplied with the unit (on the inside of the indoor unit switch box cover). The abbreviations used are listed below.

Notes to go through before starting the unit

English	Translation
Notes to go through before starting the unit	Notes to go through before starting the unit
X1M	Indoor/outdoor communication
X2M	Field wiring terminal for AC
X5M	Field wiring terminal for DC
	Earth wiring
	Field supply
→ **/12.2	Connection ** continues on page 12 column 2
①	Several wiring possibilities
	Option
	Not mounted in switch box
	Wiring depending on model
	PCB
User installed options	User installed options
☐ Domestic hot water tank	☐ Domestic hot water tank
☐ Domestic hot water tank with solar connection	☐ Domestic hot water tank with solar connection
☐ Remote user interface	☐ Remote user interface
☐ Ext. indoor thermistor	☐ External indoor thermistor
☐ Ext outdoor thermistor	☐ External outdoor thermistor
☐ Digital I/O PCB	☐ Digital I/O PCB
☐ Demand PCB	☐ Demand PCB

English	Translation
☐ Instant DHW recirculation	☐ Instant domestic hot water recirculation
Main LWT	Main leaving water temperature
☐ On/OFF thermostat (wired)	☐ On/OFF thermostat (wired)
☐ On/OFF thermostat (wireless)	☐ On/OFF thermostat (wireless)
☐ Ext. thermistor	☐ External thermistor
☐ Heat pump convector	☐ Heat pump convector
Add LWT	Additional leaving water temperature
☐ On/OFF thermostat (wired)	☐ On/OFF thermostat (wired)
☐ On/OFF thermostat (wireless)	☐ On/OFF thermostat (wireless)
☐ Ext. thermistor	☐ External thermistor
☐ Heat pump convector	☐ Heat pump convector

Position in switch box

English	Translation
Position in switch box	Position in switch box

Legend

A1P		Main PCB (hydrobox)
A2P		User interface PCB
A3P	*	On/OFF thermostat
A3P	*	Heat pump convector
A3P	*	Solar pump station PCB
A4P	*	Digital I/O PCB

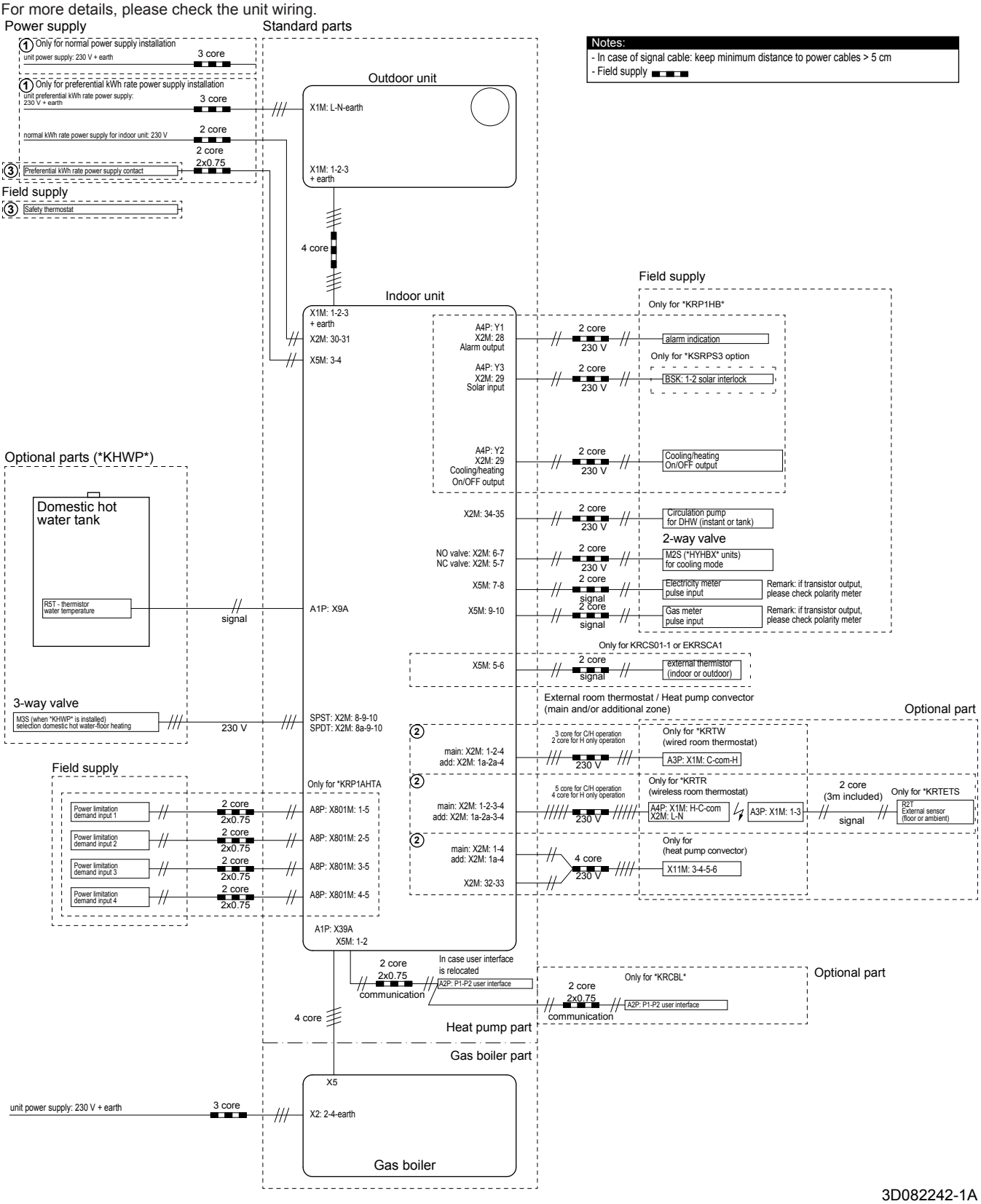
A4P	*	Receiver PCB (Wireless On/OFF thermostat, PC=power circuit)
A8P	*	Demand PCB
B1L		Flow sensor
DS1 (A8P)	*	DIP switch
F1U, F2U	*	Fuse 5 A 250 V for digital I/O PCB (A4P)
FU1		Fuse T 6.3 A 250 V for main PCB (A1P)
K*R		Relay on PCB
M1P		Main water supply pump
M2P	#	Domestic hot water pump
M2S	#	2-way valve for cooling mode
M3S		3-way valve for floor heating/domestic hot water tank
M4S		Bypass valve for gas boiler
PHC1	*	Optocoupler input circuit
PS		Switching power supply
Q*DI	#	Earth leakage circuit breaker
R1T (A1P)		Outlet water heat exchanger thermistor
R1T (A2P)		Ambient sensor user interface
R1T (A3P)	*	Ambient sensor On/OFF thermostat
R2T (A1P)		Outlet gas boiler thermistor
R2T (A4P)	*	External sensor (floor or ambient)
R3T (A1P)		Refrigerant liquid side thermistor
R4T (A1P)		Inlet water thermistor
R5T (A1P)	*	Domestic hot water thermistor
R6T (A1P)	*	External indoor or outdoor ambient thermistor
R1H (A3P)	*	Humidity sensor
S1S	#	Preferential kWh rate power supply contact
S2S	#	Electrical meter pulse input
S3S	#	Gas meter pulse input
S4S	#	Safety thermostat
S6S~S9S	#	Digital power limitation inputs
SS1 (A4P)	*	Selector switch
TR1, TR2		Power supply transformer
X*M		Terminal strip
X*Y		Connector
	* =	Optional
	# =	Field supply

Translation of text on wiring diagram

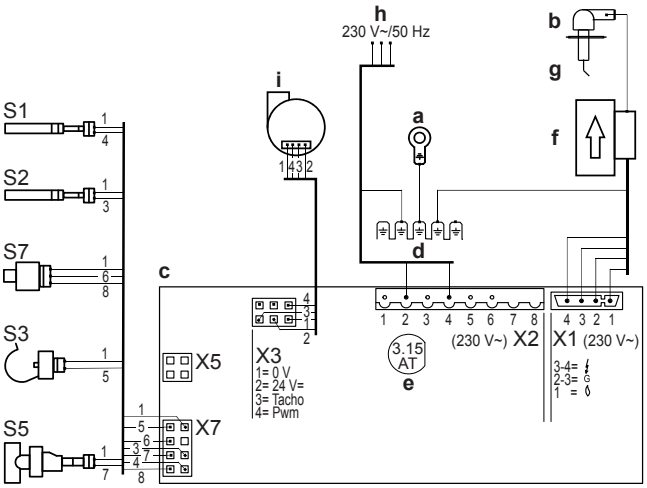
English	Translation
(1) Main power connection	(1) Main power connection
16 V DC detection (voltage supplied by PCB)	16 V DC detection (voltage supplied by PCB)
For preferential kWh rate power supply	For preferential kWh rate power supply
Indoor unit supplied from outdoor	Indoor unit supplied from outdoor
Normal kWh rate power supply	Normal kWh rate power supply
Only for normal power supply (standard)	Only for normal power supply (standard)
Only for preferential kWh rate power supply (outdoor)	Only for preferential kWh rate power supply (outdoor)
Outdoor unit	Outdoor unit
Use normal kWh rate power supply for indoor unit	Use normal kWh rate power supply for indoor unit
(2) Gas boiler interconnection	(2) Gas boiler interconnection
Gas boiler	Gas boiler
(3) User interface	(3) User interface
Only for remote user interface option	Only for remote user interface option
(4) Domestic hot water tank	(4) Domestic hot water tank
3 wire type SPDT	3 wire type SPDT
3 wire type SPST	3 wire type SPST
(5) Options	(5) Options
230 V AC supplied by PCB	230 V AC supplied by PCB
5 V DC pulse detection (voltage supplied by PCB)	5 V DC pulse detection (voltage supplied by PCB)
Continuous	Continuous current
DHW pump output	Domestic hot water pump output
DHW pump	Domestic hot water pump
Electrical and gas meter	Electrical and gas meter
Ext. thermistor option	External thermistor option
For safety thermostat	For safety thermostat
Inrush	Inrush current
Max. load	Maximum load
Normally closed	Normally closed
Normally open	Normally open
Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)	Safety thermostat contact: 16 V DC detection (voltage supplied by PCB)
Shut-off valve	Shut-off valve
(6) Option PCBs	(6) Option PCBs
12 V DC / 12 mA detection (voltage supplied by PCB)	12 V DC / 12 mA detection (voltage supplied by PCB)
Alarm output	Alarm output
Max. load	Maximum load
Min. load	Minimum load
Only for demand PCB option	Only for demand PCB option
Only for solar pump station	Only for solar pump station
Options: solar pump connection, alarm output, On/OFF output	Options: solar pump connection, alarm output, On/OFF output
Refer to operation manual	Refer to operation manual
Solar pump connection	Solar pump connection
Switch box	Switch box
Thermo On/OFF output	Thermo On/OFF output
(7) External room thermostats and heat pump convector	(7) External room thermostats and heat pump convector
Additional LWT zone	Additional leaving water temperature zone
Main LWT zone	Main leaving water temperature zone
Only for external sensor (floor/ambient)	Only for external sensor (floor or ambient)
Only for heat pump convector	Only for heat pump convector
Only for wired thermostat	Only for wired thermostat
Only for wireless thermostat	Only for wireless thermostat

Electrical connection diagram

For more details, please check the unit wiring.



15.5 Wiring diagram: Gas boiler

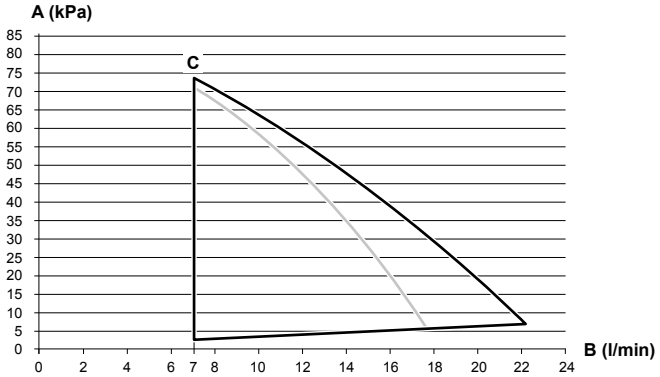


a Earth connections heat exchanger
b Spark plug cover
c Boiler controller
d Earth connections boiler controller
e Fuse (3.15 A T)
f Gas valve and ignition unit
g Ionisation/ignition probe
h Main voltage
i Fan
S1 Flow sensor
S2 Return sensor
S3 Domestic hot water sensor (not applicable for Switzerland)
S5 Flow switch
S7 Space heating water pressure sensor
X1 Gas valve and ignition electrode
X2 Main power supply (2=l (BRN), 4=N (BLU))
X3 Power supply fan (230 V)
X5 Boiler communication cable
X7 Sensor connection

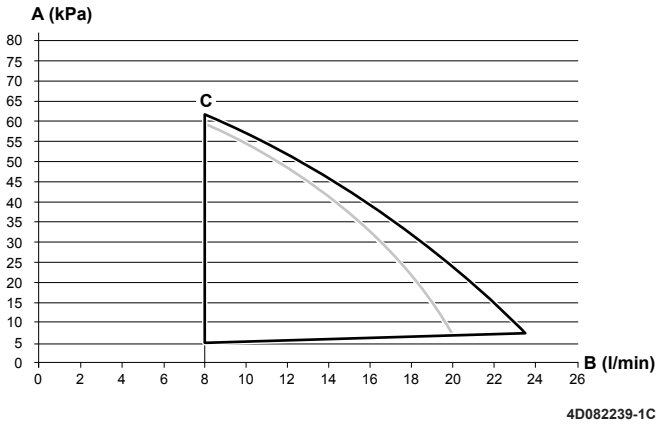
15.6 ESP curve: Indoor unit

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

5 kW



8 kW



A External static pressure
B Water flow rate
C Minimum water flow rate
Boiler bypassed
Boiler not bypassed

Note: Selecting a flow outside the area of operation can cause damage or malfunction of the unit. Water quality MUST be according to EN directive EC98/83EC.

15.7 Technical specifications: Gas boiler

15.7.1 General

	EHYKOMB33AA*
Function	Heating – Domestic hot water
Heat pump module	EHYHBH05
	EHYHBH/X08
Device category	C13, C33, C43, C53, C63, C83, C93
Gas	
Gas consumption (G20)	0.79~3.39 m^3/h
Gas consumption (G31)	0.30~1.29 m^3/h
Maximum flue gas temperature domestic hot water	70°C
Massive flow glue gas (maximum)	15.3 g/s
Available fan pressure	75 Pa
NOx class	6
NOx	50 mg/kWh
P1 at 30% of rated input (30/37)	32 kW
P4 rated output (80/60)	32 kW
η1 efficiency at P1	109.1%
η4 efficiency at P4	97.8%
Central heating	
Thermal load (Hi)	7.6~27.0 kW
Heating power space heating (80/60)	8.2~26.6 kW
Efficiency space heating (net calorific value 80/60)	98%
Efficiency space heating (net calorific value 40/30 (30%))	107%
Operation range	15~80°C
Pressure drop	See ESP curve in the installer reference guide.
Domestic hot water (not applicable for Switzerland)	
Heating power domestic hot water	7.6~32.7 kW
Efficiency domestic hot water (net calorific value)	105%
Operation range	40~65°C
Domestic hot water flow rate (setpoint 60°C)	9 l/min
Domestic hot water flow rate (setpoint 40°C)	15 l/min
Casing	
Colour	White – RAL9010
Material	Pre-coated sheet metal
Dimensions	
Packing (H×W×D)	820×490×270 mm
Unit (H×W×D)	710×450×240 mm
Machine net weight	36 kg
Packed machine weight	37 kg
Packing material	Carton/PP (straps)
Packing material (weight)	1 kg
Main components	
Water side heat exchanger	Aluminium
Space heating water circuit	
Space heating piping connections	Ø22 mm
Piping material	Cu
Safety valve	See indoor unit manual
Manometer	Yes
Drain/fill valve	No
Shut-off valves	No
Air purge valve	Yes
Maximum pressure space heating circuit	3 bar
Domestic hot water circuit (not applicable for Switzerland)	
Domestic hot water piping connections	Ø15 mm
Piping material	Cu
Gas connection	Ø15 mm
Flue gas/combustion air connection	Concentric connection Ø60/100 mm
Electrical	
Power supply voltage	230 V
Power supply phase	1~
Power supply frequency	50 Hz
IP class	IP44
Maximum electrical power consumption	55 W
Electrical power consumption (standby)	2 W

15.7.2 Gas category and supply pressure

Country	Gas category	Default setting	After conversion to G25	After conversion to G31
Germany	II2ELL3P	G20 (20 mbar)	G25 (25 mbar)	G31 (28~50 mbar)
Belgium[1]	I2E(s)3Pc, I3P	G20 (20 mbar)	G25 (25 mbar)	G31 (30 mbar)
France	II2Esi3P	G20 (20 mbar)	G25 (25 mbar)	G31 (30 mbar)
Italy	II2H3P	G20 (20 mbar)	—	G31 (30 mbar)
United Kingdom	II2H3P	G20 (20 mbar)	—	G31 (30~37 mbar)
Spain	II2H3P	G20 (20 mbar)	—	G31 (30~37 mbar)
Austria	II2H3P	G20 (20 mbar)	—	G31 (30~50 mbar)
Bulgaria	II2H3P	G20 (20 mbar)	—	G31 (30 mbar)
Czech Republic	II2H3+, II2H3P	G20 (20 mbar)	—	G31 (37 mbar)

(1) Any modifications to the gas valve MUST be performed by a certified representative of the manufacturer. For more information, contact your dealer.

15 Technical data

Country	Gas category	Default setting	After conversion to G25	After conversion to G31
Croatia	II2H3P	G20 (20 mbar)	—	G31 (30 mbar)
Hungary	II2HS3P	G25 (25 mbar)	—	G31 (30 mbar)
Slovakia	II2H3P	G20 (20 mbar)	—	G31 (30~50 mbar)
Slovenia	II2H3P	G20 (20 mbar)	—	G31 (37 mbar)
Portugal	II2H3+	G20 (20 mbar)	—	G31 (37 mbar)
Greece	II2H3+	G20 (20 mbar)	—	G31 (37 mbar)
Cyprus	II2H3+	G20 (20 mbar)	—	G31 (37 mbar)
Poland	II2H3P	G20 (20 mbar)	—	G31 (37 mbar)
Ireland	II2H3+	G20 (20 mbar)	—	G31 (37 mbar)
Turkey	II2H3+	G20 (20 mbar)	—	G31 (37 mbar)
Switzerland	II2H3+	G20 (20 mbar)	—	G31 (37 mbar)
Malta	I3P	—	—	G31 (30 mbar)
Lithuania	II2H3P	G20 (20 mbar)	—	G31 (30 mbar)
Latvia	II2H3P	G20 (20 mbar)	—	G31 (30 mbar)

GAS BOILER SYSTEM COMMISSIONING CHECKLIST

This Commissioning Checklist is to be completed in full by the competent person who commissioned the boiler as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference.

Failure to install and commission according to the manufacturer's instructions and complete this Benchmark Commissioning Checklist will invalidate the warranty. This does not affect the customer's statutory rights.

Customer Name _____ Telephone Number _____

Adress _____

Boiler Make and Model _____

Commissioned by *(print name)* _____ Gas Safe Register Number _____

Company Name _____ Telephone Number _____

Company Adress _____

_____ Commissioning Date _____

To be completed by the customer on receipt of a Building Regulations Compliance Certificate*:

Buiding Regulations Notification Number *(if applicable)*

CONTROLS Tick the appropriate boxes

Time and Temperature Control to Heating	Room Thermostat and Programmer/Timer ☐	Programmable Room Thermostat ☐	Load/Weather Compensation ☐	Optimum Start Control ☐
Time and Temperature Control to Hot Water		Cylinder Thermostat and Programmer/Timer ☐		Combination Boiler ☐
Heating Zone Valves			Fitted ☐	Not Required ☐
Hot Water Zone Valves			Fitted ☐	Not Required ☐
Thermostatic Radiator Valves			Fitted ☐	Not Required ☐
Automatic Bypass to System			Fitted ☐	Not Required ☐
Boiler Interlock				Provided ☐

ALL SYSTEMS

The system has been flushed and cleaned in accordance with BS7593 and boiler manufacturer's instructions — Yes ☐

What system cleaner was used?

What inhibitor was used? — Quantity ☐ litres

CENTRAL HEATING MODE Measure and record:

Gas Rate	☐ m^3/hr	OR		☐	ft^3/hr
Burner Operating Pressure (if applicable)	☐ mbar	OR	Gas Inlet Pressure	☐	mbar
Central Heating Flow Temperature				☐	°C
Central Heating Return Temperature				☐	°C

COMBINATION BOILERS ONLY

Is the installation in a hard water area (above 200ppm)? — Yes ☐ No ☐

If yes, and if required by the manufacturer, has a water scale reducer been fitted? — Yes ☐ No ☐

What type of scale reducer has been fitted?

DOMESTIC HOT WATER MODE Measure and Record:

Gas Rate	☐ m^3/hr	OR		☐	ft^3/hr
Burner Operating Pressure (at maximum rate)	☐ mbar	OR	Gas inlet Pressure (at maximum rate)	☐	mbar
Cold Water Inlet Temperature				☐	°C
Hot water has been checked at all outlets			Yes ☐ Temperature	☐	°C
Water Flow Rate				☐	l/min

Condensing Boilers Only

The Condensate drain has been installed in accordance with the manufacturer's instructions and/or BS5546/BS6798 — Yes ☐

If the condensate pipe terminates externally has the pipe diameter been increased and waterproof insulation fitted? — Yes ☐

ALL INSTALLATIONS

If required by the manufacturer, record the following — CO_2 ☐ % OR CO ☐ *ppm* OR co/co_2 ratio ☐

The heating and hot water system complies with the appropriate Building Regulations — Yes ☐

The boiler and associated products have been installed and commissioned in accordance with the manufacturer's instructions — Yes ☐

The operation of the boiler and system controls have been demonstrated to and understood by the customer — Yes ☐

The manufacturer's literature, including Benchmark Checklist and Service Record, has been explained and left with the the customer — Yes ☐

Commissioning Engineer's Signature

Customer's Signature

(To confirm satisfactory demonstration and receipt of manufacturer's literature)

*All installations in England and Wales must be notified to Local Authority Building Control (LABC) either directly or through a Competent Persons Scheme.
A Building Regulations Compliance Certificate will then be issued to the customer.

benchmark
THE MARK OF QUALITY FOR THE INSTALLATION, COMMISSIONING AND SERVICING OF DOMESTIC HEATING AND HOT WATER SYSTEMS

www.centralheating.co.uk

Service Record

It is recommended that your heating system is serviced regularly and that the appropriate Service Interval Record is completed.

Service Provider

Before completing the appropriate Service Record below, please ensure you have carried out the service as described in the manufacturer's instructions.

Always use the manufacturer's specified spare part when replacing controls.

Service 1 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 2 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 3 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 4 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 5 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 6 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 7 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 8 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 9 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

Service 10 Date:
Engineer Name:
Company Name:
Telephone No.
Gas Safe Register No.
Comments:
Signature:

16 Glossary

Dealer

Sales distributor for the product.

Authorized installer

Technical skilled person who is qualified to install the product.

User

Person who is owner of the product and/or operates the product.

Applicable legislation

All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company

Qualified company which can perform or coordinate the required service to the product.

Installation manual

Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual

Instruction manual specified for a certain product or application, explaining how to operate it.

Maintenance instructions

Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories

Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment

Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supply

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

Field settings table

[6.8.2] = ... **ID66F3**

Applicable indoor units

*HYHBH05AAV3
*HYHBH08AAV3
*HYHBX08AAV3

Notes

-

Field settings table

Breadcrumb	Field code	Setting name			Range, step **Default value**	Installer setting at variance with default value: Date	Value
User settings							
└ Preset values							
└ Room temperature							
7.4.1.1		Comfort (heating)		R/W	[3-07]~[3-06], step: A.3.2.4 **21°C**		
7.4.1.2		Eco (heating)		R/W	[3-07]~[3-06], step: A.3.2.4 **19°C**		
7.4.1.3		Comfort (cooling)		R/W	[3-09]~[3-08], step: A.3.2.4 **24°C**		
7.4.1.4		Eco (cooling)		R/W	[3-09]~[3-08], step: A.3.2.4 **26°C**		
└ LWT main							
7.4.2.1	[8-09]	Comfort (heating)		R/W	[9-01]~[9-00], step: 1°C **45°C**		
7.4.2.2	[8-0A]	Eco (heating)		R/W	[9-01]~[9-00], step: 1°C **40°C**		
7.4.2.3	[8-07]	Comfort (cooling)		R/W	[9-03]~[9-02], step: 1°C **18°C**		
7.4.2.4	[8-08]	Eco (cooling)		R/W	[9-03]~[9-02], step: 1°C **20°C**		
7.4.2.5		Comfort (heating)		R/W	-10~10°C, step: 1°C **0°C**		
7.4.2.6		Eco (heating)		R/W	-10~10°C, step: 1°C **-2°C**		
7.4.2.7		Comfort (cooling)		R/W	-10~10°C, step: 1°C **0°C**		
7.4.2.8		Eco (cooling)		R/W	-10~10°C, step: 1°C **2°C**		
└ Tank temperature							
7.4.3.1	[6-0A]	Storage comfort		R/W	30~[6-0E]°C, step: 1°C **60°C**		
7.4.3.2	[6-0B]	Storage eco		R/W	30~min(50, [6-0E]) °C, step: 1°C **50°C**		
7.4.3.3	[6-0C]	Reheat		R/W	30~min(50, [6-0E]) °C, step: 1°C **50°C**		
└ Quiet level							
7.4.4				R/W	0: Level 1 **1: Level 2** 2: Level 3		
└ Electricity price							
7.4.5.1	[C-0C] [D-0C]	High		R/W	0,00~990/kWh **20/kWh**		
7.4.5.2	[C-0D] [D-0D]	Medium		R/W	0,00~990/kWh **20/kWh**		
7.4.5.3	[C-0E] [D-0E]	Low		R/W	0,00~990/kWh **15/kWh**		
└ Fuel price							
7.4.6				R/W	0,00~990/kWh 0,00~290/MBtu **8,0/kWh**		
└ Set weather dependent							
└ Main							
└ Set weather-dependent heating							
7.7.1.1	[1-00]	Set weather-dependent heating	Low ambient temp. for LWT main zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
7.7.1.1	[1-01]	Set weather-dependent heating	High ambient temp. for LWT main zone heating WD curve.	R/W	10~25°C, step: 1°C 15°C		
7.7.1.1	[1-02]	Set weather-dependent heating	Leaving water value for low ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~[9-00]°C, step: 1°C **60°C**		
7.7.1.1	[1-03]	Set weather-dependent heating	Leaving water value for high ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~min(45,[9-00])°C, step: 1°C **35°C**		
└ Set weather-dependent cooling							
7.7.1.2	[1-06]	Set weather-dependent cooling	Low ambient temp. for LWT main zone cooling WD curve.	R/W	10~25°C, step: 1°C **20°C**		
7.7.1.2	[1-07]	Set weather-dependent cooling	High ambient temp. for LWT main zone cooling WD curve.	R/W	25~43°C, step: 1°C **35°C**		
7.7.1.2	[1-08]	Set weather-dependent cooling	Leaving water value for low ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C **22°C**		
7.7.1.2	[1-09]	Set weather-dependent cooling	Leaving water value for high ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C **18°C**		
└ Additional							
└ Set weather-dependent heating							
7.7.2.1	[0-00]	Set weather-dependent heating	Leaving water value for high ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~min(45,[9-06])°C, step: 1°C **35°C**		
7.7.2.1	[0-01]	Set weather-dependent heating	Leaving water value for low ambient temp. for LWT add zone heating WD curve.	R/W	[9-05]~[9-06]°C, step: 1°C **60°C**		
7.7.2.1	[0-02]	Set weather-dependent heating	High ambient temp. for LWT add zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
7.7.2.1	[0-03]	Set weather-dependent heating	Low ambient temp. for LWT add zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
└ Set weather-dependent cooling							
7.7.2.2	[0-04]	Set weather-dependent cooling	Leaving water value for high ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C **8°C**		
7.7.2.2	[0-05]	Set weather-dependent cooling	Leaving water value for low ambient temp. for LWT add zone cooling WD curve.	R/W	[9-07]~[9-08]°C, step: 1°C **12°C**		
7.7.2.2	[0-06]	Set weather-dependent cooling	High ambient temp. for LWT add zone cooling WD curve.	R/W	25~43°C, step: 1°C **35°C**		
7.7.2.2	[0-07]	Set weather-dependent cooling	Low ambient temp. for LWT add zone cooling WD curve.	R/W	10~25°C, step: 1°C **20°C**		
Installer settings							
└ System layout							
└ Standard							
A.2.1.1	[E-00]	Unit type		R/O	0~5 **3: Hybrid**		
A.2.1.2	[E-01]	Compressor type		R/O	**0: 08**		
A.2.1.3	[E-02]	Indoor software type		R/O	*HYHBH05+08: **1: Type 2** *HYHBX08: **0: Type 1**		
A.2.1.6	[D-01]	Forced off contact		R/W	**0: No** 1: Open tariff 2: Closed tariff 3: Thermostat		
A.2.1.7	[C-07]	Unit control method		R/W	0: LWT control 1: Ext RT control **2: RT control**		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name			Range, step **Default value**	Date	Value
A.2.1.8	[7-02]	Number of LWT zones		R/W	**0: 1 LWT zone** 1: 2 LWT zones		
A.2.1.9	[F-0D]	Pump operation mode		R/W	0: Continuous 1: Sample **2: Request**		
A.2.1.A	[E-04]	Power saving possible		R/O	**1: Yes**		
A.2.1.B		User interface location		R/W	0: At unit **1: In room**		
		└ Options					
A.2.2.1	[E-05]	DHW operation		R/W	0: No **1: Yes**		
A.2.2.2	[E-06]	DHW tank		R/W	**0: No** 1: Yes		
A.2.2.3	[E-07]	DHW tank type		R/W	0~6 **4: Type 5** 6: Type 7		
A.2.2.4	[C-05]	Contact type main		R/W	1: Thermo ON/OFF **2: C/H request**		
A.2.2.5	[C-06]	Contact type add.		R/W	1: Thermo ON/OFF **2: C/H request**		
A.2.2.6.2	[D-07]	Digital I/O PCB	Solar kit	R/W	**0: No** 1: Yes		
A.2.2.6.3	[C-09]	Digital I/O PCB	Alarm output	R/W	**0: Normally open** 1: Normally closed		
A.2.2.7	[D-04]	Demand PCB		R/W	**0: No** 1: Pwr consmp ctrl		
A.2.2.8	[D-08]	External kWh meter 1		R/W	**0: No** 1: 0,1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
A.2.2.A	[D-02]	DHW pump		R/W	**0: No** 1: Secondary rtrn 2: Disinf. Shunt 3: Circul. Pump 4: CP & disinf. Sh		
A.2.2.B	[C-08]	External sensor		R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
A.2.2.C	[D-0A]	External gas meter		R/W	**0: Not present** 1: 1 /m³ 2: 10 /m³ 3: 100 /m³		
		└ Space operation					
		└ LWT settings					
		└ Main					
A.3.1.1.1		LWT setpoint mode		R/W	0: Fixed **1: Weather dep.** 2: Fixed / scheduled 3: WD / scheduled		
A.3.1.1.2.1	[9-01]	Temperature range	Minimum temp (heating)	R/W	15~37°C, step: 1°C **25°C**		
A.3.1.1.2.2	[9-00]	Temperature range	Maximum temp (heating)	R/W	37~80°C, step: 1°C **80°C**		
A.3.1.1.2.3	[9-03]	Temperature range	Minimum temp (cooling)	R/W	5~18°C, step: 1°C **5°C**		
A.3.1.1.2.4	[9-02]	Temperature range	Maximum temp (cooling)	R/W	18~22°C, step: 1°C **22°C**		
A.3.1.1.5	[8-05]	Modulated LWT		R/W	0: No **1: Yes**		
A.3.1.1.6.1	[F-0B]	Shut-off valve	Thermo On/OFF	R/W	**0: No** 1: Yes		
A.3.1.1.6.2	[F-0C]	Shut-off valve	Cooling	R/W	0: No **1: Yes**		
A.3.1.1.7	[9-0B]	Emitter type		R/W	**0: Quick** 1: Slow		
		└ Additional					
A.3.1.2.1		LWT setpoint mode		R/W	0: Fixed **1: Weather dep.** 2: Fixed / scheduled 3: WD / scheduled		
A.3.1.2.2.1	[9-05]	Temperature range	Minimum temp (heating)	R/W	15~37°C, step: 1°C **25°C**		
A.3.1.2.2.2	[9-06]	Temperature range	Maximum temp (heating)	R/W	37~80°C, step: 1°C **80°C**		
A.3.1.2.2.3	[9-07]	Temperature range	Minimum temp (cooling)	R/W	5~18°C, step: 1°C **5°C**		
A.3.1.2.2.4	[9-08]	Temperature range	Maximum temp (cooling)	R/W	18~22°C, step: 1°C **22°C**		
		└ Room thermostat					
A.3.2.1.1	[3-07]	Room temp. range	Minimum temp (heating)	R/W	12~18°C, step: A.3.2.4 **12°C**		
A.3.2.1.2	[3-06]	Room temp. range	Maximum temp (heating)	R/W	18~30°C, step: A.3.2.4 **30°C**		
A.3.2.1.3	[3-09]	Room temp. range	Minimum temp (cooling)	R/W	15~25°C, step: A.3.2.4 **15°C**		
A.3.2.1.4	[3-08]	Room temp. range	Maximum temp (cooling)	R/W	25~35°C, step: A.3.2.4 **35°C**		
A.3.2.2	[2-0A]	Room temp. offset		R/W	-5~5°C, step: 0,5°C **0°C**		
A.3.2.3	[2-09]	Ext. room sensor offset		R/W	-5~5°C, step: 0,5°C **0°C**		
A.3.2.4		Room temp. step		R/W	**0: 1°C** 1: 0,5°C		
		└ Operation range					
A.3.3.1	[4-02]	Space heating OFF temp		R/W	14~35°C, step: 1°C **25°C**		
A.3.3.2	[F-01]	Space cooling On temp		R/W	10~35°C, step: 1°C **20°C**		
		└ Domestic hot water (DHW)					
		└ Type					
A.4.1	[6-0D]			R/W	0: Reheat only 1: Reheat + sched. **2: Scheduled only**		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name			Range, step **Default value**	Date	Value
		└ Disinfection					
A.4.4.1	[2-01]	Disinfection		R/W	**0: No** 1: Yes		
A.4.4.2	[2-00]	Operation day		R/W	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday **5: Friday** 6: Saturday 7: Sunday		
A.4.4.3	[2-02]	Start time		R/W	0~23 hour, step: 1 hour **23**		
A.4.4.4	[2-03]	Temperature target		R/W	fixed value **60°C**		
A.4.4.5	[2-04]	Duration		R/W	40~60 min, step: 5 min **40 min**		
		└ Maximum setpoint					
A.4.5	[6-0E]			R/W	[E-06]=1 [E-07] ≠ 6: 40~75°C, step: 1°C, **75°C** [E-07] = 6: 40~60°C, step: 1°C, **60°C** [E-06]=0 40~65°C, step: 1°C, **65°C**		
		└ SP mode					
A.4.6				R/W	**0: Fixed** 1: Weather dep.		
		└ Weather dependent curve					
A.4.7	[0-0B]	Weather-dependent curve	DHW setpoint for high ambient temp. for DHW WD curve.	R/W	35~[6-0E]°C, step: 1°C **55°C**		
A.4.7	[0-0C]	Weather-dependent curve	DHW setpoint for low ambient temp. for DHW WD curve.	R/W	45~[6-0E]°C, step: 1°C **60°C**		
A.4.7	[0-0D]	Weather-dependent curve	High ambient temp. for DHW WD curve.	R/W	10~25°C, step: 1°C **15°C**		
A.4.7	[0-0E]	Weather-dependent curve	Low ambient temp. for DHW WD curve.	R/W	-40~5°C, step: 1°C -10°C		
	└ Heat sources						
		└ Boiler					
A.5.2.2	[5-01]	Equilibrium temp.		R/W	-15~35°C, step: 1°C **5°C**		
	└ System operation						
		└ Auto restart					
A.6.1	[3-00]			R/W	0: No **1: Yes**		
		└ Pwr consumpt. Control					
A.6.3.1	[4-08]	Mode		R/W	**0: No limitation** 1: Continuous 2: Digital inputs		
A.6.3.2	[4-09]	Type		R/W	0: Current **1: Power**		
A.6.3.3	[5-05]	Amp. value		R/W	0~50 A, step: 1 A **50 A**		
A.6.3.4	[5-09]	kW value		R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.5.1	[5-05]	Amp. limits for DI	Limit DI1	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.5.2	[5-06]	Amp. limits for DI	Limit DI2	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.5.3	[5-07]	Amp. limits for DI	Limit DI3	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.5.4	[5-08]	Amp. limits for DI	Limit DI4	R/W	0~50 A, step: 1 A **50 A**		
A.6.3.6.1	[5-09]	kW limits for DI	Limit DI1	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.6.2	[5-0A]	kW limits for DI	Limit DI2	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.6.3	[5-0B]	kW limits for DI	Limit DI3	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.6.3.6.4	[5-0C]	kW limits for DI	Limit DI4	R/W	0~20 kW, step: 0,5 kW **20 kW**		
		└ Averaging time					
A.6.4	[1-0A]			R/W	0: No averaging **1: 12 hours** 2: 24 hours 3: 48 hours 4: 72 hours		
		└ Ext amb. sensor offset					
A.6.5	[2-0B]			R/W	-5~5°C, step: 0,5°C **0°C**		
		└ Savings mode					
A.6.7	[7-04]			R/W	**0: Economical** 1: Ecological		
		└ Emergency					
A.6.C				R/W	**0: Manual** 1: Automatic		
	└ Overview settings						
A.8	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating WD curve.		R/W	[9-05]~min(45,[9-06])°C, step: 1°C **35°C**		
A.8	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating WD curve.		R/W	[9-05]~[9-06]°C, step: 1°C **60°C**		
A.8	[0-02]	High ambient temp. for LWT add zone heating WD curve.		R/W	10~25°C, step: 1°C **15°C**		
A.8	[0-03]	Low ambient temp. for LWT add zone heating WD curve.		R/W	-40~5°C, step: 1°C **-10°C**		
A.8	[0-04]	Leaving water value for high ambient temp. for LWT add zone cooling WD curve.		R/W	[9-07]~[9-08]°C, step: 1°C **8°C**		
A.8	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling WD curve.		R/W	[9-07]~[9-08]°C, step: 1°C **12°C**		
A.8	[0-06]	High ambient temp. for LWT add zone cooling WD curve.		R/W	25~43°C, step: 1°C **35°C**		
A.8	[0-07]	Low ambient temp. for LWT add zone cooling WD curve.		R/W	10~25°C, step: 1°C **20°C**		
A.8	[0-0B]	Leaving water value for high ambient temp. for DHW WD curve.		R/W	35~[6-0E]°C, step: 1°C **55°C**		
A.8	[0-0C]	Leaving water value for low ambient temp. for DHW WD curve.		R/W	45~[6-0E]°C, step: 1°C **60°C**		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
A.8	[0-0D]	High ambient temp. for DHW WD curve.	R/W	10~25°C, step: 1°C **15°C**		
A.8	[0-0E]	Low ambient temp. for DHW WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
A.8	[1-00]	Low ambient temp. for LWT main zone heating WD curve.	R/W	-40~5°C, step: 1°C **-10°C**		
A.8	[1-01]	High ambient temp. for LWT main zone heating WD curve.	R/W	10~25°C, step: 1°C **15°C**		
A.8	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~[9-00]°C, step: 1°C **60°C**		
A.8	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating WD curve.	R/W	[9-01]~min(45,[9-00])°C, step: 1°C **35°C**		
A.8	[1-04]	Weather dependent cooling of the main leaving water temperature zone.	R/W	0: Disabled **1: Enabled**		
A.8	[1-05]	Weather dependent cooling of the additional leaving water temperature zone.	R/W	0: Disabled **1: Enabled**		
A.8	[1-06]	Low ambient temp. for LWT main zone cooling WD curve.	R/W	10~25°C, step: 1°C **20°C**		
A.8	[1-07]	High ambient temp. for LWT main zone cooling WD curve.	R/W	25~43°C, step: 1°C **35°C**		
A.8	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C **22°C**		
A.8	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling WD curve.	R/W	[9-03]~[9-02]°C, step: 1°C **18°C**		
A.8	[1-0A]	What is the averaging time for the outdoor temp?	R/W	0: No averaging **1: 12 hours** 2: 24 hours 3: 48 hours 4: 72 hours		
A.8	[2-00]	When should the disinfection function be executed?	R/W	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday **5: Friday** 6: Saturday 7: Sunday		
A.8	[2-01]	Should the disinfection function be executed?	R/W	**0: No** 1: Yes		
A.8	[2-02]	When should the disinfection function start?	R/W	0~23 hour, step: 1 hour **23**		
A.8	[2-03]	What is the disinfection target temperature?	R/W	fixed value **60°C**		
A.8	[2-04]	How long must the tank temperature be maintained?	R/W	40~60 min, step: 5 min **40 min**		
A.8	[2-05]	Room antifrost temperature	R/W	4~16°C, step: 1°C **8°C**		
A.8	[2-06]	Room frost protection	R/W	0: Disabled **1: Enabled**		
A.8	[2-09]	Adjust the offset on the measured room temperature	R/W	-5~5°C, step: 0,5°C **0°C**		
A.8	[2-0A]	Adjust the offset on the measured room temperature	R/W	-5~5°C, step: 0,5°C **0°C**		
A.8	[2-0B]	What is the required offset on the measured outdoor temp.?	R/W	-5~5°C, step: 0,5°C **0°C**		
A.8	[3-00]	Is auto restart of the unit allowed?	R/W	0: No **1: Yes**		
A.8	[3-01]	--		**0**		
A.8	[3-02]	--		**1**		
A.8	[3-03]	--		**4**		
A.8	[3-04]	--		**2**		
A.8	[3-05]	--		**1**		
A.8	[3-06]	What is the maximum desired room temperature in heating?	R/W	18~30°C, step: A.3.2.4 **30°C**		
A.8	[3-07]	What is the mimimum desired room temperature in heating?	R/W	12~18°C, step: A.3.2.4 **12°C**		
A.8	[3-08]	What is the maximum desired room temperature in cooling?	R/W	25~35°C, step: A.3.2.4 **35°C**		
A.8	[3-09]	What is the minimum desired room temperature in cooling?	R/W	15~25°C, step: A.3.2.4 **15°C**		
A.8	[4-00]	--		**1**		
A.8	[4-01]	--		**0**		
A.8	[4-02]	Below which outdoor temperature is heating allowed?	R/W	14~35°C, step: 1°C **25°C**		
A.8	[4-03]	--		**3**		
A.8	[4-04]	--		**1**		
A.8	[4-05]	--		**0**		
A.8	[4-06]	-- (Do not change this value)		**0/1**		
A.8	[4-07]	--		**1**		
A.8	[4-08]	Which power limitation mode is required on the system?	R/W	**0: No limitation** 1: Continuous 2: Digital inputs		
A.8	[4-09]	Which power limitation type is required?	R/W	0: Current **1: Power**		
A.8	[4-0A]	--		**0**		
A.8	[4-0B]	Automatic cooling/heating changeover hysteresis.	R/W	1~10°C, step: 0,5°C **1°C**		
A.8	[4-0D]	Automatic cooling/heating changeover offset.	R/W	1~10°C, step: 0,5°C **3°C**		
A.8	[4-0E]	Is the installer on site?	R/W	0: No **1: Yes**		
A.8	[5-00]	--		**0**		
A.8	[5-01]	What is the equilibrium temperature for the building?	R/W	-15~35°C, step: 1°C **5°C**		
A.8	[5-02]	--		**0**		
A.8	[5-03]	--		**0**		
A.8	[5-04]	--		**10**		
A.8	[5-05]	What is the requested limit for DI1?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-06]	What is the requested limit for DI2?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-07]	What is the requested limit for DI3?	R/W	0~50 A, step: 1 A **50 A**		
A.8	[5-08]	What is the requested limit for DI4?	R/W	0~50 A, step: 1 A **50 A**		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
A.8	[5-09]	What is the requested limit for DI1?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0A]	What is the requested limit for DI2?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0B]	What is the requested limit for DI3?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0C]	What is the requested limit for DI4?	R/W	0~20 kW, step: 0,5 kW **20 kW**		
A.8	[5-0D]	--		**1**		
A.8	[5-0E]	--		**0**		
A.8	[6-00]	The temperature difference determining the heat pump ON temperature.	R/W	2~20°C, step: 1°C **2°C**		
A.8	[6-01]	The temperature difference determining the heat pump OFF temperature.	R/W	0~10°C, step: 1°C **2°C**		
A.8	[6-02]	--		**0**		
A.8	[6-03]	--		**0**		
A.8	[6-04]	--		**0**		
A.8	[6-05]	--		**0**		
A.8	[6-06]	--		**0**		
A.8	[6-07]	--		**0**		
A.8	[6-08]	What is the hysteresis to be used in reheat mode?	R/W	2~20°C, step: 1°C **5°C**		
A.8	[6-09]	--		**0**		
A.8	[6-0A]	What is the desired comfort storage temperature?	R/W	30~[6-0E]°C, step: 1°C **60°C**		
A.8	[6-0B]	What is the desired eco storage temperature?	R/W	30~min(50, [6-0E])°C, step: 1°C **50°C**		
A.8	[6-0C]	What is the desired reheat temperature?	R/W	30~min(50, [6-0E])°C, step: 1°C **50°C**		
A.8	[6-0D]	What is the desired DHW production type?	R/W	0: Reheat only 1: Reheat + sched. **2: Scheduled only**		
A.8	[6-0E]	What is the maximum temperature setpoint?	R/W	[E-06]=1 [E-07] ≠ 6: 40~75°C, step: 1°C, **75°C** [E-07] = 6: 40~60°C, step: 1°C, **60°C** [E-06]=0 40~65°C, step: 1°C, **65°C**		
A.8	[7-00]	--		**0**		
A.8	[7-01]	--		**2**		
A.8	[7-02]	How many leaving water temperature zones are there?	R/W	**0: 1 LWT zone** 1: 2 LWT zones		
A.8	[7-03]	PE factor	R/W	0~6, step: 0,1 **2,5**		
A.8	[7-04]	Savings mode	R/W	**0: Economical** 1: Ecological		
A.8	[7-05]	--		**0**		
A.8	[8-00]	--		**1**		
A.8	[8-01]	Maximum running time for domestic hot water operation.	R/W	5~95 min, step: 5 min **30 min**		
A.8	[8-02]	Anti-recycling time.	R/W	0~10 hour, step: 0,5 hour **1,5 hour**		
A.8	[8-03]	--		**50**		
A.8	[8-04]	--		**0**		
A.8	[8-05]	Allow modulation of the LWT to control the room temp?	R/W	0: No **1: Yes**		
A.8	[8-06]	Leaving water temperature maximum modulation.	R/W	0~10°C, step: 1°C **5°C**		
A.8	[8-07]	What is the desired comfort main LWT in cooling?	R/W	[9-03]~[9-02]°C, step: 1°C **18°C**		
A.8	[8-08]	What is the desired eco main LWT in cooling?	R/W	[9-03]~[9-02]°C, step: 1°C **20°C**		
A.8	[8-09]	What is the desired comfort main LWT in heating?	R/W	[9-01]~[9-00]°C, step: 1°C **45°C**		
A.8	[8-0A]	What is the desired eco main LWT in heating?	R/W	[9-01]~[9-00]°C, step: 1°C **40°C**		
A.8	[8-0B]	Target flow rate during HP mode	R/W	10~20, step: 0,5 *HYHBH05: **13** *HYHBH/X08: **15**		
A.8	[8-0C]	Target flow rate during hybrid mode	R/W	10~20, step: 0,5 *HYHBH05: **13** *HYHBH/X08: **15**		
A.8	[8-0D]	Target flow rate during boiler mode	R/W	10~20, step: 0,5 **16**		
A.8	[9-00]	What is the maximum desired LWT for main zone in heating?	R/W	37~80°C, step: 1°C **80°C**		
A.8	[9-01]	What is the mimimum desired LWT for main zone in heating?	R/W	15~37°C, step: 1°C **25°C**		
A.8	[9-02]	What is the maximum desired LWT for main zone in cooling?	R/W	18~22°C, step: 1°C **22°C**		
A.8	[9-03]	What is the mimimum desired LWT for main zone in cooling?	R/W	5~18°C, step: 1°C **5°C**		
A.8	[9-04]	--		**1**		
A.8	[9-05]	What is the mimimum desired LWT for add. zone in heating?	R/W	15~37°C, step: 1°C **25°C**		
A.8	[9-06]	What is the maximum desired LWT for add. zone in heating?	R/W	37~80°C, step: 1°C **80°C**		
A.8	[9-07]	What is the mimimum desired LWT for add. zone in cooling?	R/W	5~18°C, step: 1°C **5°C**		
A.8	[9-08]	What is the maximum desired LWT for add. zone in cooling?	R/W	18~22°C, step: 1°C **22°C**		
A.8	[9-09]	--		**5**		
A.8	[9-0A]	--		**5**		
A.8	[9-0B]	What emitter type is connected to the main LWT zone?	R/W	**0: Quick** 1: Slow		
A.8	[9-0C]	Room temperature hysteresis.	R/W	1~6°C, step: 0,5°C **1 °C**		
A.8	[9-0D]	Pump speed limitation	R/W	0~8,step:1 **6**		
A.8	[9-0E]	--		0~8,step:1 **6**		
A.8	[A-00]	--		**0**		
A.8	[A-01]	--		**0**		
A.8	[A-02]	--		**0**		
A.8	[A-03]	--		**0**		
A.8	[A-04]	--		**0**		

Field settings table

Breadcrumb	Field code	Setting name		Range, step **Default value**	Installer setting at variance with default value Date	 Value
A.8	[B-00]	--		**0**		
A.8	[B-01]	--		**0**		
A.8	[B-02]	--		**0**		
A.8	[B-03]	--		**0**		
A.8	[B-04]	--		**0**		
A.8	[C-00]	Domestic heating water priority.	R/W	**0: Solar priority** 1: Heat pump priority		
A.8	[C-01]	--		**0**		
A.8	[C-02]	--		**0**		
A.8	[C-03]	--		**0**		
A.8	[C-04]	--		**3**		
A.8	[C-05]	What is the thermo request contact type for the main zone?	R/W	1: Thermo ON/OFF **2: C/H request**		
A.8	[C-06]	What is the thermo request contact type for the add. zone?	R/W	0: - 1: Thermo ON/OFF **2: C/H request**		
A.8	[C-07]	What is the unit control method in space operation?	R/W	0: LWT control 1: Ext RT control **2: RT control**		
A.8	[C-08]	Which type of external sensor is installed?	R/W	**0: No** 1: Outdoor sensor 2: Room sensor		
A.8	[C-09]	What is the required alarm output contact type?	R/W	**0: Normally open** 1: Normally closed		
A.8	[C-0A]	Indoor quick heat-up function	R/W	**0: Disable** 1: Enable		
A.8	[C-0C]	High electricity price decimal (Do not use)	R/W	0~7 **4**		
A.8	[C-0D]	Medium electricity price decimal (Do not use)	R/W	0~7 **4**		
A.8	[C-0E]	Low electricity price decimal (Do not use)	R/W	0~7 **4**		
A.8	[D-00]	--		**0**		
A.8	[D-01]	Forced off contact type	R/W	**0: No** 1: Open tariff 2: Closed tariff 3: Thermostat		
A.8	[D-02]	Which type of DHW pump is installed?	R/W	**0: No** 1: Secondary rtrn 2: Disinf. Shunt 3: Circul. Pump 4: CP & disinf. Sh		
A.8	[D-03]	Leaving water temperature compensation around 0°C.	R/W	**0: Disabled** 1: Enabled, shift 2°C (from -2 to 2°C) 2: Enabled, shift 4°C (from -2 to 2°C) 3: Enabled, shift 2°C (from -4 to 4°C) 4: Enabled, shift 4°C (from -4 to 4°C)		
A.8	[D-04]	Is a demand PCB connected?	R/W	**0: No** 1: Pwr consmp ctrl		
A.8	[D-05]	--		**1**		
A.8	[D-07]	Is a solar kit connected?	R/W	**0: No** 1: Yes		
A.8	[D-08]	Is an external kWh meter used for power measurement?	R/W	**0: No** 1: 0,1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
A.8	[D-09]	--		**0**		
A.8	[D-0A]	Is an external gas meter used for power measurement?	R/W	**0: Not present** 1: 1 /m³ 2: 10 /m³ 3: 100 /m³		
A.8	[D-0B]	--		**2**		
A.8	[D-0C]	What is the high electricity price (Do not use)	R/W	0~49 **20**		
A.8	[D-0D]	What is the medium electricity price (Do not use)	R/W	0~49 **20**		
A.8	[D-0E]	What is the low electricity price (Do not use)	R/W	0~49 **15**		
A.8	[E-00]	Which type of unit is installed?	R/O	0~5 **3: Hybrid**		
A.8	[E-01]	Which type of compressor is installed?	R/O	**0: 08**		
A.8	[E-02]	What is the indoor unit software type?	R/O	*HYHBH05+08: **1: Type 2** *HYHBX08: **0: Type 1**		
A.8	[E-03]	--		**0**		
A.8	[E-04]	Is the power saving function available on the outdoor unit?	R/O	**1: Yes**		
A.8	[E-05]	Can the system prepare domestic hot water?	R/W	0: No **1: Yes**		
A.8	[E-06]	Is a DHW tank installed in the system?	R/W	**0: No** 1: Yes		
A.8	[E-07]	What kind of DHW tank is installed?	R/W	**0~6** **4: Type 5** 6: Type 7		
A.8	[E-08]	Power saving function for outdoor unit.	R/W	0: Disabled **1: Enabled**		
A.8	[E-09]	--		**0**		
A.8	[E-0A]	--		**0**		
A.8	[E-0B]	--		**0**		
A.8	[E-0C]	--		**0**		
A.8	[E-0D]	--		**0**		
A.8	[F-00]	Pump operation allowed outside range.	R/W	**0: Disabled** 1: Enabled		
A.8	[F-01]	Above which outdoor temperature is cooling allowed?	R/W	10~35°C, step: 1°C **20°C**		
A.8	[F-02]	--		**3**		
A.8	[F-03]	--		**5**		
A.8	[F-04]	--		**0**		
A.8	[F-05]	--		**0**		
A.8	[F-06]	--		**0**		
A.8	[F-09]	Pump operation during flow abnormality.	R/W	**0: Disabled** 1: Enabled		
A.8	[F-0A]	--		**0**		
A.8	[F-0B]	Close shut-off valve during thermo OFF?	R/W	**0: No** 1: Yes		

Field settings table					Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step **Default value**	Date	Value
A.8	[F-0C]	Close shut-off valve during cooling?	R/W	0: No **1: Yes**		
A.8	[F-0D]	What is the pump operation mode?	R/W	0: Continuous 1: Sample **2: Request**		

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