

Installation manual

Daikin Altherma H Hybrid – Heat pump module

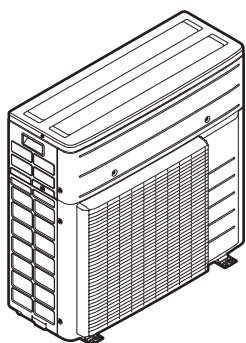


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1 About the documentation**1.1 About this document****WARNING**

This appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

Cleaning and user maintenance must not be carried out by children without supervision.

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 outdoor unit)
- **Operation manual:**
 - Quick guide for basic usage
 - Format: Paper (in the box of the outdoor unit)
- **User reference guide:**
 - Detailed step-by-step instructions and background information for basic and advanced usage
 - Format: Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>
- **Installation manual – Heat pump module:**
 - Installation instructions
 - Format: Paper (in the box of the outdoor unit)
- **Installation and operation manual – Gas boiler module:**
 - Installation and operation instructions
 - Format: Paper (in the box of the gas boiler)
- **Installer reference guide:**
 - Preparation of the installation, good practices, reference data,...
 - Format: Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>
- **Addendum book for optional equipment:**
 - Additional info about how to install optional equipment
 - Format: Paper (in the box of the outdoor unit) + Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>

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

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

Technical engineering data

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

2 About the box

2.1 Outdoor unit

2.1.1 To handle the outdoor unit



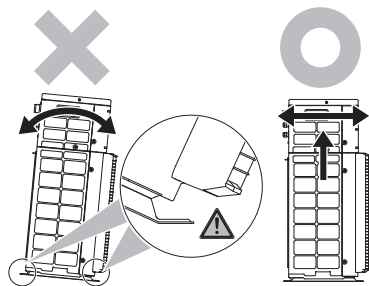
CAUTION

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

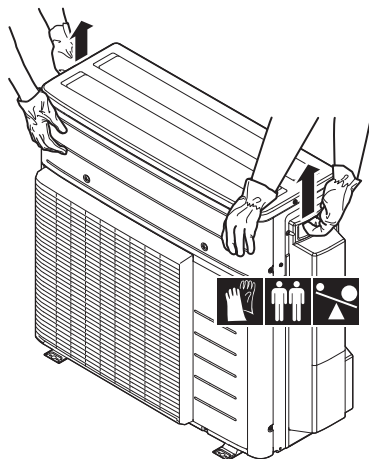


NOTICE

To prevent damage to the supporting feet, do NOT tilt the unit sideways in any way:

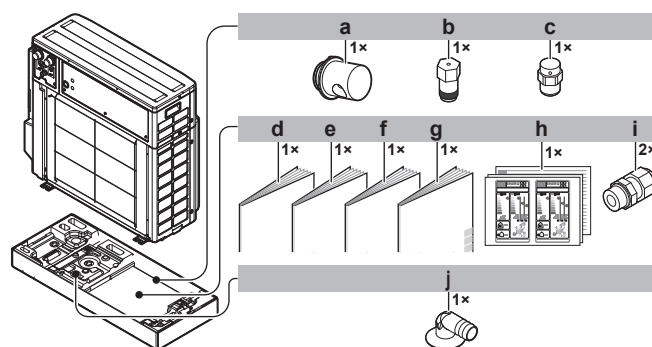


Carry the unit slowly as shown:



2.1.2 To remove the accessories from the outdoor unit

- 1 Lift the outdoor unit. See ["To handle the outdoor unit"](#) [p 5].
- 2 Remove the accessories at the bottom of the package.



- a Connection piece (with O-ring) for freeze protection valve inside the outdoor unit
- b Freeze protection valve (for inside the outdoor unit)
- c Vacuum breaker (for outside the outdoor unit)
- d General safety precautions
- e Addendum book for optional equipment
- f Outdoor unit installation manual
- g Operation manual
- h Energy label
- i Cable gland
- j Drain plug

3 About the system

3.1 Possible system layouts

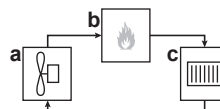


INFORMATION

This topic contains basic information about the possible system layouts. For more information, see the installer reference guide.

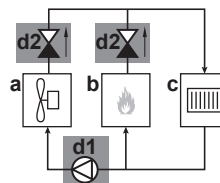
The system layout differs depending on the gas boiler. You can combine the outdoor unit (=EJHA04AAV3) with either a dedicated or a third-party gas boiler.

Dedicated gas boiler



- a Outdoor unit
- b Gas boiler
- c Space heating circuit

Third-party gas boiler



- a Outdoor unit
- b Gas boiler
- c Space heating circuit
- d Parts of mandatory options EKADDONJH and EKADDONJH2 (= connection kit for third-party gas boiler):
 - d1: External pump (EKADDONJH)
 - d2: Non-return valve EKADDONJH2

3.1.1 Dedicated gas boiler

The dedicated gas boiler (=HY2KOMB28+32AA) is recommended for new installations.

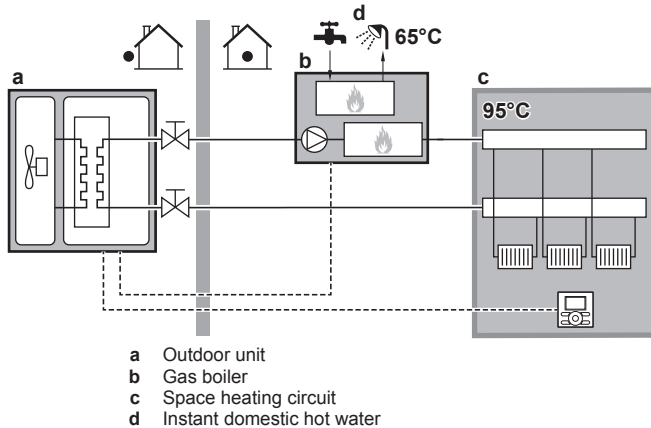
Using this gas boiler, you can produce domestic hot water as follows:

- Domestic hot water by tank

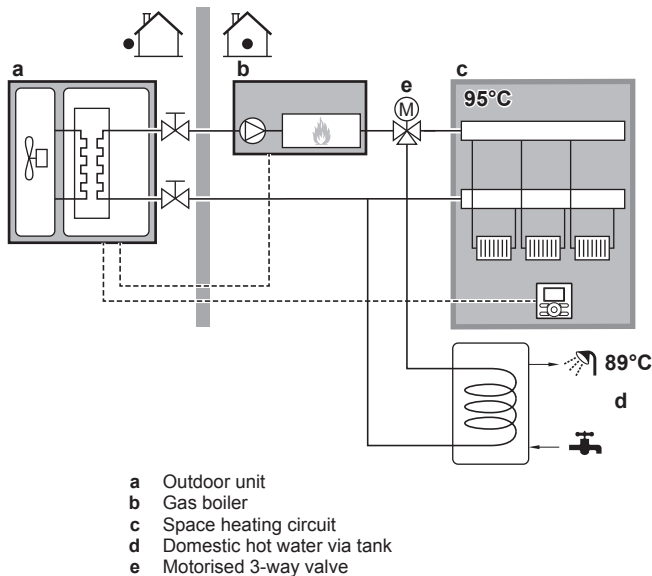
3 About the system

- Instant domestic hot water by gas boiler

Dedicated gas boiler + Instant domestic hot water



Dedicated gas boiler + Domestic hot water via tank

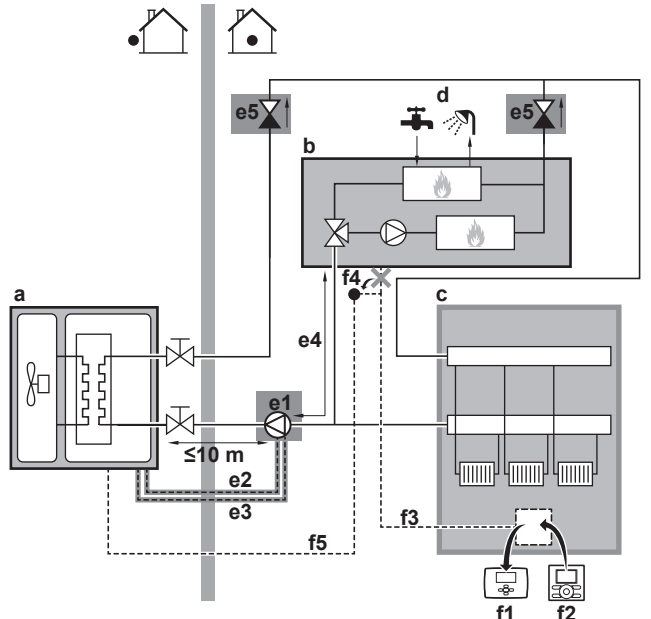


3.1.2 Third-party gas boiler

For existing installations, you do not need to buy a new gas boiler. You can reuse the existing gas boiler, and the wiring of the old thermostat.

Using this gas boiler, you can only produce domestic hot water as instant domestic hot water by gas boiler.

Third-party gas boiler + Instant domestic hot water



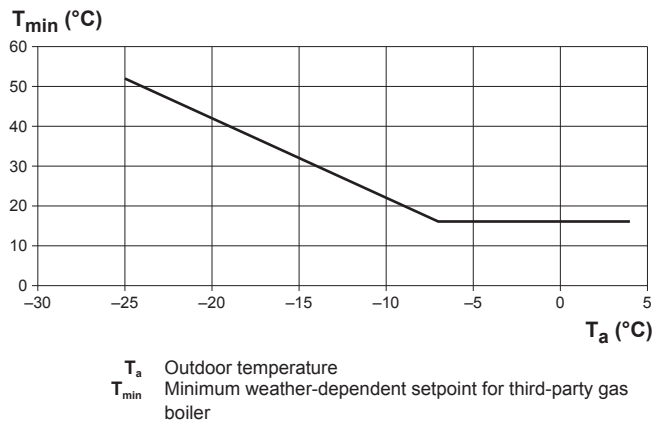
- a Outdoor unit
b Gas boiler
c Space heating circuit
d Instant domestic hot water
e1~e5 Parts of mandatory options EKADDONJH and EKADDONJH2 (= connection kit for third-party gas boiler). For installation instructions, see the installation manual of the connection kit.
e1: External pump (EKADDONJH)
e2: External pump cable – Power supply (EKADDONJH2)
e3: External pump cable – Pulse-width modulation (PWM) signal (EKADDONJH2)
e4: Distance between external pump and gas boiler must be as short as possible
e5: Non-return valve (EKADDONJH2)
f1~f5 Connection of user interface (you can reuse old wiring):
f1: Remove old thermostat
f2: Install new user interface
f3: Reuse old wiring
f4: Disconnect old wiring from the gas boiler, and connect it to new wiring
f5: Connect new wiring to the outdoor unit

Third-party gas boiler + Domestic hot water via tank

Not possible.

Setpoint of the third-party gas boiler

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



3.2 Freeze protection

You must protect the system against freezing. This involves:

- Choosing between glycol and freeze protection valves
- Installing the bottom plate heater

3.2.1 Glycol or freeze protection valves

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

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

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

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



NOTICE

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



INFORMATION

For more information about glycol and freeze protection valves, see ["To protect the water circuit against freezing"](#) [p. 13].

3.2.2 Bottom plate heater

To prevent freeze-up of the bottom plate you can install the optional bottom plate heater. In certain circumstances this is required.

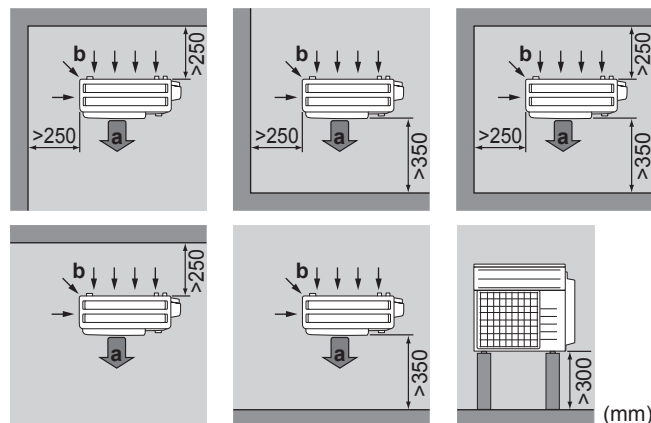
Bottom plate heater (EKBPH04JH)

- Prevents freeze-up of the bottom plate.
- Required in areas with ambient temperature $\leq -5^{\circ}\text{C}$ and high relative humidity for at least 3 consecutive days.
- For installation instructions, see the installation manual of the bottom plate heater.



NOTICE

- If you install the bottom plate heater, you may lower the operation range of the heat pump to $T_{a\geq -14^{\circ}\text{C}}$ using field setting [8-0E]= -14°C .
- If you do not install the bottom plate heater, keep [8-0E]= -5°C .



a Air outlet
b Air inlet



NOTICE

The height of the wall on the outlet side of the outdoor unit MUST be ≤ 1200 mm.

The outdoor unit is designed for outdoor installation only, and for the following ambient temperatures:

Space heating operation	$-14 \sim 25^{\circ}\text{C}$
Domestic hot water production	$-14 \sim 35^{\circ}\text{C}$

Special requirements for R32

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

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



WARNING

- Do NOT pierce or burn.
- Do NOT use means to accelerate the defrosting process or to clean the equipment, other than those recommended by the manufacturer.
- Be aware that R32 refrigerant does NOT contain an odour.



WARNING

The appliance shall be stored so as to prevent mechanical damage and in a well-ventilated room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).



WARNING

Make sure installation, servicing, maintenance and repair comply with instructions from Daikin and with applicable legislation (for example national gas regulation) and are executed only by authorised persons.

4 Preparation

4.1 Preparing the installation site



WARNING

The appliance shall be stored in a room without continuously operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater).

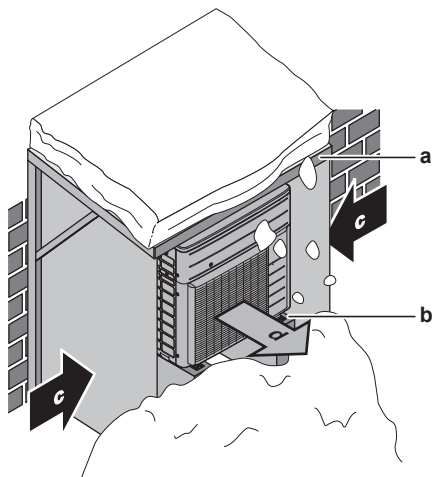
4.1.1 Installation site requirements of the outdoor unit

Mind the following spacing guidelines:

4.1.2 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.

4 Preparation



- 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 "5.2 Mounting the outdoor unit" [► 10] 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.

4.2 Preparing water piping



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.



NOTICE

Expansion vessel. Make sure that an expansion vessel is installed in the water circuit (at the space heating water inlet of the boiler).

In case of *HY2KOMB28+32AA gas boiler, the expansion vessel is available as option.

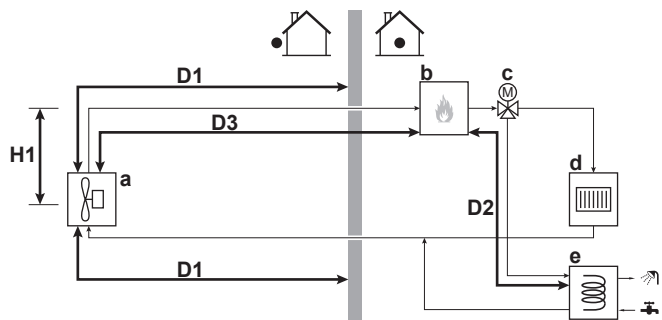
In case of third-party gas boiler, the expansion vessel is field supplied.

For more information about the expansion vessel, see the installer reference guide.

- **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.

4.2.1 Water piping lengths and height difference

In case of *HY2KOMB28+32AA gas boiler



- a Outdoor unit
- b *HY2KOMB28+32AA
- c 3-way valve
- d Space heating circuit
- e DHW tank (if applicable)

	What?	Distance
H1	Maximum height difference between outdoor unit and *HY2KOMB28+32AA gas boiler	Depends on the expansion vessel (option on *HY2KOMB28+32AA gas boiler). A distance of 10 m is recommended.
—	Maximum total length of the water piping (indoor part + outdoor part)	Depends on the external static pressure (ESP) of the system.
D1	Maximum length of the outdoor part of the water piping (to prevent freeze-up of the water piping)	10 m ^(a)
D2	Maximum distance between *HY2KOMB28+32AA gas boiler and DHW tank (if applicable)	10 m
D3	Maximum distance between outdoor unit and *HY2KOMB28+32AA gas boiler	See table below.

^(a) Only for NHY2KOMB28+32AA: a distance of up to 30 m is allowed in case the water circuit is protected against freezing by glycol, or when a domestic hot water tank (e) is installed.

If...			Then D3...	
Glycol?	Ø	Condition ^(a)	ESP ^(b) 25 kPa	ESP ^(b) 35 kPa
Water (without glycol)	3/4"	ΔT 5°C → 11.5 l/min	16 m	8.5 m
		ΔT 8°C → 7.2 l/min	63 m	45 m
	1"	ΔT 5°C → 11.5 l/min	89 m	54 m
		ΔT 8°C → 7.2 l/min	304 m	224 m
Water + glycol	1"	Start-up with glycol at -15°C → 7.0 l/min	38 m	25 m
		ΔT 5°C with glycol at 20°C → 12.8 l/min	2 m	—
		ΔT 8°C with glycol at 20°C → 8.0 l/min	134 m	85 m

^(a) Based on capacity of 4 kW

^(b) External static pressure calculated with 10×(90° elbow)

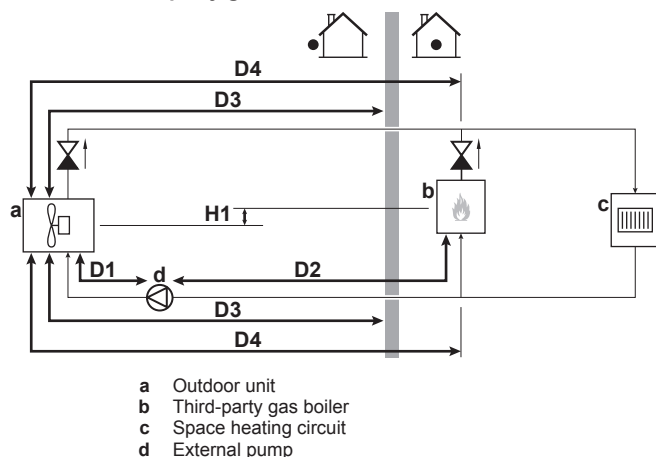
Hydronic Piping Calculation tool

For other cases the maximum water piping length can be determined using the Hydronic Piping Calculation tool. The Hydronic Piping Calculation tool is part of the Heating Solutions Navigator which can

be reached via <https://professional.standby.me.daikin.eu>. Please contact your dealer if you have no access to Heating Solutions Navigator.

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

In case of third-party gas boiler



What?	Distance
H1 Maximum height difference between outdoor unit and third-party gas boiler	Depends on the expansion vessel in the third-party gas boiler. A distance of 10 m is recommended.
— Maximum total length of the water piping (indoor part + outdoor part)	Depends on the external static pressure (ESP) of the system.
D1 Maximum distance between outdoor unit and external pump	10 m
D2 Distance between external pump and gas boiler	As short as possible.
D3 Maximum length of the outdoor part of the water piping (to prevent freeze-up of the water piping)	10 m ^(a) ^(b)
D4 Maximum distance between outdoor unit and third-party gas boiler	See table below.

^(a) A distance of up to 30 m is allowed in case the water circuit is protected against freezing by glycol.

^(b) Please confirm boiler ON delay timer settings.

If...			Then D4...	
Glycol?	Ø	Condition ^(a)	ESP ^(b) 25 kPa	ESP ^(b) 35 kPa
Water (without glycol)	3/4"	ΔT 5°C → 11.5 l/min	20 m	13 m
		ΔT 8°C → 7.2 l/min	68 m	50 m
	1"	ΔT 5°C → 11.5 l/min	123 m	88 m
		ΔT 8°C → 7.2 l/min	340 m	260 m
Water + glycol	1"	Start-up with glycol at -15°C → 7.0 l/min	44 m	30 m
		ΔT 5°C with glycol at 20°C → 12.8 l/min	36 m	14 m
		ΔT 8°C with glycol at 20°C → 8.0 l/min	170 m	120 m

^(a) Based on capacity of 4 kW

^(b) External static pressure calculated with 10×(90° elbow)

4.2.2 To check the water volume and flow rate

Minimum water volume

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



INFORMATION

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



NOTICE

When circulation in each space heating 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.

Minimum flow rate

A minimum flow rate must be guaranteed so that the outdoor unit does not go in high pressure error (A5). For guidelines on flow rates, see the tables in "Water piping lengths and height difference" [p. 8].



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, the heat pump generates a high pressure error (A5).

Minimum required flow rate

7 l/min^(a)

^(a) Below this value, no stable operation can be guaranteed.

4.3 Preparing electrical wiring

4.3.1 Overview of electrical connections for external and internal actuators



NOTICE

Field wiring – Temperature. Make sure that all field wiring withstands 90°C.

In case of system with *HY2KOMB28+32AA gas boiler

Connections to outdoor unit:

Item	Description	Wires	Maximum running current
Power supply			
1	Power supply for outdoor unit	2+GND	^(a)
User interface			
2	User interface	2	^(b)
Optional equipment			
3	Bottom plate heater	2+GND	^(c)
4	Outdoor ambient temperature sensor	2	^(d)
5	LAN adapter	2	^(e)
Field supplied components			
6	Domestic hot water pump	2+GND	^(d)

^(a) See the name plate on the outdoor unit.

^(b) Cable section 0.75 mm² till 1.25 mm²; maximum length: 200 m.

^(c) Part of optional equipment

^(d) Minimum cable section 0.75 mm².

5 Installation

- (e) Cable section 0.75 mm² till 1.25 mm²; maximum length: 200 m. These wires **MUST** be sheathed. Recommended strip length: 6 mm.



NOTICE

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

Connections to *HY2KOMB28+32AA gas boiler:

Item	Description	Wires	Maximum running current
Power supply			
1	Power supply gas boiler	2+GND	(a)
Interconnection cable			
2	Interconnection cable between outdoor unit and gas boiler	2	(b)
Optional equipment			
3	3-way valve	3	100 mA ^(c)
4	Domestic hot water tank thermistor	2	(d)
5	Room thermostat/heat pump convector	2	100 mA ^(c)

- (a) See the name plate on the gas boiler.
 (b) Cable section 0.75 mm² till 1.25 mm²; maximum length: 200 m. This cable is field supplied.
 (c) Cable section 0.75 mm² till 1.25 mm².
 (d) The thermistor and connection wire (11 m) are available as option (EKTH3 or EKTH4).



NOTICE

More technical specifications of the different connections are indicated on the inside of the gas boiler.

In case of system with third-party gas boiler

Connections to outdoor unit:

Item	Description	Wires	Maximum running current
Power supply			
1	Power supply for outdoor unit	2+GND	(a)
User interface			
2	User interface	2	(b)
External pump + bivalent signal			
3	External pump	2 and 2+GND	(c)
4	Bivalent signal for third-party gas boiler ^(g)	2	(d)
Optional equipment			
5	Bottom plate heater	2+GND	(e)
6	Outdoor ambient temperature sensor	2	(d)
7	LAN adapter	2	(f)

- (a) See the name plate on the outdoor unit.
 (b) Cable section 0.75 mm² till 1.25 mm²; maximum length: 200 m.
 (c) The external pump is part of mandatory option EKADDONJH; the 2 external pump cables (PWM signal and power supply) are part of mandatory option EKADDONJH2.
 (d) Minimum cable section 0.75 mm².
 (e) Part of optional equipment
 (f) Cable section 0.75 mm² till 1.25 mm²; maximum length: 200 m. These wires **MUST** be sheathed. Recommended strip length: 6 mm.
 (g) Field supplied



NOTICE

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

5 Installation

5.1 Opening the units

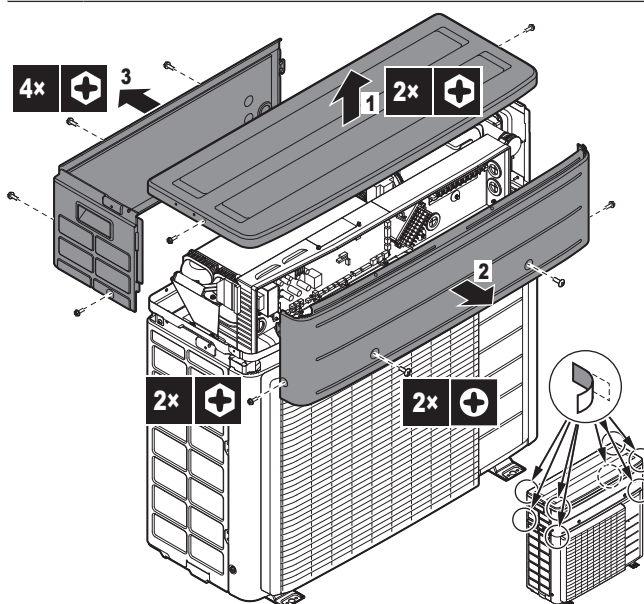
5.1.1 To open the outdoor unit



DANGER: RISK OF ELECTROCUTION



DANGER: RISK OF BURNING/SCALDING



- 1 Open the top plate.
- 2 Open the front plate.
- 3 If necessary, open the rear plate. This is, for example, necessary in the following cases:
 - When you install the freeze protection valve inside the outdoor unit.
 - When you install the bottom plate heater.

5.2 Mounting the outdoor unit

5.2.1 To provide the installation structure

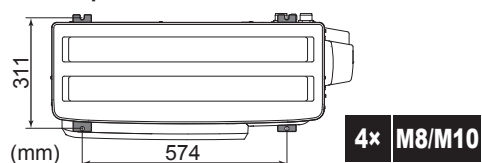
This topic shows different installation structures. For all, use 4 sets of M8 or M10 anchor bolts, nuts and washers. In any case, provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow.



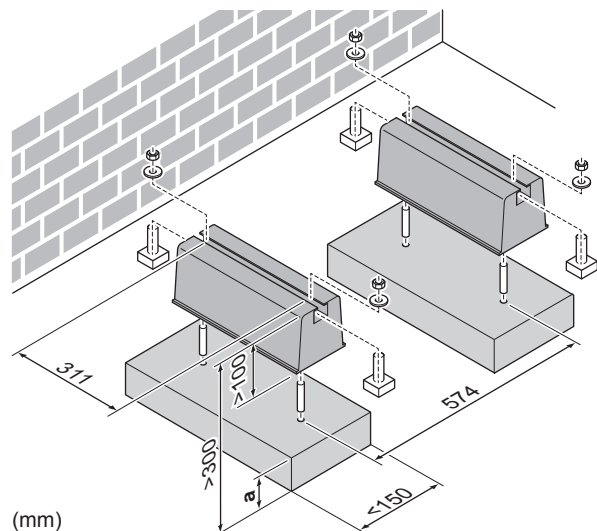
INFORMATION

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

Anchor points

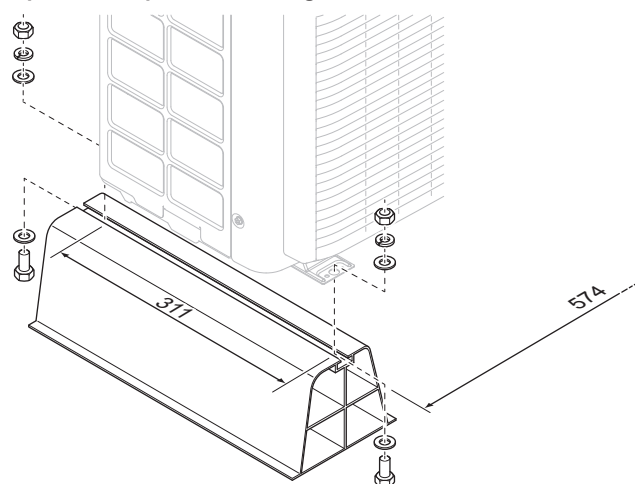


Option 1: On mounting feet "flexi-foot with strut"

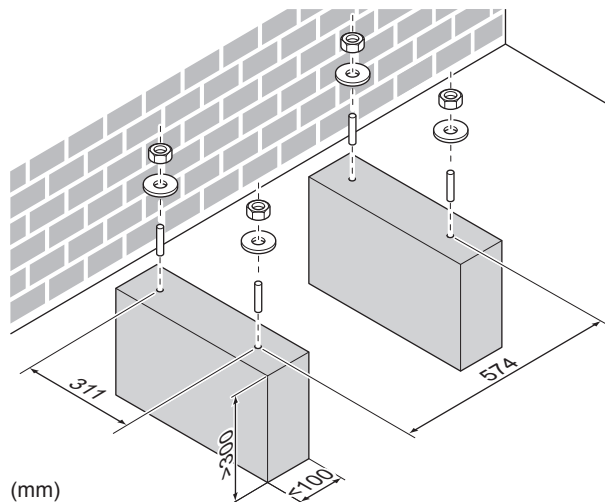


a Maximum snowfall height

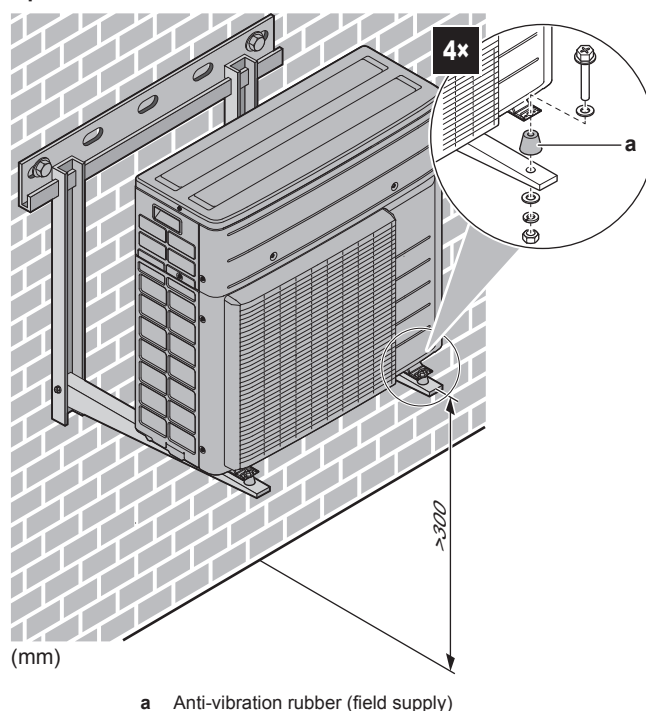
Option 2: On plastic mounting feet



Option 3: On a pedestal

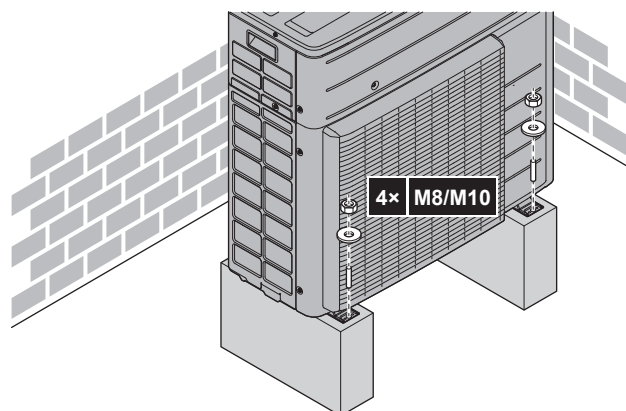


Option 4: On brackets to the wall



a Anti-vibration rubber (field supply)

5.2.2 To install the outdoor unit



5.2.3 To provide drainage

Make sure that condensation water can be evacuated properly.



NOTICE

Cold climates. If the unit is installed in a cold climate:

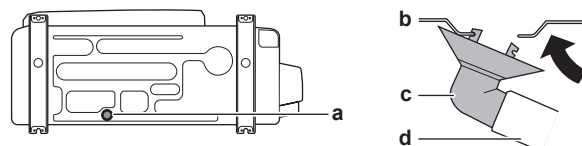
- Take adequate measures so that the evacuated condensate CANNOT freeze.
- Do NOT use the drain plug and drain hose with the outdoor unit. **Possible consequence:** Drain water might freeze, decreasing the heating capacity.



NOTICE

Provide at least 300 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the expected level of snow.

Except in cold climates, use the drain plug and a hose for drainage.



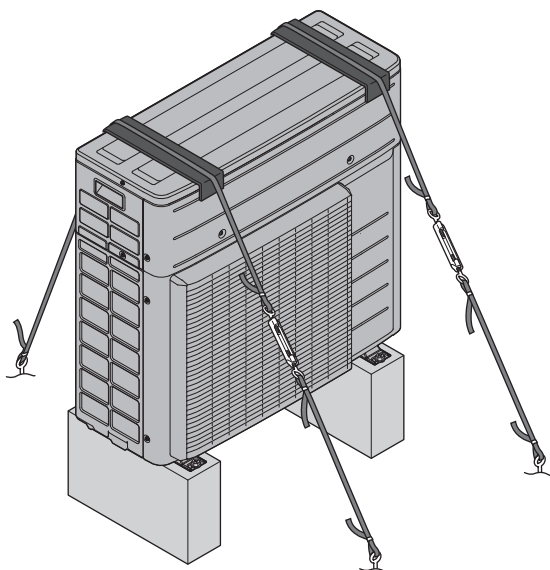
5 Installation

- a Drain hole
- b Bottom frame
- c Drain plug (delivered as accessory)
- d Hose (field supply)

5.2.4 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.
- 5 Tighten the cables.



5.3 Connecting water piping

5.3.1 To connect the water piping



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. Make sure that the tightening torque does NOT exceed 30 N•m.



NOTICE

Shut-off valves. We recommend to connect shut-off valves to facilitate service and maintenance. They are available as option (EKBALLV1). If you do not install shut-off valves, make sure to install air purge valves on the water inlet and outlet.



NOTICE

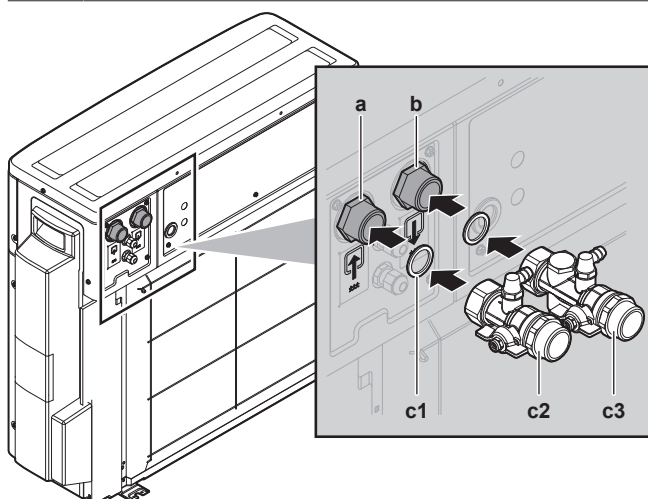
Drain/fill point. Foresee a drain/fill point to drain or fill the space heating circuit. The fill/drain point can be:

- Field supplied
- In case of *HY2KOMB28+32AA gas boiler: Part of option EKFL1A (filling loop kit)
- In case of third-party gas boiler: Part of the existing installation



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.



- a Water inlet (G1") (coming from the heat emitters)
- b Water outlet (G1") (going to the gas boiler in case of *HY2KOMB28+32AA gas boiler)
- c1~c3 Parts of option EKBALLV1
 - c1: O-rings
 - c2: Shut-off valve
 - c3: Shut-off valve with integrated connection for the vacuum breaker (if applicable)

- 1 Connect the O-rings and shut-off valves.
- 2 Connect the field piping on the shut-off valves.
- 3 In case of connection with the optional domestic hot water tank, see the installation manual of the domestic hot water tank.



NOTICE

In case of a third-party gas boiler: Install a manometer in the system.



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 (= 1 MPa) must be installed on the domestic cold water inlet connection in accordance with the applicable legislation.

5.3.2 To provide drainage for the pressure relief valve

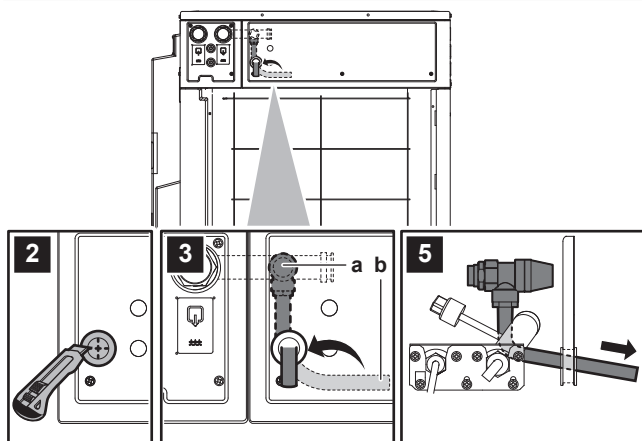


NOTICE

If overpressure occurs, the system will release some of the liquid through the pressure relief valve. The pressure relief valve of the outdoor unit is designed to open at 3 bar.

If glycol was added to the system, take adequate measures to safely recover it when the pressure relief valve opens.

In any case, make sure that the flexible hose of the pressure relief valve is ALWAYS free to release pressure.



a Pressure relief valve
b Flexible hose (drain)

- 1 Open the top plate, front plate, and rear plate. See "To open the outdoor unit" [p 10].
- 2 Make a cross-cut in the rubber grommet on the rear plate.
- 3 Route the flexible hose through the grommet.
- 4 Close the rear plate.
- 5 Pull the flexible hose with a light force to make sure that the flexible hose slopes down. This prevents water from staying and/or freezing inside the hose.
- 6 Close the front plate and top plate.
- 7 If glycol was added to the system, take adequate measures to safely recover it when the pressure relief valve opens.

5.3.3 To protect the water circuit against freezing

About freeze protection

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

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

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

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



NOTICE

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

Freeze protection by glycol

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

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



INFORMATION

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

Lowest expected outdoor temperature	Prevent from bursting	Prevent from freezing
-5°C	10%	15%
-10°C	15%	25%
-15°C	20%	35%
-20°C	25%	—
-25°C	30%	—
-30°C	35%	—



NOTICE

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

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

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

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



WARNING

Ethylene glycol is toxic.



NOTICE

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

5 Installation



WARNING

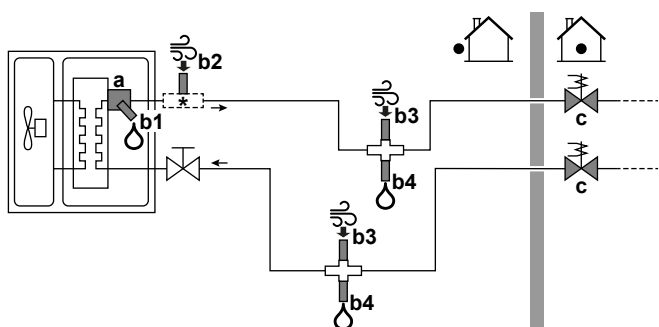
Due to the presence of glycol, corrosion of the system is possible. Uninhibited glycol will turn acidic under the influence of oxygen. This process is accelerated by the presence of copper and high temperatures. The acidic uninhibited glycol attacks metal surfaces and forms galvanic corrosion cells that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

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

Adding glycol to the water circuit reduces the maximum allowed water volume of the system. For more information, see the manual of the expansion vessel.

Freeze protection by freeze protection valves

When no glycol is added to the water, you can use freeze protection valves to drain the water from the system before it can freeze. To do so, install the following parts:

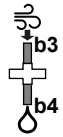


a+b1+b2 Protection for the outdoor unit (*: there are 2 possibilities to connect **b2**; see below)

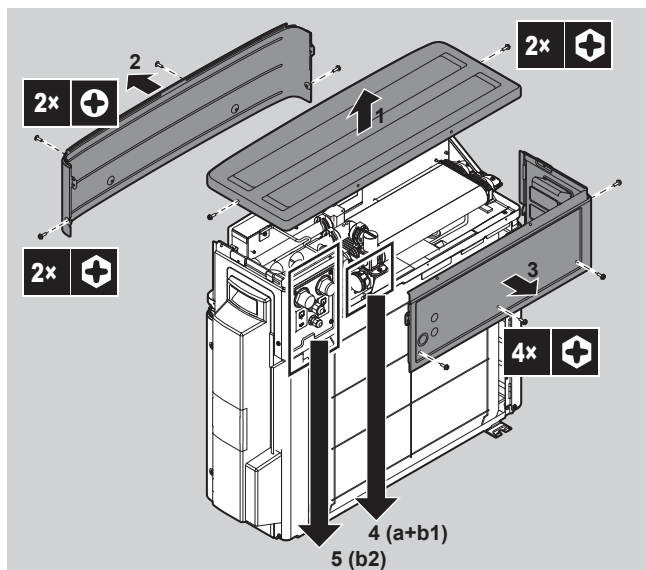
b3+b4 Protection for the field piping

c Isolation of water inside the house when there is a power interruption

Part	Description
a+b1+b2	(Mandatory – Delivered as accessory).
a	Connection piece for b1
b1	Freeze protection valve (for water drainage)
b2	Vacuum breaker (head-up for air supply)
	These parts are necessary to protect the piping inside the outdoor unit against freezing.
	Note: These parts do NOT protect the field piping against freezing.

Part	Description
b3+b4	Use AFVALVEHY2. It is the installer's responsibility to protect the field piping against freezing. One possibility is to install freeze protection valves at all lowest points of the field piping. If you do so, always install the freeze protection valves in pair:  b3 Vacuum breaker (head-up for air supply) b4 Freeze protection valve (head-down for water drainage)
c	c Normally closed valves (Recommended – Field supply). Normally closed valves can prevent that all water from the system is drained when the freeze protection valves open. When there is a power interruption: The normally closed valves close and isolate the water inside the house. If the freeze protection valves open, only the water outside the house is drained. In other circumstances (example: when there is a pump failure): The normally closed valves remain open. If the freeze protection valves open, the water from inside the house is also drained.

To connect a+b1+b2



- a** Connection piece for **b1**
- b1** Freeze protection valve (for water drainage)
- b2** Vacuum breaker (head-up for air supply)

- Open the top plate.
- Open the front plate.
- Open the rear plate.
- Connect **a+b1** as follows:

1	Remove the clip.
2	Remove and discard the stop with the sealing.
3	Attach the freeze protection valve (b1) to the connection piece (a), using thread sealant.
4	Attach the connection piece to the outdoor unit.
5	Attach the clip.
6	Close the rear plate, front plate and top plate.

5 Do one of the following to connect b2 (2 possibilities):



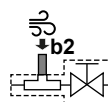
NOTICE

Vacuum breaker (b2). To make proper drainage through the freeze protection valve inside the outdoor unit possible, the vacuum breaker must be installed correctly:

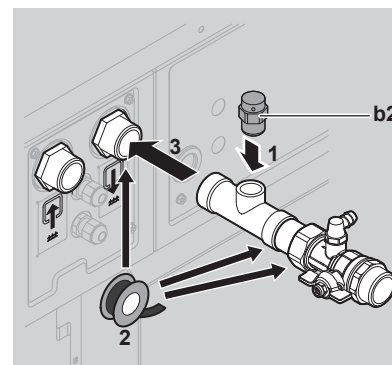
- Directly at the water outlet of the unit, without any field piping or valve in between.
- Head-up for air supply.

Possibility 1	With option EKBALLV1 (shut-off valves with integrated connection for the vacuum breaker). For installation instructions, see the installation manual of the shut-off valves.
---------------	---

Possibility 2



With T-joint (field supply) + shut-off valve (field supply).



5.3.4 To fill the space heating circuit

In case of dedicated gas boiler



INFORMATION

Air purge valves. In case of *HY2KOMB28+32AA gas boiler, the following air purge valves are possible:

- Manual air purges valves on the shut-off valves (option EKBALLV1).
- Manual air purge valve inside the *HY2KOMB28+32AA gas boiler.
- Manual or automatic field-supplied air purge valves.
- **Note:** Automatic air purge valves are NOT allowed if glycol is used.

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 fill/drain point.
Note: The fill/drain point can be:
 - Field supplied
 - Part of option EKFL1A (filling loop kit for the *HY2KOMB28+32AA gas boiler)
- 3 Power up the gas boiler to see the pressure indication on the boiler display.
- 4 If an automatic air purge valve was installed, make sure it is open.
- 5 Fill the circuit with water until the boiler display indicates a pressure of ± 2 bar (with a minimum of 0.5 bar).
Note: The pressure relief valve of the outdoor unit is designed to open at 3 bar.
- 6 Purge air from all manual air purge valves in the system (open, purge air, close).
- 7 Check the pressure. If it is too low, repeat from step 5.
- 8 Turn ON the pump, and check if you can still hear air in the circuit. After ± 1 min, turn it OFF.
Note: To turn the pump ON and OFF, use the air purge function on the outdoor unit's user interface. See ["To perform an air purge"](#) [p 28].
- 9 Purge air again from all manual air purge valves in the system (especially if you heard air in the circuit).
- 10 Check the pressure again. If it is too low, repeat from step 5.
- 11 Disconnect the water supply hose from the fill/drain point.

5 Installation

In case of third-party gas boiler



INFORMATION

Air purge valves. In case of third-party gas boiler, the following air purge valves are possible:

- Manual air purge valves on the shut-off valves (option EKBALLV1).
- Manual or automatic air purge valve inside the third-party gas boiler.
- Manual or automatic field-supplied air purge valves.
- **Note:** Automatic air purge valves are NOT allowed if glycol is used.

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 fill/drain point.
Note: The fill/drain point can be:
 - Field supplied
 - Part of the existing installation
- 3 Power up the gas boiler, and make sure you can read out the pressure indication.
Note: The pressure indication can be:
 - On the boiler display of the third-party gas boiler
 - On a field-supplied manometer
- 4 If an automatic air purge valve was installed, make sure it is open.
- 5 Fill the circuit with water until the boiler display indicates a pressure of ± 2 bar (with a minimum of 0.5 bar).
Note: The pressure relief valve of the outdoor unit is designed to open at 3 bar.
- 6 Purge air from all manual air purge valves in the system (open, purge air, close).
- 7 Check the pressure. If it is too low, repeat from step 5.
- 8 Turn ON the pump, and check if you can still hear air in the circuit. After ± 1 min, turn it OFF.
Note: To turn the pump ON and OFF, use the air purge function on the outdoor unit's user interface. See ["To perform an air purge"](#) [p 28].
- 9 Turn ON the bivalent signal test, and check if you can still hear air in the circuit. After ± 1 min, turn it OFF.
Note: To turn the bivalent signal test, see ["To perform an actuator test run"](#) [p 28].
- 10 Purge air again from all manual air purge valves in the system (especially if you heard air in the circuit).
- 11 Check the pressure again. If it is too low, repeat from step 5.
- 12 Disconnect the water supply hose from the fill/drain point.

5.3.5 To fill the domestic hot water tank

See the installation manual of the domestic hot water tank.

5.3.6 To insulate the water piping

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

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

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

5.4 Connecting the electrical wiring



DANGER: RISK OF ELECTROCUTION



WARNING

ALWAYS use multicore cable for power supply cables.



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.



NOTICE

Safety thermostat (normally closed contact). The outdoor unit does not contain a safety thermostat. Make sure to install a field-supplied safety thermostat in the heat emitter system according to the applicable legislation.

However, you cannot connect the feedback signal from the safety thermostat to the outdoor unit or gas boiler because there are no terminals for the feedback signal. Because of this, you also do not have to do any configuration on the outdoor unit or gas boiler.

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

- The safety thermostat is automatically resettable.
- The safety thermostat has a maximum temperature variation rate of $2^{\circ}\text{C}/\text{min}$.
- There is a minimum distance of 2 m between the safety thermostat and the motorized 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.

5.4.1 In case of dedicated gas boiler

To connect the electrical wiring to the outdoor unit



NOTICE

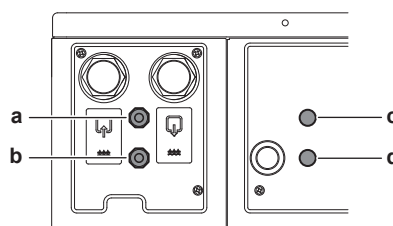
The distance between the high voltage and low voltage cables should be at least 50 mm.



CAUTION

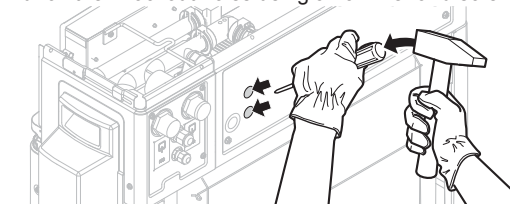
Do NOT push or place redundant cable length in the unit.

- 1 Open the top plate and the front plate. See ["To open the outdoor unit"](#) [p 10].
- 2 Insert the wiring at the back of the unit:

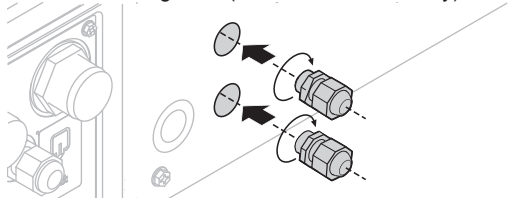


- 3 If you insert cables through the knockout holes **c** and **d**:

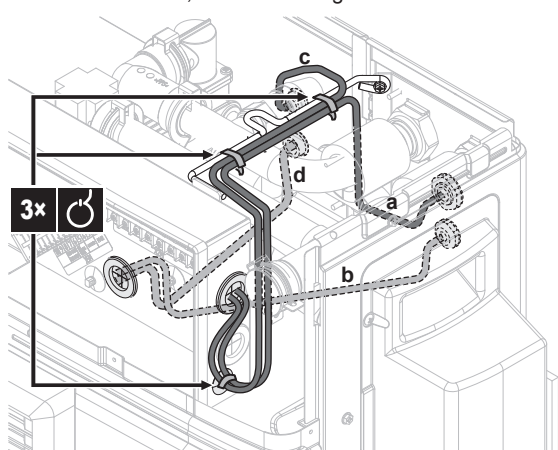
- Punch the knockout holes using a hammer and screw driver.



- Insert the cable glands (delivered as accessory).



- 4 Inside the unit, route the wiring to the switch box as follows:



a~d See below

- 5 Inside the switch box, connect the wires to the appropriate terminals.
- 6 After connecting all wiring, close the front plate and the top plate.

Connections in case of dedicated gas boiler

Routing	Possible cables (depends on the installed options)
a Main power supply (high voltage)	Main power supply
b User interface (low voltage)	User interface (mandatory option)
c High voltage	Domestic hot water pump (field supply)
d Low voltage	- Interconnection cable between outdoor unit and gas boiler - External outdoor temperature sensor (option) - LAN adapter (option)

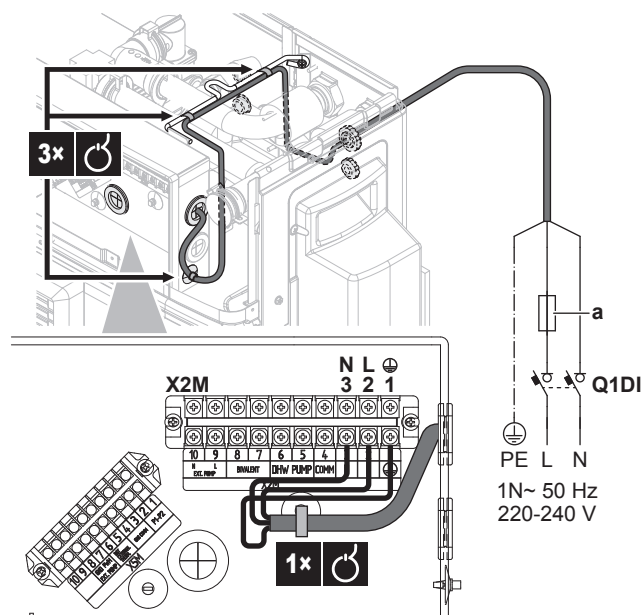


INFORMATION

Bottom plate heater (option). For the routing, see the installation manual of the bottom plate heater.

To connect the main power supply

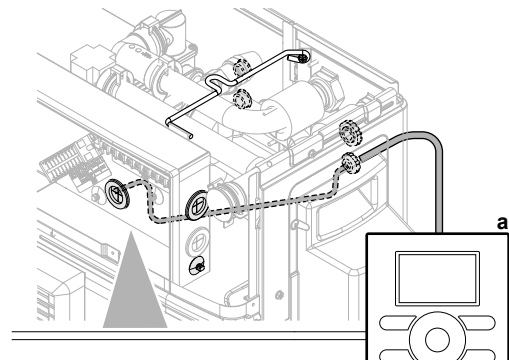
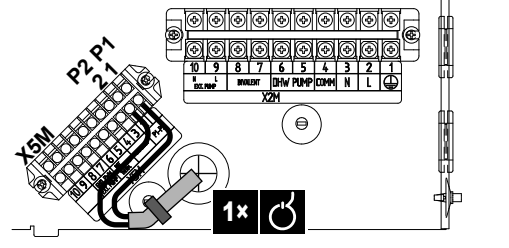
- 1 Connect the main power supply to the appropriate terminals as shown in the illustration below.



a Recommended field fuse: 20 A
Q1DI Earth leakage circuit breaker

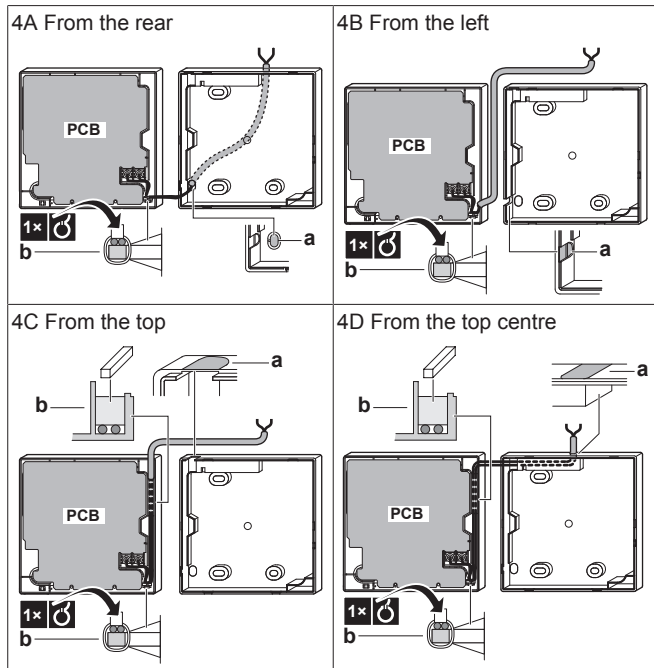
- 2 Fix the cable with cable ties to the cable tie mountings.

To connect the user interface

#	Action
1	Connect the user interface cable to the outdoor unit. Fix the cable with cable ties to the cable tie mountings. 
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 Installation

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

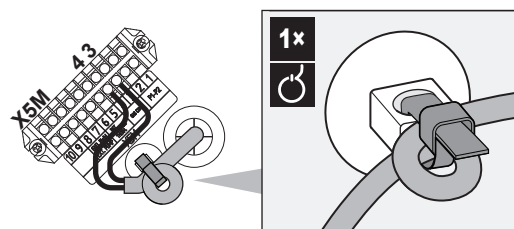
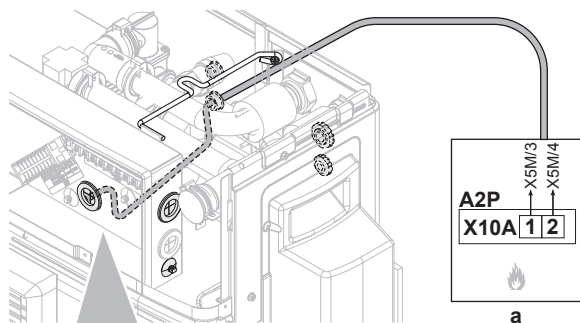


a Notch this part for the wiring to pass through with nippers etc.

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

To connect the dedicated gas boiler to the outdoor unit

- 1 Connect the interconnection cable between outdoor unit and gas boiler to the appropriate terminals as shown in the illustration below. The interconnection cable is field supplied.

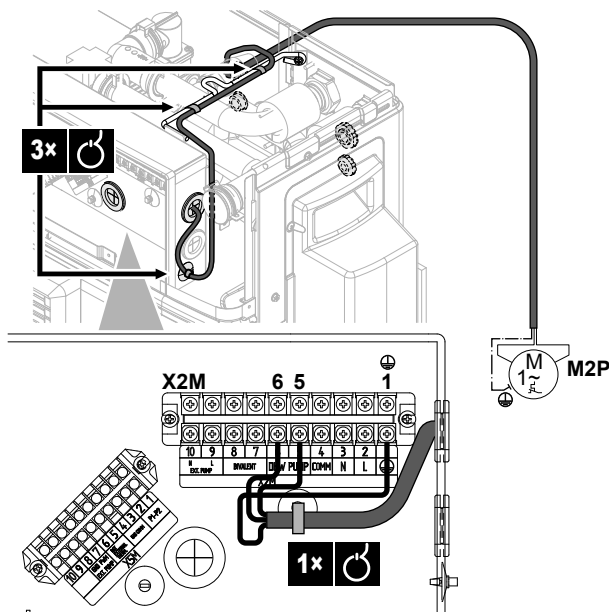


a *HY2KOMB28+32AA gas boiler

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

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.

5.4.2 In case of third-party gas boiler

To connect the electrical wiring to the outdoor unit



NOTICE

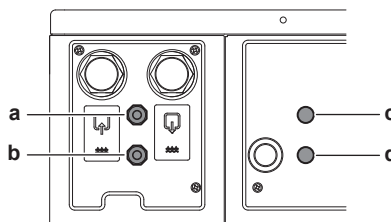
The distance between the high voltage and low voltage cables should be at least 50 mm.



CAUTION

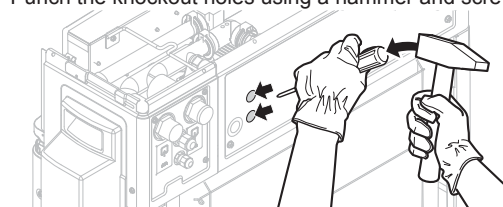
Do NOT push or place redundant cable length in the unit.

- 1 Open the top plate and the front plate. See "To open the outdoor unit" [p 10].
- 2 Insert the wiring at the back of the unit:

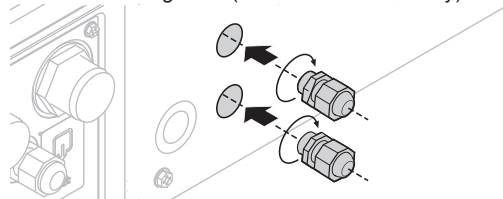


a~d See below

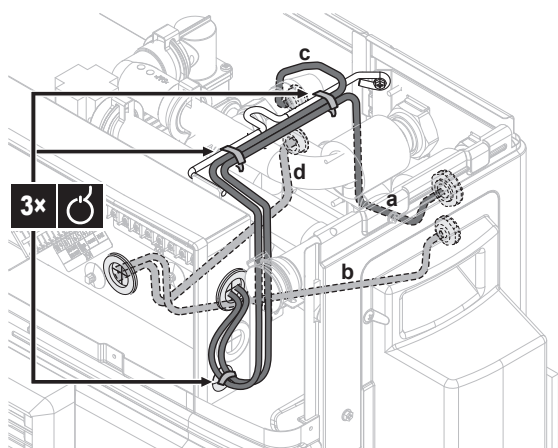
- 3 If you insert cables through the knockout holes c and d:
 - Punch the knockout holes using a hammer and screw driver.



- Insert the cable glands (delivered as accessory).



- 4 Inside the unit, route the wiring to the switch box as follows:



a~d See below

- 5 Inside the switch box, connect the wires to the appropriate terminals.
- 6 After connecting all wiring, close the front plate and the top plate.

Connections in case of third-party gas boiler

Routing	Possible cables (depends on the installed options)
a Main power supply (high voltage)	Main power supply
b User interface (low voltage)	User interface (mandatory option)
c High voltage	- Bivalent signal for third-party gas boiler (field supply) - External pump cable – Power supply (mandatory option)
d Low voltage	- External outdoor temperature sensor (option) - LAN adapter (option) - External pump cable – PWM signal (mandatory option)

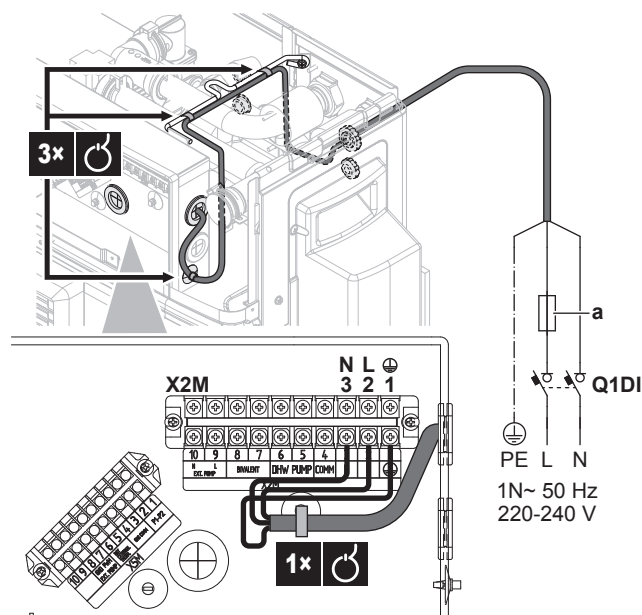


INFORMATION

Bottom plate heater (option). For the routing, see the installation manual of the bottom plate heater.

To connect the main power supply

- 1 Connect the main power supply to the appropriate terminals as shown in the illustration below.



a Recommended field fuse: 20 A
Q1DI Earth leakage circuit breaker

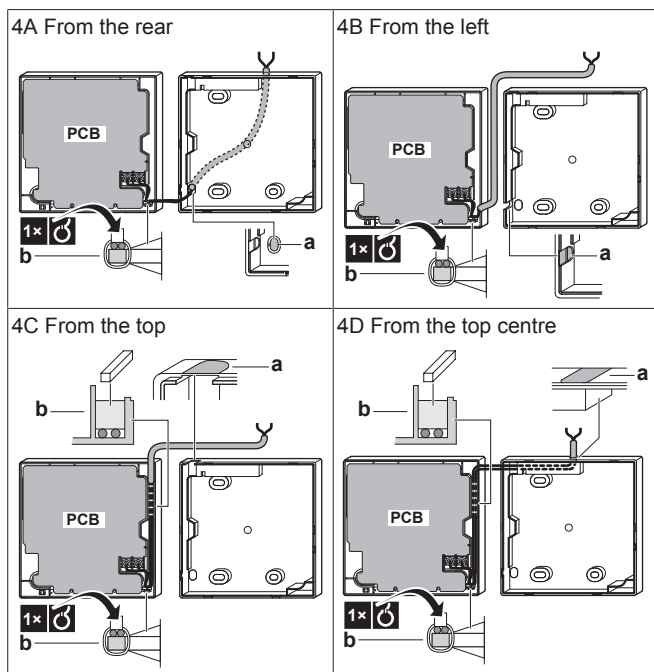
- 2 Fix the cable with cable ties to the cable tie mountings.

To connect the user interface

#	Action
1	Connect the user interface cable to the outdoor unit. Fix the cable with cable ties to the cable tie mountings. a User interface. The user interface is required for operation, but has to be ordered separately (mandatory option).
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.

6 Configuration

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

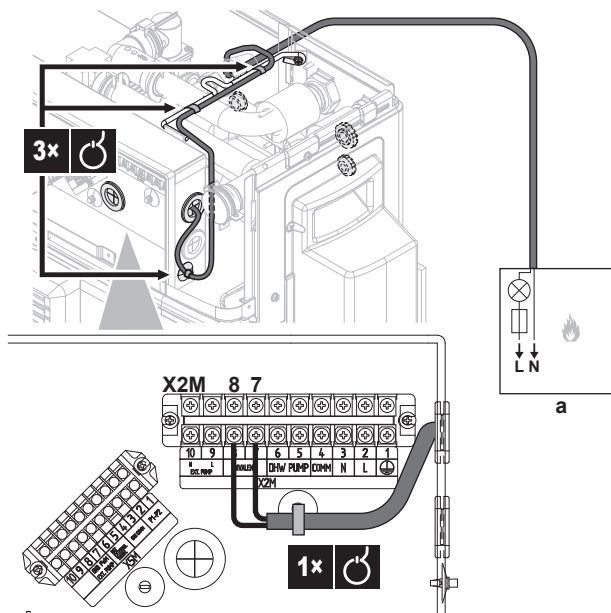


a Notch this part for the wiring to pass through with nippers etc.

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

To connect the bivalent signal for third-party gas boiler

- 1 Connect the bivalent signal for third-party gas boiler to the appropriate terminals as shown in the illustration below.



a Bivalent signal for third-party gas boiler

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

To connect the external pump



NOTICE

External pump. In case of third-party gas boiler, you must install the mandatory options EKADDONJH and EKADDONJH2 (= connection kit for third-party gas boiler). This includes connecting the external pump to the outdoor unit. For installation instructions, see the installation manual of the connection kit.

6 Configuration

6.1 Overview: Configuration

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



NOTICE

This chapter explains only the basic configuration. For more detailed explanation and background information, see the installer reference guide.



INFORMATION

Gas boiler. Depending on the installed gas boiler, settings will be visible/invisible.

- By default, only the settings applicable for the third-party gas boiler are displayed.
- When the unit detects communication from the *HY2KOMB28+32AA gas boiler, all settings applicable for the *HY2KOMB28+32AA gas boiler are automatically displayed.

Why

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

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

How

You can configure the system via the user interface.

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



INFORMATION

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

Accessing settings – Legend for tables

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

Method	Column in tables
Accessing settings via the breadcrumb in the menu structure.	# For example: [A.2.1.7]
Accessing settings via the code in the overview settings.	Code For example: [C-07]

See also:

- "To access the installer settings" [▶ 21]
- "6.4 Menu structure: Overview installer settings" [▶ 26]

6.1.1 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

Prerequisite: Your user permission level is Adv. end user.

- 1 Go to [6.4]: > Information > User permission level.
- 2 Press for more than 4 seconds.

Result: Your user permission level is now Installer. The home pages display .



INFORMATION

The Installer permission level switches automatically back to End user in the following cases:

- If you press again for more than 4 seconds, or
- If you do NOT press any button for more than 1 hour

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: Your user permission level is now Adv. end user. The user interface displays additional information and a "+" is added to the menu title. The user permission level stays in Adv. end user until manually set otherwise.

To set the user permission level to End user

- 1 Press for more than 4 seconds.

Result: Your user permission level is now End user. The user interface displays the default home page.

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 (in this example [1-01]) 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 "01".

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 (in this example [1-01]) 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 to confirm the modification of the parameter.
- 7 At installer settings menu, press to confirm the settings.

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

Result: The system will restart.

6.2 Basic configuration

6.2.1 Quick wizard: Language / time and date

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

6.2.2 Quick wizard: Standard

Space heating settings

#	Code	Description
[A.2.1.7]	[C-07]	Unit temperature control: ▪ 0 (LWT control): Unit operation is decided based on the leaving water temperature. ▪ 1 (Ext RT control): Unit operation is decided by the external thermostat. This is only applicable in case of *HY2KOMB28+32AA gas boiler. ▪ 2 (RT control): Unit operation is decided based on the ambient temperature of the user interface.

6 Configuration

#	Code	Description
[A.2.1.9]	[F-0D]	Pump operation: 0 (Continuous): Continuous pump operation, regardless of thermo ON or OFF condition. 1 (Sample): When thermo OFF condition occurs, the pump runs every 5 minutes and the water temperature is checked. If the water temperature is below target, unit operation can start. 2 (Request): Pump operation based on request. Example: Using a room thermostat and thermostat creates thermo ON/OFF condition.
[A.2.1.C]	[E-0D]	Glycol present: 0 (No) 1 (Yes)
[A.2.1.D]	[4-04]	Pipe freeze prevention: 1 (cont. pump). This setting is read-only.
[A.2.1.E]	[C-02]	Hybrid system type: 0 (Boiler): In case of *HY2KOMB28+32AA gas boiler. 1 (Bivalent boiler): In case of third-party gas boiler. By default, this setting is set to 1, and only the settings applicable for the third-party gas boiler are displayed. When the unit detects communication from the *HY2KOMB28+32AA gas boiler, the unit automatically changes this setting to 0, and all settings applicable for the *HY2KOMB28+32AA gas boiler are displayed.

6.2.3 Quick wizard: Options

Domestic hot water settings

Only applicable in case of *HY2KOMB28+32AA gas boiler.

#	Code	Description
[A.2.2.1]	[E-05]	Domestic hot water preparation: 0 (No): NOT possible 1 (Yes): Possible
[A.2.2.2]	[E-06]	Domestic hot water production: 0 (Type 1): by boiler 1 (Type 2): by tank Note: For Switzerland, setting MUST be "1".
[A.2.2.3]	[E-07]	Domestic hot water tank: 0 (Type 1): EKHWS*D* or third-party tank (see below). 4 (Type 5). EKHWP. 6 (Type 7) Third-party tank. Range: 0~6

#	Code	Description
[A.2.2.A]	[D-02]	Domestic hot water pump (not applicable for Switzerland): In case of [E-06]=1 0 (No): NOT installed 1 (Secondary return): Installed for instant hot water 2 (Disinf. shunt): Installed for disinfection See also illustrations below.



INFORMATION

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



INFORMATION

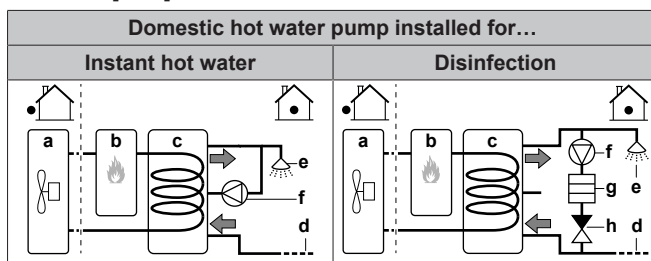
If a third-party tank is present in the system, and heat pump operation is...

...required and allowed, set [E-07] to "0".

...NOT allowed, set [E-07] to "6". If [E-07]=6, the unit limits the maximum setpoint to 60°C.

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).

In case of [E-06]=1



- a Outdoor unit
- b Gas boiler
- c Tank
- d Cold water
- e Shower
- f Domestic hot water pump
- g Heater element
- h Non-return valve



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

External room thermostat control is only applicable in case of *HY2KOMB28+32AA gas boiler.

#	Code	Description
[A.2.2.4]	[C-05]	External room thermostat for the main zone: 1 (Thermo ON/OFF): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. 2 (H/C request): Because only heating is possible, the used external room thermostat can only send a thermo ON/OFF condition.

#	Code	Description
[A.2.2.B]	[C-08]	External sensor: 0 (No): NOT installed. 1 (Outdoor sensor): Connected to the outdoor unit measuring the outdoor temperature. 2 (Room sensor): NOT applicable.

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): 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



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.

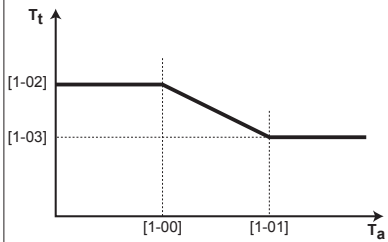


INFORMATION

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

6.2.4 Space heating control

Leaving water temperature: Main zone

#	Code	Description
[A.3.1.1.1]	N/A	Set point mode: 0 (Fixed): Absolute 1 (Weather dep.): Weather-dependent 2 (Fixed/scheduled): Absolute + scheduled (only for leaving water temperature control) 3 (WD/scheduled): Weather-dependent + scheduled (only for leaving water temperature control)
[7.7.1.1]	[1-00] [1-01] [1-02] [1-03]	Weather-dependent curve (heating):  - T_t: Target leaving water temperature (main) - T_a: Outdoor temperature



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.



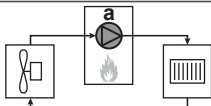
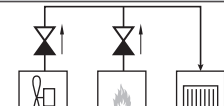
NOTICE

In case of third-party gas boiler:

If you use weather-dependent operation, make sure to set the values for the weather-dependent curves twice for correct operation:

- Once on the user interface of the outdoor unit
- Once on the third-party gas boiler

Pump control

*HY2KOMB28+32AA gas boiler	Third-party gas boiler
 a Main pump (= inside the gas boiler)	 a Main pump (= external pump)

If...		Then the main pump runs...
Space heating is done by...	And...	
Outdoor unit only	[C-0B]=1	According to ΔT control (see below).
	[C-0B]=0	At maximum pump speed.

6 Configuration

If...	Then the main pump runs...
Space heating is done by... Gas boiler only (only applicable in case of *HY2KOMB28+32AA gas boiler)	At maximum pump speed.
Combination of outdoor unit and gas boiler (only applicable in case of *HY2KOMB28+32AA gas boiler)	

Field setting [C-0B] defines whether ΔT control is enabled. The main pump will only run according to ΔT control if [C-0B] is set to 1 and space heating is done by the outdoor unit only. If the pump runs according to ΔT control:

If Emitter type [2-0C]=...	Then the target ΔT in heating is...
0: Underfloor heating	Variable according to [1-0B].
1: Fancoil unit	
2: Radiator	Fixed (10°C).



INFORMATION

Changing these settings can result in discomfort. Refer to the installer reference guide for more information.

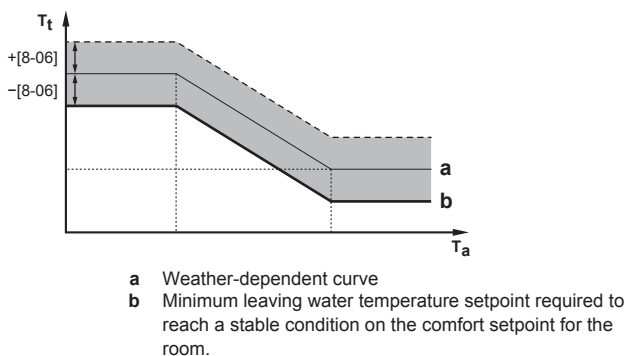
Leaving water temperature: Modulation

#	Code	Description
[A.3.1.1.5]	[8-05]	Leaving water temperature modulation: 0 (No): Disabled 1 (Yes): Enabled. The leaving water temperature is calculated according to the difference between desired and actual room temperature. This allows better matching of the heat pump capacity to actual required capacity and results in less start/stop cycles of the heat pump and more economic operation. This function is only applicable in case of room thermostat control ([C-07]=2).
N/A	[8-06]	Leaving water temperature maximum modulation: Range: 0°C~10°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. See the illustration below.



Leaving water temperature: Emitter type

#	Code	Description
[A.3.1.1.7]	[9-0B]	Emitter type: Reaction time of the system: 0: (Quick) Example: Small water volume and fan coils. 1: (Slow) Example: Large water volume, floor heating loops. Depending on the system water volume and the heat emitters type, the heat up of a space can take longer. This setting can compensate for a slow or a quick heating system by adjusting the unit capacity during the heat up cycle.

Quick heat up function

#	Code	Description
N/A	[C-0A]	Indoor quick heat up function: 0: OFF. 1: On. 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 quickly boost up the room temperature to the desired temperature. This can be useful after long periods of absence or after a breakdown of the system.

Leaving water temperature: Delta T source

#	Code	Description
[A.3.1.3.1]	[1-0B]	Heating: required temperature difference between entering and leaving water. In case a minimum temperature difference is required for the good operation of the heat emitters in heating mode. Range: 3°C~10°C

6.2.5 Domestic hot water control

Only applicable in case of *HY2KOMB28+32AA gas boiler, and an optional domestic hot water tank is installed.

This is always applicable for Switzerland.

#	Code	Description
[A.4.1]	[6-0D]	Domestic hot water Type: 0 (Reheat only): Only reheat operation is allowed. 1 (Reheat + sched.): Same as 2, but between the scheduled heatup cycles, reheat operation is allowed. 2 (Scheduled only): The domestic hot water tank can ONLY be heated according to a schedule.
[A.4.5]	[6-0E]	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. In case of [E-06]=1 (tank installed): - If [E-07]=0: 40°C~70°C - If [E-07]=4: 40°C~75°C - If [E-07]=6: 40°C~60°C In case of [E-06]=0 (no tank installed): 40°C~65°C

**INFORMATION**

There is a risk of a space heating capacity shortage/comfort problem when selecting [6-0D]=0 ([A.4.1] Domestic hot water Type=Reheat only).

In case of frequent domestic hot water operation, frequent and long space heating interruption will happen.

**INFORMATION**

If a third-party tank is present in the system, and heat pump operation is...

...required and allowed, set [E-07] to "0".

...NOT allowed, set [E-07] to "6". If [E-07]=6, the unit limits the maximum setpoint to 60°C.

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).

6.2.6 Contact/helpdesk number

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

6.3 Advanced configuration/optimization**6.3.1 Heat source settings****Equilibrium temperature**

#	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. 1: NOT allowed.
[A.5.2.2]	[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: -14°C~35°C

**NOTICE**

In case of third-party gas boiler:

- To allow more heat pump operation, it is highly recommended NOT to change the default setting of [5-00], and keep the value at "1".
- If there is a capacity shortage, you can allow more gas boiler operation by increasing [5-01].
- Make sure to set the value of [5-01] at least 1°C higher than the value of [C-03].

Boiler only ambient temperature

#	Code	Description
[A.5.2.3]	[8-0E]	Boiler only ambient temp When the ambient temperature is lower than this temperature, the heat pump is NOT allowed to work. Range: -14°C~25°C

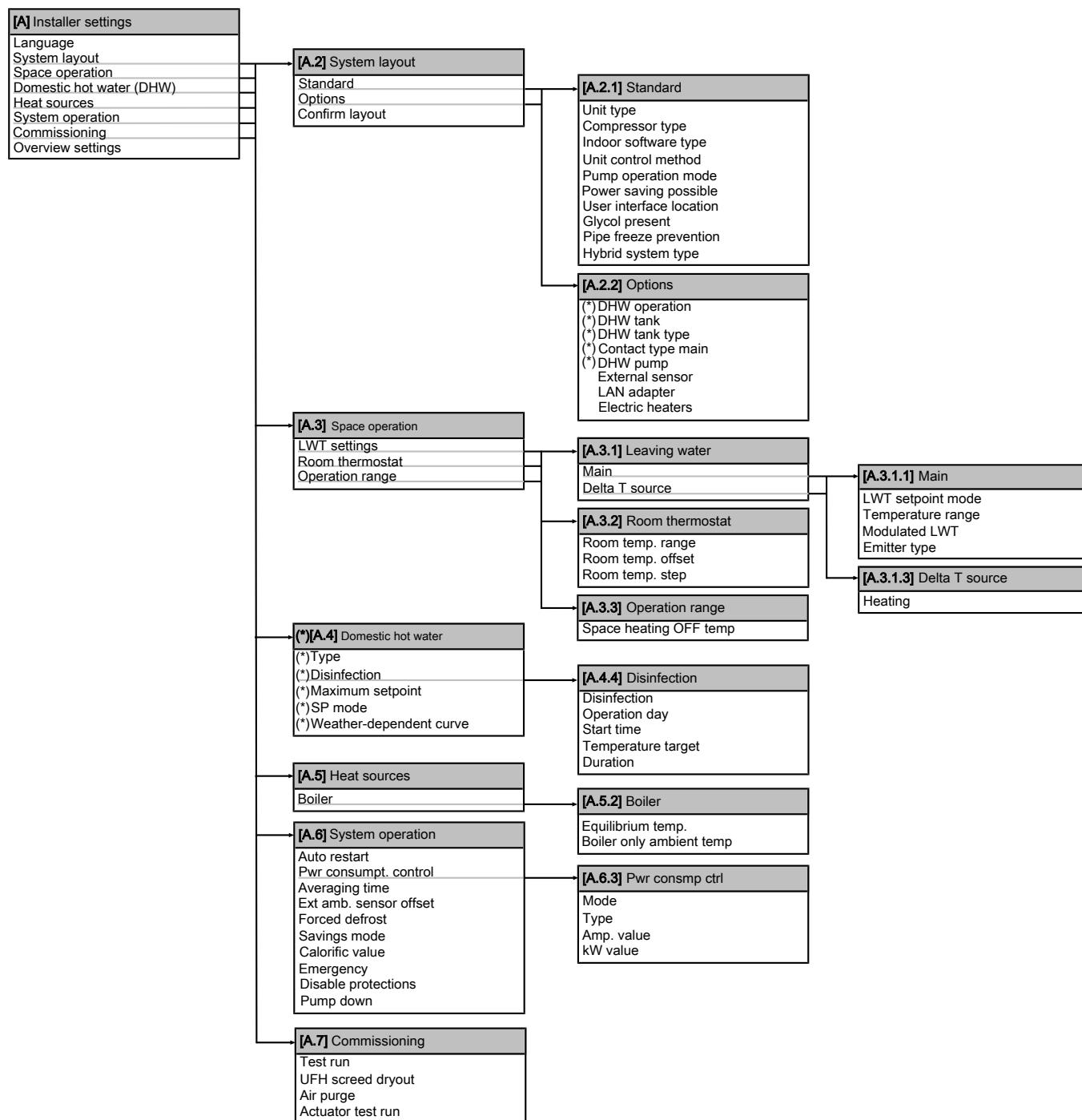
**NOTICE**

- If you install the bottom plate heater, you may lower the operation range of the heat pump to $T_a \geq -14^\circ\text{C}$ using field setting [8-0E]=-14°C.
- If you do not install the bottom plate heater, keep [8-0E]=-5°C.

For more information about the bottom plate heater, see ["Bottom plate heater" ▸ 7](#).

6 Configuration

6.4 Menu structure: Overview installer settings



(*) Only applicable in case of *HY2KOMB28+32AA gas boiler.



INFORMATION

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

7 Commissioning



NOTICE

ALWAYS operate the unit with thermistors and/or pressure sensors/switches. If NOT, burning of the compressor might be the result.



INFORMATION

Protective functions – "Installer-on-site mode". The software is equipped with protective functions, such as room antifrost. The unit automatically runs these functions when necessary. (If the user interface home pages are off, the unit will not operate automatically.)

During installation or service this behaviour is undesired. Therefore, the protective functions can be disabled:

- **At first power-on:** The protective functions are disabled by default. After 12 h they will be automatically enabled.
- **Afterwards:** An installer can manually disable the protective functions by setting [A.6.D]: Disable protections=On. After his work is done, he can enable the protective functions by setting [A.6.D]: Disable protections=OFF.

7.1 Checklist before commissioning

After the installation of the unit, first check the items listed below. Once all checks are fulfilled, the unit must be closed. Power-up the unit after it is closed.

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

☐	You read the complete installation instructions, as described in the installer reference guide .
☐	The outdoor unit is properly mounted.
☐	The gas boiler is properly mounted.
☐	In case of *HY2KOMB28+32AA gas boiler: The following field wiring has been carried out according to the available documentation and the applicable legislation: ▪ Between the outdoor unit and the local supply panel ▪ Between the gas boiler and the local supply panel ▪ Between the outdoor unit and the gas boiler (communication) ▪ Between the gas boiler and the room thermostat (if applicable) ▪ Between the gas boiler and the domestic hot water tank (if applicable)
☐	In case of third-party gas boiler: The following field wiring has been carried out according to the available documentation and the applicable legislation: ▪ Between the outdoor unit and the local supply panel ▪ Between the gas boiler and the local supply panel ▪ Between the outdoor unit and the gas boiler (bivalent signal) ▪ Between the outdoor unit and the external pump
☐	The system is properly earthed and the earth terminals are tightened.

☐	The fuses or locally installed protection devices are installed according to this document, and have NOT been bypassed.
☐	The power supply voltage matches the voltage on the identification label of the unit.
☐	There are NO loose connections or damaged electrical components in the switch box.
☐	There are NO damaged components or squeezed pipes on the inside of the outdoor unit.
☐	The correct pipe size is installed and the pipes are properly insulated.
☐	There are no water leaks inside the outdoor unit.
☐	There is NO water leak inside the gas boiler.
☐	There is NO water leak in the connection between the gas boiler and the outdoor unit.
☐	The shut-off valves are properly installed and fully open.
☐	The manual air purge valves are closed, and the automatic air purge valves (if applicable) are open.
☐	The pressure relief valve purges water when opened. Clean water must come out.
☐	The gas boiler is switched ON.
☐	Setting E. is correctly set on the gas boiler. The setting must be 0.
☐	The minimum water volume is guaranteed in all conditions. See "To check the water volume" in "4.2 Preparing water piping" [p. 8] .
☐	If glycol was added to the system, confirm the correct glycol concentration, and check if glycol setting [E-0D]=1.



NOTICE

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

7.2 Checklist during commissioning

☐	The minimum flow rate is guaranteed in all conditions. See "To check the water volume and flow rate" in "4.2 Preparing water piping" [p. 8] .
☐	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 a gas pressure test.
☐	To perform a test run on the gas boiler .

7 Commissioning

7.2.1 To perform an air purge

NOTICE

The air purge procedure requires manual action. See ["To fill the space heating circuit"](#) [p 15].

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.7.3]:  > Installer settings > Commissioning > Air purge.
- 2 Set the type.
- 3 Select Start air purge and press **OK**.
- 4 Select OK and press **OK**.

Result: The air purge starts. It stops automatically when done. To stop it manually, press , select OK and press **OK**.

Air purging heat emitters or collectors

We recommend to purge air with the unit's air purge function (see above). However, if you purge air from the heat emitters or collectors, mind the following:

WARNING

Air purging heat emitters or collectors. Before you purge air from heat emitters or collectors, check if an error or  is displayed on the home pages of the user interface.

- If not, you can purge air immediately.
- If yes, make sure that the room where you want to purge air is sufficiently ventilated. **Reason:** Refrigerant might leak into the water circuit, and subsequently into the room when you purge air from the heat emitters or collectors.

7.2.2 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"](#) [p 21].
- 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

In case of third-party gas boiler:

When starting up the system in a cold climate, it may be required to start up with a small water volume. To do this, gradually open the heat emitters. As a result, the water temperature will gradually rise. Monitor the inlet water temperature ([6.1.6] in the menu structure) and make sure it does NOT drop below 15°C.

7.2.3 To perform an actuator test run

Perform an actuator test run to confirm the operation of the different actuators. For example, when you select Pump, a test run of the pump will start.

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"](#) [p 21].

- 2 Go to [A.7.4]:  > Installer settings > Commissioning > Actuator test run.
- 3 Select an actuator and press **OK**. **Example:** Pump.
- 4 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.

- 3-way valve test
- Bottom plate heater test
- Bivalent signal test (in case of third-party gas boiler)
- Circulation pump test
- Gas boiler test (in case of *HY2KOMB28+32AA gas boiler)

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.

7.2.4 To perform an 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. It stops automatically when done. To stop it manually, press , select OK and press **OK**.

NOTICE

To perform an underfloor heating screed dryout, room frost protection needs to be disabled ([2-06]=0). By default, it is enabled ([2-06]=1). However, due to the "installer-on-site" mode (see "Commissioning"), room frost protection will be automatically disabled for 12 hours after the first power-on.

If the screed dryout still needs to be performed after the first 12 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
- [D-01]=0
- [4-08]=0
- [4-01]≠1

8 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:

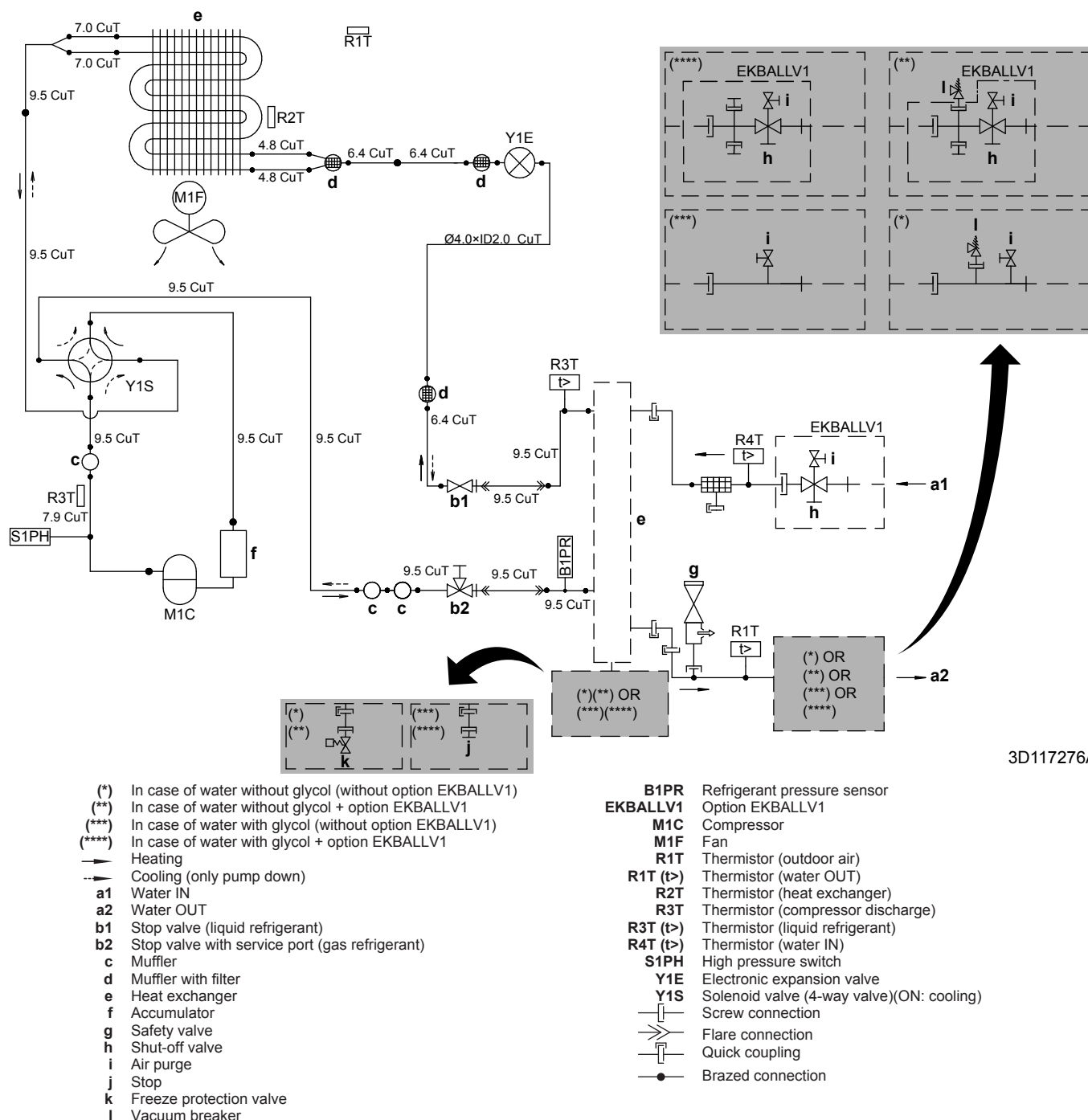
- Fill in the installer setting table (in the operation manual) with the actual settings.

- 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.

9 Technical data

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

9.1 Piping diagram: Outdoor unit



3D117276A

9 Technical data

9.2 Wiring diagram: Outdoor unit

See the internal wiring diagram supplied with the unit (on the inside of the front plate). The abbreviations used are listed below.

Outdoor unit: hydro module

(1) Connection diagram

English	Translation
Connection diagram	Connection diagram
Bivalent	Bivalent signal
Boiler box	Boiler box
Bottom plate heater option	Bottom plate heater
Continuous	Continuous current
DHW pump	Domestic hot water pump
DHW pump output	Domestic hot water pump output
External outdoor ambient sensor option	External outdoor temperature sensor
Hydro switch box	Hydro switch box
Indoor	Indoor
Inrush	Inrush current
LAN adapter	LAN adapter
Max. load	Maximum load
Normal kWh rate power supply	Normal kWh rate power supply
Only for dedicated gas boiler	Only in case of *HY2KOMB28+32AA gas boiler
Only for third-party gas boiler	Only in case of third-party gas boiler
Outdoor	Outdoor
Remote user interface	User interface

(2) Hydro switch box layout

English	Translation
Hydro switch box layout	Hydro switch box layout

(3) Notes

English	Translation
Notes	Notes
User installed options	User installed options
☐ LAN adapter	☐ LAN adapter
☐ Main supply pump	☐ Main supply pump (= external pump)
☐ Ext outdoor thermistor	☐ External outdoor temperature sensor
☐ Bottom plate heater	☐ Bottom plate heater
X2M	Main terminal
-----	Earth wiring
15	Wire number 15
-----	Field supply
①	Several wiring possibilities
	Option
	Wiring depending on model
	Switch box
	PCB

- 1 Colours: BLK: black; RED: red; BLU: blue; WHT: white; GRN: green; ORG: orange; YLW: yellow; GRY: grey; BRN: brown

(4) Legend

Legend	Legend
--------	--------

A1P	Main PCB
A13P	* LAN adapter
A14P	# User interface PCB
E2H	* Bottom plate heater
FU3	* Fuse
M1P	* Main supply pump (= external pump)
M2P	# Domestic hot water pump
Q1DI	# Earth leakage circuit breaker
R6T	* External outdoor temperature sensor
X*A	Connector
X*M	Terminal strip

- * Optional
Field supply

Outdoor unit: compressor module

(1) Connection diagram

English	Translation
Connection diagram	Connection diagram
Hydro switch box	Hydro switch box
Outdoor	Outdoor

(2) Layout

English	Translation
Layout	Layout

(3) Notes

English	Translation
Notes	Notes
	Connection
X1M	Main terminal
-----	Earth wiring
-----	Field supply
	Protective earth
	Option
	Switch box
	PCB
	Wiring depending on model
	Earth

NOTES:

- When operating, do not short-circuit protection device S1PH.
- Colours: BLK: black; RED: red; BLU: blue; WHT: white; GRN: green; ORG: orange; YLW: yellow; GRY: grey; BRN: brown

(4) Legend

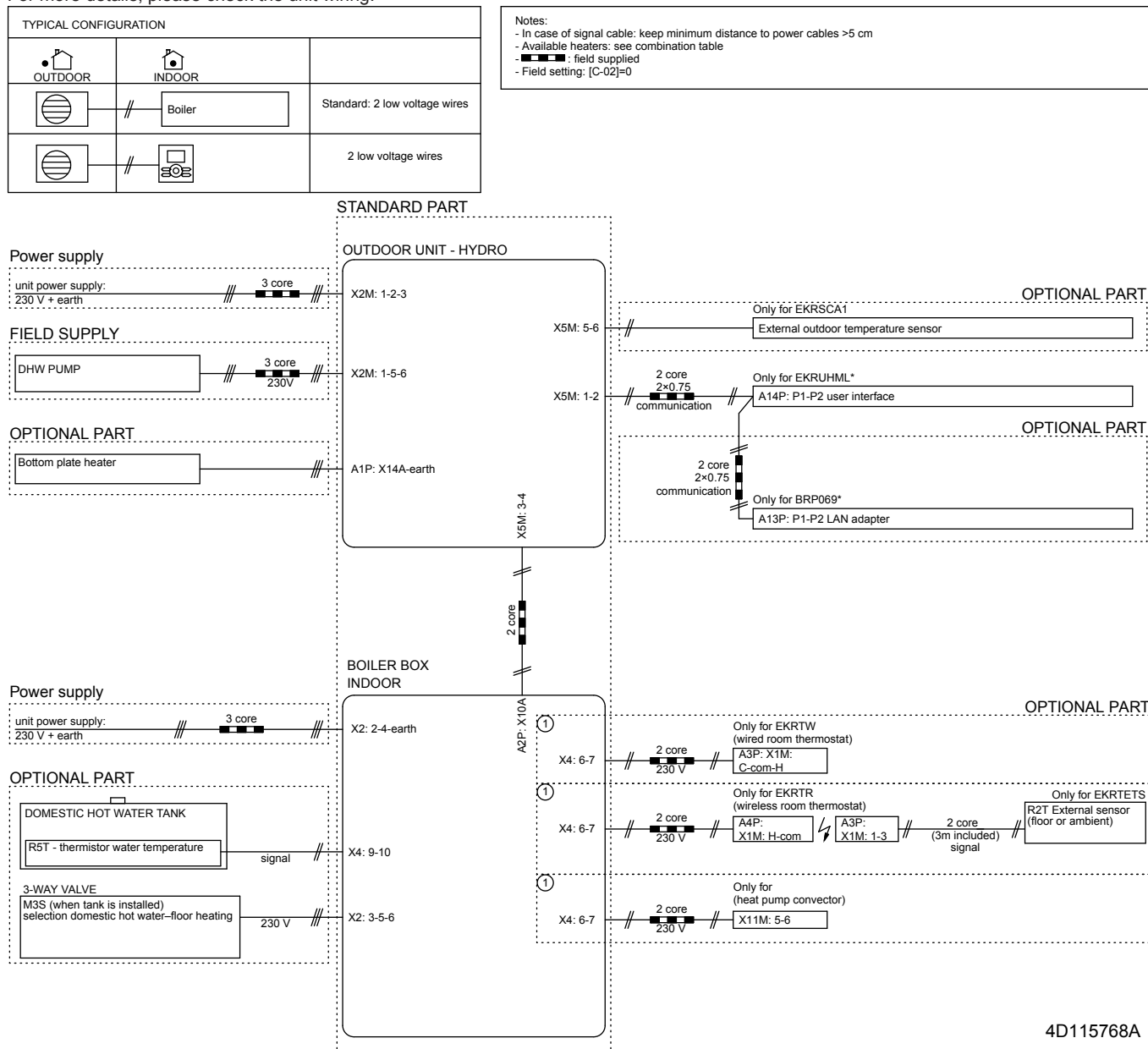
Legend	Legend
C7 (PCB1)	Capacitor
DB1 (PCB1)	Rectifier bridge
E1, E2 (PCB1)	Connector
FU1 (PCB1)	Fuse T 3.15 A 250 V
FU2 (PCB1)	Fuse T 3.15 A 250 V
FU3 (PCB1)	Fuse T 20 A 250 V
H*1 (PCB1)	Connector
IPM1 (PCB1)	Intelligent power module
MRCW (PCB1)	Magnetic relay (Y1S)

MRM*, MR30 (PCB1)	Magnetic relay
M1C	Compressor motor
M1F	Fan motor
PAM (PCB1)	Pulse-amplitude modulation
PCB1	Printed circuit board (main)
PS (PCB1)	Switching power supply
Q1L	Thermal protector
R1T	Thermistor (outdoor air)
R2T	Thermistor (heat exchanger)
R3T	Thermistor (compressor discharge)

S1PH	High pressure switch
SA1 (PCB1)	Surge arrestor
S* (PCB1)	Connector
U, V, W (PCB1)	Connector
V* (PCB1)	Varistor
X11A	Connector
X*M	Terminal strip
Y1E	Electronic expansion valve
Y1S	Solenoid valve (4-way valve)
Z*C	Noise filter (ferrite core)
Z1F (PCB1)	Noise filter

Electrical connection diagram in case of *HY2KOMB28+32AA gas boiler

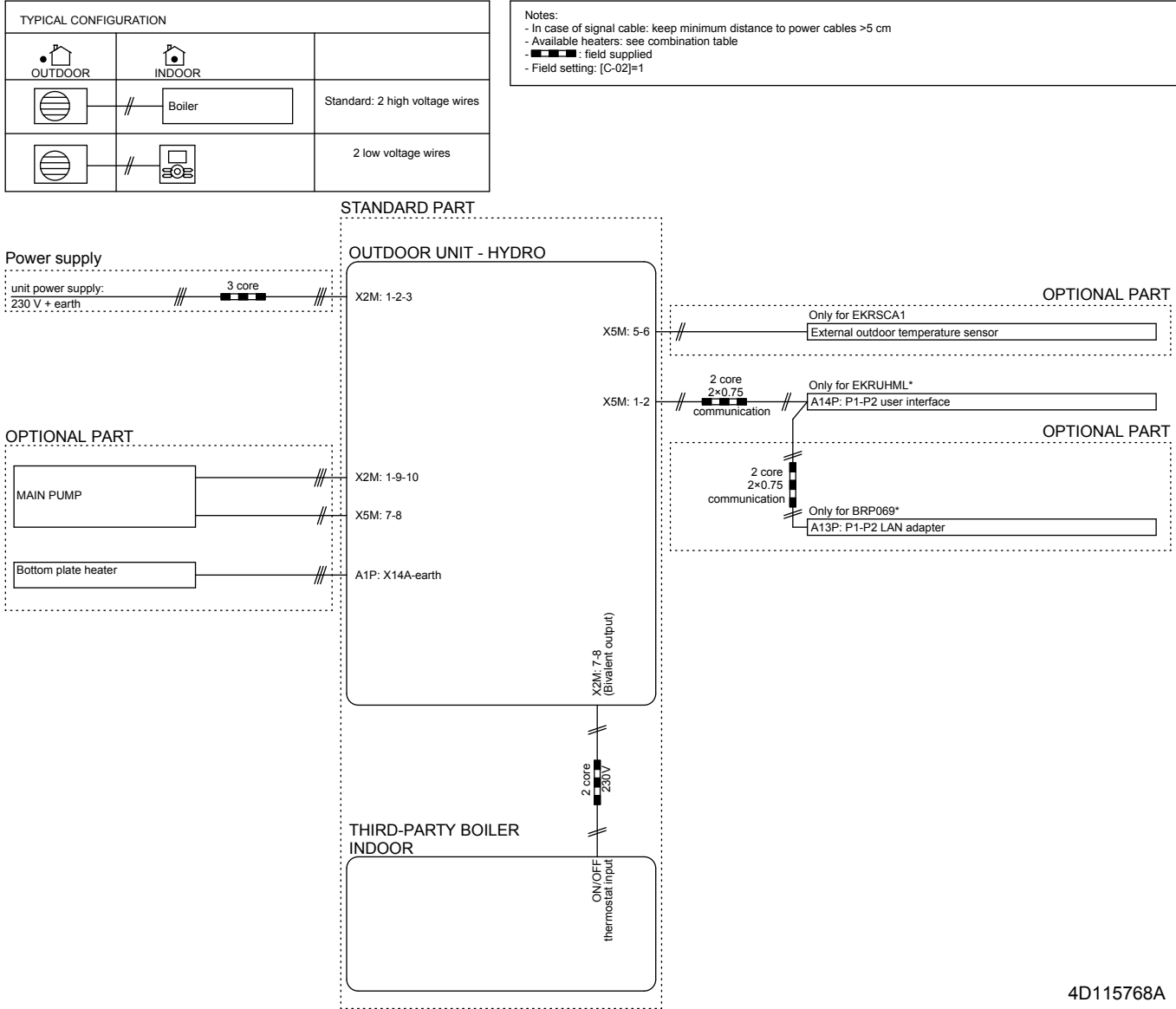
For more details, please check the unit wiring.

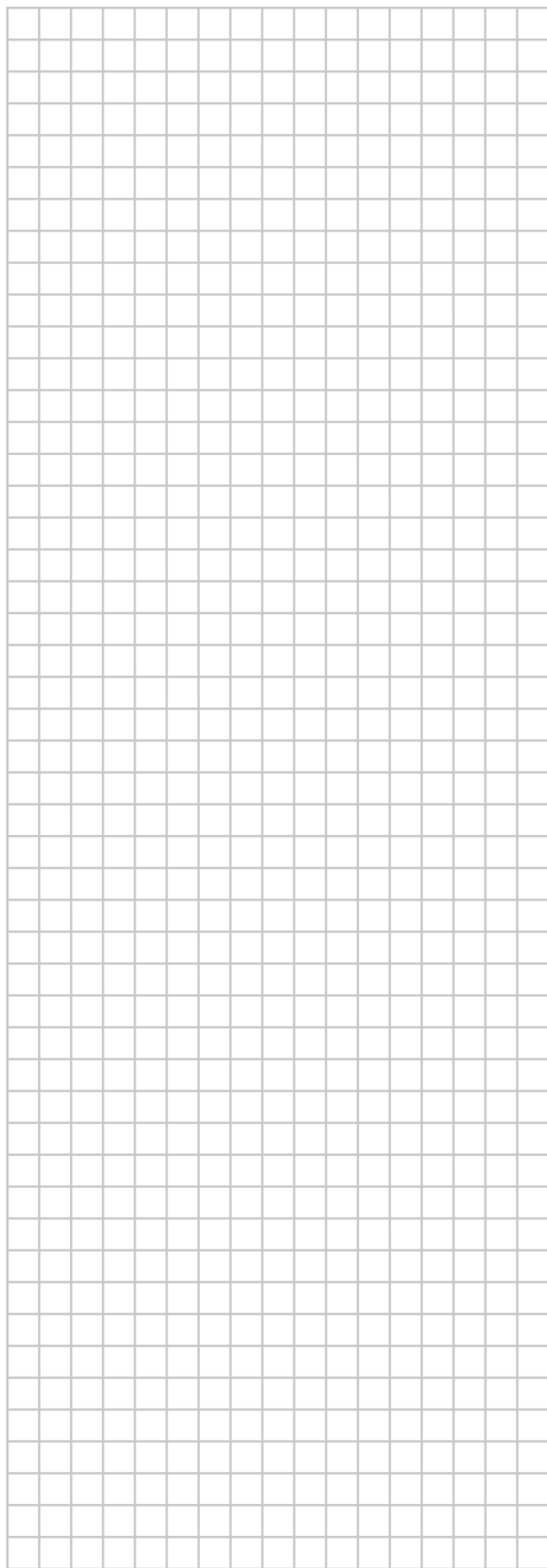
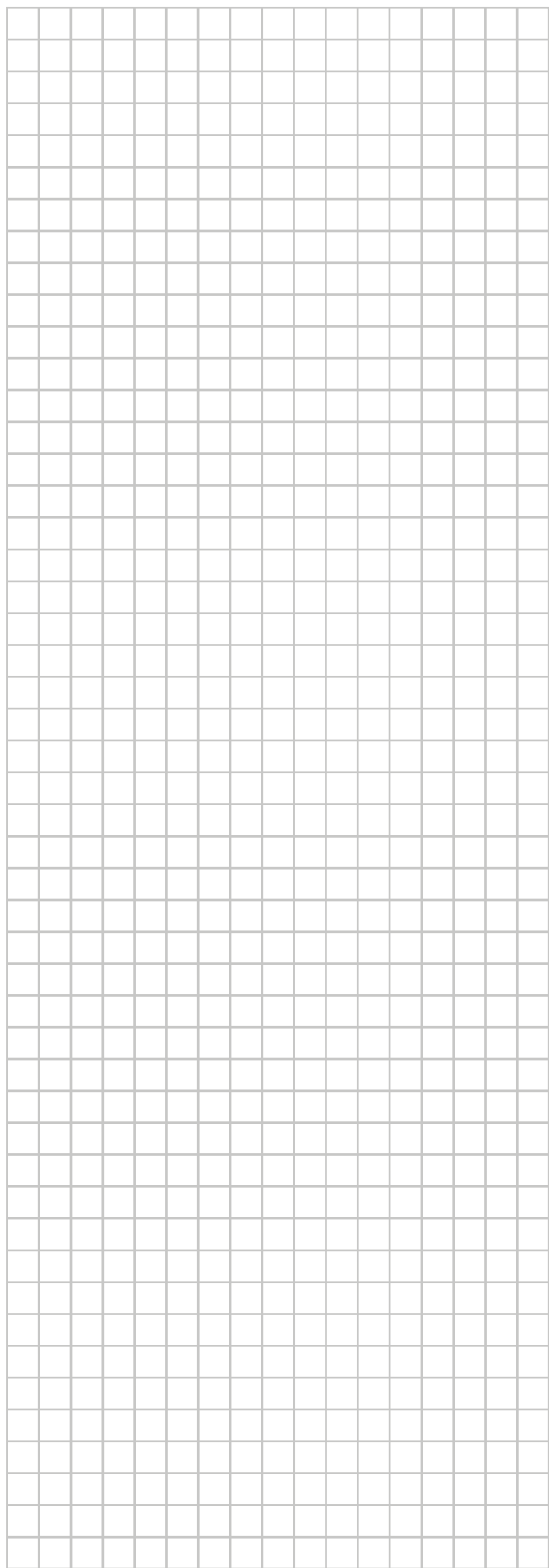


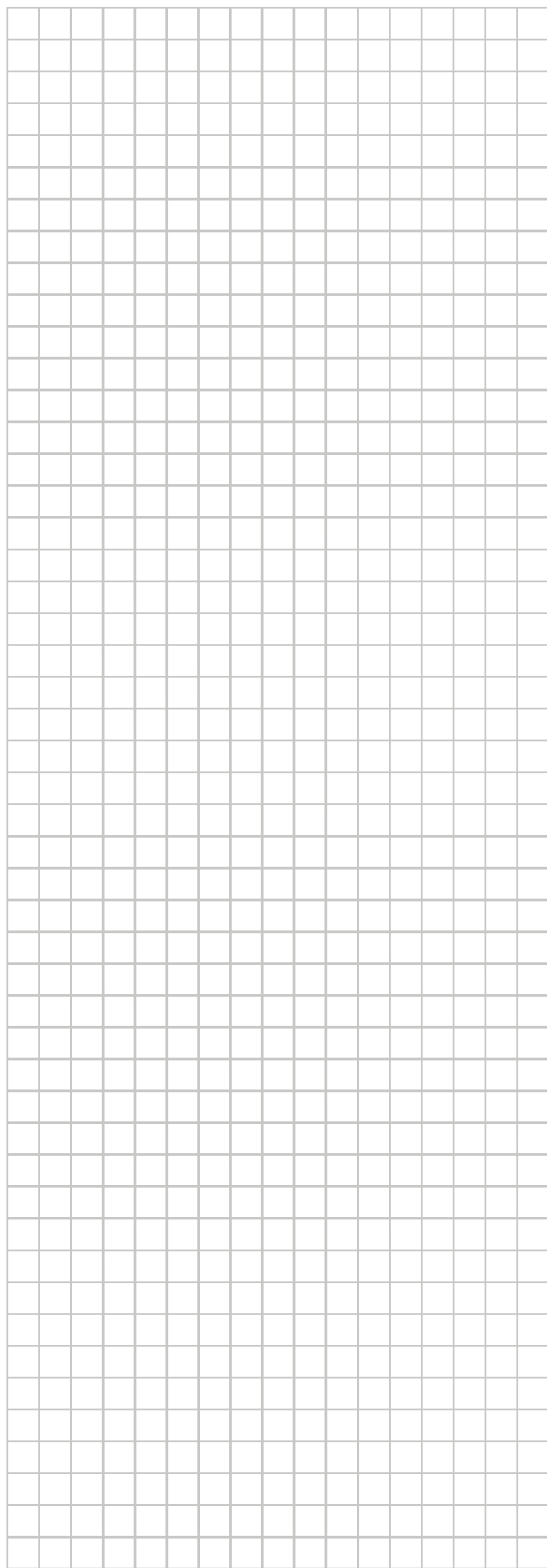
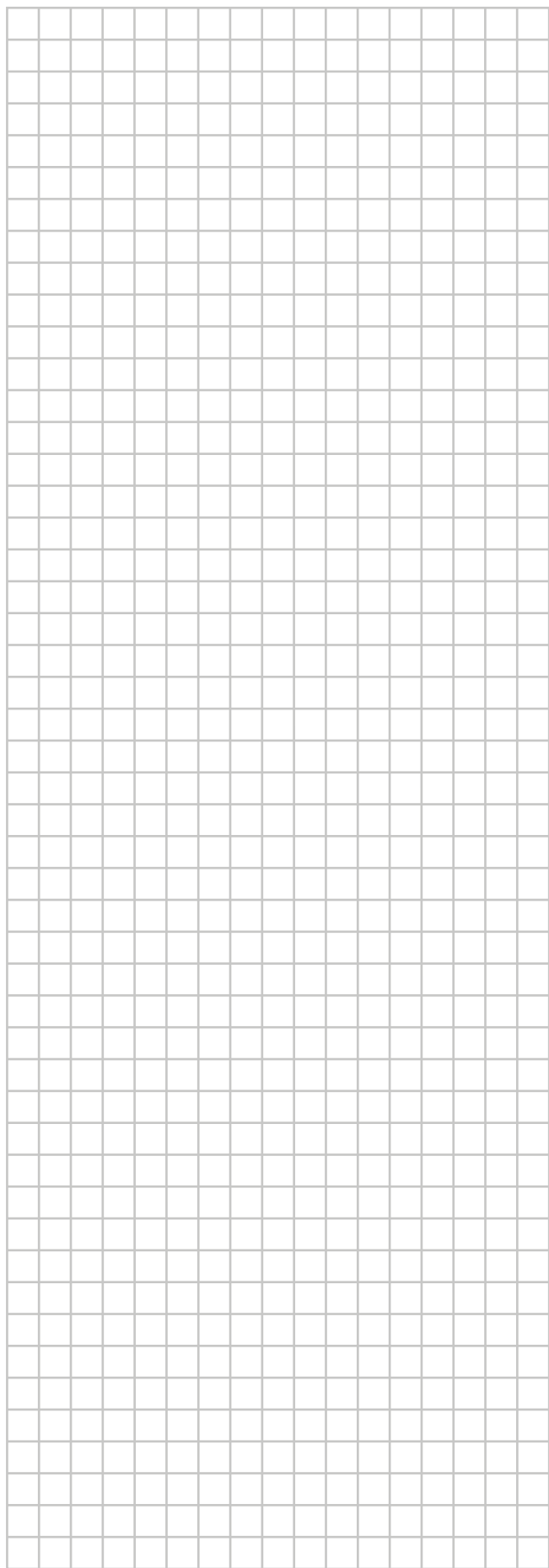
9 Technical data

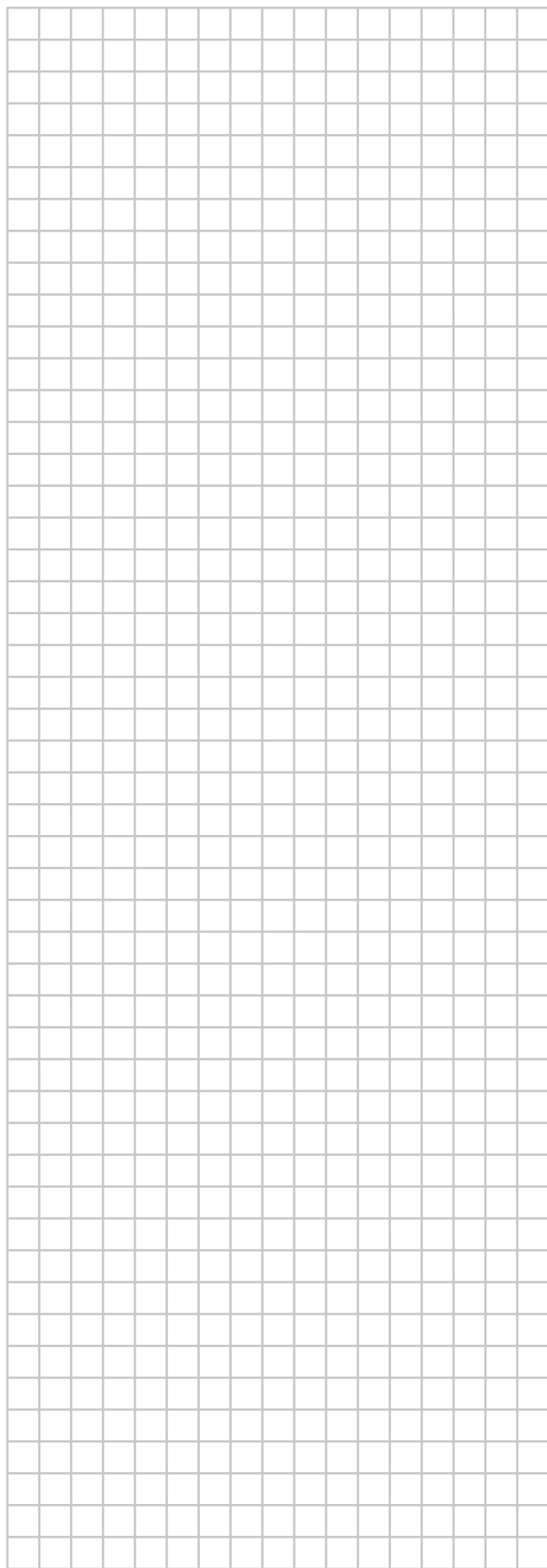
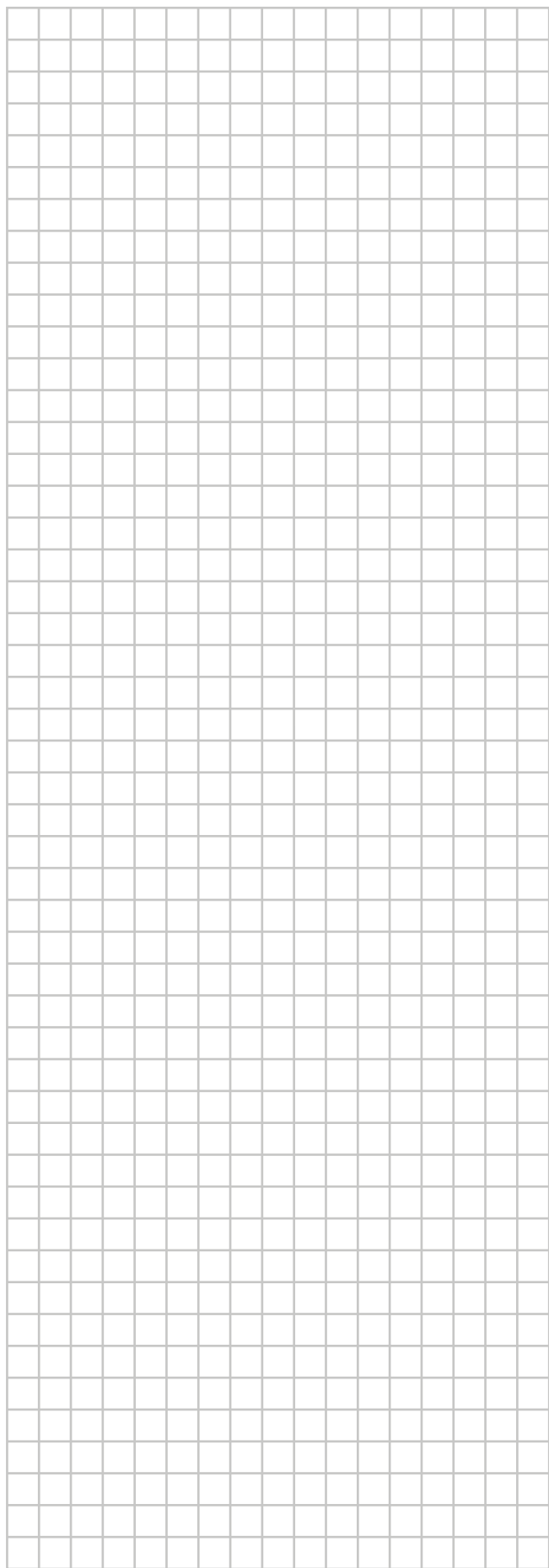
Electrical connection diagram in case of third-party gas boiler

For more details, please check the unit wiring.











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