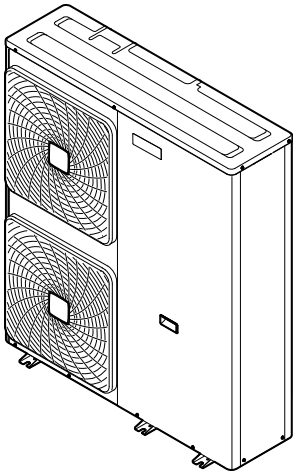




Installation manual

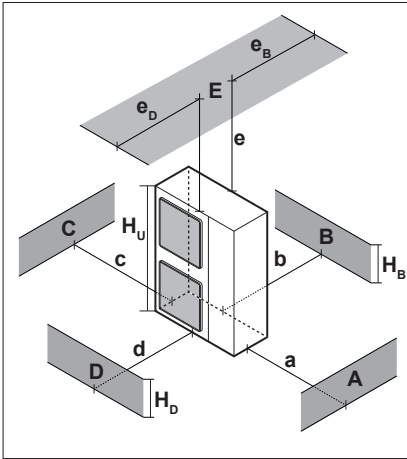
Daikin Altherma 3 H



EPGA11DAV3(7)
EPGA14DAV3(7)
EPGA16DAV3(7)

Installation manual
Daikin Altherma 3 H

English



A~E	H_B H_D H_U	(mm)							
		a	b	c	d	e	e_B	e_D	H
A, B, C	—	≥ 500	≥ 300	≥ 100					≥ 150
A, B, C, E	—	≥ 500	≥ 300	≥ 150		≥ 1000		≤ 500	≥ 150
D	—				≥ 500				≥ 150
D, E	—				≥ 500	≥ 1000	≤ 500		≥ 150
B, D	$H_D < H_U$		≥ 300		≥ 500				≥ 150
B, D, E	$H_D < H_U$ & $H_B > H_U$		≥ 300		≥ 1000	≥ 1000		≤ 500	≥ 150
	$H_D > H_U$ & $H_B < H_U$		≥ 300		≥ 1000	≥ 1000	≤ 500		≥ 150

1

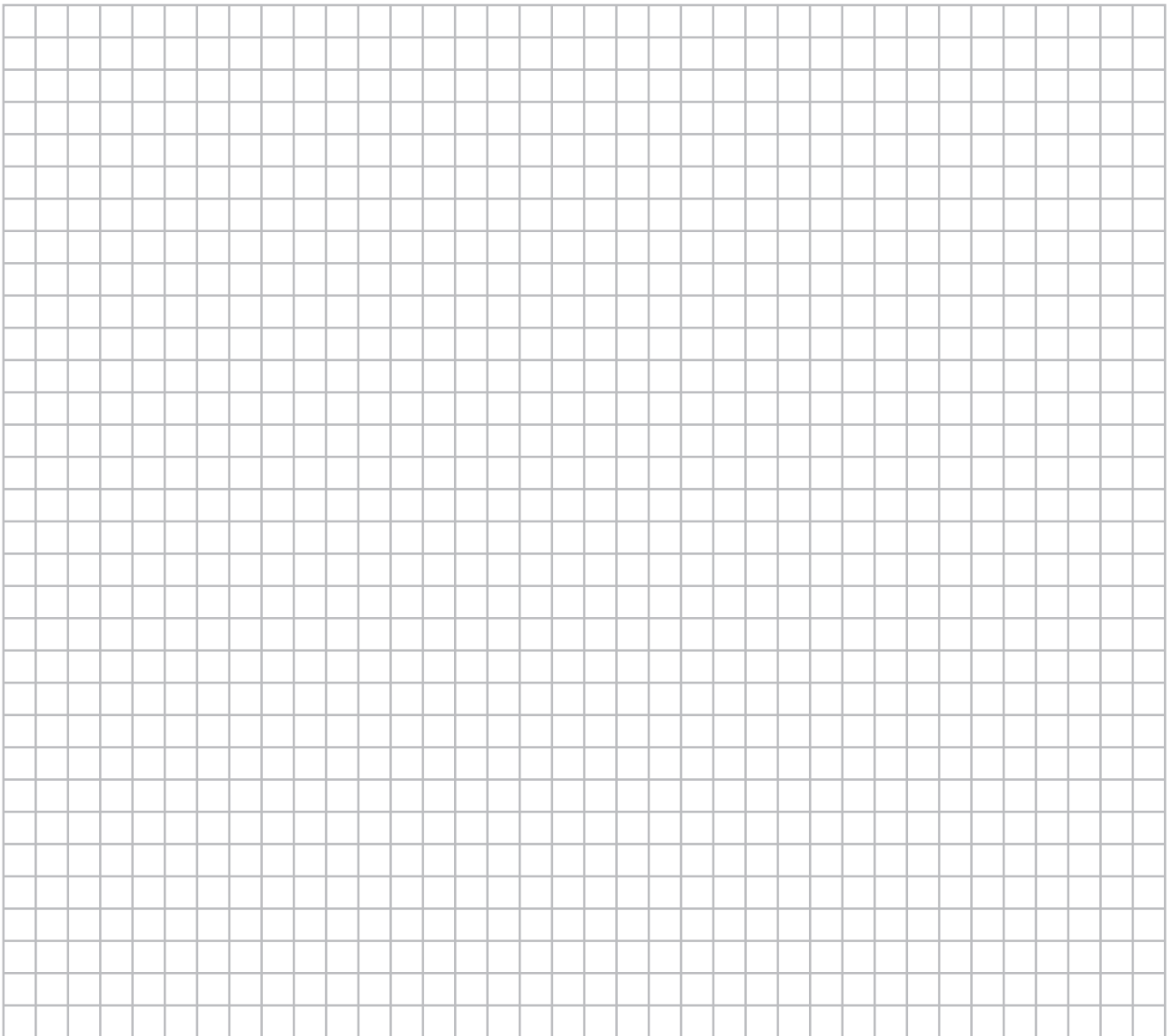


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1 About this document

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)
- **Operation manual:**
 - Quick guide for basic usage
 - Format: Paper (in the box of the indoor 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 – Outdoor unit:**
 - Installation instructions
 - Format: Paper (in the box of the outdoor unit)
- **Installation manual – Indoor unit:**
 - Installation instructions
 - Format: Paper (in the box of the indoor unit)
- **Installer reference guide:**
 - Preparation of the installation, good practices, reference data, ...
 - Format: Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>
- **Addendum book for optional equipment:**
 - Additional info about how to install optional equipment
 - Format: Paper (in the box of the 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 Business Portal (authentication required).

Online tools

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

- **Heating Solutions Navigator**
 - Digital toolbox that offers a variety of tools to facilitate the installation and configuration of heating systems.
 - To access Heating Solutions Navigator, registration to the Stand By Me platform is required. For more information, see <https://professional.standbyme.daikin.eu>.
- **Daikin e-Care**
 - Mobile app for installers and service technicians that allows you to register, configure and troubleshoot heating systems.
 - The mobile app can be downloaded for iOS and Android devices using the QR codes below. Registration to the Stand By Me platform is required to access the app.

App Store

Google Play



2 Specific installer safety instructions

Always observe the following safety instructions and regulations.

Installation site (see "[4.1 Preparing the installation site](#)" [▶ 7])



WARNING

Follow the service space dimensions in this manual for correct installation of the unit. See "[4.1.1 Installation site requirements of the outdoor unit](#)" [▶ 7].

3 About the box

Special requirements for R32 (see "4.1.1 Installation site requirements of the outdoor unit" [7])



WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- 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 and are executed ONLY by authorised persons.

Opening and closing the unit (see "4.2 Opening and closing the unit" [7])



DANGER: RISK OF ELECTROCUTION



DANGER: RISK OF BURNING/SCALDING

Mounting the outdoor unit (see "4.3 Mounting the outdoor unit" [8])



WARNING

Fixing method of the outdoor unit MUST be in accordance with the instructions from this manual. See "4.3 Mounting the outdoor unit" [8].

Piping installation (see "5 Piping installation" [9])



WARNING

Field piping method MUST be in accordance with the instructions from this manual. See "5 Piping installation" [9].

In case of freeze protection by glycol:



WARNING

Ethylene glycol is toxic.



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.

Electrical installation (see "6 Electrical installation" [11])



DANGER: RISK OF ELECTROCUTION



WARNING

Electrical wiring connection method MUST be in accordance with the instructions from:

- This manual. See "6 Electrical installation" [11].
- The wiring diagram, which is delivered with the unit, located at the inside of the service cover. For a translation of its legend, see "8.2 Wiring diagram: Outdoor unit" [14].



WARNING

ALWAYS use multicore cable for power supply cables.



CAUTION

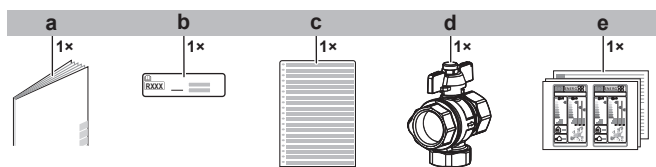
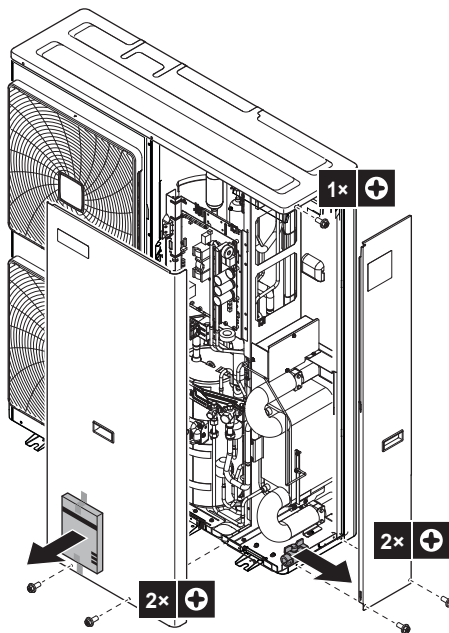
Do NOT push or place redundant cable length in the unit.

3 About the box

3.1 Outdoor unit

3.1.1 To remove the accessories from the outdoor unit

- Open the outdoor unit.
- Remove the accessories.



- a Outdoor unit installation manual
- b Fluorinated greenhouse gases label
- c Multilingual fluorinated greenhouse gases label
- d Shut-off valve (with integrated filter)
- e Energy label

3.1.2 To remove the transportation stay

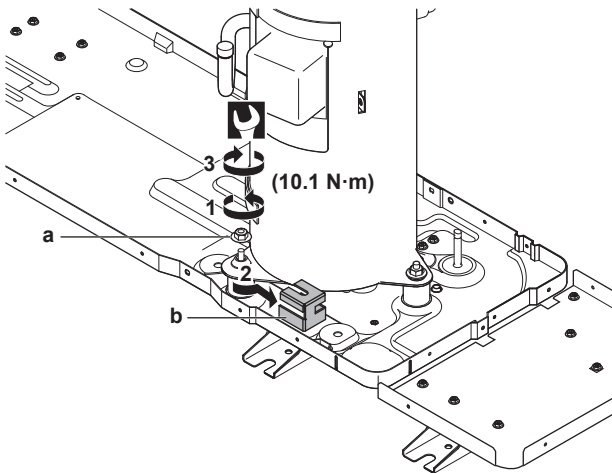


NOTICE

If the unit is operated with the transportation stay attached, abnormal vibration or noise may be generated.

The compressor transportation stay must be removed. It is installed under the compressor leg in order to protect the unit during transport. Proceed as shown in the figure and procedure below.

- 1 Remove the nut (a) of the compressor mounting bolt.
- 2 Remove and discard the transportation stay (b).
- 3 Re-install the nut (a) of the compressor mounting bolt and tighten to 10.1 N·m of torque.



4 Unit installation

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 spacing guidelines. See figure 1 on the inside of the front cover.

The symbols can be interpreted as follows:

- A, C** Right side and left side obstacles (walls/baffle plates)
- B** Suction side obstacle (wall/baffle plate)
- D** Discharge side obstacle (wall/baffle plate)
- E** Top side obstacle (roof)
- a, b, c, d, e** Minimum service space between the unit and obstacles A, B, C, D and E
- e_B** Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle B
- e_D** Maximum distance between the unit and the edge of obstacle E, in the direction of obstacle D
- H_U** Height of the unit including the installation structure
- H_B, H_D** Height of obstacles B and D
- H** Height of installation structure below the unit

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

Cooling mode	10~43°C
Heating mode	-28~35°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.

Mind the following requirements and precautions:



WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- 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 and are executed ONLY by authorised persons.

4.2 Opening and closing the unit

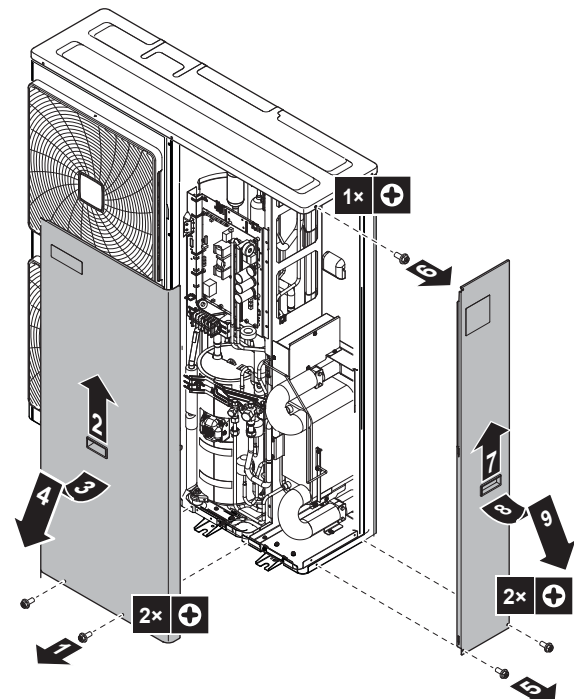
4.2.1 To open the outdoor unit



DANGER: RISK OF ELECTROCUTION



DANGER: RISK OF BURNING/SCALDING



4.2.2 To close the outdoor unit

- 1 Close the switch box cover.
- 2 Mount the front plate and the side plate.

4 Unit installation

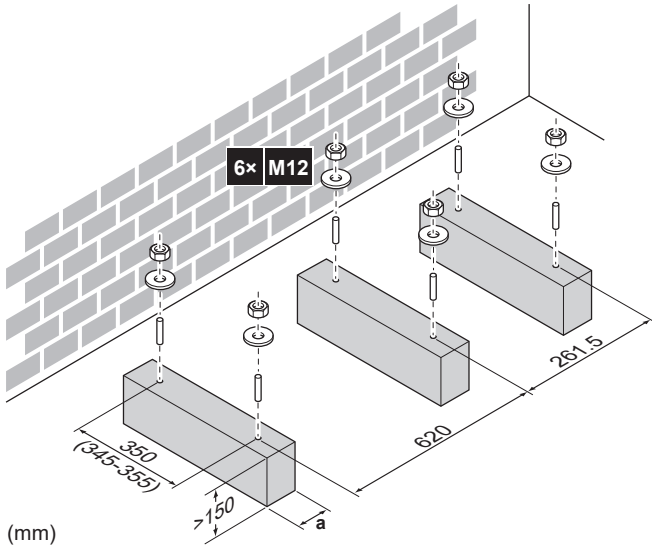
NOTICE

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

4.3 Mounting the outdoor unit

4.3.1 To provide the installation structure

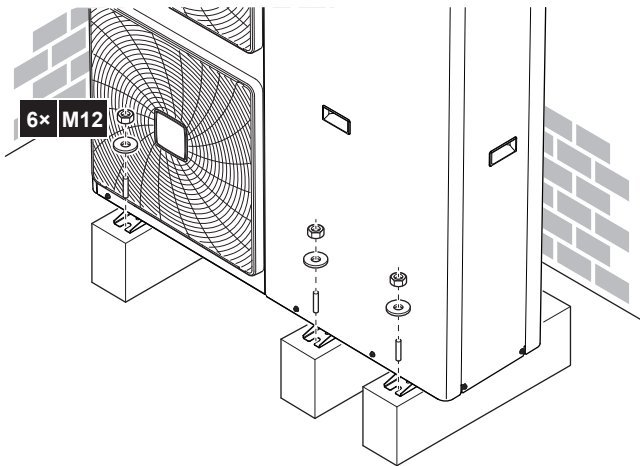
Prepare 6 sets of anchor bolts, nuts and washers (field supply) as follows:



a Make sure not to cover the drain holes.

In any case, make sure the unit is positioned at least 100 mm above the maximum expected level of snow.

4.3.2 To install the outdoor unit



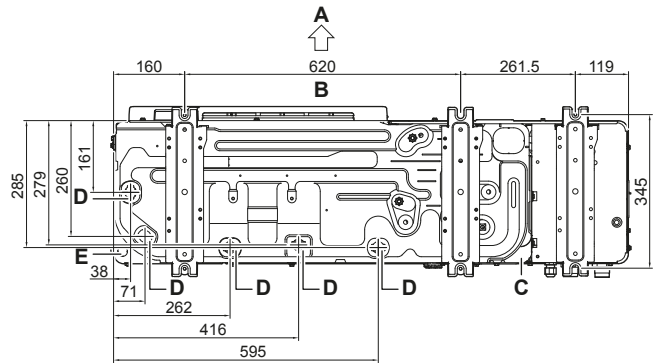
4.3.3 To provide drainage

Make sure that condensate can be evacuated properly. When the unit is in cooling mode, condensate may also form in the hydro part, therefore make sure to provide drainage in the entire unit.

NOTICE

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

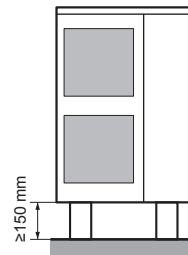
Drain holes (dimensions in mm)



- A Discharge side
- B Distance between anchor points
- C Bottom frame
- D Drain holes
- E Knockout hole for snow

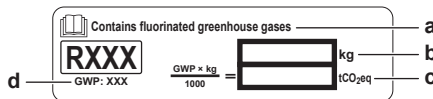
NOTICE

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



4.3.4 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 Total refrigerant charge
- c **Quantity of fluorinated greenhouse gases** of the total refrigerant charge expressed as tonnes CO₂ equivalent.
- d GWP = Global warming potential

NOTICE

Applicable legislation on **fluorinated greenhouse gases** requires that the refrigerant charge of the unit is indicated both in weight and CO₂ equivalent.

Formula to calculate the quantity in CO₂ equivalent tonnes: GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

Use the GWP value mentioned on the refrigerant charge label.

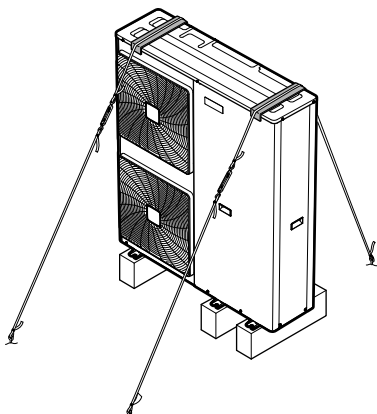
- 2 Fix the label on the inside of the outdoor unit near the gas and liquid stop valves.

4.3.5 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 Piping installation

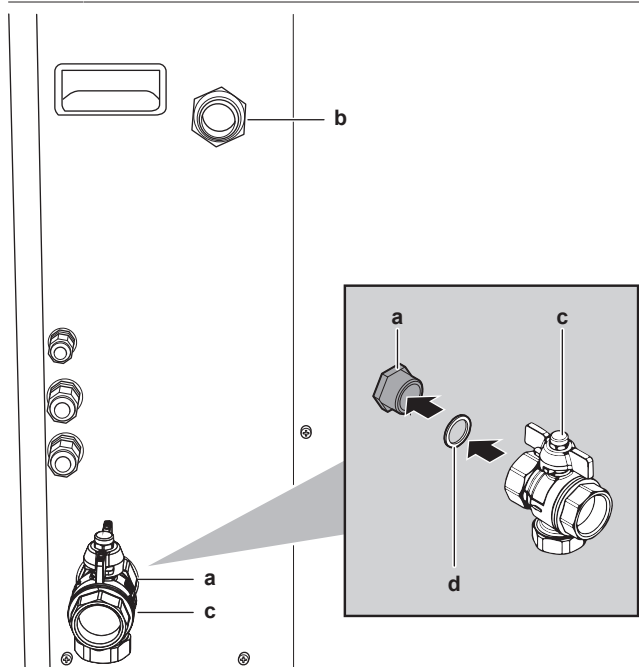
5.1 Connecting water piping

5.1.1 To connect the water piping



NOTICE

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



- a Water IN (screw connection, male, 1")
- b Water OUT (screw connection, male, 1")
- c Shut-off valve with integrated filter (delivered as accessory)
(2× screw connection, female, 1")
- d O-ring



NOTICE

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

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

- 1 Connect the O-rings and shut-off valve to the outdoor unit water inlet.
- 2 Connect the field piping to the shut-off valve.
- 3 Connect the field piping to the outdoor unit water outlet.



NOTICE

Install air purge valves at all local high points.

5.1.2 To fill the water circuit

See the installation manual of the indoor unit, or the installer reference guide.

5.1.3 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 such as water pipe freeze prevention and drain prevention (see the installer reference guide) 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. Insulate the freeze protection valves in a similar way as the water piping, but do NOT insulate the inlet and outlet (release) of these valves.



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

About freeze protection by glycol

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



WARNING

Ethylene glycol is toxic.

5 Piping 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.

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.

Types of glycol

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.

Required concentration of glycol

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

Add glycol according to the table below.

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%	—

INFORMATION

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

NOTICE

- 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.

Glycol and the maximum allowed water volume

Adding glycol to the water circuit reduces the maximum allowed water volume of the system. For more information, see the installer reference guide (topic "To check the water volume and flow rate").

Glycol setting

NOTICE

If glycol is present in the system, setting [E-0D] must be set to 1. If the glycol setting is NOT set correctly, the liquid inside the piping can freeze.

Freeze protection by freeze protection valves

About 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.

- Install freeze protection valves (field supply) at all lowest points of the field piping.
- Normally closed valves (located indoors near the piping entry/exit points) can prevent that all water from indoor piping is drained when the freeze protection valves open.

NOTICE

When freeze protection valves are installed, set the minimum cooling setpoint (default=8°C) at least 2°C higher than the maximum opening temperature of the freeze protection valve. If lower, freeze protection valves can open during cooling operation.

For more information, see the installer reference guide.

Heater tape (field supply)

- 1 Install heater tape to the outdoor field piping.
- 2 Provide external power supply for the heater tape.

NOTICE

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

5.1.4 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.

Outdoor water piping insulation



NOTICE

Outside piping. Make sure the outside piping is insulated as instructed to protect against hazards.

For piping in free air, it is recommended to use the insulation thickness as shown in below table as a minimum (with $\lambda=0.039$ W/mK).

Piping length (m)	Minimum insulation thickness (mm)
<20	19
20~30	32
30~40	40
40~50	50

For other cases the minimum insulation thickness can be determined using the Hydronic Piping Calculation tool.

The Hydronic Piping Calculation tool also calculates the maximum hydronic piping length from the indoor unit to the outdoor unit based on the emitter pressure drop or the other way around.

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.

6 Electrical installation



DANGER: RISK OF ELECTROCUTION



WARNING

ALWAYS use multicore cable for power supply cables.

6.1 About electrical compliance

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

6.2 Guidelines when connecting the electrical wiring

Tightening torques

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

6.3 Specifications of standard wiring components

Component		EPGA11~16DAV3
Power supply cable	MCA ^(a)	30.7 A
	Voltage	230 V
	Phase	1~
	Frequency	50 Hz
	Wire sizes	Must comply with applicable legislation

Component	EPGA11~16DAV3
Interconnection cable	Minimum cable section of 1.5 mm ² and applicable for 230 V
Recommended field fuse ^(b)	32 A
Earth leakage circuit breaker	Must comply with applicable legislation

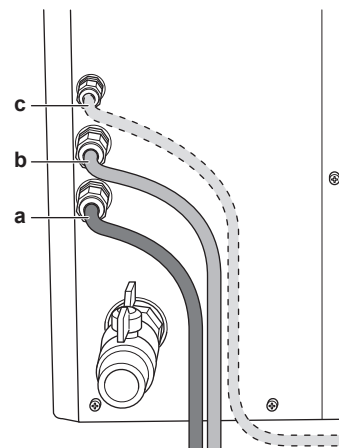
^(a) The minimum allowed field fuse is 20 A.

^(b) MCA=Minimum circuit ampacity. Stated values are maximum values (see electrical data of combination with indoor units for exact values).

6.4 To connect the electrical wiring to the outdoor unit

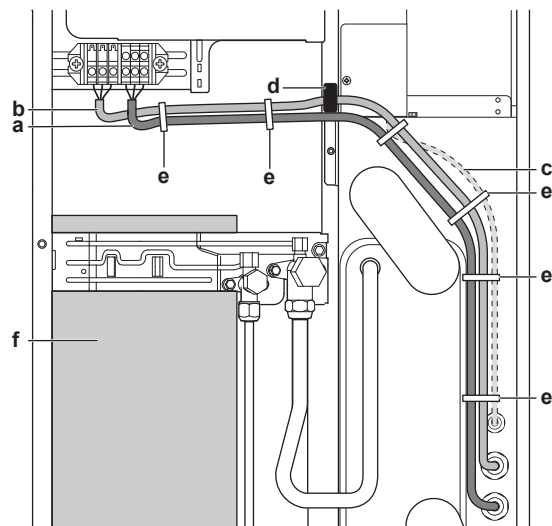
1 Remove the switch box cover. See "4.2.1 To open the outdoor unit" [p 7].

2 Insert the wiring at the back of the unit:



- a Power supply cable (high voltage)
- b Communication cable (high voltage)
- c Cable for bottom plate heater (optional)

3 Inside the unit, route the wiring as follows:



- a Power supply cable
- b Communication cable
- c Cable for bottom plate heater (optional)
- d Ferrite core
- e Tie strap
- f Compressor

7 Starting up the outdoor unit



NOTICE

To guarantee electromagnetic compatibility:

- Make sure both power supply and communication cables run parallel to one another. Use tie straps to hold the cables together.
- Make sure the cables are located as far away from the compressor as possible.
- The communication cable **MUST** pass through the ferrite core.

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

5 Install the switch box cover.



INFORMATION

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



CAUTION

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

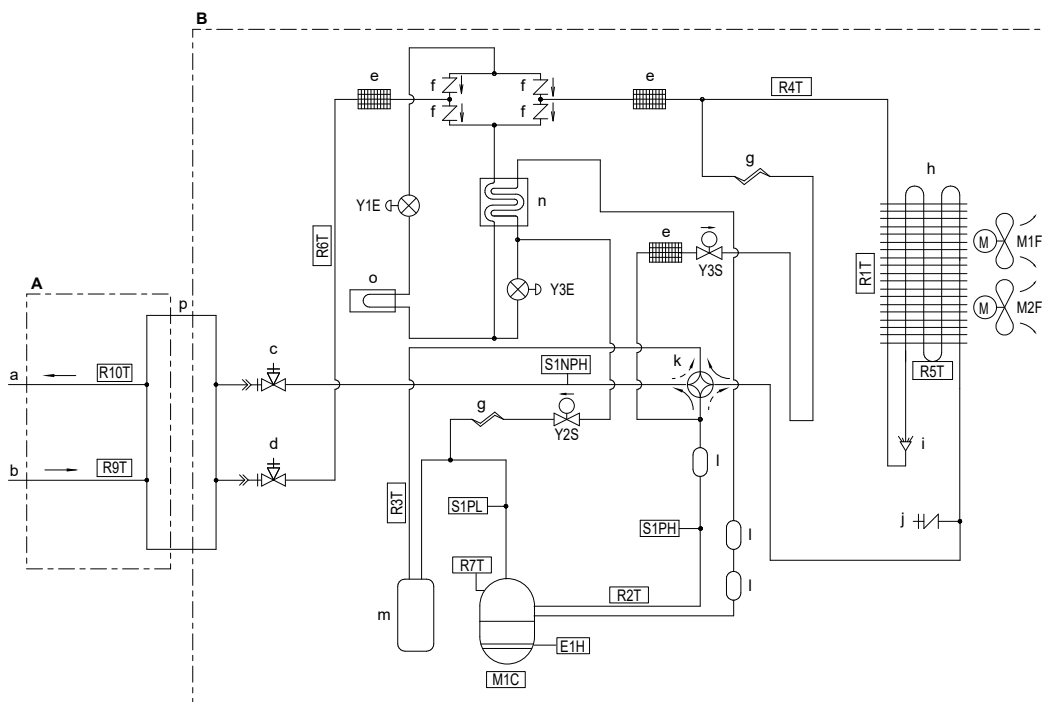
7 Starting up the outdoor unit

See the indoor unit installation manual for configuration and commissioning of the system.

8 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).

8.1 Piping diagram: Outdoor unit



A Water side
B Refrigerant side

a Water OUT, male 1"
b Water IN, male 1"
c Gas stop valve with service port
d Liquid stop valve with service port
e Refrigerant filter
f One-way valve
g Capillary tube
h Heat exchanger
i Distributor
j Service port 5/16" flare
k 4-way valve
l Muffler
m Accumulator
n Economiser heat exchanger
o Inverter PCB heat sink
p Plate heat exchanger

E1H Crankcase heater
M1C Compressor
M1F Upper fan motor
M2F Lower fan motor
R1T Thermistor (outdoor air)
R2T Thermistor (compressor discharge)
R3T Thermistor (compressor suction)
R4T Thermistor (air heat exchanger liquid pipe)
R5T Thermistor (air heat exchanger middle)
R6T Thermistor (refrigerant liquid)
R7T Thermistor (compressor protection)
R9T Thermistor (entering water)
R10T Thermistor (leaving water)
S1PH High pressure switch
S1PL Low pressure switch
S1NPH High pressure sensor
Y1E Electronic expansion valve (main)
Y2S Solenoid valve (injection bypass)
Y3E Electronic expansion valve (injection)
Y3S Solenoid valve (hot gas bypass)

→ Heating
 → Cooling

8 Technical data














8.2 Wiring diagram: Outdoor unit

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

(1) Connection diagram

English	Translation
Connection diagram	Connection diagram
Only for ***	Only for ***
See note ***	See note ***
Outdoor	Outdoor
Indoor	Indoor
Position of compressor terminal	Position of compressor terminal
Position in switch box	Position in switch box
Front	Front
Right	Right
Back	Back
Upper	Upper
Lower	Lower
Fan	Fan
ON	ON
OFF	OFF

(2) Notes

English	Translation
Notes	Notes
L	Live
N	Neutral
	Connection
	Connector
	Earth wiring
	Field supply
	Protective earth
	Noiseless earth
	Field wire
	Terminal
	Terminal strip
	Wiring depending on model
	Option
	Switch box
	PCB

NOTES:

- Colours: BLK: black, RED: red, BLU: blue, WHT: white, GRN: green, YLW: yellow, PNK: pink, ORG: orange.
- This wiring diagram applies only to the outdoor unit.
- When operating, do not short-circuit protective devices S1PH and S1PL
- Refer to the combination table and the option manual for how to connect the wiring to X6A, X4A and X41A.
- Refer to the service manual for instructions on how to set the selector switches (DS1). The factory setting of all switches is OFF.

(3) Legend

English	Translation
Legend	Legend
Field supply	Field supply
Optional	Optional

English	Translation
Part n°	Part n°
Description	Description

A1P	Printed circuit board (main)
A2P	Printed circuit board (noise filter)
A3P	Printed circuit board (leakage current)
A4P	Printed circuit board (ACS)
BS1~BS4 (A1P)	Push button switch
C1~C4 (A1P, A2P)	Capacitor
DS1 (A1P)	Dipswitch
E1H	Crankcase heater
E2H	Bottom plate heater (option)
E3H~E5H	Plate heat exchanger heaters
F1U~F4U (A2P)	Fuse
F6U (A1P)	Fuse (T 5.0 A / 250 V)
H1P~H7P (A1P)	Light-emitting diode (service monitor is orange)
HAP (A1P)	Light-emitting diode (service monitor is green)
K1R (A1P)	Magnetic relay (Y1S)
K1R (A4P)	Magnetic relay (E3H~E5H)
K2R (A1P)	Magnetic relay (Y2S)
K2R (A4P)	Magnetic relay (E2H)
K3R (A1P)	Magnetic relay (Y3S)
K4R (A1P)	Magnetic relay (E1H)
K10R (A1P)	Magnetic relay
K11M (A1P)	Magnetic contactor
K13R~K15R (A1P, A2P)	Magnetic relay
L1R~L3R (A1P)	Reactor
M1C	Compressor motor
M1F~M2F	Fan motor
PS (A1P)	Switching power supply
Q1DI	Earth leakage circuit breaker (30 mA) (field supply)
R1~R5 (A1P, A2P)	Resistor
R1T	Thermistor (outdoor air)
R2T	Thermistor (compressor discharge)
R3T	Thermistor (compressor suction)
R4T	Thermistor (air heat exchanger liquid pipe)
R5T	Thermistor (air heat exchanger middle)
R6T	Thermistor (refrigerant liquid)
R7T	Thermistor (compressor protection)
R9T	Thermistor (entering water)
R10T	Thermistor (leaving water)
R11T	Thermistor (fin)
RC (A2P)	Signal receiver circuit
S1NPH	High pressure sensor
S1PH	High pressure switch
S1PL	Low pressure switch
T1A	Current sensor
TC (A2P)	Signal transmission circuit

V1D~V4D (A1P)	Diode
V1R (A1P)	IGBT power module
V2R (A1P)	Diode module
V1T~V3T (A1P)	Insulated Gate Bipolar Transistor (IGBT)
X1M	Terminal strip
Y1E	Electronic expansion valve (main)
Y3E	Electronic expansion valve (injection)
Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (injection bypass)
Y3S	Solenoid valve (hot gas bypass)
Z1C~Z11C	Noise filter (ferrite core)
Z1F~Z6F (A1P, A2P)	Noise filter

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