



# Installation manual

## Daikin Altherma 3 R



ERGA04EAV3(A)  
ERGA06EAV3(A)  
ERGA08EAV3(A)

Installation manual  
Daikin Altherma 3 R

English









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## 1 About the documentation

### 1.1 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)
- **Indoor unit installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the indoor unit)

- **Outdoor unit installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the outdoor 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).

## 2 Specific installer safety instructions


Always observe the following safety instructions and regulations.

**Installation site (see "4.1 Preparing the installation site" [p 8])**

 **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).


**Mounting the outdoor unit (see "4.2 Mounting the outdoor unit" [p 8])**

 **NOTICE**


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

**Piping installation (see "5 Piping installation" [p 11])**

 **DANGER: RISK OF BURNING/SCALDING**

 **NOTICE**

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

 **NOTICE**

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



**NOTICE**

ALWAYS use a recommended bubble test solution from your wholesaler.

NEVER use soap water:

- Soap water may cause cracking of components, such as flare nuts or stop valve caps.
- Soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold.
- Soap water contains ammonia which may lead to corrosion of flared joints (between the brass flare nut and the copper flare).



**NOTICE**

Make sure to open the stop valves after installing the refrigerant piping and performing vacuum drying. Running the system with the stop valves closed may break the compressor.



**WARNING**

If the total refrigerant charge in the system is  $\geq 1.84$  kg (i.e. if the piping length is  $\geq 27$  m), you need to comply with the minimum floor area requirements for the indoor unit. For more information, see the indoor unit installation manual.



**WARNING**

- Only use R32 as refrigerant. Other substances may cause explosions and accidents.
- R32 contains fluorinated greenhouse gases. Its global warming potential (GWP) value is 675. Do NOT vent these gases into the atmosphere.
- When charging refrigerant, ALWAYS use protective gloves and safety glasses.



**NOTICE**

Applicable legislation on **fluorinated greenhouse gases** requires that the refrigerant charge of the unit is indicated both in weight and CO<sub>2</sub> equivalent.

**Formula to calculate the quantity in CO<sub>2</sub> equivalent tonnes:** GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

Use the GWP value mentioned on the refrigerant charge label.

Electrical installation (see "6 Electrical installation" ▶ 13)



**DANGER: RISK OF ELECTROCUTION**



**WARNING**

ALWAYS use multicore cable for power supply cables.

## 3 About the box

### 3.1 Outdoor unit

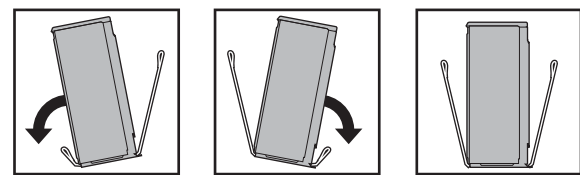
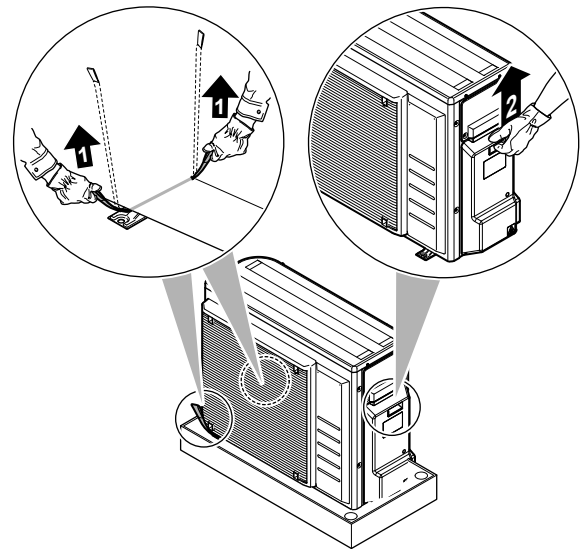
#### 3.1.1 To handle the outdoor unit



**CAUTION**

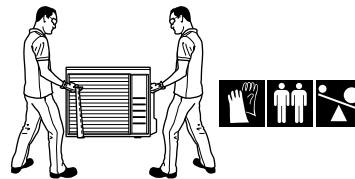
To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.

- 1 Handle the unit using the sling to the left and the handle to the right. Pull up both sides of the sling at the same time to prevent disconnection of the sling from the unit.



2 While handling the unit:

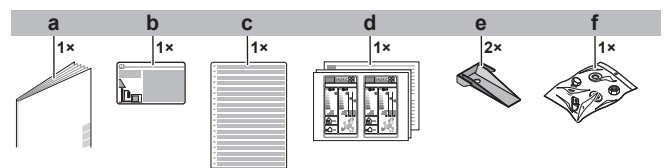
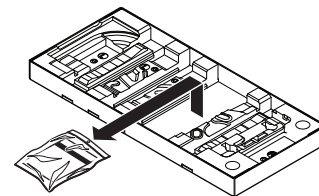
- Keep both sides of the sling level.
- Keep your back straight.



3 After mounting the unit, remove the sling from the unit by pulling 1 side of the sling.

#### 3.1.2 To remove the accessories from the outdoor unit

- 1 Lift the outdoor unit. See "3.1.1 To handle the outdoor unit" ▶ 7.
- 2 Remove the accessories at the bottom of the package.



- a Outdoor unit installation manual
- b Fluorinated greenhouse gases label
- c Multilingual fluorinated greenhouse gases label
- d Energy label
- e Unit mounting plate
- f Bolts, nuts, washers, spring washers and wire clamp

## 4 Unit installation

### 4 Unit installation

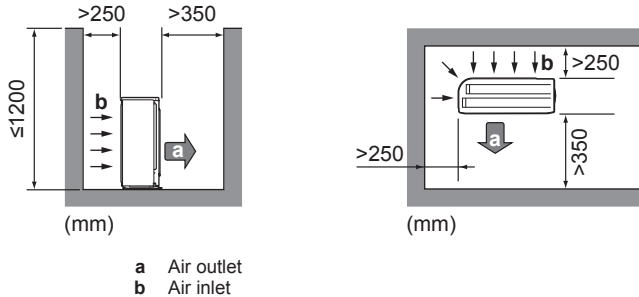
#### 4.1 Preparing the installation site

##### 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).

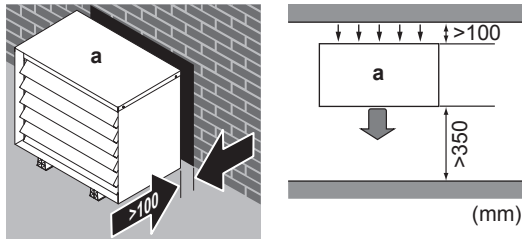
##### 4.1.1 Installation site requirements of the outdoor unit

Mind the following spacing guidelines:



##### INFORMATION

In sound sensitive areas (e.g. near a bedroom), you can install the low sound cover (EKLN08A1) to decrease the operation noise of the outdoor unit. If you install it, mind the following spacing guidelines:



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

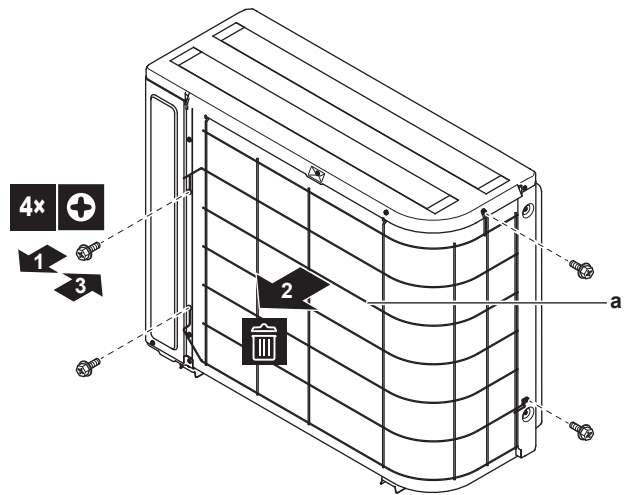
Cooling mode	10~43°C
Heating mode	-25~25°C

##### 4.1.2 Additional installation site requirements of the outdoor unit in cold climates

In areas with low ambient temperatures and high humidity, or in areas with heavy snowfall, remove the suction grille to ensure proper operation.

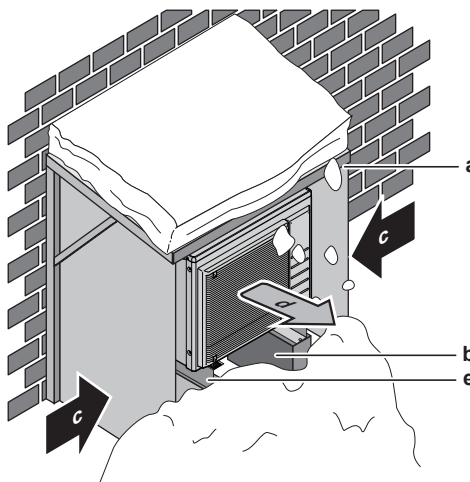
Non-exhaustive list of areas: Austria, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Latvia, Lithuania, Norway, Poland, Romania, Serbia, Slovakia, Sweden, ...

- 1 Remove the screws holding the suction grille.
- 2 Remove the suction grille, and dispose of it.
- 3 Reattach the screws to the unit.



a Suction grille

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



- a Snow cover or shed
- b Pedestal
- c Prevailing wind direction
- d Air outlet
- e EKFT008D option kit

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 "4.2 Mounting the outdoor unit" [p. 8] 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 Mounting the outdoor unit

### 4.2.1 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.

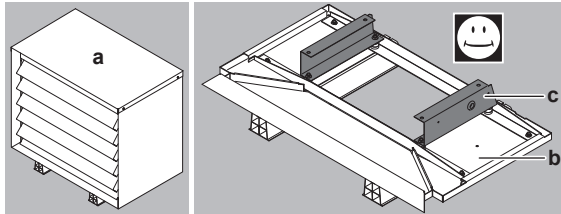
##### INFORMATION

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



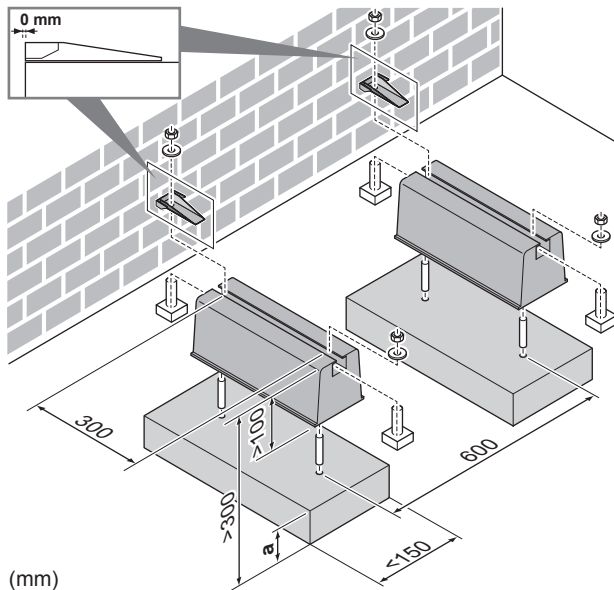
## **i** INFORMATION

If you install the U-beams in combination with the low sound cover (EKLN08A1), different installation instructions apply for the U-beams. See the installation manual of the low sound cover.



- a Low sound cover
- b Bottom parts of the low sound cover
- c U-beams

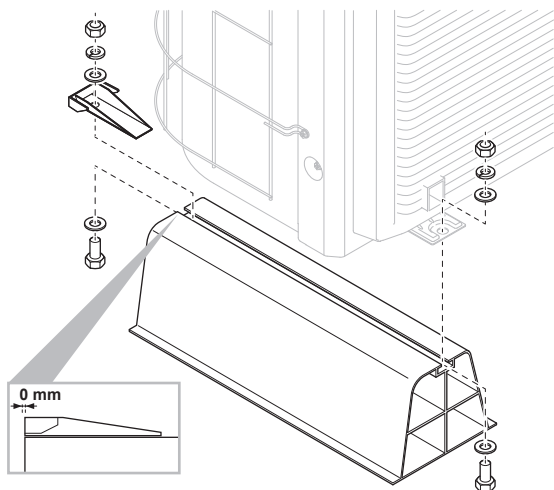
### Option 1: On mounting feet "flexi-foot with strut"



- a Maximum snowfall height

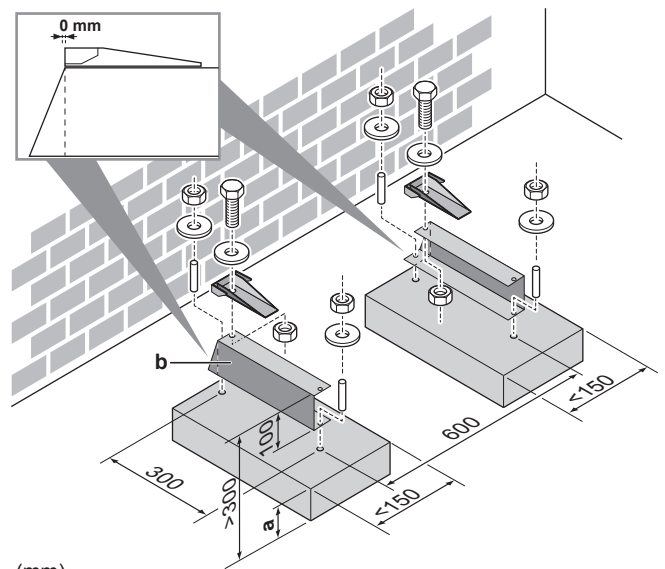
### Option 2: On plastic mounting feet

In this case, you can use the bolts, nuts, washers and spring washers delivered with the unit as accessories.



### Option 3: On a pedestal with the EKFT008D option kit

The EKFT008D option kit is recommended in areas with heavy snowfall.

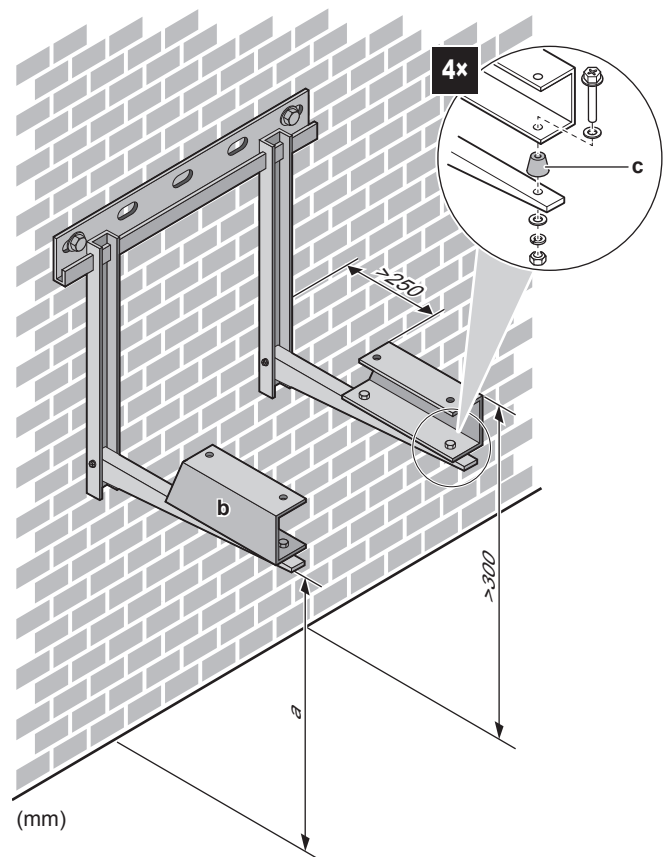


(mm)

- a Maximum snowfall height
- b EKFT008D option kit

### Option 4: On brackets to the wall with the EKFT008D option kit

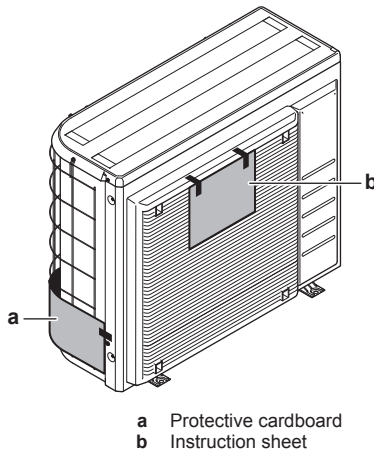
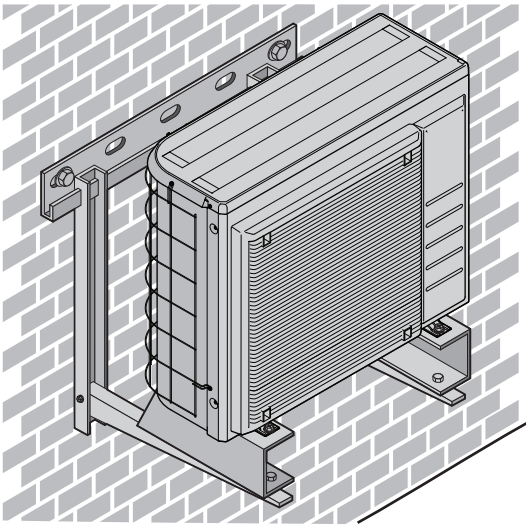
The EKFT008D option kit is recommended in areas with heavy snowfall.



(mm)

- a Maximum snowfall height
- b EKFT008D option kit
- c Anti-vibration rubber (field supply)

## 4 Unit installation



a Protective cardboard  
b Instruction sheet

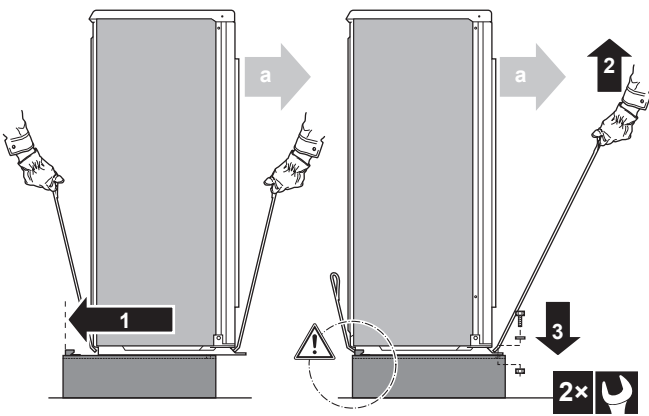
### 4.2.2 To install the outdoor unit



#### CAUTION

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

- 1 Lift the outdoor unit as described in "3.1.1 To handle the outdoor unit" [p 7].
- 2 Install the outdoor unit as follows:
  - (1) Put the unit into position (using the sling to the left and the handle to the right).
  - (2) Remove the sling (by pulling 1 side of the sling).
  - (3) Fix the unit.



a Air outlet



#### NOTICE

Properly align the unit. Make sure the backside of the unit does NOT protrude.

- 3 Remove the protective cardboard and instruction sheet.

### 4.2.3 To provide drainage

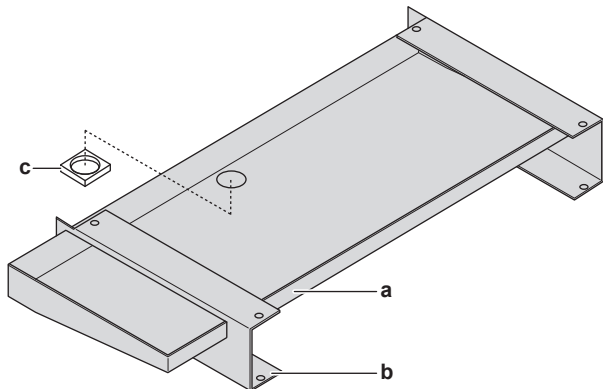
Make sure that condensation water can be evacuated properly.



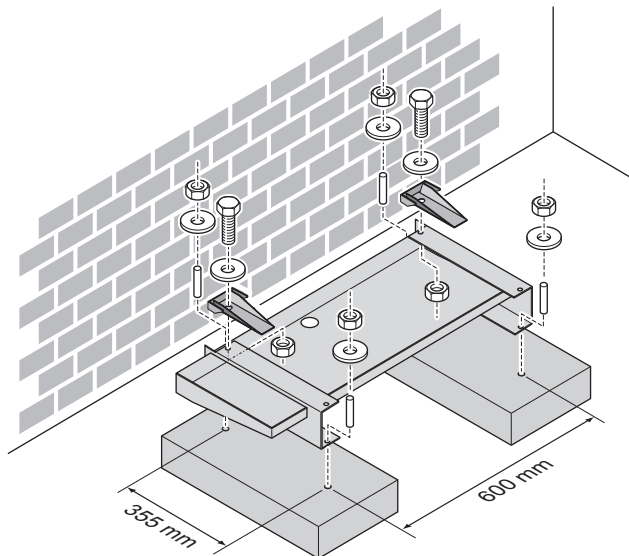
#### NOTICE

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

- **Drain pan.** You can use the drain pan option (EKDP008D) to gather the drain water. For the complete installation instructions, see the installation manual of the drain pan. In short, the drain pan must be installed level (with a tolerance of 1° at all sides) and as follows:



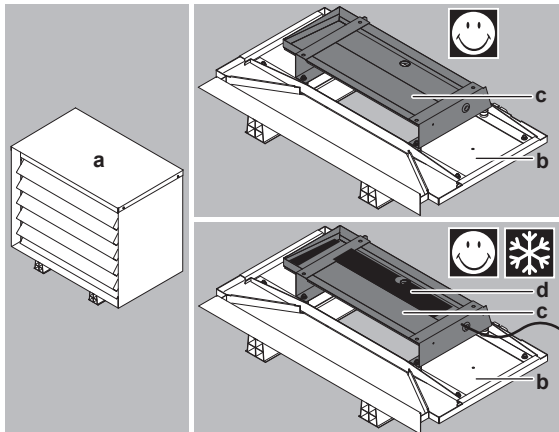
a Drain pan  
b U-beams  
c Drain hole insulation



- **Drain pan heater.** You can use the drain pan heater option (EKDPH008CA) to prevent freezing-up of the drain pan. For the installation instructions, see the installation manual of the drain pan heater.
- **Non-heated drain tube.** When using the drain pan heater without drain tube or with a non-heated drain tube, remove the drain hole insulation (Item c on the illustration).

### **i** INFORMATION

If you install the drain pan kit (with or without drain pan heater) in combination with the low sound cover (EKLN08A1), different installation instructions apply for the drain pan kit. See the installation manual of the low sound cover.

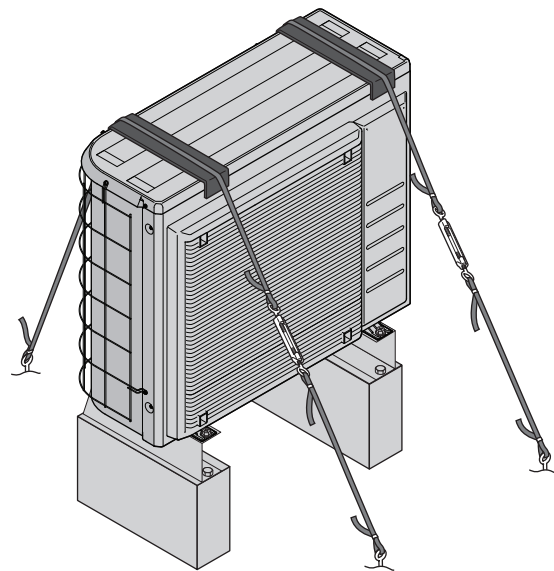


- a Low sound cover
- b Bottom parts of the low sound cover
- c Drain pan kit
- d Drain pan heater

#### 4.2.4 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.



### 4.3 Opening the unit

#### 4.3.1 To open the outdoor unit



**DANGER: RISK OF ELECTROCUTION**



**DANGER: RISK OF BURNING/SCALDING**

See "5.1.1 To connect the refrigerant piping to the outdoor unit" [▶ 11] and "6.3.1 To connect the electrical wiring to the outdoor unit" [▶ 13].

## 5 Piping installation

### 5.1 Connecting the refrigerant piping



**DANGER: RISK OF BURNING/SCALDING**



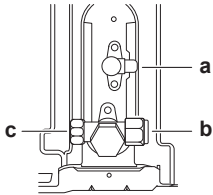
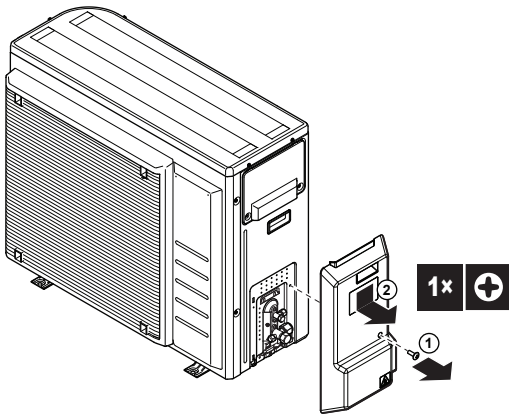
**WARNING**

- Only use R32 as refrigerant. Other substances may cause explosions and accidents.
- R32 contains fluorinated greenhouse gases. Its global warming potential (GWP) value is 675. Do NOT vent these gases into the atmosphere.
- When charging refrigerant, ALWAYS use protective gloves and safety glasses.

#### 5.1.1 To connect the refrigerant piping to the outdoor unit

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

## 5 Piping installation



- a Liquid stop valve
- b Gas stop valve
- c Service port

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

### NOTICE

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

## 5.2 Checking the refrigerant piping

### 5.2.1 To check for leaks

#### NOTICE

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

#### NOTICE

ALWAYS use a recommended bubble test solution from your wholesaler.

NEVER use soap water:

- Soap water may cause cracking of components, such as flare nuts or stop valve caps.
- Soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold.
- Soap water contains ammonia which may lead to corrosion of flared joints (between the brass flare nut and the copper flare).

- 1 Charge the system with nitrogen gas up to a gauge pressure of at least 200 kPa (2 bar). It is recommended to pressurize to 3000 kPa (30 bar) in order to detect small leaks.
- 2 Check for leaks by applying the bubble test solution to all connections.
- 3 Discharge all nitrogen gas.

### 5.2.2 To perform vacuum drying

- 1 Vacuum the system until the pressure on the manifold indicates  $-0.1$  MPa ( $-1$  bar).
- 2 Leave as is for 4-5 minutes and check the pressure:

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

- 3 Vacuum the system for at least 2 hours to a manifold pressure of  $-0.1$  MPa ( $-1$  bar).
- 4 After turning the pump OFF, check the pressure for at least 1 hour.
- 5 If you do NOT reach the target vacuum or CANNOT maintain the vacuum for 1 hour, do the following:
  - Check for leaks again.
  - Perform vacuum drying again.

### NOTICE

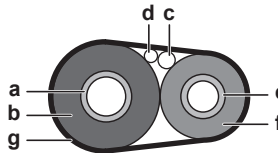
Make sure to open the stop valves after installing the refrigerant piping and performing vacuum drying. Running the system with the stop valves closed may break the compressor.

### 5.2.3 To insulate the refrigerant piping

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

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

- 1 Insulate and fix the refrigerant piping and cables as follows:



- a Gas pipe
- b Gas pipe insulation
- c Interconnection cable
- d Field wiring (if applicable)
- e Liquid pipe
- f Liquid pipe insulation
- g Finishing tape

- 2 Install the service cover.

## 5.3 Charging refrigerant

### 5.3.1 To determine the additional refrigerant amount

#### WARNING

If the total refrigerant charge in the system is  $\geq 1.84$  kg (i.e. if the piping length is  $\geq 27$  m), you need to comply with the minimum floor area requirements for the indoor unit. For more information, see the indoor unit installation manual.

If the total liquid piping length is...	Then...
$\leq 10$ m	Do NOT add additional refrigerant.

If the total liquid piping length is...	Then...
>10 m	$R = (\text{total length (m) of liquid piping} - 10 \text{ m}) \times 0.020$ $R = \text{Additional charge (kg) (rounded in units of 0.01 kg)}$



### INFORMATION

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

### 5.3.2 To charge additional refrigerant



### WARNING

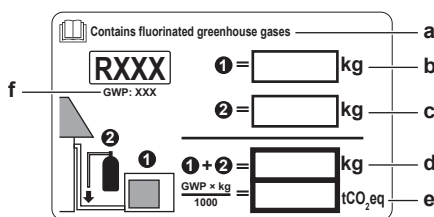
- Only use R32 as refrigerant. Other substances may cause explosions and accidents.
- R32 contains fluorinated greenhouse gases. Its global warming potential (GWP) value is 675. Do NOT vent these gases into the atmosphere.
- When charging refrigerant, ALWAYS use protective gloves and safety glasses.

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

- Connect the refrigerant cylinder to the service port.
- Charge the additional refrigerant amount.
- Open the gas stop valve.

### 5.3.3 To fix the fluorinated greenhouse gases label

- Fill in the label as follows:



- 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**.
- Factory refrigerant charge: see unit name plate
- Additional refrigerant amount charged
- Total refrigerant charge
- Quantity of fluorinated greenhouse gases** of the total refrigerant charge expressed as tonnes CO<sub>2</sub> equivalent.
- 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 CO<sub>2</sub> equivalent.

**Formula to calculate the quantity in CO<sub>2</sub> equivalent tonnes:** GWP value of the refrigerant × total refrigerant charge [in kg] / 1000

Use the GWP value mentioned on the refrigerant charge label.

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

## 6 Electrical installation



### DANGER: RISK OF ELECTROCUTION



### WARNING

ALWAYS use multicore cable for power supply cables.

### 6.1 About electrical compliance

Only for ERGA04~08DAV3 (not for ERGA04~08DAV3A)

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

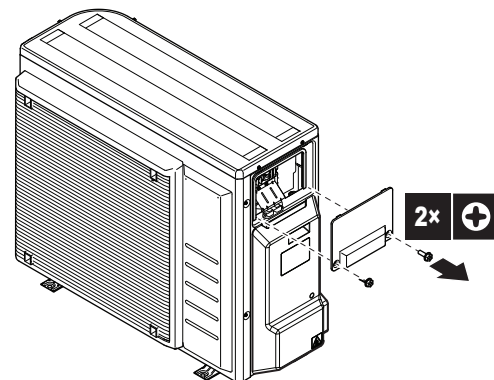
Item	Tightening torque (N•m)
M4 (X1M)	1.2~1.5
M4 (earth)	

### 6.3 Connections to the outdoor unit

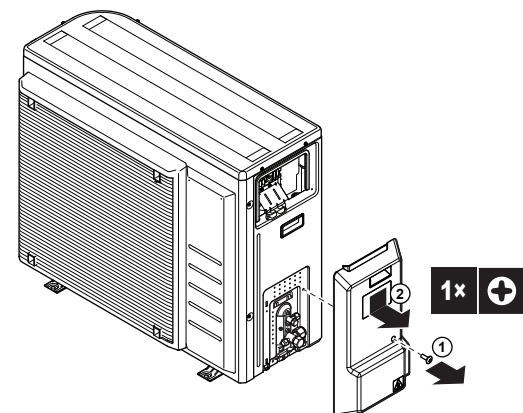
Item	Description
Power supply cable	See "6.3.1 To connect the electrical wiring to the outdoor unit" [▶ 13].
Interconnection cable	

#### 6.3.1 To connect the electrical wiring to the outdoor unit

- Remove the switch box cover.

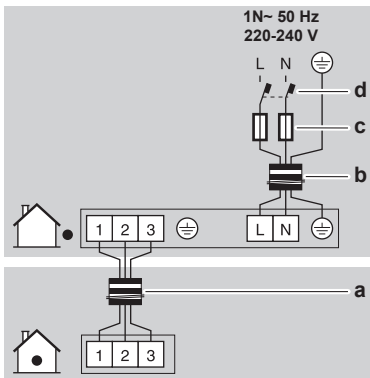


- Remove the refrigerant piping cover.

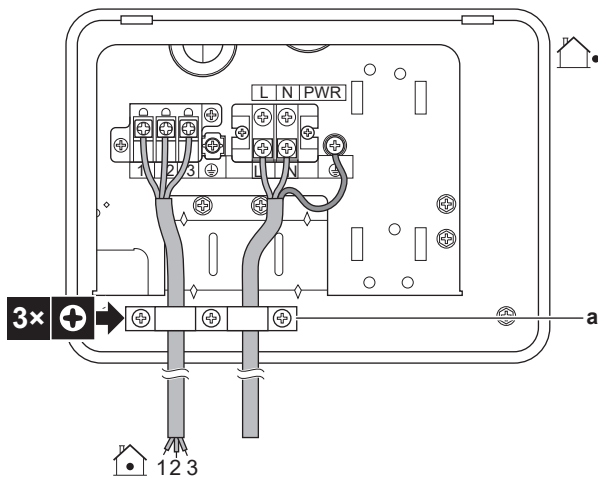


- Connect the interconnection cable and power supply as follows. Ensure stress relief by using the wire clamp.

## 7 Starting up the outdoor unit

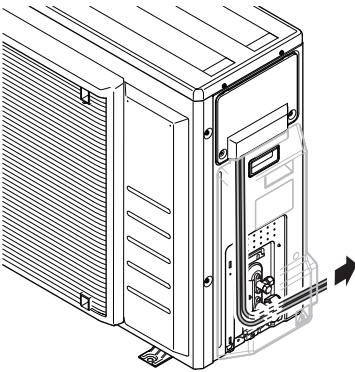


- a Interconnection cable
- b Power supply cable
- c Fuse
- d Earth leakage circuit breaker



- a Wire clamp

- 4 Reattach the switch box cover.
- 5 Reattach the refrigerant piping cover. Make sure the cables are routed under the cover as shown:



- 6 Connect an earth leakage circuit breaker and fuse to the power supply line.

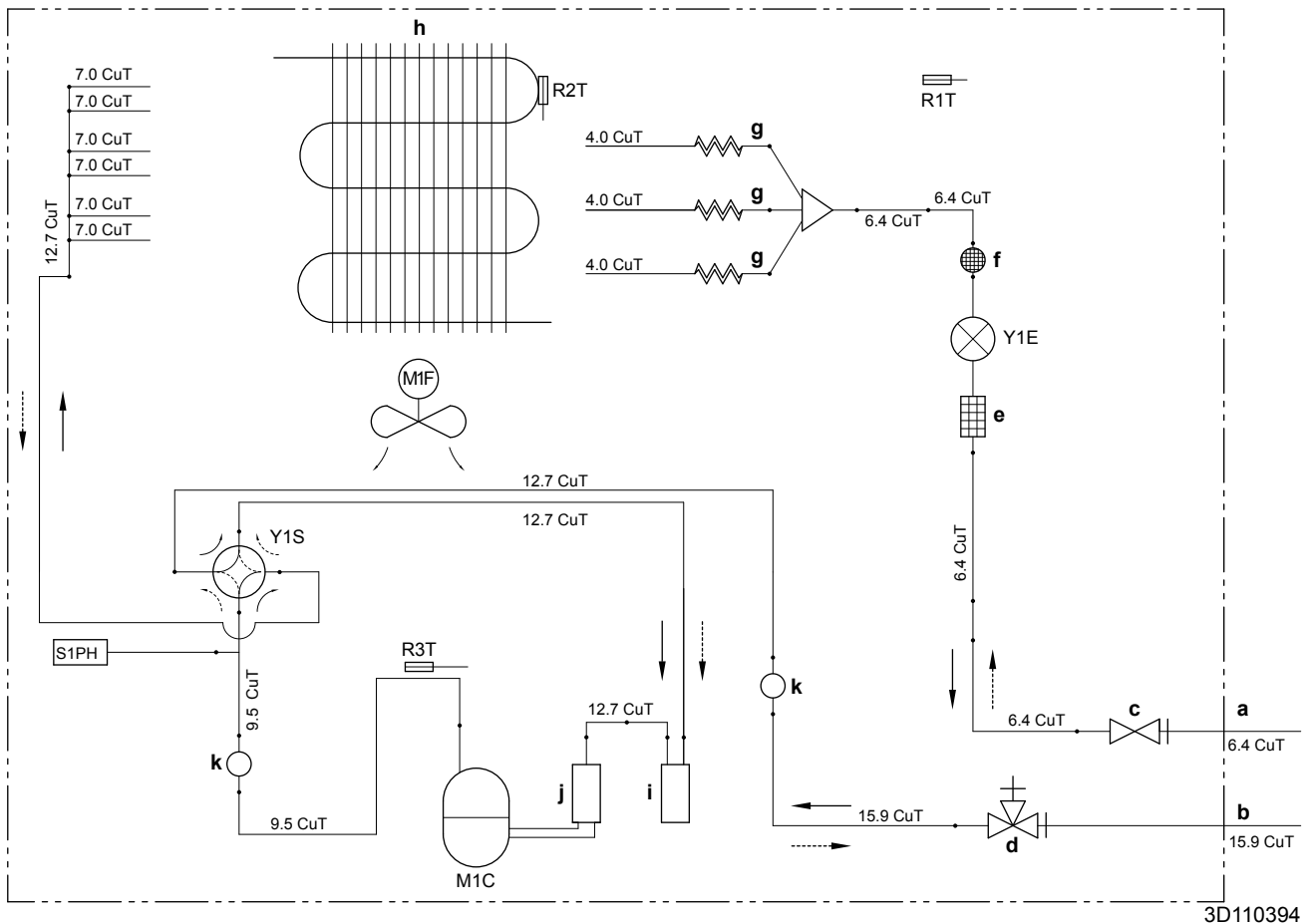
## 7 Starting up the outdoor unit

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



3D110394

- a Field piping (liquid: Ø6.4 mm flare connection)
- b Field piping (gas: Ø15.9 mm flare connection)
- c Stop valve (liquid)
- d Stop valve with service port (gas)
- e Filter
- f Muffler with filter
- g Capillary tube
- h Heat exchanger
- i Accumulator
- j Compressor accumulator
- k Muffler

- M1C Compressor
- M1F Fan
- R1T Thermistor (outdoor air)
- R2T Thermistor (heat exchanger)
- R3T Thermistor (compressor discharge)
- S1PH High pressure switch (automatic reset)
- Y1E Electronic expansion valve
- Y1S Solenoid valve (4-way valve)(ON: cooling)
- Heating
- Cooling

## 8 Technical data


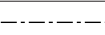

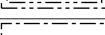
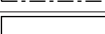
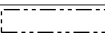



### 8.2 Wiring diagram: Outdoor unit

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

#### (1) Connection diagram

English	Translation
Connection diagram	Connection diagram

#### (2) Notes

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

S	Connector
S1PH	High pressure switch
S2~80	Connector
SA1	Surge arrester
SHM	Terminal strip fixed plate
U, V, W	Connector
V3, V4, V401	Varistor
X*A	Connector
X*M	Terminal strip
Y1E	Electronic expansion valve
Y1S	Solenoid valve (4-way valve)
Z*C	Noise filter (ferrite core)
Z*F	Noise filter

\* Optional

# Field supply

#### NOTES:

- 1 When operating, do not short-circuit protection device S1PH.
- 2 Refer to the combination table and the option manual for how to connect the wiring to X6A, X28A and X77A.
- 3 Colours: BLK: black; RED: red; BLU: blue; WHT: white; GRN: green; YLW: yellow

#### (3) Legend

AL*	Connector
C*	Capacitor
DB*	Rectifier bridge
DC*	Connector
DP*	Connector
E*	Connector
F1U	Fuse T 6.3 A 250 V
FU1, FU2	Fuse T 3.15 A 250 V
FU3	Fuse T 30 A 250 V
H*	Connector
IPM*	Intelligent power module
L	Connector
LED 1~5	Indication lamp
LED A	Pilot lamp
L*	Reactor
M1C	Compressor motor
M1F	Fan motor
MR*	Magnetic relay
N	Connector
PCB1	Printed circuit board (main)
PS	Switching power supply
Q1L	Thermal protector
Q1DI	# Earth leakage circuit breaker
Q*	Insulated gate bipolar transistor (IGBT)
R1T	Thermistor (air)
R2T	Thermistor (heat exchanger)
R3T	Thermistor (discharge)
RTH2	Resistor









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