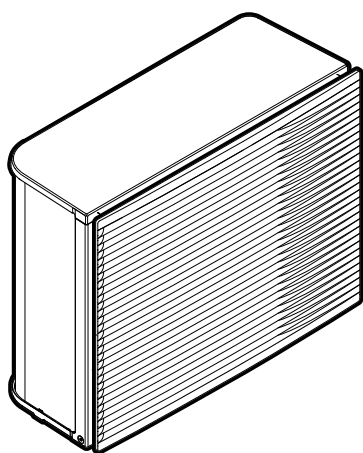


# Installation manual

## Daikin Altherma 3 H HT

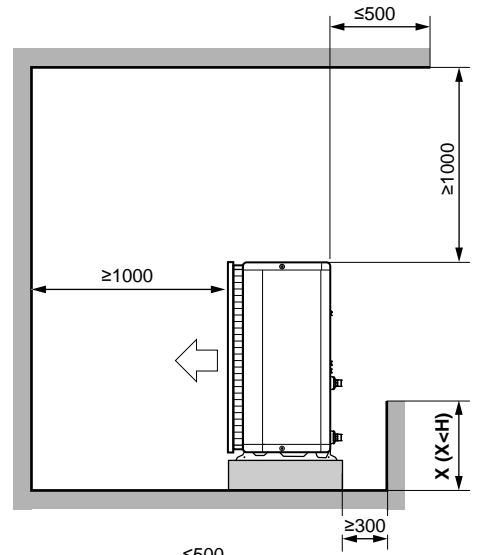
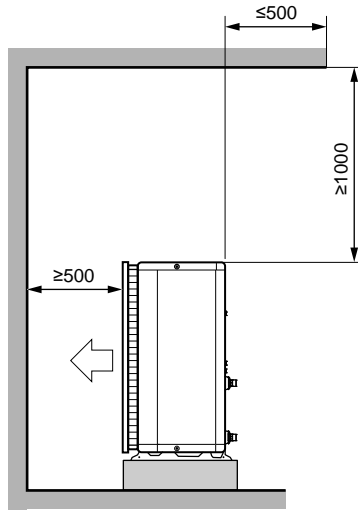
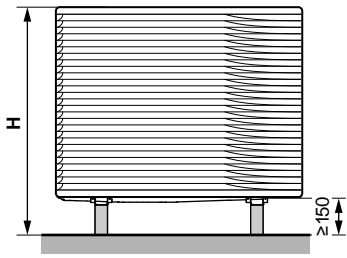


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EPRA16DAV3  
EPRA18DAV3

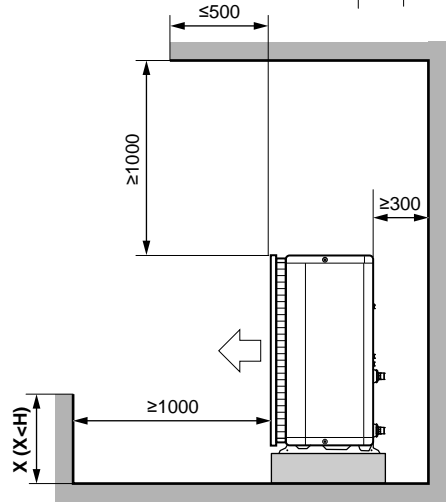
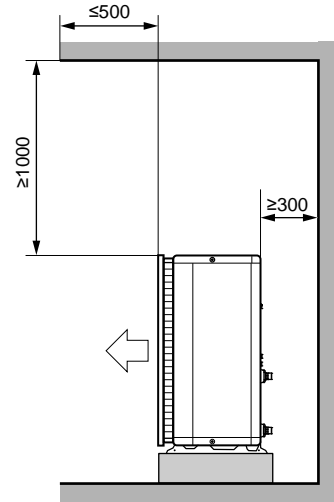
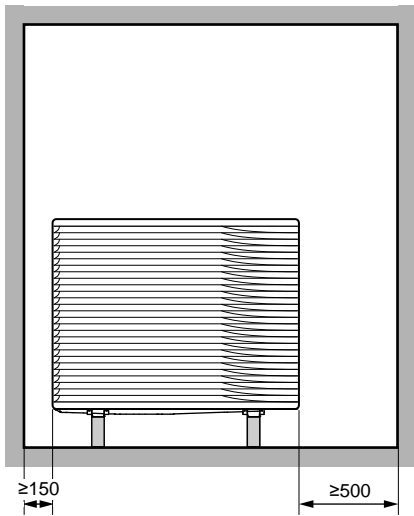
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EPRA18DAW1

(mm)

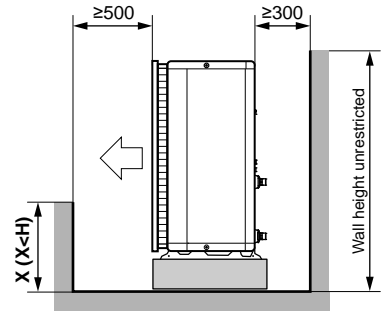
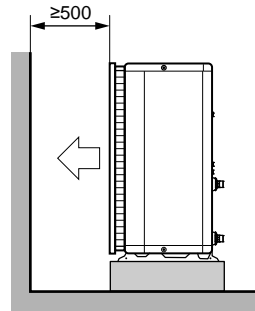
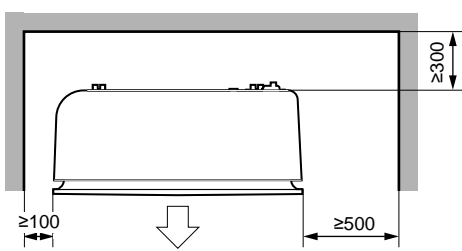
General



Top-side obstacle



No top-side obstacle



3D124412





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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)
- **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 unit) + Digital files on <http://www.daikineurope.com/support-and-manuals/product-information/>

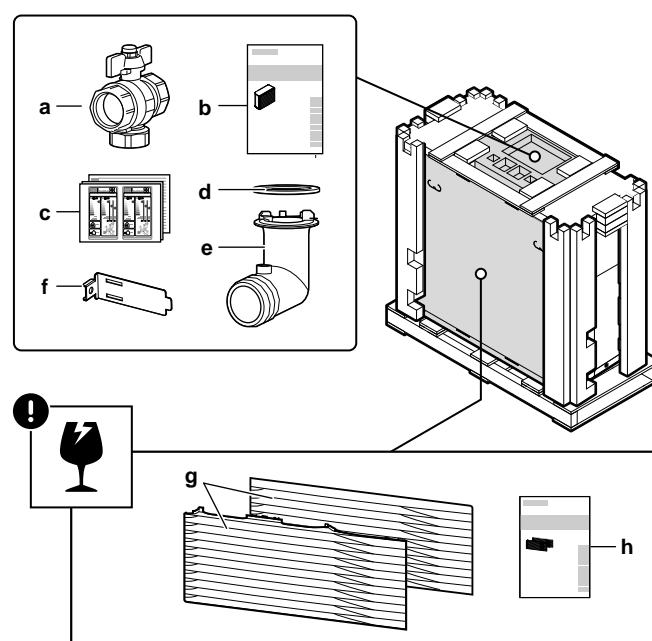
Latest revisions of the supplied documentation may be available on the regional Daikin website or via your dealer.

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

## 2 About the box

### 2.1 Outdoor unit

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



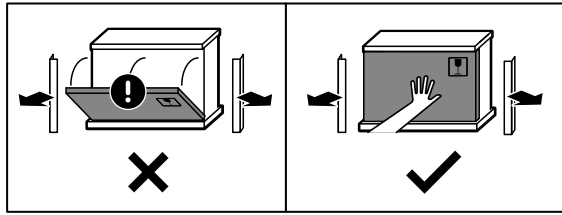
- a Shut-off valve (with integrated filter)
- b Installation manual – Outdoor unit
- c Energy label
- d O-ring for drain socket
- e Drain socket
- f Thermistor fixture (for installations in areas with low ambient temperatures)

### 3 Unit installation

- g Discharge grille (upper + lower part)
- h Installation manual – Discharge grille

#### NOTICE

**Unpacking – Front corners.** When you remove the front packaging corners, hold the box containing the discharge grille to prevent it from falling.



## 3 Unit installation

### 3.1 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).

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

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

Translation of text on figure 1:

English	Translation
General	General
No top-side obstacle	No top-side obstacle
Top-side obstacle	Top-side obstacle
Wall height unrestricted	Wall height unrestricted

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.
- 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.

### 3.2 Mounting the outdoor unit

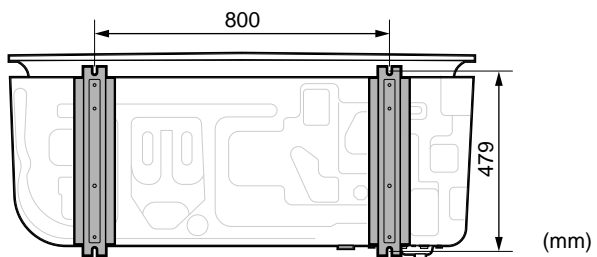
#### 3.2.1 To provide the installation structure

#### NOTICE

**Level.** Make sure the unit is level.

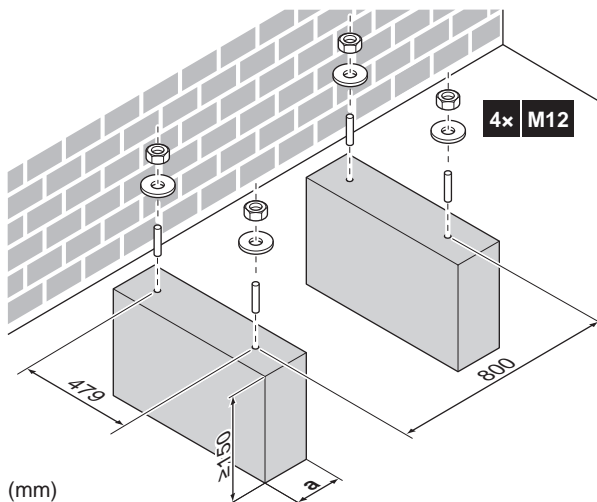
Use 4 sets of M12 anchor bolts, nuts and washers. Provide at least 150 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow.

#### Anchor points



#### Pedestal

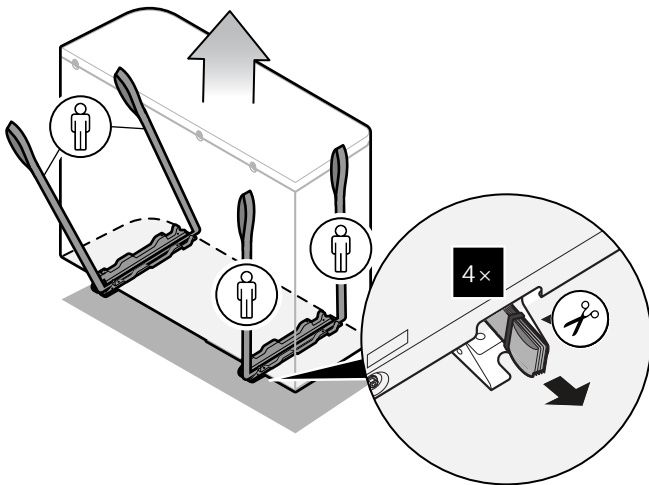
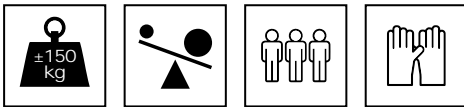
When installing on a pedestal, make sure that the discharge grille still can be put in its safety position. See "6.3 To remove the discharge grille, and put the grille in safety position" on page 15.



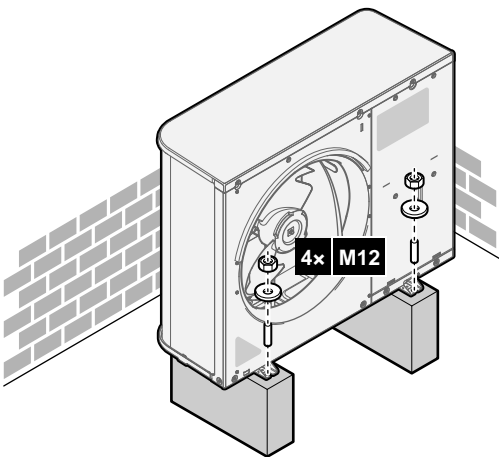
a Make sure not to cover the drain hole in the bottom plate of the unit.

#### 3.2.2 To install the outdoor unit

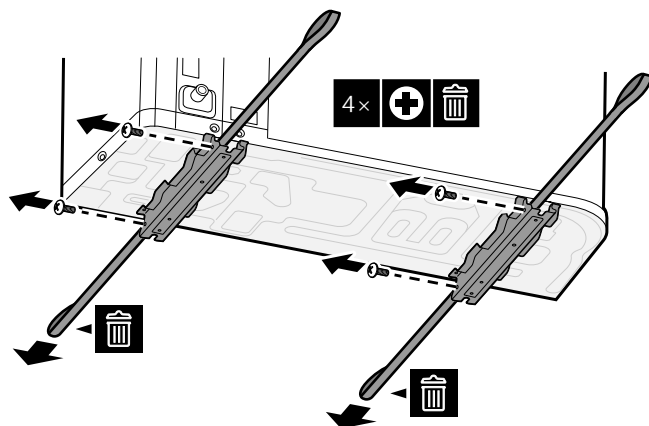
- 1 Carry the unit by its slings, and put it onto the installation structure.



2 Fix the unit to the installation structure.



3 Remove the slings (and screws), and dispose of them.



### 3.2.3 To provide drainage

Make sure that condensation water can be evacuated properly.

#### NOTICE

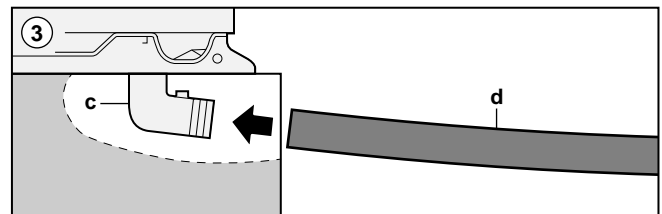
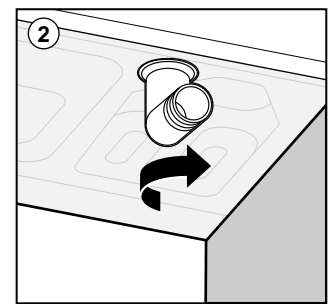
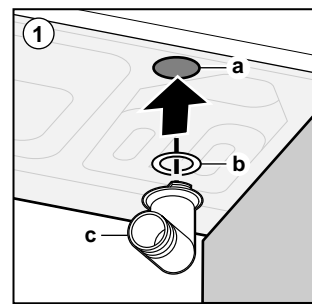
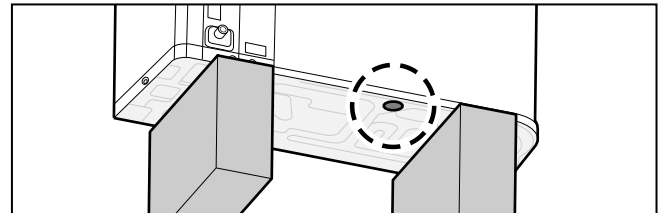
If the unit is installed in a cold climate, take adequate measures so that the evacuated condensate **CANNOT** freeze. We recommend to do the following:

- Insulate the drain hose.
- Install a drain tube heater (field supply). To connect the drain tube heater, see "5.3 To connect the electrical wiring on the outdoor unit" on page 11.

#### NOTICE

Provide at least 150 mm of free space below the unit. Additionally, make sure the unit is positioned at least 100 mm above the expected level of snow.

Use the drain plug (with O-ring) and a hose for drainage.



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

#### NOTICE

**O-ring.** Make sure the O-ring is installed correctly to prevent leakage.

### 3.3 To open the outdoor unit

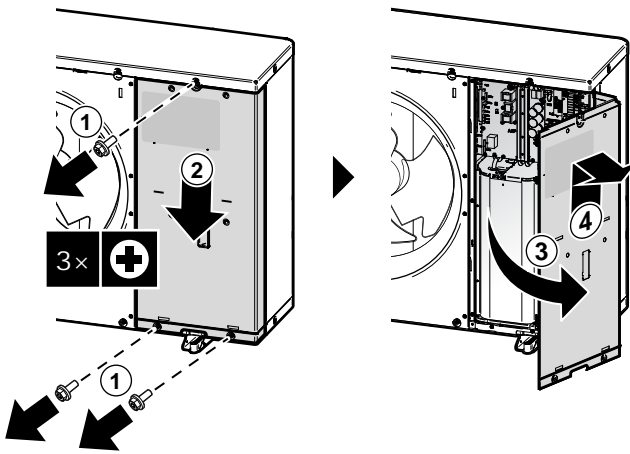


**DANGER: RISK OF ELECTROCUTION**



**DANGER: RISK OF BURNING**

## 4 Piping installation

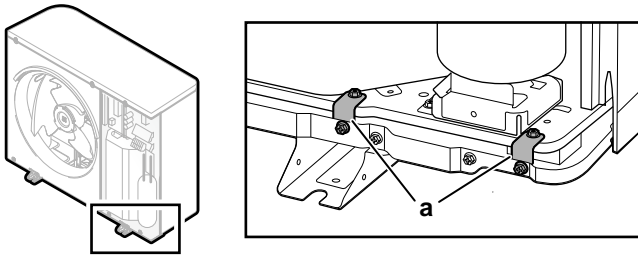


### 3.4 To remove the transportation stay

#### NOTICE

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

The transportation stays (2×) protect the unit during transport. During installation they must be removed.



a Transportation stays (2×)

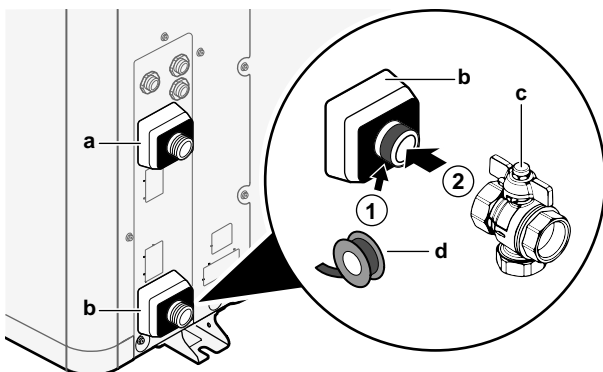
- 1 Open the switch box cover. See "3.3 To open the outdoor unit" on page 7.
- 2 Remove the screws (4×) from the transportation stays.
- 3 Remove the transportation stays (2×), and dispose of them.
- 4 Reattach the screws to the unit.

## 4 Piping installation

### 4.1 Connecting the water piping

#### 4.1.1 To connect the water piping

- 1 Connect the shut-off valve (with integrated filter) to the outdoor unit water inlet, using thread sealant.



a Water OUT (screw connection, male, 1")

- b Water IN (screw connection, male, 1")
- c Shut-off valve with integrated filter (delivered as accessory)
- d Thread sealant

- 2 Connect the field piping to the shut-off valve.
- 3 Connect the field piping to the outdoor unit water outlet.

#### 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.

#### NOTICE

Install air purge valves at all local high points.

#### 4.1.2 To fill the water circuit

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

#### 4.1.3 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.

#### 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%	—



Lowest expected outdoor temperature	Prevent from bursting	Prevent from freezing
-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 <sup>(a)</sup>
The system does NOT contain a domestic hot water tank	You can use either propylene glycol <sup>(a)</sup> or ethylene glycol

<sup>(a)</sup> 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.

## WARNING

Due to 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 installer reference guide (topic "To check the water volume and flow rate").

## 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

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, do NOT select a minimum cooling setpoint lower than 7°C (7°C=default). If lower, freeze protection valves can open during cooling operation.

For more information, see the installer reference guide.

### 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.

## 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.

## 4 Piping installation

### WARNING

Due to 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 <sup>(a)</sup>
The system does NOT contain a domestic hot water tank	You can use either propylene glycol <sup>(a)</sup> or ethylene glycol

<sup>(a)</sup> 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, do NOT select a minimum cooling setpoint lower than 7°C (7°C=default). If lower, freeze protection valves can open during cooling operation.

For more information, see the installer reference guide.

### 4.1.4 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.standbyme.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.

### 5 Electrical installation



**DANGER: RISK OF ELECTROCUTION**



**WARNING**

**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "6.2 To install the discharge grille" on page 14
- "6.3 To remove the discharge grille, and put the grille in safety position" on page 15



**WARNING**

ALWAYS use multicore cable for power supply cables.



**CAUTION**

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



**NOTICE**

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

#### 5.1 About electrical compliance

Only for EPRA14~18DAV3

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.).

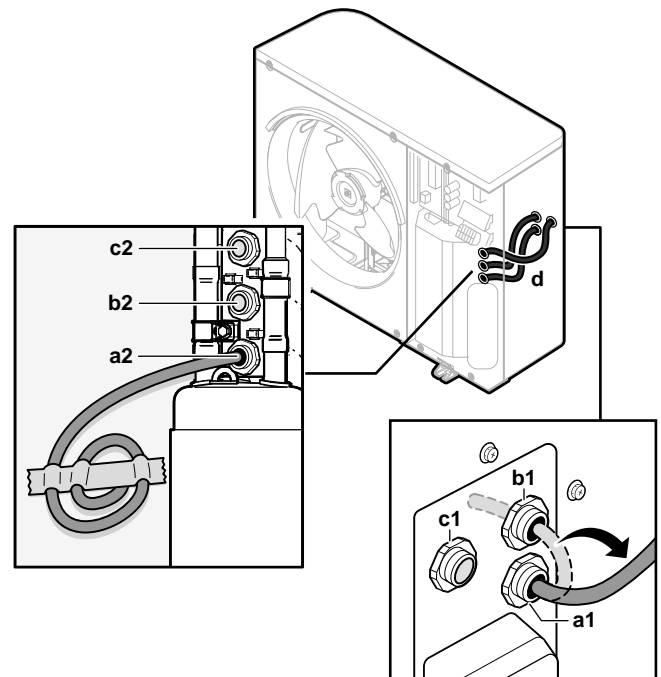
#### 5.2 Guidelines when connecting the electrical wiring

Tightening torques

Item	Tightening torque (N·m)
M4 (X1M, X2M)	1.2~1.5
M4 (earth)	

#### 5.3 To connect the electrical wiring on the outdoor unit

- 1 Open the switch box cover. See "3.3 To open the outdoor unit" on page 7.
- 2 Insert the cables at the back of the unit, and route them through the factory-mounted cable sleeves into the switch box. For the power supply, use the factory-mounted cable.



**a1+a2** Power supply cable (factory-mounted cable)  
**b1+b2** Interconnection cable (field supply)  
**c1+c2** (optional) Drain tube heater cable (field supply)  
**d** Cable sleeves (factory-mounted)

- 3 Inside the switch box, connect the wires to the appropriate terminals, and fix the cables with cable ties. See:

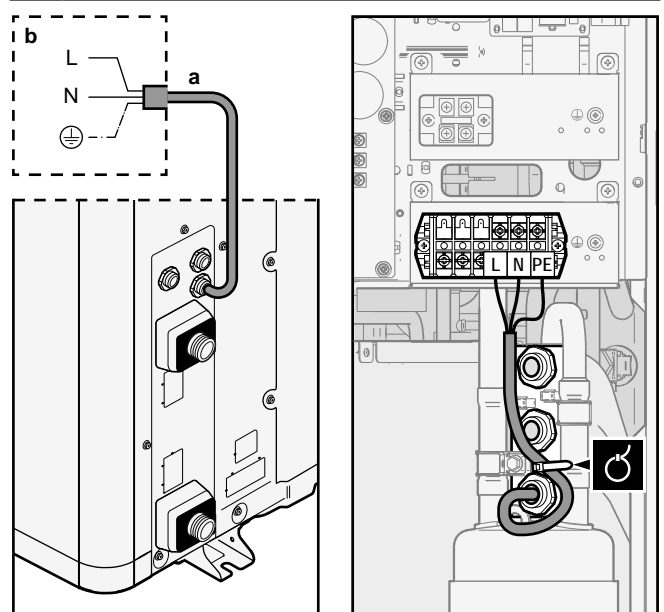
- "5.3.1 In case of V3 models" on page 11
- "5.3.2 In case of W1 models" on page 12

##### 5.3.1 In case of V3 models

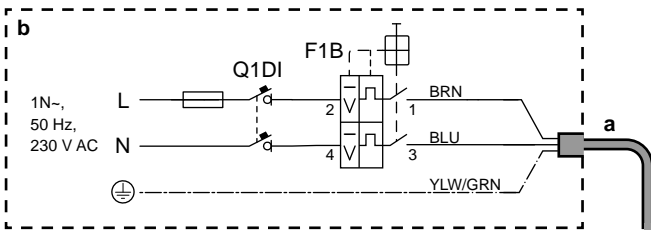
###### 1 Power supply cable:

- Use the factory-mounted cable, which is already routed through the frame.
- Connect the wires to the terminal block.
- Fix the cable with a cable tie.

Use the factory-mounted cable.  
 Wires: 1N+GND  
 Maximum running current: Refer to name plate on unit.



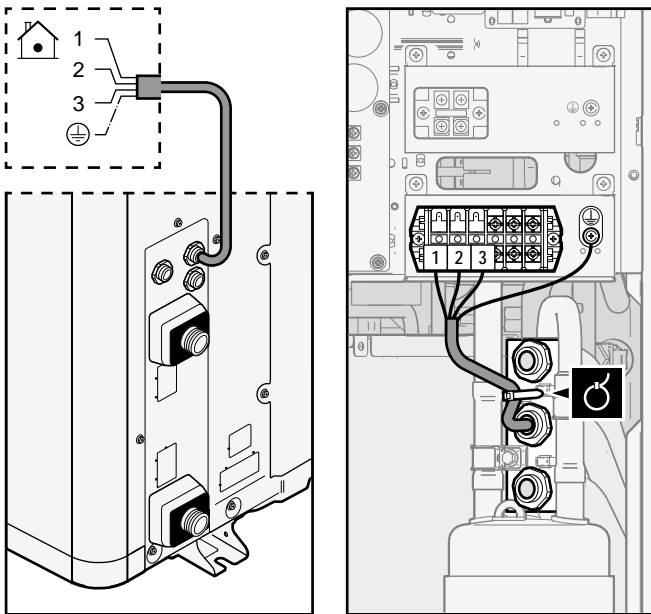
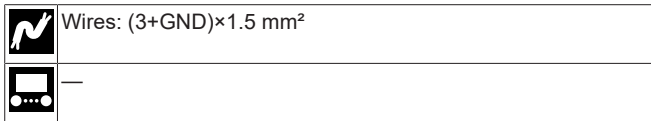
## 5 Electrical installation



- a** Factory-mounted power supply cable  
**b** Field wiring  
**F1B** Overcurrent fuse (field supply). Recommended fuse: 2 pole, 32 A fuse, C curve.  
**Q1DI** Earth leakage circuit breaker (30 mA)(field supply)

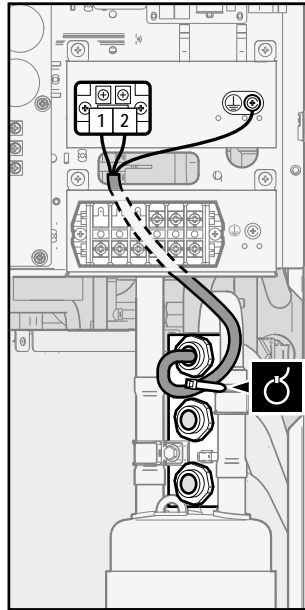
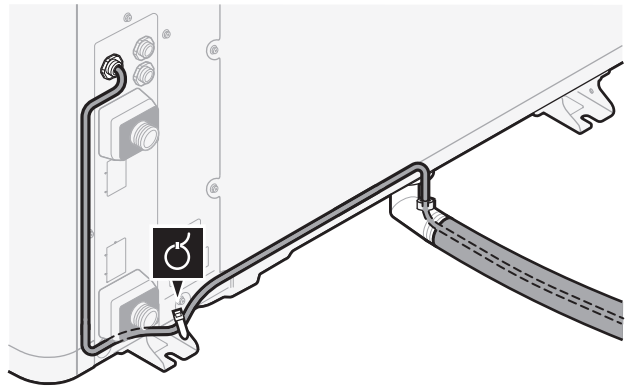
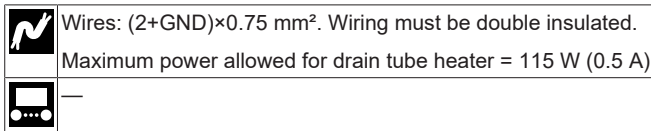
### 2 Interconnection cable (indoor↔outdoor):

- Route the cable through the frame.
- Connect the wires to the terminal block (make sure the numbers match with the numbers on the indoor unit) and the earth screw.
- Fix the cable with a cable tie.



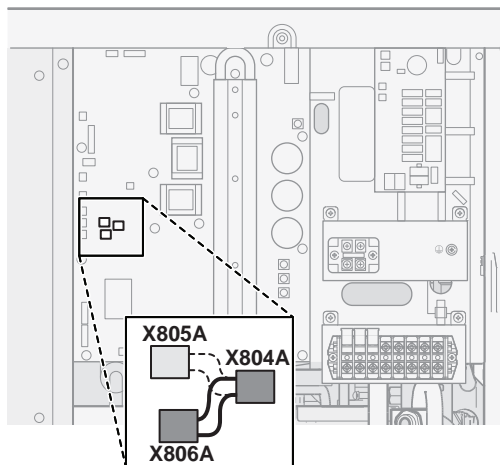
### 3 (Optional) Drain tube heater cable:

- Make sure the heating element of the drain tube heater is completely inside the drain tube.
- Route the cable through the frame.
- Connect the wires to the terminal block and the earth screw.
- Fix the cable with cable ties.



### 4 (Optional) Power saving function: If you want to use the power saving function:

- Disconnect X804A from X805A.
- Connect X804A to X806A.




### **i** INFORMATION


**Power saving function.** The power saving function is only applicable for V3 models. For more information about the power saving function ([9.F] or overview field setting [E-08]), see the installer reference guide.

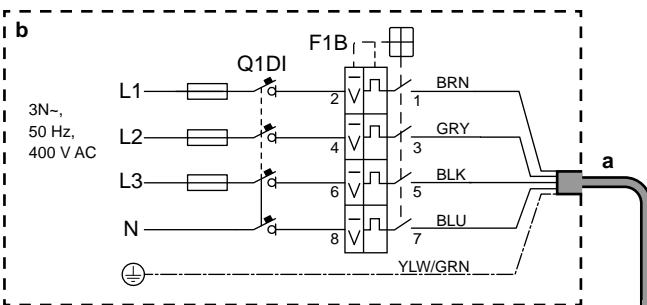
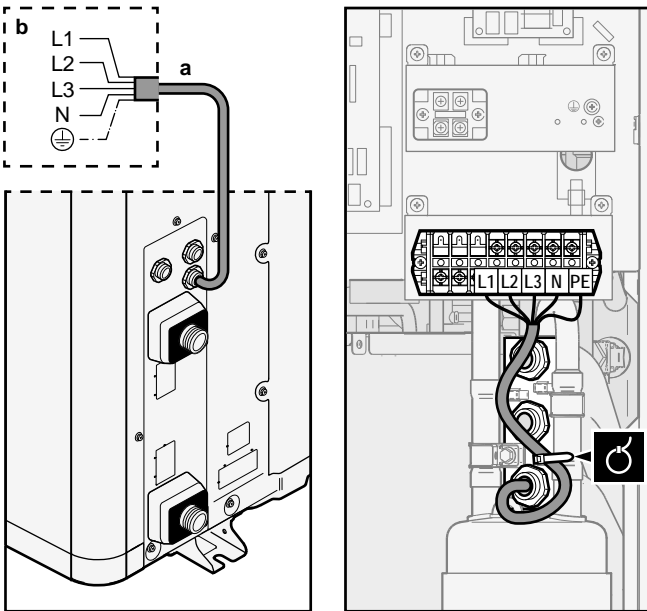
### 5.3.2 In case of W1 models

#### 1 Power supply cable:

- Use the factory-mounted cable, which is already routed through the frame.
- Connect the wires to the terminal block.
- Fix the cable with a cable tie.

 Use the factory-mounted cable.  
 Wires: 3N+GND  
 Maximum running current: Refer to name plate on unit.







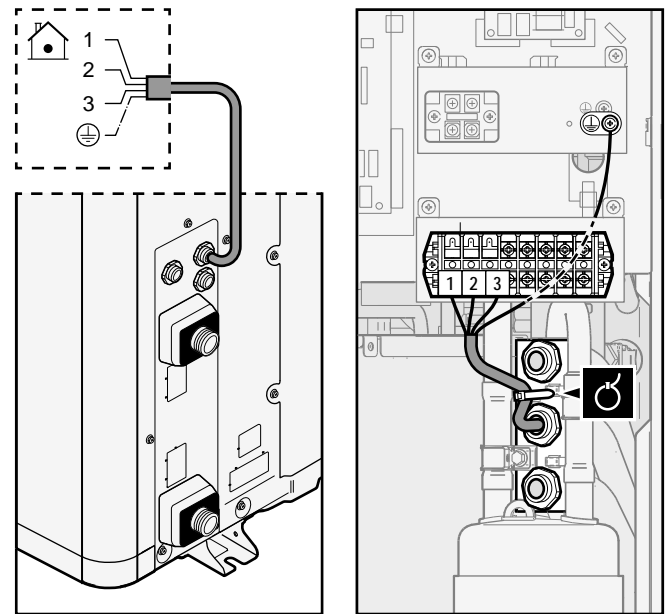
- a** Factory-mounted power supply cable  
**b** Field wiring  
**F1B** Overcurrent fuse (field supply). Recommended fuse: 4 pole, 16 A or 20 A fuse, C curve.  
**Q1DI** Earth leakage circuit breaker (30 mA)(field supply)

## 2 Interconnection cable (indoor↔outdoor):

- Route the cable through the frame.
- Connect the wires to the terminal block (make sure the numbers match with the numbers on the indoor unit) and the earth screw.
- Fix the cable with a cable tie.


 Wires: (3+GND)×1.5 mm<sup>2</sup>




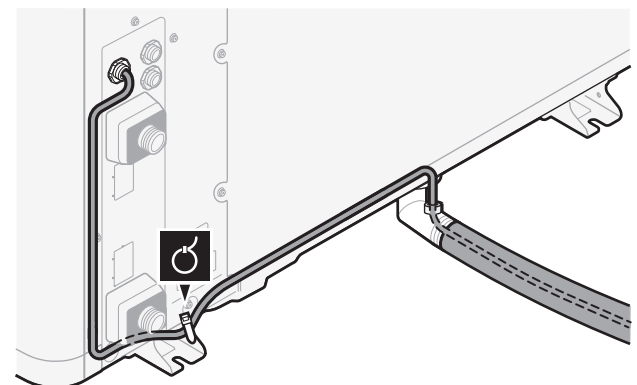


## 3 (Optional) Drain tube heater cable:

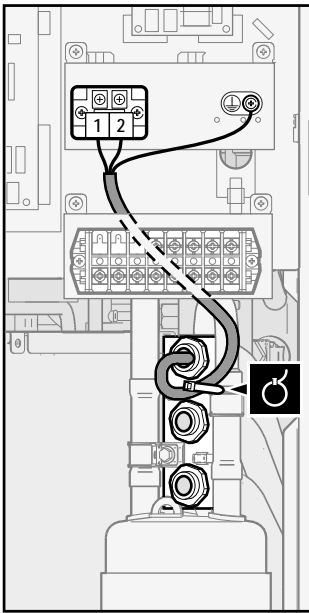
- Make sure the heating element of the drain tube heater is completely inside the drain tube.
- Route the cable through the frame.
- Connect the wires to the terminal block and the earth screw.
- Fix the cable with cable ties.

 Wires: (2+GND)×0.75 mm<sup>2</sup>. Wiring must be double insulated.  
 Maximum power allowed for drain tube heater = 115 W (0.5 A)






## 6 Finishing the outdoor unit installation

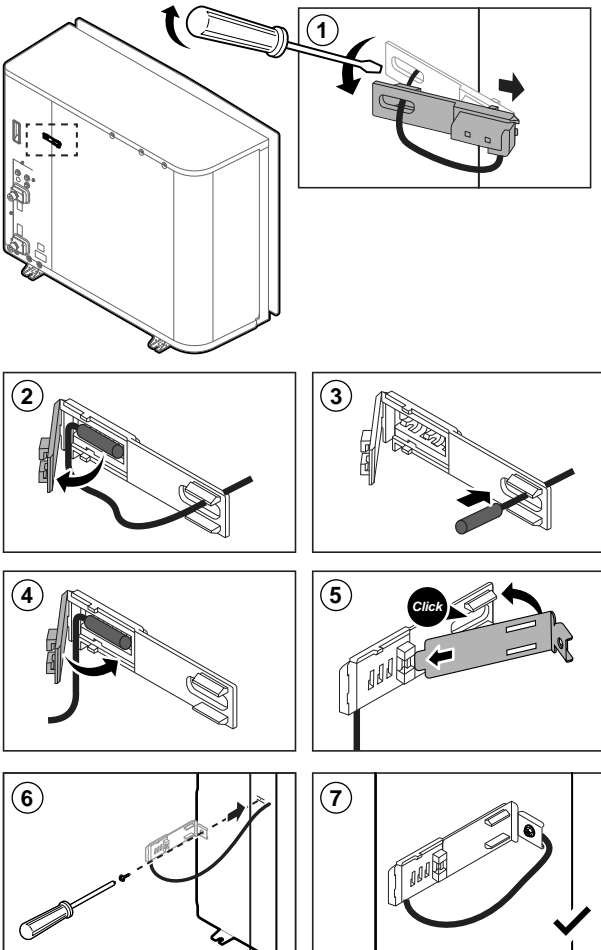


### 5.4 To reposition the air thermistor on the outdoor unit

This procedure is only necessary in areas with low ambient temperatures.

Required accessory (delivered with the unit):

	Thermistor fixture.
--	---------------------



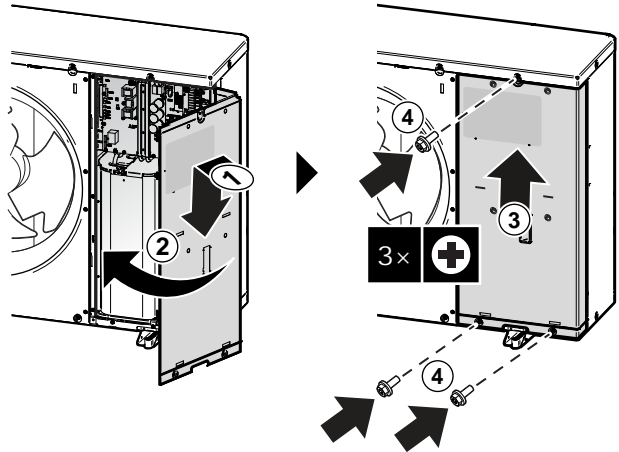
## 6 Finishing the outdoor unit installation

### 6.1 To close the outdoor unit



#### NOTICE

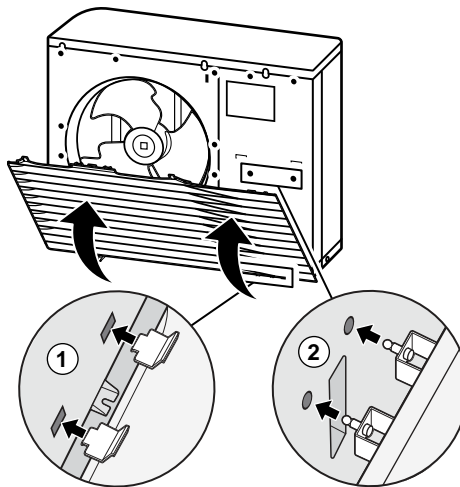
When closing the outdoor unit cover, make sure that the tightening torque does NOT exceed 4.1 N•m.



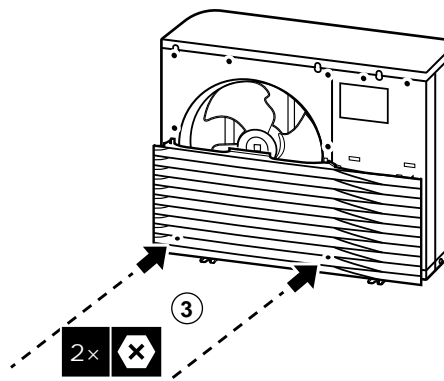
### 6.2 To install the discharge grille

Install the lower part of the discharge grille

- 1 Insert the hooks.
- 2 Insert the ball studs.



- 3 Fix the 2 lower screws.



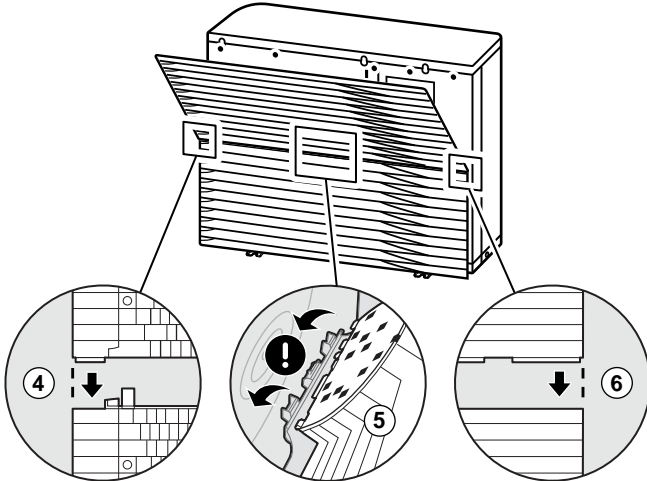
### Install the upper part of the discharge grille



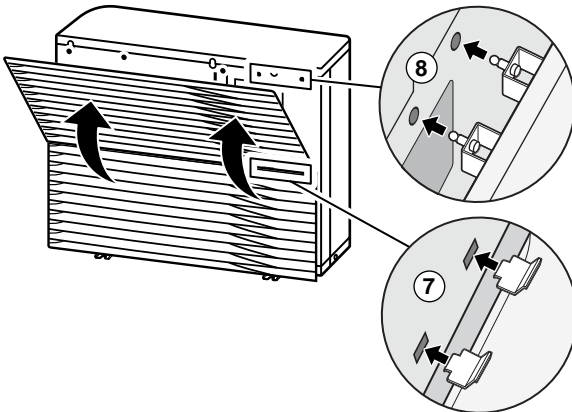
#### NOTICE

**Vibrations.** Make sure the upper part of the discharge grille is attached seamlessly to the lower part to prevent vibrations.

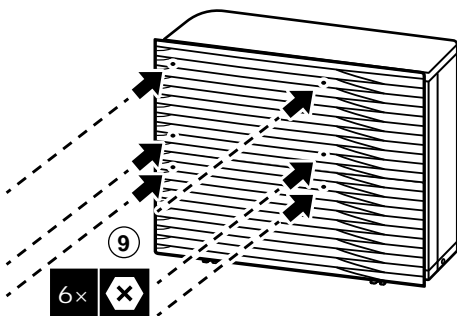
- 4 Align and attach the left side.
- 5 Align and attach the middle part.
- 6 Align and attach the right side.



- 7 Insert the hooks.
- 8 Insert the ball studs.



- 9 Fix the 6 remaining screws.



### 6.3 To remove the discharge grille, and put the grille in safety position

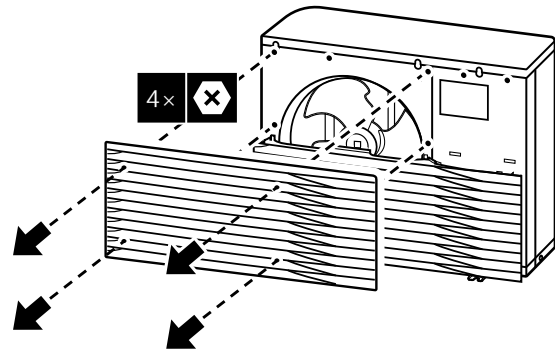


#### WARNING

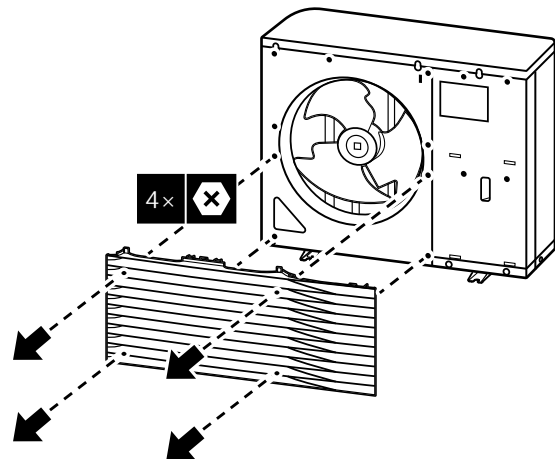
**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "6.2 To install the discharge grille" on page 14
- "6.3 To remove the discharge grille, and put the grille in safety position" on page 15

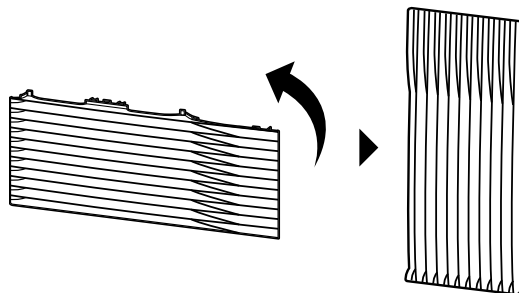
- 1 Remove the upper part of the discharge grille.



- 2 Remove the lower part of the discharge grille.

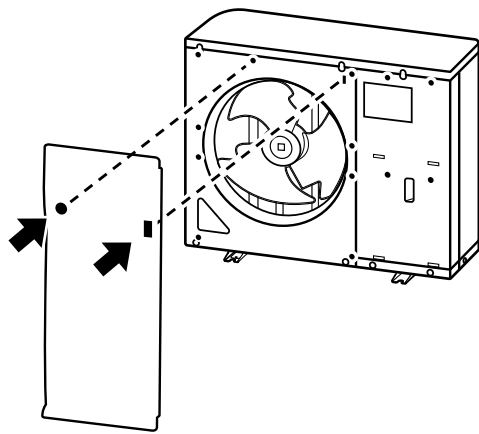


- 3 Rotate the lower part of the discharge grille.

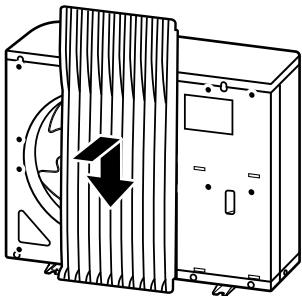


- 4 Align the ball stud and hook on the grille with their counterparts on the unit.

## 7 Starting up the outdoor unit



5 Attach the grille to the unit.



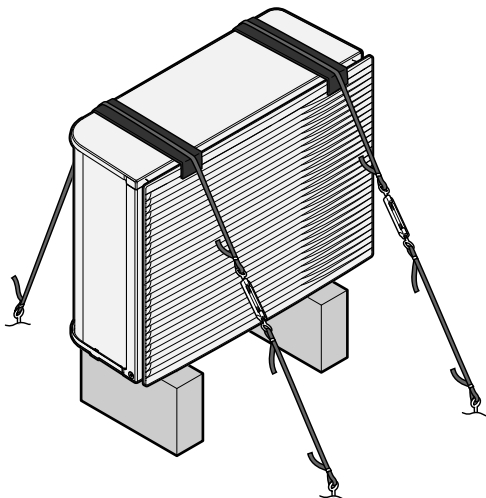
### 6.4 To prevent the outdoor unit from falling over

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 and tighten them.

#### NOTICE

**Discharge grille.** Do NOT use too much force to prevent damage to the discharge grille.



## 7 Starting up the outdoor unit

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



#### WARNING

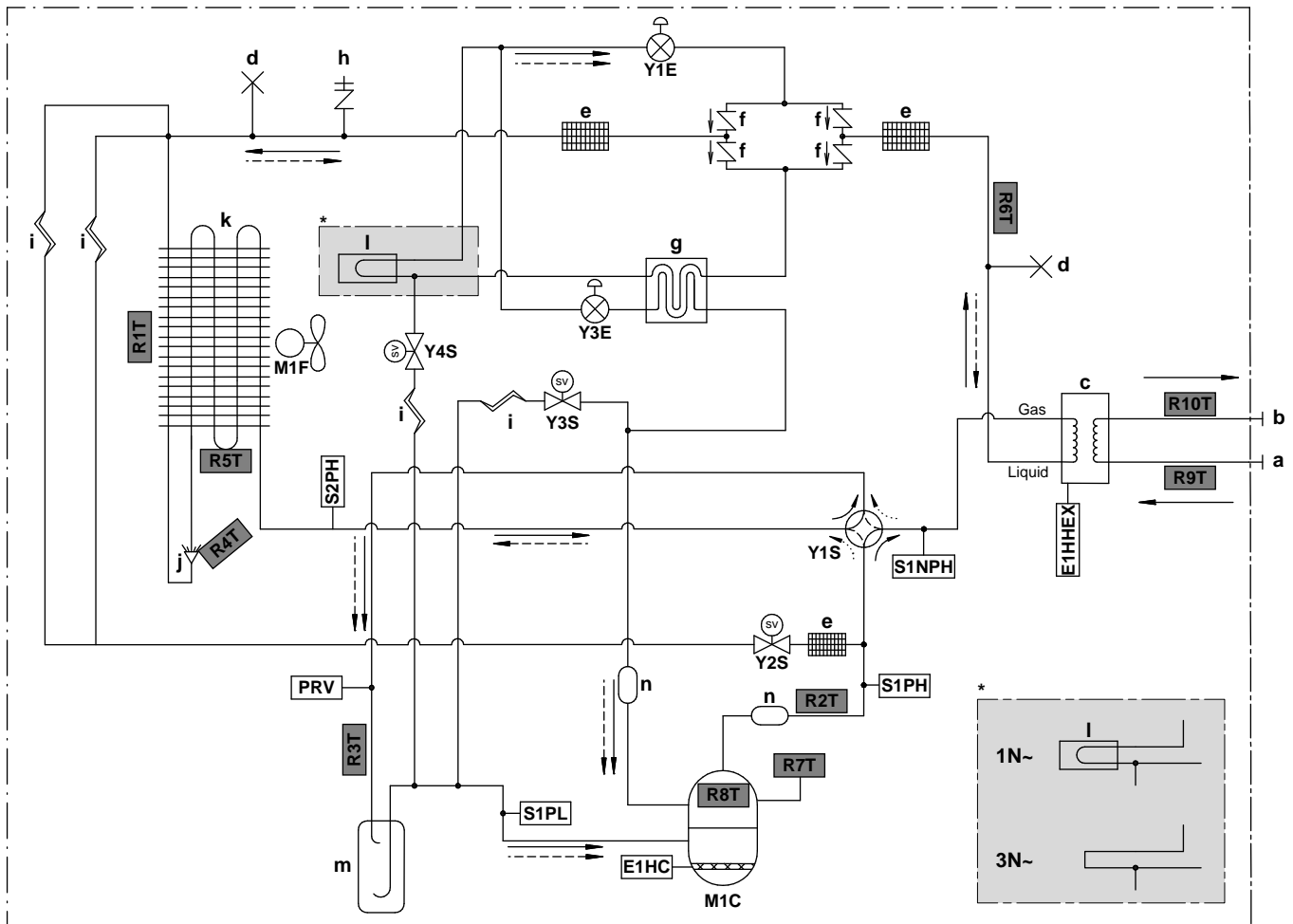
**Rotating fan.** Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "6.2 To install the discharge grille" on page 14
- "6.3 To remove the discharge grille, and put the grille in safety position" on page 15



## 8 Technical data

### 8.1 Piping diagram: Outdoor unit



3D124079A

- |               |  |
|---------------|--|
| <b>Gas</b>    | Gas                                    |
| <b>Liquid</b> | Liquid                                 |
| <b>a</b>      | Water IN (screw connection, male, 1")  |
| <b>b</b>      | Water OUT (screw connection, male, 1") |
| <b>c</b>      | Plate heat exchanger                   |
| <b>d</b>      | Pinched pipe                           |
| <b>e</b>      | Refrigerant filter                     |
| <b>f</b>      | One-way valve                          |
| <b>g</b>      | Economiser heat exchanger              |
| <b>h</b>      | Service port 5/16" flare               |
| <b>i</b>      | Capillary tube                         |
| <b>j</b>      | Distributor                            |
| <b>k</b>      | Air heat exchanger                     |
| <b>l</b>      | PCB cooling                            |
| <b>m</b>      | Accumulator                            |
| <b>n</b>      | Muffler                                |

- |               |  |
|---------------|--|
| <b>E1HC</b>   | Crankcase heater                       |
| <b>E1HHEX</b> | Plate heat exchanger heater            |
| <b>M1C</b>    | Compressor                             |
| <b>M1F</b>    | Fan motor                              |
| <b>PRV</b>    | Refrigerant pressure relief valve      |
| <b>S1PH</b>   | High pressure switch (5.6 MPa)         |
| <b>S2PH</b>   | High pressure switch (4.17 MPa)        |
| <b>S1PL</b>   | Low pressure switch                    |
| <b>S1NPH</b>  | High pressure sensor                   |
| <b>Y1E</b>    | Electronic expansion valve (main)      |
| <b>Y3E</b>    | Electronic expansion valve (injection) |
| <b>Y1S</b>    | Solenoid valve (4-way valve)           |
| <b>Y2S</b>    | Solenoid valve (hot gas bypass)        |
| <b>Y3S</b>    | Solenoid valve (low pressure bypass)   |
| <b>Y4S</b>    | Solenoid valve (liquid injection)      |

**Thermistors:**

- |             |                                 |
|-------------|---------------------------------|
| <b>R1T</b>  | Outdoor air                     |
| <b>R2T</b>  | Compressor discharge            |
| <b>R3T</b>  | Compressor suction              |
| <b>R4T</b>  | Air heat exchanger, distributor |
| <b>R5T</b>  | Air heat exchanger, middle      |
| <b>R6T</b>  | Refrigerant liquid              |
| <b>R7T</b>  | Compressor shell                |
| <b>R8T</b>  | Compressor port                 |
| <b>R9T</b>  | Entering water                  |
| <b>R10T</b> | Leaving water                   |

**Refrigerant flow:**

- |   |         |
|---|---------|
| → | 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 switch box cover.

English	Translation
Electronic component assembly	Electronic component assembly
Front side view	Front side view
Indoor	Indoor
OFF	OFF
ON	ON
Outdoor	Outdoor
Position of compressor terminal	Position of compressor terminal
Position of elements	Position of elements
Rear side view	(only for W1 models) Rear side view
Right side view	Right side view
See note ***	See note ***

#### Notes:

1	Symbols:
	L Live
	N Neutral
	 Protective earth
	 Noiseless earth
	 Field wiring
	 Option
	 Terminal strip
	 Terminal
	 Connector
	 Connection
2	Colours:
	BLK Black
	RED Red
	BLU Blue
	WHT White
	GRN Green
	YLW Yellow
	PNK Pink
	ORG Orange
	GRY Grey
	BRN Brown
3	This wiring diagram applies only to the outdoor unit.
4	When operating, do not short-circuit protective devices S1PH, S2PH and S1PL.
5	Refer to the combination table and the option manual for how to connect the wiring to X6A, X41A and X2M.
6	The factory setting of all switches is OFF, do not change the setting of the selector switch (DS1).
7	(only for W1 models) Ferrite core Z8C consists of 2 separate core parts.

#### Legend in case of V3 models:

A1P	Printed circuit board (main)
A2P	Printed circuit board (noise filter)
A3P	Printed circuit board (leakage current)
A4P	Printed circuit board (ACS)
A5P	Printed circuit board (flash)

BS1~BS4 (A1P)	Push button switch
C1~C4 (A1P, A2P)	Capacitor
DS1 (A1P)	DIP switch
E1H	Drain tube heater (field supply)
E1HC	Crankcase heater
E1HHEX~E3HHEX	Plate heat exchanger heaters
F1U	Field fuse (field supply)
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 (E1HHEX~E3HHEX)
K2R (A1P)	Magnetic relay (Y2S)
K2R (A4P)	Magnetic relay (E1H)
K3R (A1P)	Magnetic relay (Y3S)
K4R (A1P)	Magnetic relay (E1HC)
K10R (A1P)	Magnetic relay
K11M (A1P)	Magnetic contactor
K13R~K15R (A1P, A2P)	Magnetic relay
L1R~L3R (A1P)	Reactor
M1C	Compressor motor
M1F	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, distributor)
R5T	Thermistor (air heat exchanger, middle)
R6T	Thermistor (refrigerant liquid)
R7T	Thermistor (compressor shell)
R8T	Thermistor (compressor port)
R9T	Thermistor (entering water)
R10T	Thermistor (leaving water)
R11T	Thermistor (fin)
RC (A2P)	Signal receiver circuit
S1NPH	High pressure sensor
S1PH, S2PH	High pressure switch
S1PL	Low pressure switch
T1A	Current transfo
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, X2M	Terminal strip
Y1E	Electronic expansion valve (main)
Y3E	Electronic expansion valve (injection)

Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (hot gas bypass)
Y3S	Solenoid valve (low pressure bypass)
Y4S	Solenoid valve (liquid injection)
Z1C~Z11C	Noise filter (ferrite core)
Z1F~Z6F (A1P, A2P)	Noise filter

**Legend in case of W1 models:**

A1P	Printed circuit board (main)
A2P	Printed circuit board (inverter)
A3P	Printed circuit board (noise filter)
A4P	Printed circuit board (ACS)
A5P	Printed circuit board (leakage current)
BS1~BS4 (A1P)	Push button switch
C1~C3 (A2P)	Capacitor
DS1 (A1P)	DIP switch
E1H	Drain tube heater (field supply)
E1HC	Crankcase heater
E1HHEX	Plate heat exchanger heater
F1U	Field fuse (field supply)
F1U~F7U (A1P, A2P)	Fuse
H1P~H7P (A1P)	Light-emitting diode (service monitor is orange)
HAP (A1P, A2P)	Light-emitting diode (service monitor is green)
K1R (A1P)	Magnetic relay (Y1S)
K1R (A2P)	Magnetic relay
K1R (A4P)	Magnetic relay (E1HHEX)
K2R (A1P)	Magnetic relay (Y2S)
K2R (A4P)	Magnetic relay (E1H)
K3R (A1P)	Magnetic relay (Y3S)
K4R (A1P)	Magnetic relay (E1HC)
K2M, K11M (A2P)	Magnetic contactor
L1R~L4R	Reactor
M1C	Compressor motor
M1F	Fan motor
PS (A2P)	Switching power supply
Q1DI	Earth leakage circuit breaker (30 mA) (field supply)
R1, R2 (A2P)	Resistor
R1T	Thermistor (outdoor air)
R2T	Thermistor (compressor discharge)
R3T	Thermistor (compressor suction)
R4T	Thermistor (air heat exchanger, distributor)
R5T	Thermistor (air heat exchanger, middle)
R6T	Thermistor (refrigerant liquid)
R7T	Thermistor (compressor shell)
R8T	Thermistor (compressor port)
R9T	Thermistor (entering water)
R10T	Thermistor (leaving water)
R11T	Thermistor (fin)
S1NPH	High pressure sensor
S1PH, S2PH	High pressure switch
S1PL	Low pressure switch
T1A	Current transfo
V1R, V2R (A2P)	IGBT power module

V3R (A2P)	Diode module
X1M, X2M	Terminal strip
Y1E	Electronic expansion valve (main)
Y3E	Electronic expansion valve (injection)
Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (hot gas bypass)
Y3S	Solenoid valve (low pressure bypass)
Y4S	Solenoid valve (liquid injection)
Z1C~Z10C	Noise filter (ferrite core)
Z1F~Z4F (A1P, A3P)	Noise filter

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