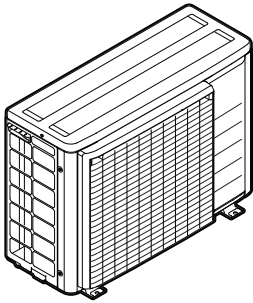




# Installation manual

## Daikin Altherma 3 R



CE-DECLARATION-OF-CONFORMITY  
CE-DICHIAZIONE-DI-CONFORMITÀ  
CE-ΔΗΛΩΣΗ-ΥΠΟΜΟΡΦΩΣΗΣ  
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Low Voltage 2014/35/EU

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06 **en** Directie, come da modifica;
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Electromagnetic Compatibility 2014/30/EU

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Yasuto Hiraoka
Managing Director
Pilsen, 1st of April 2020

DAIKIN INDUSTRIES CZECH REPUBLIC s.r.o.

U Nové Hospody 1/1155, 301 00 Pilsen Skvrnany,
Czech Republic

Table with 4 columns: <A>, <B>, <C>, <D>, <E>, <F>, <G>, <H>. Row 1: DAIKIN.TCF.034A6/09-2019. Row 2: DEKRA (NB0344). Row 3: 2192529.0551-EMC. Row 4: Daikin.T.CFP.0185A. Row 5: VINÇOTTE nv (NB0026). Row 6: D1. Row 7: —. Row 8: II.



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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.

#### 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



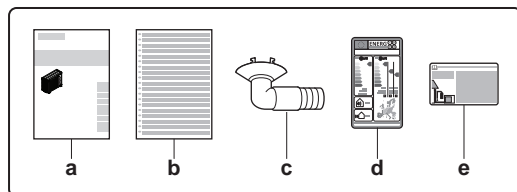
Google Play



## 2 About the box

### 2.1 Outdoor unit

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



- a Outdoor unit installation manual
- b Multilingual fluorinated greenhouse gases label
- c Drain plug (located on the bottom of the packing case)
- d Energy label
- e Fluorinated greenhouse gases label

## 3 Unit installation

### 3.1 Preparing the installation site

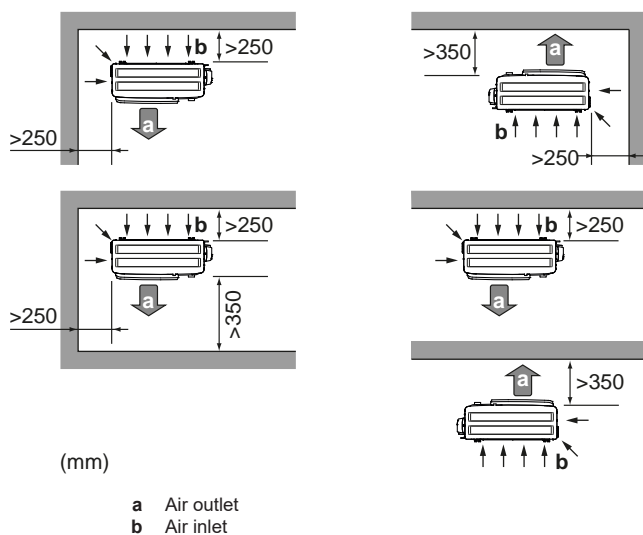


#### WARNING

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 following spacing guidelines:



#### NOTICE

The height of the wall on the outlet side of the outdoor unit **MUST** be  $\leq 1200$  mm.

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

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

Do NOT install the unit in sound sensitive areas (e.g. near a bedroom), so that the operation noise will cause no trouble.

**Note:** If the sound is measured under actual installation conditions, the measured value might be higher than the sound pressure level mentioned in "Sound spectrum" in the data book due to environmental noise and sound reflections.



#### INFORMATION

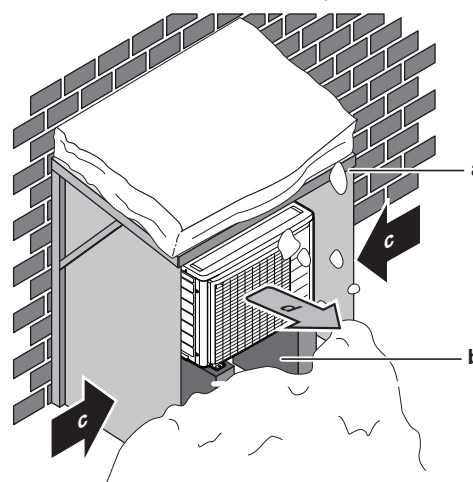
The sound pressure level is less than 70 dBA.

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

Cooling mode	10~43°C
Heating mode	-15~25°C

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

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



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

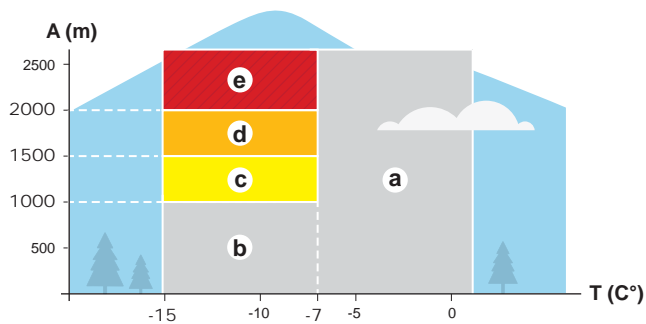
It is recommended to provide at least 150 mm of free space below the unit (300 mm for heavy snowfall areas). Additionally, make sure the unit is positioned at least 100 mm above the maximum expected level of snow. If necessary, construct a pedestal. See "3.2 Mounting the outdoor unit" [p. 6] for more 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.

By default, the outdoor unit heat pump can operate until  $-7^{\circ}\text{C}$ . Depending on the installation area, this can be lowered to  $-15^{\circ}\text{C}$  by modifying the BUH only ambient temperature ([8-0E]) field setting. This setting can also be changed via the menu structure. See the installation manual of the indoor unit for how to change the setting.

Additionally, in areas with ambient temperatures between  $-7^{\circ}\text{C}$  and  $-15^{\circ}\text{C}$ , and depending on the altitude of the unit, the installation of a bottom plate heater (EKBPH03D) may be required to guarantee outdoor unit operation.

## 3 Unit installation



- A** Altitude
- T** Temperature
- a** No special installation requirements
- b** Below 1000 m, no bottom plate heater is installed. Set [8-0E] = -15°C.
- c** Unit between 1000 m and 1500 m altitude — Bottom plate heater required. Set [8-0E] = -15°C.
- d** Unit between 1500 m and 2000 m altitude — Bottom plate heater required and set [8-0E] = -15°C. If the unit is within 3 km of any lakes or rivers, [8-0E] = -7°C.
- e** Outdoor unit operation not possible below -7°C (backup heater operation only). [8-0E] = -7°C.

### 3.1.3 Refrigerant piping length and height difference

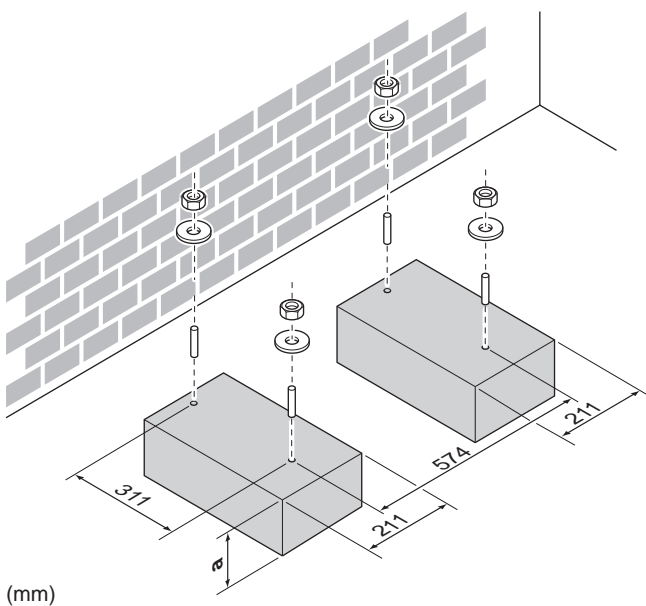
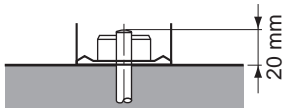
What?	Distance
Maximum allowable pipe length	20 m
Minimum allowable pipe length	3 m
Maximum allowable height difference	20 m

## 3.2 Mounting the outdoor unit

### 3.2.1 To provide the installation structure

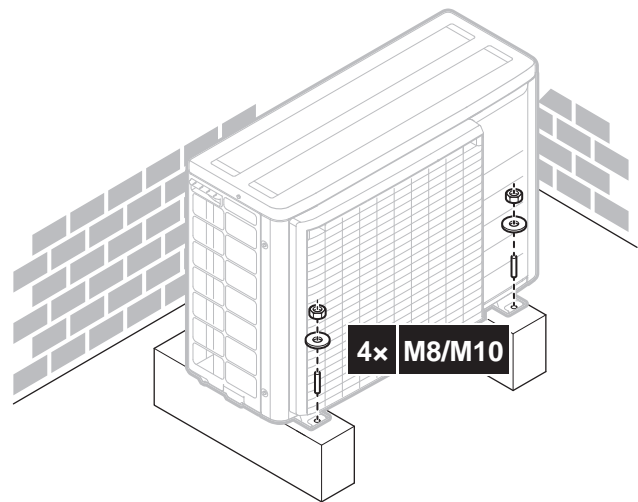
Use a vibration-proof rubber (field supply) in cases where vibrations may be transmitted to the building.

Prepare 4 sets of M8 or M10 anchor bolts, nuts and washers (field supply).



**a** 100 mm above expected level of snow

### 3.2.2 To install the outdoor unit



### 3.2.3 To provide drainage

Make sure that condensation water can be evacuated properly.



#### NOTICE

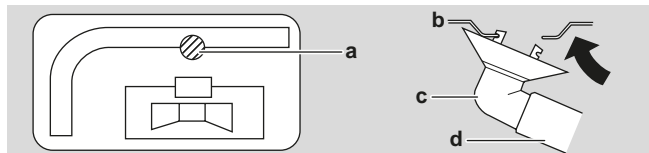
If the unit is installed in a cold climate, take adequate measures so that the evacuated condensate CANNOT freeze.



#### INFORMATION

For information on the available options, contact your dealer.

- 1 Use a drain plug for drainage.
- 2 Use a Ø16 mm hose (field supply).



- a** Drain port
- b** Bottom frame
- c** Drain plug (accessory)
- d** Hose (field supply)

## 3.3 Opening the unit

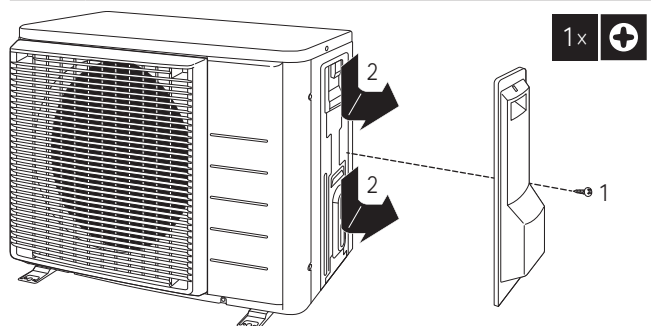
### 3.3.1 To open the outdoor unit



**DANGER: RISK OF ELECTROCUTION**



**DANGER: RISK OF BURNING**



## 4 Piping installation

### 4.1 Connecting the refrigerant piping



**DANGER: RISK OF BURNING**

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

- **Piping length.** Keep field piping as short as possible.
- **Piping protection.** Protect the field piping against physical damage.



**WARNING**

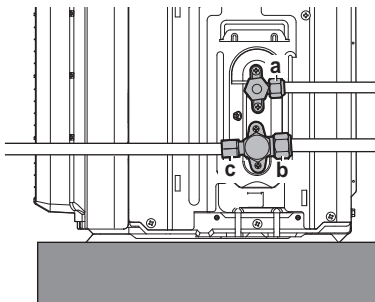
Connect the refrigerant piping securely before running the compressor. If the refrigerant piping is NOT connected and the stop valve is open when the compressor is run, air will be sucked in. This will cause abnormal pressure in the refrigeration cycle, which may result in equipment damage and even injury.



**CAUTION**

- Use the flare nut fixed to the unit.
- To prevent gas leakage, apply refrigeration oil only to the inside of the flare. Use refrigeration oil for R32.
- Do NOT reuse joints.

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



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

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



**NOTICE**

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

### 4.2 Checking the refrigerant piping

#### 4.2.1 To check for leaks



**NOTICE**

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



**NOTICE**

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

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

#### 4.2.2 To perform vacuum drying



**DANGER: RISK OF EXPLOSION**

Do NOT start the unit if it is vacuumed.

- 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.

### 4.3 Charging refrigerant

#### 4.3.1 About charging refrigerant

The outdoor unit is factory charged with refrigerant, but in some cases you may need to completely recharge refrigerant.

**Example:**

- When relocating the system.
- After a leak.

**Completely recharging refrigerant**

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

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

## 5 Electrical installation



### NOTICE

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

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

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

### 4.3.2 About the refrigerant

This product contains fluorinated greenhouse gases. Do NOT vent gases into the atmosphere.

Refrigerant type: R32

Global warming potential (GWP) value: 675



### WARNING: FLAMMABLE MATERIAL

The refrigerant inside this unit is mildly flammable.



### 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).



### WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Do NOT use cleaning materials or means to accelerate the defrosting process other than those recommended by the manufacturer.
- Be aware that the refrigerant inside the system is odourless.



### WARNING

The refrigerant inside the unit is mildly flammable, but normally does NOT leak. If the refrigerant leaks in the room and comes in contact with fire from a burner, a heater, or a cooker, this may result in fire, or the formation of a harmful gas.

Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.

Do NOT use the unit until a service person confirms that the part from which the refrigerant leaked has been repaired.

### 4.3.3 To determine the complete recharge amount

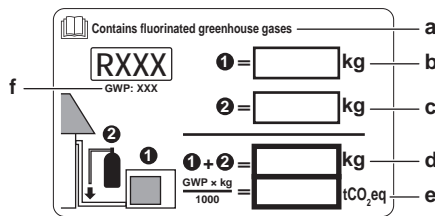


### INFORMATION

If a complete recharge is necessary, the total refrigerant charge is equal to the factory refrigerant charge (see unit name plate).

### 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 Factory refrigerant charge: see unit name plate
- c Additional refrigerant amount charged
- d Total refrigerant charge
- e **Quantity of fluorinated greenhouse gases** of the total refrigerant charge expressed as tonnes CO<sub>2</sub> equivalent.
- f 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. That GWP is based on the current legislation on fluorinated greenhouse gases. The GWP mentioned in the manual might be outdated.

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

## 5 Electrical installation



### DANGER: RISK OF ELECTROCUTION



### WARNING

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



### WARNING

**ALWAYS** use multicore cable for power supply cables.



### WARNING

Use an all-pole disconnection type breaker with at least 3 mm between the contact point gaps that provide full disconnection under overvoltage category III.



### WARNING

If the supply cord is damaged, it **MUST** be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.



### WARNING

Do **NOT** connect the power supply to the indoor unit. This could result in electrical shock or fire.



## 6 Finishing the outdoor unit installation

### WARNING

- Do NOT use locally purchased electrical parts inside the product.
- Do NOT branch the power supply for the drain pump, etc. from the terminal block. This could result in electrical shock or fire.

### WARNING

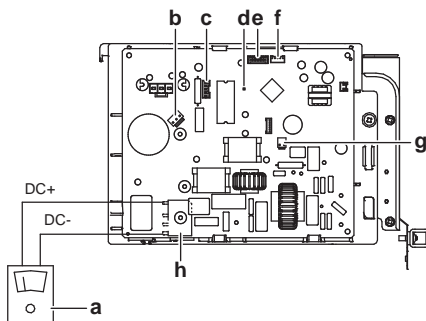
Keep the interconnection wiring away from copper pipes without thermal insulation as such pipes will be very hot.

### DANGER: RISK OF ELECTROCUTION

All electrical parts (including thermistors) are powered by the power supply. Do not touch them with bare hands.

### DANGER: RISK OF ELECTROCUTION

Disconnect the power supply for more than 10 minutes, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.



- a Multimeter (DC voltage range)
- b S80 – reversing solenoid valve lead wire
- c S70 – fan motor lead wire
- d LED
- e S90 – thermistor lead wire
- f S20 – electronic expansion valve lead wire
- g S40 – thermal overload relay lead wire – high pressure switch
- h DB1 – diode bridge

### 5.1 About electrical compliance

Only for ERLA03DAV3

Equipment complying with EN/IEC 61000-3-2 (European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current  $\leq 16$  A per phase.).

### 5.2 Guidelines when connecting the electrical wiring

#### Tightening torques

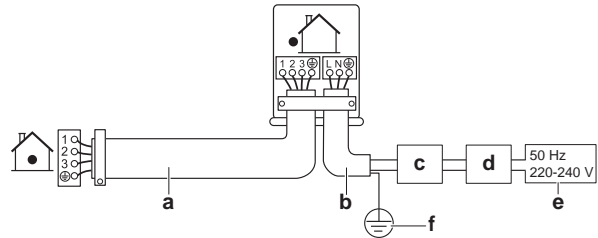
Outdoor unit:

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

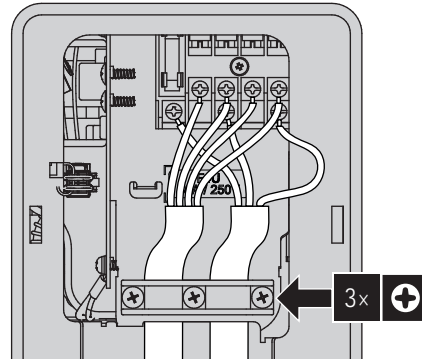
### 5.3 To connect the electrical wiring on the outdoor unit

- Remove the service cover.
- Open the wire clamp.

- Connect the interconnection cable and power supply as follows:



- a Interconnection cable
- b Power supply cable
- c Circuit breaker
- d Earth leakage circuit breaker
- e Power supply
- f Earth



- Tighten the terminal screws securely. We recommend using a Phillips screwdriver.

## 6 Finishing the outdoor unit installation

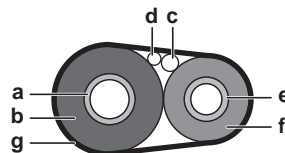
### 6.1 To finish the outdoor unit installation



#### DANGER: RISK OF ELECTROCUTION

- Make sure that the system is earthed properly.
- Turn off the power supply before servicing.
- Install the service cover before turning on the power supply.

- 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

- Install the service cover.

## 7 Starting up the outdoor unit

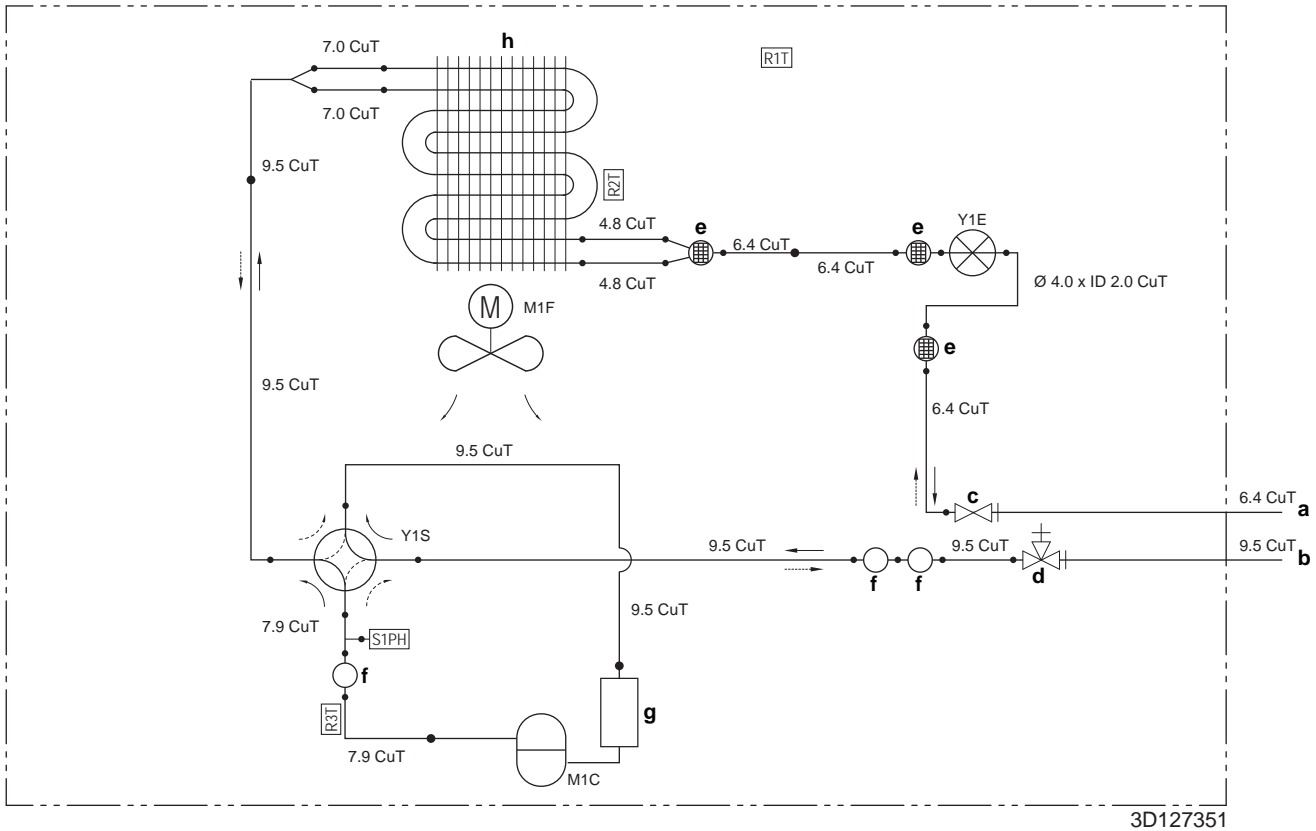
See the indoor unit installation manual for configuration and commissioning of the system.

## 8 Technical data

### 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 Field piping (liquid: Ø6.4 mm flare connection)
- b Field piping (gas: Ø9.5 mm flare connection)
- c Stop valve (liquid)
- d Stop valve with service port (gas)
- e Muffler with filter
- f Muffler
- g Accumulator
- h Heat exchanger
- 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

## 8.2 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) Wiring diagram

English	Translation
Wiring diagram	Wiring diagram
For the power requirements, refer to the nameplate.	For the power requirements, refer to the nameplate.
Field wiring	Field wiring
Indoor	Indoor
Outdoor	Outdoor

### (2) Notes

- 1 Size: 140×80
- 2 Refer to purchasing specification AS303002, unless otherwise specified.

### (3) Legend

L	Live
N	Neutral
	Protective earth
	Earth
	Field wiring
	Circuit breaker
	Connection
	Terminal strip
	Connector
	Terminal
BLK	Black
WHT	White
BRN	Brown
RED	Red
GRN	Green
YLW	Yellow
ORG	Orange
BLU	Blue
GRY	Grey
A1P	Printed circuit board
C7	Capacitor
DB1	Diode bridge
E*	Connector
FU1, FU2	Fuse T 3.15 A 250 V
F4U	Fuse T 30 A 250 V
H*	Connector
IPM*	Intelligent power module
M1C	Compressor motor
M1F	Fan motor
MR4, MR30	Magnetic relay
MRM10, MRM20	Magnetic relay
PAM	Pulse-amplitude modulation
PS	Switching power supply
Q1L	Overload protector
R1T	Thermistor (outdoor air)
R2T	Thermistor (heat exchanger)
R3T	Thermistor (compressor discharge)
S1PH	High pressure switch

S*	Connector
SA1	Surge arrester
U, V, W	Connector
V2, V3, V150	Varistor
X11A	Connector
X1M	Terminal strip
Y1E	Electronic expansion valve coil
Y1S	Reversing solenoid valve coil
Z*C	Noise filter (ferrite core)
Z1F	Noise filter



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