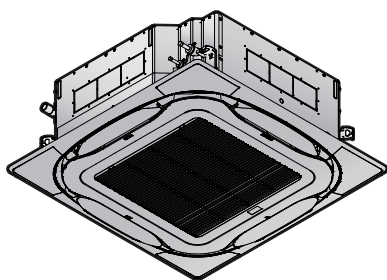




# Installer and user reference guide

## CO<sub>2</sub> Conveni-Pack: indoor unit



FXFN50A2VEB  
FXFN71A2VEB  
FXFN112A2VEB

Installer and user reference guide  
CO<sub>2</sub> Conveni-Pack: indoor unit

English

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# 1 About the documentation

## 1.1 About this document



### INFORMATION

Make sure that the user has the printed documentation and ask him/her to keep it for future reference.

### Target audience

Authorised installers + end users



### INFORMATION

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.



### WARNING

Make sure installation, servicing, maintenance, repair and applied materials follow the instructions from Daikin and, in addition, comply with applicable legislation and are performed by qualified persons only. In Europe and areas where IEC standards apply, EN/IEC 60335-2-40 is the applicable standard.

### 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 and operation manual:**
  - Installation and operation instructions
  - Format: Paper (in the box of the indoor unit)
- **Installer and user reference guide:**
  - Preparation of the installation, good practices, reference data,...
  - 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/>

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 General safety precautions

### 2.1 About the documentation

- The original documentation is written in English. All other languages are translations.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual and in the installer reference guide **MUST** be performed by an authorised installer.

### 2.1.1 Meaning of warnings and symbols



#### DANGER

Indicates a situation that results in death or serious injury.



#### DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.



#### DANGER: RISK OF BURNING/SCALDING

Indicates a situation that could result in burning/scalding because of extreme hot or cold temperatures.



#### DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.



#### WARNING

Indicates a situation that could result in death or serious injury.



#### WARNING: FLAMMABLE MATERIAL



#### CAUTION

Indicates a situation that could result in minor or moderate injury.



#### NOTICE

Indicates a situation that could result in equipment or property damage.



#### INFORMATION

Indicates useful tips or additional information.

Symbols used on the unit:

Symbol	Explanation
	Before installation, read the installation and operation manual, and the wiring instruction sheet.
	Before performing maintenance and service tasks, read the service manual.
	For more information, see the installer and user reference guide.
	The unit contains rotating parts. Be careful when servicing or inspecting the unit.

Symbols used in the documentation:

Symbol	Explanation
	Indicates a figure title or a reference to it. <b>Example:</b> "▲ 1–3 Figure title" means "Figure 3 in chapter 1".
	Indicates a table title or a reference to it. <b>Example:</b> "■ 1–3 Table title" means "Table 3 in chapter 1".

## 2.2 For the installer

### 2.2.1 General

If you are NOT sure how to install or operate the unit, contact your dealer.

## 2 General safety precautions



### DANGER: RISK OF BURNING/SCALDING

- Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you MUST touch it, wear protective gloves.
- Do NOT touch any accidental leaking refrigerant.



### WARNING

Improper installation or attachment of equipment or accessories could result in electrical shock, short-circuit, leaks, fire or other damage to the equipment. ONLY use accessories, optional equipment and spare parts made or approved by Daikin.



### WARNING

Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).



### CAUTION

Wear adequate personal protective equipment (protective gloves, safety glasses,...) when installing, maintaining or servicing the system.



### WARNING

Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. Possible risk: suffocation.



### WARNING

Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.



### CAUTION

Do NOT touch the air inlet or aluminium fins of the unit.



### CAUTION

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least: information on maintenance, repair work, results of tests, stand-by periods,...

Also, at least, following information MUST be provided at an accessible place at the product:

- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN378 provides the necessary guidance for this logbook.

### 2.2.2 Installation site

- Provide sufficient space around the unit for servicing and air circulation.
- Make sure the installation site withstands the weight and vibration of the unit.
- Make sure the area is well ventilated. Do NOT block any ventilation openings.
- Make sure the unit is level.

Do NOT install the unit in the following places:

- In potentially explosive atmospheres.
- In places where there is machinery that emits electromagnetic waves. Electromagnetic waves may disturb the control system, and cause malfunction of the equipment.
- In places where there is a risk of fire due to the leakage of flammable gases (example: thinner or gasoline), carbon fibre, ignitable dust.
- In places where corrosive gas (example: sulphurous acid gas) is produced. Corrosion of copper pipes or soldered parts may cause the refrigerant to leak.

### 2.2.3 Refrigerant — in case of R744

See the installation manual or installer reference guide of your application for more information.



### NOTICE

Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.



### NOTICE

Make sure the field piping and connections are NOT subjected to stress.



### WARNING

During tests, NEVER pressurise the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).



### WARNING

Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- Carbon dioxide poisoning
- Asphyxiation



### NOTICE

After all the piping has been connected, make sure there is no gas leak. Use nitrogen to perform a gas leak detection.



### NOTICE

- To avoid compressor breakdown, do NOT charge more than the specified amount of refrigerant.
- When the refrigerant system is to be opened, refrigerant MUST be treated according to the applicable legislation.



### WARNING

Make sure there is no oxygen in the system. Refrigerant may ONLY be charged after performing the leak test and the vacuum drying.

**Possible consequence:** Self-combustion and explosion of the compressor because of oxygen going into the operating compressor.



### CAUTION

A vacuumed system will be under triple point. To avoid solid ice, ALWAYS start charging with R744 in vapour state. When the triple point is reached (5.2 bar absolute pressure or 4.2 bar gauge pressure), you may continue charging with R744 in liquid state.

- In case recharge is required, see the nameplate of the unit. It states the type of refrigerant and necessary amount.

### 3 Specific installer safety instructions

- The unit is factory charged with refrigerant and depending on pipe sizes and pipe lengths some systems require additional charging of refrigerant.
- Only use R744 (CO<sub>2</sub>) as refrigerant. Other substances may cause explosions and accidents.
- Do NOT charge liquid refrigerant directly from a gas line. Liquid compression could cause compressor operation failure.
- Only use tools exclusively for the refrigerant type used in the system, this to ensure pressure resistance and prevent foreign materials from entering into the system.
- Open refrigerant cylinders slowly.



#### CAUTION

When the refrigerant charging procedure is done or when pausing, close the valve of the refrigerant tank immediately. If the valve is NOT closed immediately, remaining pressure might charge additional refrigerant.

**Possible consequence:** Incorrect refrigerant amount.

## 2.2.4 Electrical



#### DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- 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.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.



#### WARNING

If NOT factory installed, a main switch or other means for disconnection, having a contact separation in all poles providing full disconnection under overvoltage category III condition, MUST be installed in the fixed wiring.



#### WARNING

- ONLY use copper wires.
- Make sure the field wiring complies with the applicable legislation.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electrical shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.



#### CAUTION

- When connecting the power supply: connect the earth cable first, before making the current-carrying connections.
- When disconnecting the power supply: disconnect the current-carrying cables first, before separating the earth connection.
- The length of the conductors between the power supply stress relief and the terminal block itself MUST be as such that the current-carrying wires are tightened before the earth wire is in case the power supply is pulled loose from the stress relief.



#### NOTICE

Precautions when laying power wiring:



- Do NOT connect wiring of different thicknesses to the power terminal block (slack in the power wiring may cause abnormal heat).
- When connecting wiring which is the same thickness, do as shown in the figure above.
- For wiring, use the designated power wire and connect firmly, then secure to prevent outside pressure being exerted on the terminal board.
- Use an appropriate screwdriver for tightening the terminal screws. A screwdriver with a small head will damage the head and make proper tightening impossible.
- Over-tightening the terminal screws may break them.

Install power cables at least 1 meter away from televisions or radios to prevent interference. Depending on the radio waves, a distance of 1 meter may NOT be sufficient.



#### WARNING

- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.



#### NOTICE

ONLY applicable if the power supply is three-phase, and the compressor has an ON/OFF starting method.

If there exists the possibility of reversed phase after a momentary black out and the power goes ON and OFF while the product is operating, attach a reversed phase protection circuit locally. Running the product in reversed phase can break the compressor and other parts.

## 3 Specific installer safety instructions

Always observe the following safety instructions and regulations.



#### CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.

### 3 Specific installer safety instructions

#### General installation requirements



##### WARNING

Installation shall be done by an installer, the choice of materials and installation shall comply with the applicable legislation. In Europe, EN378 is the applicable standard.



##### WARNING

- Make sure to install all necessary countermeasures in case of refrigerant leakage according to standard EN378 (see ["16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant"](#) [p 20]).
- Make sure to install a CO<sub>2</sub> leak detector (field supply) and enable the function for refrigerant leak detection (see ["20.1 Field setting"](#) [p 31]).



##### WARNING

Make sure installation, servicing, maintenance, repair and applied materials follow the instructions from Daikin and, in addition, comply with applicable legislation and are performed by qualified persons only. In Europe and areas where IEC standards apply, EN/IEC 60335-2-40 is the applicable standard.

Installation site (see ["16.1 Preparing the installation site"](#) [p 18])



##### CAUTION

Appliance NOT accessible to the general public, install it in a secured area, protected from easy access.

This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment.



##### CAUTION

Excessive concentrations of refrigerant R744 (CO<sub>2</sub>) in a closed room can lead to unconsciousness and oxygen deficiency. Take appropriate measures.

See ["To determine the minimum number of appropriate measures"](#) [p 21].



##### CAUTION

This equipment is NOT intended for use in residential locations and will NOT guarantee to provide adequate protection to radio reception in such locations.



##### WARNING

In case of mechanical ventilation, take care the ventilated air is exhausted to the outdoor space and NOT into another closed area.



##### WARNING

Install the unit ONLY in locations where the doors of the occupied space are NOT tight fitting.



##### WARNING

When using safety shut-off valves, make sure to install measures such as a bypassing piping with a pressure relief valve (from liquid pipe to gas pipe). When the safety shut-off valves close and no measures are installed, increased pressure may damage the liquid piping.

Refrigerant piping installation (see ["17 Piping installation"](#) [p 25])



##### CAUTION

Install the refrigerant piping or components in a position where they are unlikely to be exposed to any substance which may corrode components containing refrigerant, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.



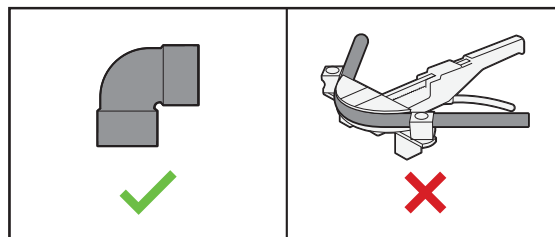
##### WARNING

- Use K65 piping for high-pressure applications with a working pressure of 120 bar or 90 bar, depending on its location in the system.
- Use K65 unions and fittings approved for a working pressure of 120 bar or 90 bar, depending on its location in the system.
- ONLY brazing is allowed for connection of pipes. No other types of connections are allowed.
- Expanding of pipes is NOT allowed.



##### CAUTION

NEVER bend high pressure piping! Bending can reduce the pipe thickness and thus weaken the piping. ALWAYS use K65 fittings.



Electrical installation (see ["18 Electrical installation"](#) [p 27])



##### WARNING

ALWAYS use multicore cable for power supply cables.



##### 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

- If the power supply has a missing or wrong N-phase, equipment might break down.
- Establish proper earthing. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shock.
- Install the required fuses or circuit breakers.
- Secure the electrical wiring with cable ties so that the cables do NOT come into contact with sharp edges or piping, particularly on the high-pressure side.
- Do NOT use taped wires, stranded conductor wires, extension cords, or connections from a star system. They can cause overheating, electrical shock or fire.





### 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.

Commissioning (see "[19 Commissioning](#)" [p. 30])



### WARNING

If the panels on the indoor units are not installed yet, make sure to power OFF the system after finishing the test run. To do so, turn OFF operation via the user interface. Do NOT stop operation by turning OFF the circuit breakers.

## For the user

## 4 User safety instructions

Always observe the following safety instructions and regulations.

### 4.1 General



### WARNING

If you are NOT sure how to operate the unit, contact your installer.



### WARNING

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children SHALL NOT play with the appliance.

Cleaning and user maintenance SHALL NOT be made by children without supervision.



### WARNING

To prevent electrical shocks or fire:

- Do NOT rinse the unit.
- Do NOT operate the unit with wet hands.
- Do NOT place any objects containing water on the unit.



### CAUTION

- Do NOT place any objects or equipment on top of the unit.

- Do NOT sit, climb or stand on the unit.

- Units are marked with the following symbol:



This means that electrical and electronic products may NOT be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts MUST be done by an authorised installer and MUST comply with applicable legislation.

Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

- Batteries are marked with the following symbol:



This means that the batteries may NOT be mixed with unsorted household waste. If a chemical symbol is printed beneath the symbol, this chemical symbol means that the battery contains a heavy metal above a certain concentration.

Possible chemical symbols are: Pb: lead (>0.004%).

Waste batteries MUST be treated at a specialised treatment facility for reuse. By ensuring waste batteries are disposed of correctly, you will help to prevent potential negative consequences for the environment and human health.

### 4.2 Instructions for safe operation



### WARNING

Do NOT modify, disassemble, remove, reinstall or repair the unit yourself as incorrect dismantling or installation may cause an electrical shock or fire. Contact your dealer.



### CAUTION

If this unit is equipped with an electrically powered safety measure, such as a CO<sub>2</sub> refrigerant leak detector

## 4 User safety instructions

(field supply), in order to be effective, the unit must be electrically powered at all times after installation, except for short service periods.

### CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.

### CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT remove the front panel. Some parts inside are dangerous to touch and appliance problems may happen. For checking and adjusting the internal parts, contact your dealer.

### WARNING

This unit contains electrical and hot parts.

### WARNING

Before operating the unit, be sure the installation has been carried out correctly by an installer.

### CAUTION

It is unhealthy to expose your body to the air flow for a long time.

### CAUTION

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the system.

### CAUTION

Do NOT operate the system when using a room fumigation-type insecticide. Chemicals could collect in the unit, and endanger the health of people who are hypersensitive to chemicals.

### CAUTION

NEVER expose little children, plants or animals directly to the airflow.

### WARNING

Do NOT place objects below the indoor and/or outdoor unit that may get wet. Otherwise condensation on the main unit or refrigerant pipes, air filter dirt or drain blockage may cause dripping, and objects under the unit may get dirty or damaged.

### WARNING

Do NOT place a flammable spray bottle near the air conditioner and do NOT use sprays near the unit. Doing so may result in a fire.

Maintenance and service (see "10 Maintenance and service" ▶ 12)

### WARNING: ⇄•⇄ System contains refrigerant under very high pressure.

The system MUST be serviced by qualified persons ONLY.

### CAUTION: Pay attention to the fan!

It is dangerous to inspect the unit while the fan is running.

Make sure to turn OFF the main switch before executing any maintenance task.

### WARNING

NEVER replace a fuse with a fuse of a wrong ampere ratings or other wires when a fuse blows out. Use of wire or copper wire may cause the unit to break down or cause a fire.

### CAUTION

After a long use, check the unit stand and fitting for damage. If damaged, the unit may fall and result in injury.

### CAUTION

Before accessing terminal devices, make sure to interrupt all power supply.





### **DANGER: RISK OF ELECTROCUTION**

To clean the air conditioner or air filter, be sure to stop operation and turn all power supplies OFF. Otherwise, an electrical shock and injury may result.



### **WARNING**

Be careful with ladders when working in high places.



### **WARNING**

Do NOT let the indoor unit get wet.  
**Possible consequence:** Electrical shock or fire.

About the refrigerant (see "[10.5 About the refrigerant](#)" [► 14])



### **WARNING**

- Do NOT pierce or burn refrigerant cycle parts.
- Be aware that the refrigerant inside the system is odourless.



### **WARNING**

The R744 refrigerant (CO<sub>2</sub>) inside the unit is odourless, non-flammable and normally does NOT leak.

ALWAYS install a CO<sub>2</sub> detector according to the specifications of standard EN378.

If the refrigerant leaks in high concentrations in the room, it may have negative effects on its occupants such as asphyxiation and carbon dioxide poisoning. Ventilate the room and contact the dealer where you purchased the unit (see "[10.5.1 About refrigerant leak detection](#)" [► 14]).

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

Troubleshooting (see "[11 Troubleshooting](#)" [► 15])



### **WARNING**

**Stop operation and shut OFF the power if anything unusual occurs (burning smells etc.).**

Leaving the unit running under such circumstances may cause breakage, electrical shock or fire. Contact your dealer.

## 5 About the system



### **NOTICE**

The appliance shall be stored so as to prevent mechanical damage.



### **WARNING**

Do NOT modify, disassemble, remove, reinstall or repair the unit yourself as incorrect dismantling or installation may cause an electrical shock or fire. Contact your dealer.



### **NOTICE**

Do NOT use the system for other purposes. In order to avoid any quality deterioration, do NOT use the unit for cooling precision instruments, food, plants, animals, or works of art.



### **NOTICE**

For future modifications or expansions of your system:

A full overview of allowable combinations (for future system extensions) is available in technical engineering data and should be consulted. Contact your installer to receive more information and professional advice.



### **CAUTION**

If this unit is equipped with an electrically powered safety measure, such as a CO<sub>2</sub> refrigerant leak detector (field supply), in order to be effective, the unit must be electrically powered at all times after installation, except for short service periods.

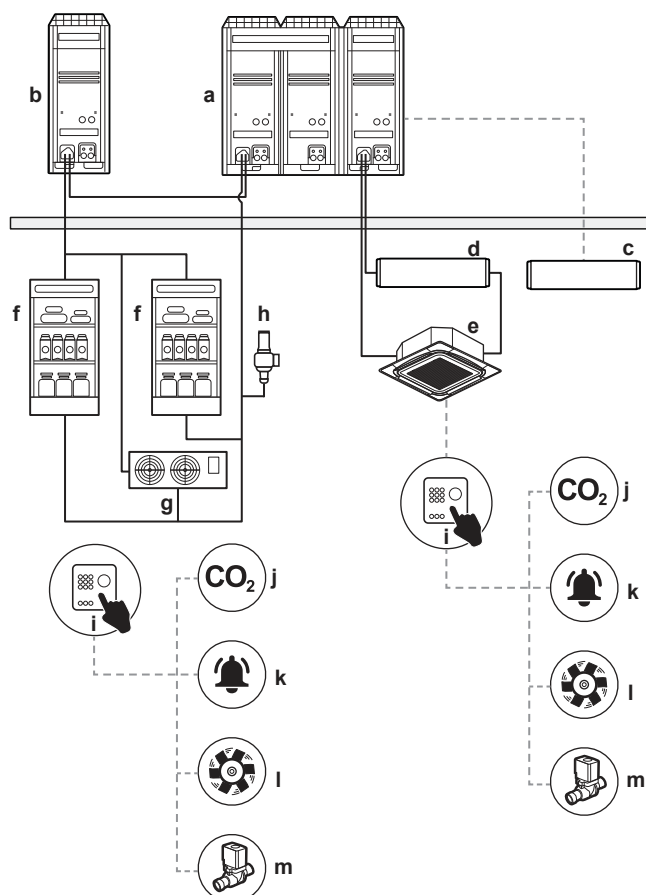
## 5.1 System layout



### **INFORMATION**

The following illustration is an example and might NOT match your system layout.

## 6 User interface



- a Main outdoor unit (LRYEN10\*)
- b Capacity up unit (LRNUN5\*)
- c Communication box (BRR9B1V1)
- d BEV2 unit
- e Indoor unit for air conditioning
- f Indoor unit for refrigeration (showcase)
- g Indoor unit for refrigeration (blower coil)
- h Safety valve
- i CO<sub>2</sub> control panel
- j CO<sub>2</sub> detector
- k CO<sub>2</sub> alarm
- l CO<sub>2</sub> ventilator
- m Shut-off valve



### INFORMATION

- Maximum installation distance between the indoor unit and the BEV2 unit depends on the length of attached transmission and power supply cables.
- Make sure to install the units so the cables reach both units terminals.
- Maximum installation height difference between the indoor unit and the BEV2 unit is ≤0.5 m.

## 5.2 Information requirements for fan coil units

Item	Symbol	Value	Unit
Cooling capacity (sensible)	P <sub>rated,c</sub>	A	kW
Cooling capacity (latent)	P <sub>rated,c</sub>	B	kW
Heating capacity	P <sub>rated,h</sub>	C	kW
Total electric power input	P <sub>elec</sub>	D	kW
Sound power level (cooling)	L <sub>WA</sub>	E	dB(A)
Sound power level (heating)	L <sub>WA</sub>	F	dB(A)

Contact details:

DAIKIN INDUSTRIES CZECH REPUBLIC s.r.o. U Nové Hospody  
1/1155, 301 00 Plzeň Skvrňany, Czech Republic

	A	B	C	D	E	F
FXFN50A	4.1	1.5	6.3	0.3	53	54
FXFN71A	5.8	2.2	9	0.6	58	59
FXFN112A	8.7	3.8	14	1.2	63	64

## 6 User interface



### CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT remove the front panel. Some parts inside are dangerous to touch and appliance problems may happen. For checking and adjusting the internal parts, contact your dealer.



### NOTICE

Do NOT wipe the controller operation panel with benzine, thinner, chemical dust cloth, etc. The panel may get discoloured or the coating peeled off. If it is heavily dirty, soak a cloth in water-diluted neutral detergent, squeeze it well and wipe the panel clean. Wipe it with another dry cloth.



### NOTICE

NEVER press the button of the user interface with a hard, pointed object. The user interface may be damaged.



### NOTICE

NEVER pull or twist the electric wire of the user interface. It may cause the unit to malfunction.

This operation manual offers a non-exhaustive overview of the main functions of the system.

For more information about the user interface, see the operation manual of the installed user interface.

## 7 Before operation



### WARNING

This unit contains electrical parts.



### WARNING

Before operating the unit, be sure the installation has been carried out correctly by an installer.



### CAUTION

It is unhealthy to expose your body to the air flow for a long time.



### CAUTION

To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the system.



### CAUTION

Do NOT operate the system when using a room fumigation-type insecticide. Chemicals could collect in the unit, and endanger the health of people who are hypersensitive to chemicals.

This operation manual is for the following systems with standard control. Before initiating operation, contact your dealer for the operation that corresponds to your system type and mark. If your installation has a customised control system, ask your dealer for the operation that corresponds to your system.

## 8 Operation

### 8.1 Operation range

Use the system in the following temperature and humidity ranges for safe and effective operation.

	Cooling and drying	Heating
Outdoor unit	−5~43°C DB	−20~16°C WB
Indoor unit	14~24°C WB	15~27°C DB
Indoor humidity	≤80% <sup>(a)</sup>	—

<sup>(a)</sup> To avoid condensation and water dripping out of the unit. If the temperature or the humidity is beyond these conditions, safety devices may be put in action and the air conditioner may not operate.

### 8.2 About operation modes



#### INFORMATION

Depending on the installed system, some operation modes will not be available.

- The air flow rate may adjust itself depending on the room temperature or the fan may stop immediately. This is not a malfunction.
- If the main power supply is turned off during operation, operation will restart automatically after the power turns back on again.
- **Setpoint.** Target temperature for the Cooling, Heating, and Auto operation modes.
- **Setback.** A function that keeps the room temperature in a specific range when the system is turned off (by the user, the schedule function, or the OFF timer).

#### 8.2.1 Basic operation modes

The indoor unit can operate in various operation modes.

Icon	Operation mode
	<b>Cooling.</b> In this mode, cooling will be activated as required by the setpoint, or by Setback operation.
	<b>Heating.</b> In this mode, heating will be activated as required by the setpoint, or by Setback operation.
	<b>Fan only.</b> In this mode, air circulates without heating or cooling.
	<b>Dry.</b> In this mode, the air humidity will be lowered with a minimal temperature decrease.  The temperature and fan speed are controlled automatically and cannot be controlled by the controller.  Dry operation will not function if the room temperature is too low.
	<b>Auto.</b> In Auto mode, the indoor unit automatically switches between heating and cooling mode, as required by the setpoint.

#### 8.2.2 Special heating operation modes

Operation	Description
<b>Defrost</b>	To prevent a loss of heating capacity due to frost accumulation in the outdoor unit, the system will automatically switch to defrost operation.  During defrost operation, the indoor unit fan will stop operation, and the following icon will appear on the home screen:   The system will resume normal operation after approximately 6 to 8 minutes.
<b>Hot start</b>	During hot start, the indoor unit fan will stop operation, and the following icon will appear on the home screen: 

#### 8.2.3 Adjusting the airflow direction

The following airflow directions can be set:

Direction	Screen
<b>Fixed position.</b> The indoor unit blows air in 1 of 5 fixed positions.	
<b>Swing.</b> The indoor unit alternates between the 5 positions.	
<b>Auto.</b> The indoor unit adjusts its airflow direction according to movement sensed by a movement sensor.	



#### INFORMATION

Depending on system layout and organisation, Auto airflow direction may not be available.



#### INFORMATION

For setting procedure of the airflow direction, see the reference guide or the manual of the used user interface.

#### Automatic airflow control

In the following operating conditions, the airflow direction of the indoor units is controlled automatically:

- When the room temperature is higher than the controller's setpoint for heating operation (including auto operation).
- When the indoor units run in heating operation mode, and the Defrost function is active.
- When the indoor units run in Continuous operation, and the airflow direction is Horizontal.

## 9 Energy saving and optimum operation



### WARNING

NEVER touch the air outlet or the horizontal blades while the swing flap is in operation. Fingers may become caught or the unit may break down.



### NOTICE

Avoid operating in the horizontal direction. It may cause dew or dust to settle on the ceiling or flap.

### 8.2.4 Active circulation airflow

Use active circulation airflow to heat or cool the room more quickly.



### INFORMATION

For setting procedure of the active circulation airflow, see the reference guide or the manual of the used user interface.

## 8.3 To operate the system



### INFORMATION

For setting of the operation mode, airflow direction, active circulation airflow or other settings, see the reference guide or operation manual of the user interface.

## 9 Energy saving and optimum operation



### CAUTION

NEVER expose little children, plants or animals directly to the airflow.



### NOTICE


Do NOT place objects below the indoor and/or outdoor unit that may get wet. Otherwise condensation on the unit or refrigerant pipes, air filter dirt or drain blockage may cause dripping, and objects under the unit may get dirty or damaged.



### WARNING

Do NOT place a flammable spray bottle near the air conditioner and do NOT use sprays near the unit. Doing so may result in a fire.

Observe the following precautions to ensure the system operates properly.


- Prevent direct sunlight from entering a room during cooling operation by using curtains or blinds.
- Make sure the area is well ventilated. Do NOT block any ventilation openings.
- Ventilate often. Extended use requires special attention to ventilation.
- Keep doors and windows closed. If the doors and windows remain open, air will flow out of your room causing a decrease in the cooling or heating effect.
- Be careful NOT to cool or heat too much. To save energy, keep the temperature setting at a moderate level.
- NEVER place objects near the air inlet or the air outlet of the unit. Doing so may cause a reduced heating/cooling effect or stop operation.
- When the display shows  (time to clean the air filter), clean the filters (see "10.2.1 To clean the air filter" [p 13]).

- Condensation may form if the humidity is above 80% or if the drain outlet gets blocked.
- Adjust the air outlet properly and avoid direct air flow to room inhabitants.

## 10 Maintenance and service

### 10.1 Precautions for maintenance and service



**WARNING:**  System contains refrigerant under very high pressure.

The system MUST be serviced by qualified persons ONLY.



### NOTICE

Maintenance MUST be done by an authorised installer or service agent.

We recommend performing maintenance at least once a year. However, applicable legislation might require shorter maintenance intervals.



### CAUTION: Pay attention to the fan!

It is dangerous to inspect the unit while the fan is running.

Make sure to turn OFF the main switch before executing any maintenance task.



### CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. When the fan is rotating at high speed, it will cause injury.



### NOTICE

NEVER inspect or service the unit by yourself. Ask a qualified service person to perform this work. However, as end user, you may clean the air filter, suction grille, air outlet and outside panels.



### WARNING

NEVER replace a fuse with a fuse of a wrong ampere ratings or other wires when a fuse blows out. Use of wire or copper wire may cause the unit to break down or cause a fire.



### CAUTION

After a long use, check the unit stand and fitting for damage. If damaged, the unit may fall and result in injury.



### NOTICE

Do NOT wipe the controller operation panel with benzine, thinner, chemical dust cloth, etc. The panel may get discoloured or the coating peeled off. If it is heavily dirty, soak a cloth in water-diluted neutral detergent, squeeze it well and wipe the panel clean. Wipe it with another dry cloth.



### CAUTION

Before accessing terminal devices, make sure to interrupt all power supply.



### DANGER: RISK OF ELECTROCUTION

To clean the air conditioner or air filter, be sure to stop operation and turn all power supplies OFF. Otherwise, an electrical shock and injury may result.



## WARNING

Be careful with ladders when working in high places.

Following symbols may occur on the indoor unit:

Symbol	Explanation
	Measure the voltage at the terminals of main circuit capacitors or electrical components before servicing.

## 10.2 Cleaning the air filter, suction grille, air outlet and outside panels



## CAUTION

Turn off the unit before cleaning the air filter, suction grille, air outlet and outside panels.

### 10.2.1 To clean the air filter

#### When to clean the air filter:

- Rule of thumb: Clean every 6 months. If the air in the room is extremely contaminated, increase the cleaning frequency.
- Depending on the settings, the user interface can display the "Time to clean filter" notification. Clean the air filter when the notification is displayed.
- If the dirt becomes impossible to clean, change the air filter (= optional equipment).

#### How to clean the air filter:

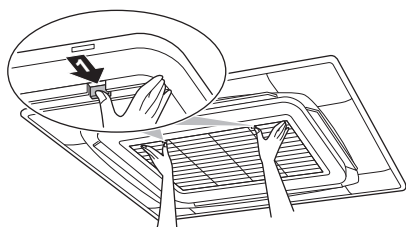


## NOTICE

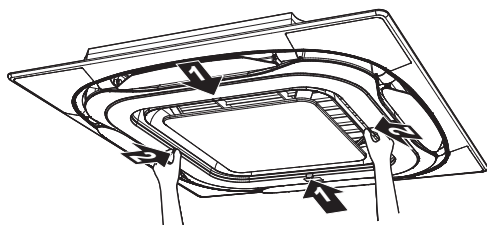
Do NOT use water of 50°C or higher. **Possible consequence:** Discoloration and deformation.

- 1 Open the suction grille.

#### Standard panel:

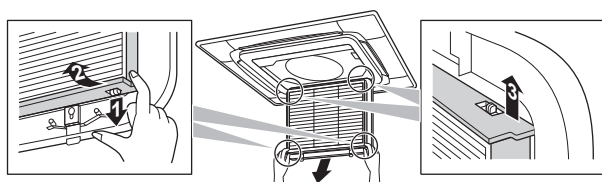


#### Design panel:

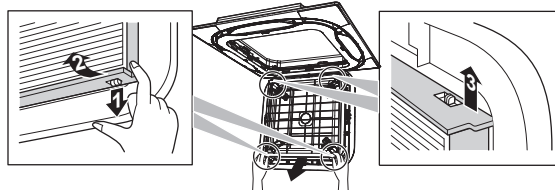


- 2 Remove the air filter.

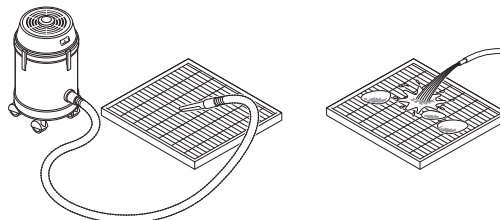
#### Standard panel:



#### Design panel:



- 3 Clean the air filter. Use a vacuum cleaner or wash with water. If the air filter is very dirty, use a soft brush and neutral detergent.



- 4 Dry the air filter in the shadow.
- 5 Reattach the air filter and close the suction grille.
- 6 Turn ON the power.
- 7 To remove warning screens, see the reference guide of the user interface.

### 10.2.2 To clean the suction grille

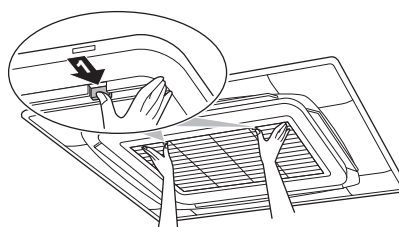


## NOTICE

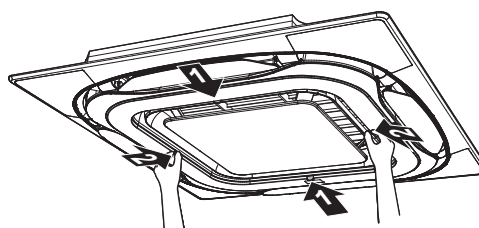
Do NOT use water of 50°C or higher. **Possible consequence:** Discoloration and deformation.

- 1 Open the suction grille.

#### Standard panel:

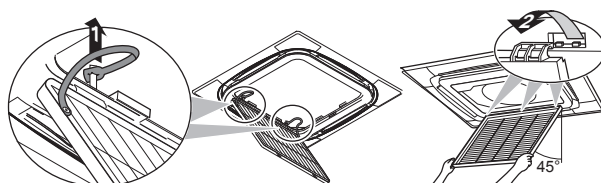


#### Design panel:



- 2 Remove the suction grille.

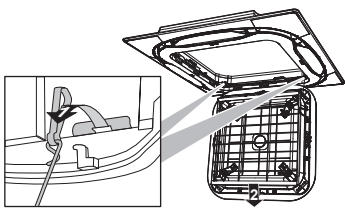
#### Standard panel:



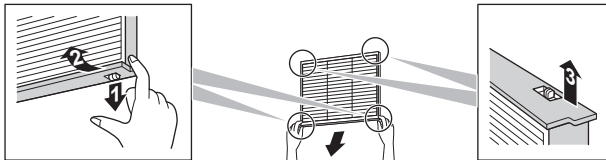


## 10 Maintenance and service

Design panel:



- 3 Remove the air filter.



- 4 Clean the suction grille. Wash with a soft bristle brush, and water or neutral detergent. If the suction grille is very dirty, use a typical kitchen cleaner, leave it on for 10 min, then wash it with water.
- 5 Reattach the air filter (step 3 in reverse order).
- 6 Reattach the suction grille and close it (step 2 and 1 in reverse order).

### 10.2.3 To clean the air outlet and outside panels



#### WARNING

Do NOT let the indoor unit get wet. **Possible consequence:** Electrical shock or fire.



#### NOTICE

- Do NOT use gasoline, benzene, thinner polishing powder or liquid insecticide. **Possible consequence:** Discoloration and deformation.
- Do NOT use water or air of 50°C or higher. **Possible consequence:** Discoloration and deformation.
- Do NOT scrub firmly when washing the blade with water. **Possible consequence:** The surface sealing peels off.

Clean with a soft cloth. If it is difficult to remove stains, use water or neutral detergent.

### 10.3 Maintenance before a long stop period

E.g., at the end of the season.

- Let the indoor units run in fan only operation for about half a day in order to dry the interior of the units.
- Clean air filters and casings of indoor units (see "[10.2.1 To clean the air filter](#)" [p 13] and "[10.2.3 To clean the air outlet and outside panels](#)" [p 14]).
- Remove the batteries from the user interface (if applicable).

### 10.4 Maintenance after a long stop period

E.g., at the beginning of the season.

- Check and remove everything that might be blocking inlet and outlet vents of indoor units and outdoor units.
- Clean air filters and casings of indoor units (see "[10.2.1 To clean the air filter](#)" [p 13] and "[10.2.3 To clean the air outlet and outside panels](#)" [p 14]).
- Insert batteries in the user interface (if applicable).

## 10.5 About the refrigerant

This product contains refrigerant gases.

Refrigerant type: R744 (CO<sub>2</sub>)



#### WARNING

- Do NOT pierce or burn refrigerant cycle parts.
- Be aware that the refrigerant inside the system is odourless.



#### WARNING

The R744 refrigerant (CO<sub>2</sub>) inside the unit is odourless, non-flammable and normally does NOT leak.

ALWAYS install a CO<sub>2</sub> detector according to the specifications of standard EN378.


If the refrigerant leaks in high concentrations in the room, it may have negative effects on its occupants such as asphyxiation and carbon dioxide poisoning. Ventilate the room and contact the dealer where you purchased the unit (see "[10.5.1 About refrigerant leak detection](#)" [p 14]).

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

### 10.5.1 About refrigerant leak detection

In order to detect refrigerant leaks, a CO<sub>2</sub> refrigerant leak detector (field supply) MUST be installed. The CO<sub>2</sub> refrigerant leak detector may require annual tests. For more details, see the documentation of the installed device.

#### In case a CO<sub>2</sub> refrigerant leak is detected

- the fan of the indoor unit is stopped to prevent the refrigerant from being spread,
- the user interface displays error code A0 or U9 (  for the Madoka; to display error codes, refer to the reference guide of the Madoka),
- a warning sound will come from the user interface ( only for Madoka with buzzer, see option list) or from another safety alarm in combination with a CO<sub>2</sub> refrigerant leak detector (field supply).

#### Actions required by the user

- Ventilate the room and immediately contact the dealer where you purchased the unit. Do NOT use the unit before the fault is fixed.

#### Actions required by the installer or the service person



#### INFORMATION

During detection of the refrigerant leakage, the contact between terminals T1 and T2 disconnects. During normal operation, the contact between terminals T1 and T2 is closed (acting as a short circuit).

- If field supplied stop-valves are NOT installed: Close the stop valves of the gas and liquid pipe on the outdoor unit.
- If field supplied shut-off valves are installed: If the refrigerant leak to the room has stopped, you can use the air conditioner for other rooms where the refrigerant leak did NOT occur.
- Locate and repair the cause of the refrigerant leak. If necessary, replace the indoor unit.
- Refill the refrigerant if needed.
- Perform manual power reset and resume operation.





### NOTICE

After the refrigerant leakage is detected, the unit will send a signal at regular intervals to confirm if the CO<sub>2</sub> concentration is at a safe level. Even when the CO<sub>2</sub> concentration is at a safe level, do NOT resume operation before the fault is fixed and the refrigerant is refilled.

## 11 Troubleshooting

If one of the following malfunctions occur, take the measures shown below and contact your dealer.





### WARNING

**Stop operation and shut OFF the power if anything unusual occurs (burning smells etc.).**

Leaving the unit running under such circumstances may cause breakage, electrical shock or fire. Contact your dealer.

The system MUST be repaired by a qualified service person.

Malfunction	Measure
If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates or the ON/OFF switch does NOT function properly.	Turn OFF all main power supply switches to the unit.
If water leaks from the unit.	Stop operation.
The operation switch does NOT function properly.	Turn OFF the power supply.
If the user interface displays  or an error code.	Notify your installer and report the error code. To display error codes, see the reference guide of the user interface.
The user interface displays error code A0 or U9 (or  ) , the fan stops and you can hear a warning sound from the user interface (in case of Madoka) or from another safety alarm in combination with a gas detection device (if installed).	A refrigerant leak may be detected (see "10.5.1 About refrigerant leak detection" ▶ 14).

If the system does NOT operate properly except for the above mentioned cases and none of the above mentioned malfunctions is evident, investigate the system in accordance with the following procedures.

Malfunction	Measure
If the system does not operate at all.	<ul style="list-style-type: none"> <li>Check if there is no power failure. Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after power is restored.</li> <li>Check if no fuse has blown or breaker is activated. Change the fuse or reset the breaker if necessary.</li> </ul>

Malfunction	Measure
The system operates but cooling or heating is insufficient.	<ul style="list-style-type: none"> <li>Check if air inlet or outlet of outdoor or indoor unit is not blocked by obstacles. Remove any obstacles and make sure the air can flow freely.</li> <li>Check if the air filter is not clogged (see "10.2.1 To clean the air filter" ▶ 13).</li> <li>Check the temperature setting.</li> <li>Check the fan speed setting on your user interface.</li> <li>Check for open doors or windows. Close doors and windows to prevent wind from coming in.</li> <li>Check if there are too many occupants in the room during cooling operation. Check if the heat source of the room is excessive.</li> <li>Check if direct sunlight enters the room. Use curtains or blinds.</li> <li>Check if the air flow angle is proper.</li> </ul>

If after checking all above items, it is impossible to fix the problem yourself, contact your installer and state the symptoms, the complete model name of the unit (with manufacturing number if possible) and the installation date (possibly listed on the warranty card).

## 11.1 Symptoms that are NOT system malfunctions

The following symptoms are NOT system malfunctions:

### 11.1.1 Symptom: The system does not operate

- The air conditioner does not start immediately after the ON/OFF button on the user interface is pressed. If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 5 minutes after it is turned ON again in case it was turned OFF just before. The same starting delay occurs after the operation mode selector button was used.
- The system does not start immediately after the power supply is turned on. Wait one minute until the micro computer is prepared for operation.

### 11.1.2 Symptom: The fan speed does not correspond to the setting

The fan speed does not change even if the fan speed adjustment button is pressed. During heating operation, when the room temperature reaches the set temperature, the outdoor unit goes off and the indoor unit changes to high fan speed for a short period of time. This is to accelerate pressure equalisation of the system and to avoid refrigerant accumulation to the heat exchanger.

### 11.1.3 Symptom: The fan direction does not correspond to the setting

The fan direction does not correspond with the user interface display. The fan direction does not swing. This is because the unit is being controlled by the micro computer.

### 11.1.4 Symptom: White mist comes out of a unit (Indoor unit)

- When humidity is high during cooling operation. If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the

## 12 Relocation

interior of the indoor unit. Ask your dealer for details on cleaning the unit. This operation requires a qualified service person.

- Immediately after the cooling operation stops and if the room temperature and humidity are low. This is because warm refrigerant gas flows back into the indoor unit and generates steam.

### 11.1.5 Symptom: White mist comes out of a unit (Indoor unit, outdoor unit)

When the system is changed over to heating operation after defrost operation. Moisture generated by defrost becomes steam and is exhausted.

### 11.1.6 Symptom: The user interface reads "U4" or "U5" and stops, but then restarts after a few minutes

This is because the user interface is intercepting noise from electric appliances other than the air conditioner. The noise prevents communication between the units, causing them to stop. Operation automatically restarts when the noise ceases. A power reset may help to remove this error.

### 11.1.7 Symptom: Noise of air conditioners (Indoor unit)

- A "zeen" sound is heard immediately after the power supply is turned on. The electronic expansion valve inside an indoor unit starts working and makes the noise. Its volume will reduce in about one minute.
- A continuous low "shah" sound is heard when the system is in cooling operation or at a stop. When the drain pump is in operation, this noise is heard.
- A "pishi-pishi" squeaking sound is heard when the system stops after heating operation. Expansion and contraction of plastic parts caused by temperature change make this noise.

### 11.1.8 Symptom: Noise of air conditioners (Indoor unit, outdoor unit)

- A continuous low hissing sound is heard when the system is in cooling or defrost operation. This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- A hissing sound which is heard at the start or immediately after stopping operation or defrost operation. This is the noise of refrigerant caused by flow stop or flow change.

### 11.1.9 Symptom: Dust comes out of the unit

When the unit is used for the first time in a long time. This is because dust has gotten into the unit.

### 11.1.10 Symptom: The units can give off odours

The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

### 11.1.11 Symptom: In winter, indoor unit generates cold air and fan is turned ON regardless of setting

The system went to defrost operation. The fan of the indoor unit is turned ON for correct defrost operation, cold air may be generated during this time period.

## 12 Relocation

Contact your dealer for removing and reinstalling the total unit. Moving units requires technical expertise.

## 13 Disposal



### NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

## For the installer

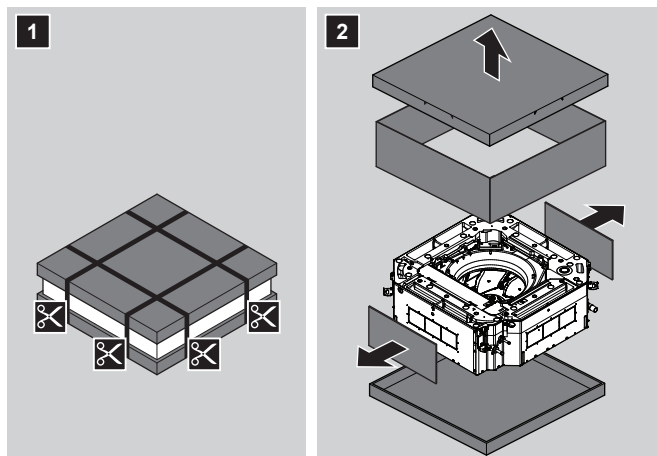
## 14 About the box

### 14.1 Indoor unit

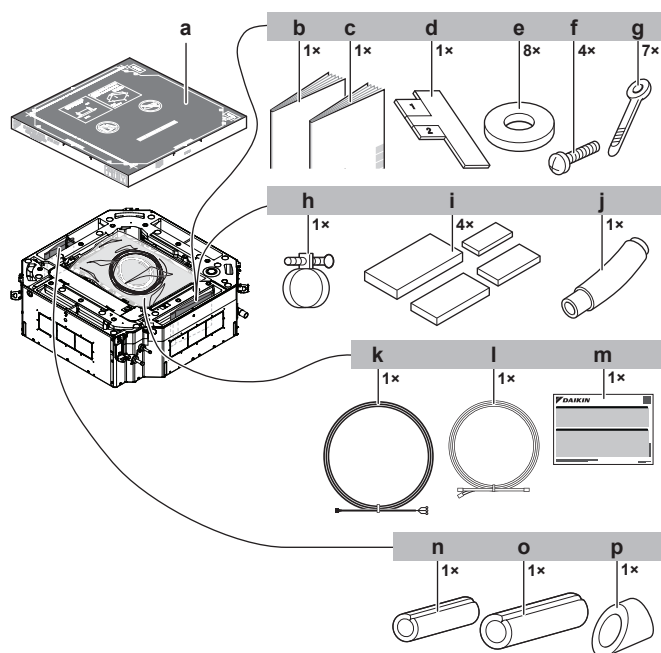
#### 14.1.1 To unpack and handle the unit

Use a sling of soft material or protective plates together with a rope when lifting the unit in order to avoid damage or scratches to the unit.

- 1 Lift the unit by holding on to the hanger brackets without exerting any pressure on other parts, especially on refrigerant piping, drain piping and other resin parts.



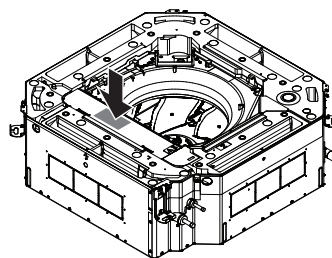
### 14.1.2 To remove the accessories from the indoor unit



- a Paper pattern for installation (top part of packing box)
- b General safety precautions
- c Indoor unit installation and operation manual
- d Installation guide
- e Washers for hanger brackets
- f Screws (to temporarily attach the paper pattern for installation to the indoor unit)
- g Tie wraps
- h Metal clamp
- i Sealing pads: Large (drain pipe), medium 1 (gas pipe), medium 2 (liquid pipe), small (electrical wiring)
- j Drain hose
- k Power supply cable
- l Communication cable
- m Addendum for auto cleaning panel installation manual
- n Insulation piece: Small (liquid pipe)
- o Insulation piece: Large (gas pipe)
- p Insulation piece (drain pipe)

### 15.1.1 Identification label: Indoor unit

Location



## 15.2 About the indoor unit

Use the system in the following temperature and humidity ranges for safe and effective operation.

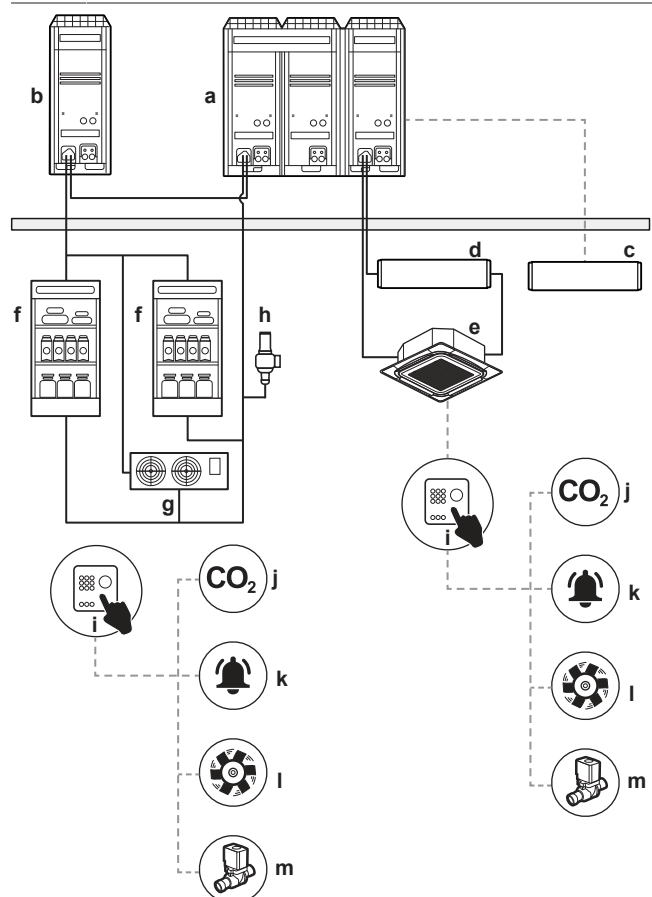
	Cooling and drying	Heating
Outdoor unit	-5~43°C DB	-20~16°C WB
Indoor unit	14~24°C WB	15~27°C DB
Indoor humidity	≤80% <sup>(a)</sup>	—

<sup>(a)</sup> To avoid condensation and water dripping out of the unit. If the temperature or the humidity is beyond these conditions, safety devices may be put in action and the air conditioner may not operate.

## 15.3 System layout

### INFORMATION

The following illustration is an example and might NOT match your system layout.



- a Main outdoor unit (LRYEN10\*)
- b Capacity up unit (LRNUN5\*)
- c Communication box (BRR9B1V1)

## 15 About the units and options

### In this chapter

15.1 Identification	17
15.1.1 Identification label: Indoor unit	17
15.2 About the indoor unit	17
15.3 System layout	17
15.4 Combining units and options	18
15.4.1 Possible options for the indoor unit	18

### 15.1 Identification



#### NOTICE

When installing or servicing several units at the same time, make sure NOT to switch the service panels between different models.

## 16 Unit installation

- d BEV2 unit
- e Indoor unit for air conditioning
- f Indoor unit for refrigeration (showcase)
- g Indoor unit for refrigeration (blower coil)
- h Safety valve
- i CO<sub>2</sub> control panel
- j CO<sub>2</sub> detector
- k CO<sub>2</sub> alarm
- l CO<sub>2</sub> ventilator
- m Shut-off valve



### INFORMATION

- The maximum installation distance between the indoor unit and the BEV2 unit depends on the length of the included transmission and power supply cables.
- Make sure to install the units so the cables reach both units terminals.
- The maximum installation height difference between the indoor unit and the BEV2 unit is ≤0.5 m.

## 15.4 Combining units and options



### INFORMATION

Certain options may NOT be available in your country.

### 15.4.1 Possible options for the indoor unit

Make sure you have the following mandatory options:

- User interface: Wired or wireless (refer to catalogues and technical literature to select a suitable user interface)



### INFORMATION

Madoka with buzzer is a recommended option. In case you use another user interface, an additional safety alarm in combination with a gas detection device (field supply) may be required; see ["16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant"](#) [p 20].

## 16 Unit installation

### In this chapter

16.1	Preparing the installation site.....	18
16.1.1	Installation site requirements of the indoor unit.....	18
16.1.2	Additional installation site requirements for CO <sub>2</sub> refrigerant .....	20
16.2	Mounting the indoor unit.....	22
16.2.1	Guidelines when installing the indoor unit .....	22
16.2.2	Guidelines when installing the drain piping.....	23



### WARNING

Installation shall be done by an installer, the choice of materials and installation shall comply with the applicable legislation. In Europe, EN378 is the applicable standard.



### WARNING

- Make sure to install all necessary countermeasures in case of refrigerant leakage according to standard EN378 (see ["16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant"](#) [p 20]).
- Make sure to install a CO<sub>2</sub> leak detector (field supply) and enable the function for refrigerant leak detection (see ["20.1 Field setting"](#) [p 31]).

## 16.1 Preparing the installation site

Choose an installation location with sufficient space for carrying the unit in and out of the site.

Avoid installation in an environment with a lot of organic solvents such as ink and siloxane.

Do NOT install the unit in places often used as work place. In case of construction works (e.g. grinding works) where a lot of dust is created, the unit MUST be covered.

### 16.1.1 Installation site requirements of the indoor unit



### INFORMATION

Also read the general installation site requirements. See the ["2 General safety precautions"](#) [p 3] chapter.



### INFORMATION

The sound pressure level is less than 70 dBA.



### INFORMATION

Equipment meets the requirement for commercial and light-industrial location when professionally installed and maintained.



### NOTICE

- The professional installer shall evaluate the EMC situation before installation, if the equipment is installed closer than 30 m to a residential location.
- Special installation measures are NOT required to minimize EMC (electro-magnetic) emissions.



### CAUTION

This equipment is NOT intended for use in residential locations and will NOT guarantee to provide adequate protection to radio reception in such locations.



### CAUTION

Appliance NOT accessible to the general public, install it in a secured area, protected from easy access.

This unit, both indoor and outdoor, is suitable for installation in a commercial and light industrial environment.

Do NOT install the unit in the following places:

- In places where a mineral oil mist, spray or vapour may be present in the atmosphere. Plastic parts may deteriorate and fall off or cause water leakage.

It is NOT recommended to install the unit in the following places because it may shorten the life of the unit:

- Where the voltage fluctuates a lot
- In vehicles or vessels
- Where acidic or alkaline vapour is present



### NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.



## NOTICE

The equipment described in this manual may cause electronic noise generated from radio-frequency energy. The equipment complies to specifications that are designed to provide reasonable protection against such interference. However, there is no guarantee that interference will NOT occur in a particular installation.

It is therefore recommended to install the equipment and electric wires in such a way that they keep a proper distance from stereo equipment, personal computers, etc.

In places with weak reception, keep distances of 3 m or more to avoid electromagnetic interference of other equipment and use conduit tubes for power and transmission lines.

- Take care that in the event of a water leak, water cannot cause any damage to the installation space and surroundings.
- Choose a location where the operation noise or the hot/cold air discharged from the unit will not disturb anyone.
- When installing the unit in a small room, take measures in order to keep the refrigerant concentration from exceeding allowable safety limits in the event of a refrigerant leak.

See "16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant" [p 20].



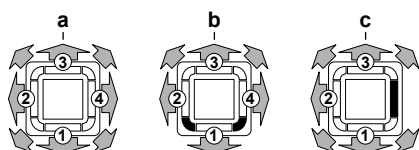
## CAUTION

Excessive concentrations of refrigerant R744 (CO<sub>2</sub>) in a closed room can lead to unconsciousness and oxygen deficiency. Take appropriate measures.

See "To determine the minimum number of appropriate measures" [p 21].

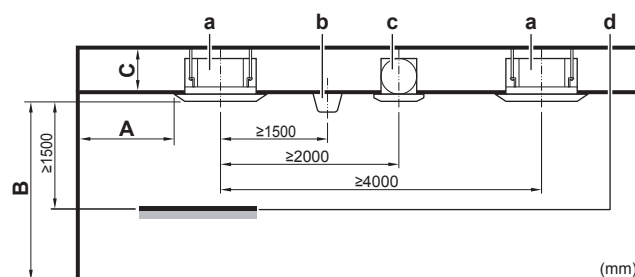
- Air flow.** Make sure nothing blocks the air flow.
- Drainage.** Make sure condensation water can be evacuated properly.
- Paper pattern for installation** (upper part of packing (accessory)). When selecting the installation location, use the paper pattern. It contains the dimensions of the unit and the required ceiling opening.
- Air flow directions.** You can select different air flow directions. Choose the one best suited for the room. For more information, see the installation manual of the optional blocking pad kit.

### Example:



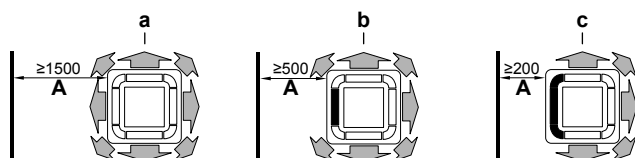
- a All-round air flow
- b 4-way air flow (with closed corners) (optional blocking pad kit required)
- c 3-way air flow (optional blocking pad kit required)

- Ceiling insulation.** When conditions in the ceiling exceed 30°C and a relative humidity of 80%, or when fresh air is inducted into the ceiling, then additional insulation is required (minimum 10 mm thickness, polyethylene foam).
- Spacing.** Mind the following requirements:



- A** Minimum distance to the wall (see below)
- B** Minimum and maximum distance to the floor (see below)
- C** **50~71 class:**  
 ≥269 mm: In case of installation with standard decoration panel  
 ≥311 mm: In case of installation with design decoration panel  
 ≥349 mm: In case of installation with auto cleaning decoration panel  
 ≥319 mm: In case of installation with standard panel + fresh air intake kit  
 ≥361 mm: In case of installation with design panel + fresh air intake kit  
**112 class:**  
 ≥311 mm: In case of installation with standard decoration panel  
 ≥353 mm: In case of installation with design decoration panel  
 ≥391 mm: In case of installation with auto cleaning decoration panel  
 ≥361 mm: In case of installation with standard panel + fresh air intake kit  
 ≥403 mm: In case of installation with design panel + fresh air intake kit  
**a** Indoor unit  
**b** Lighting (the figure shows ceiling-mounted lighting, but recessed lighting is also allowed)  
**c** Air fan  
**d** Static volume (example: table)

- A: Minimum distance to the wall.** Depends on the air flow directions towards the wall.



- a Air outlet and corners open
- b Air outlet closed, corners open (optional blocking pad kit required)
- c Air outlet and corners closed (optional blocking pad kit required)

- B: Minimum and maximum distance to the floor:**

- Minimum: 2.7 m to avoid accidental touching.
- Maximum: Depends on the airflow directions and the capacity class. See "20.1 Field setting" [p 31].



## INFORMATION

Maximum distance to the floor for the 3-way and the 4-way airflow (which require an optional blocking pad kit) may differ. See the installation manual of the optional blocking pad kit.



## INFORMATION

Some options may require additional service space. Refer to the installation manual of the used option before installation.



## Unit installation

### 16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant



#### WARNING

In case of mechanical ventilation, take care the ventilated air is exhausted to the outdoor space and NOT into another closed area.

Refrigerant basic characteristics	
Refrigerant	R744
RCL (refrigerant concentration limit)	0.072 kg/m <sup>3</sup>
QLMV (quantity limit with minimum ventilation)	0.074 kg/m <sup>3</sup>
QLAV (quantity limit with additional ventilation)	0.18 kg/m <sup>3</sup>
Toxicity limit	0.1 kg/m <sup>3</sup>

#### Refrigerant basic characteristics

Safety class	A1
--------------	----

#### Allowable refrigerant charge

The calculation of the allowable refrigerant charge depends on the combination of the "access category" and the "location classification" as described in the following table.



#### INFORMATION

Where the possibility exists of more than one access category, the more stringent requirements apply. If occupied spaces are isolated, e.g. by sealed partitions, floors and ceilings, the requirements of the individual access category apply.

Access category		Location classification			
		I	II	III	IV
General		Toxicity limit × Room volume  or  "Appropriate measures" [p 21]		No charge restriction	The charge shall be assessed according to location I, II or III, depending on the location of the ventilated enclosure
Supervised	Upper floors without emergency exits	Toxicity limit × Room volume  or  "Appropriate measures" [p 21]	No charge restriction		
	Below ground floor level				
	Other				
Authorized	Upper floors without emergency exits	Toxicity limit × Room volume  or  "Appropriate measures" [p 21]	No charge restriction		
	Below ground floor level				
	Other				

#### 16-1 Description of access categories

Access category	Description	Examples
<b>General access</b>	Rooms, parts of buildings, buildings where: <ul style="list-style-type: none"> <li>sleeping facilities are provided;</li> <li>people are restricted in their movements;</li> <li>an uncontrolled number of people are present;</li> <li>any person has access without being personally acquainted with the necessary safety precautions.</li> </ul>	Hospitals, courts or prisons, theatres, supermarkets, schools, lecture halls, public transport terminals, hotels, restaurants.
<b>Supervised access</b>	Rooms, parts of buildings, buildings where only a limited number of people may be assembled, some being necessarily acquainted with the general safety precautions of the location.	Business or professional offices, laboratories, places for general manufacturing and where people work.
<b>Authorized access</b>	Rooms, parts of buildings, buildings where only authorized persons have access, who are acquainted with general and special safety precautions of the location and where manufacturing, processing or storage of material or products take place.	Manufacturing facilities, e.g. for chemicals, food, beverage, ice, ice cream, refineries, cold stores, dairies, abattoirs, non-public areas in supermarkets.

#### 16-2 Description of location classification

Location classification		Description
<b>Class I</b>	Mechanical equipment located within the occupied space	If the refrigerating system or refrigerant-containing parts are located in the occupied space, the system is considered to be of class I, unless the system complies with the requirements of class II.
<b>Class II</b>	Compressors in machinery room or open air	If all compressors and pressure vessels are either located in a machinery room or in the open air, the requirements for a class II location shall apply, unless the system complies with the requirements of class III. Coils and pipework including valves may be located in an occupied space.



Location classification		Description
<b>Class III</b>	Machinery room or open air	If all refrigerant-containing parts are located in a machinery room or in the open air, the requirements for a class III location shall apply. The machinery room shall fulfil the requirements of EN 378-3.
<b>Class IV</b>	Ventilated enclosure	If all refrigerant-containing parts are located in a ventilated enclosure, the requirements for a class IV location shall apply. The ventilated enclosure shall fulfil the requirements of EN 378-2 and EN 378-3.

## Appropriate measures



### INFORMATION

Appropriate measures are field supply. Choose and install all required appropriate measures in accordance with EN 378-3:2016.

- (natural or mechanical) ventilation
- safety shut-off valves
- safety alarm, in combination with a CO<sub>2</sub> refrigerant leak detector (a safety alarm alone is NOT considered an appropriate measure where occupants are restricted in their movements)
- CO<sub>2</sub> refrigerant leak detector



### WARNING

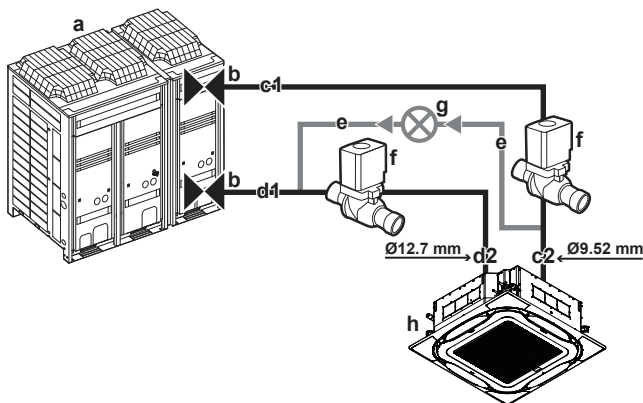
Install the unit ONLY in locations where the doors of the occupied space are NOT tight fitting.



### WARNING

When using safety shut-off valves, make sure to install measures such as a bypassing piping with a pressure relief valve (from liquid pipe to gas pipe). When the safety shut-off valves close and no measures are installed, increased pressure may damage the liquid piping.

**Example:** Install the bypass piping (e) with a pressure relief valve (g) leading from the liquid piping between indoor unit and the shut off valve (c2) to the gas piping between outdoor unit and the shut off valve (d1).



▲ 16-1 Installation layout example

- a Outdoor unit
- b Stop valve on the outdoor unit
- c1 Liquid piping between outdoor unit and the shut off valve
- c2 Liquid piping between indoor unit and the shut off valve
- d1 Gas piping between outdoor unit and the shut off valve
- d2 Gas piping between indoor unit and the shut off valve
- e Bypassing piping
- f Safety shut off valve
- g Pressure relief valve
- h Indoor unit

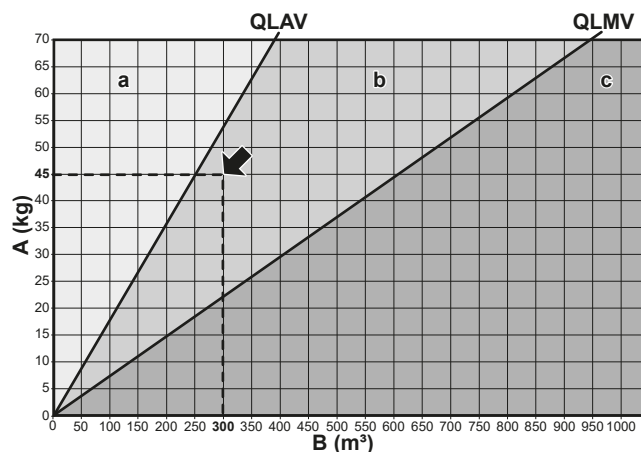
## To determine the minimum number of appropriate measures

For occupancies other than on the lowest underground floor of the building

If the total refrigerant charge (kg) divided by the room volume <sup>(a)</sup> (m <sup>3</sup> ) is...	...the number of appropriate measures must be at least...
<QLMV	0
>QLMV and <QLAV	1
>QLAV	2

<sup>(a)</sup> For occupied spaces with a floor area exceeding 250 m<sup>2</sup>, use 250 m<sup>2</sup> as the floor area for determination of the room volume  
(**Example:** even if the room area is 300 m<sup>2</sup> and the room height is 2.5 m, calculate the room volume as 250 m<sup>2</sup>×2.5 m=625 m<sup>3</sup>)

**Example:** Total refrigerant charge in the system is 45 kg and room volume is 300 m<sup>3</sup>. 45/300=0.15, which is >QLMV (0.074) and <QLAV (0.18), therefore install at least 1 appropriate measure in the room.



▲ 16-2 Example graph for calculation

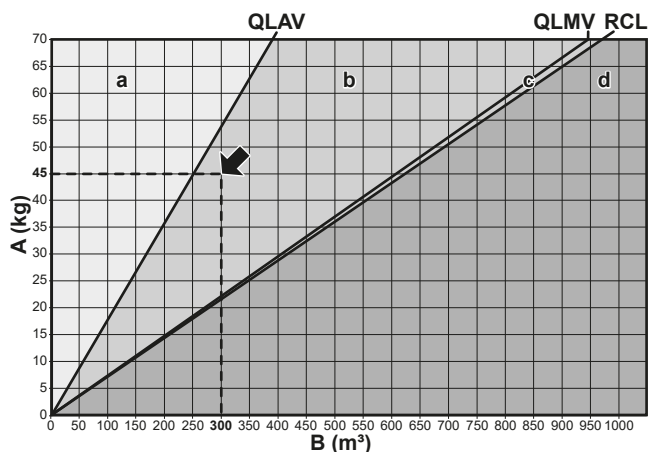
- A Refrigerant charge
- B Room volume
- a 2 appropriate measures required
- b 1 appropriate measure required
- c No measure required

For occupancies on the lowest underground floor of the building

If the total refrigerant charge (kg) divided by the room volume <sup>(a)</sup> (m <sup>3</sup> ) is...	...the number of appropriate measures must be at least...
<RCL	0
>RCL and ≤QLMV	1
>QLMV and <QLAV	2
>QLAV	Value CANNOT be exceeded!

<sup>(a)</sup> For occupied spaces with a floor area exceeding 250 m<sup>2</sup>, use 250 m<sup>2</sup> as the floor area for determination of the room volume  
(**Example:** even if the room area is 300 m<sup>2</sup> and the room height is 2.5 m, calculate the room volume as 250 m<sup>2</sup>×2.5 m=625 m<sup>3</sup>)

**Example:** Total refrigerant change in the system is 45 kg and room volume is 300 m<sup>3</sup>. 45/300=0.15, which is >RCL (0.072) and <QLAV (0.18), therefore install at least 2 appropriate measures in the room.



16-3 Example graph for calculation

- A Refrigerant charge limit
- B Room volume
- a Installation is not allowed
- b 2 appropriate measures required
- c 1 appropriate measure required
- d No measure required



## INFORMATION

Even if there is no refrigerating system on the lowest floor, where the largest system charge (kg) in the building divided by total volume of the lowest floor (m³) exceed the value for QLMV, provide a mechanical ventilation in accordance with EN 378-3:2016.

## Space volume calculation

Take into account following requirements for the space volume calculation:

- The space considered is any space that contains refrigerant-containing parts or into which refrigerant can be released.
- Use the room volume of the smallest, enclosed, occupied space to determine the refrigerant quantity limits.
- Multiple spaces that have appropriate openings (which cannot be closed) between the individual spaces or are connected with a common ventilation supply, return or exhaust system not containing the evaporator or the condenser shall be treated as a single space.
- Where the evaporator or condenser is located in an air supply duct system serving multiple spaces, the volume of the smallest single space shall be used.
- If the airflow to a space cannot be reduced to less than 10% of the maximum airflow using an airflow reducer, then that space shall be included in the volume of the smallest human occupied space.
- For refrigerants of safety class A1, the total volume of all the rooms cooled or heated by air from one system is used as the volume for calculation, if the air supply to each room cannot be restricted below 25% of its full supply.
- For refrigerants of safety class A1, the effect of the air changes may be considered in calculating the volume if the space has a mechanical ventilation system which will be operating during the occupation of the space.
- Where the evaporator or condenser is located in an air supply duct system and the system serves a non-partitioned multi-storey building, the occupied volume of the smallest occupied storey of the building shall be used.
- Include the space above a false ceiling or partition in the volume calculation unless the false ceiling is airtight.
- Where an indoor unit, or any related refrigerant-containing pipework, is located in a space where the total charge exceeds the allowable charge, make special provisions to ensure at least an equivalent level of safety.

## 16.2 Mounting the indoor unit

### 16.2.1 Guidelines when installing the indoor unit



#### INFORMATION

**Optional equipment.** When installing optional equipment, also read the installation manual of the optional equipment. Depending on the field conditions, it might be easier to install the optional equipment first.

- **Decoration panel.** Install the decoration panel always **after** installing the unit.



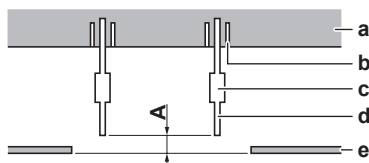
#### NOTICE

After installing the decoration panel:

- Make sure there is no gap between the unit body and the decoration panel. **Possible consequence:** Air might leak and cause dew drop.
- Make sure no oil remains on the plastic parts of the decoration panel. **Possible consequence:** Degradation and damage of plastic parts.

- **Ceiling strength.** Check whether the ceiling is strong enough to support the weight of the unit. If there is a risk, reinforce the ceiling before installing the unit.

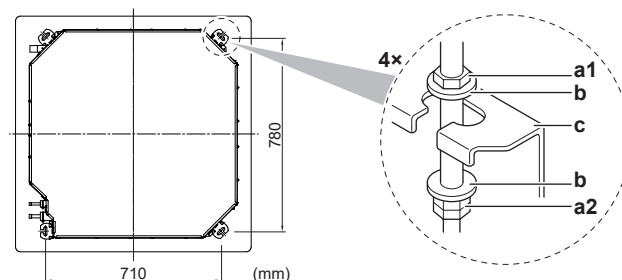
- For existing ceilings, use anchors.
- For new ceilings, use sunken inserts, sunken anchors or other field supplied parts.



- A **50~100 mm:** In case of installation with standard panel
- 100~150 mm:** In case of installation with fresh air intake kit or design panel
- 130~180 mm:** In case of installation with auto cleaning decoration panel

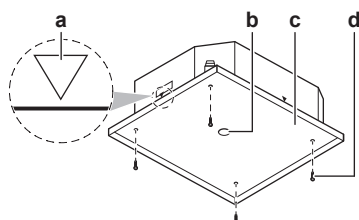
- a Ceiling slab
- b Anchor
- c Long nut or turnbuckle
- d Suspension bolt
- e Suspended ceiling

- **Suspension bolts.** Use M8~M10 suspension bolts for installation. Attach the hanger bracket to the suspension bolt. Fix it securely using a nut and washer from the upper and lower sides of the hanger bracket.



- a1 Nut (field supply)
- a2 Double nut (field supply)
- b Washer (accessories)
- c Hanger bracket (attached to the unit)

- **Paper pattern for installation** (upper part of the packing). Use the paper pattern to determine the correct horizontal positioning. It contains the necessary dimensions and centers. You can attach the paper pattern to the unit.



- a Centre of the unit
- b Centre of the ceiling opening
- c Paper pattern for installation (upper part of the packing)
- d Screws (accessories)

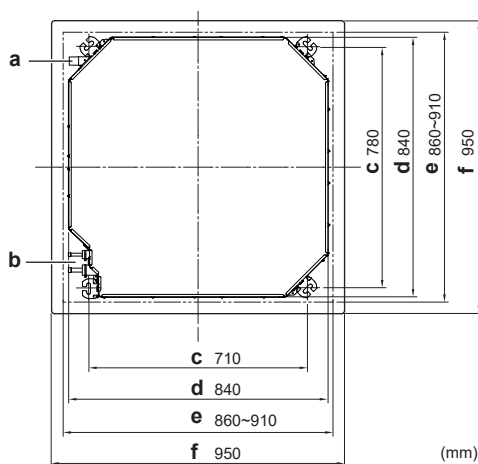
#### ▪ Ceiling opening and unit:

- Make sure the ceiling opening is within the following limits:

**Minimum:** 860 mm to be able to fit the unit.

**Maximum:** 910 mm to ensure enough overlap between the decoration panel and the suspended ceiling. If the ceiling opening is larger, add extra ceiling material.

- Make sure the unit and its hanger brackets (suspension) are centered within the ceiling opening.

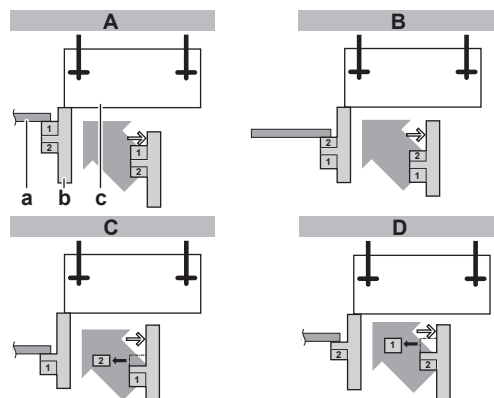


- a Drain piping
- b Refrigerant piping
- c Hanger bracket pitch (suspension)
- d Unit
- e Ceiling opening
- f Decoration panel

Example	If A <sup>(a)</sup>	Then	
		B <sup>(a)</sup>	C <sup>(a)</sup>
	860 mm	10 mm	45 mm
	910 mm	35 mm	20 mm

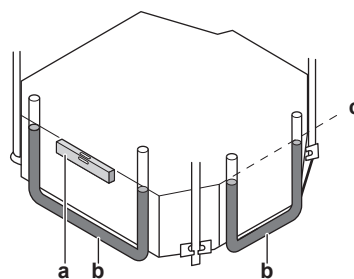
- <sup>(a)</sup> A: Ceiling opening  
 B: Distance between the unit and the ceiling opening  
 C: Overlap between the decoration panel and the suspended ceiling

- **Installation guide.** Use the installation guide to determine the correct vertical position.



- A In case of installation with standard decoration panel
- B In case of installation with fresh air intake kit
- C In case of installation with auto cleaning decoration panel
- D In case of installation with design decoration panel
- a Suspended ceiling
- b Installation guide (accessory)
- c Unit

- **Level.** Make sure the unit is level at all 4 corners using a level or a water-filled vinyl tube.



- a Level
- b Vinyl tube
- c Water level



#### NOTICE

Do NOT install the unit tilted. **Possible consequence:** If the unit is tilted against the direction of the condensate flow (the drain piping side is raised), the float switch might malfunction and cause water to drip.

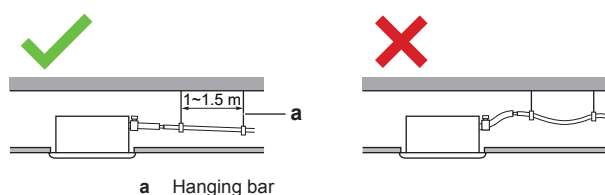
### 16.2.2 Guidelines when installing the drain piping

Make sure condensation water can be evacuated properly. This involves:

- General guidelines
- Connecting the drain piping to the indoor unit
- Checking for water leaks

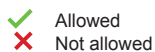
#### General guidelines

- **Pipe length.** Keep drain piping as short as possible.
- **Pipe size.** Keep the pipe size equal to or greater than that of the connecting pipe (vinyl pipe of 25 mm nominal diameter and 32 mm outer diameter).
- **Slope.** Make sure the drain piping slopes down (at least 1/100) to prevent air from being trapped in the piping. Use hanging bars as shown.

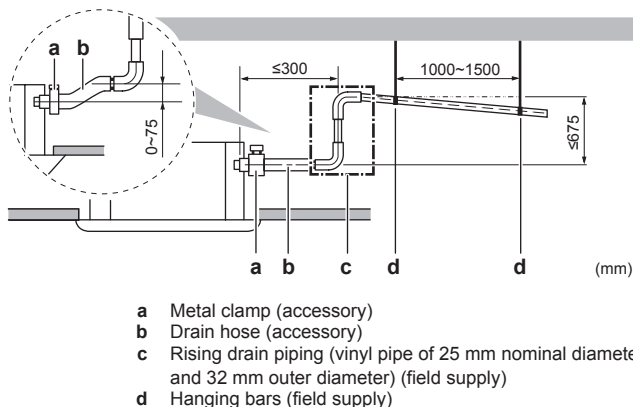


- a Hanging bar

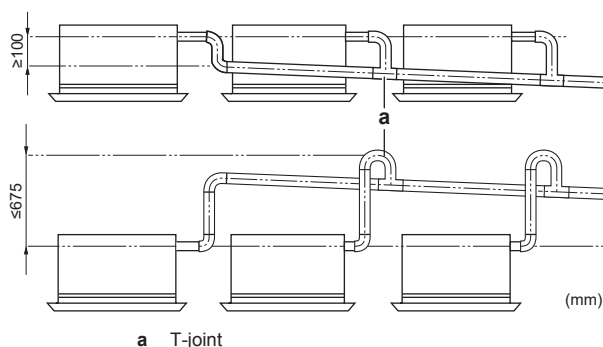
## Unit installation



- **Condensation.** Take measures against condensation. Insulate the complete drain piping in the building.
- **Rising piping.** If necessary to make the slope possible, you can install rising piping.
  - Drain hose inclination: 0~75 mm to avoid stress on the piping and to avoid air bubbles.



- **Combining drain pipes.** You can combine drain pipes. Make sure to use drain pipes and T-joints with a correct gauge for the operating capacity of the units.



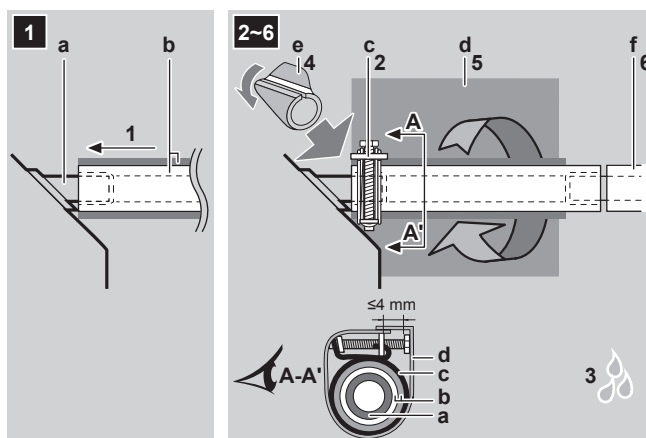
### To connect the drain piping to the indoor unit



#### NOTICE

Incorrect connection of the drain hose might cause leaks, and damage the installation space and surroundings.

- 1 Push the drain hose as far as possible over the drain pipe connection.
- 2 Tighten the metal clamp until the screw head is less than 4 mm from the metal clamp part.
- 3 Check for water leaks (see ["To check for water leaks"](#) [p. 24]).
- 4 Install the insulation piece (drain pipe).
- 5 Wind the large sealing pad (= insulation) around the metal clamp and drain hose, and fix it with tie wraps.
- 6 Connect the drain piping to the drain hose.



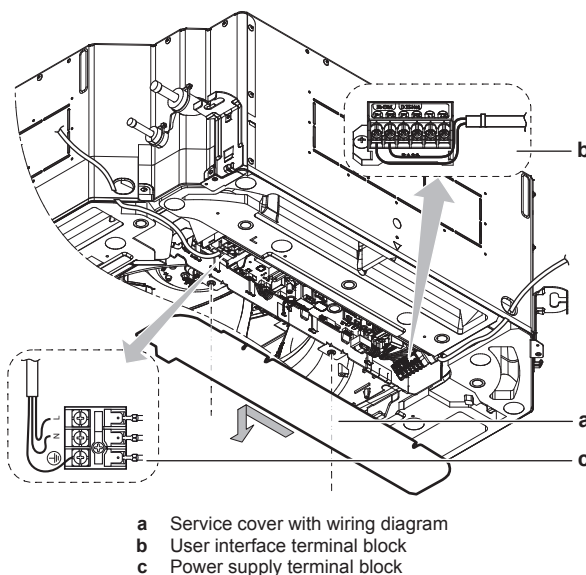
### To check for water leaks

The procedure differs depending on whether installation of the system is already completed. When installation of the system is not yet completed, temporarily connect the user interface and power supply to the unit.

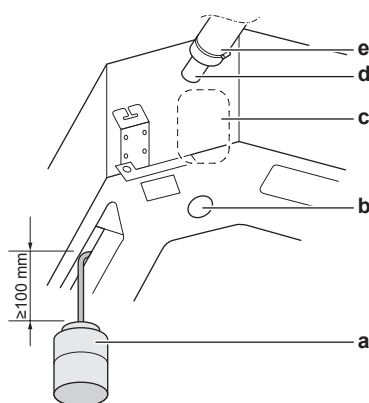
#### When installation of the system is not yet completed

- 1 Temporarily connect electrical wiring.

- Remove the service cover (a).
- Connect the user interface (b).
- Connect the power supply (c).
- Reattach the service cover (a).



- 2 Turn ON the power.
- 3 Start fan only operation (see the reference guide or the service manual of the user interface).
- 4 Gradually pour approximately 1 l of water through the air discharge outlet, and check for leaks.



- a Plastic watering can
- b Service drain outlet (with rubber plug). Use this outlet to drain water from the drain pan
- c Drain pump location
- d Drain pipe connection
- e Drain pipe

- 5 Turn OFF the power.
- 6 Disconnect the electrical wiring.
  - Remove the service cover.
  - Disconnect the power supply.
  - Disconnect the user interface.
  - Reattach the service cover.

#### When installation of the system is already completed

- 1 Start cooling operation (see the reference guide or the service manual of the user interface).
- 2 Gradually pour approximately 1 l of water through the water inlet, and check for leaks (see "When installation of the system is not yet completed" ▶ 24).

## 17 Piping installation

### In this chapter

17.1	Preparing refrigerant piping.....	25
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### 17.1 Preparing refrigerant piping

#### 17.1.1 Refrigerant piping requirements



#### INFORMATION

Also read the precautions and requirements in the "2 General safety precautions" ▶ 3].



#### NOTICE

The refrigerant R744 requires strict cautions for keeping the system clean, dry and tight.

- Clean and dry: foreign materials (including mineral oils or moisture) should be prevented from getting mixed into the system.
- Tight: R744 does not contain any chlorine, does not destroy the ozone layer, and does not reduce earth's protection against harmful ultraviolet radiation. R744 can contribute to the greenhouse effect if it is released. Therefore pay special attention to check the tightness of the installation.



#### NOTICE

The piping and other pressure-containing parts shall be suitable for refrigerant and oil. Use K65 copper-iron alloy tube system for high-pressure applications with a working pressure of 120 bar at the air conditioner side and 90 bar at the refrigeration side.

- Foreign materials inside pipes (including oils for fabrication) must be ≤30 mg/10 m.



#### NOTICE

If the ability to close the stop valves for field piping is wanted, the installer **MUST** install a pressure relief valve on the following piping:

- Outdoor unit to refrigeration indoor units: on liquid piping
- Outdoor unit to air conditioning indoor units: on liquid piping AND gas piping

#### Refrigerant piping diameter

Liquid piping	Gas piping
Ø9.5 mm	Ø12.7 mm

#### Refrigerant piping material

- **Piping material:** K65 copper-iron alloy (CuFe2P), maximum operating pressure = 120 bar
- **Piping temper grade and thickness:**

Outer diameter (Ø)	Temper grade	Thickness (t) <sup>(a)</sup>	
9.5 mm (3/8")	R420	≥0.65 mm	
12.7 mm (1/2")	(drawn)	≥0.85 mm	

<sup>(a)</sup> Depending on the applicable legislation and the maximum working pressure of the unit (see "PS High" on the unit name plate), larger piping thickness might be required.

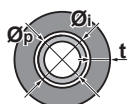
#### 17.1.2 Refrigerant piping insulation

- Use polyethylene foam as insulation material:
  - with a heat transfer rate between 0.041 and 0.052 W/mK (0.035 and 0.045 kcal/mh°C)
  - with a heat resistance of at least 120°C
- Insulation thickness

Pipe outer diameter (Ø <sub>p</sub> )	Insulation inner diameter (Ø <sub>i</sub> )	Insulation thickness (t)
9.5 mm (3/8")	10~14 mm	≥10 mm
12.7 mm (1/2")	14~16 mm	≥10 mm



## Piping installation



If the temperature is higher than 30°C and the humidity is higher than RH 80%, the thickness of the insulation materials should be at least 20 mm to prevent condensation on the surface of the insulation.

## 17.2 Connecting the refrigerant piping

### 17.2.1 About connecting the refrigerant piping

#### Before connecting the refrigerant piping

Make sure the outdoor and indoor unit are mounted.

#### Typical workflow

Connecting the refrigerant piping involves:

- Connecting the refrigerant piping to the indoor unit
- Connecting the refrigerant piping to the outdoor unit
- Insulating the refrigerant piping
- Keeping in mind the guidelines for:
  - Brazing
  - Using the stop valves

### 17.2.2 Precautions when connecting the refrigerant piping



#### INFORMATION

Also read the precautions and requirements in the following chapters:

- "2 General safety precautions" [p 3]
- "17.1 Preparing refrigerant piping" [p 25]

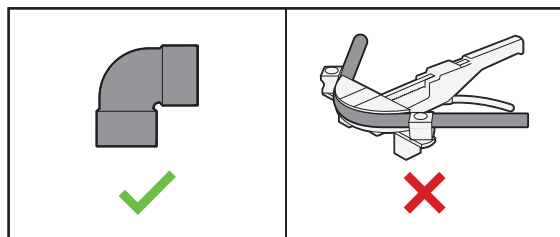


#### DANGER: RISK OF BURNING/SCALDING



#### CAUTION

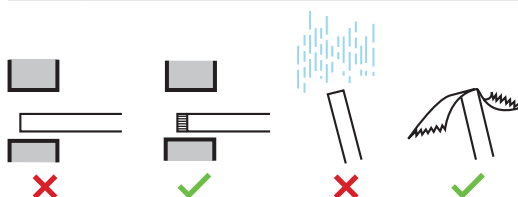
NEVER bend high pressure piping! Bending can reduce the pipe thickness and thus weaken the piping. ALWAYS use K65 fittings.



#### NOTICE

Take the following precautions on refrigerant piping into account:

- Avoid anything but the designated refrigerant to get mixed into the refrigerant cycle (e.g. air).
- Only use R744 (CO<sub>2</sub>) when adding refrigerant.
- Only use installation tools (e.g. manifold gauge set) that are exclusively used for R744 (CO<sub>2</sub>) installations to withstand the pressure and to prevent foreign materials (e.g. mineral oils and moisture) from entering the system.
- Do NOT leave pipes unattended at the site. If you will finish the work in less than 1 month, tape the pipe ends or pinch the pipe (see figure below). Pipes that are installed outdoors must be pinched, regardless of the duration of the works.
- Use caution when passing copper tubes through walls (see figure below).

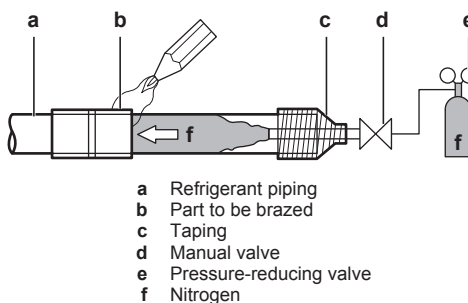


#### INFORMATION

Do NOT open the refrigerant stop valve before checking the refrigerant piping. When you need to charge additional refrigerant it is recommended to open the refrigerant stop valve after charging.

### 17.2.3 Guidelines when connecting the refrigerant piping

- When brazing, blow through with nitrogen to prevent creation of large quantities of oxidized film on the inside of the piping. This film adversely affects valves and compressors in the refrigerating system and prevents proper operation.
- Set the nitrogen pressure to 20 kPa (0.2 bar) (just enough so it can be felt on the skin) with a pressure-reducing valve.



- Do NOT use anti-oxidants when brazing pipe joints. Residue can clog pipes and break equipment.
- Do NOT use flux when brazing copper-to-copper refrigerant piping. Use phosphor copper brazing filler alloy (CuP279, CuP281, or CuP284:DIN EN ISO 17672), which does not require flux. Flux has an extremely harmful influence on refrigerant piping systems. E.g., if a chlorine-based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will deteriorate the refrigerant oil.
- Always protect the surrounding surfaces (e.g. using insulation foam) against heat when brazing.



### 17.2.4 To connect the refrigerant piping to the indoor unit



#### CAUTION

Install the refrigerant piping or components in a position where they are unlikely to be exposed to any substance which may corrode components containing refrigerant, unless the components are constructed of materials that are inherently resistant to corrosion or are suitably protected against corrosion.

- **Pipe length.** Keep refrigerant piping as short as possible.



#### WARNING

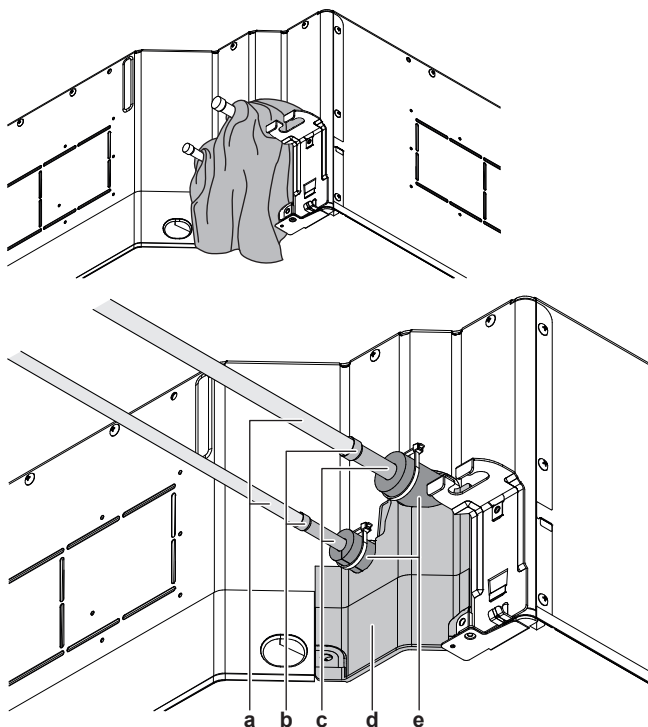
- Use K65 piping for high-pressure applications with a working pressure of 120 bar or 90 bar, depending on its location in the system.
- Use K65 unions and fittings approved for a working pressure of 120 bar or 90 bar, depending on its location in the system.
- ONLY brazing is allowed for connection of pipes. No other types of connections are allowed.
- Expanding of pipes is NOT allowed.

- 1 Insert the field pipe into the piping on the indoor unit side.
- 2 Connect refrigerant piping to the unit using only **brazed connections**.



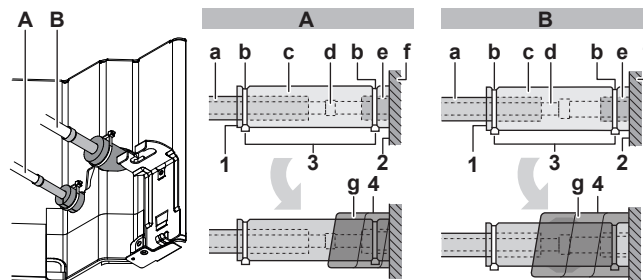
#### NOTICE

When brazing, cover the plastic hold plate (d) and thermal insulation (e) by a wet cloth and make sure the temperature does not exceed 200°C.



- a Field piping
- b Brazed connection
- c Piping on the indoor unit side
- d Plastic hold plate
- e Insulation attached on the unit

- 3 Insulate the refrigerant piping on the indoor unit as follows:



- A Liquid piping
- B Gas piping

- a Insulation material (field supply)
  - b Tie wraps (accessory)
  - c Insulation pieces: Large (gas pipe), small (liquid pipe) (accessory)
  - d Brazed connection
  - e Refrigerant pipe connection (attached to the unit)
  - f Unit
  - g Sealing pads: Medium 1 (gas pipe), medium 2 (liquid pipe) (accessories)
- 1 Turn up the seams of the insulation pieces.
  - 2 Attach to the base of the unit.
  - 3 Tighten the tie wrap on the insulation pieces.
  - 4 Wrap the sealing pad from the base of the unit to the top of the brazed connection.



#### NOTICE

Make sure to insulate all refrigerant piping. Any exposed piping might cause condensation.

## 18 Electrical installation

### In this chapter

- 18.1 About connecting the electrical wiring ..... 27
  - 18.1.1 Precautions when connecting the electrical wiring ..... 27
  - 18.1.2 Guidelines when connecting the electrical wiring ..... 28
  - 18.1.3 Specifications of standard wiring components ..... 28
- 18.2 To connect the electrical wiring to the indoor unit ..... 29
- 18.3 To connect appropriate measures for appliances filled with CO<sub>2</sub> ..... 29



#### NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### 18.1 About connecting the electrical wiring

#### Typical workflow

Connecting the electrical wiring typically consists of the following stages:

- 1 Making sure the power supply system complies with the electrical specifications of the units.
- 2 Connecting the electrical wiring to the outdoor unit.
- 3 Connecting the electrical wiring to the indoor unit.
- 4 Connecting the main power supply.

#### 18.1.1 Precautions when connecting the electrical wiring



#### DANGER: RISK OF ELECTROCUTION



#### WARNING

ALWAYS use multicore cable for power supply cables.

# Electrical installation



## INFORMATION

Also read the precautions and requirements in the "2 General safety precautions" [▶ 3].



## INFORMATION

Also read "18.1.3 Specifications of standard wiring components" [▶ 28].



## 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

- If the power supply has a missing or wrong N-phase, equipment might break down.
- Establish proper earthing. Do **NOT** earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shock.
- Install the required fuses or circuit breakers.
- Secure the electrical wiring with cable ties so that the cables do **NOT** come in contact with sharp edges or piping, particularly on the high-pressure side.
- Do **NOT** use taped wires, stranded conductor wires, extension cords, or connections from a star system. They can cause overheating, electrical shock or fire.
- Do **NOT** install a phase advancing capacitor, because this unit is equipped with an inverter. A phase advancing capacitor will reduce performance and may cause accidents.



## 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.



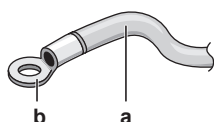
## WARNING

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.

## 18.1.2 Guidelines when connecting the electrical wiring

Keep the following in mind:

- If stranded conductor wires are used, install a round crimp-style terminal on the end of the wire. Place the round crimp-style terminal on the wire up to the covered part and fasten the terminal with the appropriate tool.



a Stranded conductor wire  
b Round crimp-style terminal

- Use the following methods for installing wires:

Wire type	Installation method
Single-core wire	<p>a Curled single-core wire b Screw c Flat washer</p>
Stranded conductor wire with round crimp-style terminal	<p>a Terminal b Screw c Flat washer</p> <p>✓ Allowed ✗ NOT allowed</p>

## Tightening torques

Wiring	Screw size	Tightening torque (N•m)
Power supply cable	M4	1.2~1.4
Transmission cable (F1, F2)	M3.5	0.79~0.97
User interface cable		

- The earth wire between the wire retainer and the terminal must be longer than the other wires.



## 18.1.3 Specifications of standard wiring components

Component		Class		
		50	71	112
Power supply cable	MCA <sup>(a)</sup>	0.3 A	0.6 A	1.2 A
	Voltage	220~240 V		
	Phase	1~		
	Frequency	50/60 Hz		
	Wire sizes	2.5 mm <sup>2</sup> (3-core wire) H07RN-F (60245 IEC 66)		
Transmission wiring		0.75 to 1.25 mm <sup>2</sup> (2-core wire)		
User interface cable		H05RN-F (60245 IEC 57)		
		indoor↔outdoor - maximum 1000 m (total wiring length 2000 m) indoor↔user interface - maximum 500 m		
Recommended field fuse		6 A		
Residual current circuit breaker		Must comply with applicable legislation		

<sup>(a)</sup> MCA=Minimum circuit ampacity. Stated values are maximum values (see electrical data of combination with indoor units for exact values).

## 18.2 To connect the electrical wiring to the indoor unit

### NOTICE

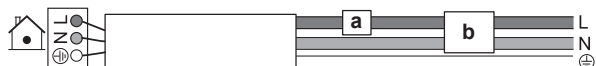
- Follow the wiring diagram (delivered with the unit, located at the inside of the service cover).
- For instructions on how to connect the optional equipment, see the installation manual delivered with the optional equipment.
- Make sure the electrical wiring does NOT obstruct proper reattachment of the service cover.

It is important to keep the power supply and the transmission wiring separated from each other. In order to avoid any electrical interference the distance between both wirings should ALWAYS be at least 50 mm.

### NOTICE

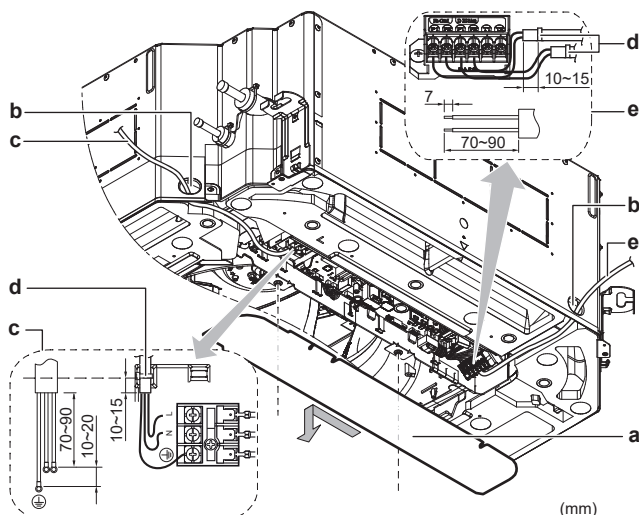
Be sure to keep the power line and transmission line apart from each other. Transmission wiring and power supply wiring may cross, but may NOT run parallel.

- Remove the service cover.
- User interface cable:** Route the cable through the frame, connect the cable to the terminal block (symbols P1, P2) and fix the cable with a tie wrap.
- Transmission cable:** Route the cable through the frame, connect the cable to the terminal block (make sure the symbols F1, F2 match with the symbols on the outdoor unit), and fix the cable with a tie wrap.
- Appropriate measures (field supply):** If installation is required in accordance with "16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant" [p 20], connect them to the terminal block (symbols T1, T2). See "18.3 To connect appropriate measures for appliances filled with CO<sub>2</sub>" [p 29].
- Power supply cable:** Route the cable through the frame and connect the cable to the terminal block (L, N, earth).



a Circuit breaker  
b Residual current device

- Divide the small sealing (accessory) and wrap it around the cables to prevent water from entering the unit.
- Seal all gaps with a sealing material (field supply) to prevent small animals from entering the system.
- Reattach the service cover.

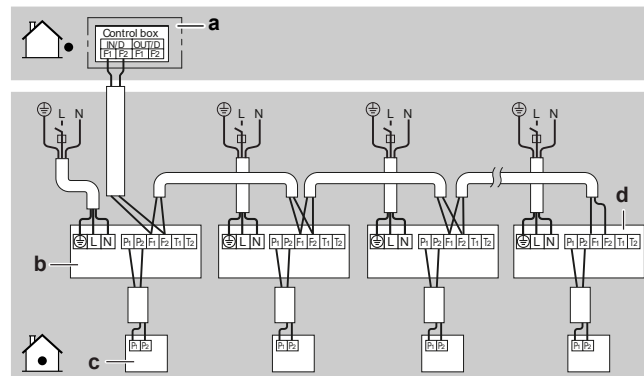


a Service cover (with wiring diagram)

- b Opening for cables
- c Connection of power supply
- d Tie wrap
- e Connection of user interface and transmission cable

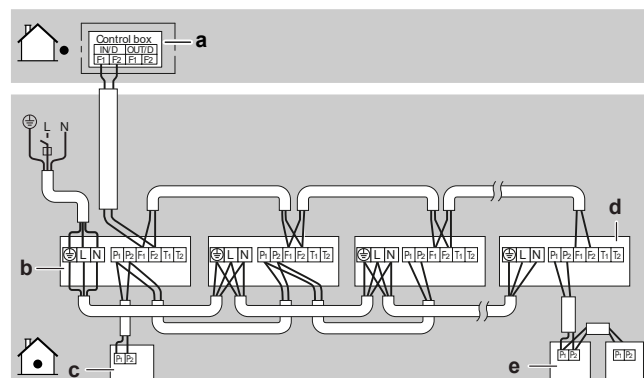
### Complete system example

- Example:** 1 user interface controls 1 indoor unit.



a Outdoor unit  
b Indoor unit  
c User interface  
d Most downstream indoor unit

- Example:** Group control or use with 2 user interfaces.



a Outdoor unit  
b Indoor unit  
c User interface (controls 3 indoor units)  
d Most downstream indoor unit  
e For use with 2 user interfaces

- Setting master unit (Cooling/Heating masterhood).** In case of group control, connect the user interface wiring directly to the master unit. Do not connect user interfaces directly to slave units. Slave units are restricted in their operation by the master unit (e.g. 1 outdoor unit does not allow for 1 indoor unit to run in cooling operation while another runs in heating operation). For setting using the user interface, refer to the manual or reference guide of the user interface.

### INFORMATION

In case of group control, it is not necessary to assign a group address to the indoor unit. The group address is automatically set when the power is turned on.

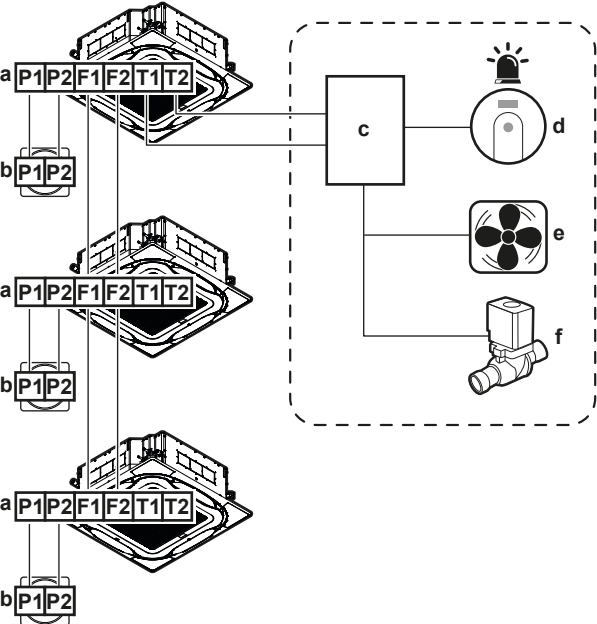
## 18.3 To connect appropriate measures for appliances filled with CO<sub>2</sub>

Appropriate measures are field supplied. For details on how to connect wiring to the appropriate measures, refer to the documentation of the used appropriate measures.

- Determine the minimum number of appropriate measures for the room in accordance with "16.1.2 Additional installation site requirements for CO<sub>2</sub> refrigerant" [p 20].
- Connect the appropriate measures to the indoor unit terminal block, symbols T1, T2.

19 Commissioning

3 If the CO<sub>2</sub> refrigerant leak detector is installed, **enable the function for refrigerant leak detection** as described in "20.1 Field setting" [p.31].



18-1 Example of appropriate measures connection layout for one room

- a Terminal strip on the indoor unit
- b Terminal P1/P2 on the user interface
- c Control panel (field supply)
- d CO<sub>2</sub> refrigerant leak detector (field supply) in combination with a safety alarm (field supply)
- e Ventilation (natural or mechanical) (field supply)
- f Shut-off valves (field supply)

19 Commissioning

In this chapter

19.1 Overview: Commissioning.....	30
19.2 Precautions when commissioning.....	30
19.3 Checklist before commissioning.....	30
19.4 To perform a test run.....	31

**NOTICE**

**General commissioning checklist.** Next to the commissioning instructions in this chapter, a general commissioning checklist is also available on the Daikin Business Portal (authentication required).

The general commissioning checklist is complementary to the instructions in this chapter and can be used as a guideline and reporting template during the commissioning and hand-over to the user.

19.1 Overview: Commissioning

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

Typical workflow

Commissioning typically consists of the following stages:

- 1 Checking the "Checklist before commissioning".
- 2 Performing a test run for the system.

19.2 Precautions when commissioning

**INFORMATION**

During the first running period of the unit, the required power may be higher than stated on the nameplate of the unit. This phenomenon is caused by the compressor, that needs a continuous run time of 50 hours before reaching smooth operation and stable power consumption.

**NOTICE**

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

**NOTICE**

ALWAYS complete the refrigerant piping of the unit before operating. If NOT, the compressor will break.

**NOTICE**

**Cooling operation mode.** Perform the test run in cooling operation mode so that stop valves failing to open can be detected. Even if the user interface was set to heating operation mode, the unit will run in cooling operation mode during 2-3 minutes (although the user interface will display the heating icon), and then automatically switch to heating operation mode.

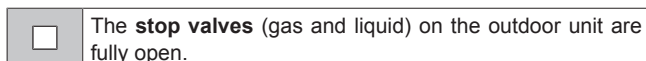
**WARNING**

If the panels on the indoor units are not installed yet, make sure to power OFF the system after finishing the test run. To do so, turn OFF operation via the user interface. Do NOT stop operation by turning OFF the circuit breakers.

19.3 Checklist before commissioning

- 1 After the installation of the unit, check the items listed below.
- 2 Close the unit.
- 3 Power up the unit.

<input type="checkbox"/>	You read the complete installation and operation instructions, as described in the <b>installer and user reference guide</b> .
<input type="checkbox"/>	The <b>indoor unit</b> is properly mounted.
<input type="checkbox"/>	The <b>outdoor unit</b> is properly mounted.
<input type="checkbox"/>	Make sure <b>drain piping</b> is properly installed, insulated and drainage flows smoothly. Check for water leaks. <b>Possible consequence:</b> Condensate water might drip.
<input type="checkbox"/>	The <b>refrigerant pipes</b> (gas and liquid) are installed correctly and thermally insulated.
<input type="checkbox"/>	There are <b>NO refrigerant leaks</b> .
<input type="checkbox"/>	There are <b>NO missing phases</b> or <b>reversed phases</b> .
<input type="checkbox"/>	The system is properly <b>earthed</b> and the earth terminals are tightened.
<input type="checkbox"/>	The <b>fuses</b> or locally installed protection devices are installed according to this document, and have NOT been bypassed.
<input type="checkbox"/>	The <b>power supply voltage</b> matches the voltage on the identification label of the unit.
<input type="checkbox"/>	There are <b>NO loose connections</b> or damaged electrical components in the switch box.
<input type="checkbox"/>	There are <b>NO damaged components</b> or <b>squeezed pipes</b> on the inside of the indoor and outdoor units.



## 19.4 To perform a test run



### INFORMATION

- Perform the test run according to the instructions in the outdoor unit manual.
- The test run is only completed if there is no malfunction code displayed on the user interface or the outdoor unit 7-segment display.
- See the service manual for the complete list of error codes and a detailed troubleshooting guideline for each error.



### NOTICE

Do NOT interrupt the test run.

# 20 Configuration

## 20.1 Field setting

Make the following field settings so that they correspond with the actual installation setup and with the needs of the user:

- Ceiling height
- Decoration panel type
- Air flow direction range
- Air volume when thermostat control is OFF
- Time to clean air filter
- Thermostat sensor selection
- Thermostat differential changeover (if remote sensor is used)
- Differential automatic changeover
- Auto-restart after power failure
- Function for refrigerant leak detection



### INFORMATION

- The connection of optional accessories to the indoor unit might cause changes to some field settings. For more information, see the installation manual of the optional accessory.
- Following setting are only applicable when using the BRC1H52\* user interface. When using any other user interface, see the installation manual or service manual of the user interface.

### Setting: Ceiling height

This setting must correspond with the actual distance to the floor, capacity class and air flow directions.

- For 3-way and 4-way airflows (which require an optional blocking pad kit), see the installation manual of the optional blocking pad kit.
- For all-round airflow, use the table below.

If the distance to the floor is (m)		Then <sup>(1)</sup>		
FXFN50	FXFN71, FXFN112	M	SW/C1	—/C2
≤2.7	≤3.2	13 (23)	0	01
2.7<x≤3.0	3.2<x≤3.6			02
3.0<x≤3.5	3.6<x≤4.2			03

### Setting: Decoration panel type

When installing or changing the decoration panel type, ALWAYS check if the correct values are set.

If the ... decoration panel is used	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
Standard or auto cleaning	13 (23)	15	01
Design			02

### Setting: Airflow direction range

This setting must correspond with the needs of the user.

If you want set the airflow direction range to...	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
Upper	13 (23)	4	01
Medium			02
Lower			03

### Setting: Air volume when thermostat control is OFF

This setting must correspond with the needs of the user. It determines the fan speed of the indoor unit during thermostat OFF condition.

- If you have set the fan to operate, set the air volume speed:

If you want...		Then <sup>(1)</sup>		
		M	SW/C1	—/C2
During thermostat OFF at cooling operation	LL <sup>(2)</sup>	12 (22)	6	01
	Setup volume <sup>(2)</sup>			02
	OFF <sup>(a)</sup>			03
	Monitoring 1 <sup>(2)</sup>			04
	Monitoring 2 <sup>(2)</sup>			05
	Monitoring 3 <sup>(2)</sup>			06
	H <sup>(2)</sup>			07
During thermostat OFF at heating operation	LL <sup>(2)</sup>	12 (22)	3	01
	Setup volume <sup>(2)</sup>			02
	OFF <sup>(a)</sup>			03
	Monitoring 1 <sup>(2)</sup>			04
	Monitoring 2 <sup>(2)</sup>			05
	Monitoring 3 <sup>(2)</sup>			06
	H <sup>(2)</sup>			07

<sup>(1)</sup> Field settings are defined as follows:

- M**: Mode number – **First number**: for group of units – **Number between brackets**: for individual unit
- SW**: Setting number / **C1**: First code number
- : Value number / **C2**: Second code number
- : Default

<sup>(2)</sup> Fan speed:

- LL**: Low fan speed (set during thermostat OFF)
- L**: Low fan speed (set by the user interface)
- H**: High fan speed
- Setup volume**: The fan speed corresponds to the speed the user has set (low, medium, high) using the fan speed button on the user interface.
- Monitoring 1, 2, 3**: The fan is OFF, but runs for a short time every 6 minutes to detect the room temperature by **LL** (Monitoring 1), by **L** (Monitoring 2) or by **H** (Monitoring 3).



## 21 Hand-over to the user

<sup>(a)</sup> Only use in combination with optional remote sensor or when setting **M** 10 (20), **SW/C1** 2, **—/C2** 3 is used.

### Setting: Time to clean air filter

This setting must correspond with the air contamination in the room. It determines the interval at which "Time to clean filter" notification is displayed on the user interface.

If you want an interval of... (air contamination)	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
±2500 h (light)	10 (20)	0	01
±1250 h (heavy)			02
Notification ON		3	01
Notification OFF			02

### Setting: Thermostat sensor selection

This setting must correspond with how/if the remote controller thermostat sensor is used.

When the remote controller thermostat sensor is...	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
Used in combination with indoor unit thermistor	10 (20)	2	01
Not used (indoor unit thermistor only)			02
Used exclusively			03

### Setting: Thermostat differential changeover (if remote sensor is used)

If the system contains a remote sensor, set the increase/decrease increments.

If you want to change increments to...	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
1°C	12 (22)	2	01
0.5°C			02

### Setting: Differential for automatic changeover

Set temperature difference between cooling setpoint and heating setpoint in automatic mode (availability depends on the system type). Differential is cooling setpoint minus heating setpoint.

If you want to set...	Then <sup>(1)</sup>			Example
	M	SW/C1	—/C2	
0°C	12 (22)	4	01	cooling 24°C/heating 24°C
1°C			02	cooling 24°C/heating 23°C
2°C			03	cooling 24°C/heating 22°C
3°C			04	cooling 24°C/heating 21°C
4°C			05	cooling 24°C/heating 20°C
5°C			06	cooling 24°C/heating 19°C
6°C			07	cooling 24°C/heating 18°C
7°C			08	cooling 24°C/heating 17°C

<sup>(1)</sup> Field settings are defined as follows:

- **M**: Mode number – **First number**: for group of units – **Number between brackets**: for individual unit
- **SW**: Setting number / **C1**: First code number
- **—**: Value number / **C2**: Second code number
- **■**: Default

### Setting: Auto-restart after power failure

Depending on the needs of the user, you may disable/enable the automatic restart after a power failure.

If you want auto-restart after power failure...	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
Disabled	12 (22)	5	01
Enabled			02

### Function for refrigerant leak detection

If the CO<sub>2</sub> refrigerant leak detector (field supply) is connected to the indoor unit (symbols T1, T2), setting **—/C2** of mode 12(22) must be changed to 08. See "10.5.1 About refrigerant leak detection" [p. 14].

If the CO <sub>2</sub> refrigerant leak detector (field supply) is...	Then <sup>(1)</sup>		
	M	SW/C1	—/C2
NOT installed	12(22)	1	01
Installed			08

- **2 or more user interfaces**: When using 2 or more user interfaces, one must be set to "MAIN" and the other to "SUB". For setting procedure see the installation and operation manual of the used user interface.

## 21 Hand-over to the user

Once the test run is finished and the unit operates properly, please make sure the following is clear for the user:

- Make sure that the user has the printed documentation and ask him/her to keep it for future reference. Inform the user that he can find the complete documentation at the URL mentioned earlier in this manual.
- Explain the user how to properly operate the system and what to do in case of problems.
- Show the user what to do for the maintenance of the unit.

## 22 Troubleshooting

### 22.1 Solving problems based on error codes

If the unit runs into a problem, the user interface displays an error code. It is important to understand the problem and to take measures before resetting an error code. This should be done by a licensed installer or by your local dealer.

This chapter gives you an overview of most possible error codes and their descriptions as they appear on the user interface.



#### INFORMATION

See the service manual for:

- The complete list of error codes
- A more detailed troubleshooting guideline for each error

#### 22.1.1 Error codes: Overview

In case other error codes appear, contact your dealer.



Code	Description
R0	External protection device activated (refrigerant leak detection)
R1	Malfunction of indoor unit PCB
R3	Drain level control system abnormality
R4	Malfunction of freezing protection
R5	High pressure control in heating, freeze-up protection control in cooling
R6	Malfunction of fan motor
R7	Malfunction of swing flap motor
R8	Malfunction of power supply or AC input overcurrent
R9	Malfunction of electronic expansion valve
RF	Malfunction of a humidifier system
RH	Malfunction of dust collector of air cleaner
RJ	Malfunction of capacity setting (Indoor unit PCB)
L1	Failure of transmission (between indoor unit PCB and sub PCB)
L4	Malfunction of liquid pipe thermistor for heat exchanger
L5	Malfunction of gas pipe thermistor for heat exchanger
L6	Malfunction of gas pipe thermistor for heat exchanger
L9	Malfunction of suction air thermistor
LR	Malfunction of discharge air thermistor
LJ	Room temperature thermistor in remote controller abnormality
U9	Malfunction of transmission (other system) or refrigerant leak detection

## 23 Disposal



### NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation. Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery.

## 24 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).

### 24.1 Wiring diagram

#### 24.1.1 Unified wiring diagram legend

For applied parts and numbering, refer to the wiring diagram on the unit. Part numbering is by Arabic numbers in ascending order for each part and is represented in the overview below by "\*" in the part code.

Symbol	Meaning	Symbol	Meaning
	Circuit breaker		Protective earth
	Connection		Protective earth (screw)
	Connector		Rectifier
	Earth		Relay connector
	Field wiring		Short-circuit connector
	Fuse		Terminal

Symbol	Meaning	Symbol	Meaning
	Indoor unit		Terminal strip
	Outdoor unit		Wire clamp
	Residual current device		

Symbol	Colour	Symbol	Colour
BLK	Black	ORG	Orange
BLU	Blue	PNK	Pink
BRN	Brown	PRP, PPL	Purple
GRN	Green	RED	Red
GRY	Grey	WHT	White
SKY BLU	Sky blue	YLW	Yellow

Symbol	Meaning
A*P	Printed circuit board
BS*	Pushbutton ON/OFF, operation switch
BZ, H*O	Buzzer
C*	Capacitor
AC*, CN*, E*, HA*, HE*, HL*, HN*, HR*, MR*_A, MR*_B, S*, U, V, W, X*A, K*R_*, NE	Connection, connector
D*, V*D	Diode
DB*	Diode bridge
DS*	DIP switch
E*H	Heater
FU*, F*U, (for characteristics, refer to PCB inside your unit)	Fuse
FG*	Connector (frame ground)
H*	Harness
H*P, LED*, V*L	Pilot lamp, light emitting diode
HAP	Light emitting diode (service monitor green)

## 25 Glossary

Symbol	Meaning
HIGH VOLTAGE	High voltage
IES	Intelligent eye sensor
IPM*	Intelligent power module
K*R, KCR, KFR, KHuR, K*M	Magnetic relay
L	Live
L*	Coil
L*R	Reactor
M*	Stepper motor
M*C	Compressor motor
M*F	Fan motor
M*P	Drain pump motor
M*S	Swing motor
MR*, MRCW*, MRM*, MRN*	Magnetic relay
N	Neutral
n=*, N=*	Number of passes through ferrite core
PAM	Pulse-amplitude modulation
PCB*	Printed circuit board
PM*	Power module
PS	Switching power supply
PTC*	PTC thermistor
Q*	Insulated gate bipolar transistor (IGBT)
Q*C	Circuit breaker
Q*DI, KLM	Earth leak circuit breaker
Q*L	Overload protector
Q*M	Thermo switch
Q*R	Residual current device
R*	Resistor
R*T	Thermistor
RC	Receiver
S*C	Limit switch
S*L	Float switch
S*NG	Refrigerant leak detector
S*NPH	Pressure sensor (high)
S*NPL	Pressure sensor (low)
S*PH, HPS*	Pressure switch (high)
S*PL	Pressure switch (low)
S*T	Thermostat
S*RH	Humidity sensor
S*W, SW*	Operation switch
SA*, F1S	Surge arrester
SR*, WLU	Signal receiver
SS*	Selector switch
SHEET METAL	Terminal strip fixed plate
T*R	Transformer
TC, TRC	Transmitter
V*, R*V	Varistor
V*R	Diode bridge, Insulated-gate bipolar transistor (IGBT) power module
WRC	Wireless remote controller
X*	Terminal
X*M	Terminal strip (block)
Y*E	Electronic expansion valve coil

Symbol	Meaning
Y*R, Y*S	Reversing solenoid valve coil
Z*C	Ferrite core
ZF, Z*F	Noise filter

## 25 Glossary

### Dealer

Sales distributor for the product.

### Authorised installer

Technical skilled person who is qualified to install the product.

### User

Person who is owner of the product and/or operates the product.

### Applicable legislation

All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

### Service company

Qualified company which can perform or coordinate the required service to the product.

### Installation manual

Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

### Operation manual

Instruction manual specified for a certain product or application, explaining how to operate it.

### Accessories

Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

### Optional equipment

Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

### Field supply

Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.



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