

ECOFLEX MINI VRF R32 SERIES

Four-way Cassette

Installation and Commissioning Guide



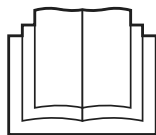
Model Numbers

MFC-028CS	MFC-080CS
MFC-036CS	MFC-090CS
MFC-045CS	MFC-100CS
MFC-056CS	MFC-112CS
MFC-071CS	MFC-140CS



CAUTION:

The system is charged with flammable refrigerant, safety checks are necessary to ensure that the risk of ignition is minimised.



IMPORTANT NOTE:

Please read the R-32 Safety Manual and this manual carefully before installing or operating your air conditioning unit.

Information in this manual is to be used in conjunction with the R-32 Safety Manual.

Make sure to save this manual for future reference.

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01. PREFACE

Dear users,

Thank you for purchasing and using our product. Please read this manual carefully before you install, use, maintain or troubleshoot this product so that you can familiarize yourself with the product and use it correctly.





For Outdoor Units or other Indoor Units, please refer to the applicable installation & owner’s manuals provided with them.

For detailed operation of auxiliary control devices, such as wired, remote and centralized controllers, please refer to their instructions.

- To ensure the correct installation and operation of the product, the following instructions are provided:
- To ensure the correct and safe operation of the product, please strictly follow the requirements listed in this manual.
- All figures and contents in this manual are for reference only. Due to continuing product improvement, the specifications are subject to change without notice.
- Regular cleaning and maintenance of the product are required for intended performance and long service life. Each year before using the air conditioner, please contact your local dealer, to provide services of cleaning, maintenance and inspection.
- Please retain this manual for future reference.

02. SAFETY WARNING

Please thoroughly read and ensure that you fully understand the safety precautions (including the signs and symbols) in this manual, and follow relevant instructions during use to prevent damage to health or property.

	WARNING	This symbol shows that this appliance uses a flammable refrigerant. If the refrigerant has leaked and exposed to an external ignition source, there is a risk of fire.
	CAUTION	This symbol shows that the operation manual should be read carefully.
	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the installation manual.
	CAUTION	This symbol shows that information is available such as the operating manual or installation manual.

02.01. Warning Signs

Different marks are used to indicate the levels of hazard severity. Please follow the instructions and ensure safe operation:

DANGER

Failure to observe the warning will result in severe personal injury or death.

WARNING

Failure to observe the warning could result in severe personal injury or death, property damage, or electrical or fire hazards.

CAUTION

Failure to observe the warning could result in minor personal injury, product or property damage, or other unsafe situations.

NOTE

Useful operation and maintenance information.

Warning Contets



Ensure Proper Grounding



Professional Only

Prohibition signs



No Flammable Materials



No Strong Current



No Open Fire



No Acid or Alkali Materials

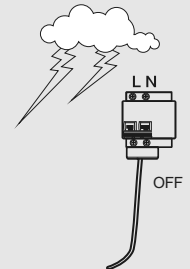
02.02. Safety Precautions



DANGER

During thunderstorms, disconnect the main power switch. Otherwise, lightning may damage the unit.

In the event of refrigerant leakage, smoking and open flames are prohibited. Disconnect the main power switch immediately, open windows to allow ventilation, keep away from the leakage point, and contact your local dealer or technical support to request a professional repair.



WARNING

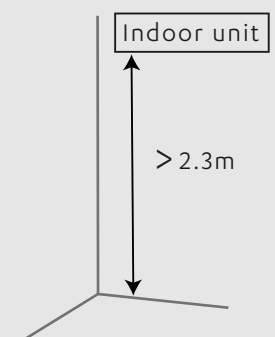
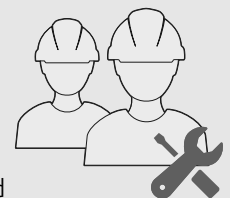
Air conditioner installation must comply with local standards and electrical codes, and relevant instructions in this manual.

Do not use any liquid cleanser, liquefied cleanser, or corrosive cleanser to wipe this unit or spray water or other liquids on the unit. Otherwise, the plastic parts of the unit will become damaged and an electrical shock may occur. Disconnect the main power switch before cleaning and maintenance to avoid accidents.

Ask a professional to remove and reinstall the air conditioner. Ask a professional for maintenance and repair assistance.

This air conditioner is classified as an “appliance which is not accessible to the general public”.

The IDU shall be placed at a height not accessible to children, at least 2.3m above the ground.



⚠ CAUTION

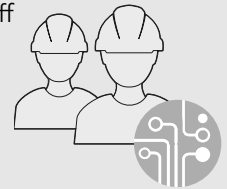
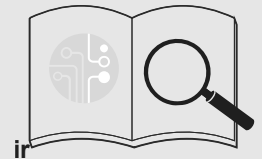
This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

The units are partial unit air conditioners, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

02.03. Electric Safety Requirements**⚠ WARNING**

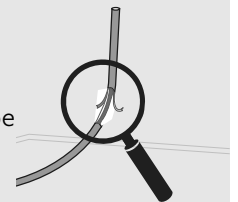
- The air conditioner shall be installed according to the local wiring specifications. Wiring work must be completed by qualified electricians.
- All wiring work must comply with electrical safety specifications.
- The air conditioner must be well grounded. Specifically, the main switch of the air conditioner must have a reliable grounding cable.
- Before contacting wiring devices, cut off all the power supplies.
- The user **MAY NOT** disassemble or repair the air conditioner. Doing so can be dangerous. In the event of a fault, immediately cut off the power and contact your local dealer or technical support.
- A separate power supply that meets the rated parameter values must be provided for the air conditioner.
- The fixed wiring to which the air conditioner is connected must be equipped with a power cut-off device that meets the wiring requirements.
- To avoid danger, a damaged power cable must be replaced by professionals from the maintenance department or a similar department of the manufacturer.
- The air conditioner's circuit board (PCB) is designed with a fuse to provide overcurrent protection.
- The specifications of the fuse are printed on the circuit board.
- NOTE: For the units with R32 refrigerant , only the blast-proof ceramic fuse can be used.

**⚠ CAUTION**

Always ground the main power switch.

Do not use a damaged power cable and replace it if it is damaged.

When the air conditioner is used for the first time or is in a power-off state for a long time, it needs to be connected to the power supply and warmed up for at least 12 hours before use.



02.04. Appendix

WARNING

The following applies to R32 refrigerant systems.

- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.
- For repair to the refrigerating system, the following precautions shall be complied with prior to conducting work on the system.
- Work shall be undertaken under a controlled procedure so as to minimise the risk of a flammable gas or vapour being present while the work is being performed.
- All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.
- No person carrying out work in relation to a refrigeration system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion.
- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt consult the manufacturer's technical department for assistance.
- The following checks shall be applied to installations using flammable refrigerants:
 - the charge size is in accordance with the room size within which the refrigerant containing parts are installed;
 - the ventilation machinery and outlets are operating adequately and are not obstructed;
 - if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant; which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault compromises safety then the unit should not be operated at all.
- Initial safety checks shall include:
 - that capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
 - that no live electrical components and wiring are exposed while charging, recovering or purging the system;
 - that there is continuity of earth bonding.
- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer's specifications.
- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.
- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of ageing or continual vibration from sources such as compressors or fans.
- When opening the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed.
- Since flammability is a consideration. The following procedure shall be adhered to:
 - remove refrigerant;
 - purge the circuit with inert gas;
 - evacuate;
 - purge again with inert gas;
 - open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. The system shall be "flushed" with Oxygen-Free Nitrogen to render the unit safe. This process may need to be repeated several times. Compressed air or oxygen shall not be used for this task.

Flushing shall be achieved by breaking the vacuum in the system with Oxygen-Free Nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.

- This process shall be repeated until no refrigerant is within the system. When the final Oxygen-Free Nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- This operation is absolutely vital if brazing operations on the pipe-work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.
- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
- Prior to recharging the system it shall be pressure tested with Oxygen-Free Nitrogen.
 1. Become familiar with the equipment and its operation.
 2. Isolate system electrically.
 3. Before attempting the procedure ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
 4. Pump down refrigerant system, if possible.
 5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
 6. Make sure that cylinder is situated on the scales before recovery takes place.
 7. Start the recovery machine and operate in accordance with manufacturer's instructions.
 8. Do not overfill cylinders. (No more than 80 % volume liquid charge).
 9. Do not exceed the maximum working pressure of the cylinder, even temporarily.

10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
 11. Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.
- This process shall be repeated until no refrigerant is within the system. When the final Oxygen-Free Nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
 - This operation is absolutely vital if brazing operations on the pipe-work are to take place.
 - Ensure that the outlet for the vacuum pump is not close to any ignition sources and there is ventilation available.
 - Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimise the amount of refrigerant contained in them.
 - Prior to recharging the system it shall be pressure tested with Oxygen-Free Nitrogen.
 - Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.
 - Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.
 - When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
 - When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
 - The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
 - The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.
 - If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.
 - Warning: disconnect the appliance from its power source during service and when replacing parts.
 - These units are partial unit air conditioners, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

03. PRECAUTIONS

03.01. Qualification and Safety Regulation Requirements

WARNING

- **Please carry out the installation according to local standards.**
- **Ask your local dealer or professionals to install the product.**

This unit must be installed by professional technicians with relevant specialized knowledge. Users MAY NOT install the unit themselves; otherwise, faulty operations may cause the risks of fire, electrical shock, injury, or leakage, which could harm you or others or damage the air conditioner.
- **Never modify or repair the unit on your own.**

Otherwise, a fire, electric shock, injury or water leakage may occur. Get your local dealer or a professional to do so.
- **Ensure that the residual current device (RCD) is installed.**

The RCD must be installed. Failure to install it may result in electric shock.
- **When powering the unit, follow the regulations of the local electric company.**

Make sure that the unit is grounded reliably in accordance with laws. If the grounding is not completed correctly, it may cause electrical shock.
- **When moving, disassembling or reinstalling the air conditioner, get the assistance of your local dealer or a professional.**

If installed improperly, fire, electrical shock, injury, or water leakage may occur.
- **Use the optional accessories specified by our company.**

The installation of these accessories must be carried out by professionals. Improper installation may cause fire, electrical shock, water leakage and other hazards.
- **Use only power cables and communication cables that meet specification requirements. Properly connect all the wiring to make sure that no external forces are acting on the terminal blocks, power cables and communication cables. Improper wiring or installation may cause a fire.**
- **The air conditioner must be grounded. Check whether the earth line is securely connected or broken. Do not connect the ground line to gas cans, water piping, lightning rods or telephone earth lines.**
- **The main power switch of the air conditioner should be put in a position that is out of the reach of children.**

It should not be obstructed by flammable objects such as curtains.
- **Open flames are prohibited when refrigerant leaks are present.**

If the air conditioner is not cooling/heating properly, this may be caused by a refrigerant leak. If this occurs, contact your local dealer or a professional.

The refrigerant in the air conditioner is safe, and usually does not leak. If there is refrigerant leakage in the room, it is easy for a fire to occur after contact with the heating units of the heater/electric stove/stove. Please disconnect the power supply of the air conditioner, extinguish the flames of appliances that produce a flame, and open the windows and doors of the room to allow ventilation and ensure that the concentration of refrigerant leakage in the room does not exceed a critical level; keep away from the leakage point, and contact the dealer or professional personnel.
- **After the refrigerant leakage is repaired, do not start the product until the maintenance personnel confirms that the leakage is fully repaired.**
- **Before and after installation, exposing the unit to water or moisture will cause electrical parts short circuiting.**

Do not store the unit in a humid basement or expose it to rain or water.
- **Make sure the installation base and lifting are robust and reliable;**

Insecure installation of the base may cause the air conditioner to fall, leading to an accident. Take into full consideration the effects of strong winds, typhoons and earthquakes, and reinforce the installation.
- **Check whether the drainage pipe can drain the water smoothly.**

Improper installation of the pipeline may lead to water leakage, damaging furniture, electric appliances, and the carpet.
- **After installation, check whether the refrigerant is leaking.**
- **Do not install the product in a location where there is a danger of flammable gas leaks.**

In the event of leakage of combustible gas, the combustible gas surrounding the Indoor Unit may cause a fire.
- **Install an air filter of 30–80 mesh at the return air grille to filter dust in the air and keep the air diffuser clean and free from dirt blockage.**

 **CAUTION**

- **Keep the Indoor Unit, Outdoor Unit, power cable, and connecting wires at least 1m away from the high-power radio equipment, to prevent electromagnetic interference and noise. For some electromagnetic waves, it is not enough to prevent noise even at a distance of more than 1m.**
- **In a room equipped with fluorescent lamps (rectifier type or fast start type), the signal transmission distance of the remote controller (wireless) may not reach the predetermined value. Install the Indoor Unit as far away from the fluorescent lamp as possible.**
- **Do not touch the fins of the heat exchanger, as this could cause injury.**
- **For safety, please dispose of the packing materials properly.**
Nails and other packaging materials may cause personal injury or other risks. Tear up the plastic packaging bag and dispose of it properly to prevent children from playing with it, leading to suffocation.
- **Do not cut off the power supply immediately after the Indoor Unit stops running.**
Some parts of the Indoor Unit like the valve body and water pump are still in operation. Please wait for at least 5 minutes before cutting off the power supply. Otherwise, water leakage and other faults may occur.
- **If the temperature and humidity in the ceiling mezzanine may exceed 30°C RH80%, please put insulation material on the unit.**
Please use glass wool or foamed polyethylene as insulation material, the thickness of which is required to be 10mm or more, and can be stored in the ceiling opening.
- **For evaporating units and condensing units, the instructions or markings shall include a wording to assure that the maximum operating pressure is considered when connecting to any condenser unit or evaporator unit.**
- **For evaporating units, condensing units and condenser units, the instructions or markings shall include refrigerant charging instructions.**
- **A warning to assure that partial units shall only be connected to an appliance suitable for the same refrigerant.**
- **This unit is a partial unit air conditioner, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.**
- **The electrical interfaces shall be specified with purpose, voltage, current, and safety class of construction. The SELV connection points, if provided, are to be clearly indicated in the instructions.**
- **The connection point should be marked with the “read the instructions” symbol per ISO 7000-0790 (2004-01) and the Class III symbol according to IEC 60417-5180 (2003-02).**

NOTE

This unit is equipped with a refrigerant leak detector for safety. To be effective, the unit must be electrically powered at all times after installation, other than when servicing.

If any supplemental unit is employed to detect leaked refrigerant, such unit shall also apply this marking or be accompanied by such instructions.

03.02. Precautions for Carrying and Lifting the Air Conditioner

1. Before carrying the air conditioner, determine the route that will be used to move it to the installation site.
2. Do not unseal the air conditioner until it is moved to the installation site.
3. When unpacking and moving the air conditioner, you must hold the hanger seat and not apply force to other parts, especially the refrigerant piping, drainage pipe and plastic accessories, so as to avoid damaging the air conditioner and causing personal injury.
4. Before installing the air conditioner, make sure that the refrigerant specified on the nameplate is used. For the installation of the Outdoor Unit, refer to the installation instructions in the Installation & Owner's Manual attached with the Outdoor Unit.

03.03. Precautions for Installation sites



WARNING

Installation sites not recommended

Do not install or use the air conditioner in the following places

1. A place filled with mineral oil, fumes or mist, like a kitchen. Plastic parts will age and the heat exchanger will become dirty, eventually causing the air conditioner performance to deteriorate or leak water.
2. A place where there are corrosive gases, such as acid or alkaline gases. Copper pipes and copper welds will be corroded, resulting in refrigerant leakage.
3. A place exposed to combustible gases and using volatile combustible gases such as diluent or gasoline. The electronics in the air conditioner may cause the surrounding gas to ignite.
4. A place where there is equipment emitting electromagnetic radiation. The control system will fail and the air conditioner will not function properly.
5. A place where there is a high salt content in the air like a coastal area (If installed in a high salt area it may affect the unit's performance and longevity).
6. A place where an explosion may occur.
7. In vehicles or cabin rooms.
8. Factories with major voltage fluctuations in the power supplies.
9. Other special environmental conditions.

NOTE

Air conditioner units of this series are designed to provide comfort. Do not use them in equipment rooms and rooms with precision instruments, food, plants, animals, or works of art.

03.04. Recommended Installation Sites

03.04.01. Selection principle for the installation site

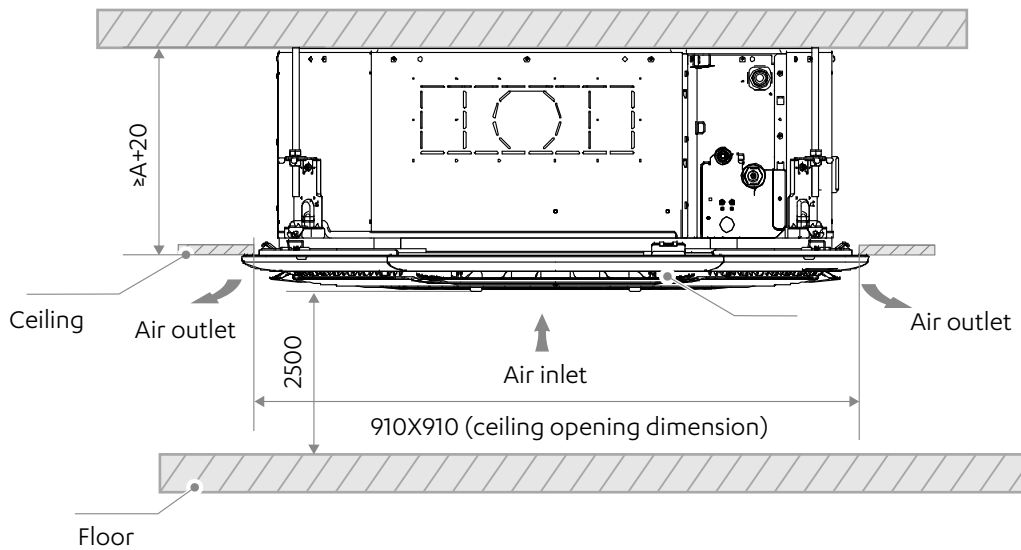
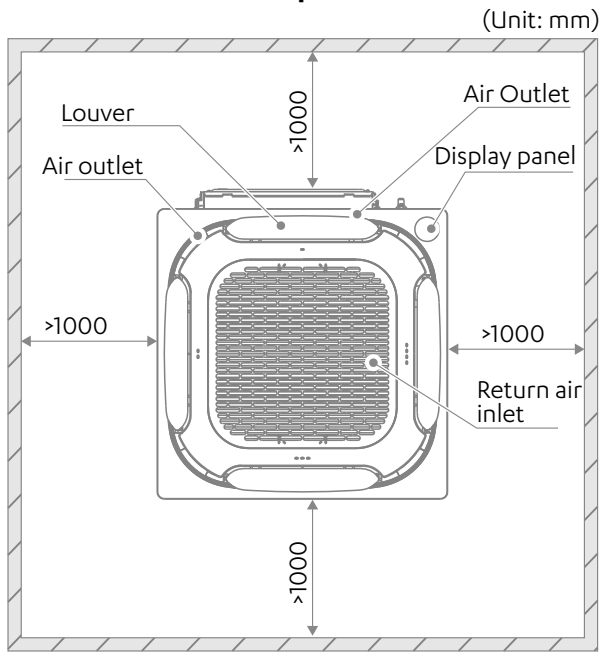
It is recommended to install the air conditioner according to the design drawing of the HVAC engineer. The selection principle for the installation site is as follows:

1. Ensure that the airflow in and out of the Indoor Unit is reasonably organized to form an air circulation in the room.
2. Ensure Indoor Unit maintenance space.
3. The nearer the drainage pipe and copper pipe are to the Outdoor Unit, the lower the pipe cost is.
4. Prevent the air conditioner from blowing directly at the human body.
5. The closer the wiring is to the power cabinet, the lower the wiring cost is.
6. Keep the air-conditioning return air away from direct exposure to the sun in the room.
7. Be careful not to interfere with the light tank, fire pipe, gas pipe and other facilities.
8. The Indoor Unit should not be lifted in the places like load-bearing beams and columns that affect the structural safety of the house.
9. The wired controller and the Indoor Unit should be in the same installation space; otherwise, the sampling point setting of the wired controller needs to be changed.

Choose a site that fully complies with the following conditions and user requirements to install the air conditioning unit:

1. There is enough space for installation and maintenance. (See the diagrams on section 03.04.02.)
2. The ceiling is level, and the structure is strong enough to support the Indoor Unit. If necessary, take measures to reinforce the unit's stability.
3. Airflow in/out of the machine is not obstructed, and the external air exerts minimum impact.
4. It is easy to supply airflow to every corner of the room. It is easy to drain fluids from the connected piping and water discharge piping.
5. There is no direct heat radiation.
6. Avoid installation in narrow spaces or where there are more stringent noise requirements.
7. The Indoor Unit needs to be installed at a position greater than 2.3m and less than 3.5m from the ground.
8. Condensate water can be discharged smoothly.
9. The length of the piping between the indoor and Outdoor Units is within the permitted range. Refer to the Installation & Owner's Manual attached with the Outdoor Unit.

03.04.02. Installation space



Model (kW)	A
kW \leq 8.0	204
8.0<kW \leq 10.0	246
10.0<kW \leq 14.0	288

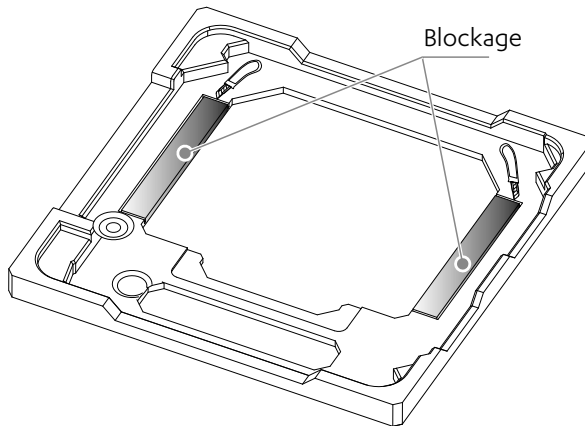
03.04.03. Recommended Installation Sites

Crowded places such as living rooms and offices



The air outlet must not face the areas where people frequently spend time, such as sofas and coffee tables. Instead, let the airflow exit from the side for enhanced comfort.

Air outlets at corners can be blocked with optional accessories (which can be found in the packaging material)



Use a knife to cut the blockage out of the packaging material.

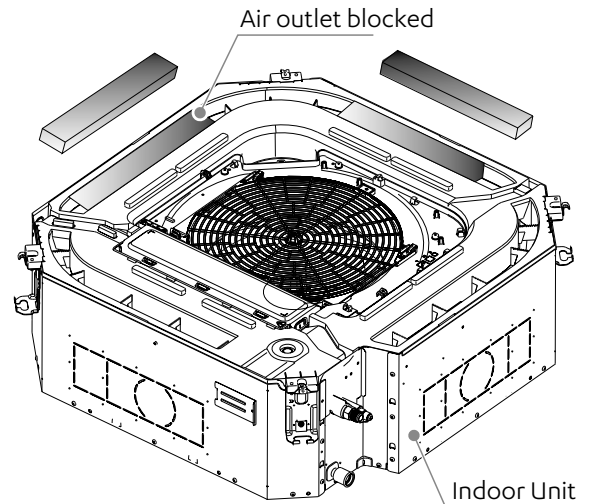


Diagram of a blocked air outlet

Dining room



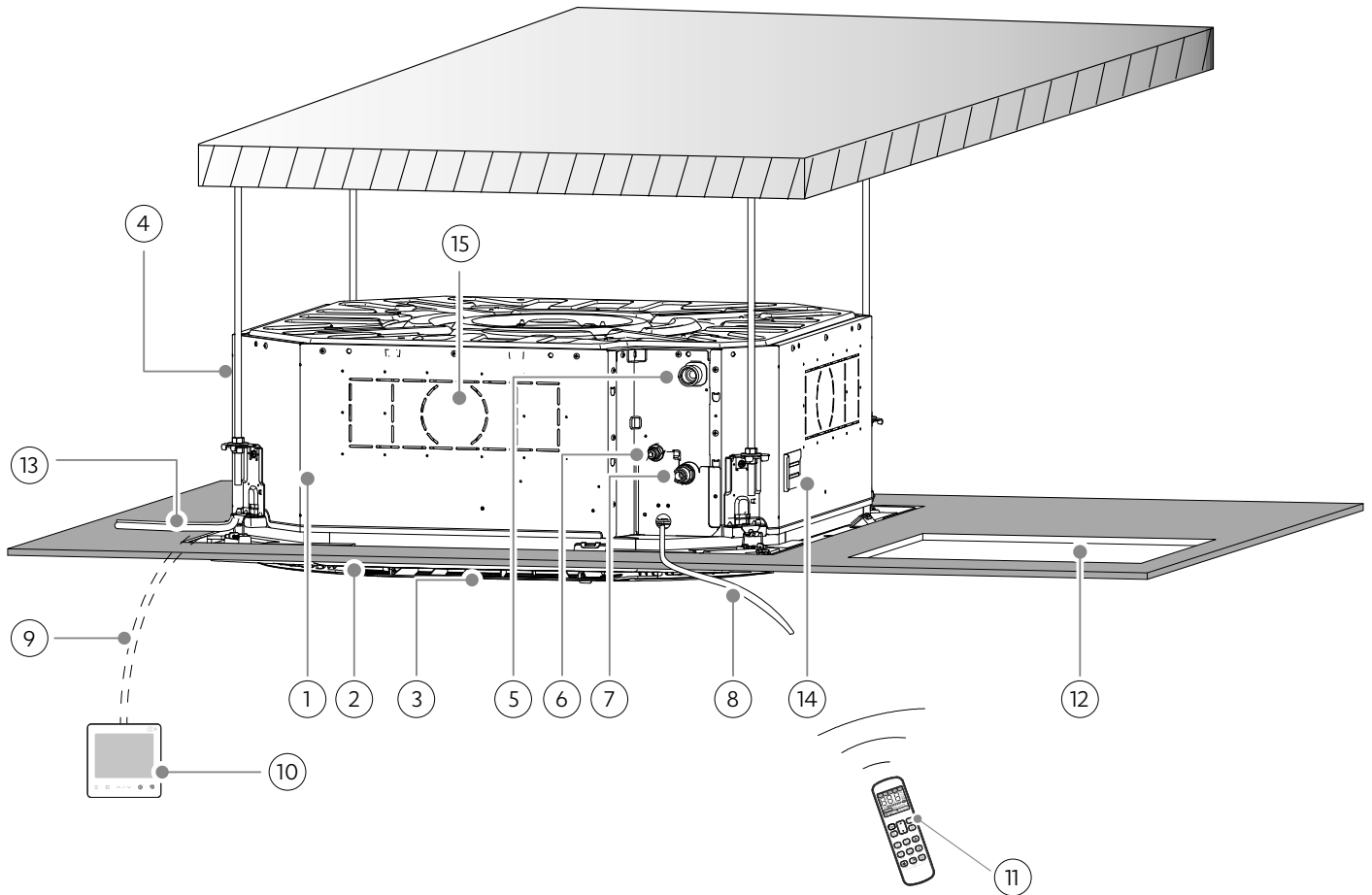
As the dining room is generally next to the kitchen, which is usually filled with oily fumes, the central air conditioner can be installed in the middle of the ceiling. The air outlet must not face the dining table. Otherwise, dust on the air outlet on the ceiling may be blown onto the food. Keep the return air inlet as far away from the kitchen as possible to avoid intaking oily fumes and affecting the air quality.



Bedroom

The unit can be installed on the ceiling in the middle of the bedroom. Avoid direct streams of air towards the bed if possible.

04. COMPONENTS OVERVIEW

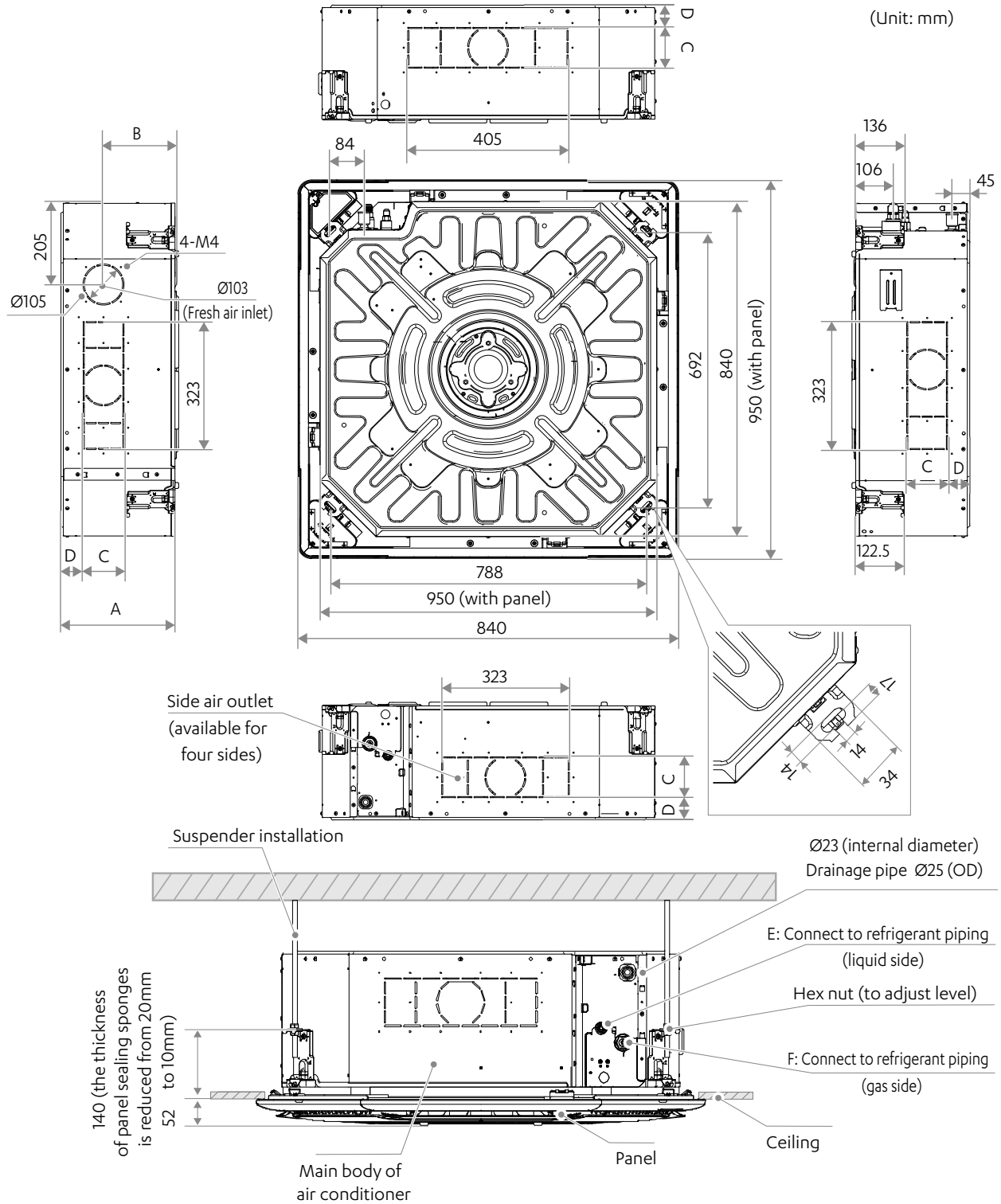


1	Indoor Unit	2	Panel (optional)	3	Air outlet
4	Fresh air inlet	5	Drainage pipe	6	Liquid pipe
7	Gas pipe	8	*Power cable and ground wire	9	*Connection wire
10	Wired controller (optional)	11	Remote controller (optional)	12	Access hole
13	*Communication line	14	Water cover assembly/water level, water level switch check		
15	Expanded air inlet/outlet	* To be purchased separately			

NOTE

- Panels, wired controllers, and remote controllers are available in various models. All optional accessories can be purchased from ActronAir
- For optional accessories such as wired controllers, please refer to the instructions of the product.
- All the figures in the manual explain only the general appearance and functions of the product. The appearance and functions of the product you purchased may not be completely consistent with those listed in the figures. Please refer to the actual product.

05. PRODUCT DIMENSIONS



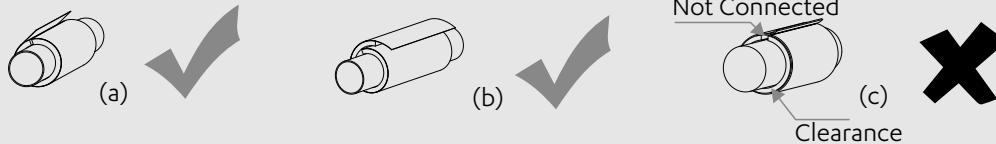
MODEL (KW)	A	B	C	D	E	F
kW≤5.6	204	141	63	41.5	Ø12.7	Ø6.35
5.6<kW≤8.0	204	141	63	41.5	Ø15.9	Ø9.52
8.0<kW≤10.0	246	163	103	41.5	Ø15.9	Ø9.52
10.0<kW≤14.0	288	190	103	56.5	Ø15.9	Ø9.52

06. ACCESSORIES

List of accessories				
Installation & Owner's Manual X 1 Indoor Unit Installation Instructions (Make sure to hand it over to the user)	Brass nut X 2 For use in the installation of connecting pipe (the quantity is one for models with a process pipe)	Cable tie X 4 To tighten the drainage hose tightly to the drainage outlet and PVC piping of the Indoor Unit.	Thermal insulation pipe X 2 Used for insulation and anti-condensation at pipe connections.	Cardboard X 1 Used to determine the distance between the unit and the ceiling opening

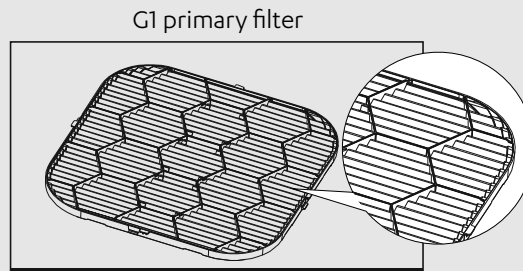
⚠ CAUTION

When installing the insulation pipe on site, please cut it according to the actual needs. (Either method (a) or (b) is OK. Method (c) is incorrect. There must be no gap between the insulation pipe and the copper pipe.)



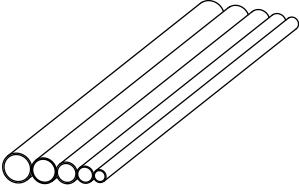
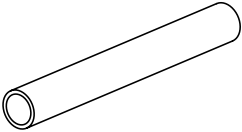

NOTE

- Check the accessory kit for the above items and contact your local dealer for any missing items.
- Do not throw away any accessories that may be required for installation until the installation is complete. Wired/remote controller is optional and needs to be purchased separately.
- The air filter uses G1 as the primary filter.



06.01. Accessories available to be purchased separately

List of accessories		
Copper pipe Used to connect the indoor refrigerant piping.	PVC water discharge pipe Used to drain the condensed water from the Indoor Unit.	Thermal insulation pipe Used to prevent pipe condensation.
Expansion screw (M10)X4 Used to install the Indoor Unit.	Lifting screw (M10)X4 Used to install the Indoor Unit.	

	Copper pipe specification(Unit: mm)		
	Model (kW)	Piping	Gas side
	kW≤5.6		Ø6.35×0.75
	5.6<kW≤14.0		Ø9.52×0.75
	Remarks	For connection of the Indoor Unit refrigerant system, it is recommended to use a soft copper tube (T2M), with the length selected according to the actual situation.	
	PVC water discharge pipe		Thermal insulation pipe
	This is used as the Indoor Unit's drainage pipe, 25mm in external diameter. The length is determined according to actual needs		The thickness of the insulation pipe for the copper pipe is usually 15mm or above; and the thickness of the insulation pipe for the rigid polyethylene plastic tube is usually 10mm or above. If the pipe is used in a closed humid area, the thickness should be increased.

CAUTION

Materials, including copper pipes, drainage pipes, lifting screws, various fasteners (such as pipe supports, clamps, screws), power cables, and signal cables, to be used for field installation need to be purchased on site by the installation operator. Materials and specifications must comply with relevant national or industry standards.

06.02. Heat Insulation Material Requirements

Copper pipe insulation	1	Use the closed-cell foam insulation material, which is rated at a flame retardancy level of B1 and heat resistance of over 120°C.
	2	Thickness of the insulation pipe: 1. When the diameter is equal to or greater than 15.9mm, the insulation thickness is at least 20mm. 2. When the diameter is equal to or smaller than 12.7mm, the insulation thickness is at least 15mm.
	3	For insulation of the outdoor copper pipe, the wall thickness of insulation pipes for winter heating systems is generally increased to over 40mm in regions with severe cold. For insulation of the indoor gas pipe, the wall thickness of insulation pipes is usually greater than 20mm.
	4	Use glue to connect the joints and cuts of the thermal insulation pipe, and then wrap them with electrical tape with a width of not less than 50mm to ensure the connection is firm.
	5	The insulation between the copper pipe and the Indoor Unit should be tight to prevent the generation of condensed water.
	6	After the system leakage detection test indicates that there are no leaks, carry out the insulation of the copper pipe.
Drainage pipe insulation	1	The indoor part of the drainage pipe needs to be insulated to prevent condensation, and a thermal insulation pipe with a thickness of more than 10mm should be selected.
	2	If the pipe is not wholly insulated, be sure to rebind the cut part.
	3	Use glue or buckles to connect the joints and cuts of the thermal insulation pipe, and make sure it is at the top of the pipe.
	4	After the drainage test shows that there are no leaks, carry out the insulation of the water distribution pipe.

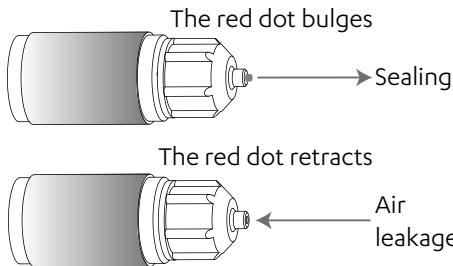
CAUTION

The materials and specifications of insulation materials must meet national or industry standards.

07. PREPARATIONS BEFORE INSTALLATION

07.01. Unpacking Check

1. Before installation, check whether the packing materials are in good condition, whether the accessories that come with the product are complete, whether the air conditioner is intact, and whether the surfaces of the heat exchanger and other parts are worn.
2. Check the sealing nut of the refrigerant pipe, and observe whether the red dot on the surface of the sealing nut of the gas pipe bulges. If it bulges, the pipe is well-sealed; if it retracts, the line is leaking, and you need to contact your local dealer.

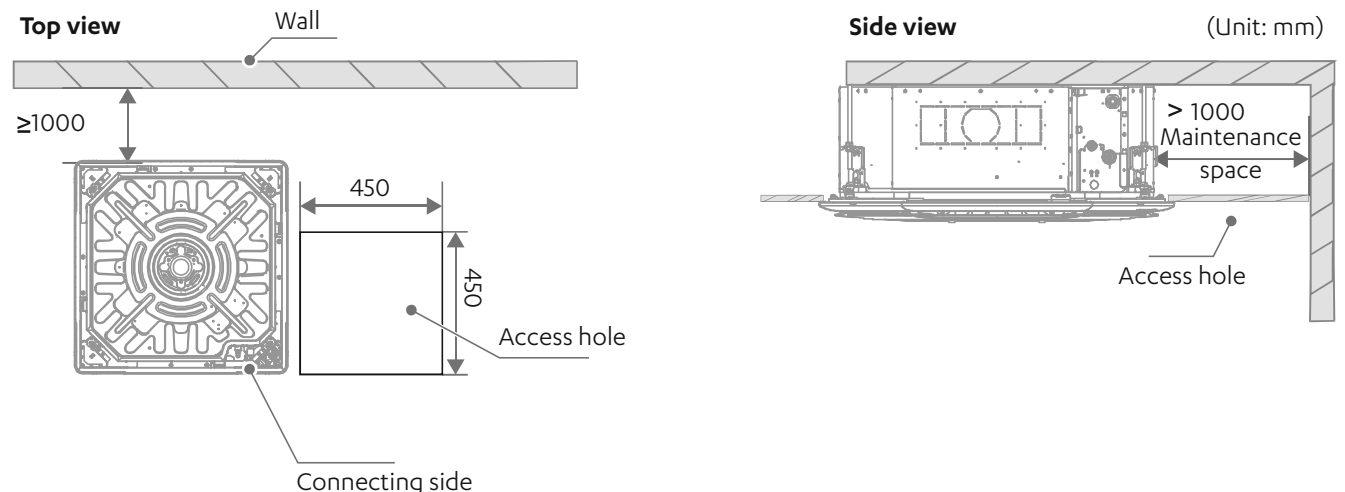


3. Check the machine model before installation.
4. After Indoor Unit and Outdoor Unit inspection, pack them with plastic bags to avoid intake of foreign matters.

07.02. Indoor Unit Positioning

Determine the positions of the air conditioning unit and lifting screws

1. Determine the lifting position of the Indoor Unit according to the design drawing.
2. Draw lines to locate the drilling positions of the suspender bolts according to the mounting cardboard.
3. Make an access hole on the electric control box side (recommended size: 450×450mm).
4. There shall be no obstacles within 200mm of the return air inlet.
5. It is suggested to use an infrared ray locator for line drawing.

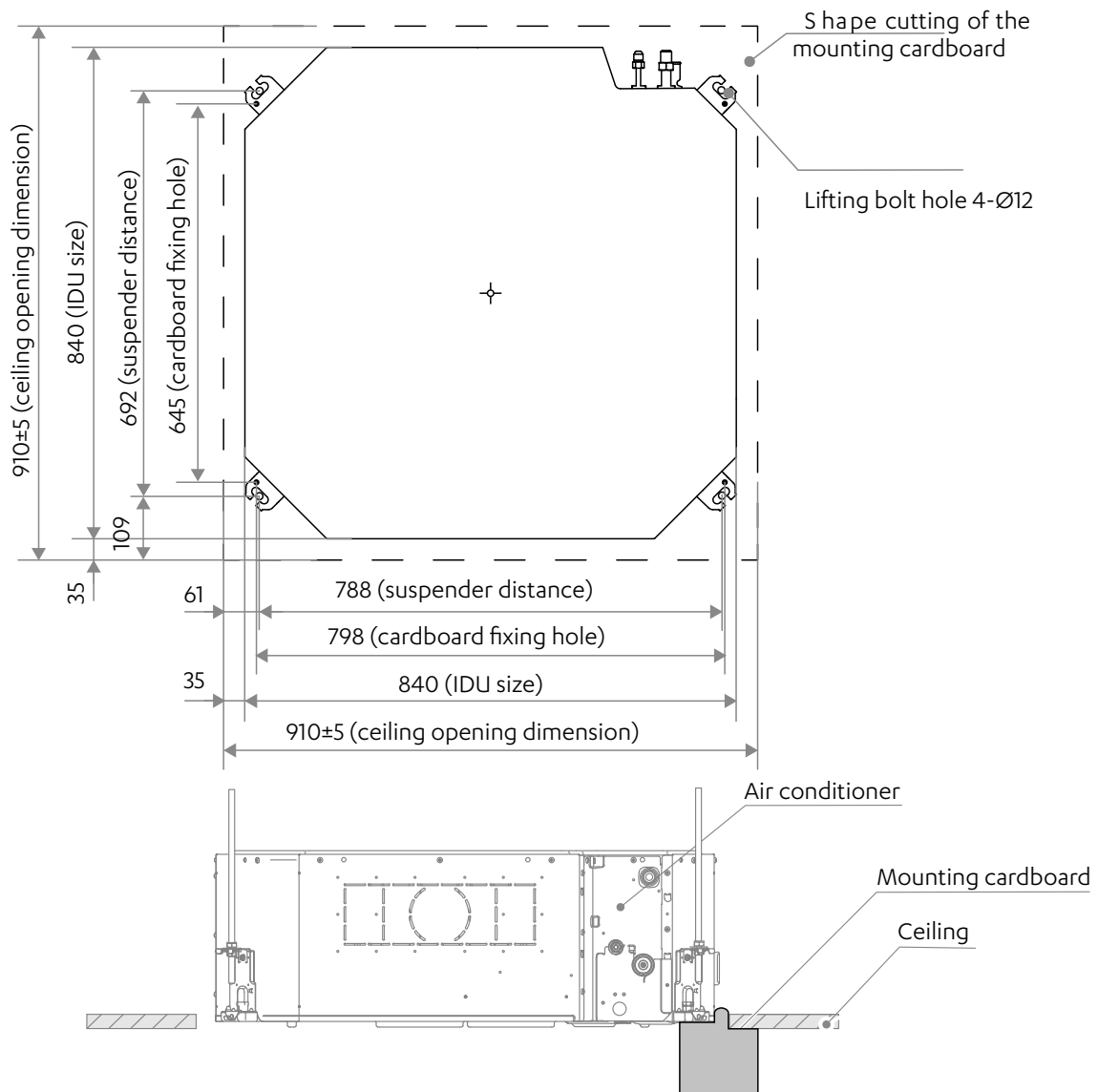


07.03. Installation Preparations

07.03.01. Determine the positions of the ceiling opening, the unit and the lifting screws.

1. Cut a hole with a size of 910mm x 910mm according to the outline of the mounting cardboard.

(Unit: mm)



The mounting cardboard is used to adjust the distance between the air conditioner and the ceiling to ensure that the panel fits closely with the ceiling after installation.

CAUTION

Adjust the hex nuts of suspenders at the four corners to make sure that the main body of the air conditioner is level.

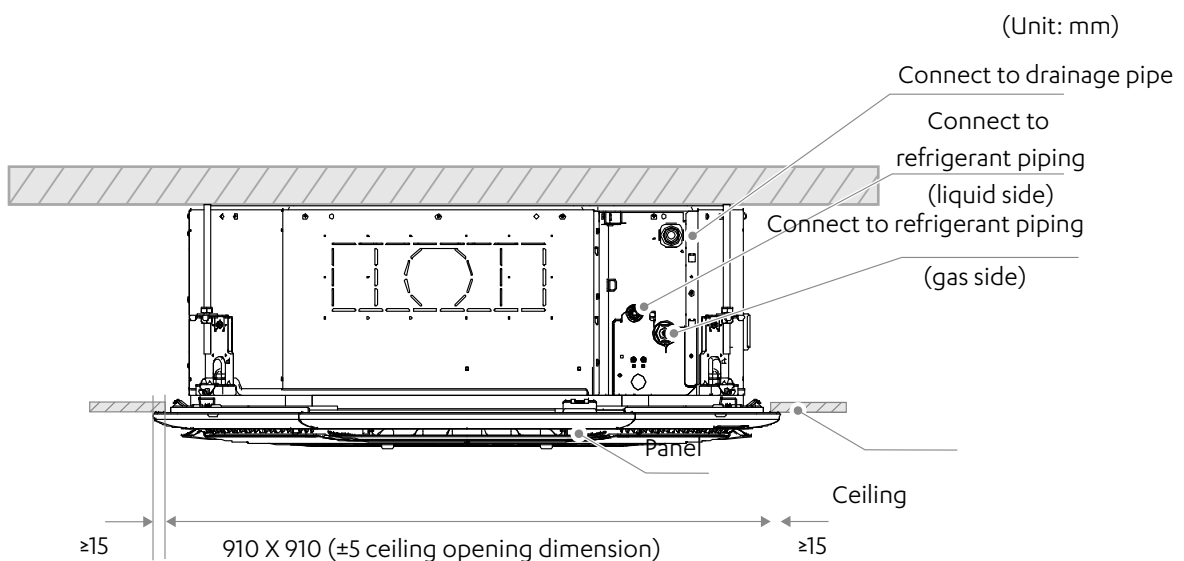
1. Determine the suspender location according to the "lifting bolt hole" at the four corners of the cardboard.
2. Please cut the cardboard along the cutting line to help determine the position of the body and ceiling opening, and open a square hole of 910mm x 910mm in the ceiling.
3. When installing the ceiling, cut the cardboard along the cutting line and fix it on the air conditioner body to determine the size and position of the opening in advance.

2. Use the holes in the mounting cardboard to determine the positions of mounting holes
3. When installing the air conditioner on a new ceiling, affix a piece of cardboard to the main body of the installed air conditioner for reference to determine the size, location, and center of the ceiling opening.

⚠ CAUTION

- Evenly adjust the four hex nuts to make sure that the main body of the air conditioner is level.
- When the air conditioner is to be fixed onto the ceiling with a frame:
The horizontal distance of the overlapping part of the ceiling and decoration panel must be more than 10mm. The distance between the Indoor Unit and the ceiling must be within 12mm. If the distance is greater than 15mm, retrofit the ceiling.

07.03.02. If necessary, cut out the required openings for installation on the ceiling (where there is an existing ceiling).



⚠ CAUTION

- Before connecting the Indoor Unit piping and wiring, connect the refrigerant piping, drainage pipe, remote control wire (not required when using a wireless remote controller), and the connection wire, power cable, and ground wire between the Indoor Unit and Outdoor Unit (please refer to piping and wiring instructions) so that it can be connected to the Indoor Unit immediately after installation.
- To cut ceiling holes, the ceiling bracket may be reinforced to keep the ceiling flat and prevent the ceiling from vibrating. For details, please consult the builder.

08. INDOOR UNIT INSTALLATION

! CAUTION

- Install the air conditioner in a location with sufficient strength to support the weight of the unit. Take reinforcement measures when necessary.
- The unit may fall and cause personal injury if the location is not strong enough.
- Unstable installation may cause the unit to fall and cause an accident.
- Before wiring/pipe layout, make sure that the installation area (walls and floor) is safe and free of water, power, gas, and other hidden dangers.

08.01. Installation of Lifting Bolts

! CAUTION

- High-quality carbon steel bolts (galvanized or with other anti-rust paint applied) or stainless steel bolts are used.
- How the ceiling is treated will differ with the type of building. For specific measures, please consult the building and renovation engineers.
- How the lifting bolt is secured varies according to the specific situation, and it must be secure and reliable.

Refer to the following table on installation using the lifting bolts.

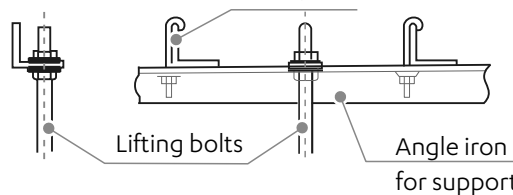
Sites with concrete slabs

Use embedded bolts and pull bolts.



Sites with steel frame

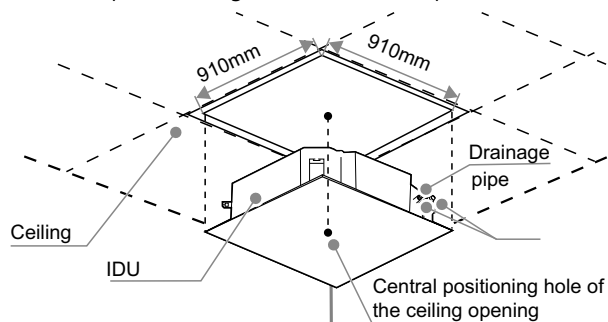
Directly set and use an angle iron for support.



08.02. Indoor Unit Installation

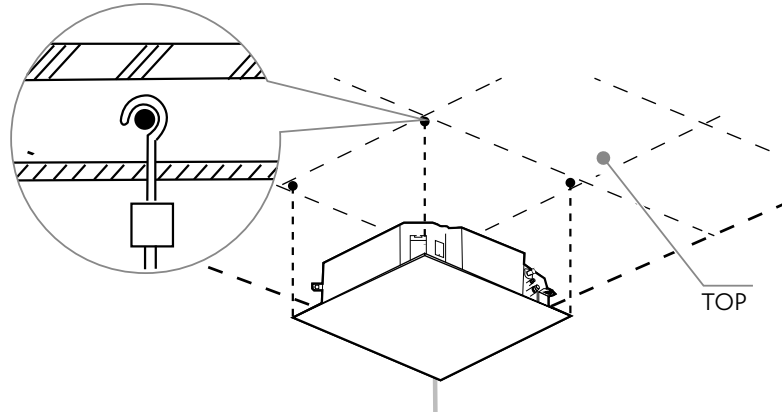
08.02.01. Existing ceiling (the ceiling surface needs to be level)

1. Cut a 910mm × 910mm square hole on the ceiling according to the shape of the mounting cardboard (see the figure below).
 - a. The center of the ceiling opening is the same as the center of the main body of the air conditioner.
 - b. Determine the lengths and outlets of connecting pipe, drainage pipe, and electrical wiring.
 - c. To keep the ceiling surface level and prevent vibration, strengthen the ceiling rigidity if necessary.



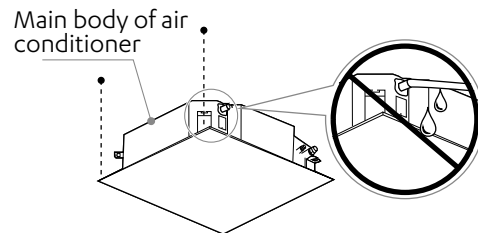
2. Confirm the installation hook position according to the installation hook holes located in the four corners of the mounting cardboard.

- Drill four holes with a diameter of $\varnothing 12\text{mm}$ and a depth of 50–55mm on the roof according to the specified position, and then embed expansion hooks.
- During installation, face the concave surface of the mounting hook towards the expansion hook, determine the appropriate length of the mounting hook according to the ceiling height, and cut off the excess part.
- M10 or W3/8 bolts should be used to install the hook screw.
- Generally, the remaining length is about 1/2 of the thread length of the mounting hook.

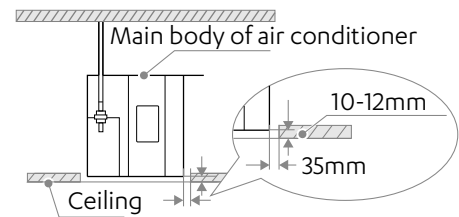


3. Use the hex nuts on the four mounting hooks to adjust evenly and make sure the main body is level.

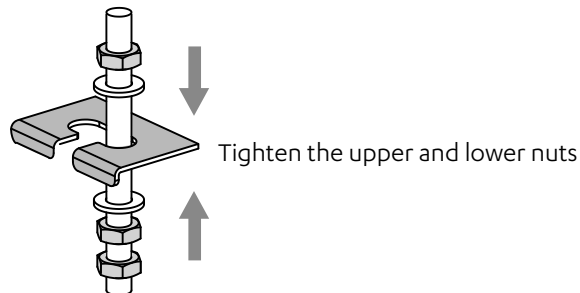
- If the water discharge pipe is slanted, it may cause the water level switch to malfunction, and water may leak.



- Adjust the position of the main body to ensure that the interval of the four sides of the ceiling is even, and the bottom surface of the main body should be recessed from the bottom surface of the ceiling by 10-12mm.

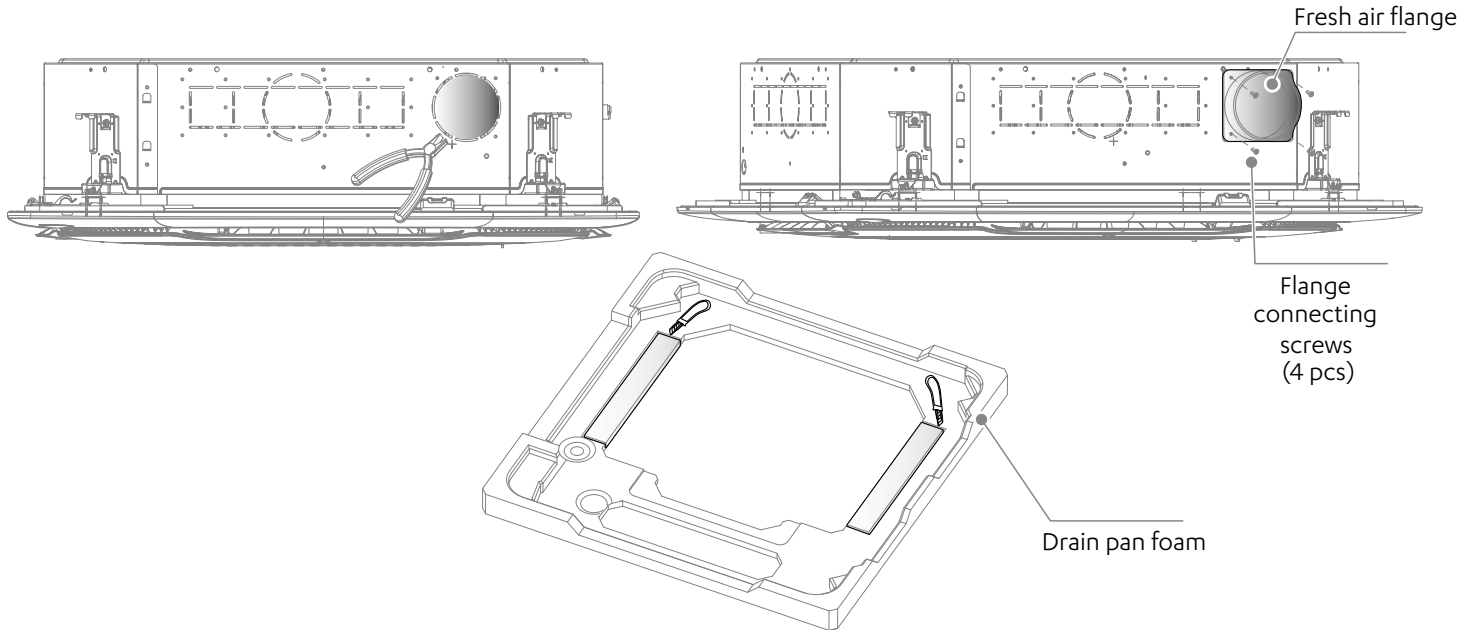


- After adjusting the main body position and level, tighten the nuts on the mounting hook to secure the air conditioner in place.



4. For units with fresh air functions, before installing Indoor Units:

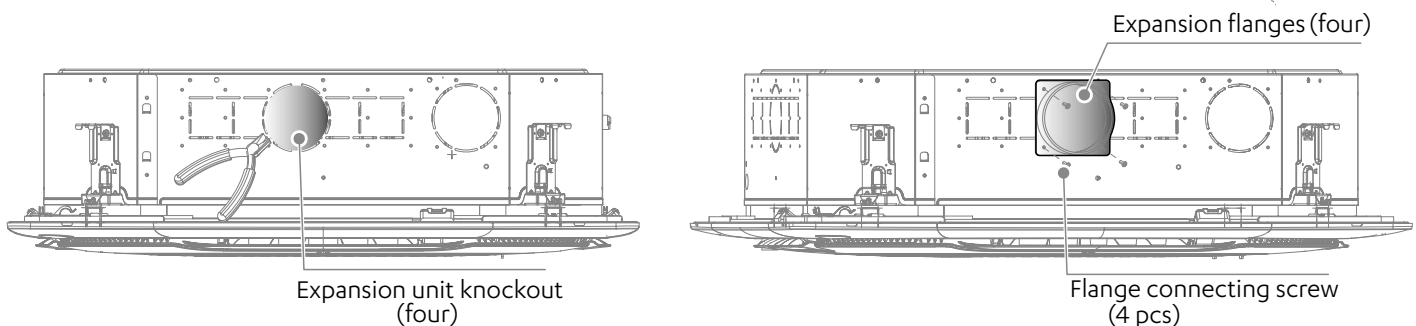
- Remove the knockout at the fresh air unit at one side of the unit in advance. Install a fresh air flange at the fresh air unit and secure it with the flange connecting screws.
- Use a knife to the fresh air blockage of the drain pan foam.



CAUTION

- When connecting the fresh air unit, insulate the fresh air pipe with foam insulation materials that are at least 10mm thick.
- The temperature difference between the fresh air provided by the fresh air unit to the Indoor Unit and the indoor temperature shall not exceed 5°C, otherwise there is a risk of condensation in the return air area of the air conditioner. Please use a fresh air unit equipped with a temperature regulation function Or cover the enclosure of the fresh air outlet of the air conditioner with foam insulation material with a thickness of at least 10mm. The area and thickness of the insulation material should be adjusted depending on the actual situation.

5. For models with expansion units, remove the knockouts at the expansion units at two sides of the unit in advance before installing Indoor Units. Install expansion flanges at the expansion unit and secure them with the flange connecting screws.

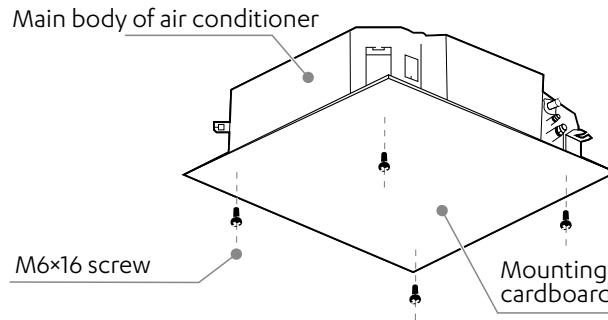


CAUTION

An expansion flange may be round or rectangular depending on the customer's needs.

08.02.02. New rooms and new ceilings

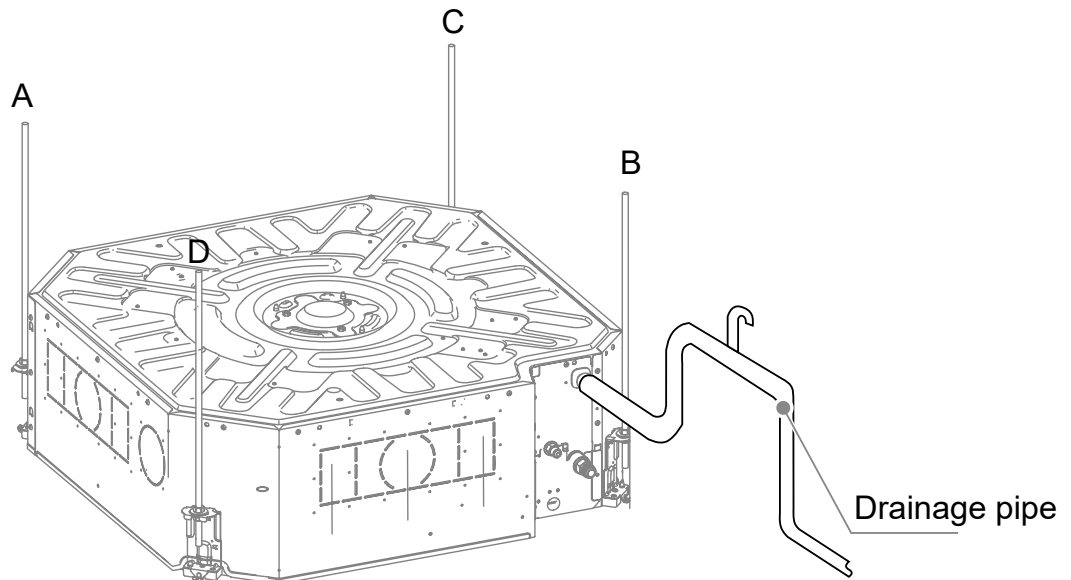
1. For the installation of lifting bolts, a hook can be embedded in the new room. Make sure the hook can withstand 4 times the weight of the Indoor Unit and will not loosen due to shrinkage of the concrete.
2. After the main body is lifted, fix the mounting cardboard on the air conditioner unit with M5×20 screws (panel) to predetermine the size and position of the ceiling opening.
 - a. Make sure the ceiling is level when installing the ceiling.
 - b. Carry out installation as described above for the remaining parts (Point 1 of Existing Ceiling installation).



3. Carry out installation as described above (Point 3 of Existing Ceiling installation).
4. Remove the mounting cardboard.

NOTE

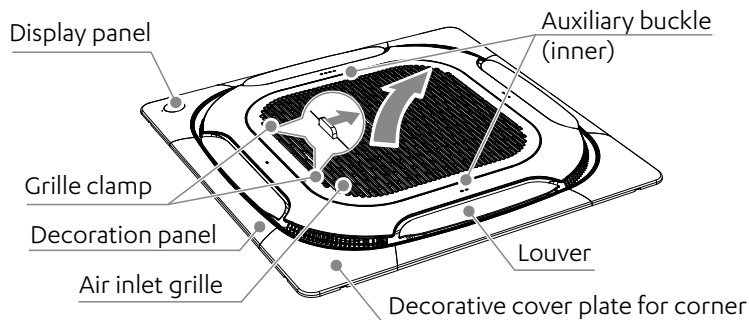
- Make sure the Indoor Unit unit is level: Use a spirit level to correct the level of the Indoor Unit, otherwise water leakage may occur.
- The Indoor Unit is equipped with a built-in drain pump and a water level switch. Do not tilt the unit in the opposite direction of the condensate water flow; otherwise, the water level switch will fail and cause water leakage.
- If the ceiling is unavailable for use, to drain water efficiently, adjust the levelness of the unit body. It is preferable that corner A is about 5mm higher than corner B, and the height of corners C and D falls in the middle of the height difference between A and B.



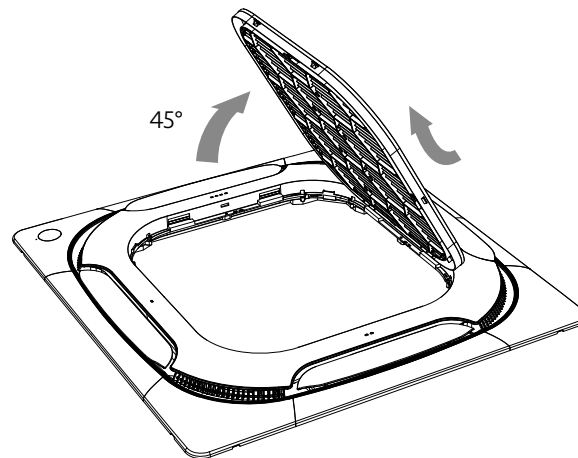
08.03. Panel Installation

08.03.01. Remove the air inlet grille

08.03.01.01. Press the two grille clamps at the same time to lift the grille.



08.03.01.02. Raise the air inlet grille to about 45° and remove the grille.

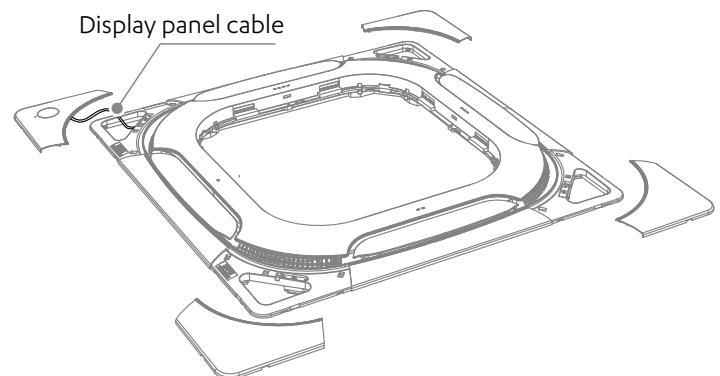
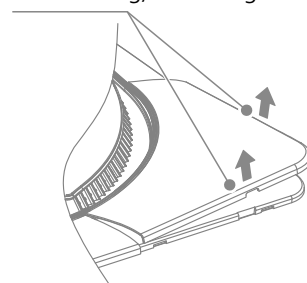


NOTE

- Do not position the panel so that it faces downwards or leans against the wall. Do not place it on a protruding object either.
- Do not hit or squeeze the louver.
- The panel display side is consistent with the outlet pipe side of the indoor unit. Otherwise, air leakage and condensation may easily occur.

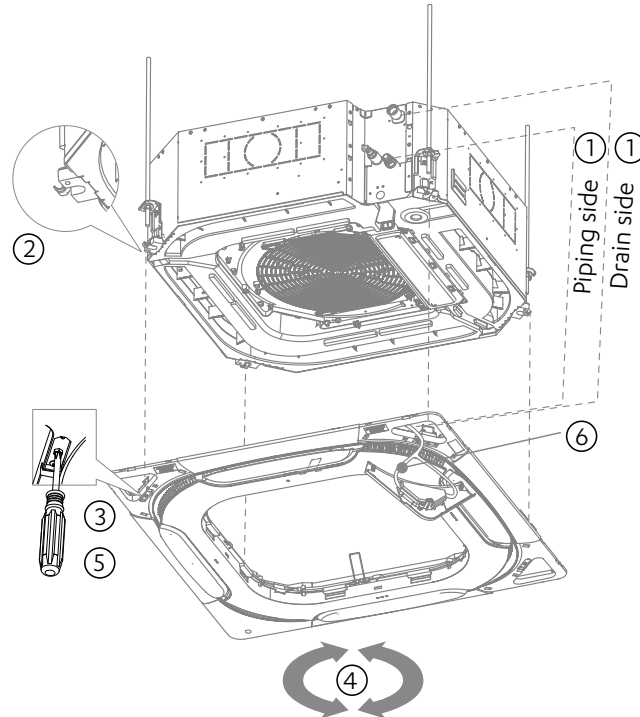
08.03.01.03. Remove the mounting cover plates at the four corners, take out the hanging ropes of the installation frame from the inner hooks at the corners of the panel, and take out the mounting cover plates outwards, as shown in the following figure.

Exert pulling force from the position for installing/removing buckle



08.03.02. Install the panel

1. Align the decoration panel with the Indoor Unit direction: The following text is engraved on the decoration panel: "Piping side" and "Drainage side". Rotate the decoration panel to align the direction engraved with "Piping side" with the refrigerant piping direction of the Indoor Unit. Due to product updates, the current drain side is the same as the piping side, as shown in the two serial numbers (1) in the figure below.

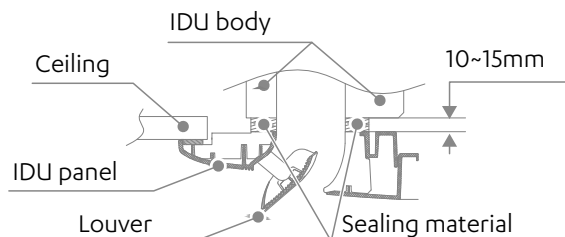


2. Suspend the decoration panel: Hang the two auxiliary hooks of the decoration panel onto the two hooks of the Indoor Unit's air guide ring. Then hang the four steel wire buckles for suspension onto the hooks at the four corners of the Indoor Unit, as indicated by the serial number (2) in the figure. Note that the hooks are those hanging, protruded hooks.

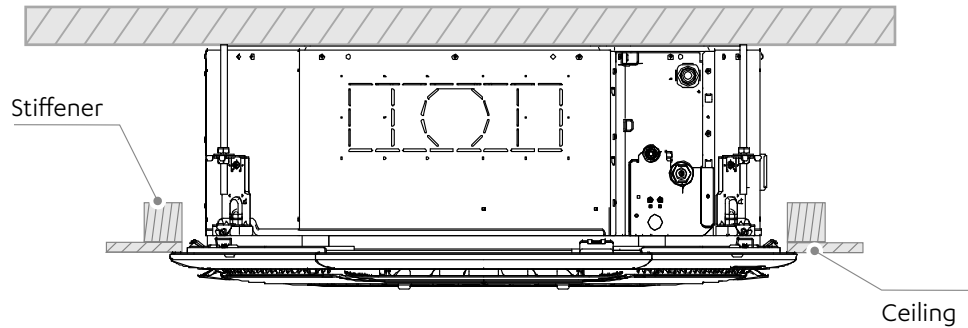
CAUTION

The figure shows only one model of Indoor Unit adaptive to this decoration panel. The actual design of other Indoor Units adaptive to this decoration panel may vary, but the operation method is the same.

3. Pre-fasten the decoration panel: Screw in the locking screws at four corners of the decoration panel by about 5mm (the panel will rise by 5mm accordingly).
4. Rotate to adjust the decoration panel along the direction of the arrow so that it can cover the entire ceiling hole.
5. Tighten the four locking screws at step (3) till the thickness of the sealing material between the panel and the unit body is compressed to 10–15mm, as shown in the figure below.



6. The ceiling shall have sufficient strength to ensure that the panel and the ceiling can be tightly fitted without gap. If the ceiling is not strong enough, add a stiffener. (See the figure below)



7. Do not pull the display panel and its connecting cable during installation; otherwise a fault could occur.
8. If the ceiling is unavailable: Adjust the four locking screws until gentle contact with the sealing material between the panel and the unit body. Do not press the material until it reaches a thickness of 10–15mm. Without support from the ceiling, tightening the screws too much will deform the panel edge.



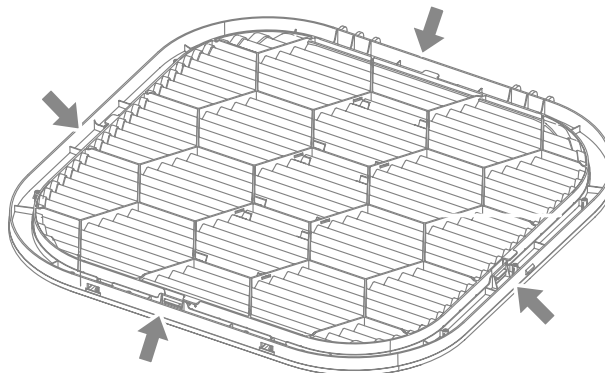
Without support from the ceiling, tightening the screws too much will deform the panel.

CAUTION

The figure shows only one model of Indoor Unit adaptive to this decoration panel. The actual design of other Indoor Units adaptive to this decoration panel may vary, but the operation method is the same.

08.03.03. Install the grille

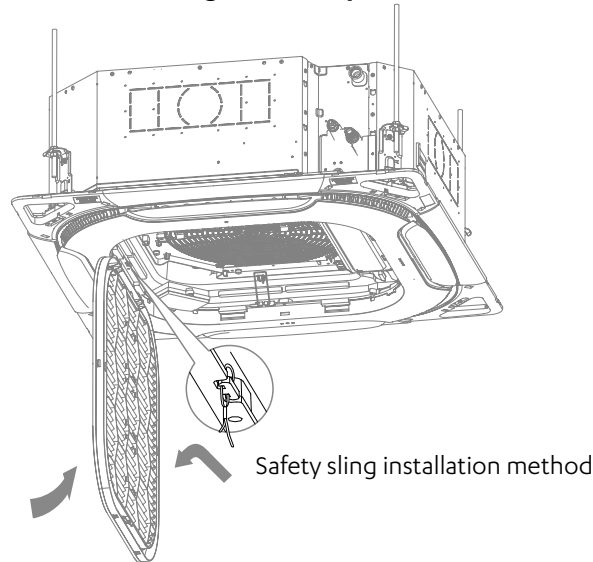
- 08.03.03.01. To replace the G1 primary filter, press the buckles inwards in four directions, and then remove the G1 primary filter from the air inlet grille.**



- 08.03.03.02. To install a new filter, perform the step in the opposite direction.**

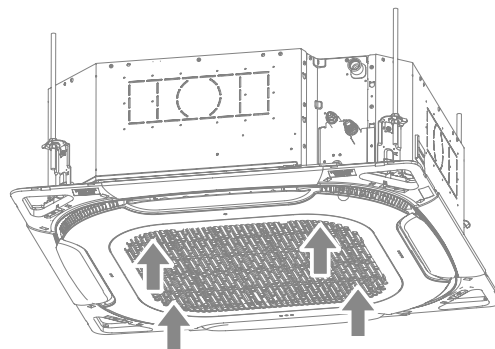
08.03.04. Install the air inlet grille

08.03.04.01. Tilt the air inlet grille by 45°, and insert the suspension hooks into the hook holes around the return air inlet of the decoration panel. The air inlet grille can be installed at four directions around the return air inlet. But only two directions provide structures to install the safety sling. Please determine the installation direction according to the requirements of the user (see figure below).



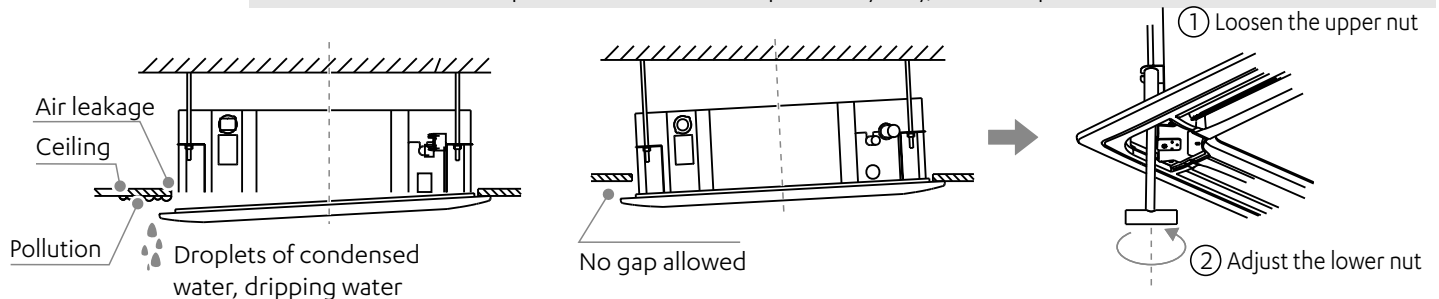
08.03.04.02. A safety sling is designed at the air inlet grille hook. Install the safety sling in the safety sling slot according to the example shown in the figure above.

08.03.04.03. Close the return air grille, and push up the air inlet grille at the four positions indicated by the arrows in the figure below, so that the return air grille is fully clamped into the return air inlet. After assembly, check if the clearances around the air inlet grille are even, and make sure that all the buckles have been fully clamped.



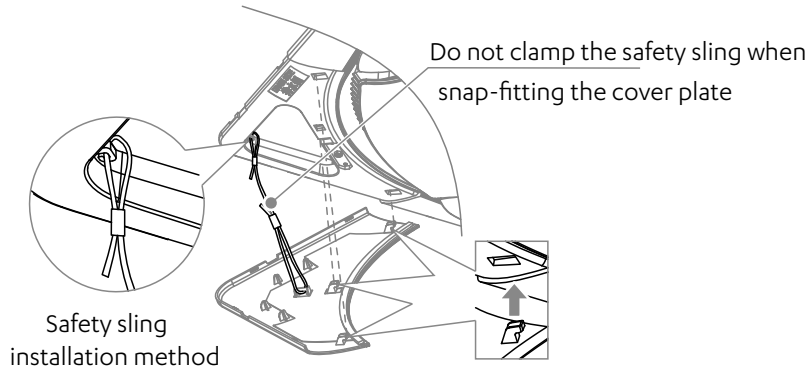
CAUTION

The figure shows only one model of Indoor Unit adaptive to this decoration panel. The actual design of other Indoor Units adaptive to this decoration panel may vary, but the operation method is the same.

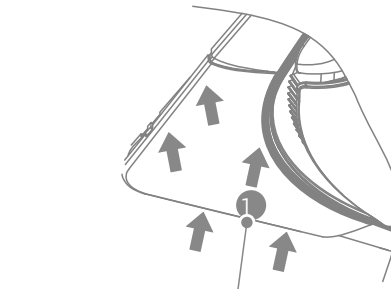


08.03.05. Install the decorative cover plate for the corners and the display cover plate.

08.03.05.01. Fix the safety sling on the decorative cover plate for corner on the decoration panel.



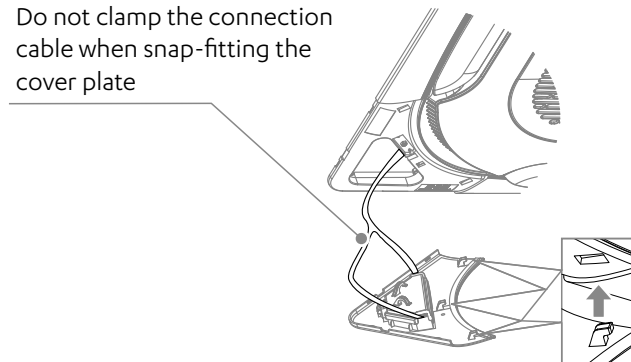
08.03.05.02. Snap-fit the decorative cover plate for corner: There are three buckles on the decorative cover plate. First insert the three buckles in the three corresponding holes on the decoration panel, when the three buckles are not snap-fitted with the decoration panel, and then press the position indicated by the arrow (1) in the figure below to snap-fit the three buckles with the decoration panel. Finally, press the positions indicated by the other four arrows so that the decorative cover plate for the corners is completely assembled with the decoration panel.



Push this position to make the three buckles enter the buckle holes

08.03.05.03. The display panel cover plate is connected to the decoration panel using a cable. It is not necessary to install a safety sling. The installation method of the display panel and the decoration panel is the same as that described in the above step 2.

Do not clamp the connection cable when snap-fitting the cover plate



09. REFRIGERANT CONNECTING PIPING INSTALLATION

09.01. Length and Level Difference Requirements for the Pipe Connections of Indoor Unit and Outdoor Unit .

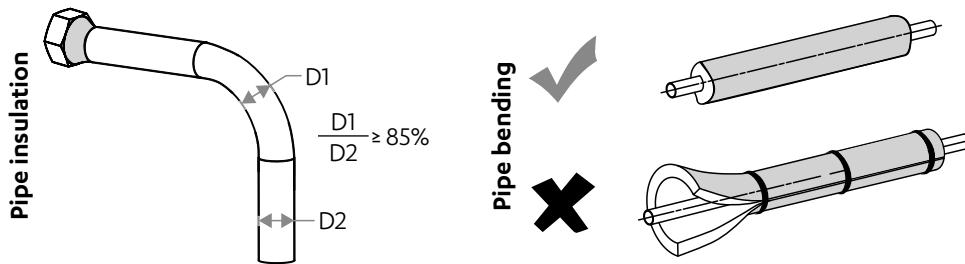
Different Outdoor Units have different requirements for length and level differences for the piping. Refer to the Installation & Owner's Manual attached with the Outdoor Unit.

WARNING

- During the installation of the connecting pipes, do not allow air, dust, and other debris to penetrate the piping system, and make sure the interior of the pipes are dry.
- Install the connecting pipes only when the Indoor Units and Outdoor Units are secured.
- When installing the connecting pipes, record the actual installation length of the liquid pipe on the spot so that additional refrigerant can be added.
- The copper pipes must be wrapped with thermal insulation materials when they are installed. In the event of refrigerant gas leakage during operation, please ventilate immediately.

09.02. Pipe Layout

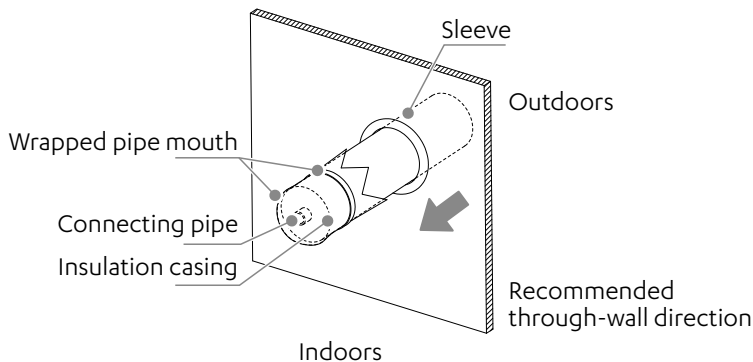
1. Bend the pipes or punch holes in the wall as needed. The deformed pipe area must not exceed 15% of the total area. A protective casing should be installed at the wall or floor hole. The weld joint must not be inside the casing. The drill hole on the external wall must be sealed and tightly wrapped with a binding tie to prevent impurities from entering the pipe. The pipe must be insulated with the correctly-sized insulation pipe.



NOTE

D1 is the minimum diameter, and D2 is the nominal diameter.

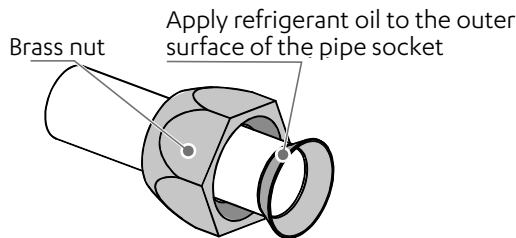
2. The wrapped connecting pipe is plugged through the wall hole sleeve from the outdoor side and enters the indoor side. The pipes must be arranged carefully so as not to damage the piping.



09.03. Pipe Connection Steps

Measure the required length of the connecting pipe. Make the connecting pipe using the following method (see "Pipe Connection" for details).

1. Connect the Indoor Unit first, then connect the Outdoor Unit.
Before tightening the flare nut, apply refrigeration oil on the inner and outer surface of the pipe flare (you must use refrigeration oil compatible with the refrigerant for this model), and turn it 3 or 4 turns by hand to tighten it. When connecting or removing a pipe, use two wrenches at the same time.



CAUTION

✓ Bend and arrange pipes carefully without damaging the pipes and their insulating layers.

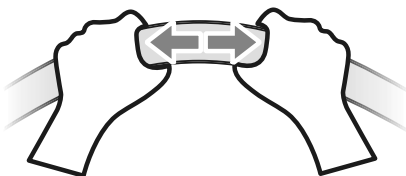


Do not let the interface of the Indoor Unit bear the weight of the connecting pipe; otherwise, the connecting pipe may be crushed and deformed, which will affect the unit's cooling (heating) abilities, or the thermal insulation materials may become compressed, resulting in air leakage and condensation.

2. The check valve of the Outdoor Unit is completely closed when leaving the factory. Unscrew brass nuts from the check valve in each connection, and connect the flared tube within 5 minutes. When the brass nuts at the check valve are removed and placed somewhere for too long, dust and other sundries may enter the pipeline system and cause failures after extended periods of operation.
3. After the refrigerant piping is connected to the Indoor Unit and Outdoor Unit, follow the operations in the section titled "Vacuum pumping" to exhaust the air. After the air is exhausted, tighten the maintenance nut.

09.04. Pipe Connection

Bend the pipe with your thumb



Processing method

1. Hand bending processing: Applicable to thin copper pipes (Ø6.35mm–Ø12.7mm).
2. Mechanical bending processing: Wider application (Ø6.35mm–Ø28mm), using spring pipe bender, manual pipe bender or electric pipe bender.

CAUTION

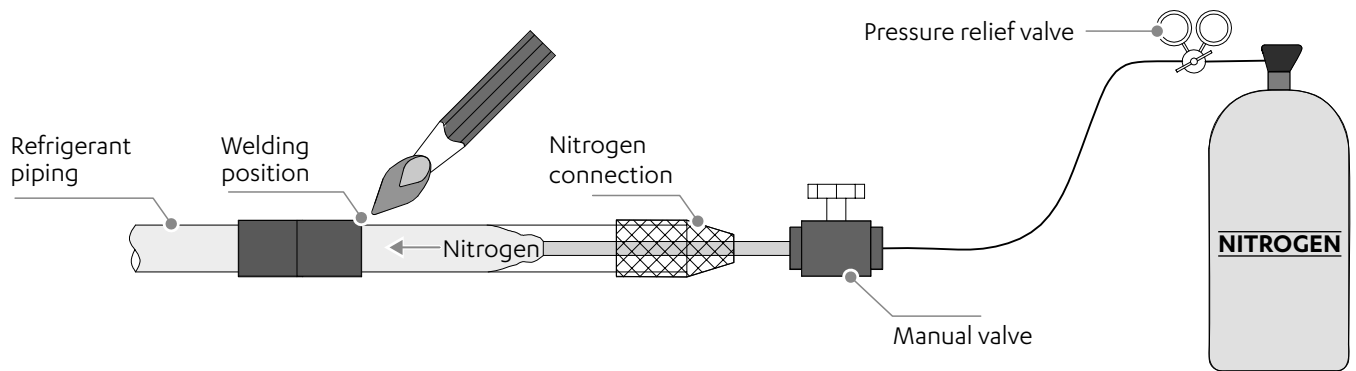
- The bending angle should not exceed 90°; otherwise, wrinkles will be formed in the pipe, which can easily break.
- The bending radius should not be smaller than 3.5D (pipe diameter) and should be as large as possible to prevent the pipe from becoming flattened or crushed.
- When mechanically bending the pipe, the pipe bender inserted into the copper pipe must be cleaned.

09.04.01. Brazing pipes

When brazing pipes, fill the pipes with nitrogen. First evenly heat the inner pipes, then the outer pipes, and fill the joints with solder.

! WARNING

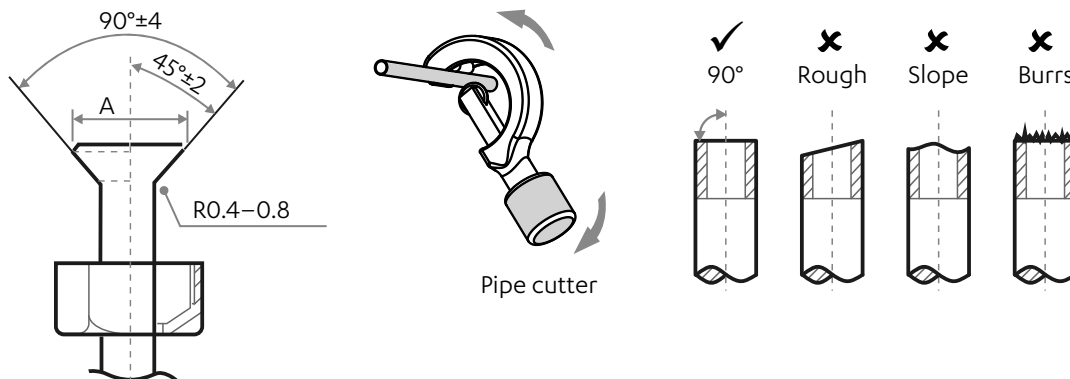
- When it is necessary to fill the piping with nitrogen during welding, the pressure must be kept at 0.02MPa using a pressure relief valve.
- Do not use flux when soldering the refrigerant connection piping. Use a phosphor copper solder that does not require flux.
- Do not use any oxidants when soldering the piping. The piping may become clogged with residual oxidants, which may block components such as electronic expansion valves during operation.



09.04.02. Flaring

To cut the piping with a pipe cutter, rotate the pipe cutter repeatedly.

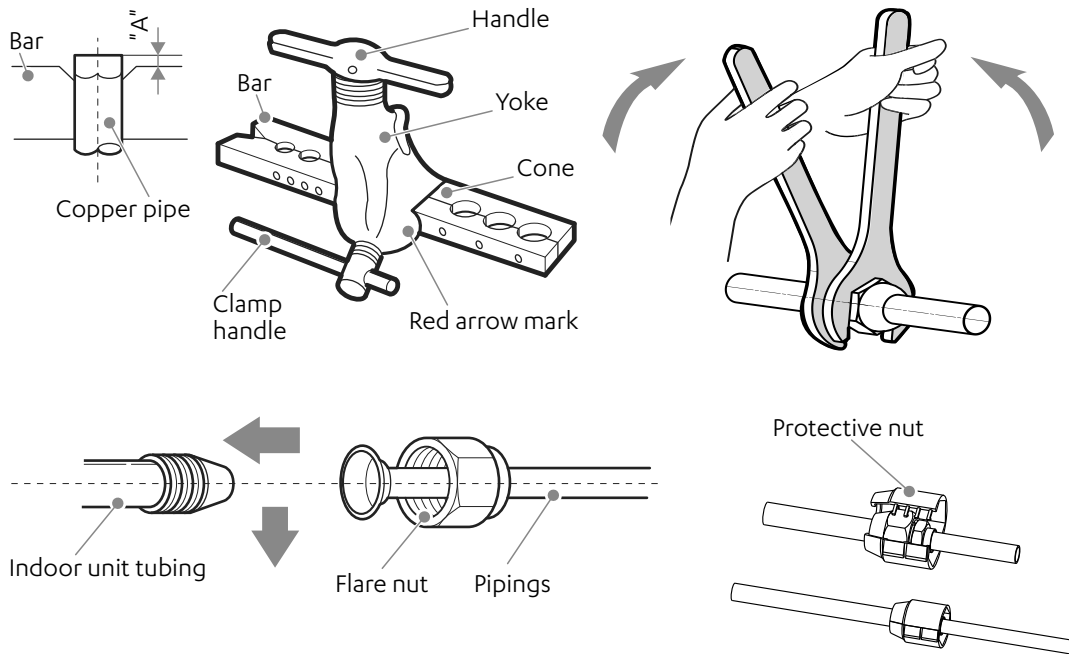
Put the pipe into the connecting nut flaring, and both the gas pipe and liquid pipe of the Indoor Unit are connected by flaring.



Outer diameter (mm)	A (mm)	
	Max.	Min.
Ø6.35	8.7	8.3
Ø9.52	12.4	12.0
Ø12.7	15.8	15.4
Ø15.9	19.1	18.6
Ø19.1	23.3	22.9

09.04.03. Nut fastening

1. Align the connecting piping, firstly tighten most of the thread of the connecting nut by hand, and then use a wrench to tighten the last 1-2 turns of the thread as shown in the figure.
2. The welding is done on site, and the bell mouth cannot be used indoors.(For IEC/EN 60335-2-40 except IEC 60335-2-40: 2018)
3. The protective nut is a one-time part, it can not be reused. In case it is removed, it should be replaced with a new one.(For IEC 60335-2-40: 2018 only)



⚠ CAUTION

- Excessive torque can break nut on installation conditions.
- When flared joints are reused indoors, the flare part should be re-fabricated.

Pipe size (mm)	Tightening torque [N.m (kgf.cm)]
Ø6.35	14.2–17.2 (144–176)
Ø9.52	32.7–39.9 (333–407)
Ø12.7	49.5–60.3 (504–616)
Ø15.9	61.8–75.4 (630–770)
Ø19.1	97.2–118.6 (990–1210)

⚠ CAUTION

Depending on the installation conditions, excessive torque will damage the flared mouth, and too small torque cannot tighten the nut, which will cause refrigerant leakage. Please refer to the above table to determine the appropriate tightening torque.

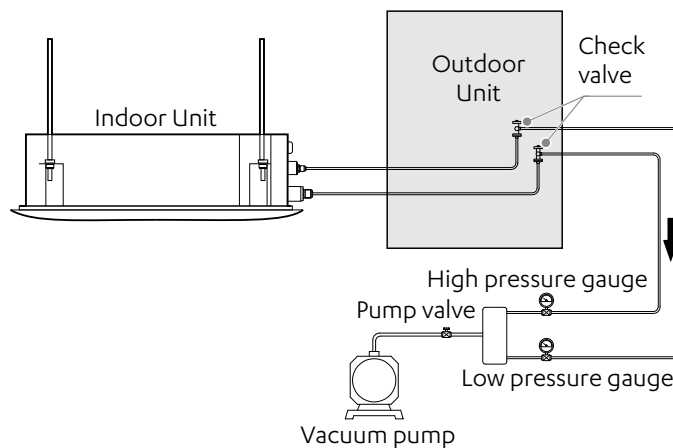
09.05. Refrigerant Piping Fixing

Angle iron brackets or round steel hangers should be used for fixing. When the liquid pipe and gas pipe are suspended together, the size of the liquid pipe shall prevail.

Pipe outer diameter (mm)	≤20	20~40	≥40
Horizontal pipe distance (m)	1.0	1.5	2.0
Stand pipe distance (m)	1.5	2.0	2.5

09.06. Vacuum Pumping

Connect the refrigerant piping to the gas and liquid pipes of the Outdoor Unit, and use a vacuum pump to evacuate the gas and liquid pipes of the Outdoor Unit at the same time.



X Do not use the refrigerant enclosed in the Outdoor Unit for vacuuming. The reduction of Outdoor Unit refrigerant may cause performance degradation of the air conditioner.

09.07. Leak Detection

Fill the system with nitrogen and increase the pressure to the HP cut out limit to detect leaks.. The following methods are recommended:

1. By foam

Apply soapy water or foam evenly (spray) on areas where leakage may occur, and observe whether air bubbles appear. If there are no air bubbles, it indicates that the system is airtight.

2. By instrument

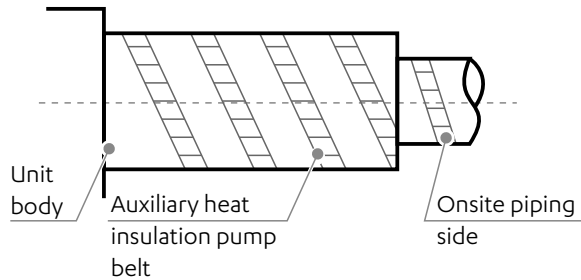
Use a refrigerant leak detector to identify leaks. Align the leak detector probe with the part where leakage may occur, and follow the instructions to determine whether there is a leak.

⚠ CAUTION

Leak detection will be conducted at each spot for at least 3 minutes. If any leak has been identified, tighten the nut and perform the detection again until no leaks are found. After completing the leak detection, wrap the exposed Indoor Unit pipe joint with insulation material and tie it with a binding tie to prevent condensation and dripping water.

09.08. Pump Outlet

Pipes on the liquid and air sides have a low temperature during cooling. Take sufficient insulation measures to prevent condensation.



NOTE

- Be sure to use a thermal insulation material with a heat resistance of 120°C or higher for the gas pipe.
- The attached insulation material for the part of the Indoor Unit where the pipe connects must undergo heat insulation treatment that leaves no gaps.
- For outdoor pipelines, additional protective treatments should be performed, such as adding metal duct boxes or wrapping the pipes with aluminum foil materials. Thermal insulation materials directly exposed to the open air will degrade and lose their insulating properties

10. DRAINAGE PIPE INSTALLATION

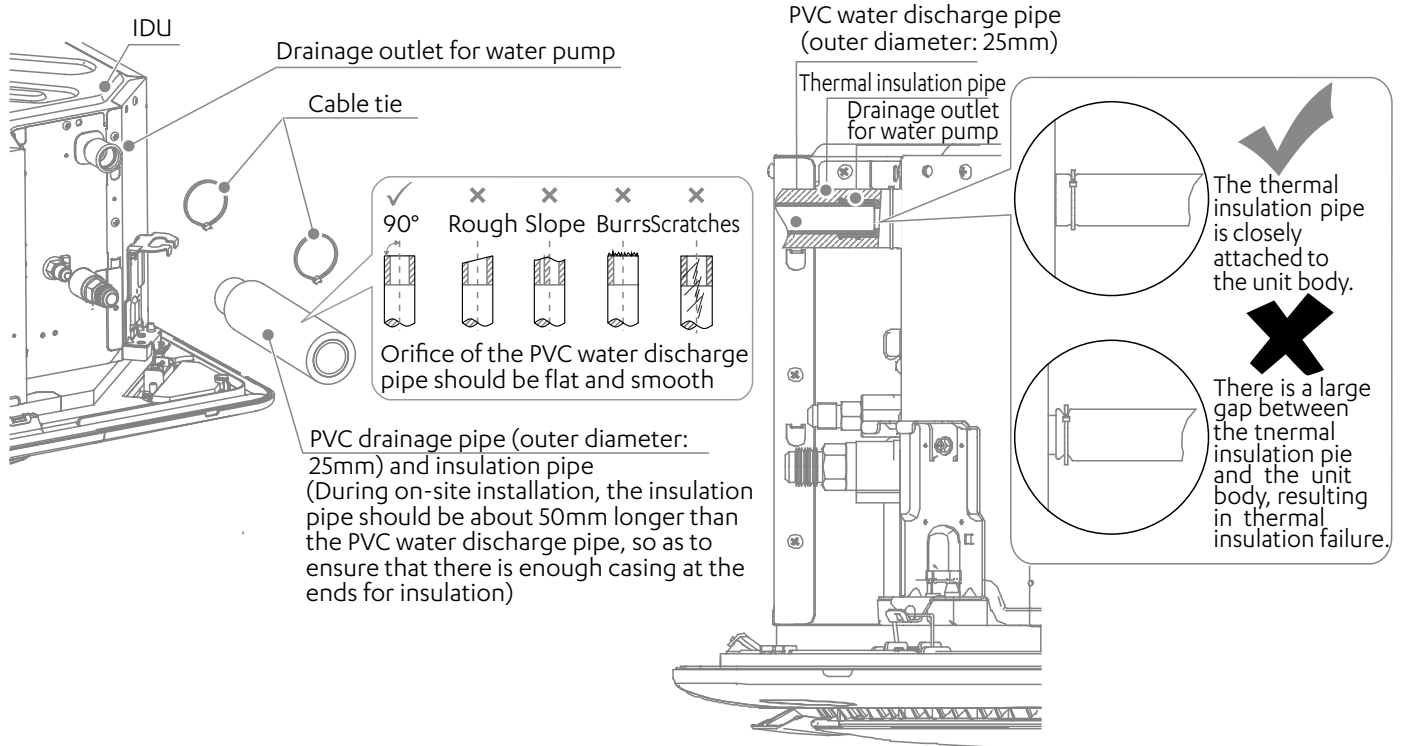
CAUTION

- Before installation of the condensate pipeline, determine its direction and elevation to avoid intersection with other pipelines to ensure that the slope is smooth and straight.
- The highest point of the drainage pipe should be equipped with a discharge port to ensure the smooth discharge of condensate water, and the discharge port must face downwards to prevent dirt from entering the pipe.
- Do not connect the drainage pipe to the wastewater pipe, sewage pipe, or other pipes that produce corrosive gases or odors. Otherwise, the Indoor Unit (especially the heat exchanger) may be corroded and odor may enter the room, negatively impacting the heat exchange effects and user experience. The user will assume responsibility for any consequences resulting from failure to abide by instructions.
- After the pipeline connection is completed, a water test and a full water test should be done to check whether the drainage is smooth and whether the pipeline system leaks.
- The air conditioner drainage pipe must be installed separately from other sewage pipes, rainwater pipes and drainage pipes in the building.
- Adverse slope, convex and concave pipes are prohibited, as improper airflow will cause poor drainage. Drainage pipes need to be evenly wrapped with thermal insulation pipes to prevent condensation.
- Please connect the drainage pipes in the following ways. Improper installation of the pipes may result in water leakage and damage to furniture and property.
- All joints of the drainage system must be sealed to prevent water leakage.

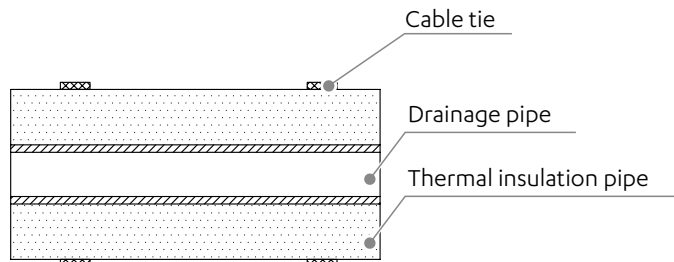
10.01. Installation of Water Discharge Pipe for the Indoor Unit

1. The drainage pipe can be connected to the water pump outlet by using a PVC pipe, and fastening it with a hose clamp. Then push the thermal insulation pipe to be closely attached to the main body, and finally fasten the hose clamp.

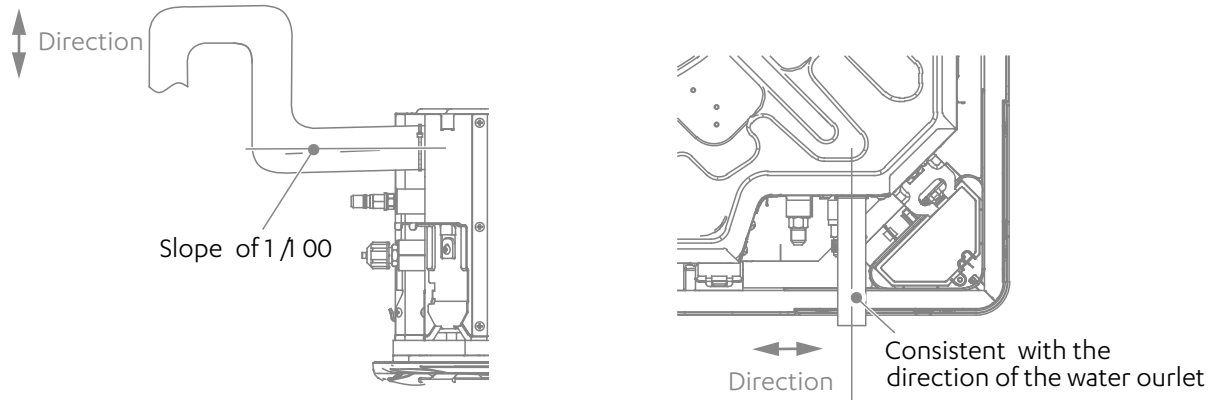
The connection between the two ends of the drainage hosepipes and the connection of the water pump outlet need to be fastened with a cable tie, in combination with PVC/rubber adhesives. Pay attention to the instructions for use of the adhesives to prevent corrosion to the EPDM rubber. Use hard PVC adhesives for connecting to other water piping. Check that the connections are tight and without leakage.



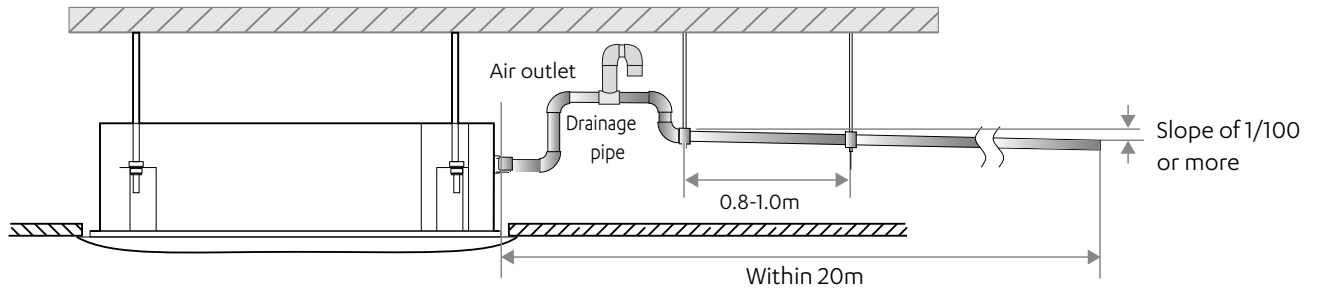
2. The drainage pipes of the unit (especially the indoor part) must be evenly wrapped with thermal insulation pipes and fastened with cable ties to prevent air from entering and producing condensate water.



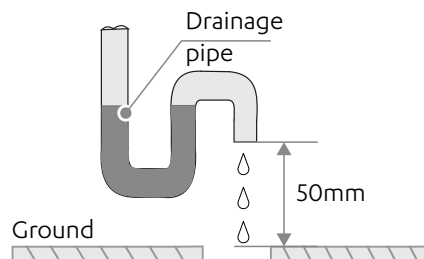
- To prevent water from flowing back into the air conditioner when it stops running, avoid installing the drainage pipe in a way that slopes upwards for a long distance. To lift the drainage height (the distance between the highest point and the lower side of the Indoor Unit is not greater than 1m), raise the required height over a short distance and connect the drainage pipe to the main drainage pipe downwards. The drainage pipe should be positioned in the same direction as the drainage outlet of the unit body in the left and right direction, so that the drainage pipe does not expand and store water; otherwise, it may generate abnormal noise.



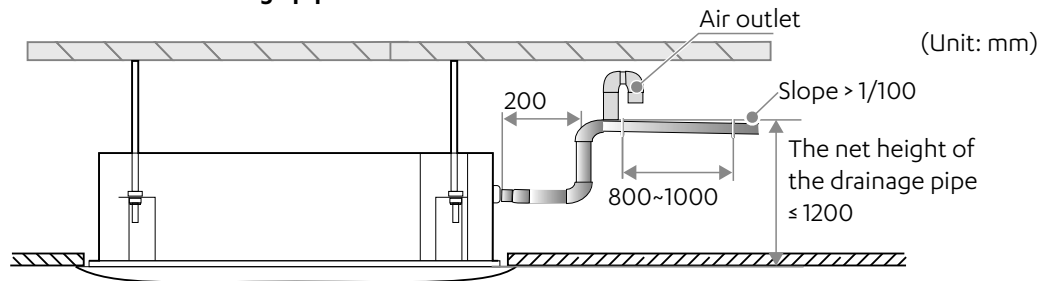
- When connecting the drainage pipe, do not pull the drainage pipe forcefully, or it may become loose. The lateral pull-out of the drainage pipe should be within 20m, and a support point should be set every 0.8–1.0m to avoid air resistance caused by the deflection of the drainage pipe. The drainage pipe shall be equipped with a support point every 1.5-2.0m.



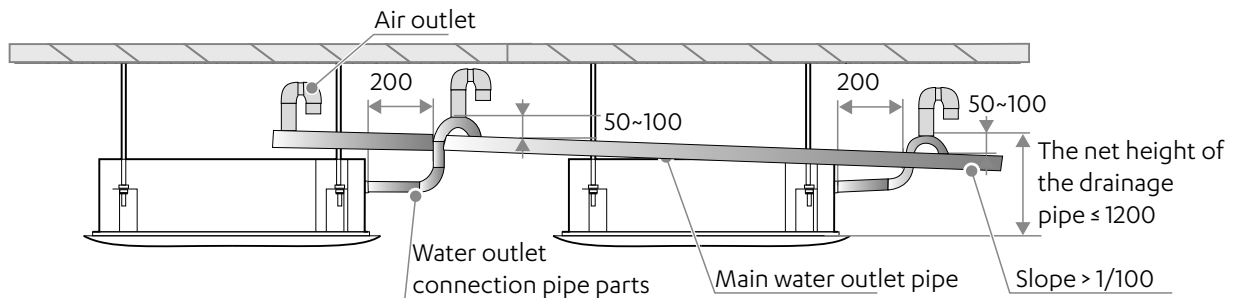
- The end of the drainage pipe must be more than 50mm above the ground or from the base of the water discharge slot. In addition, do not submerge it in water. To discharge the condensed water directly into a ditch, the water discharge pipe must bend upwards to form a U-shaped water plug to stop odors from entering the room via the water discharge pipe.



Connection method of the drainage pipe:

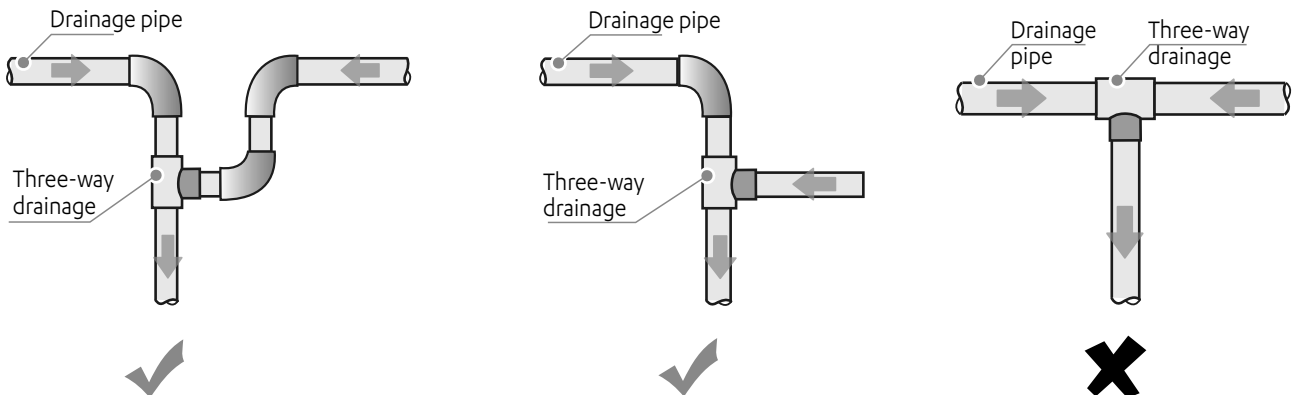


Method to connect the drainage pipe for a single unit



Drainage pipes from multiple units are connected to the main drainage pipe to be discharged through the sewage pipe.

Hedging must be prevented for horizontal drainage pipes to avoid adverse slopes and poor drainage.



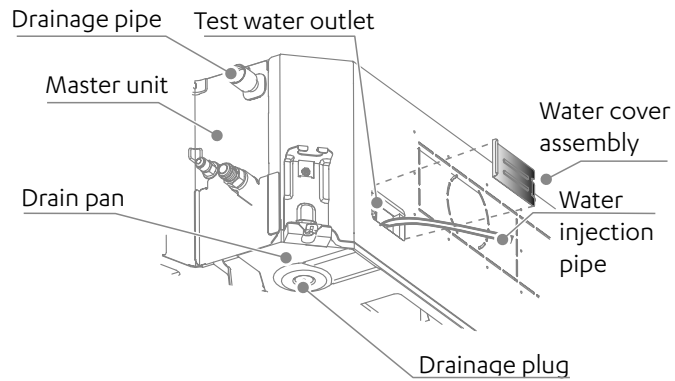
10.02. Water Discharge Test

1. Before the test, make sure that the water discharge pipeline is smooth, and check that each connection is properly sealed.

2. Conduct the water discharge test in a new room before the ceiling is plastered.

- The drainage pipe can be made of PVC pipe (outer diameter: 25mm). Based on the actual installation circumstances.
- Connect the power supply, and set the air conditioner to operate in cooling mode. Check the operating sound of the drain pump, and check whether the drainage outlet is draining normally (depending on the length of the drainage pipe, it may be delayed for about 1 minute before draining), and whether there is water leakage at each joint.
- If water drainage is carried out using the Indoor Unit drain pump, you need to remove the drainage plug on the unit body when conducting the water discharge test, to check whether the drain pump is operating. If the drain pump has not been started, check whether the drain pump has malfunctioned. Note: The drain pump only starts in cooling mode. While in heating mode, the drain pump remains turned off.
- Continue to add water until the alarm for excessive water levels is triggered. Check if the drain pump drains water immediately. After three minutes, if the water level does not fall below the warning level, the unit will shut down. If this occurs, you need to turn off the power supply, and drain away the accumulated water before you can turn on the unit normally.

- Turn off the power supply, remove the water, and put the water cover assembly back in its original place.



CAUTION

- The drainage plug at the bottom of the Indoor Unit is used to remove the accumulated water in the drain pan when the air conditioner is faulty and being repaired. The drainage plug should be inserted during operation to prevent water leakage.
- Faults, if any, need to be rectified as soon as possible.

11. ELECTRICAL CONNECTION

DANGER

- The power supply must be cut off before any electrical work is carried out. Do not conduct electrical work when the power is on; otherwise, it may cause serious personal injury.
- The air conditioning unit must be grounded reliably and must meet the requirements of the local country/region. If the grounding is not reliable, serious personal injury due to electric leakage may occur.

WARNING

- Installation, inspection or maintenance operations must be completed by professional technicians. All parts and materials must comply with the relevant regulations of the local country/region.
- The air conditioning unit must be equipped with a special power supply, and the power supply voltage should conform to the nominal working voltage range of the air conditioning unit.
- The power supply of the air conditioning unit must be equipped with a power disconnect device that conforms to the requirements of relevant local technical standards for electrical equipment. The power disconnecting device must be equipped with short circuit protection, overload protection and electric leakage protection. The clearance between open contacts of the power disconnecting device shall be at least 3mm.
- The core of the power cable must be made of copper, and the wire diameter should meet the current-carrying requirements. For details, refer to the "Power Cable Diameter and Electric Leakage Protector Selection". A wire diameter that is too small may cause the power cable to heat up, resulting in a fire.
- The power cable and the ground wire should be secured reliably to avoid stress on the terminals. Do not pull the power cable forcibly; otherwise, the wiring may become loosened or the terminal blocks may be damaged.
- Strong current wires such as power cables cannot be connected to weak current wires such as communication lines; otherwise, the product may become seriously damaged.
- Do not bond and connect the power cable. Bonding and connecting the power cable may cause it to heat up, resulting in a fire.

CAUTION

- Bonding and connecting the communication line should be avoided, but if it is used, at the very least, ensure a reliable connection by crimping or soldering and make sure the copper wire at the connection is not exposed; otherwise, communication failure may occur.
- The power cable and communication line must be routed separately, with a distance of over 5 cm. Otherwise, communication failure may occur.
- Keep the vicinity of the air conditioning unit as clean as possible to avoid small animals from nesting and biting the cables. If a small animal touches or bites the cables, short circuiting or electric leakage may occur.
- Do not connect the ground wire to the gas pipe, water pipe, lightning rod ground wire or telephone ground wire. Gas pipe: Risk of explosion and fire when gas leaks.
- Water pipe: If rigid plastic pipes are used, there will be no grounding effect.
- Lightning rod ground wire or telephone ground wire: In the event of lightning strikes, abnormal ground potential may rise.
- After all wiring is completed, check carefully before turning on the power supply.

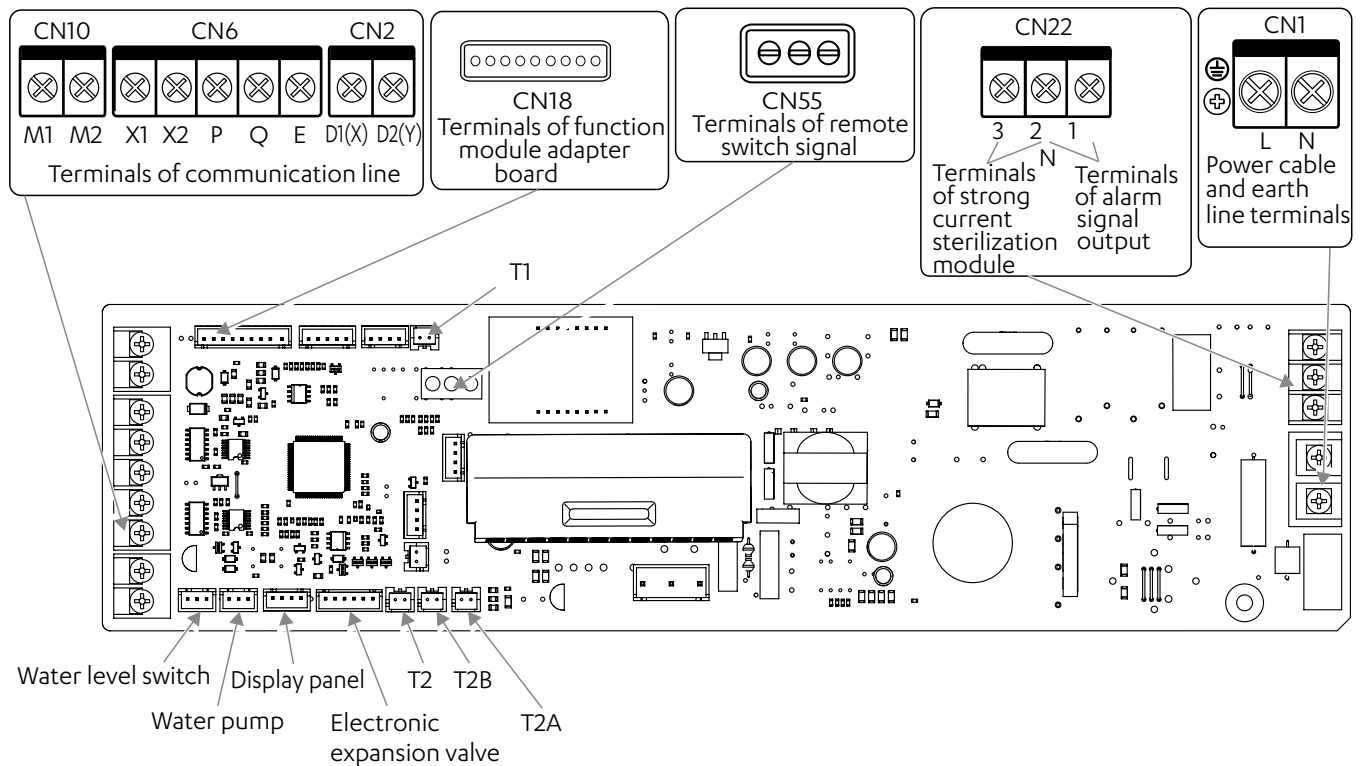
11.01. Electrical Characteristics

Unit power (kW)	Electric specifications of the Indoor Unit					
	Frequency (Hz)	Voltage (V)	MCA (A)	MFA (A)	IFM power input (W)	FLA (A)
2.8	50	216~253	0.27	15	45	0.22
3.6			0.27		45	0.22
4.5			0.52		45	0.41
5.6			0.33		45	0.26
7.1			0.42		45	0.33
8.0			0.63		45	0.51
9.0			0.58		45	0.46
10.0			0.91		45	0.72
11.2			0.78		125	0.62
14.0			1.42		125	1.14

NOTES

- MCA: Min. Circuit Amps. (A), which is used to select the minimum circuit size to ensure safe operation over a long period of time.
- MFA: Max. Fuse Amps. (A), which is used to select the circuit breaker.
- IFM power input: full load power input of the indoor fan motor (reliable operation at the fastest speed setting).
- FLA: Full Load Amps. (A), which is the full load current of the indoor fan motor (reliable operation at the fastest speed setting).

11.02. Schematic diagram of the main terminal blocks of main control board



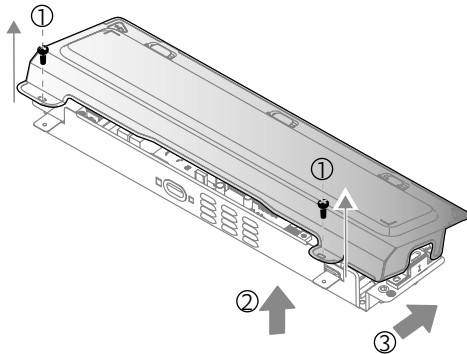
CAUTION



All weak point connection points meet SELV, such as X1, X2, P, Q, E, M1, M2, CN18, CN55 etc

11.03. Wiring

11.03.01. Open the Indoor Unit's electric control box cover

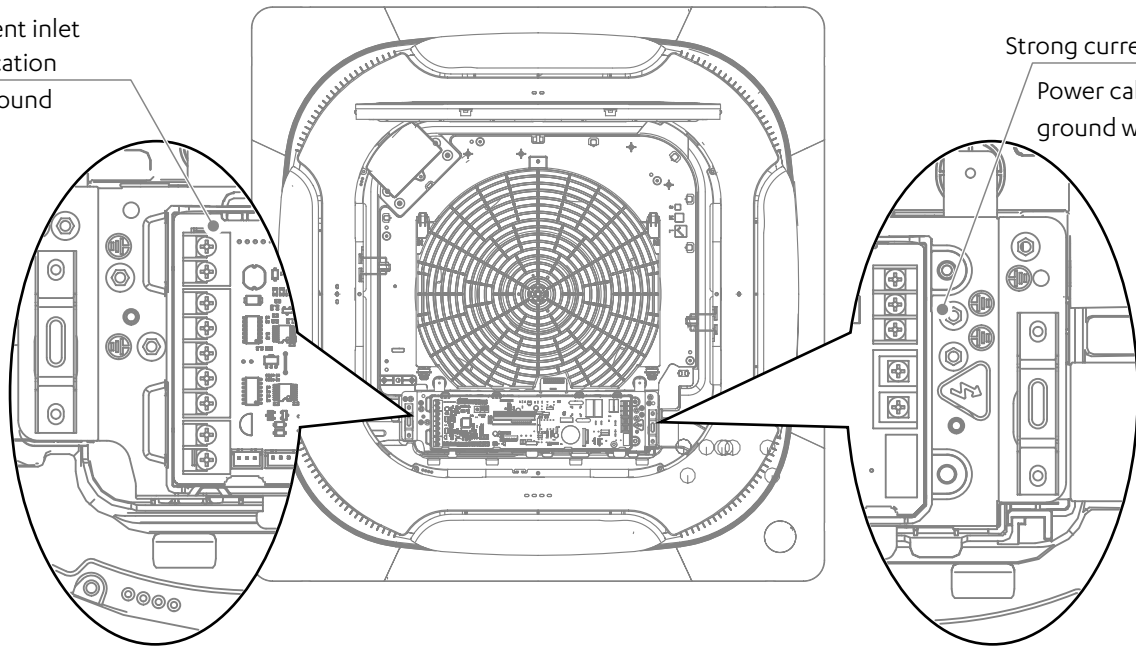


1. Remove the two screws at the positions shown in the figure;
2. Pull the bottom end of the electric control box cover horizontally outward;
3. Remove the electric control box cover by pulling downwards.

11.03.02. Connect the current wires

Connect the strong current wires (power cable, alarm signal output wire, strong current sterilization wire, and ground wire) and weak current wires (communication line, remote switch connection wire, function expansion board connection wire) to the electric control box through both sides of the electric control box, and the strong and weak current inlets.

Weak current inlet
Communication
line and ground
wire, etc.



Strong current inlet
Power cable and
ground wire, etc.

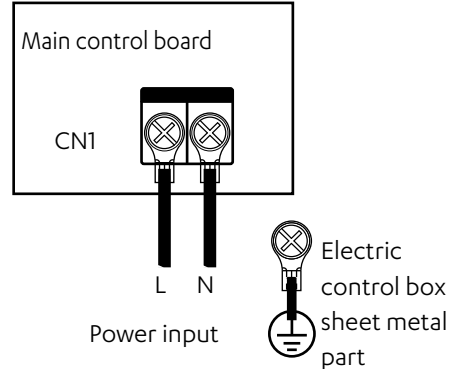
CAUTION

- The strong and weak current wires must be separated.
- Alarm signal output, strong current sterilization, remote switch, and function expansion board are custom or optional functions.

11.03.03. Power cable connection

11.03.03.01. Connection between the power cable and power supply terminal

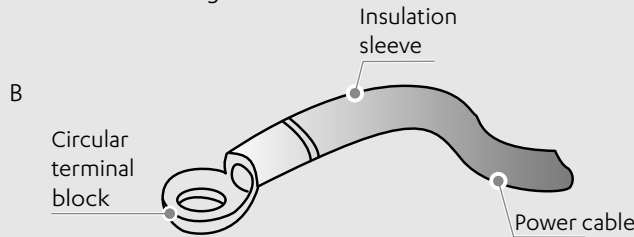
The power supply terminal of the Indoor Unit is fixed to the main control board, and the power cable is connected to the power supply terminal labeled "CN1" on the main control board. The live and neutral wires are connected according to the main control board logos "L" and "N", and the ground wire is directly connected to the electric control box sheet metal part.



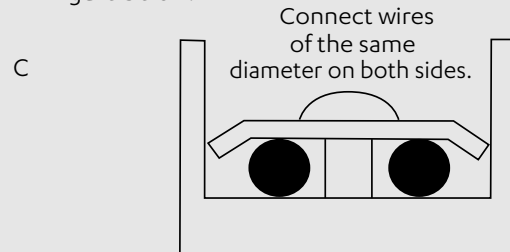
CAUTION

A Do not bond and connect the power cable. Bonding and connecting the power cable may cause it to heat up, resulting in a fire.

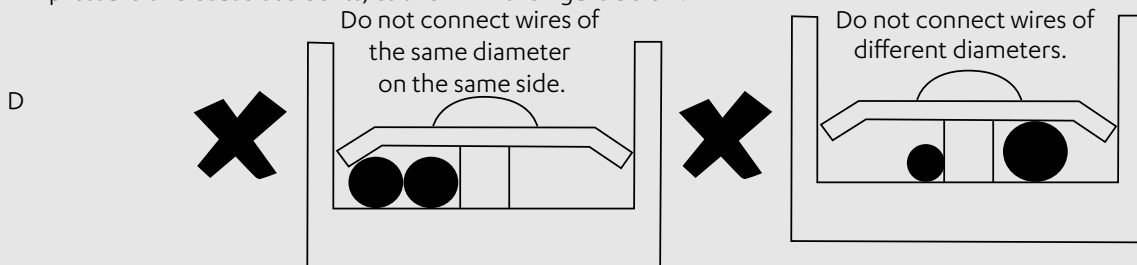
The power cable must be crimped reliably using an insulated circular terminal block, and then connected to the power supply terminal of the Indoor Unit, as shown in the figure below.



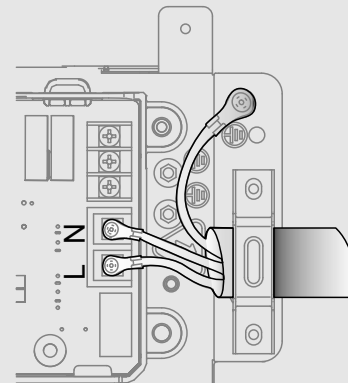
If it fails to crimp the insulated circular terminal block due to on-site limitations, connect the power cables of the same diameter to both sides of the power supply terminal block of the Indoor Unit, as shown in the figure below.



Do not press the power cables of the same wire diameter on the same side of the terminal. Do not use two power cables of different wire diameters for the same terminal blocks; otherwise, they can easily loosen due to uneven pressure and cause accidents, as shown in the figure below.



E The connected power cable should be secured with a wire clamp to prevent loosening, as shown in the right figure.

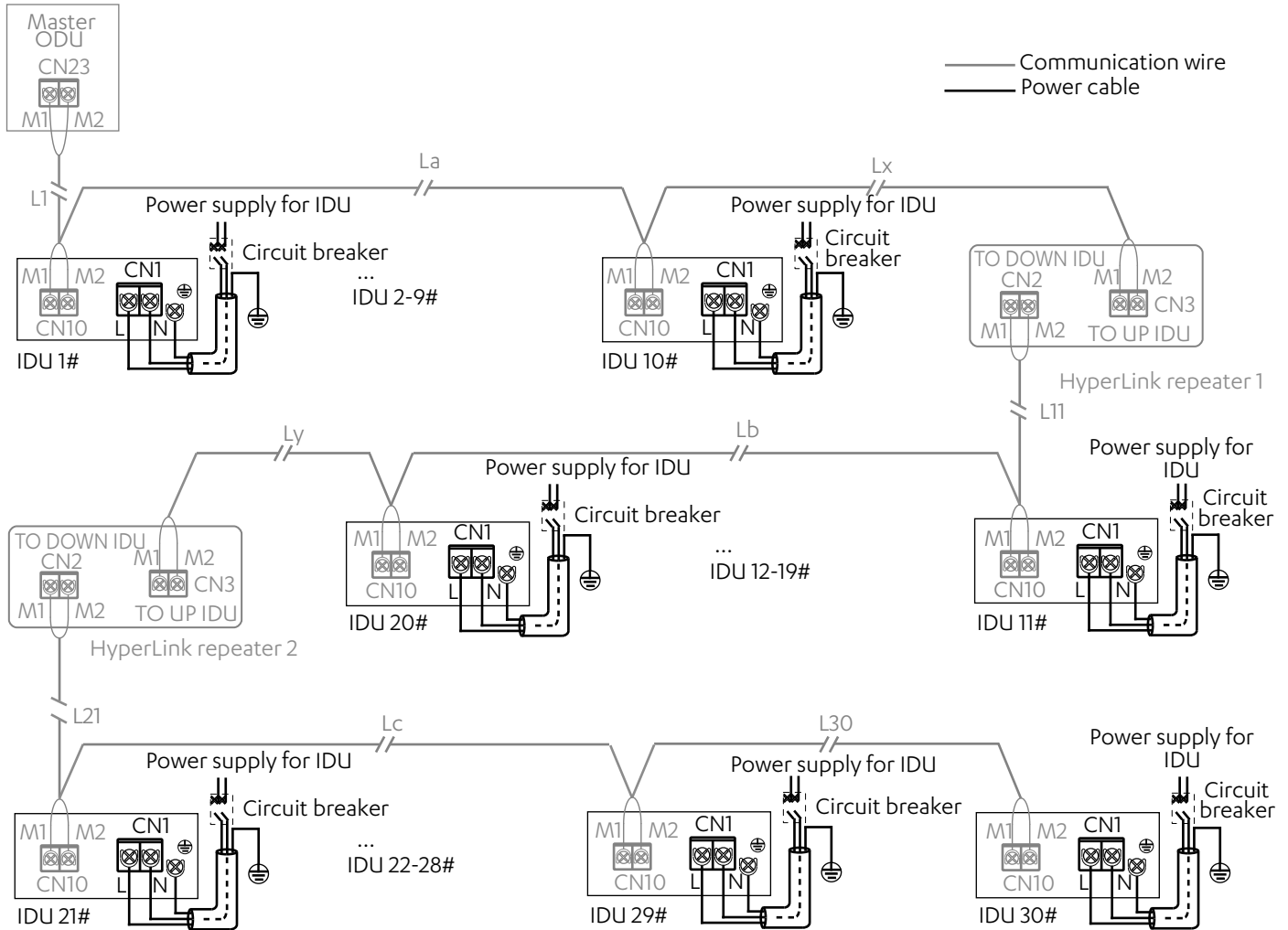


11.03.03.02. Power cable system connection

Power cable system connection depends on the forms of communication between the Indoor Unit and Outdoor Unit. For the HyperLink communication form with an independent power supply, Indoor Units are allowed to have an independent power supply. For other communication forms, Indoor Units should be provided with uniform power supply.

A. Indoor Units are provided with independent power supplies*, which are wired as follows:

For HyperLink communication with an independent power supply:

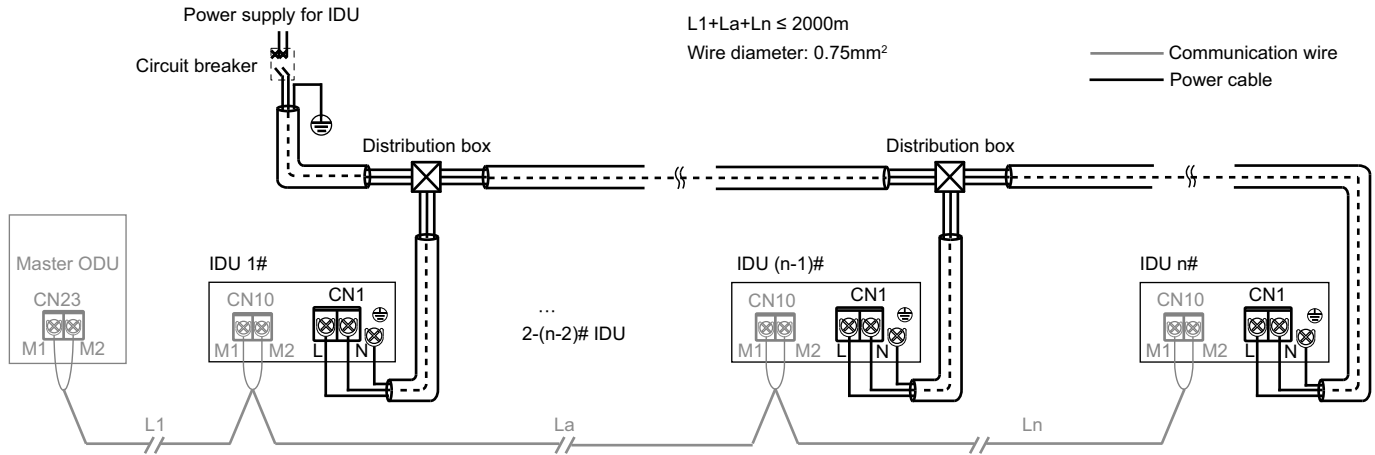


CAUTION

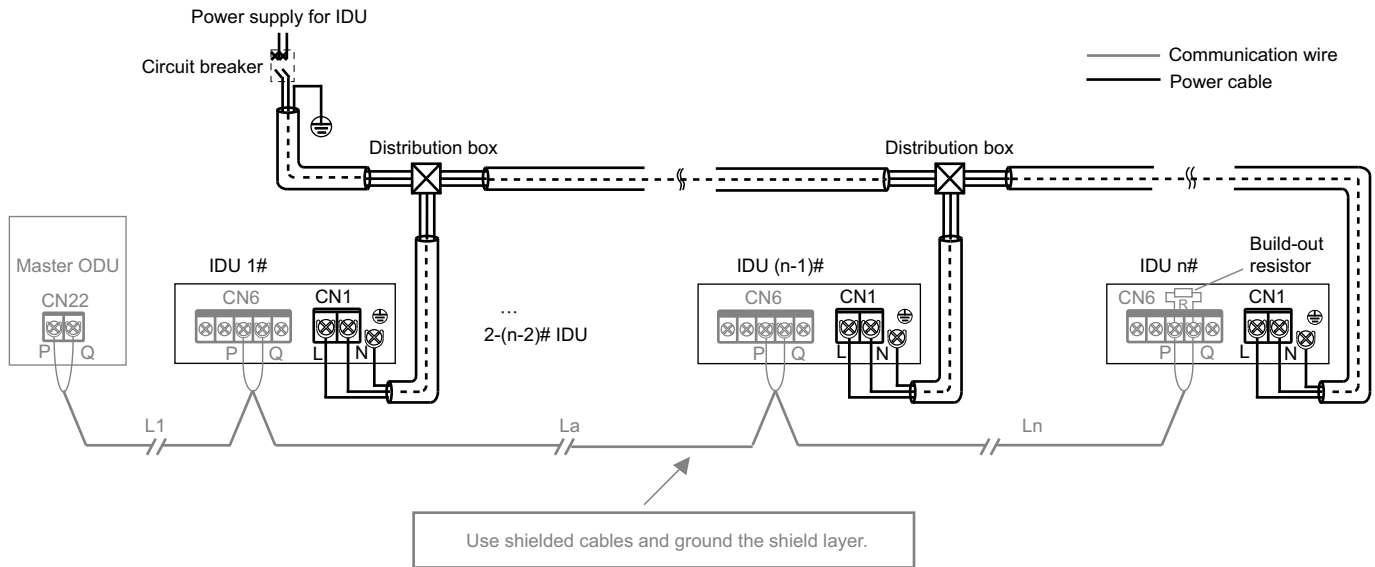
- When the Indoor Units are provided with independent power supplies, the Indoor Units in the same refrigerant system should be ECOFLEX Indoor Units, and the communication between Indoor Units and Outdoor Unit adopts a HyperLink with an independent power supply.
- This connection method has the function of an independent power supply, so in the same refrigerant system, the number of Indoor Units must not exceed 30 sets, and a maximum of only two repeaters may be installed.
- One repeater shall be added for every 10 Indoor Units or a communication distance of 200m added.

B. Indoor Units are provided with uniform power supply*, which are wired as follows:

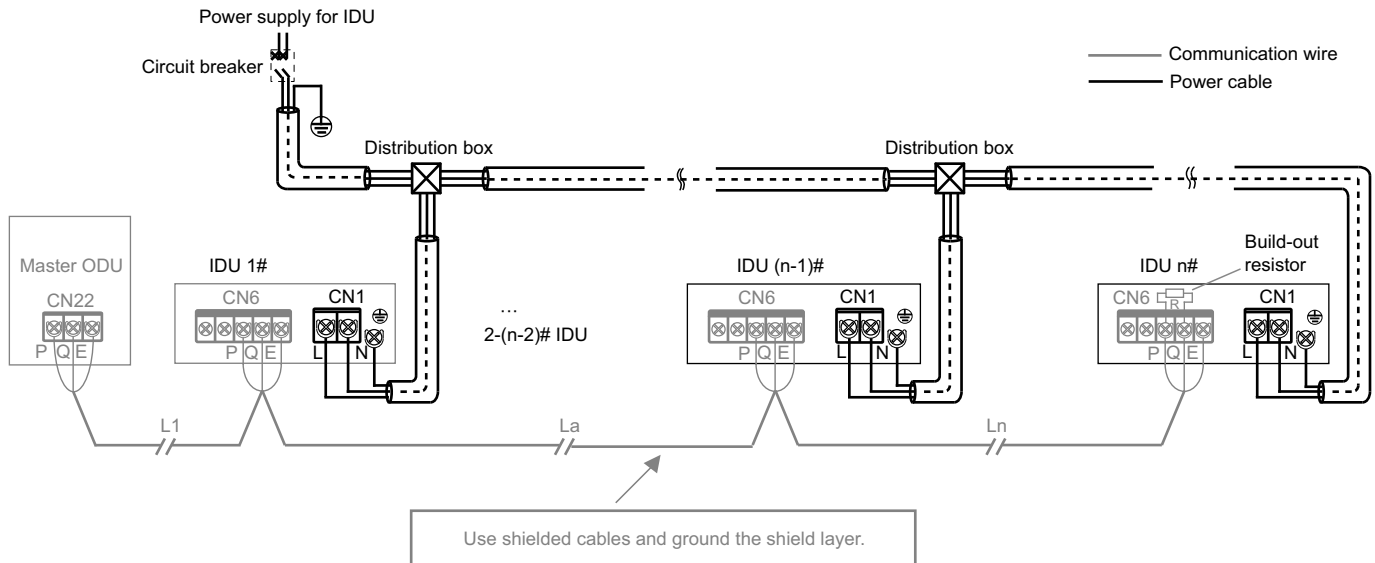
1. HyperLink communication with the uniform power supply:



2. P/Q communication (RS485):



3. P/Q/E communication (RS485):



⚠ CAUTION

- When the Indoor Units are provided with a uniform power supply, if the Indoor Units in the same refrigerant system are ECOFLEX Indoor Units, then Indoor Units and Outdoor Unit can communicate either via HyperLink with a uniform power supply, or via P/Q communication. If some of the Indoor Units in the same refrigerant system are non-ECOFLEX series, then Indoor Units and Outdoor Unit can only communicate via P/Q or P/Q/E communication.
- Both P/Q communication and HyperLink communication (M1M2) are indoor and outdoor communication, and only one of them can be selected. Do not connect P/Q communication and HyperLink communication at the same time in the same system. Do not connect HyperLink communication to P/Q or D1D2 communication.
- Do not connect M1M2 with the P/Q.

NOTE

- Independent power supply: With separate circuit breakers, the power supply for each Indoor Unit can be controlled independently.
- Uniform power supply: All the Indoor Units in the system are controlled by one circuit breaker.
- Repeater: power supply repeater, which is used to compensate for the voltage drop due to excessive length of line or line resistance when the main control board of the Outdoor Unit provides an independent power supply for Indoor Units through the HyperLink communication line. It is only used in refrigerant systems where Indoor Units are provided with an independent power supply.

11.03.04. Communication line connection

11.03.04.01. Selection of communication method for IDU

Equipped with independently developed HyperLink (M1M2) communication, ECOFLEX series Indoor Units also preserve the previous RS-485 (PQE) communication method. They are compatible with non-ECOFLEX Indoor Units. Pay attention to the type of Indoor Unit you have purchased before connecting communication lines. Please refer to the following table to select an appropriate communication method.

Indoor Unit type	Optional communication method between Indoor Units and Outdoor Unit	Remarks
When all Indoor Units are ECOFLEX series	HyperLink (M1M2) communication	<ol style="list-style-type: none"> 1. Independent power supply for Indoor Units*. 2. Any topology connection of communication lines. 3. Two-core and non-polar communication for M1M2.
	RS-485 (PQ) communication	<ol style="list-style-type: none"> 1. The Indoor Units need to be powered uniformly. 2. The communication cables must be connected in serial. 3. Two-core and non-polar communication for PQ.
When some of the Indoor Units are non-ECOFLEX series	RS-485 (PQE) communication	<ol style="list-style-type: none"> 1. The Indoor Units need to be powered uniformly. 2. The communication cables must be connected in serial. 3. PQE cables must be 3-core and PQ non-polar.

11.03.04.02. Table of selection of communication line diameter

Function	Indoor Unit and Outdoor Unit communication				One controller to one Indoor Unit (Two controllers to one Indoor Unit) Communication	One-to-more (centralized controller) Communication
	HyperLink communication (Indoor Units are powered independently)	HyperLink communication (Indoor Units are powered uniformly)	P/Q communication (Indoor Units are powered uniformly)	P/Q/E communication (Indoor Units are powered uniformly)	X1X2 communication	D1D2 communication
Wire diameter	2 × 1.5mm ² Wire resistance ≤ 1.33Ω/100m	2 × 0.75mm ²	2 × 0.75mm ² (shielded cable)	3 × 0.75mm ² (shielded cable)	2 × 0.75mm ² (shielded cable)	2 × 0.75mm ² (shielded cable)
Length	≤ 600m (add two repeaters)	≤ 2000m	≤ 1200m	≤ 1200m	≤ 200m	≤ 1200m

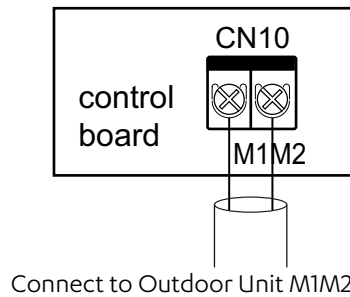
 CAUTION

- Please select the communication line according to the requirements in the above reference table. Use shielded cables for communication when strong magnetism or interference is present.
- On-site wiring must comply with the relevant regulations of the local country/region and must be completed by professionals.
- Do not connect the communication line when the power is on.
- Do not connect the power cable to the communication terminal; otherwise, the main control board may be damaged.
- The standard value of the screw torque of the communication line terminal is 0.5N·m. Insufficient torque may cause poor contact; excessive torque may damage the screws and power supply terminals.
- Both HyperLink communication and PQ communication are internal and external, so only one of the two can be selected. Do not connect both HyperLink communication line and PQ communication line to the same system, otherwise the Indoor Unit and Outdoor Unit cannot communicate normally.
- If some of the Indoor Units in the same refrigerant system are non-ECOFLEX series, only P/Q/E communication can be selected for the Indoor Unit and Outdoor Unit communication. The three-core shielded cable of 3×0.75mm² is required to connect "P", "Q", and "E".
- Do not bundle the communication line with the refrigerant pipeline, power cable, etc. When the power cable and the communication line are laid in parallel, a distance of more than 5cm should be maintained to prevent interference from the signal source.
- When the installers of the Indoor Unit and Outdoor Unit are working separately, information communication and synchronization are required. Do not connect the Outdoor Unit to HyperLink and the Indoor Unit to PQ. Do not connect the Outdoor Unit to PQ and the Indoor Unit to HyperLink.
- Bonding and connecting the communication line should be avoided, but if it is used, at the very least, ensure a reliable connection by crimping or soldering and make sure the copper wire at the connection is not exposed; otherwise, communication failure may occur.

11.03.04.03. Indoor Unit and Outdoor Unit communication**a. HyperLink communication (with independent power supply)**

Single unit: HyperLink communication is a new type of Indoor Unit and Outdoor Unit communication technology. When the Indoor Units are provided with independent power supplies, use 2×1.5mm² communication cables. M1 and M2 ports are located at terminal block "CN10" of the main control board. There is no distinction between negative and positive electrodes.

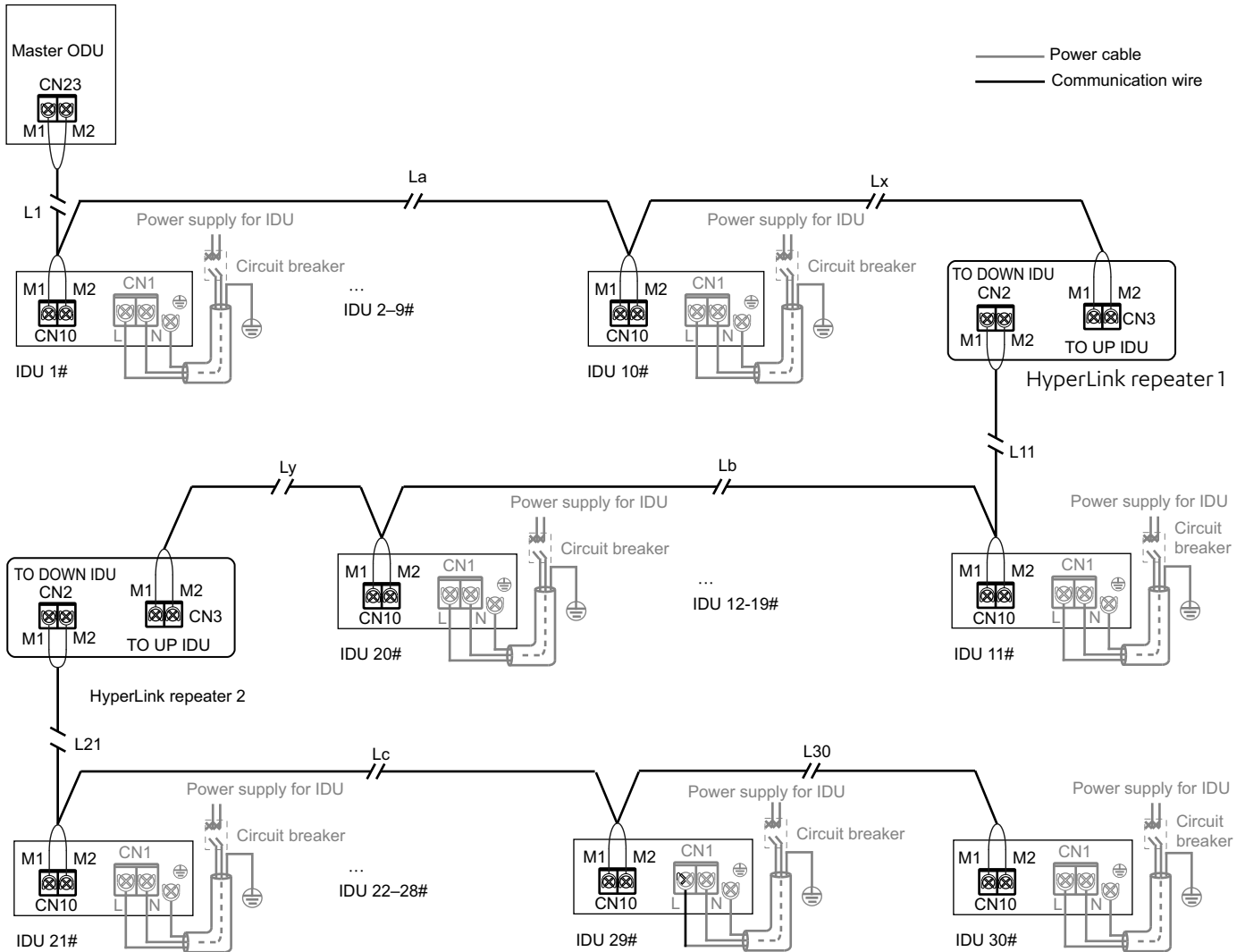
For details, see the following figure:

**CAUTION**

- Do not connect the HyperLink communication line to the PQ or D1D2 communication line.

System: The HyperLink communication line with an independent power supply between Indoor Unit and Outdoor Unit can reach a length of up to 600 meters, supporting any topology connection.

The following figure shows a serial connection:



$$L1+La+Lx \leq 200m$$

$$L11+Lb+Ly \leq 200m$$

$$L21+Lc+L30 \leq 200m$$

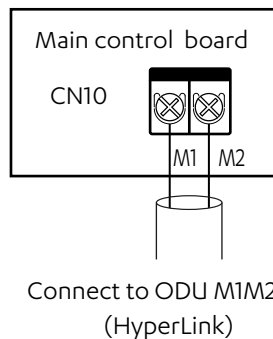
For other connection methods (tree topology, star topology, ring topology), please refer to the Installation Manual of Outdoor and Controller and For further assistance contact ActronAir Technical Support

 **CAUTION**

- If the total distance is $\leq 200\text{m}$ and the total number of Indoor Units is ≤ 10 sets, the valve is powered and controlled by the master Outdoor Unit.
- If the total distance is longer than 200m or the total number of Indoor Units is more than 10 sets, a repeater is required to increase the bus voltage.
- The load capacity of the repeater is the same as that of the Outdoor Unit, and it can load a bus length of 200m or 10 Indoor Units.
- The number of Indoor Units requiring power supply in the same refrigerant system does not exceed 30 sets.
- A maximum of two repeaters can be installed in the same refrigerant system.
- Keep the power on/off for both the repeater and the Outdoor Unit, or use an uninterruptible power supply.
- For repeater installation, refer to the repeater installation manual. Do not connect the upstream and downstream Indoor Unit ports of the repeater in reverse; otherwise, it will cause a communication failure.
- The repeater is optional. If you need to purchase it, please contact your local dealer.

b. HyperLink communication (with uniform power supply)

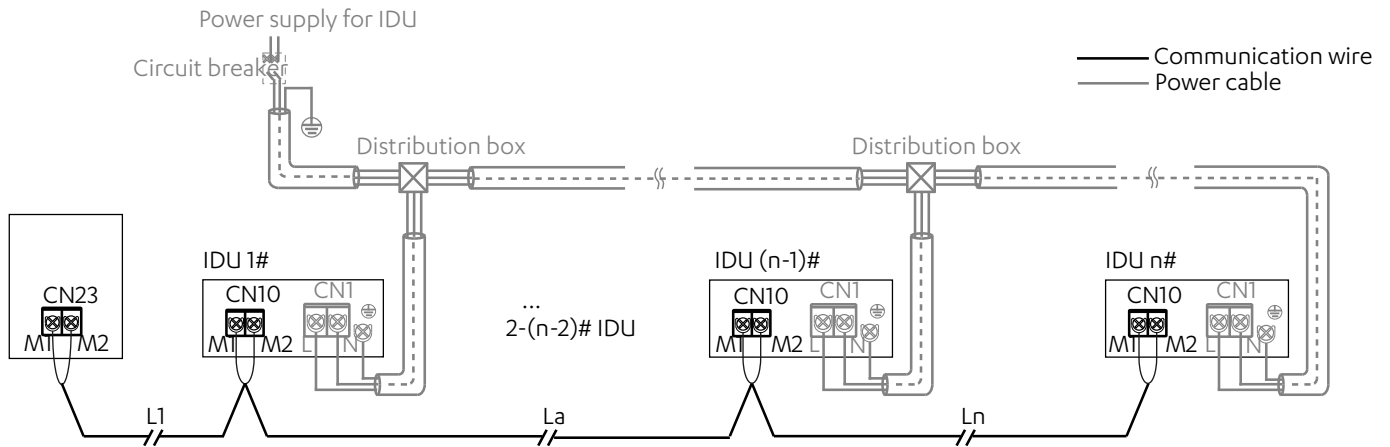
Single unit: When the Indoor Units are provided with uniform power supply, it is not necessary for HyperLink communication line to provide an independent power supply for Indoor Units. In this case, use $2 \times 0.75\text{mm}^2$ communication cables. M1 and M2 ports are located at terminal block "CN10" of the main control board. There is no distinction between negative and positive electrodes. **For details, see the following figure:**


 **CAUTION**

Do not connect the HyperLink communication line to the PQ or D1D2 communication line.

System: The HyperLink communication line with a uniform power supply between Indoor Unit and Outdoor Unit can reach a length of up to 2000 meters, supporting any topology connection.

The following figure shows a serial connection:



$$L1+La+Ln \leq 2000m$$

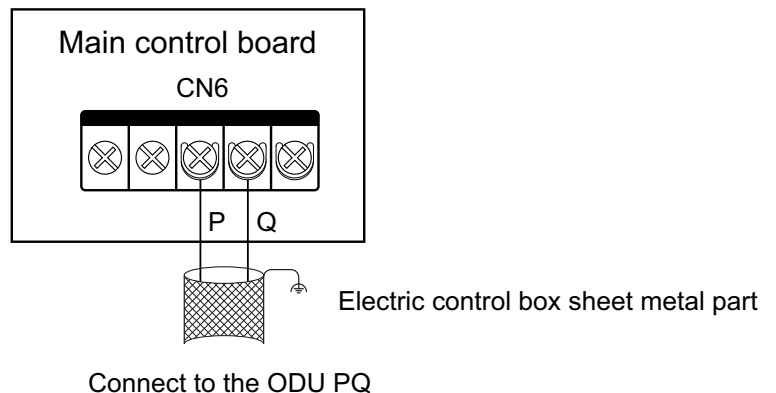
For other connection methods (tree topology, star topology, ring topology), please refer to the technical manual or consult technical personnel

CAUTION

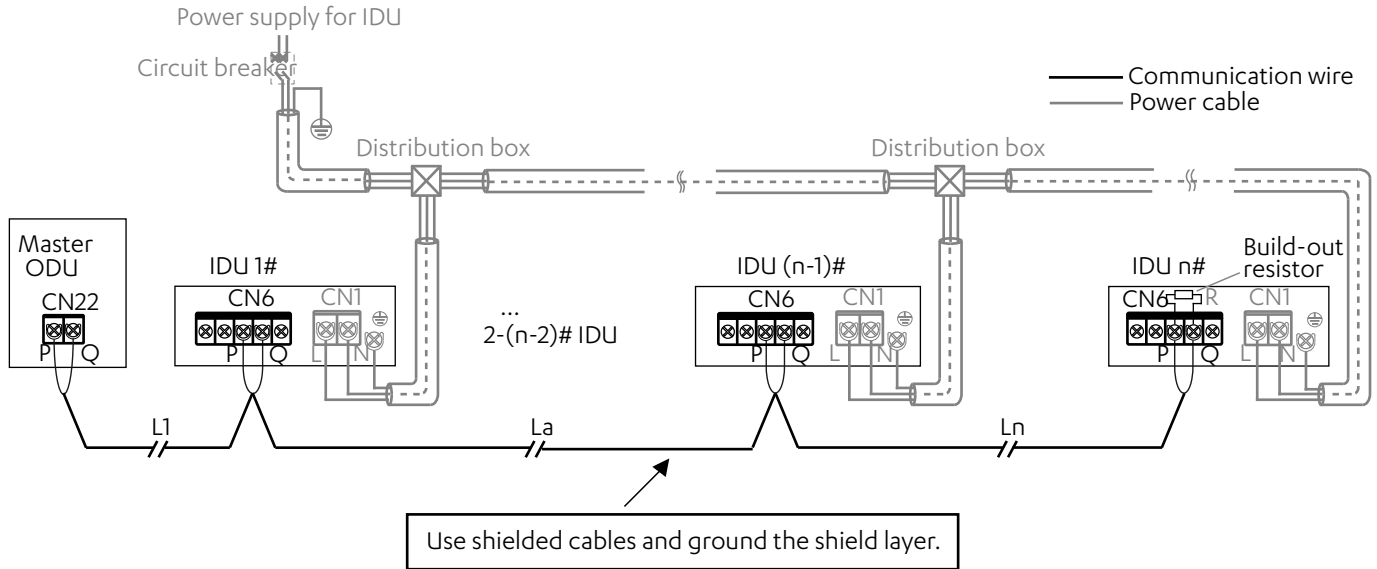
- When HyperLink with a uniform power supply is available, a uniform power supply for Indoor Units is required. For details, see "Power Cable Connection".
- When HyperLink with a uniform power supply is available, there is no need to connect a repeater to the system.

c. P/Q communication

Single unit: Use a shielded cable for the P/Q communication and properly ground the shield layer. P and Q ports are located at terminal block "CN6" of the main control board. There is no distinction between negative and positive electrodes. Connect the shield layer to the sheet metal of the electric control box, as shown in the following figure:



System: The maximum total length of the P/Q communication cable of the Indoor Unit and Outdoor Unit can be up to 1200m, and can be connected in serial, as shown in the figure below:

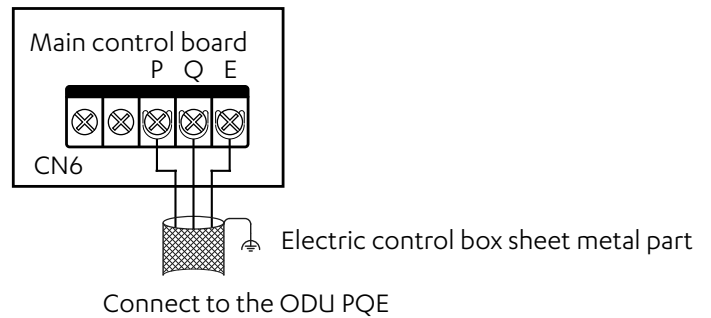


$$L1+La+Ln \leq 1200m$$

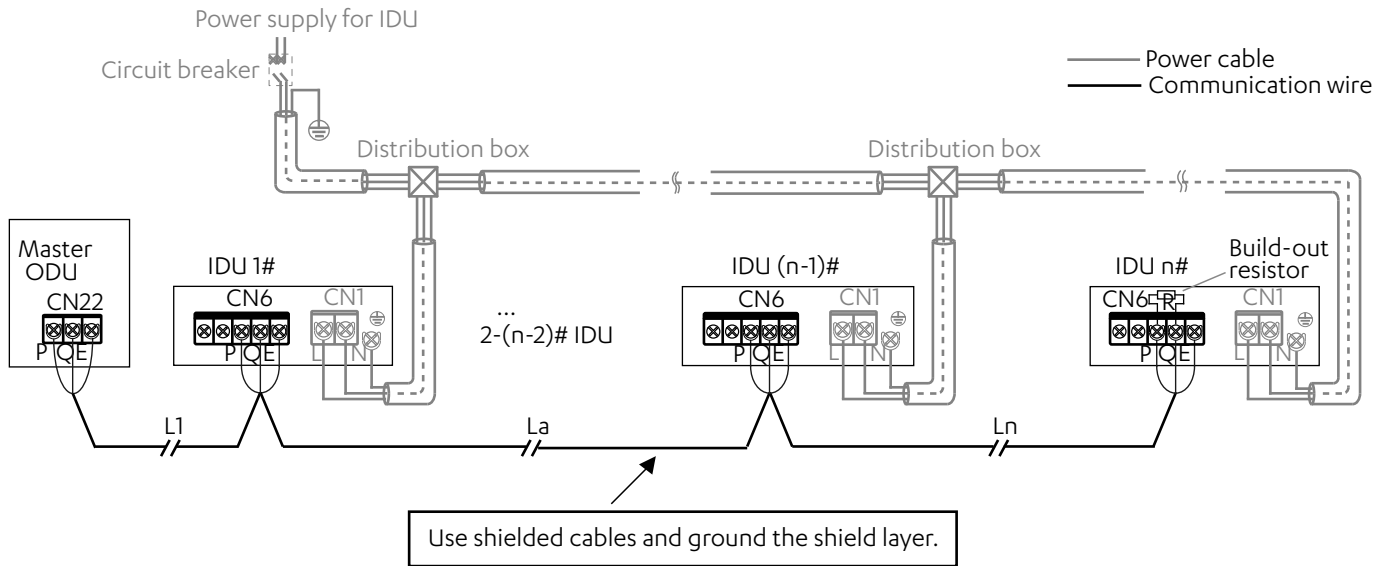
d. P/Q/E communication

If some of the Indoor Units in the same refrigerant system are non-ECOFLEX series, it is required to connect "P", "Q", and "E" for P/Q/E communication.

Single unit: Use a shielded cable for the P/Q/E communication and properly ground the shield layer. P, Q, and E ports are located at terminal block "CN6" of the main control board. There is no distinction between negative and positive electrodes. Connect the shield layer to the sheet metal of the electric control box, as shown in the following figure:



System: The maximum total length of the P/Q/E communication cable of the Indoor Unit and Outdoor Unit can be up to 1200m, and can be connected in serial, as shown in the figure below:



$L1+La+Ln \leq 1200m$

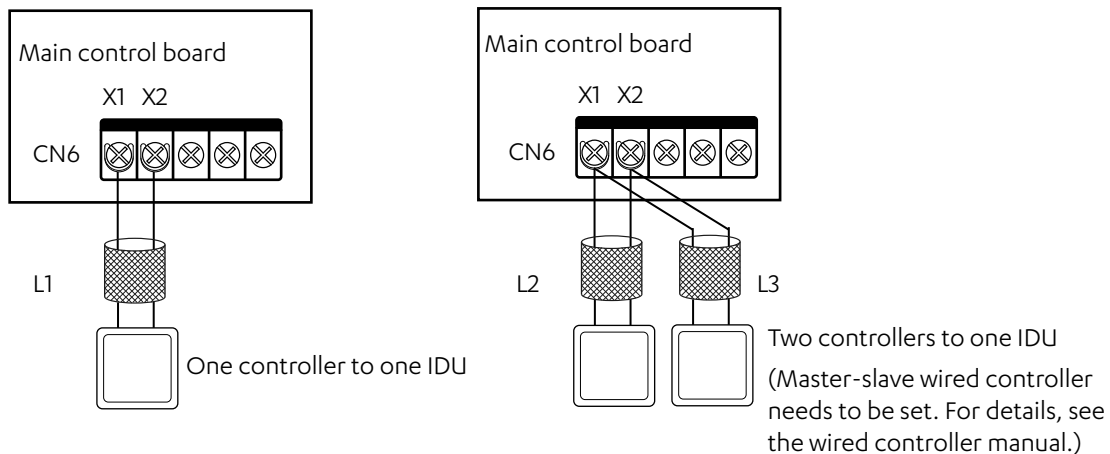
CAUTION

- When P/Q or P/Q/E communication is used, the Indoor Units need to be powered uniformly.
- Either P/Q, P/Q/E communication or HyperLink communication can be selected. If it is required for Indoor Units to have independent power supplies, then HyperLink communication must be selected.
- Use only shielded cables for P/Q or P/Q/E communication. Otherwise, the Indoor Unit and Outdoor Unit communication may be affected.
- A matching resistor needs to be added to the last Indoor Unit on the PQ (in the accessory bag of the Outdoor Unit).

11.03.04.04. X1/X2 communication cable connection

The X1X2 communication line is mainly connected to the wired controller to achieve one controller per Indoor Unit and two controllers per Indoor Unit. The total length of the X1X2 communication line can reach 200 meters. Please use shielded wires, but the shield layer cannot be grounded. X1 and X2 ports are located at terminal block "CN6" of the main control board. There is no distinction between negative and positive electrodes.

For details, see the following figure:



$L1 \leq 200m, L2+L3 \leq 200m.$

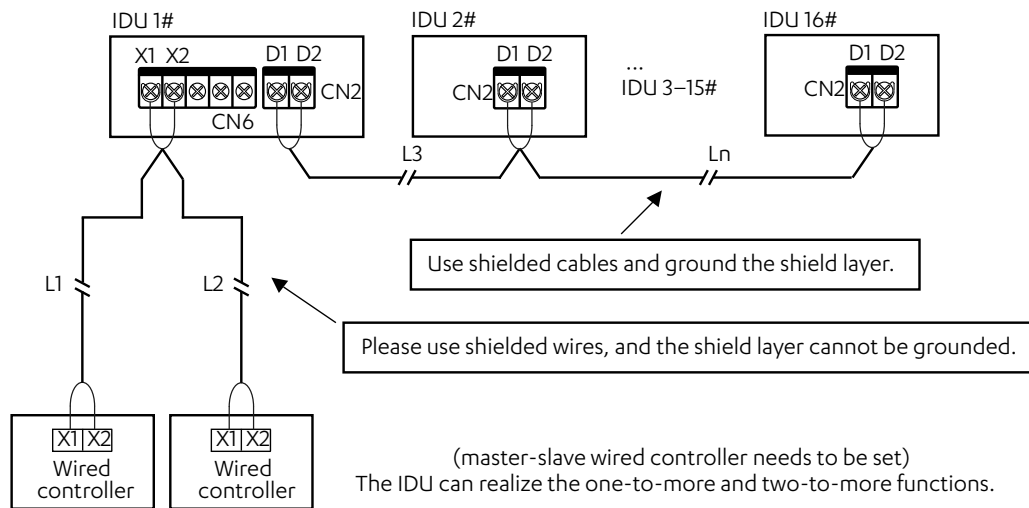
CAUTION

Two wired controllers of the same model can be used to control one Indoor Unit at the same time. In this case, you need to set one controller to be the master and the other to be the slave. For details, see the wired controller manual.

11.03.04.05. D1D2 communication line connection (limited to Outdoor Unit and system configuration)

A. Achieving one-to-multiple and two-to-multiple functions of the Indoor Unit wired controller through D1D2 communication (a maximum of 16 sets)

D1D2 communication is 485 communication. The one-to-more and two-to-more functions of the Indoor Unit wired controller can be achieved through D1D2 communication, as shown in the figure below:



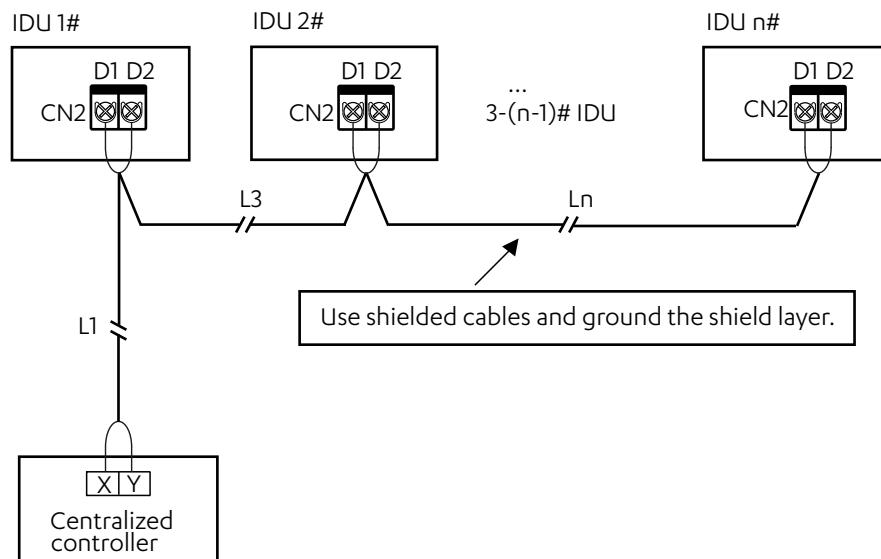
$L1+L2 \leq 200m, L3+Ln \leq 1200m$

CAUTION

- When the Indoor Units in the same refrigerant system are ECOFLEX Indoor Units, D1D2 communication can enable one-to-multiple and two-to-multiple functions of the Indoor Unit wired controller.
- To enable two-to-multiple functions, wired controllers must be of the same model.

B. Achieving centralized control of the Indoor Unit through D1D2 communication

The D1D2 communication line can also be connected to the centralized controller to achieve centralized control of the Indoor Unit, as shown in the figure below:



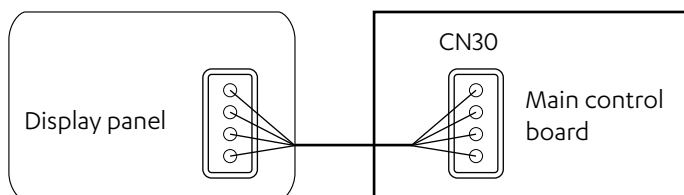
$$L1+L3+Ln \leq 1200m$$

11.03.05. External board connection (limited to Outdoor Unit and system configuration)

The external board is a connection module outside the main control board, including a display panel, a function module adapter board, and optional function expansion boards 1 and 2.

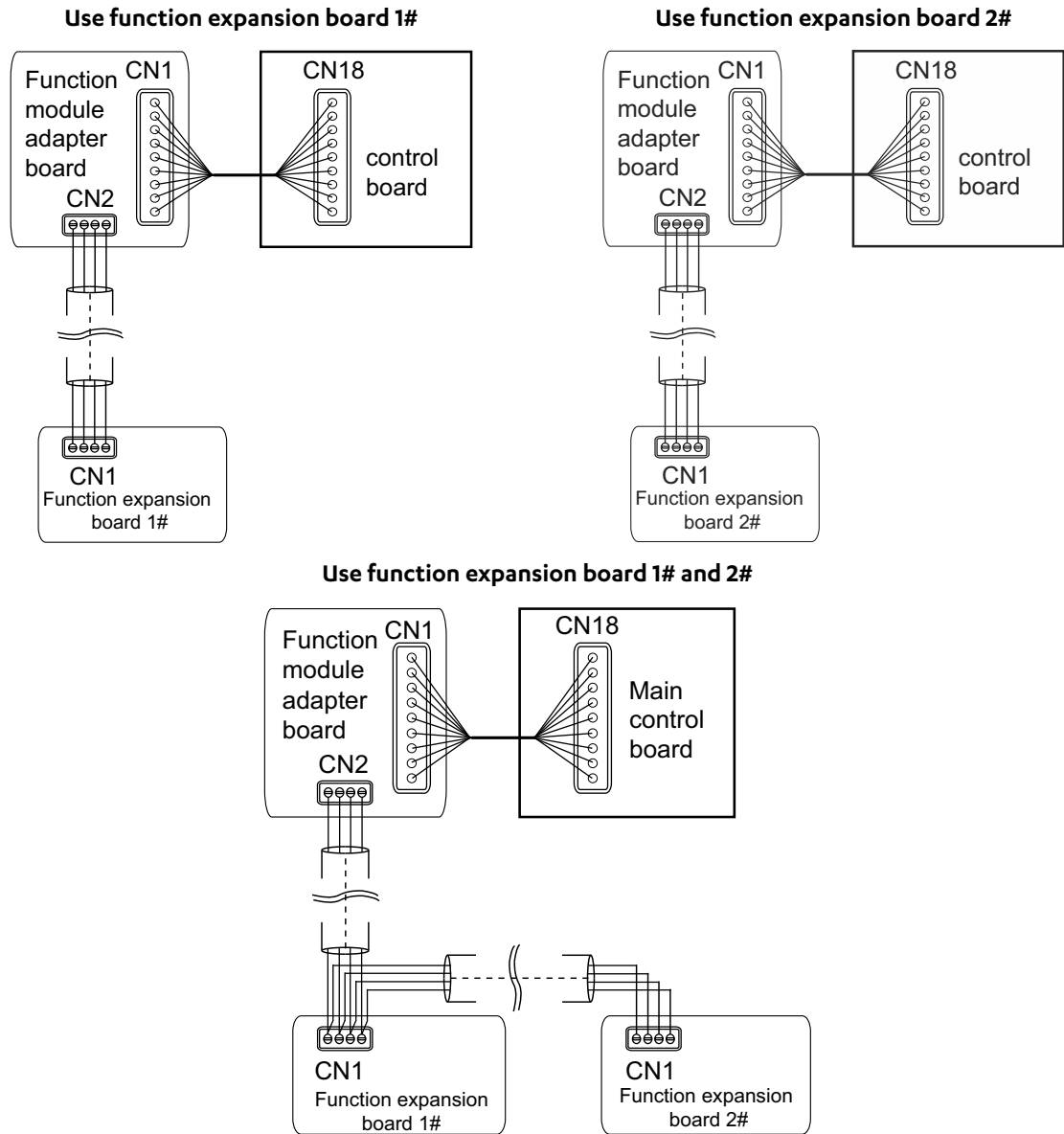
11.03.05.01. Display panel connection

The display panel is connected to the main control board through a 4-core cable, and is connected to the "CN30" socket of the main control board, as shown in the following figure:



11.03.05.02. Function module adapter board connection

Function expansion boards can communicate with the main control board through the adapter board. You can use one or both of the two function expansion boards. The wiring diagrams are as follows:

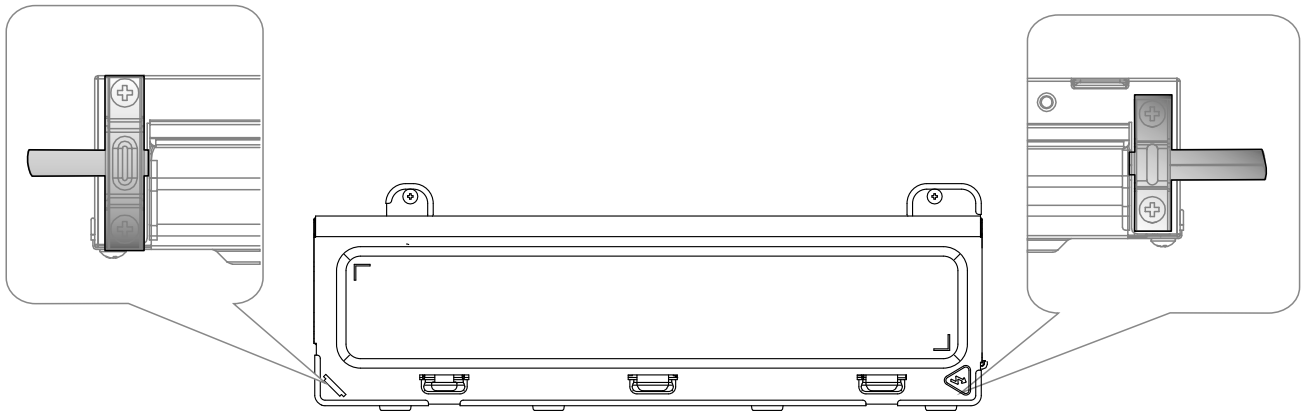


⚠ CAUTION

For the function introduction of the function module adapter board, function expansion board 1#, and function expansion board 2#, please refer to the function module manual.

11.03.06. Reclose the electric control box cover

Straighten out the connecting wires and lay them flat, and close the electric control box cover again.

**⚠ CAUTION**

- Do not cover the electric control box during power-on.
- When covering the electric control box, arrange the cables carefully and do not clip the connecting wires on the electric control box cover

12. APPLICATION CONTROL

12.01. Error Codes and Definitions

In the following circumstances (warning failures excluded), please stop the air conditioner immediately, cut off the power switch and contact the local air conditioner customer service center. The error code is displayed on the display panel and the wired controller display.

Error code	Error
A01	Emergency stop
A11	R32 refrigerant leaks, requiring shutdown immediately
A51	Outdoor Unit fault
A71	The fault of the linked FAPU is transmitted to the master Indoor Unit (series setting)
A72	The fault of the linked humidifying Indoor Unit is transmitted to the master Indoor Unit
A73	The fault of the linked FAPU is transmitted to the master Indoor Unit (non-series setting)
A74	The fault of the AHU Kit slave unit is sent to the master unit
A81	Self-check fault
A82	MS (refrigerant flow direction switching device) fault
A91	Mode conflict (non-ECOFLEX communication protocol adopted)
b11	1# EEV coil fault
b12	1# EEV body fault
b13	2# EEV coil fault
b14	2# EEV body fault
b34	Stall protection on 1# water pump
b35	Stall protection on 2# water pump
b36	Water level switch alarm
b71	Reheating electric heater fault
b72	Preprocessing electric heater fault
b81	Humidifier fault
C11	Duplicate Indoor Unit address code
C21	Abnormal communication between the Indoor Unit and Outdoor Unit
C41	Abnormal communication between the Indoor Unit main control board and fan drive board
C51	Abnormal communication between the Indoor Unit and wired controller
C52	Abnormal communication between the Indoor Unit and Wi-Fi Kit
C61	Abnormal communication between the Indoor Unit main control board and display board
C71	Abnormal communication between the AHU Kit slave unit and master unit
C72	Number of AHU Kits is not the same as the set number
C73	Abnormal communication between the linked humidifying Indoor Unit and master Indoor Unit
C74	Abnormal communication between the linked FAPU and master Indoor Unit (series setting)
C75	Abnormal communication between the linked FAPU and master Indoor Unit (non-series setting)
C76	Abnormal communication between the main wired controller and secondary wired controller

Error code	Error
C77	Abnormal communication between the Indoor Unit main control board and 1# function expansion board
C78	Abnormal communication between the Indoor Unit main control board and 2# function expansion board
C79	Abnormal communication between the Indoor Unit main control board and adapter board
d16	Air inlet temperature of the Indoor Unit is too low in heating mode
d17	Air inlet temperature of the Indoor Unit is too high in cooling mode
d81	Alarm for exceeding temperature and humidity range
dE1	Sensor control board fault
dE2	PM2.5 sensor fault
dE3	CO2 sensor fault
dE4	Formaldehyde sensor fault
dE5	INTELLECTUAL EYE sensor fault
E21	T0 (fresh inlet air temperature sensor) short-circuits or cuts off
E22	The upper dry bulb temperature sensor short-circuits or cuts off
E23	The lower dry bulb temperature sensor short-circuits or cuts off
E24	T1 (Indoor Unit return air temperature sensor) short-circuits or cuts off
E31	The built-in room temperature sensor of the wired controller short-circuits or cuts off
E32	The wireless temperature sensor short-circuits or cuts off
E33	The external room temperature sensor short-circuits or cuts off
E61	Tcp (pre-cooled fresh air temperature sensor) short-circuits or cuts off
E62	Tph (pre-heated fresh air temperature sensor) short-circuits or cuts off
E81	TA (outlet air temperature sensor) short-circuits or cuts off
EA1	Outlet air humidity sensor fault
EA2	Return air humidity sensor fault
EA3	Upper wet bulb sensor fault
EA4	Lower wet bulb sensor fault
EC1	R32 refrigerant leakage sensor fault
F01	T2A (heat exchanger inlet temperature sensor) short-circuits or cuts off
F11	T2 (heat exchanger middle temperature sensor) short-circuits or cuts off
F12	T2 (heat exchanger middle temperature sensor) overtemperature protection
F21	T2B (heat exchanger outlet temperature sensor) short-circuits or cuts off
P71	Main control board EEPROM fault
P72	Indoor Unit display control board EEPROM fault
U01	Locked (electronic lock)

Error code	Error
U11	Unit model code not set
U12	Horsepower code not set
U14	Horsepower code setting error
U15	AHU Kit fan control input signal DIP setting error
U38	Address code not detected
J01	Motor failed more than once
J1E	IPM (fan module) overcurrent protection
J11	Instantaneous overcurrent protection for phase current
J3E	Low bus voltage fault
J31	High bus voltage fault
J43	Phase current sample bias error
J45	Motor and Indoor Unit are unmatched
J47	IPM and Indoor Unit are unmatched
J5E	Motor startup failure
J52	Motor blocking protection
J55	Speed control mode setting error
J6E	Phase lack protection of motor

12.02. Operating Status Codes and Definitions (Non-Error)

Code	Definition
d0	Oil return or preheating operation
dC	Self-cleaning
dd	Mode conflict (ECOFLEX communication protocol adopted)
dF	Defrosting
d51	Static pressure detection
d61	Remote shutdown
d71	Indoor Unit backup operation
d72	Outdoor Unit backup operation
OTA	Main control program upgrading

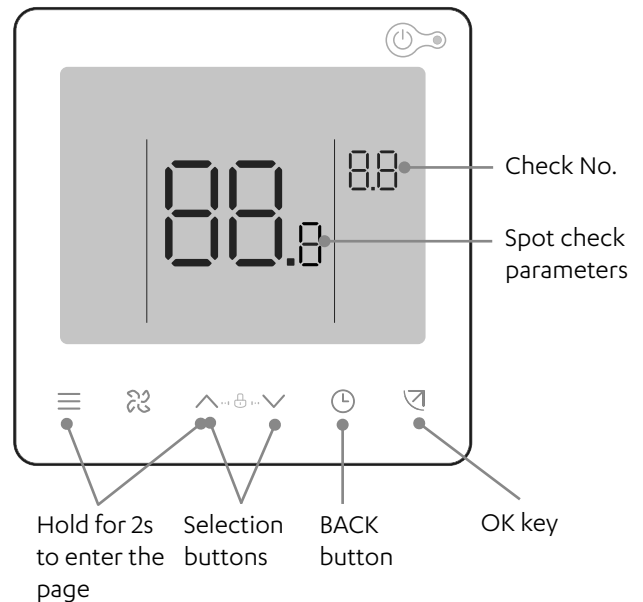
CAUTION

- Error codes are displayed only for certain Outdoor Unit models and Indoor Unit configurations (including the wired controller and display panel).
- When the main control program is being upgraded, make sure that the Indoor Unit and Outdoor Unit remain powered on. Otherwise, the upgrading process will stop.

12.03. Spot Check Description

Use the bi-directional communication wired controller (for example, MWC-B01CS) to activate the spot check function in the following steps:

1. On the main page, hold "≡" and "^" for 2s to enter the query page. The Outdoor Unit displays u00-u03, the Indoor Unit displays n00-n63 (the last two digits show the Indoor Unit address), and the wired controller displays CC. Press the "^" or "v" key to select the Indoor Unit, and press the "↵" key to enter the parameter query page.
2. Press the "^" or "v" key to query the parameters, and the parameters can be queried cyclically. See the spot check list below for details.
3. Press the "⌚" key to exit the query function.
4. On the top of the query page, the "Timing area" displays the spot check serial number, and the "Temperature area" displays the content of the spot check parameters.



No.	Displayed content	No.	Displayed content
1	Indoor Unit and Outdoor Unit communication address (current Indoor Unit addresses are displayed every 0.5s)	13	Compressor discharge temperature
2	Capacity HP of Indoor Unit	14	Target overheating
3	Actual set temperature Ts	15	EEV opening (actual opening/8)
4	Current running set temperature Ts	16	Software version No.
5	Actual T1 indoor temperature	17	Display board version No.
6	Modified indoor temperature T1_modify	18	Fan drive version No.
7	T2 heat exchanger intermediate temperature	19	Historical error code (recent)
8	T2A heat exchanger liquid pipe temperature	20	Historical error code (sub-recent)
9	T2B heat exchanger gas pipe temperature	21	Indoor Unit network address display
10	Actual set humidity RHs	22	Indoor Unit expansion board address display
11	Actual RH indoor humidity	23	[— — —] is displayed
12	Real-time static pressure		

13. TEST RUN

13.01. Before test run check

- Indoor Units and the Outdoor Unit are properly installed.
- The piping is correct, and the refrigerant piping system has been checked for leakage.
- Piping length and the amount of refrigerant charged have been recorded.
- The wiring is correct and firm without connection issues. Ground wires have been properly connected.
- The voltage of the power supply is the same as the rated voltage of the air conditioner.
- Heat insulation is complete.
- There are no obstructions at the air inlet and outlet of the Indoor Unit and Outdoor Unit.
- Fully open the check valves of the gas pipe and liquid pipe of the Outdoor Unit.
- Turn on the power supply to preheat the Outdoor Unit for 12 hours.

13.02. Test Run

- Use the wired/remote controller to control the cooling or heating operation of the air conditioner according to the instructions.
- In the event of a failure, please troubleshoot according to the section "Symptoms That Are Not Faults" in the owner's manual.



Follow the trial run steps of the Outdoor Unit

13.03. Indoor Unit (Indoor Unit)

- The wired/remote controller switch is operating normally.
- The display of the wired/remote controller is normal, the function keys work normally, the room temperature adjustment is normal, and the air flow and direction adjustment are normal.
- The LED indicator is on.
- Water discharge is normal.
- Check the Indoor Units one by one for normal operation, and the cooling and heating functions are normal without vibration or abnormal sound.

13.04. Outdoor Unit (Outdoor Unit)

- There are no vibrations or strange sounds during operation.
- The fan, noise and condensation do not affect the neighbors.
- There is no refrigerant leakage.

13.05. Inspection After Installation

To ensure a comfortable indoor environment, please run down through the list to check whether the installation of the air conditioner meets the requirements. Insert a "X" for Fail and a "✓" for Pass.

Check Item	Check Criteria	Check Result (Pass/Fail)
Are the Indoor Units and Outdoor Units securely installed?	The air conditioner does not fall or vibrate, and there is no noise.	
Has the installation of the Indoor Unit been completed?	The unit works properly and no parts are burned out.	
Has a leak test been performed?	The cold/hot air is sufficient.	
Is the heat insulation in good condition (refrigerant piping, drainage pipe, and air ducts)?	There is no condensation dripping.	
Were the copper pipes sealed before installation to prevent dust from entering?	The compressor is functional.	
Is the refrigerant piping purged with nitrogen for shielded welding during the welding process (a nitrogen cylinder is on site)?	There is no oxide film on the inner surface of the copper pipe. The system is functional with no major failures.	
Has a water discharge test been performed? Is drainage smooth? Is the connection secure?	There is no water leakage.	
Is the power supply voltage consistent with the specified voltage on the unit nameplate?	The unit works properly and no parts are burned out.	
Are the wires and pipes connected correctly?	The unit works properly and no parts are burned out.	
Is the air conditioner safely grounded?	There is no electric leakage.	
Have wires of the specified size been used?	The unit works properly and no parts are burned out.	
Are the terminal screws securely fastened?	There is no electric shock or fire.	
Are the inlets and outlets of the Indoor Units and Outdoor Units free of obstruction?	The cold/hot air is sufficient.	
Has the unit's external static pressure been set for the Indoor Unit in constant speed mode?	The cooling and heating functions are normal.	
Has the refrigerant piping length and refrigerant charge been recorded?	The amount of refrigerant in the air conditioning system is clear.	
Was an access hole reserved at the installation position of the Indoor Unit?	The maintenance can be easily carried out.	
Are air filters and grilles installed (at air inlets and outlets)?	The unit works properly.	
Does the temperature of each room meet the requirements during testing?	Users' comfort needs can be satisfied.	
Have you explained to the user how to operate the unit according to the user manual?	The unit is effective.	
Have you explained to the user how to operate and clean the air filter, grille (air inlets and outlets), etc.?	The unit is effective.	

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Installation & Commissioning Guide ECOFLEX MINI VRF R32 SERIES - 4 WAY CASSETTE INDOOR
Doc. No.9590-5028-04 **Ver. 1 2307xx**