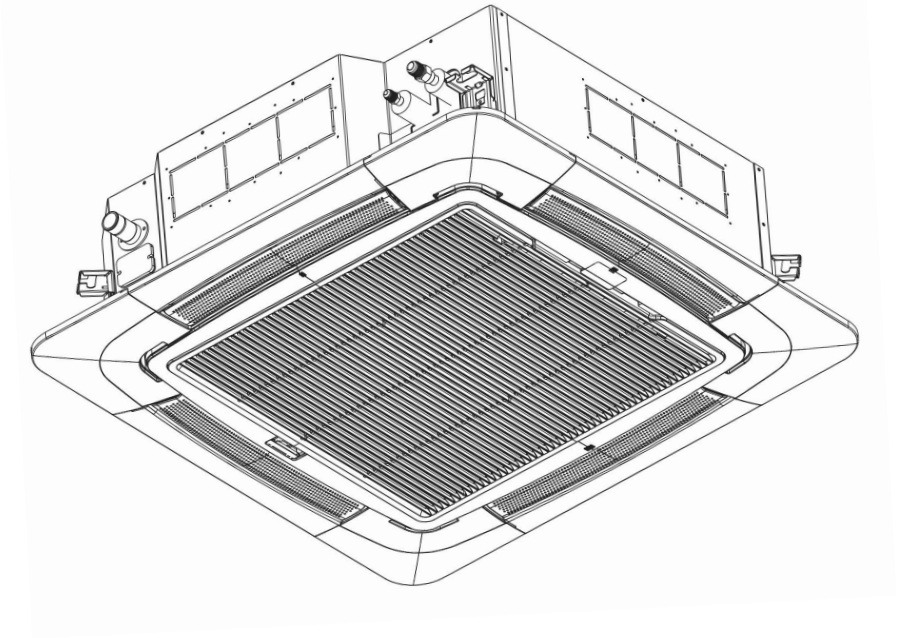
Indoor Unit Operation & Installation Manual

CASSETTE TYPE INDOOR UNIT

VRF R32

AB072MNFRA
AB092MNFRA
AB122MNFRA
AB162MNFRA
AB182MNFRA
AB242MNFRA
AB282MNFRA
AB302MNFRA
AB382MNFRA
AB482MNFRA
AB602MNFRA



No. 0150580352
September, 2024

Specially designed for professionals.
Reserved by the user for future reference.

Contents

1.Warnings and Precautions

Before carrying out any installation work, please read the warnings and precautions carefully.

	This symbol indicates that this equipment uses flammable refrigerants. If refrigerant leaks and is exposed to external sources of fire, there is a risk of fire.
	This symbol indicates that qualified personnel must operate the equipment according to the installation instructions.
	Carefully read the operation manual.
	Use the recommendations provided in the installation instructions and the user operation manual.

Regulatory conditions for installation and maintenance

The installation and maintenance of the equipment must be carried out by approved professionals in accordance with current regulations and technical rules, especially in France:

- Legislation on refrigerant treatment: **Decree No. 2007/737 and its detailed implementing regulations**.
- According to the **Articles R 543-75 to 123 of the Environmental Law and its implementing regulations**, the debugging of this air conditioner must carry out by a qualified installer who holds a capacity certificate. As well as any other operations performed on the equipment that requires handling refrigerant fluids.
- **NF C 15-100 and its amendments**: Low voltage electrical equipment - Rules.

General rules

- Before any action is taken, ensure that the general power supply is cut off and recorded.
- The equipment is only suitable for situations where the altitude is below 2000 meters.
- Do not install or store the equipment near heat sources.
- Do not pierce or burn the equipment.
- The equipment does not contain any parts that can be repaired by the user. Delegate it to the installation personnel.
- The equipment is intended for use by children aged 8 years or older, as well as individuals with impaired

physical, sensory, or mental abilities or lacking experience or knowledge, provided they receive appropriate supervision or have received instructions for safe use of the equipment and are aware of the risks involved. Children are not allowed to play with the equipment. Children are not allowed to clean and maintain without supervision.

- Properly handle packaging materials. Tear up the plastic packaging and discard it in an area where children are unlikely to play with it. Untorn plastic packaging may cause suffocation.
- If the valve connections and their size, length, and thickness combinations mentioned in this manual are not followed, the operation of the equipment cannot be guaranteed.

Equipment transportation

- During transportation, the outdoor unit must not be laid flat. Horizontal transportation may damage equipment through refrigerant displacement and compressor suspension deformation. Damage caused by horizontal transportation is not covered by the warranty. If necessary, the outdoor unit can only be tilted during manual operation (through doors or stairs). Be careful when performing this operation and immediately restore the equipment to its vertical position.

Refrigerant R32

- Under additional load, use tools and connecting joints that are compatible with the liquid refrigerant specified on the equipment nameplate.
- Do not release refrigerant into the atmosphere. If refrigerant leaks during installation, ventilation and air exchange should be carried out. After installation, there should be no refrigerant leakage in the circuit.
- This flammable and odorless fluid requires compliance with the minimum surface area and volume of the room in which the equipment is installed, stored, or used. Ensure that the on-site application complies with the dimensions of the processed components and the fluid load of the equipment (in accordance with EN-378 standard).
- The taper pipe inside buildings shall not be reused. The flare joint on the pipe must be removed and a new flare joint must be manufactured.
- The taper pipe outside buildings shall not be reused.
- Do not come into contact with refrigerant during connection leaks or other processes. Direct contact may cause frostbite.
- Do not introduce any substances other than recommended refrigerants into the equipment.
- Do not touch refrigerant pipes, water pipes, or internal components during or after operation. It may be too hot or too cold. Give it time to return to normal temperature. If you have to touch it, wear protective gloves.
- Follow the safety and usage rules of R32 refrigerant.
- When using R32 refrigerant, the equipment should be stored in a room without a continuous operating fire source.

Refrigeration connection

- When used in an ERP indoor environment, dry nitrogen should be used to avoid introducing harmful moisture to equipment operation.
- Do not use sealant at the refrigeration connection as it may clog or contaminate the internal of the connection. The use of sealant will void the warranty of the equipment.
- All refrigeration circuits are afraid of the contamination of the dust and moisture. If these pollutants enter the refrigeration circuit, it may cause the performance reduction of the unit. It is necessary to ensure the correct sealing of unit connections and refrigeration circuits. If a malfunction subsequently occurs, according to expert assessment, the presence of moisture or foreign objects in the compressor oil will systematically lead to warranty exclusion.
- Keep the refrigeration connection sealed (by covering with a lid, clamping, folding, preferably brazing). The moisture seriously affects the normal operation and lifespan of the product. In the case of pollution, it is difficult, sometimes even impossible, to clean the circuit.
- After storage or refrigeration, higher humidity may occur. Considering the external temperature, please perform nitrogen purging and vacuum pumping.
- Do not use regular mineral oil on flare joint. Use refrigeration oil compatible with R32 and try to avoid it entering the circuit as much as possible, otherwise it

will reduce the lifespan of the equipment.

- Do not use potential sources of ignition to locate or detect refrigerant leaks.

Battery

- Do not place the battery within reach of children.
- If the remote controller is not used for a long time, please remove the battery to prevent battery leakage and damage to the equipment.
- If the liquid in the battery comes into contact with the skin, eyes, or mouth, immediately rinse with plenty of water and consult a doctor.
- Waste batteries should be removed immediately and appropriately recycled.
- Do not attempt to charge the battery.
- Do not mix new and old batteries or different types of batteries for use.

Installation

- These air conditioners are designed for residential and tertiary industries to ensure thermal comfort for users. They are not suitable for places with excessive humidity (such as distillation rooms, indoor greenhouses, wine cellars, etc.), dusty air, and severe electromagnetic interference (such as computer rooms, places near TV antennas or relays).
- The size of the equipment must be correct to meet the requirements. Suggest inviting experts to conduct thermal equilibrium. It is recommended to consult an expert for thermal balance.
- Only qualified personnel can handle, charge, clean, and discard refrigerants.
- The equipment is not explosion-proof, therefore it should not be installed in potentially explosive environments.
- If moving, please call the installation personnel to disassemble and install the equipment.
- Ensure to use the parts provided or specified in the instruction manual during installation.
- Installation personnel must follow the advice provided in this manual to install the equipment. Improper installation may result in serious damage, such as refrigerant or water leakage, electric shock, or fire hazards. If the equipment is not installed according to the manual, the manufacturer's warranty will be invalid.
- Do not touch the fins of the heat exchanger, otherwise it may damage and harm you.
- Take appropriate measures to prevent the equipment from being used as a shelter by small animals. Animals that come into contact with electrical components may cause malfunctions or fires. Inform the customer that the area around the equipment must be kept clean.
- Install the equipment in a location that is easy to install for gas, liquid, and condensate discharge pipes.
- Install the air conditioner on a sufficiently sturdy foundation to support the weight of the unit. Insufficient basic strength may cause equipment to fall and cause injury.
- Do not use suspended ceilings or other spaces as air intake or exhaust ducts.
- Install the indoor unit, outdoor unit, power cord, interconnection cable, and remote control cable at a distance of at least 1 meter from the television or radio receiver. This preventive measure aims to avoid interference (however, even at a distance of 1 meter or more, the signal may still be affected by interference).
- Correctly fix the electrical casing cover and service panel. If the electrical casing cover or service panel of the equipment is not properly fixed, it may be affected by dust, water, and other factors.
- To avoid electric shock, please operate the equipment with dry hands.

Electrical connection

- The rated operating voltage of this equipment is 230 volts AC 50 hertz. At any time (including during the start-up phase), the voltage at the equipment terminals shall not be lower than 220 volts AC or higher than 240 volts AC.
- The maximum length of the cable depends on the voltage drop, which must be less than 2%. If the voltage drop is greater than or equal to 2%, please use a cable with larger cross-section.
- Electrical connections can only be made after completing all other installation operations (fixing, assembly, etc.).
- Check whether the wiring is prone to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects.

- These air conditioning units are designed for the following neutral states: TT and TN. Neutral states are not applicable to these units (using isolation transformers). It is strictly prohibited to use single-phase power sources without neutral (between phases). For three-phase equipment, the neutral point must also be consistently distributed (TT or TN).
- The contract signed with the energy supplier must be sufficient to cover not only the power of the equipment, but also the sum of the power of all equipment that may operate simultaneously. If there is insufficient electricity, please verify the electricity value specified in the contract with the energy supplier.
- Obtain cable specifications and harmonic currents from the distribution network operator.
- Do not use power sockets for power supply.
- If the power cord is damaged, it must be replaced by qualified personnel to avoid any danger.
- Use a dedicated power circuit. Do not share power with other equipment.
- Do not install phase advance capacitors, as the equipment is equipped with an inverter. Phase advance capacitors will reduce performance and may lead to accidents.
- Use an independent power cord protected by a full pole circuit breaker with a contact opening greater than 3mm to supply power to the equipment.
- Electrical equipment must be equipped with 30 mAh differential protection.
- Ensure that the circuit breaker is placed in a location where the user cannot inadvertently start or stop it (subsidiary buildings, etc.). When the distribution panel is located outdoors, close and lock it to make it difficult to access.
- Do not disconnect the main circuit breaker except in emergency situations. This operation will cause compressor failure and water leakage. Only use any type of remote control or external input equipment to turn off the indoor unit (switch), then disconnect the circuit breaker.
- After the power is cut off, it is necessary to wait for 10 minutes before touching electrical components. The static electricity in the human body can damage components. Eliminate the static electricity from the body. Do not touch electrical components with wet hands. The electric shock may occur.
- If there are any signs of malfunction (such as burning smell), immediately stop the installation, turn off the circuit breaker, and consult a qualified personnel.
- Grounding the equipment. Incorrect grounding may result in electric shock.
- Incorrect wiring may damage the entire system.
- Use cable ties to secure the cables, keeping them away from sharp edges or pipes, especially on the high-voltage side.
- Do not use cables bonded with adhesive tape, twisted conductive cables, extension cords, or star shaped system connections. They may cause overheating, electric shock, or fire.
- When the voltage is too low or abnormalities occur during the startup of the equipment, it may be difficult for the equipment to start. In such cases, please consult your energy supplier.
- Ensure the safety of all cables, use wires that comply with current standards (especially NF C 15-100), and make sure that the terminal connections and cables are not subjected to external forces.

These units shall comply with the following instructions:

2014/30/EU Electromagnetic Compatibility (EMC)
2006/42/EC Machinery Directive
2014/35/EU Low Voltage Directive
2014/68/EU Pressure Equipment Directive
2009/125/EC Ecological Design Directive
2011/65/EU ROHS

2.Product Processing

Use personal protective equipment (PPE) to handle products.

Sharp element

Protective gloves

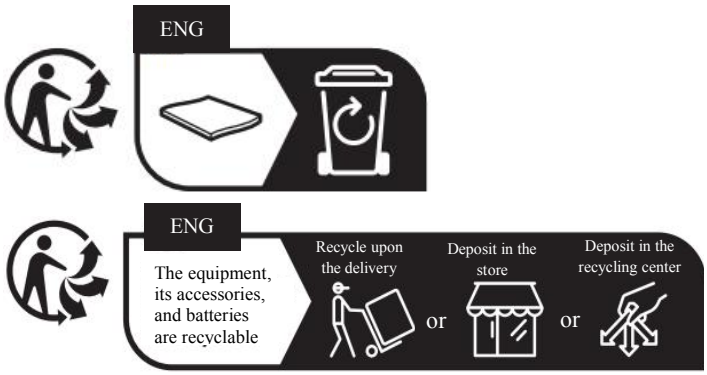
Protective glasses

Protective cuff

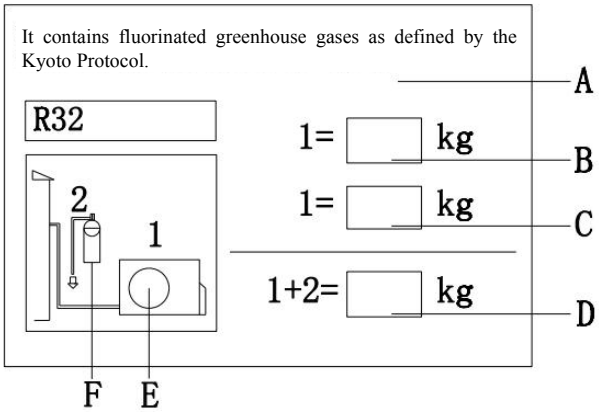
3.Environmental Protection

The symbol on the product or packaging indicates that the product cannot be disposed of as household waste under any circumstances. Therefore, it must be handed over to the waste collection center responsible for recycling electrical and electronic equipment. Collecting and recycling waste separately during disposal will help protect natural resources and ensure harmless recycling for the environment and human health. For more information about waste collection locations, please contact the authorized service center or your distributor.

Do not attempt to disassemble the system yourself: The disassembly of the system and the handling of refrigerant, oil, and other components must be carried out by qualified installers in accordance with local and national regulations. Waste equipment and batteries must be handled in specialized facilities for recycling or reuse.



The recycling locations on the www.quefairedemesdechets website will prioritize repairing or donating your equipment!



This equipment contains fluorinated greenhouse gases as defined by the Kyoto Protocol. Do not release R32 into the atmosphere.

Refrigerant type: R32

GWP value (GWP): 675

GWP=Global Warming Potential

Write the following information on the label with indelible ink:

1-the factory refrigerant charge of the product

2-the additional refrigerant amount charged in the field and

1+2-the total refrigerant charge

The filled out label must be adhered in the proximity of the product charging port(e.g. onto the inside of the stop value cover).

A: contains fluorinated greenhouse gases covered by the Kyoto Protocol

B: factory refrigerant charge of the product: see unit name plate

C: additional refrigerant amount charged in the field

D: total refrigerant charge

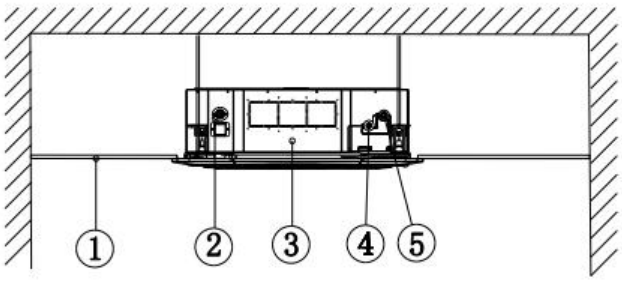
E: outdoor unit

F: refrigerant cylinder and manifold for charging

4.About System

Indoor design

The equipment is equipped with electrical safety measures, such as a refrigerant leak detector. To be effective, the equipment must be powered on at any time after installation, except for short-term maintenance.



1. Ceiling
2. Drainage outlet
3. Indoor unit
4. Liquid pipe
5. Gas pipe
6. Concrete structure

Indoor and outdoor units cannot share the same power.

Other functions

The requirements for optional equipment must be proposed by the user and installed by professional after-sales service personnel.

Accessory	Function	Usage Method	Standard or optional
R32 detector	Component for detecting refrigerant R32 leakage	Wired controller	Standard
UV lamp	Sterilize the air and make the air healthy	Wired controller	Standard

5.Wired Controller

When using R32 refrigerant in VRF systems, it is best to choose a wired controller. In fact, in the event of a leak, the controller itself can trigger an alarm. The sound emitted by the wired controller for alarm is 65 dB (A), so it is recommended not to install the equipment in a location with environmental noise higher than the alarm.

It is imperative to avoid any operation on the internal components of the remote control.

For more information, please refer to the operation manual.

6.Operation

6.1.Operation Range

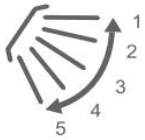
The working range of outdoor units varies depending on the type of unit. The specific working range of the outdoor unit refers to the parameter table in the sample book.

Cooling	Indoor	Maximum value	WB：24℃
		Minimum value	WB：15℃
	Outdoor	Maximum value	DB：53℃
		Minimum value	DB：-5℃
Heating	Indoor	Maximum value	DB：27℃
		Minimum value	DB：15℃
	Outdoor	Maximum value	WB：21℃
		Minimum value	WB：-23℃

Example of operation range

6.2.Adjustment of Airflow Direction

The selection range of the indoor unit cooling operating position is from position 1 to position 5.



Position	1	2	3	4	5
Angle	33	36	44	52	60

When the humidity exceeds 80%, the airflow direction can adjust automatically and not be controlled by the controller to prevent condensed water from flowing out of the indoor unit.

6.3.Operation Mode

Basic operation mode

Icon	Operation Mode
	Automatic: In this mode, the equipment automatically selects the operating mode, fan speed, and setting temperature based on the ambient temperature.
	Cooling: In this mode, the equipment operates to cool according to the set temperature.
	Heating: In this mode, the equipment operates in heating mode. Due to the cold air prevention function, the hot air will be ventilated shortly thereafter. When the ventilation is set to automatic, the equipment will automatically adjust the ventilating speed according to the room temperature.
	Fan: In this mode, air circulates without being heated or cooled.
	Dehumidification: This mode can reduce room humidity. In the dehumidification mode, when the room temperature is 2 ℃ at the set temperature, the equipment operates intermittently at a low fan speed.
	If the main power is turned off during operation and the indoor unit is set to memory mode, the operation will automatically restart after being powered on again.

Special operation mode

Operation Mode	Operation
Cold Prevention Control	When the indoor unit is set to heating mode, the hot air will not be immediately discharged, and the heat exchanger coil must reach a higher temperature before discharging the air. This control aims to prevent cold air from blowing towards the user.
Defrost	To avoid loss of heating capacity due to outdoor unit icing, the system automatically switches to defrost mode. During defrosting, the indoor unit fan stops. The system will resume normal operation after approximately **10 minutes**.
Antifreeze	When the temperature of the indoor unit coil is low, the evaporator freezes, affecting the cooling effect. In this case, the antifreeze mode is activated, the indoor unit stops cooling and enters the fan mode. The cooling mode only resumes when the frost has completely melted.
Oil Return	When the load rate is low, the compressor oil enters the VRF system and runs out. At this point, the oil return mode is activated to return the oil to the compressor and ensure its normal operation.

**The load rate is equal to the capacity of the operating indoor unit divided by the total capacity of the indoor unit.*

7.Maintenance and Care

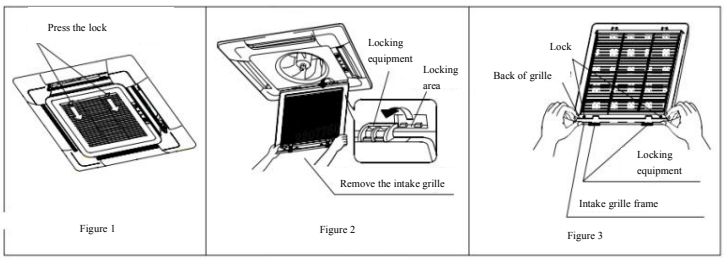
7.1. Precautions for Maintenance and Care

- **After long-term use, check whether the equipment bracket and fixation are damaged. If they are damaged, replace them.**
- **When the fuse jumps, do not replace it with a fuse of incorrect amperage or other fuses.**
- **Do not insert fingers, rods, or other objects into the air inlet or outlet. When the fan rotates at high speed, it may cause injury.**

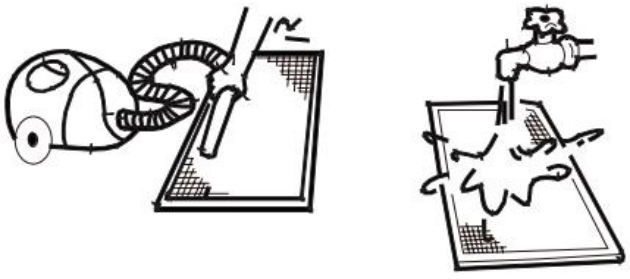
- **We recommend conducting maintenance at least once a year and having it done by approved professionals**
- **Do not use gasoline, diluents, chemical dust cloths, etc. to wipe the controller control panel.**
- **Use non abrasive detergent and then wipe with a clean and dry cloth.**

7.2.Cleaning of Air Filters

- **We recommend performing this operation regularly (according to the equipment environment settings).**
- **When the air conditioner operates in an environment exposed to dust, it is recommended to clean it every 2 weeks.**



1. Press the 2 locks on the intake grille and remove the intake grille (Figure 1).
2. Position the grille at a 45 degree angle (Figure 2) and remove it.
3. Remove the grid and then remove the filter (Figure 3).
4. Check for cracks or breakages, replace if any.
5. Remove the dust from the filter, then clean it with soapy water (<50 ℃) and let it air dry.



7.3.In Case of Refrigerant Leakage

The R32 detector needs to be replaced at the end of its service life (15 years). Only qualified and approved personnel can replace the detector.

- **Regularly and automatically check the operation of safety measures. If a malfunction occurs, an error code will be displayed on the user interface.**
- **The presence of high concentration chemicals (such as organic solvents, hair gel, paint) near indoor units may distort detection.**

After the end of the sensor's lifespan, the wired controller displays an "AF" (hexadecimal) error. Whether the indoor unit is turned on or waiting, the R32 detector will detect refrigerant leakage. If there is a refrigerant leak:

- The controller displays error code "AA" (hexadecimal), or the display panel displays error "AA" (hexadecimal), an alarm will be triggered, and the error indicator light (LED5) on the internal PCB flashes **11 times**.
- The indoor unit will increase the air volume to prevent the accumulation of R32 refrigerant.
- Room ventilation (natural or mechanical ventilation).
- To stop the user interface alarm, you can shut down the system after 10 minutes (if so, please contact the dealer).

8.Troubleshooting

If any abnormal situation occurs (such as burning smell), please turn off the equipment and cut off the power. Keeping the equipment running may result in damage, electric shock, or fire.

If any of the following malfunctions occur, please take the following steps and contact the dealer.

Defect	Corrective action
If the safety appliance (such as fuses) frequently trip or if the switch is not functioning properly.	Turn off all main power switches of the equipment.
If water overflows from the equipment.	Stop the operation.
If the wired controller sends an error code.	Notify the installation personnel and report error codes. To find error codes, please refer to the User Interface Reference Guide.

If any of the above defects are not the cause of the equipment malfunction, please contact your installation personnel and provide the malfunction performance and the full name of the equipment model (if possible, please provide the manufacturing number).

9.Accessories

Name	Clamp ring	Operation manual	Clamp	Panel fixing screws
Quantity	×2	×1	×6	×4
Shape				

Name	Copper nuts	Diverter	Insulation components	Isolation condensate discharge pipe
Quantity	×1 ×1	×3	×2	×1
Shape				

10.Installation of the Equipment

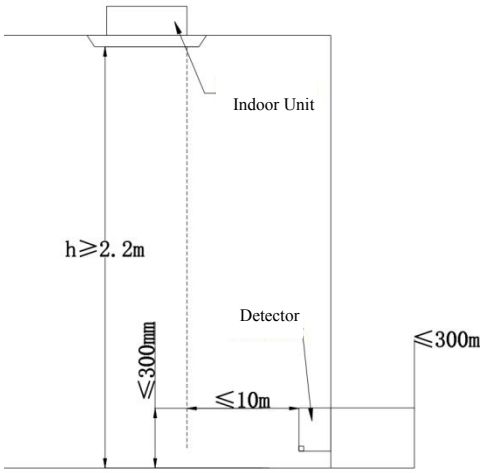
10.1.Preparation for Installation Site

▪ Before installation

- Do not discard the spare parts required for installation before installation.
- Do not remove the packaging during installation.

When it is necessary to remove the packaging, lift the equipment with soft materials or protective plates to avoid damaging the equipment or causing scratches.

- The standard accessories for this series of models are listed in the packing list. Other components required for installation shall be provided according to the company's requirements for network installation.
- When installing indoor units in very large rooms, if you want to install additional external detection alarms, please follow the installation location of the leak detector described below. Please use the recommended model for this external detection alarm.



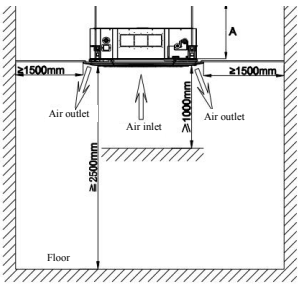
The leakage detector shown in the picture is an external detection alarm, which should be placed at a horizontal distance of **10 meters** and located on the wall of the room where the indoor unit is installed. However, when it does not enter the field of view in a straight line from the leak detector, it is installed on the wall at a minimum horizontal distance of less than **7 meters** without obstacles.

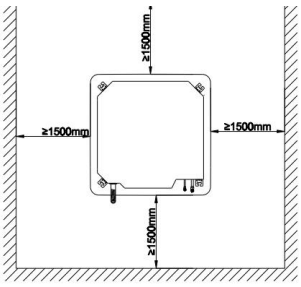
10.2.Selection for Installation Site

The choice of location is particularly important as subsequent relocation is a delicate operation carried out by qualified personnel.

The installation location is decided after discussing with the client.

- When installing the equipment, it should be easy to connect with the outdoor unit (cooling connections, condensate discharge, and electrical connections).
- Consider maintenance and care when choosing the location. Leave enough space for easy access to the air conditioner, especially for removing the filter.
- Choose a thick and vibration insensitive bracket at the location that can support the weight of the equipment.
- The air conditioner should be installed on a bracket that can bear at least 5 times the weight of the unit itself, and the bracket should not produce any noise or vibration.
- Do not install the indoor unit in the following locations:
- At the seaside, high concentrations of salt can damage metal components.
- A room (such as a kitchen) that contains mineral oil and is prone to spraying oil or steam. The place where hazardous substances are produced, such as sulfuric acid gas, chlorine gas, acid or alkali.
- Places where flammable gases leak contain suspended flammable carbon fibers or dust, or flammable volatile particles such as paint thinner or gasoline. If gas leaks and spreads around the equipment, it may catch fire.
- The area where ammonia is produced.
- Close to heat sources, steam, flammable gases, or exposed to sunlight.
- In places where there is a risk of hazardous gas leakage.
- In places where vibration and noise will be amplified.
- Under no circumstances should the air inlet and outlet be blocked. The air must be blown throughout the entire room.





Example of cassette type indoor unit installation location

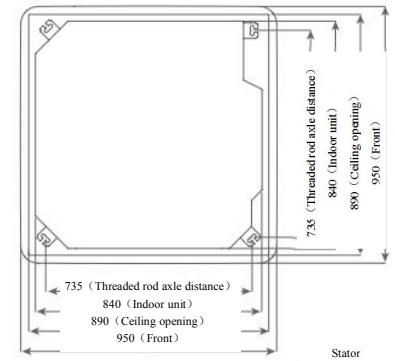
- **The visual appearance of indoor units is not representative, but the distance shown should be followed.**
- **The distance between the indoor unit and the ground should be greater than 2.2 meters.**

▪ **Dimensions and Position**

Specific Dimensions

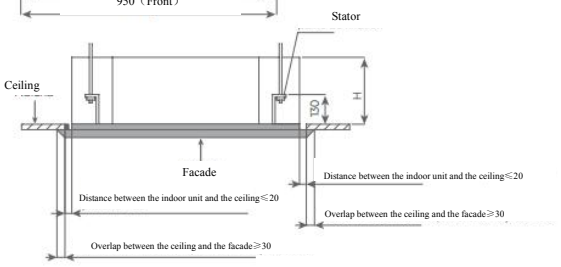
Model	Distance A
AB072-182MNFRA	206
AB242-302MNFRA	227
AB382MNFRA	269
AB482-602MNFRA	311

▪ **Ceiling Opening and Fixing**



Unit: mm

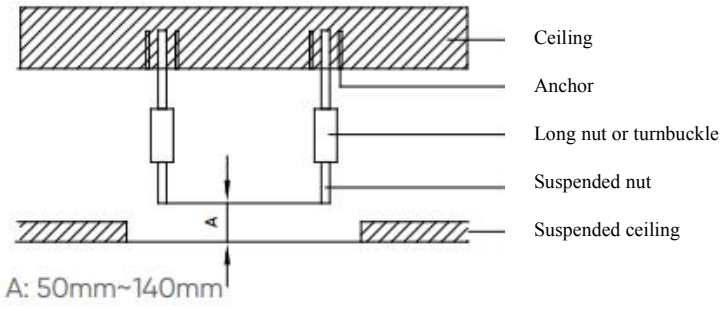
Model	H
AB072-182MNFRA	236
AB242-302MNFRA	257
AB382MNFRA	299
AB482-602MNFRA	341



Before installing the indoor unit by suspension, select the installation location based on the pipes and wiring within the suspended ceiling, and determine the direction of the pipes. Prior to hanging the indoor unit, prepare all the pipes (refrigerant and drainage) and wiring (interconnection for the remote controller, as well as interconnection between the indoor unit and the outdoor unit) for the indoor unit, so that connections can be made immediately after installation.

- In situations where there is a ceiling, place the refrigerant pipes, exhaust pipes, connecting cables, and wires of the remote controller in their designated piping and wiring positions before hanging the equipment.
- Confirm the dimensions of the indoor unit and adjust it according to the conditions stated in the manual.

10.3.Installation of Threaded Rods



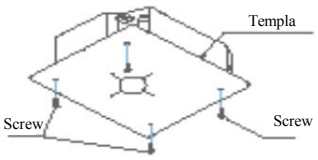
10.4.Fixing of the Indoor Unit Body

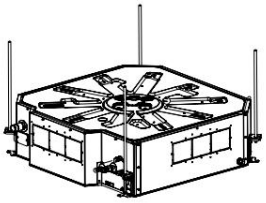
1.Temporary installation of the indoor unit.

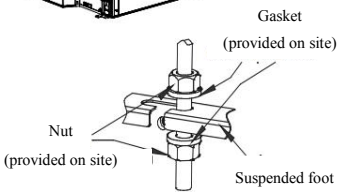
2.The template is marked with installation holes. Use 4 screws to secure the template to the equipment.

3.After installing it onto the suspended ceiling, adjust the equipment to meet the requirements (see the section titled "Ceiling Opening and Fixing" on page 10).

4.Tighten the nuts.







10.5.Upgrading

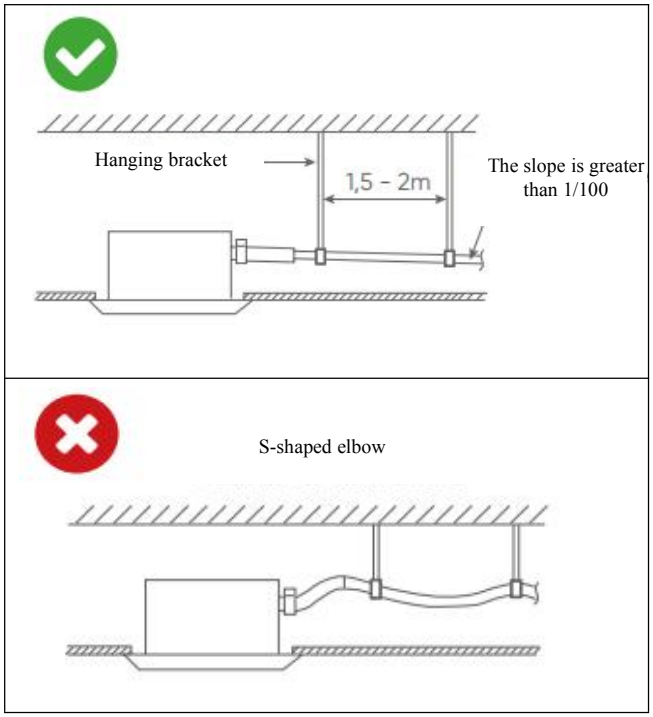
Use a bubble level or a transparent pipe filled with water to precisely adjust the indoor unit body. The indoor unit is equipped with an integrated lift pump. Tilting the condensate water drainage upwards may cause malfunctions in the lift pump's flow meter and result in water leakage.

10.6.Finishing Touch

Tighten the nuts to secure the indoor unit body.

10.7.Installation Guide for Drainage Pipe

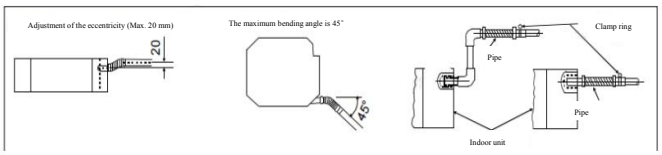
▪**Requirements**



The exhaust piping of the indoor unit requires insulation.
Thermal insulation must be carried out when connecting with the indoor unit. Poor insulation may lead to condensation.
The exhaust pipe with a slope at the top greater than 1/100 should not be S-shaped, as it may cause abnormal noises.
The horizontal length of the drain pipe must be controlled within 20 meters. Hanging brackets can be set every 1.5 to 2 meters to avoid uneven pipe length.
Be careful not to apply external force at the connections of the exhaust pipe.

▪Piping

The fixed pipe can be used to adjust the eccentricity and angle of the PVC pipe. Pull out the pipe for connection to avoid deformation. The flexible end of the pipe must be placed with a flange.



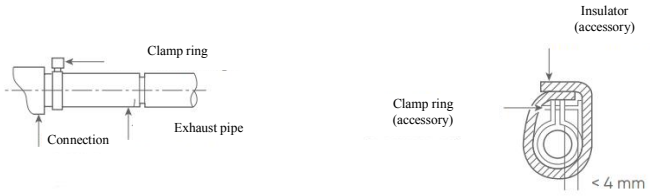
Location of the Condensate Pipe

▪Piping Material and Thermal Insulation Material

To prevent condensation, thermal insulation treatment must be carried out. The thermal insulation treatment for pipelines should be conducted separately in winter.

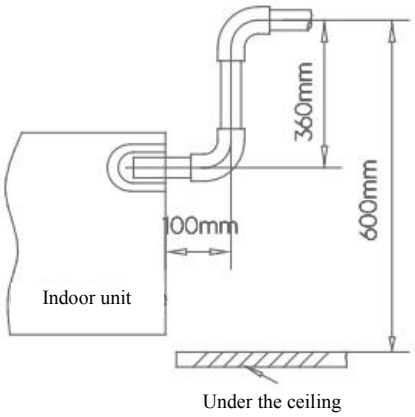
▪Thermal Insulation Treatment:

As shown in the picture below, wrap the exhaust pipe with thermal insulation material.



▪Drainage Pipe Lifting

The exhaust pipe can be lifted up by **360 millimeters**. When the downward slope of the drain pipe cannot be guaranteed, after the vertical lift, the drain pipe will still maintain a downward slope.



▪Confirmation of Drainage

During the testing process, the drain pipe must be sealed to ensure no leaks at the connections.
1. Inject 1/2 liter of water slowly into the outlet or the designated position on the machine through the pipe.
2. After installing the electrical system, activate the cooling mode and check for any leaks.

11.Pipe Installation

11.1.Preparation of Refrigerant Pipe

▪Requirements of Refrigerant Pipe

The piping must be installed according to the following instructions. Only mechanical seals conforming to the latest version of ISO 14903 can be used.

Flare joints should be used to connect refrigerant piping.

▪Refrigerant Pipe Diameter

Use the following diameters for indoor unit pipe joints:

Model	Outer Diameter of Pipe	
	Liquid Connection Diameter	Gas Connection Diameter
AB072-092MNFRA	Ø 6.35	Ø 9.52
AB122-182MNFRA	Ø 6.35	Ø 12.7
AB242-602MNFRA	Ø 9.52	Ø 15.88

▪Material and Thermal Insulation of Refrigerant Pipe

Outer Diameter	Insulated Inner Diameter	Insulation Thickness	Quenching Grade	Thickness*
6.35 mm（1/4 inch）	8~10 mm	≥10 mm	Annealing（O）	≥0.8 mm
9.52 mm（3/8 inch）	12~15 mm	≥13 mm		
12.7 mm（1/2 inch）	14~16 mm			
15.88 mm（5/8 inch）	17~20 mm			

**Based on applicable regulations and the maximum working pressure of the unit (see "PS High" on the unit's nameplate), a thicker pipe wall is required.*

When using polyethylene foam as thermal insulation material:

- The heat transfer rate is between **0.041** and **0.052 W/mK** (0.035 to 0.045 kcal/mh℃)
- The heat resistance should be at least 120℃

If the temperature exceeds **30℃** and the humidity exceeds **80%**, the thickness of the thermal insulation material should not be less than **20** mm to prevent condensation on the surface of the insulation.

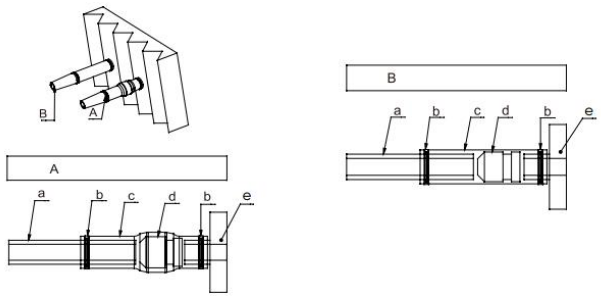
11.2.Connection of Refrigerant Pipe

Connection of the Refrigerant Pipe

Install the pipe in a location where it will not be exposed to substances that may corrode refrigerant-containing components, unless the components are made of inherently corrosion-resistant material or have appropriate corrosion protection.

Follow these instructions for insulating the pipe:

- Do not use worn, deformed, or discolored adhesive. Instead, use new refrigerant-quality adhesive.
- Use dry nitrogen to avoid introducing moisture that is harmful to the operation of the equipment.
- Do not use sealant on connections of the refrigerant pipe, as it may block or contaminate the inside of the connections. Using sealant will void the equipment warranty.



A. Gas pipe
B. Liquid Pipe

a.Insulation material (included)
b.Clamp ring (accessory)
c.Insulator: Large (gas pipe), small pipe (liquid pipe) (accessory)
d.Flare nut (included)
e.Machine body

1. Pull up the seams of the thermal insulation components.
2. Fix them onto the base of the unit.
3. Place and tighten the clamp rings to secure the thermal insulation.

Ensure that each refrigerant pipe is insulated.

12. Electrical Connection

- **Always use multi-core cables as power cords.**
- **For more information, please refer to the "Warnings and Precautions" chapter.**

12.1. Standard Wiring Specifications

Name		Category
Power cord	MCA*	1.9 A
	Voltage	220~240 V
	Phase	Single phase
	Frequency	50/60 Hz
	Cable size	2.5 mm^2 (2 cables + ground)

Transmission cable	0.75~2.0 mm^2 (2 cables); Max. 1000 m
Remote control cable	0.75~2.0 mm^2 (2 cables); Max. 400 m
Recommended circuit breaker	6 A

**The minimum circuit strength. The value shown is the maximum (for the exact value, see the electrical data of the indoor unit).*

12.2.Connecting Wires to the Indoor Unit

- **It's crucial to separate the power cord from the transmission line. To avoid any electrical interference, the distance between the two lines must always be at least 50 mm.**
- **Ensure that the power cord and transmission line are kept far apart. The transmission line and power cord can cross, but they must not run parallel.**

- **High-voltage** lines pass through cable port **A**.

They include power cords for indoor and outdoor units.

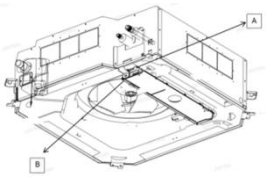
- **Low-voltage** lines pass through cable port **B**.

They include communication lines, stepper motor wires, remote control cables, and optional component wires.

1.Remove 2 screws and the pick, then open the maintenance cover.

2.Use the appropriate cable clamps to position and secure the cables.

3.Close the maintenance cover.



▪Notes:

Only copper wires should be used. A circuit breaker should be provided; otherwise, it may lead to electric shock.

Ensure that the wires do not come into contact with any hot parts of the pipe to avoid melting the cable insulation.

After connection, the pipe must be bent into a U-shape and fixed with a clamp.

The controller wiring and refrigerant piping can be arranged and fixed together.

Before any intervention, please cut off the power supply.

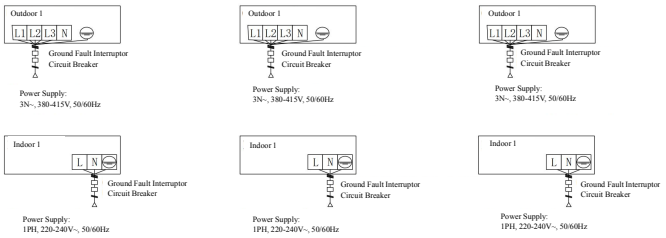
Seal the packaging holes with thermal insulation material to prevent condensation water.

The signal line and the power cord are separate.

The power cord of the indoor unit should be arranged according to the indoor unit installation manual.

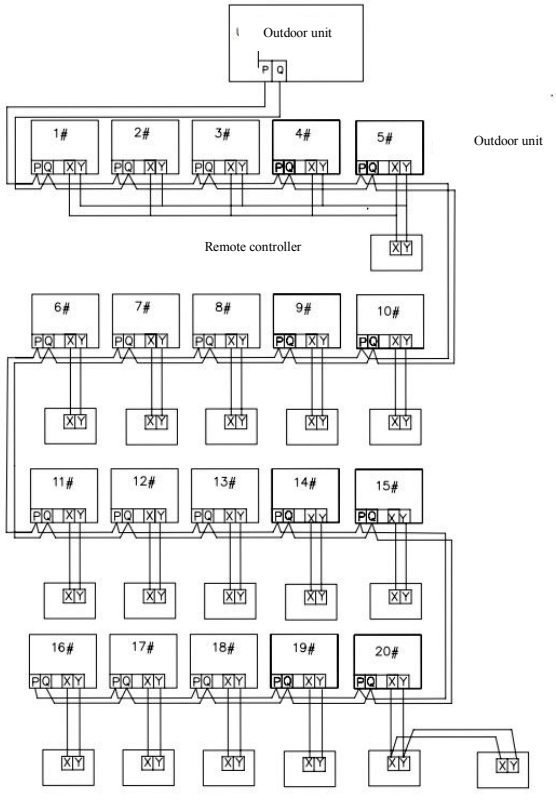
Example of the Complete System

The wiring of the transmitter and controller is as follows:



- **The indoor unit and the outdoor unit must be connected to the power source separately.**
- **The indoor unit should share a common power source, but their capacity and specifications should be taken into account.**
- **Both indoor and outdoor units must be equipped with leakage circuit breakers and overflow protection circuit breakers.**

▪Signal Wiring Diagram



The communication wiring between the indoor unit and the remote controller is achieved with two wires, without polarity. The communication wiring between the outdoor unit and the indoor unit is also achieved with two wires, without polarity. There are three ways to connect the remote controller to the indoor unit:

Connection Method A

A single line controls multiple equipment, namely 2 to 16 indoor units, as shown in the diagram above (indoor units 1# to 5#). The indoor unit 5 is the host unit for line control, while the others are sub-units controlled by INE. The remote controller and the host (directly connected to the line-controlled indoor unit) are connected by two non-polar lines. The other indoor units are connected to the host by two non-polar lines. The SW01 on the main line control unit is set to 0, while the SW01 on the other line control sub-units is set to 1.

SW01_1	**Remote Controller Group Address**	**[1]**	**Wired controller Indoor Unit Address (Group Address)**
		0	0# (Wired Controller Host Unit) (Default)
		1	1# (Wired Controller Slave Unit) (Default)

Connection Method B

A single line controls a single indoor unit, namely 2 to 16 indoor units, as shown in the diagram above (indoor units 6# to 19#). The indoor unit is connected to the line control by two non-polar lines.

Connection Method C

Dual lines control the indoor unit, as shown in the diagram (indoor unit 20). One of the line control equipment can be set as the main line control, while the other can be set as the auxiliary line control.

The main line control and the indoor unit, as ell as the main line and auxiliary line control are all connected by two non-polar lines.

Wiring for indoor unit power cords, wiring between indoor and outdoor units, and wiring between indoor units:

Total Current of Indoor Unit（A）	Cross Section（mm^2）	Length（m）	Rated Current of Overcurrent Circuit Breaker（A）	Rated Current of Residual Current Circuit Breaker（A）; Ground Fault Switch（mA）; Response Time（s）
<6	2.5	20	6	6 A, 30 mA, 0.1 second or less
≥6 and <10	2.5	20	10	10 A, 30 mA, 0.1 second or less
≥10 and <16	4	25	16	16 A, 30 mA, 0.1 second or less
≥10 and <25	6	30	25	25 A, 30 mA, 0.1 second or less
≥25 and <32	10	50	32	32 A, 30 mA, 0.1 second or less

- The power cord and the signal line must be tightly connected.
- Each indoor unit must be grounded.
- It is necessary to adjust the cross section of the power cord according to its length.
- The total length of the communication line must not exceed **1,000 meters**.

Signal Wiring of the Controller

Maximum Length of Remote Control Cable（m）	Wiring Dimensions
L ≤ 250 m	0.75 mm^2 (1 Pair Shielded)

13.Debugging

13.1.Pre-debugging Checklist

After installing the equipment, check the following points first:

The indoor and outdoor units are installed correctly.

Ensure that the drainage pipe is installed correctly, insulated, and drains smoothly.

Check for any water leaks.

The refrigerant pipe (gas and liquid) is installed correctly and insulated.

The system is properly grounded, and check for any phase loss or phase reversal.

According to the installation instructions, the locally installed fuse or protective equipment is in place.

The power voltage matches the voltage indicated on the equipment identification label.

Check the switch box for any loose connections or damaged electrical components.
Check the indoor and outdoor units for any damaged parts or crushed pipes.
The shut-off valves (gas and liquid) on the outdoor unit are fully open.
The indoor unit is equipped with an R32 detector.

13.2.Run Test

Follow the instructions in the outdoor unit manual for "Pilot Run".
The test is considered complete only when no fault codes are displayed on the user interface or the outdoor unit screen.

Outdoor unit	**SW1**	0	（1）Press the Enter button（SW7）for 3 seconds, with CCC flashing, all indoor units operate in cooling mode; （2）Press the Exit button（SW6）for 3 seconds, displaying "---"，all indoor units stops working.
	SW2	D	
	SW3	2	

Outdoor unit	**SW1**	0	（1）Press the Enter button（SW7）for 3 seconds, with HHH flashing, all indoor units operate in heating mode; （2）Press the Exit button（SW6）for 3 seconds, displaying "---", all indoor units stops working.
	SW2	E	
	SW3	2	

▪Adjustment Switch

SW01_5 SW01_6 SW01_7 SW01_8	**Capacity of indoor unit**	**[5]**	**[6]**	**[7]**	**[8]**	**Capacity of indoor unit**
		0	0	0	1	AB072MNFRA
		0	0	1	0	AB092MNFRA
		0	0	1	1	AB122MNFRA AB162MNFRA AB182MNFRA
		0	1	0	1	
		0	1	1	0	
		0	1	1	1	AB242MNFRA
		1	0	0	0	AB282MNFRA
		1	0	0	1	AB302MNFRA
		1	0	1	0	AB382MNFRA
		1	0	1	1	AB482MNFRA
		1	1	0	0	AB602MNFRA

SW03_1	**Address type**	**[1]**	**Setting mode address**						
		0	**Automatic adjustment**						
		1	**Manually set the address SW03_2 to SW03_8**						
SW03_2 SW03_8	**Address of the indoor unit and central controller**	**[2]**	**[3]**	**[4]**	**[5]**	**[6]**	**[7]**	**[8]**	**Address of the indoor unit**	**Address of the centralized remote controller**
		0	0	0	0	0	0	0	0	1
		0	0	0	0	0	0	1	1	2
		0	0	0	0	0	1	0	2	3
		.....								
		0	1	1	1	1	1	1	63	64

- SW03_2=OFF, Remote controller address=Address of the centralized remote controller=Communication address+1

▪Error Code for Indoor Unit

Error Code Displayed on the Remote Controller	**PCB LED5**	**Fault Description**
01	1	Malfunction of internal air intake sensor "Tai" malfunction
02	2	Malfunction of TC1 indoor unit heat exchanger outlet temperature sensor
03	3	Malfunction of TC2 indoor unit heat exchanger inlet temperature sensor
05	5	Malfunction of indoor unit "EEPROM"
06	6	Lack of communication between indoor unit and outdoor unit
07	7	Malfunction of communication between indoor unit and wired controller
08	8	Malfunction of the indoor unit drainage pump
09	9	Duplication Failure of the indoor unit address
0E	14	Malfunction of the DC motor
14	20	Corresponding malfunction of the outdoor unit

Error Code Displayed on the Remote Controller	PCB LED5	Fault Description
AA	11	Refrigerant leak detection in indoor unit
Ab	11	The concentration of the refrigerant is reduced
Ac	19	The communication between the detector and the indoor printed circuit board is interrupted.
Ad	19	The indoor unit detector self-check is abnormal.
AE	19	The indoor unit detector has reached its useful life (180 days in advance).
AF	19	The indoor unit detector has reached its useful life.

14.Parameter Settings

▪System Settings

The following settings need to be made to correspond to the actual installation configuration and user requirements.

The following settings applies only to the use of the remote controller.

If using other interfaces, please refer to the installation or maintenance manuals in the user interface.

Distance from the Ground(meter)		Configuration Method	
AB072-24 2MNFRA	AB282-6 02MNFR A	Procedure （Configuration Method）	Installation Height
2.2<x≤2.3		Installation Height	Low
2.3<x≤3.3			Normal （default）
3.3<x≤3.5			High

▪Cleaning Time of Air Filter

This parameter must be consistent with the air pollution in a room. It determines the time interval for displaying the "cleaning time of air filter" notification on the user interface. By default, the filter cleaning interval is **2500 hours**. The time interval can be modified by the after-sales service according to the actual air pollution level. The "filter deadline 1/2" for the indoor unit memory can be modified by the after-sales service department.

▪Selection of Room Temperature Sensor

This setting must correspond to the use of the remote controller

User Interface	Corrective Action
Remote Controller	Select the ambient temperature sensor of the wired controller as the air temperature of the room.
Infrared Remote Control	Select the ambient temperature of the indoor unit as the air temperature of the room.

▪Indoor Unit Heating Ambient Temperature Compensation

（If using the remote sensor）

If the system is equipped with infrared remote controller, please adjust the increment/decrement.

The temperature sensor of the unidirectional box indoor unit cannot accurately reflect the indoor temperature; therefore, it is necessary to set ambient temperature compensation.

The default value of the ambient temperature compensation is **-3**℃; The after-sales service department can modify it according to the needs of users.

▪Automatically Restart After Power-off

Depending on the user's needs, disable/enable the automatic restart (memory deactivation).

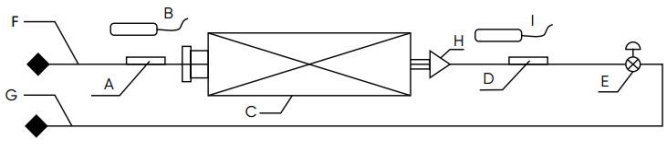
Press the menu button **10 times** within **5 seconds**:

- Four echoes indicate the settings of the power-off memory;
- Two echoes indicate the cancellation of power off memory;
- Automatic restart is enabled by default.

▪Other Functions

For other functions, please refer to the user manual of the infrared remote controller or the remote controller.

15.Equipment System Construction



A.TC1 sensor
B.Tai sensor
C.Exchanger
D.TC2 sensor
E.Electronic expansion valve
F.Gas pipe
G.Liquid pipe
H.Distributors
I.Leak detector