



Owner's Manual

Original Instructions

Commercial Air Conditioners

HR Mode Exchange Box

Models:

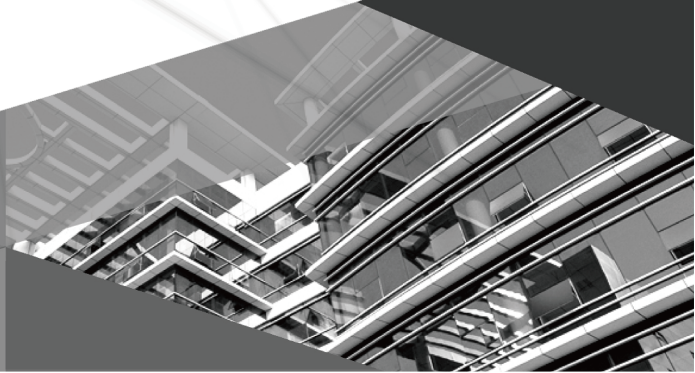
HR6B1NK

HR6BS2NK

HR6BS4NK

HR6BS8NK

Thank you for choosing commercial air conditioners. Please read this Owner's Manual carefully before operation and retain it for future reference.



To Users

Thank you for selecting our product. Please read this instruction manual carefully before installing and using the product, so as to master and correctly use the product. In order to guide you to correctly install and use our product and achieve expected operating effect, we hereby instruct as below:

- (1) This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- (2) In order to ensure reliability of product, the product may consume some power under stand-by status for maintaining normal communication of system and preheating refrigerant and lubricant. If the product is not to be used for long, cut off the power supply; please energize and preheat the unit in advance before reusing it.
- (3) Please properly select the model according to actual using environment, otherwise it may impact the using convenience.
- (4) This product has gone through strict inspection and operational test before leaving the factory. In order to avoid damage due to improper disassembly and inspection, which may impact the normal operation of unit, please do not disassemble the unit by yourself. You can contact with the special maintenance center of our company if necessary.
- (5) When the product is faulted and cannot be operated, please contact with our maintenance center as soon as possible by providing the following information.
 - 1) Contents of nameplate of product (model, cooling/heating capacity, product No., ex-factory date).
 - 2) Malfunction status (specify the situations before and after the error occurs).
- (6) All the illustrations and information in the instruction manual are only for reference. In order to make the product better, we will continuously conduct improvement and innovation. We have the right to make necessary revision to the product from time to time due to the reason of sales or production, and reserve the right to revise the contents without further notice.
- (7) The final right to interpret for this instruction manual belongs to C&H.

Exception Clauses

Manufacturer will bear no responsibilities when personal injury or property loss is caused by the following reasons:

- (1) Damage the product due to improper use or misuse of the product;
- (2) Alter, change, maintain or use the product with other equipment without abiding by the instruction manual of manufacturer;
- (3) After verification, the defect of product is directly caused by corrosive gas;
- (4) After verification, defects are due to improper operation during transportation of product;
- (5) Operate, repair, maintain the unit without abiding by instruction manual or related regulations;
- (6) After verification, the problem or dispute is caused by the quality specification or performance of parts and components that produced by other manufacturers;
- (7) The damage is caused by natural calamities, bad using environment or force majeure.

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1 Safety Notices (Please be Sure to Abide)



WARNING: If not abide strictly, it may cause severe damage to the unit or the people.



NOTICE: If not abide strictly, it may cause slight or medium damage to the unit or the people.



This sign indicates that the operation must be prohibited. Improper operation may cause severe damage or death to people.



This sign indicates that the items must be observed. Improper operation may cause damage to people or property.



WARNING!

This Multi VRF System shall only be connected to an appliance suitable for the same refrigerant.

All units in Manual Cover is a partial unit, complying with partial unit of IEC 60335-2-40:2018, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this international standard.




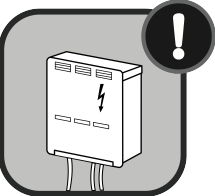
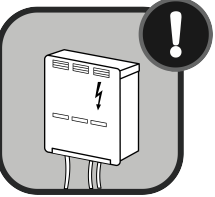
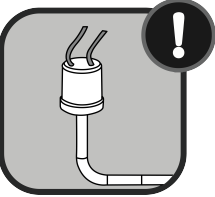
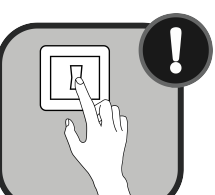

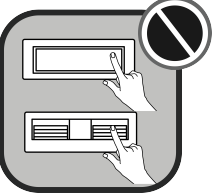

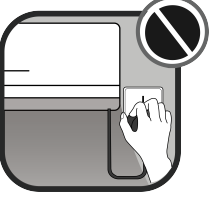
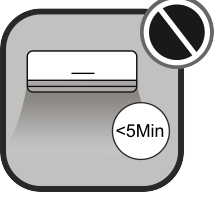
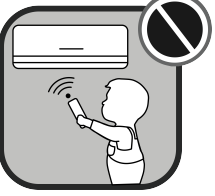

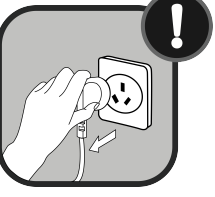

The electrical interface shall comply with electrical security requirement, voltage shall be 220-240V ~50/60Hz, current shall be referred to the table of “Dimension of power cord and capacity of air switch” in Section 3.4, and safety class of construction is I.



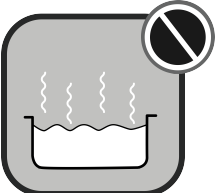
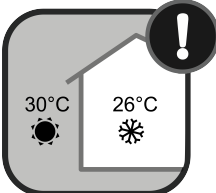
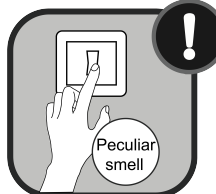

The design pressure is 4.3 MPa. The thickness of pipe for installation should comply with the relevant national/continental regulations.

Do not connect the indoor unit and hot water generator at the same time under the same branch of the mode converter, otherwise the unit will be damaged.

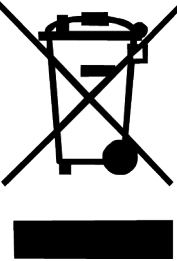
After the power cord is installed, please note to ensure that the power cord should not direct touch the sheet metal of electric box.

	<p>Please install the unit according to instructions in this manual. Read this manual carefully before starting up or checking the machine.</p>		<p>Installation should be performed by dealer or qualified technicians. Do not install the product by yourself. Improper installation may result in water leakage, electric shock or fire hazard.</p>
	<p>Make sure the local power supply is in accordance with units before installation, and check the power supply carefully.</p>		<p>This air conditioner must be properly grounded through the receptacle to avoid electric shock. The grounding wire shouldn't be connected with gas pipe, water pipe, lightning arrester or telephone line.</p>

 <p>Dedicated</p>	<p>Please use specialized accessories or parts to carry out installation, or water leakage, electric shock, fire hazard may resulted.</p>		<p>R410A refrigerant can produce poisonous gas once it meets fire, so please ventilate the room immediately if refrigerant leaks out during installation.</p>
 <p>Dedicated components</p>	<p>Diameter of power cord must be large enough. Damaged power cord and connecting wire must be replaced by specialized electric cable.</p>		<p>After the power cord is connected, please install the cover of electric box to avoid danger.</p>
	<p>Nitrogen must be charged according to technical requirements.</p>		<p>Short circuit is forbidden. Do not cancel the pressure switch in case the unit may be damaged.</p>
	<p>For units with wired controller, do not connect power supply until the wired controller is well installed. Otherwise, the wired controller cannot be used.</p>		<p>When the installation is finished, please check and make sure the drain pipe, pipeline and electric wire are all well connected in order to avoid water leakage, refrigerant leakage, electric shock or fire hazard.</p>
	<p>Do not extend fingers or objects into air outlet or air return grille.</p>		<p>If you use gas heater or petroleum heater in the same room, please open the door or window to maintain good air circulation in case the room may lack of oxygen.</p>
	<p>Never start or stop the air conditioner by inserting or removing the power cord.</p>		<p>Do not turn off the air conditioner until it runs for at least 5 minutes. Otherwise, oil-return of the compressor will be affected.</p>
	<p>Children are not allowed to operate the air conditioner.</p>		<p>Do not operate the air conditioner with wet hands.</p>
	<p>Please turn the unit off and unplug your air conditioner before cleaning. Otherwise, it may cause electric shock or personal injury.</p>		<p>Do not spray water on the air conditioner or it will cause malfunction or electric shock.</p>

	<p>Do not expose the air conditioner directly to water or place it in a damp or corrosive environment.</p>		<p>Connect power supply 8 hours before operation. Do not disconnect power if you want to stop the unit in a short period of time, e.g. in one night (This is for protecting the compressor).</p>
	<p>Volatile liquid like thinner or gasoline will damage the appearance of air conditioner. Please use soft dry cloth or wet cloth with mild detergent to clean the outer case of air conditioner.</p>		<p>During Cooling mode, indoor temperature should not be set too low. Keep the difference between indoor temp and outdoor temp within 5°C.</p>
	<p>If abnormal condition occurs (e.g. unpleasant smell), please turn off the unit at once and disconnect power supply. Then contact C&H service center. If the air conditioner continues to operate despite of abnormal condition, the unit may be damaged and it may cause electric shock or fire hazard.)</p>		<p>Do not repair the air conditioner by yourself. Improper repair will cause electric shock or fire hazard. Please contact C&H service center and have it repaired by professional technicians.</p>
<p>Install units according to national wiring codes. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard. An all-pole disconnection device which has at least 3mm clearances in all poles, and disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.</p>			
<p>C&H will not assume responsibility for any personal injury or property loss caused by improper installation, improper debugging, unnecessary repair or not following the instructions of this manual.</p>			

Any personal injury or property loss caused by improper installation, improper debug, unnecessary repair or not following the instructions of this manual should not be the responsibility of C&H.

	<p>Correct Disposal of this product</p>	
	<p>This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.</p>	

2 Product Introduction

2.1 Names of Main Parts

One-to-one Mode Exchange Box:

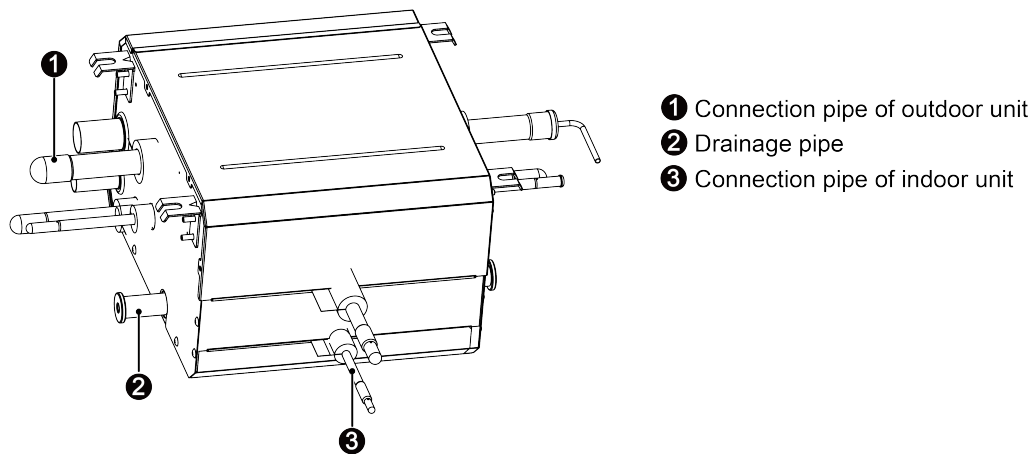


Fig.2.1.1

One-to-two Mode Exchange Box:

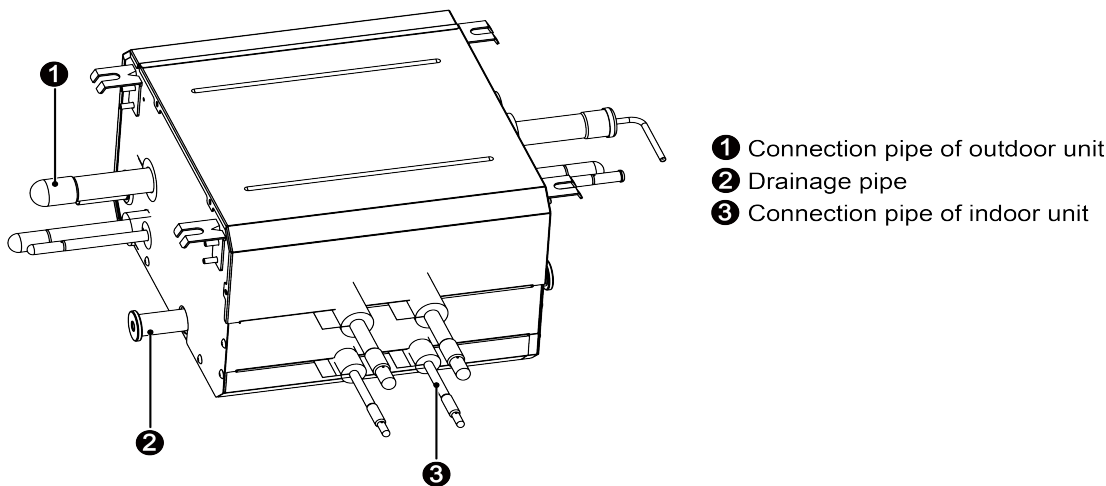


Fig.2.1.2

One-to-four Mode Exchange Box:

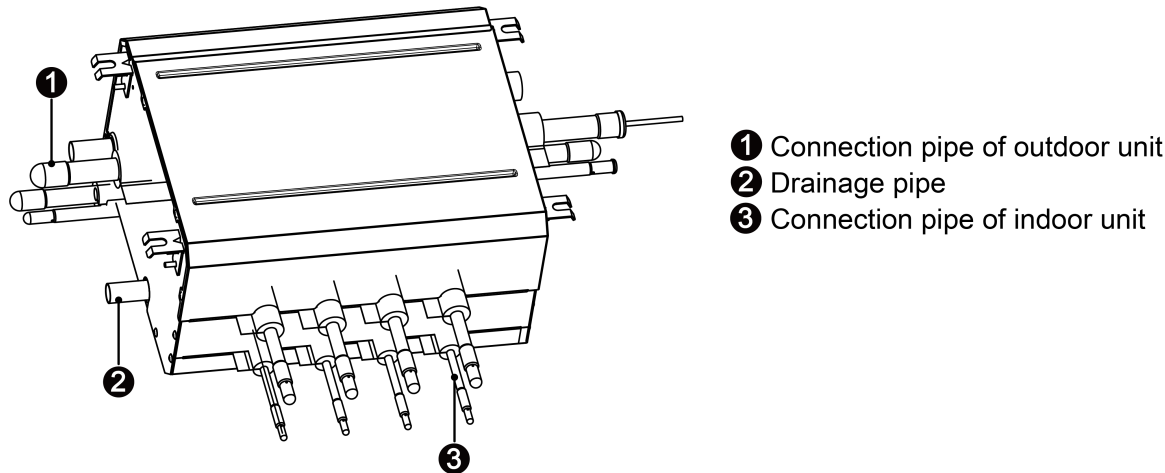


Fig.2.1.3

One-to-eight Mode Exchange Box:

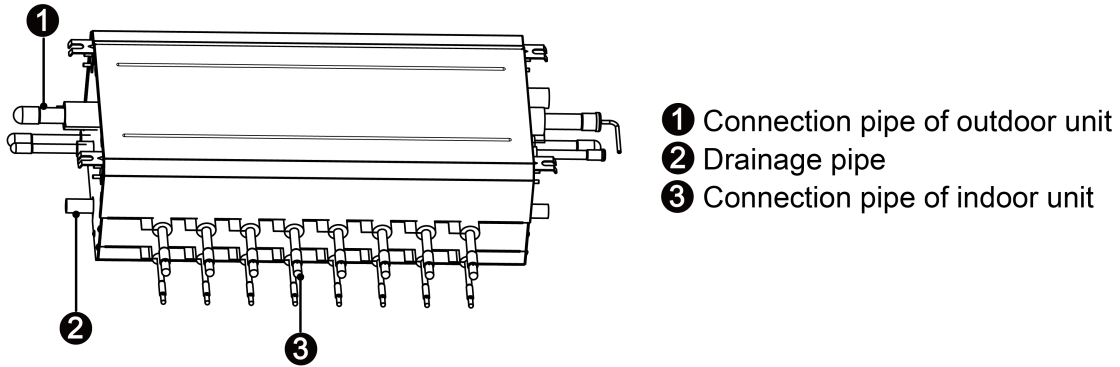


Fig.2.1.4

2.2 Parameter Table

Model				HR6B1NK	HR6BS2NK	HR6BS4NK	HR6BS8NK
Numbers of branches			unit	1	2	4	8
Maximum numbers of connectable IDUs	Per branch	unit		8	8	8	8
	Total	unit		8	16	32	64
Maximum capacity of connectable IDUs	Per branch	kW		16	16	16	16
	Total	kW		16	28	45	85
Power supply				220-240V ~50/60Hz			
Piping connections	ODU	Liquid	mm	Φ9.52	Φ9.52	Φ12.7	Φ15.9
		High pressure gas	mm	Φ19.05	Φ19.05	Φ22.2	Φ22.2
		Low pressure gas	mm	Φ22.2	Φ22.2	Φ28.6	Φ28.6
	IDU	Liquid	mm	Φ6.35/9.52	Φ6.35/9.52	Φ6.35/9.52	Φ6.35/9.52
		Gas	mm	Φ12.7/15.9	Φ12.7/15.9	Φ12.7/15.9	Φ12.7/15.9

**NOTE!**

- ① The HR6B series mode exchange box can only be connected to HR series outdoor units (CHV6-H***NMX).
- ② The number of mode exchange box (N) in a system cannot be more than 20.

$$N = \text{The number of one-to-one mode exchange box} + \text{The number of one-to-two mode exchange box} + \text{The number of one-to-four mode exchange box} + 2 \times \text{The number of one-to-eight mode exchange box}$$






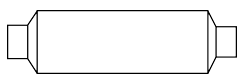
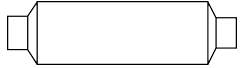


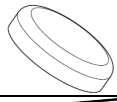
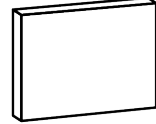
3 Preparation before Installation

**NOTE!**

The product photos are only for reference. The unit for size is mm, except otherwise stated.

3.1 Standard Accessory

Please use below provided standard parts according to requirement.

No.	Name	Photo	Quantity	Purpose
1	M10×8 Nut with washer M10×8		4	Used for hanging mode exchange box
2	Nut M10 (hexagon nut M10×8.4)		4	Used for hanging mode exchange box
3	Washer 10 (spring washer M10×2.6)		4	Used for hanging mode exchange box
4	Sponge of drainage pipe		2	Wrap the connection position of drainage pipe
5	High-temperature tieline		11	Wrap sponges at the connection position
6	Installation template	—	1	Used for drilling holes at the ceiling
7	silencer 1		1	The sizes of both nozzles are IDΦ19.3mm and Φ19.05mm, nozzle Φ19 mm is used for connecting the high pressure gas pipe of HR6B1NK and HR6BS2NK.
8	silencer 2		1	The sizes of both nozzles are IDΦ22.6mm and Φ22.2mm, nozzle Φ28mm is used for connecting the low pressure gas pipe of HR6B1NK and HR6BS2NK.
9	silencer 1		1	The sizes of both nozzles are IDΦ22.6mm and Φ22.2mm, nozzle Φ22 mm is used for connecting the high pressure gas pipe of HR6BS4NK and HR6BS8NK.
10	silencer 2		1	The sizes of both nozzles are IDΦ28.8mm and Φ28.6mm, nozzle Φ28mm is used for connecting the low pressure gas pipe of HR6BS4NK and HR6BS8NK.
11	sealing cap		1	Used for blocking the low pressure gas pipe nozzle
12	damping block		1	Wrap the unused low pressure gas pipe of mode exchange box.

The packed attachments should be subject to actual objects. If there are any alterations, there will be no further notice.

3.2 Installation Site

- (1) Make sure the hanging parts can hold the weight of unit.
- (2) Water can be drained out from the drainage hose conveniently.
- (3) No obstacles at outlet and inlets. Keep the air ventilation in good condition.
- (4) Connect either left or right side of converter to outdoor unit for piping according to installation space, as shown in the Fig.3.2.1, the space used for maintenance should be ensured.

- (5) Please keep the unit away from those positions where there's thermal source, inflammable gas and smog.
- (6) The unit is the cassette type (concealed type).
- (7) Indoor unit, outdoor unit, mode exchange box power cord and connection cord should be kept 1m above away from TV and radio for preventing graphic interference and noise. (Even the distance is 1m, if there's strong electric wave, there's still noise).

Unit: mm

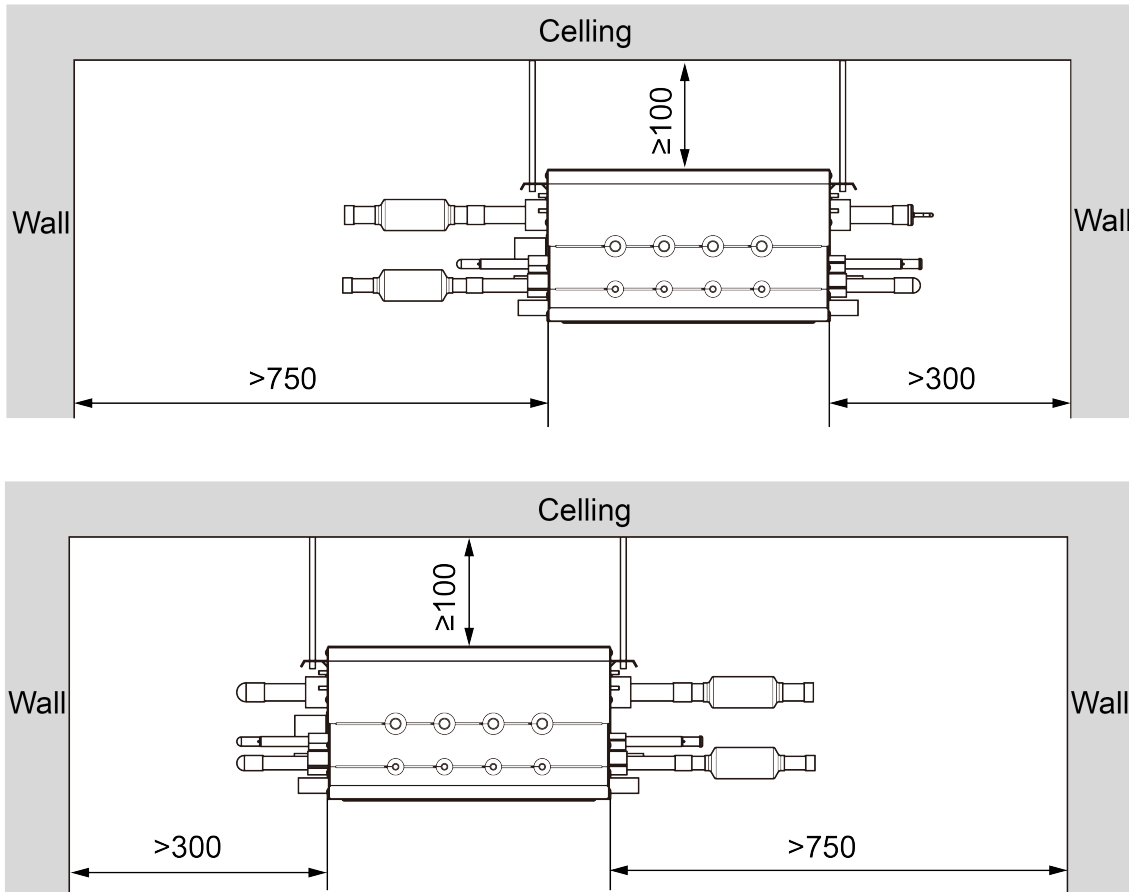


Fig.3.2.1



NOTES!

- ① The installation of the unit must comply with national and local safety regulations.
- ② Users can't install the unit by themselves, because the installation quality will affect the operation directly. After purchasing the unit, please contact with dealer. The unit must be installed and debugged by professional installer.
- ③ The unit can be put through power only after all installation work is finished.

3.3 Selection Requirement for Communication Wire



NOTE!

If the unit is installed at the place where there's strong electromagnetic interference, the communication wire between indoor unit and wired controller must adopt shield wire, and the

communication wire between indoor unit and indoor unit (outdoor unit) must adopt twisted wire with shielding function.

Type of wire	Total length of communication wire between Mode Exchange Box and another indoor/outdoor unit L(m)	Wire diameter (mm ²)	Material standard	Remarks
Light/Ordinary polyvinyl chloride sheathed cord (60227 IEC 52/60227 IEC 53)	L≤1000	≥2×0.75	IEC 60227-5:2007	1. If the wire diameter is enlarged to 2×1mm ² , the total communication length can reach 1500m. 2. The cord shall be circular cord (the cores shall be twisted together). Communication wire can be longer if wire diameter is 2×1mm ² . But the total length cannot exceed 1500m. 3. If unit is installed in places with intense magnetic field or strong interference, it's necessary to use shielded wire.

3.4 Wiring Requirement

Power cord size and capacity of air switch.

Model	Power	Capacity of air switch (A)	Min sectional area for earthing wire (mm ²)	Min sectional area for power cord(mm ²)
HR6B1NK	220-240V ~50/60Hz	6	1.0	1.0
HR6BS2NK	220-240V ~50/60Hz	6	1.0	1.0
HR6BS4NK	220-240V ~50/60Hz	6	1.0	1.0
HR6BS8NK	220-240V ~50/60Hz	6	1.0	1.0



NOTES!

- ① Above circuit breaker and power cord specification are selected according to the max power (max current).
- ② Specification of power cord is based on the working condition where ambient temperature is 40°C and multi-core copper cable (working temperature is 90°C, e.g. power cable with YJV cross-linked copper, insulated PE and PVC sheath) is lying on the surface of slot. If working condition changes, please adjust the specification according to national standard.
- ③ Specification of circuit breaker is based on the working condition where ambient temperature of circuit breaker is 40°C. If working condition changes, please adjust the specification according to national standard.
- ④ When installing the cut-off device next to the unit, the min space between every two levels of cut-off device should be 3mm (for indoor unit and outdoor unit).

4 Installation Instruction

4.1 Installation of Mode Exchange Box

4.1.1 Dimension of Outdoor Unit and Mounting Hole Position

After the unit is installed, a maintenance port should be reserved at the electric box side of unit for maintenance. The position of maintenance port should be lower than the lower size of unit.

The Mode Exchange Box shall be installed near the maintenance port or air return of indoor unit. (Note: if it is installed near the air return, please make sure not to affect air return and maintenance).

The following pictures detailed describe the installation of maintenance port and Mode Exchange Box:

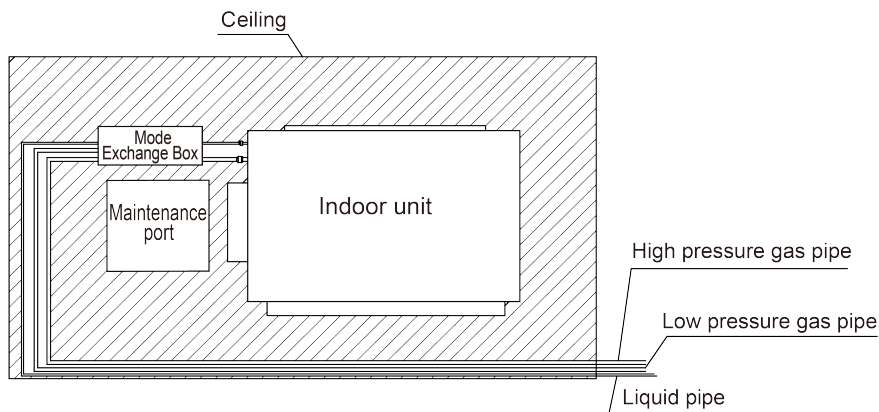


Fig.4.1.1

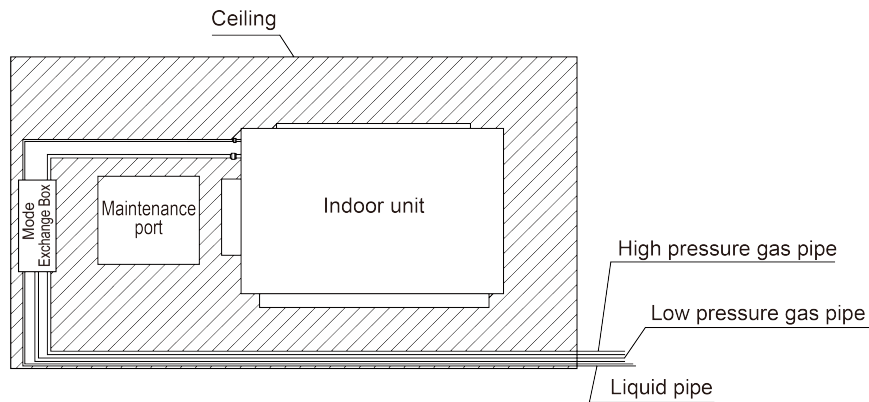


Fig.4.1.2

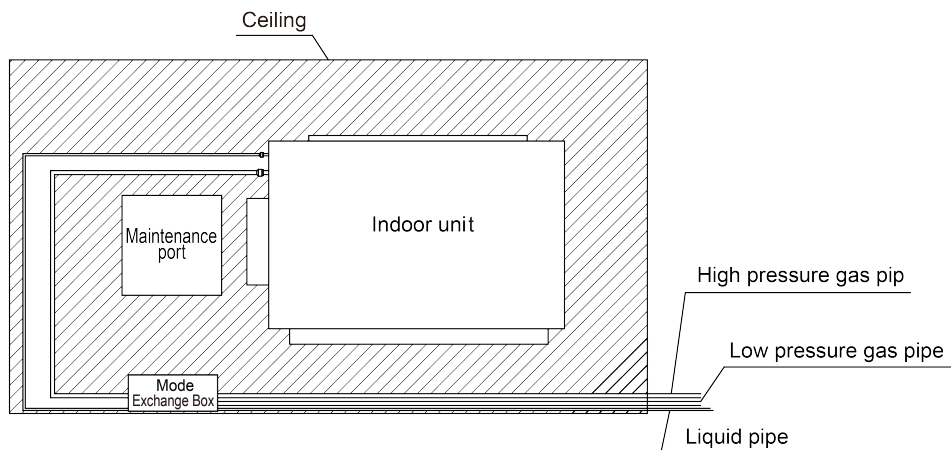


Fig.4.1.3

HR Mode Exchange Box

Due to the structure of installation space, the Mode Exchange Box needs a maintenance port. Please reserve another maintenance port for Mode Exchange Box.

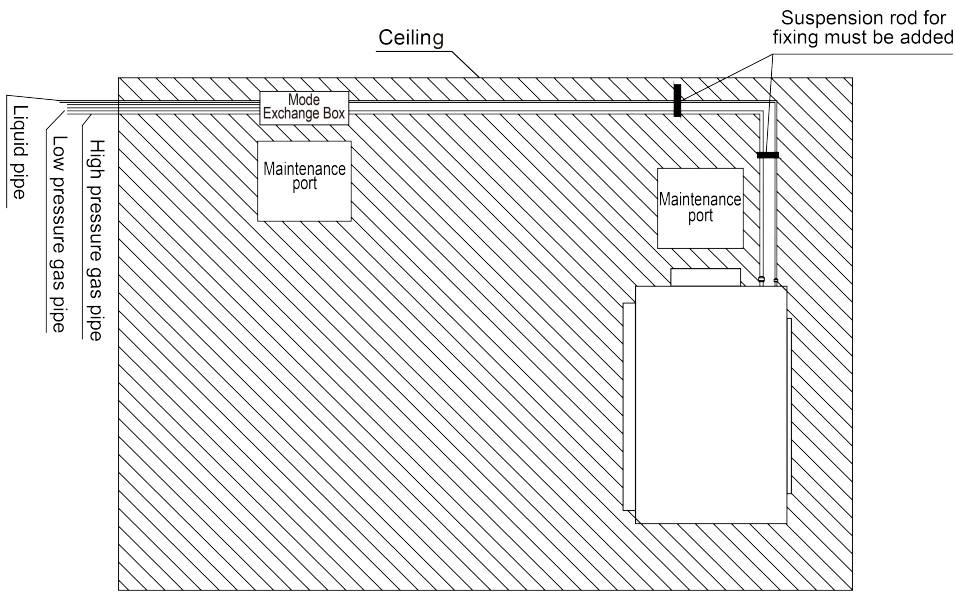


Fig.4.1.4

HR6B1NK outline and installation dimension:

Unit: mm

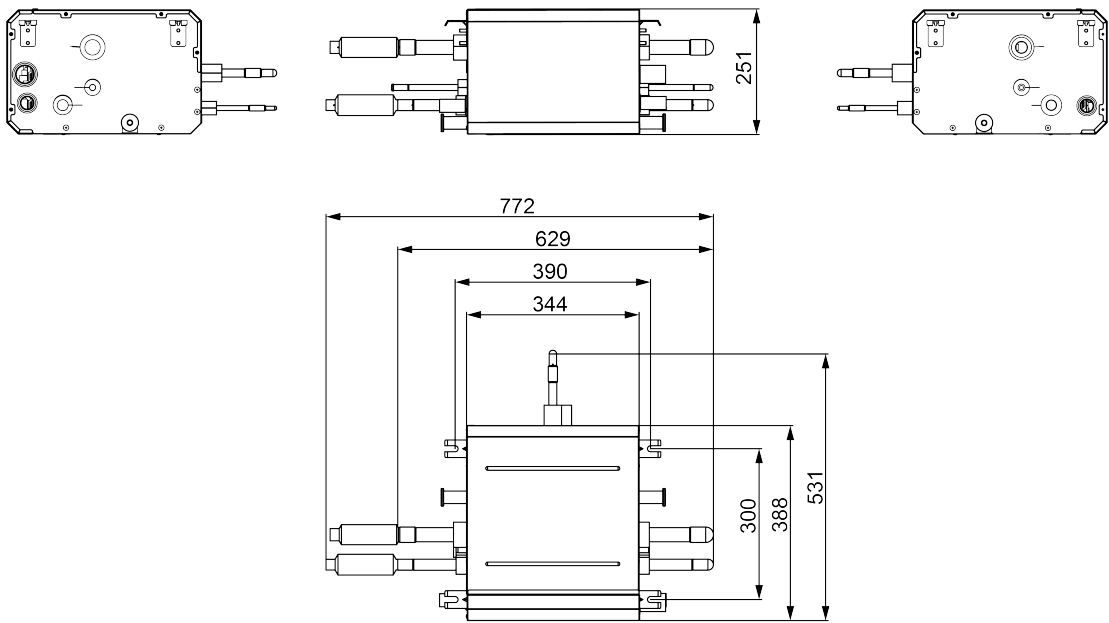


Fig.4.1.5

HR6BS2NK outline and installation dimension:

Unit: mm

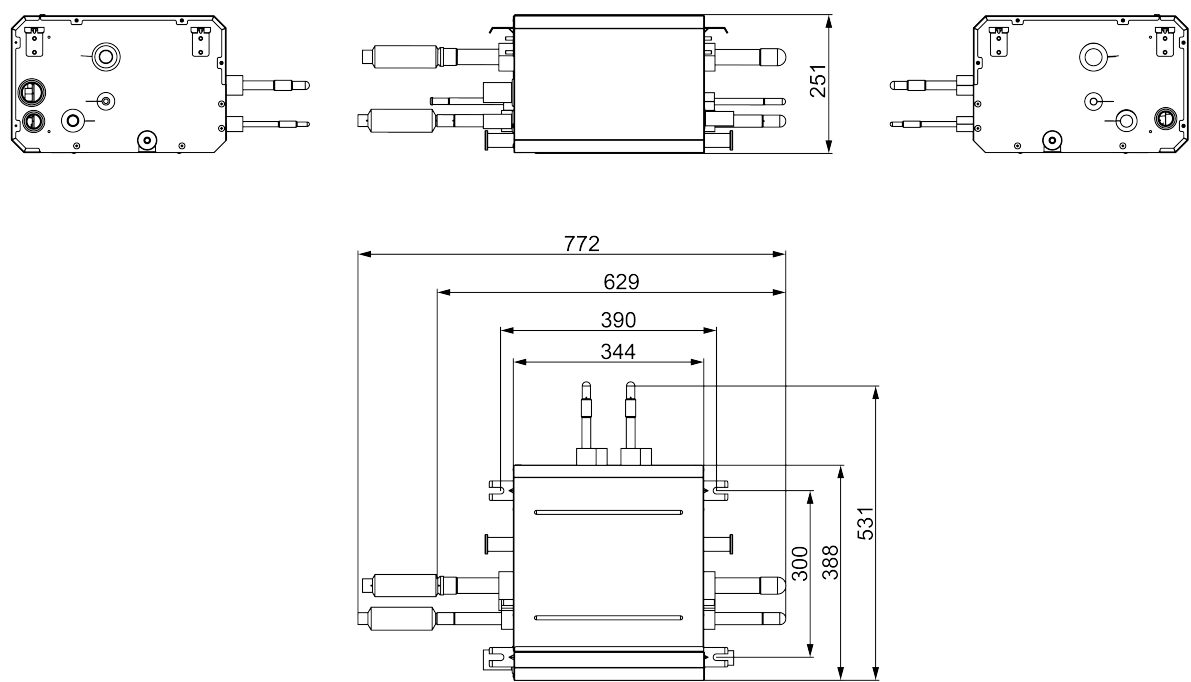


Fig.4.1.6

HR6BS4NK outline and installation dimension:

Unit: mm

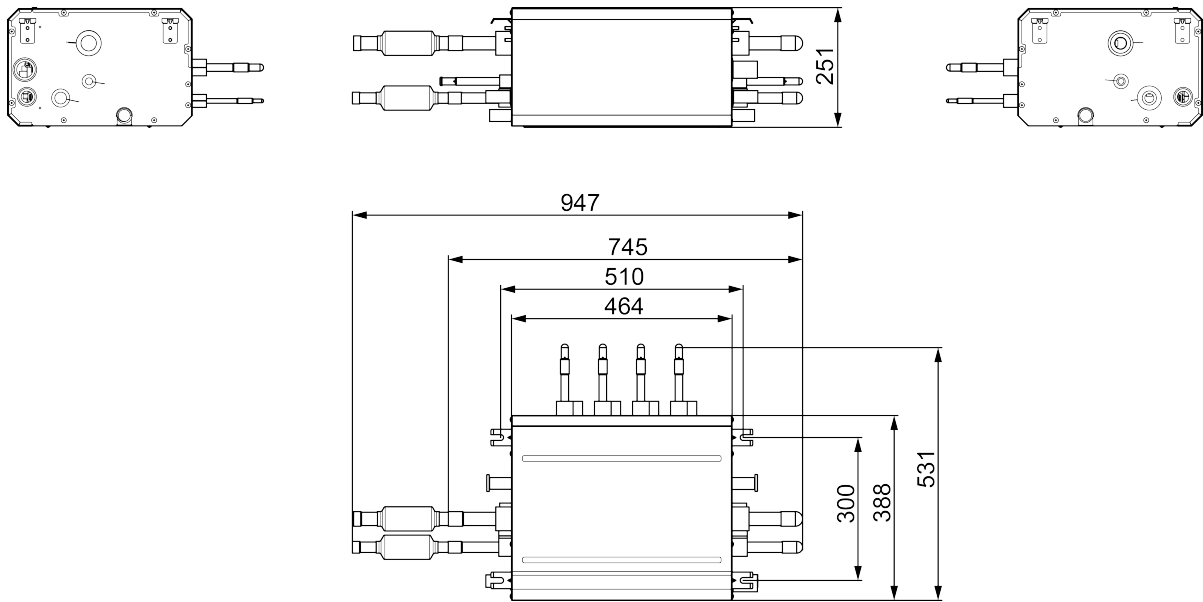


Fig.4.1.7

HR6BS8NK outline and installation dimension:

Unit: mm

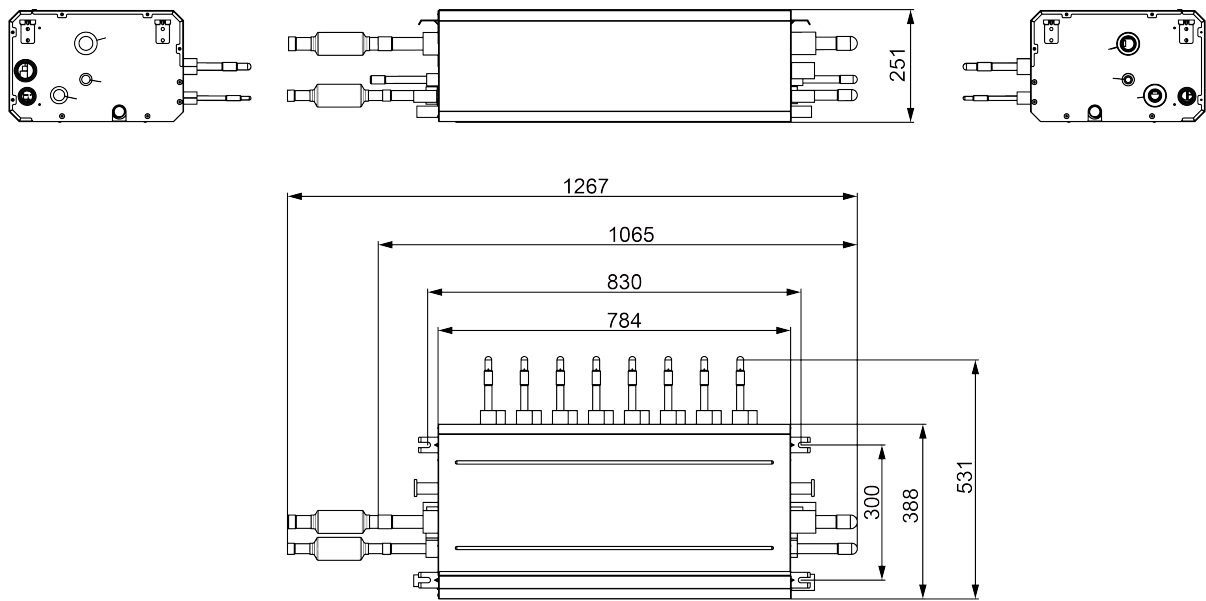


Fig.4.1.8

4.1.2 Suspend the Mode Exchange Box

(1) Drill bolt holes and install bolts

1) Stick the installation template at the installation position flatly, drill 4 holes at the installation position basing on the installation template. As shown in Fig.4.1.9. Please refer to the diameter of expansion bolt for the diameter of hole with depth of 60-70mm. As shown in Fig.4.1.10.

Unit: mm

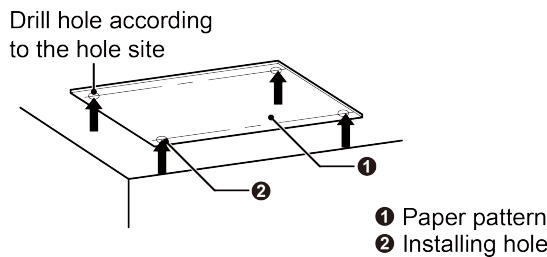


Fig.4.1.9

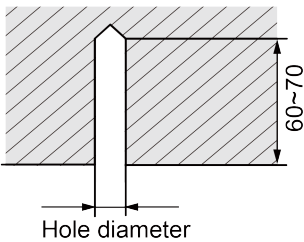


Fig.4.1.10

2) Insert M10 expansion bolt into hole, and then set the iron nail into bolt. As shown in Fig.4.1.11, and then remove the paper pattern.



NOTE!

The length of bolt should be selection according to the height of room. Bolt should be purchased by the user.

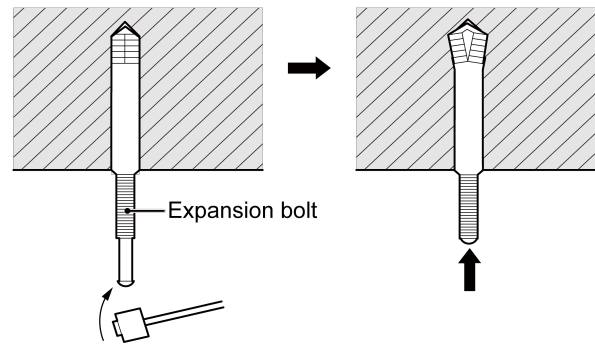


Fig.4.1.11

(2) Install the Mode Exchange Box temporarily

Assemble suspension bolt on the expansion bolt, attach the hanger bracket to the suspension bolt. Be sure to fix it securely by using a nut and washer from upper and lower sides of the hanger bracket. The washer fixing plate will prevent the washer from falling.

Unit: mm

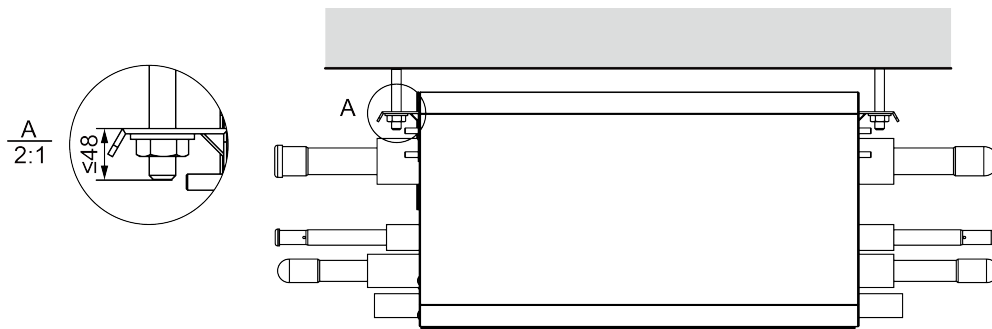


Fig.4.1.12



NOTES!

- ① Before operation, please prepare all pipelines (connection pipe, drainage hose) and wires (connection wire for wired controller, connection wire for Mode Exchange Box).
- ② When drilling holes on ceiling (air return outlet or air outlet), you can need to reinforce the ceiling to prevent vibration. For details, please consult user or builder.
- ③ If the strength of the ceiling is not good, please install a beam bracket, and then put the unit on the beam bracket.
- (3) Adjust the unit to the right position
- (4) Check the level of the unit

After the Mode Exchange Box is installed, remember to check the horizontal status of the whole unit. It should be horizontal from front to back and slant 1% from left to right, following the drainage direction.

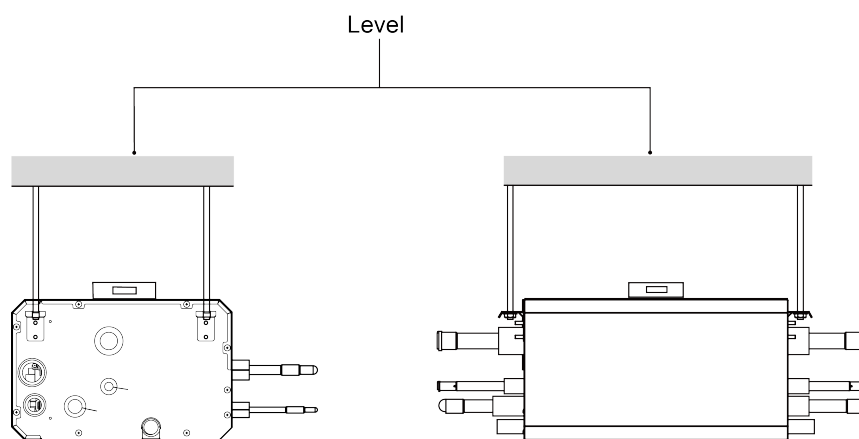


Fig.4.1.13

Cautions for Installation:

- ① The Mode Exchange Box must be installed by using hanger rod. During installation, the components must be kept vertically upright according to the indicated direction.
- ② During installation, enough space shall be considered for removal of the components. The pipe shall not be jammed between the components.
- ③ The Mode Exchange Box and its upstream branch pipe must be installed on the same horizontal plane (See schematics below).

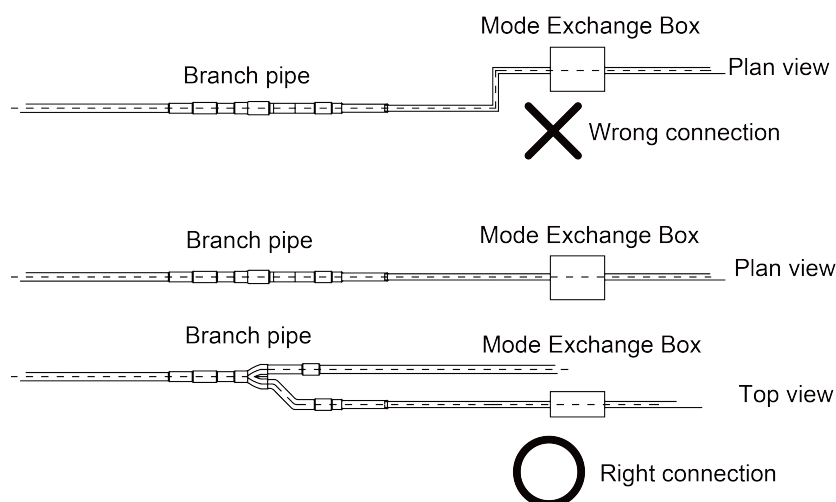


Fig.4.1.14

4.2 Pipe Connection

4.2.1 Installation Instruction for Silencer

If there's silencer in the packing accessories, please refer to below diagram for its installation method. Take HR6BS4NK for example.

Connect either left or right side of the mode exchange box to outdoor unit for piping according to installation space;

(1) Installation instruction for silencer while the right side of box is connected to outdoor unit.

Weld to take off the junction sealing caps on low pressure gas pipe nozzle and liquid pipe nozzle. Cut off the sealing cap of high pressure gas pipe with a pipe cutter.

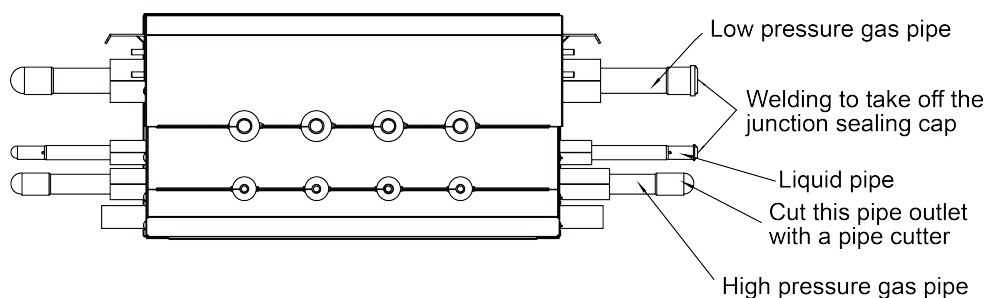


Fig.4.2.1

Take out the two silencers, insert nozzle OD Φ 22 mm in silencer 1 to the high pressure gas pipe on the right side of the box, then insert nozzle OD Φ 28 mm in silencer 2 to the low pressure gas pipe on the right side of the box, weld them together.

Unit: mm

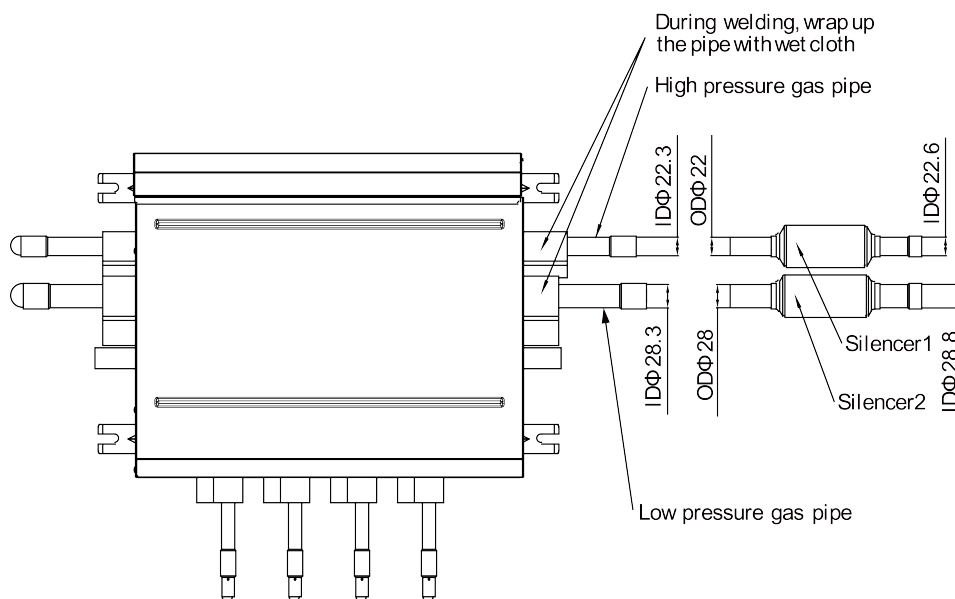


Fig.4.2.2

**NOTE!**

During welding, wrap up the pipe with wet cloth (as shown in the Fig.4.2.2).

(2) Installation instruction for silencer while the left side of box is connected to outdoor unit;

Weld to take off the junction sealing cap on low pressure gas pipe nozzle of right side. Then weld the other junction sealing packed with the box on it.

Cut off the sealing caps of high pressure gas pipe, low pressure gas pipe and liquid pipe with a pipe cutter.

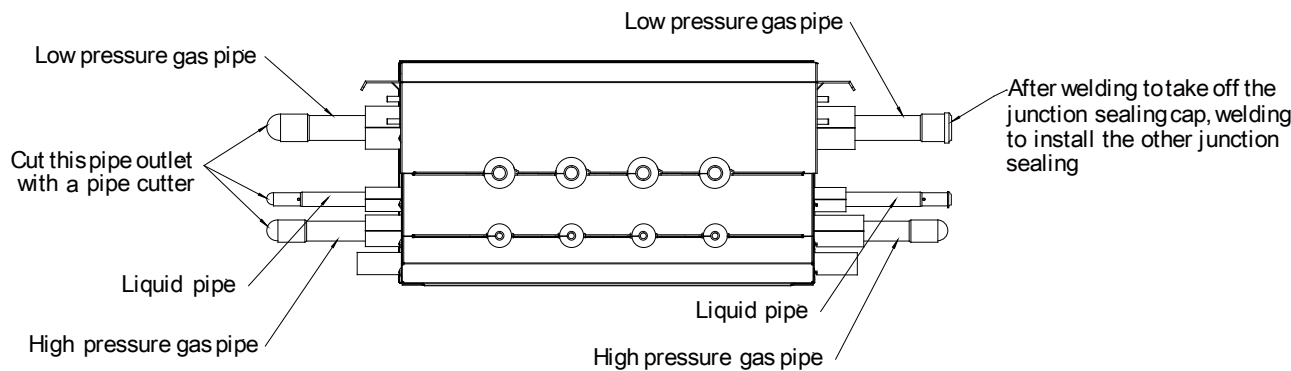


Fig.4.2.3

Take out the two silencers, insert nozzle OD Φ 22 mm in silencer 1 to the high pressure gas pipe on the left side of box, then insert nozzle OD Φ 28 mm in silencer 2 to the low pressure gas pipe on the left side of box, weld them together.

Unit: mm

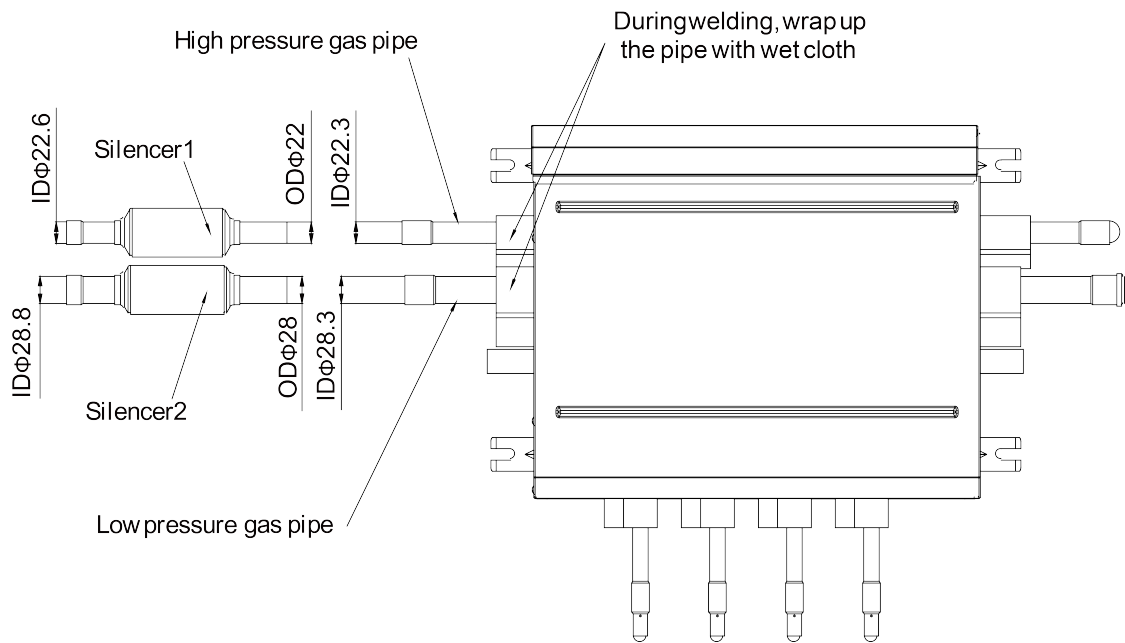


Fig.4.2.4



NOTE!

During welding, wrap up the pipe with wet cloth (as shown in the Fig.4.2.4).

4.2.2 Notices for Welding

- (1) Pipeline connection must adopt socket soldering welding. The gap between socket components cannot be too big or too small to only make sure they won't fall down by relying on friction force.

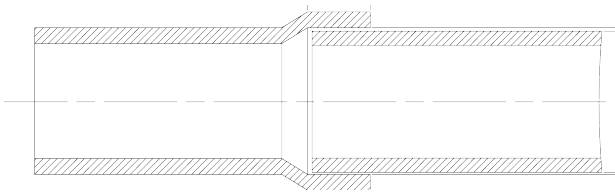


Fig.4.2.5

- (2) Please note that protect thermal insulating sponge and solenoid valve in the pipeline. Please wrap the pipeline with wet cloth to weld it for protection.
- (3) Before welding the pipeline, please charge nitrogen at first. Nitrogen must be charged for protection during the whole welding process and within 30s after welding is finished. The nitrogen cylinder must be connected to the pressure control valve and the flow speed of nitrogen should be controlled within 4~6L/min (air pressure: 0.02~0.05Mpa). During installation process, please adjust the flow speed of nitrogen by control valve according to the diameter of copper pipe.
- (4) As for the unused branches, do not cut the pipes with a pipe cutter to avoid refrigerant leakage.

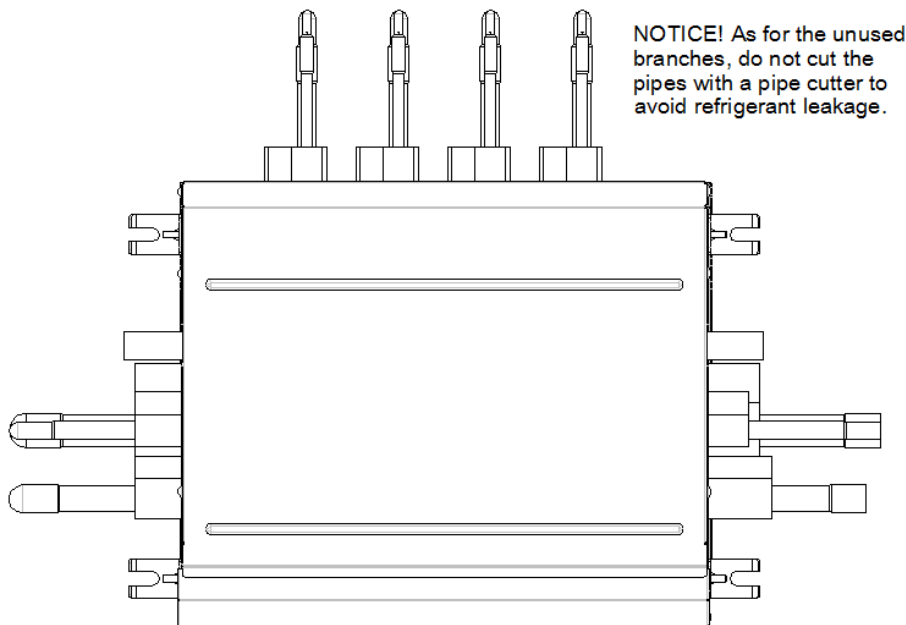


Fig.4.2.6

4.2.3 Precautions for the Installation of Connection Pipe

- (1) The mode exchange box is filled with helium. Before welding the pipeline sealing cap, please make sure the helium is totally released. Otherwise, it may cause unnecessary property damage or personal injury.
- (2) Please comply with the following rules during pipe connection: Connection pipe should be as short as possible, so is the height difference between indoor and outdoor units. Keep the pipe bends as less as possible and the bend radius as large as possible.
- (3) Install the connection pipes by welding. Please strictly follow the requirements for welding process. Rosin joints, weak joints or pin holes are not allowed.
- (4) When laying the pipe, be careful not to distort it. Radius of bending parts must be over 200mm. Please do not bend or stretch the pipes frequently, otherwise the pipes will become hard. A pipe shall not be bent or stretched for more than 3 times at the same position.

4.2.4 Selection of Y-type Branch

If connect outdoor unit to multiple Mode Exchange Box, the Y-type branch should be adopted.

(1) Y-type manifold is as follows. Y-type manifold can be installed vertically or horizontally.

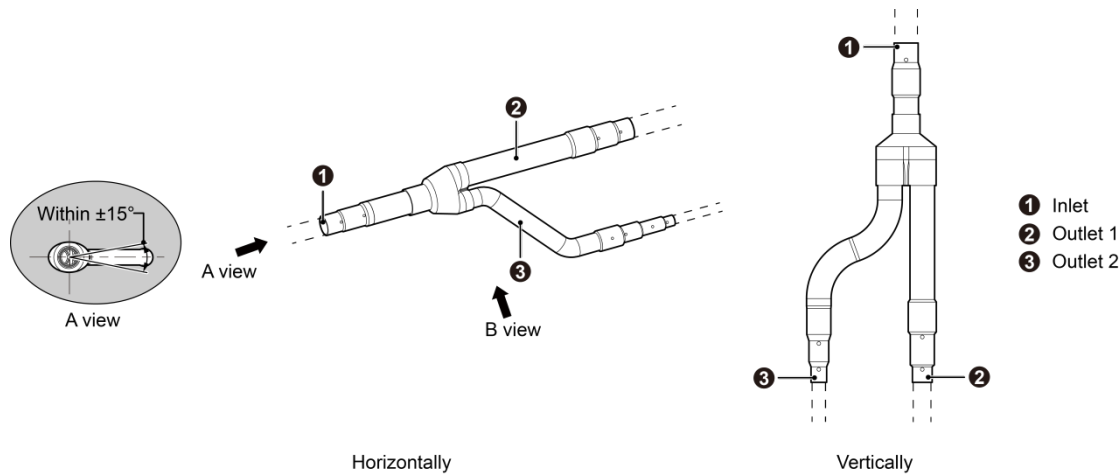


Fig.4.2.7

(2) The installation of the branch pipe has the following requirements. Please install it according to the angle shown in the figure below. Improper installation may lead to malfunction of the outdoor unit.

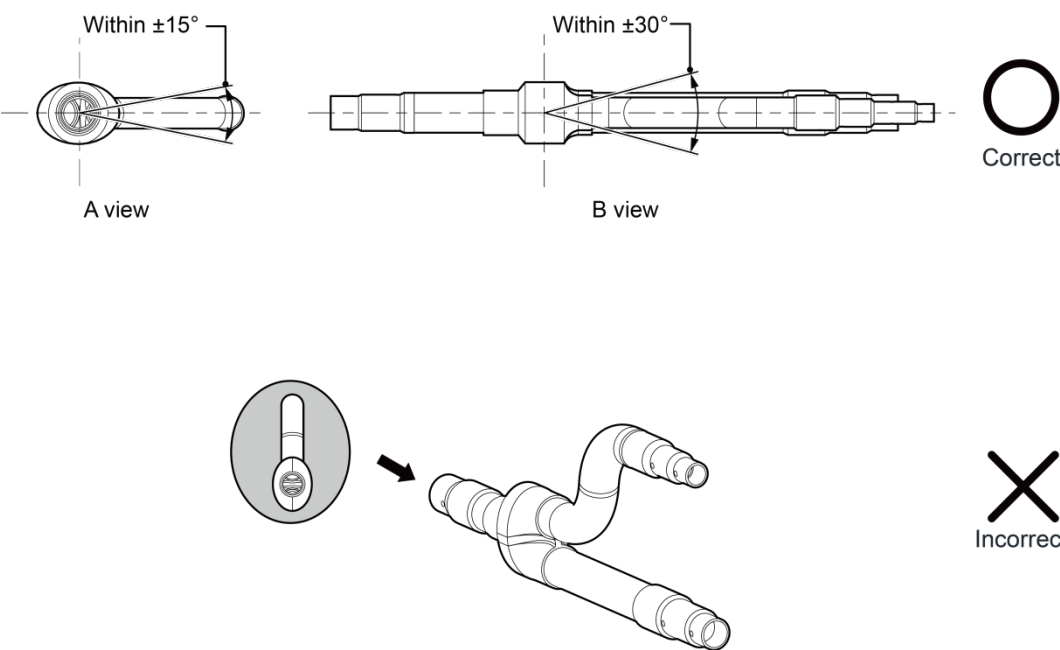


Fig.4.2.8

(3) Manifold has several pipe sections with different pipe size, which facilitates to match with various copper pipe. Use pipe cutter to cut in the middle of the pipe section with different pipe size. See the Fig.4.2.9 as below.

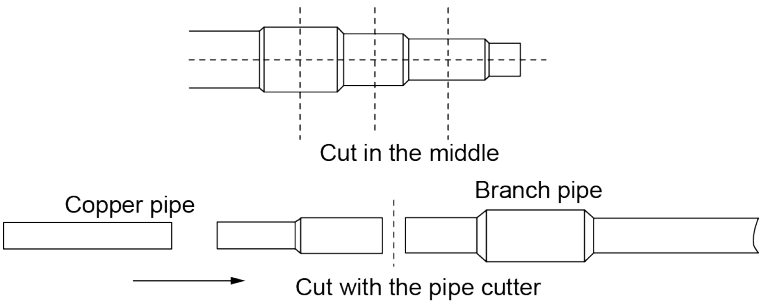


Fig.4.2.9

- (4) Branch shall be insulated by insulating material that can bear 120° or even higher temperature. The attached foam of branch cannot be taken as insulating material.

4.2.5 Thermal Insulation for Pipeline

- (1) For multi VRF system, every copper pipe should be labeled so as to avoid misconnection.
- (2) Manifolds can be laid in the following ways:

The length of a straight pipe between two manifolds cannot be less than 500 mm. The length of a straight pipe before the main pipe port of the manifold cannot be less than 500mm. The length of a straight pipe between the branch of the manifold and the IDU cannot be less than 500mm. See Fig.4.2.10.

Unit: mm

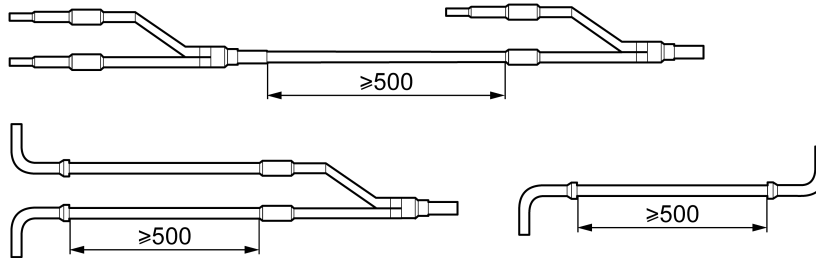


Fig.4.2.10

- (3) There must be three fixing point for both horizontal and vertical installation of the Y-type manifold. See Fig.4.2.11.

Fixing point 1: 100mm on the main inlet manifold from the welding point

Fixing point 2: 200mm on the main branched pipe from the welding point

Fixing point 3: 250mm on the branched pipe from the welding point

Unit: mm

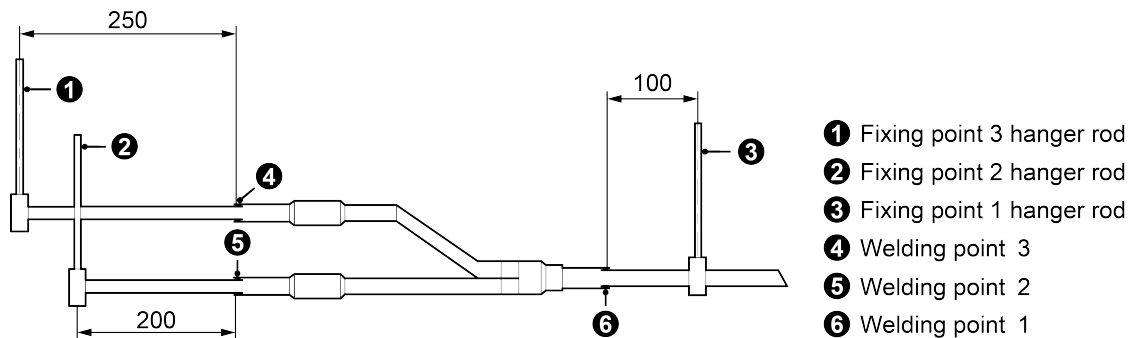


Fig.4.2.11

- (4) Thermal insulation for pipeline

- 1) To avoid condensate or water leak on the connection pipe, the gas pipe and liquid pipe must be wrapped with thermal insulating material and tied by adhesive tape.
- 2) Thermal insulating material shall be able to bear the pipe temperature: For heat pump unit, liquid pipe should bear 70°C or above and gas pipe should bear 120°C or above. For cooling only unit, both liquid pipe and gas pipe should bear 70°C or above. Example: Polyethylene foam (bear 120°C or above); foaming polyethylene (bear 100°C or above).

- 3) The low pressure gas pipe on the unconnected side should be wrapped by the damping block. See Fig.4.2.12.

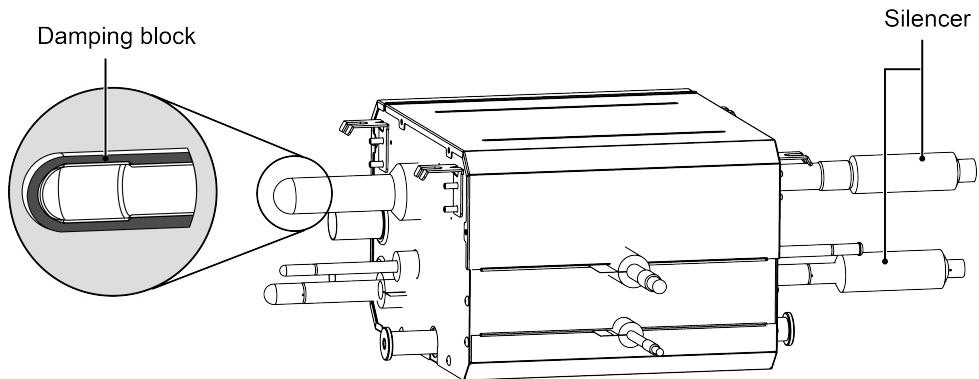


Fig.4.2.12

- 4) Joints of indoor and outdoor unit should be wrapped with insulating material and leave no gap to surfaces of indoor unit and outdoor unit. See Fig.4.2.13 , Fig.4.2.14 and Fig.4.2.15.

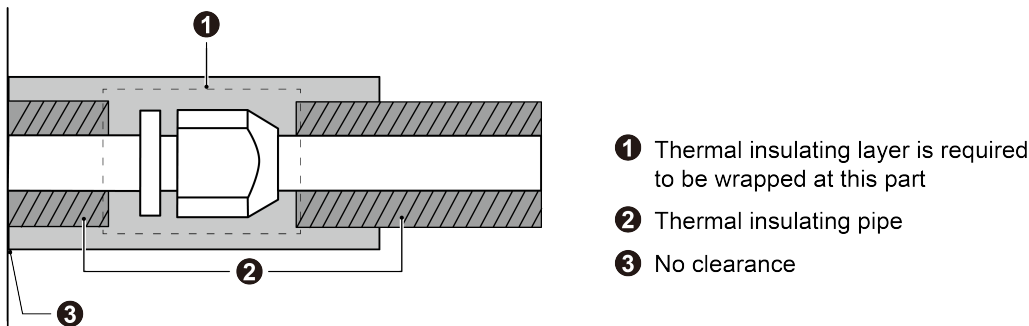


Fig.4.2.13

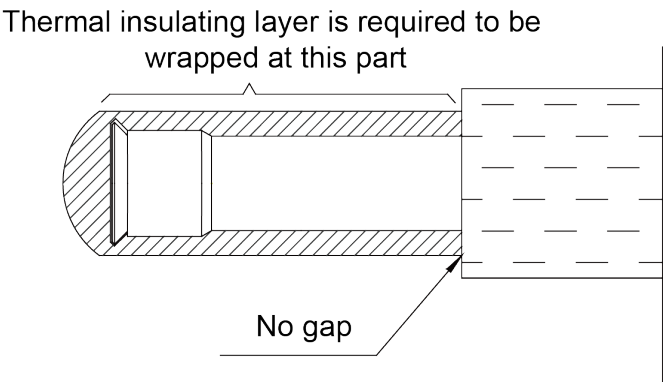


Fig.4.2.14

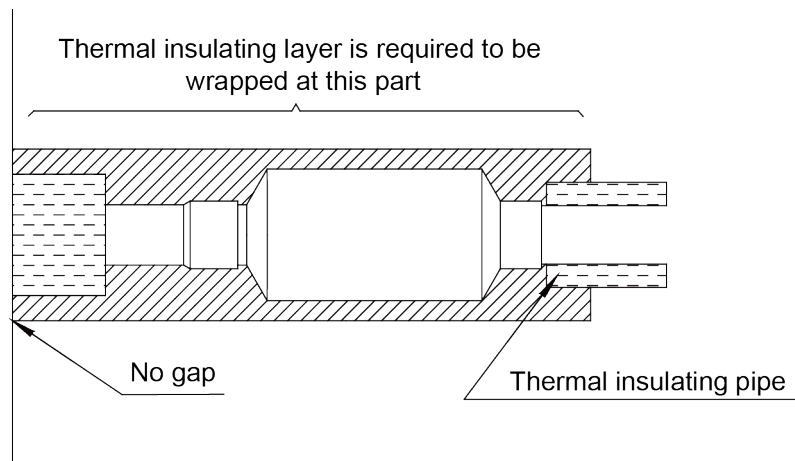


Fig.4.2.15

- 5) Thermal insulating material of branches should be the same as that of the pipeline. The attached foam of branches cannot be taken as insulating material.
- 6) When wrapping the tape, the later circle should cover half of the former one. Don't wrap the tape too tight, otherwise the insulation effect will be weakened.
- 7) After wrapping the pipe, apply sealing material to completely seal the hole on the wall.

4.2.6 Support and Protection of Pipeline

- (1) Support should be made for hanging connection pipe. Distance between each support cannot be over 1m.
- (2) Protection against accidental damage should be made for outdoor pipeline. If pipeline exceeds 1m, a pinch plate should be added for protection.

Schematic diagram of piping connection :

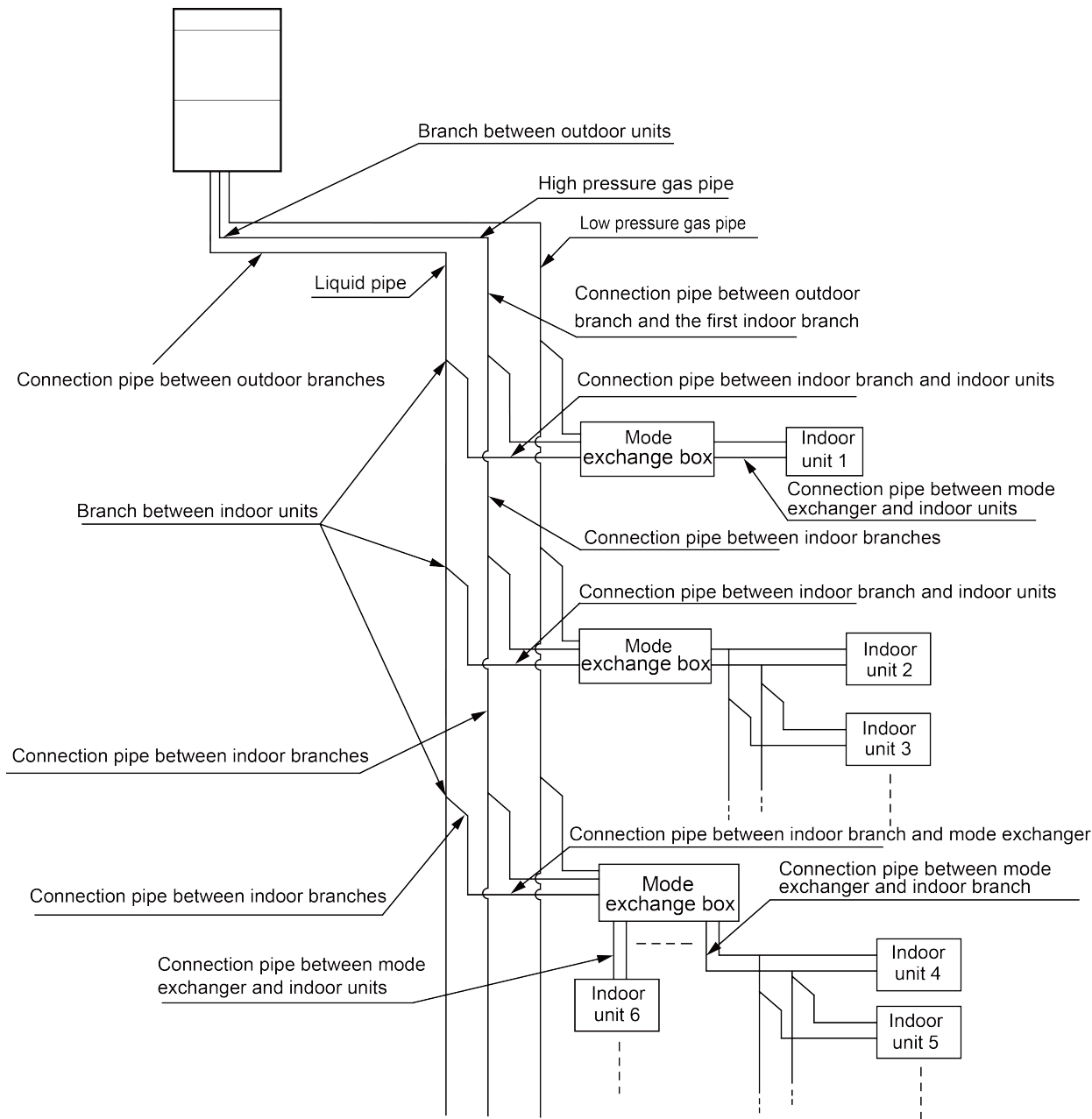


Fig.4.2.16

4.2.7 Size Requirement for Branch Pipe and Piping

Take the connection sketch map of single-module system for example.

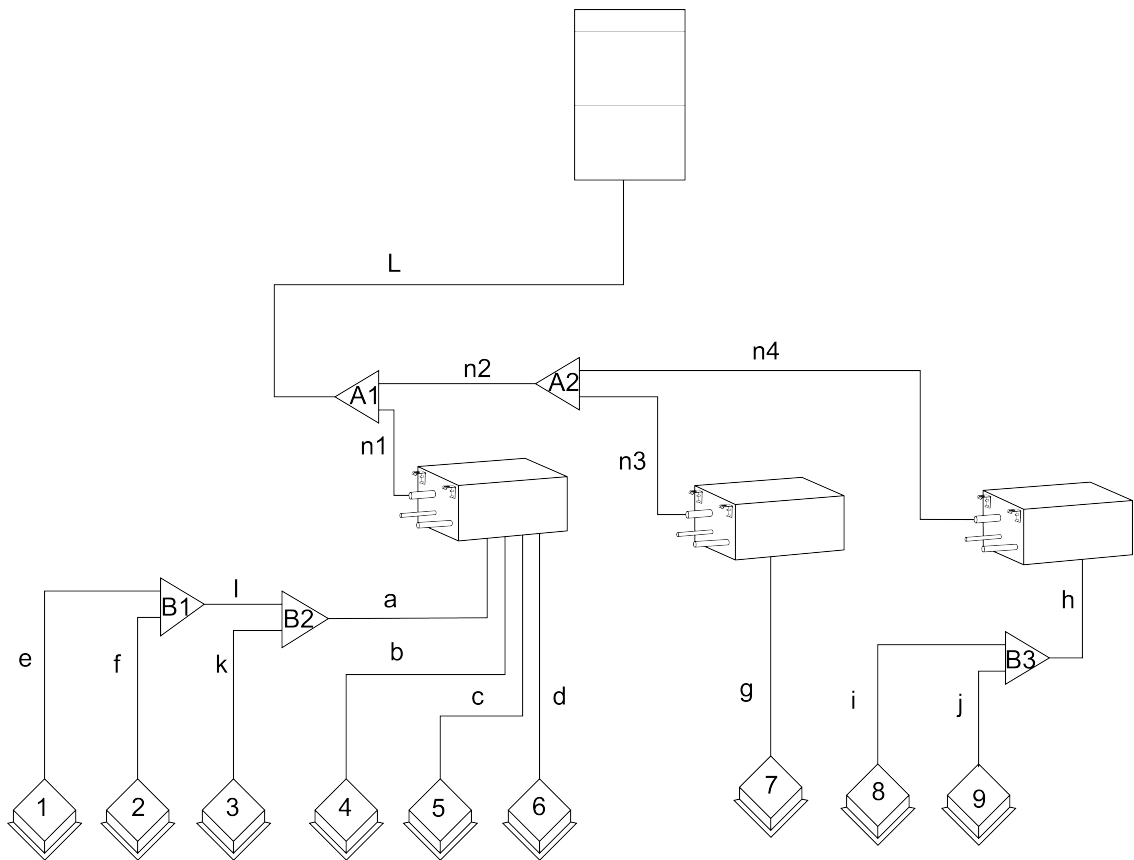


Fig.4.2.17

4.2.7.1 Branch Selection of Mode Exchange Box (“A1, A2”)

Select branch of Mode Exchange Box as per total capacity of downstream indoor unit(s). Please refer to the following table.

Model selection for branch “A1、A2” of Mode Exchange Box;

R410A refrigerant system	Total capacity of the downstream indoor unit X(kW)	Model
Y-Type Branch Pipe	$X \leq 5$	FQ01Na/A
	$5 < X \leq 22.4$	FQ02Na/A
	$22.4 < X \leq 28$	FQ03Na/A
	$28 < X \leq 68$	FQ04Na/A
	$68 < X \leq 96$	FQ05Na/A
	$96 < X$	FQ06Na/A

4.2.7.2 Connection for Single Indoor Unit with Capacity of less than 16kW

Piping size among downstream branches of Mode Exchange Box “a、h、l”

Total rated capacity of downstream indoor units: X (kW)	Piping size among downstream branches of mode exchange box	
	Gas pipe/mm	Liquid pipe/mm
$X \leq 2.8$	$\Phi 9.52$	$\Phi 6.35$
$2.8 < X \leq 5$	$\Phi 12.7$	$\Phi 6.35$
$5 < X \leq 14$	$\Phi 15.9$	$\Phi 9.52$
$14 < X \leq 16$	$\Phi 19.05$	$\Phi 9.52$

Each branch is to connect to a set of indoor units with the same mode. For the branch does not connect to indoor unit, make sure that the welding is reliable without leaking of refrigerant.

Branch selection of downstream indoor unit of Mode Exchange Box (“B1、B2、B3”)

R410A refrigerant system	Total rated capacity of downstream indoor units: X(kW)	Model
Y-type branch	$X \leq 16$	FQ01B/A

Piping size between Mode Exchange Box and downstream indoor unit (“b、c、d、g”)

Total rated capacity of downstream indoor units: X (kW)	Piping size between mode exchange box and downstream indoor unit	
	Gas pipe/mm	Liquid pipe/mm
$X \leq 2.8$	$\Phi 9.52$	$\Phi 6.35$
$2.8 < X \leq 5.0$	$\Phi 12.7$	$\Phi 6.35$
$5.0 < X \leq 14$	$\Phi 15.9$	$\Phi 9.52$
$14 < X \leq 16$	$\Phi 19.05$	$\Phi 9.52$

Size of connection pipe between indoor branch and indoor unit should be consistent with the connection pipe of indoor unit.

Piping between indoor branch and indoor unit “e、f、i、j、k”

Rated capacity of indoor units C(kW)	Size of connection pipe between indoor branch and indoor unit	
	Gas pipe/mm	Liquid pipe/mm
$C \leq 2.8$	$\Phi 9.52$	$\Phi 6.35$
$2.8 < C \leq 5.0$	$\Phi 12.7$	$\Phi 6.35$
$5.0 < C \leq 14$	$\Phi 15.9$	$\Phi 9.52$
$14 < C \leq 16$	$\Phi 19.05$	$\Phi 9.52$

4.2.7.3 Connecting Method for Indoor Unit with Capacity of over 16kW

When connecting to the indoor unit with capacity of over 16 kW, it is not allowed to connect with only one branch; it must use two branches controlled by the same mainboard for parallel connection. The length of pipe from mode exchange box to the indoor unit cannot be longer than 20m.

Parallel connection	Dial code	Indoor unit communication connection for mode exchange box	Remarks
Indoor unit No.1 and No.2	<div>ON DIP</div> <div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div>1 2 3 4</div> <div>SA1</div>	"1D1 1D2" or "2D1 2D2"	Parallel connection can be conducted only as the combination of this table; it is not allowed to otherwise connect. Note that after the connection, manually set the SA1 dial code of corresponding mainboard, and dial the code as shown in the table.
Indoor unit No.2 and No.3	<div>ON DIP</div> <div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div>1 2 3 4</div> <div>SA1</div>	"2D1 2D2" or "3D1 3D2"	
Indoor unit No.3 and No.4	<div>ON DIP</div> <div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div>1 2 3 4</div> <div>SA1</div>	"3D1 3D2" or "4D1 4D2"	
Indoor unit No.1 and No.2 Indoor unit No.3 and No.4	<div>ON DIP</div> <div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div><div><div></div><div></div></div></div> <div>1 2 3 4</div> <div>SA1</div>	"1D1 1D2" or "2D1 2D2" and "3D1 3D2" or "4D1 4D2"	

Connecting method is as shown in the picture:

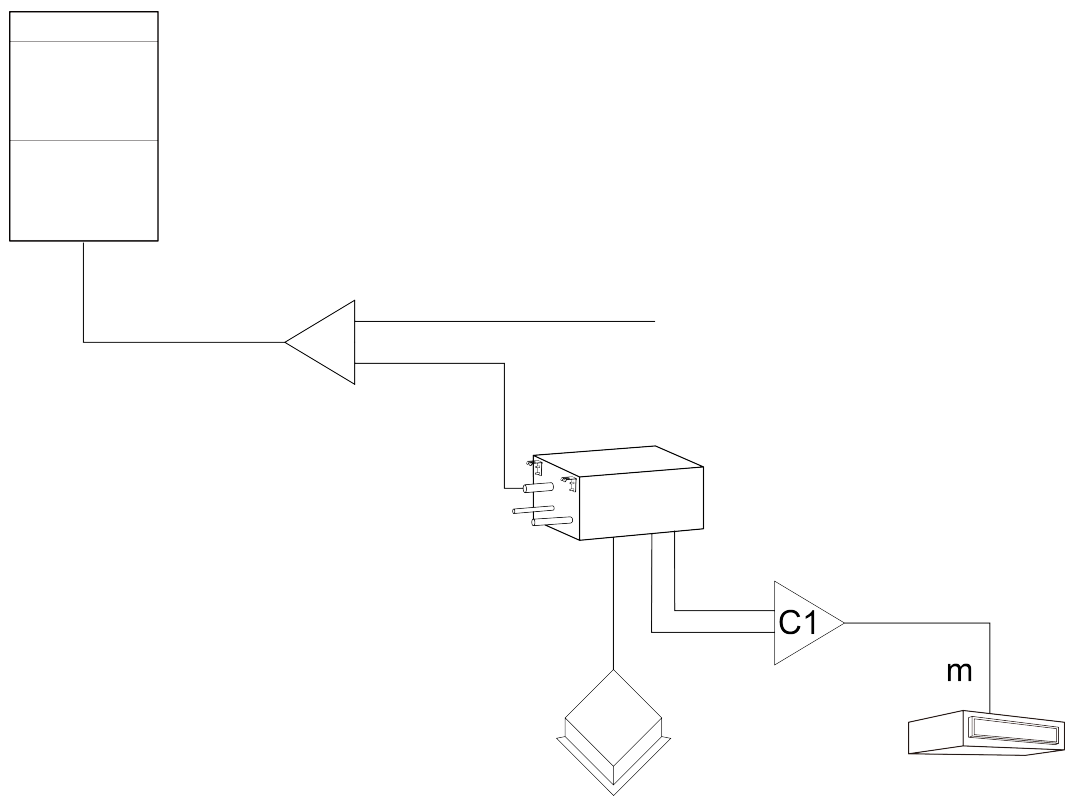


Fig.4.2.18

4.2.7.4 Branch selection of indoor unit of Mode Exchange Box (“C1”)

R410A refrigerant system	capacity of downstream indoor units: X/kW	Model
Y-type branch	16<X≤28	FQ01B/A

Size of connection pipe between indoor branch and indoor unit should be consistent with the connection pipe of indoor unit.

Piping between indoor branch and indoor unit “m”

Rated capacity of indoor units: C(kW)	Size of connection pipe between indoor branch and indoor unit	
	Gas pipe/mm	Liquid pipe/mm
16<C≤22.4	Φ19.05	Φ9.52
22.4<C≤28	Φ22.2	Φ9.52

4.3 Installation and Test for Drainage Hose

4.3.1 Precautions for the Installation of Drainage Hose

- (1) It is not allowed to connect the condensate drain pipe into waste pipe or other pipelines which are likely to produce corrosive or peculiar smell to prevent the smell from entering indoors or corrupt the unit.
- (2) It is not allowed to connect the condensate drain pipe into rain pipe to prevent rain water from pouring in and cause property loss or personal injury.
- (3) Condensate drain pipe should be connected into special drain system for air conditioner.
- (4) As for the drainage hose, the shorter the better. The drainage hose should be kept 1%~2% at least gradient for draining out the condensate water.
- (5) The side of drainage hose must be bigger than or equal to the size of drainage piping.
- (6) Install the drainage hose according to below figure and then perform thermal insulation for it. Incorrect installation may lead to leakage and then moisten indoor furniture and other objects.
- (7) Purchase the normal hard PVC pipe at local market as for the drainage pipeline. Insert the end part of PVC pipe into the drainage hole, and then tighten it with drainage hose and cable tie. Do not use adhesive glue to connect drainage hole and drainage hose.
- (8) When the pipeline is used for multiple units, the position for the common pipeline should be lower than the drain outlet of every unit 100m. In this case, thick pipes should be adopted.

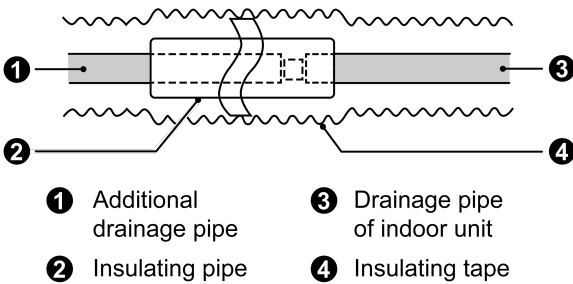


Fig.4.3.1

4.3.2 Drainage Pipe Installation

- (1) Insert the drain hose into the drain hole and tighten it with tapes, as shown in Fig.4.3.2. Model with water pump will be provided with drain hose, while other models please prepare the drain hose by yourself.
- (2) Tighten the pipe clamp to make the distance between screw cap and hose less than 4mm.

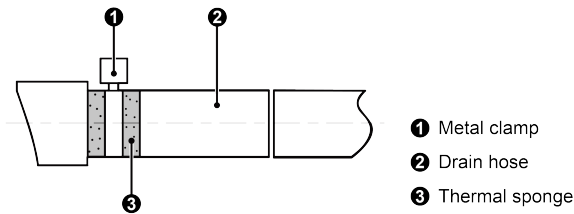


Fig.4.3.2

- (3) Perform thermal insulating for Pipe clamp and hose with gasket. (Perform the thermal insulation after the drainage system test is finished). See Fig.4.3.3.

Unit: mm

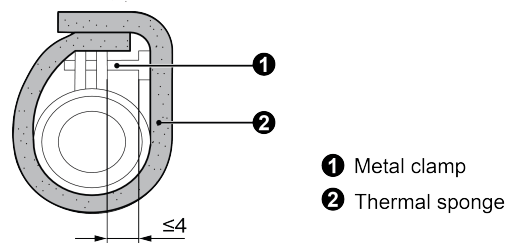


Fig.4.3.3

- (4) When multiple drainage pipes are connected together, connection pipes as shown in Fig.4.3.4 or Fig.4.3.5.

Unit: mm

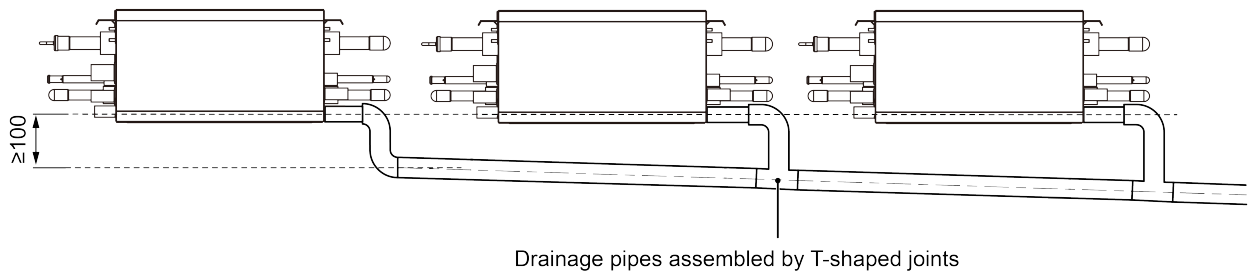


Fig.4.3.4

Unit: mm

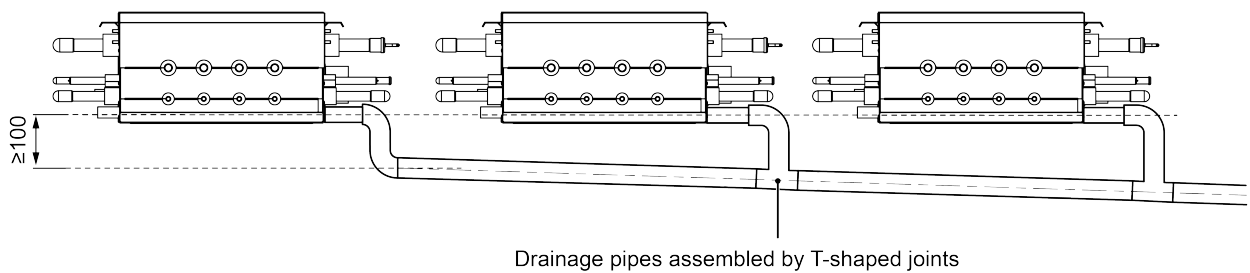


Fig.4.3.5

- (5) Install the trap as shown in Fig.4.3.6.
- (6) One trap should be installed for every unit.
- (7) Convenience for cleaning trap in the future should be considered when installing it.

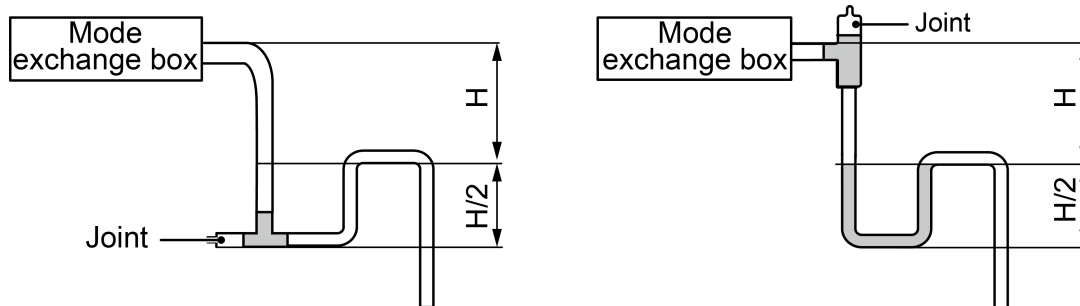


Fig.4.3.6

- (8) Horizontal pipe can't be connected to the vertical pipe at the same horizontal height. Please see below figure for the connection method:

No1: Three-way connection of drainage hose joint as shown in Fig.4.3.7;

No2: Down elbow connection as shown in Fig.4.3.8;

No3: Set into horizontal pipe as show in Fig.4.3.9.

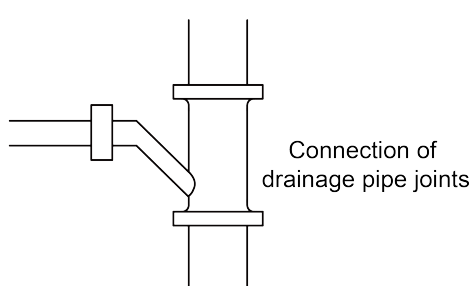


Fig.4.3.7

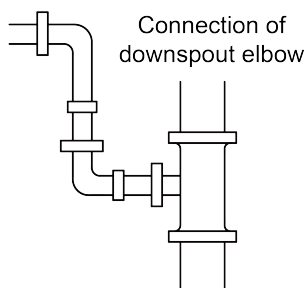


Fig.4.3.8

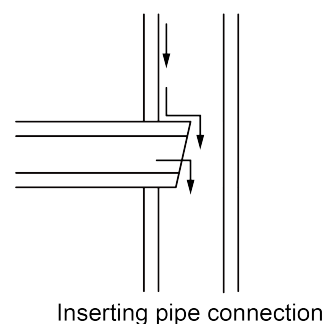


Fig.4.3.9

- (9) Drainage pipe should kept 1%~2% gradient downwards. Therefore, install a support bracket every 1000-1500mm.

Unit: mm

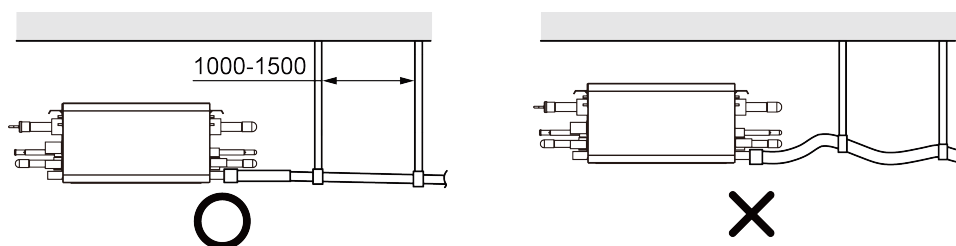


Fig.4.3.10

4.3.3 Test of Drainage System

- (1) Connect the drain hose to the other drain connection pipe of mode exchange box water tray. Add about 1L of water. (After finishing the test, remove the drain hose and insert the plug of water tray.)
- (2) Check if the water flows out properly through the drain pipe; observe the connection pipe carefully to ensure that there is no water leakage.

- (3) After finishing checking the drain system, arrange insulation to the drain hose and pipe clamp.

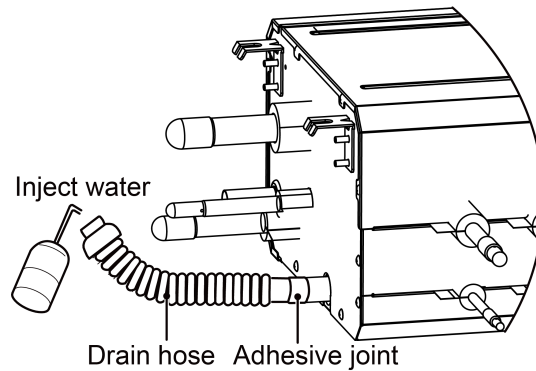


Fig.4.3.11

5 Cable Connection



NOTES!

- ① Air conditioner must be grounded for preventing damage due to invalid insulation.
- ② Before connecting wires, please confirm the voltage on the nameplate and then connect wires according to wiring diagram. Wrong wire connection may lead to abnormal operation or damage to the air conditioner.
- ③ Power capacity should be enough and then section area of wires should be 2.5 mm² above.
- ④ As for the air conditioner power, please use special branch circuit and socket.
- ⑤ Perform wiring according to standard to ensure normal operation of air conditioner.
- ⑥ According to related regulation and electric appliances standard, install special branch circuit breaker.
- ⑦ All wiring must use pressure terminal or single wire. If connect the stranded wire to the wiring board directly, it may cause fire.
- ⑧ Do not let cable connect refrigerant pipe and compressor or fan.
- ⑨ Do not modify the internal wiring of air conditioner. Manufacturer will not responsible for the damage or abnormal operation because of that.
- ⑩ If there's strong electromagnetic interference around the installation environment, you are suggested to use twisted shielding wire. When connecting wires, please note that the metal shielding layer of twisted pair wire must be grounded (case) to prevent abnormal operation due to electromagnetic interference.
- ⑪ Communication wire must be separated from power cord and outdoor/indoor unit connection wires.
- ⑫ When higher pressure is need for the project, please set it through wired controller. The appliance shall be installed in accordance with national wiring regulation. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.

5.1 Connection of Cable and Terminal of Wiring Board

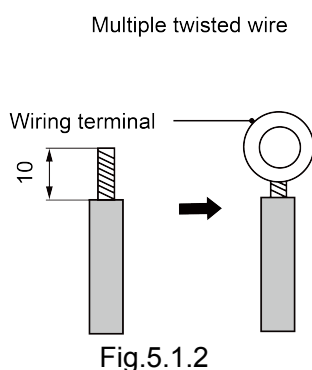
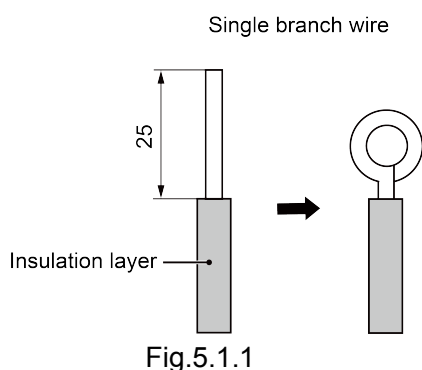
(1) Connect single wire (as shown in Fig.5.1.1).

- 1) Peel the insulation layer at the end of the single wire about 25mm with wire stripper to expose the single-core wire.
- 2) Use screwdriver to remove the terminal screw on wiring terminal board.
- 3) Bend the terminal of single wire with pliers to a round circle whose dimension complies with the screw.
- 4) Hold the screw to pass it through the round circle of single wire and then fix it at the wiring board.

(2) Connect stranded wire (as shown in Fig.5.1.2).

- 1) Peel the insulation layer at the end of the stranded wire about 10mm.
- 2) Remove the screws on the wiring board of air conditioner with screwdriver.
- 3) Use round terminal fastener or pliers to clip round terminal and every core wire of multi-core wire tightly.
- 4) Confirm the position of every core-wire on round terminal and then use screwdriver to tighten the screws of wiring terminal.

Unit: mm

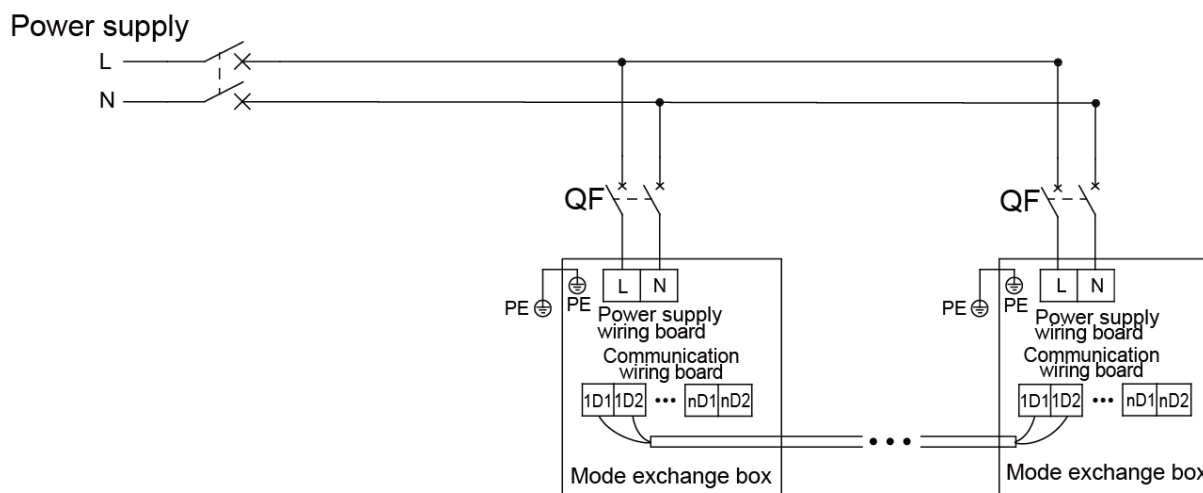


5.2 Connect Power Cord



NOTE!

The Mode Exchange Box in the same system must be supplied power uniformly.



Remark: The maximum quantity “n” of indoor unit is decided by the capacity of indoor unit, please refer to capacity of unit.

- 1) Remove electric box cover of indoor unit.
- 2) Pass the power cord through rubber ring.
- 3) Connect power cord to “L, N” terminal and earthing screw.
- 4) Fix the power cord with wire-fixing clamp.
- 5) Take off the cable cross loop that is attached to the Mode Exchange Box, as shown in Fig.5.2.2~Fig.5.2.5. Replace with a local cable cross bushing.

One-to-one Mode Exchange Box:

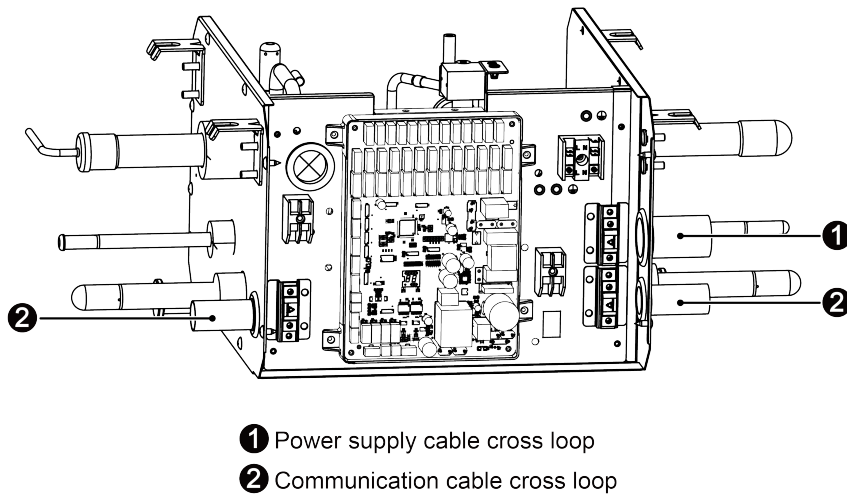


Fig.5.2.2

One-to-two Mode Exchange Box:

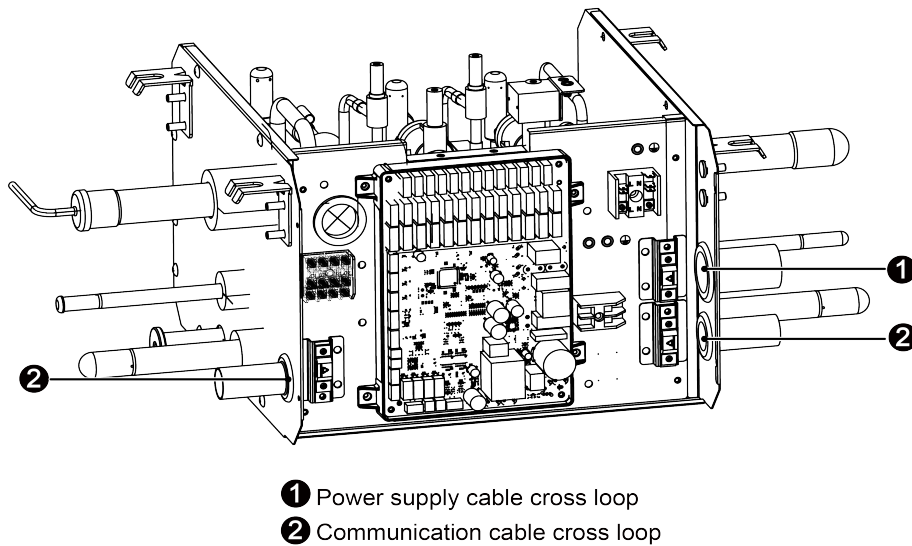


Fig.5.2.3

One-to-four Mode Exchange Box:

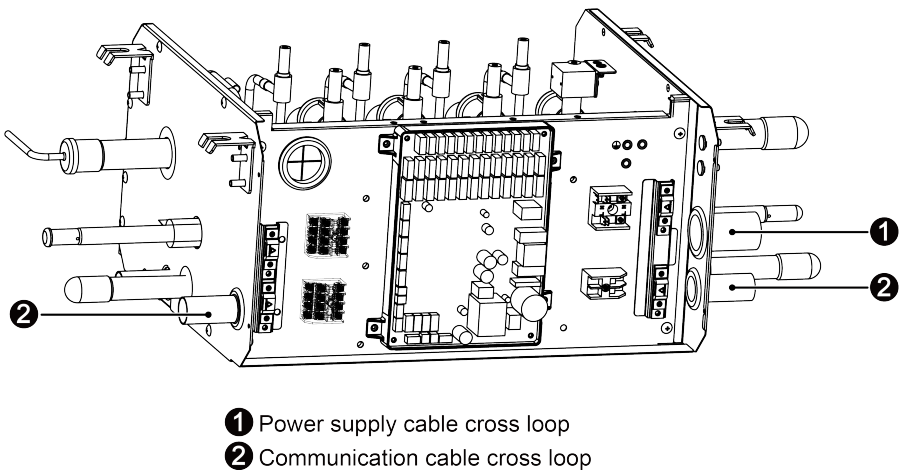


Fig.5.2.4

One-to-eight Mode Exchange Box:

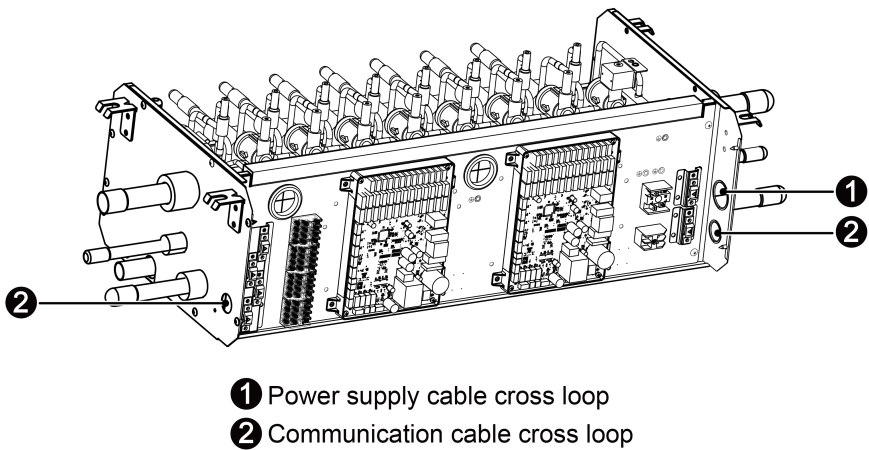


Fig.5.2.5

5.3 Connect Communication Wire of Indoor Unit and Outdoor Unit

- (1) Open electric box cover of indoor unit.
- (2) Pass the communication wire through rubber ring.
- (3) Connect communication wire to wiring board OD (D1, D2) of outdoor unit of Mode Exchange Box.
- (4) Connect communication wire lead from D1 and D2 terminal of 4-bit wiring board of indoor unit to wiring board ID1 (1D1, 1D2) of indoor unit of Mode Exchange Box; ID2 (2D1, 2D2).....ID-n (nD1, nD2), $n \leq 8$; As shown in Fig.5.3.3.

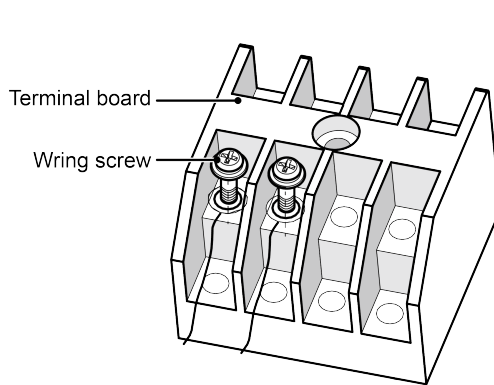


Fig.5.3.1

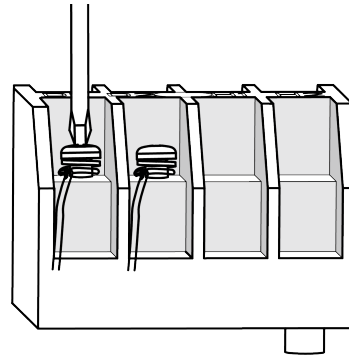


Fig.5.3.2

- (5) Fix the communication wire with wire-fixing clamp.
- (6) In order to ensure the reliability of communication between indoor unit and outdoor unit, add a matched resistance (in the packing bag) on the wiring board at the last connected Mode Exchange Box. The matched resistance should be connected among terminal screw D1 and D2.
- (7) When mode converter connects to the indoor unit with capacity of over 16kW, it only requires to connect the indoor unit to one of the two corresponding branch. Note that the SA1 dial code for corresponding mainboard of the two branches should be set according to 4.2.7.3.

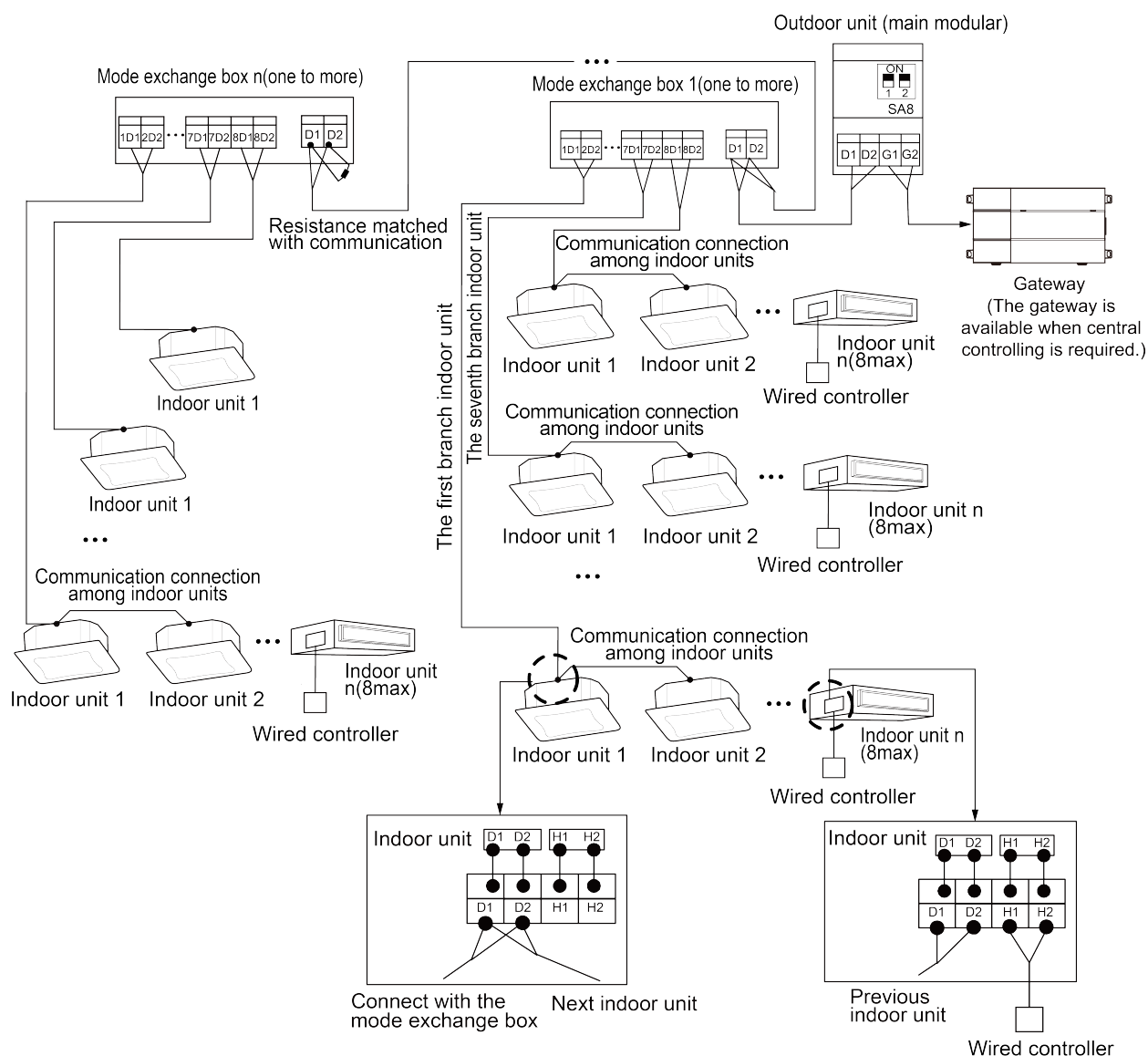


Fig.5.3.3

6 Routine Maintenance



CAUTION!

- ① Only clean the air conditioner after turning off the unit and cutting off the power. Otherwise, it may cause electric shock or injury.
- ② When cleaning the air conditioner, please stand on the solid platform.
- ③ Do not use hot water 45°C above to clean the surface of air conditioner. Otherwise, it may cause discolor or deformation.
- ④ Do not dry the filter on fire. Otherwise, the filter may catch fire or be deformed.
- ⑤ Volatile liquid, such as thinner or gasoline, may damage the air conditioner. (Only use soft dry cloth or wet cloth dipped with neutral detergent to clean the filter of air conditioner.)
- ⑥ If there's abnormal phenomenon, please contact after-sales person.

6.1 Notice before Seasonal Use

- (1) Check whether air inlets and air outlets of indoor and outdoor units are blocked.
- (2) Check whether ground connection is reliable or not.
- (3) Check whether the wires are connected well.
- (4) After getting through power, check whether there're characters on the screen of wire controller.

6.2 Maintenance after Seasonal Use

- (1) Run the air conditioner at fan mode for half day at sunny day to dry the internal parts of unit.
- (2) If you don't use the air conditioner for a long time, please cut off the power to save energy.

After cutting off the power, the characters on the screen of wire controller will disappear. After cutting off the power, the characters on the screen of wire controller will disappear.

7 Troubleshooting

If the air conditioner can't operate normally, please check below items before asking for service:

Malfunction	Causes
Air conditioner can't be started up	<ol style="list-style-type: none"> ① It hasn't been put through power. ② Leakage switch is tripped. ③ Voltage is too low. ④ Working buttons are off. ⑤ Malfunction of control loop.
Air conditioner can operate, but it will stop operate after for a while	<ol style="list-style-type: none"> ① There's obstacle in front of condenser. ② Control loop is abnormal. ③ Turn on the cooling mode when the outdoor ambient temperature is more than 43°C.
Cooling effect is bad	<ol style="list-style-type: none"> ① Air filter is dirty or blocked. ② There are heat source or too many people in the room. ③ Door or window is open. ④ There're obstacles at air inlet and air outlet. ⑤ Set temperature is too high or refrigerant is leaking. ⑥ Specification of room temperature sensor is not good.
Heating effect is bad	<ol style="list-style-type: none"> ① Air filter is dirty or blocked. ② Door or window is not closed well. ③ Set temperature is too low. ④ Refrigerant is leaking. ⑤ Outdoor ambient temperature is lower than -5°C. ⑥ Control wiring is abnormal.
Indoor fan can't be started up under heating mode	<ol style="list-style-type: none"> ① The installation position for the tube temperature sensor is not proper. ② Tube temperature sensor is not inserted well. ③ Wires for tube temperature sensor is broken. ④ Capacitor is leaking.



NOTE!

After checking above items, if the air conditioner still can't operate normally, please stop the air conditioner immediately and then contact appointed maintenance center.



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