MUNDOCLIMA®

MVD

OUTDOOR UNIT

Installation and owner's manual

MINI MVD V4+

(40 and 45kW)

www.mundoclima.com

CL23272 to CL23273

English

CONTENTS

INSTALLATION MANUAL

CONTENTS PAGE

1. PRECAUTIONS

- **Ensure that all Local, National and International regulations are satisfied.**
- **Read this "PRECAUTIONS " carefully before Installation.**
- **The precautions described below include the important items regarding safety. Observe them without fail.**
- **After the installation work, perform a trial operation to check for any problem.**
- **Follow the Owner's Manual to explain how to use and maintain the unit to the customer.**
- **Turn off the main power supply switch (or breaker) before maintenance the unit .**
- **Ask the customer that the Installation Manual and the Owner's Manual should be kept together .**

CAUTION

Accordingly the exclusive tools are required for the new refrigerant (R410A):
For connecting pipes, use new and clean piping designed for R410A,and please care so that water or dust does not enter.
Moreover, do not use the existing piping because there are problems with pressure-resistance force and impurity in it.

CAUTION

Do not connect the Appliance from Main Power Supply.

This unit must be connected to the main power supply by means of a switch with a contact separation of at least 3 mm.
The installation fuse must be used for the power supply line of this conditioner.

WARNING

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 switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.
The appliance shall be installed in accordance with national wiring regulations.
The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD)with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.
The power cord type designation is H05RN-R/H07RN-F or above.
Ask an authorized dealer or qualified installation professional to install/maintain the air conditioner.
Inappropriate installation may result in water leakage,electric shock or fire.
Turn off the main power supply switch or breaker before attempting any electrical work.
Make sure all power switches are off.Failure to do so may cause electric shock.
Connect the connecting cable correctly.
If the connecting cable is connected in a wrong way, electric parts may be damaged.
When moving the air conditioner for the installation into another place, be very careful not to enter any gaseous matter other than the specified refrigerant into the refrigeration cycle.
If air or any other has is mixed in refrigerant, the gas pressure in the refrigeration cycle becomes abnormally high and it may resultingly causes pipe burst and injuries on persons.
Do not modify this unit by removing any of the safety guards or by by-passing any of the safety interlock switches.
Exposure of unit to water or other moisture before installation may cause a short-circuit of electrical parts.
Do not store it in a wet basement or expose to rain or water.
After unpacking the unit, examine it carefully if there are possible damage.
Do not install in a place that might increase the vibration of the unit.
To avoid personal injury (with sharp edges), be careful when handling parts.
Perform installation work properly according to the Installation Manual.
Inappropriate installation may result in water leakage, electric shock or fire.
When the air conditioner is installed in a small room, provide appropriate measures to ensure that the concentration of refrigerant leakage occur in the room does not exceed the critical level.
Install the air conditioner securely in a location where the base can sustain the weight adequately.
Perform the specified installation work to guard against an earthquake.
If the air conditioner is not installed appropriately, accidents may occur due to the falling unit.
If refrigerant gas has leaked during the installation work, ventilate the room immediately.
If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.
After the installation work, confirm that refrigerant gas does not leak.
If refrigerant gas leaks into the room and flows near a fire source, such as a cooking range, noxious gas might generate.
Electrical work must be performed by a qualified electrician in accordance with the Installation Manual. Make sure the air conditioner uses an exclusive power supply.
An insufficient power supply capacity or inappropriate installation may cause fire.
Use the specified cables for wiring connect the terminals securely fix. To prevent external forces applied to the terminals from affecting the terminals.
Be sure to provide grounding.
Do not connect ground wires to gas pipes, water pipes, lightning rods or ground wires for telephone cables.
Conform to the regulations of the local electric company when wiring the power supply.
Inappropriate grounding may cause electric shock.
Do not install the air conditioner in a location subject to a risk of exposure to a combustible gas.
If a combustible gas leaks, and stays around the unit, a fire may occur.

Required tools for installation work

1) Philips screw driver
2) Hole core drill(65mm)
3) Spanner
4) Pipe cutter
5) Gas leak detector
6) Tape measure
7) Thermometer
8) Mega-tester
9) Electro circuit tester
10) Hexagonal wrench
11) Flare tool
12) Pipe bender
13) Level vial
14) Metal saw
15) Gauge manifold (Charge hose:R410A special requirement)
16) Vacuum pump (Charge hose:R410A special requirement)
17) Torque wrench
    1/4(17mm)16N•m (1.6kgf•m)
    3/8(22mm)42N•m (4.2kgf•m)
    1/2(26mm)55N•m (5.5kgf•m)
    5/8(15.9mm)120N•m (12.0kgf•m)
18) Copper pipe gauge adjusting projection margin
19) Vacuum pump adapter

2. ATTACHED FITTINGS

Please check whether the following fittings are of full scope. If there are some spare fittings , please restore them carefully.

	NAME	SHAPE	QUANTITY
INSTALLATION FITTINGS	1. Outdoor unit installation and owner's manual		1
	2. Indoor unit owner's manual		1
	3. Installation Instructions: Indoor Unit Manifold		1
	4.Straight screwdriver		1
	5.Connection pipe		1
	6.Curved connection pipe		1

3. CONSTRUCTION INSPECTION

3.1 Unpacking installation

1.After unpacking, check if there's trasportation injuries. Declare to the transportation agent immediately in written form.
2.Check if the models, specifications and quantity are conform to the content in the contract.
3.Keep the operation manual and check the accessories when unpacking.

3.2 Refrigerant pipe

1.Use Mundoclima central air-conditioner specified refrigerant pipe.
2.Refrigerant pipe with specified diameters and thickness should be used.
3.Nitrogen blanket protection should be applied when welding copper pipes. Fill nitrogen of 0.2kgf/cm^2 before welding. Cut off nitrogen when the copper pipe completely cooled after welding.
4.Heat preservation process should be applied to refrigerant pipe.
5.After installing refrigerant pipe, indoor unit can't be powered on before tightness test and vaccumizing.

3.3 Tightness test

After installing refrigerant pipe, fill 40kgf/cm^2(3.9MPa)) nitrogen from both gas and liquid sides to process a 24-hour tightness test.

3.4 Vaccumizing

Vaccumizing from both gas and liquid sides after tightness test. (Pressure of vacuum should be -0.1MPa)

3.5 Refrigerant adding

1.Calculating refrigerant adding amount according to the diameters and length(actual length) of indoor/outdoor unit liquid side pipes.
2.Mark refrigerant adding amount, pipe diameters of pipe, length (actual length) and height difference between indoor and outdoor unit on the usage confirm form of outdoor unit(on electronic control box plate) in advance, in order to further use.

3.6 Electric wiring

1.Please choose the power supply capacity, diamters of wires according to the design manual. Power supply cables of air-conditoner should be thicker than cables used in normal electric motor.
2.To prevent air-conditioner from malfunctioning, don't entwine power supply wires (380V 3N~)and connecting wires of indoor and outdoor unit(low voltage wires).
3.Power on indoor unit after tightness test and vaccumizing.
4.For function dial code, please refer to dial code instruction table usage.

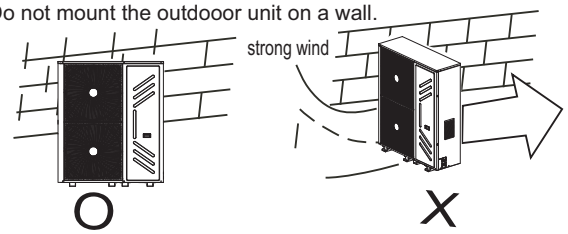
3.7 Trial running

Trial running can be processed after 24-hour (or above) preheating of outdoor unit, otherwise it could damage the system.

4. OUTDOOR UNIT INSTALLATION

WARNING

- Ask an authorized dealer or qualified installation professional to install maintain the air conditioner.Inappropriate installation may result in water leakage,electric shock or fire.
- Do not expose the unit directly to sunlight and other souces of heat. Add a cover if necessary to prevent the unit from direct sunlight.
- A place that is even and strong enough to bear the weight of the unit.
- Do not install in a place that might increase the vibration of the unit.
- Install the unit at a place where noise and hot air couldn't bother your neighbour.
- Do not install the air conditioner in a location subject to a risk of exposure to a combustible gas. If a combustible gas leaks, and stays around the unit, a fire may occur.
- Remove obstacles around the unit in order to leave enough space for air circulation.
- Install the unit near to the indoor unit as faras possible under certain installation conditions.
- When installing the outdoor unit in a place that is constantly exposed to a strong wind such as the upper stairs or rooftop of a building, use a baffle when necessary.
- Install the unit so that its discharge port faces to the wall of the building. Keep a distance of 4000mm or more between the unit and the wall surface. Keep strong wind from blowing back inside.
- Do not mount the outdooor unit on a wall.



4.1 Installation place

Please keep away from the following place, or malfunction of the machine may be caused:

- There is combustible gas leakage.
- There is much oil (including engine oil) ingredient.
- There is salty air surrounding(near the coast)
- There is caustic gas (the sulfide, for example) existing in the air (near a hotspring)
- A place the heat air expelled out from the outdoor unit can reach your neighbor's window.
- A place that the noise interferes your neighbors every day life.
- A place that is too weak to bear the weight of the unit
- Uneven place.
- Insufficient ventilation place.
- Near a private power station or high Frequency equipment.
- Install indoor unit, outdoor unit, power cord and connecting wire at least 1m away from TV set or radio to prevent noise or picture interference.

Installation space (Unit:mm), see *Fig.4-1,4-2,4-3,4-4*.

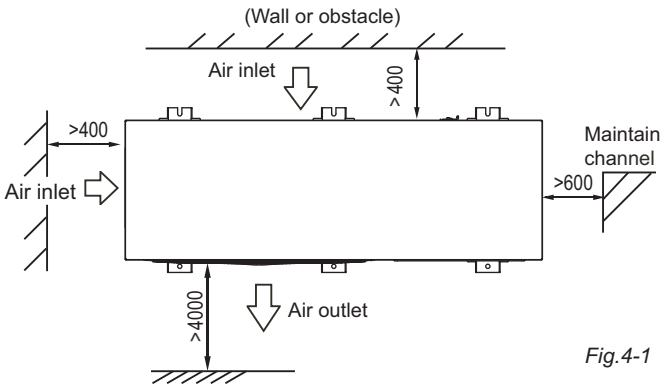


Fig.4-1

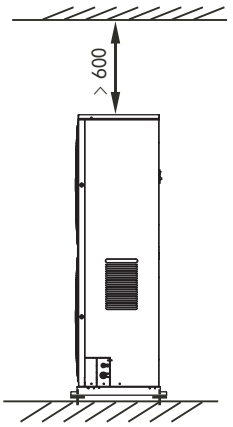


Fig.4-2

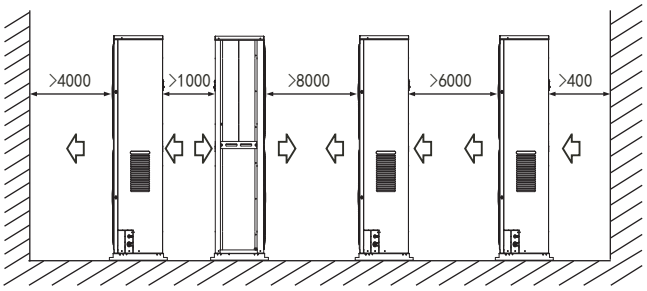


Fig.4-3

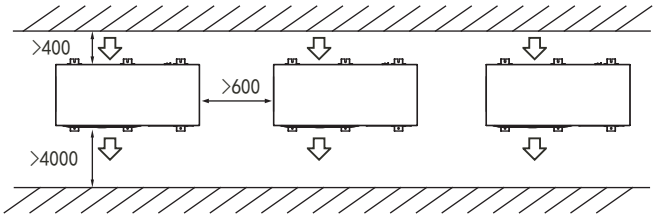


Fig.4-4

4.2 Handling

1) Do not unpacking the unit when handling. Use two ropes whose lengths are more than 8m to handle the unit. Keep balance of the unit, when lifting stably. Use a padding plate or packing materials for protection if the package has been destroyed or no package.
2) Keep the unit vertical when moving and handling. If the unit barycenter is not at the center of the unit, do not lean it more than 30°. Refer to *Fig.4-5.* Be careful during moving and lifting .
3) Never hold the inlet of the outdoor unit to prevent it from deforming.
4) Do not touch the fan with hands or other objects.
5) Do not lean it more than 45°, and do not lay it sidelong.

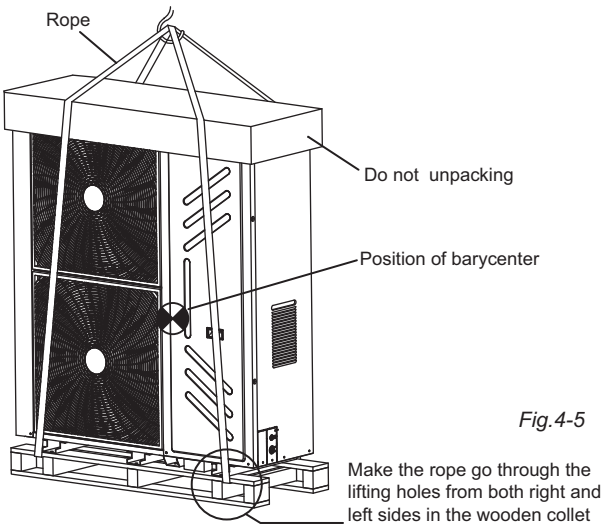


Fig.4-5

4.3 Outdoor unit basement

1）Advantages of a strong and correct basement :
①Outdoor unit won't subside
②Outdoor unit won't generate abnormal noise caused by improper basement.
2)Basement types
①Steel-frame basement
②Concrete basement(See *Fig.4-6* for common practice)

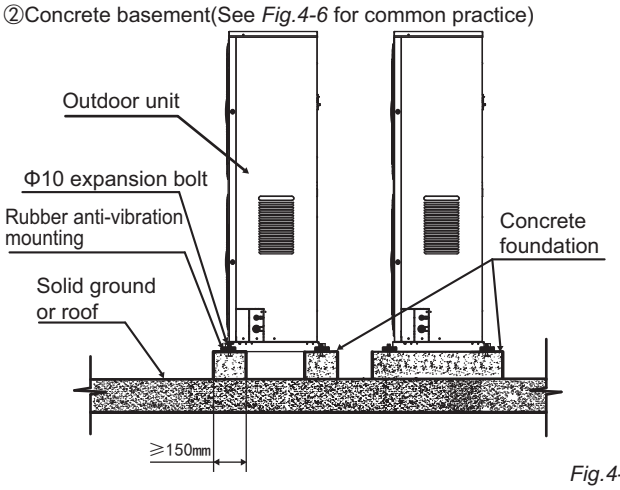


Fig.4-6

Points of making a basement:
①Host unit basement should be made in strong concrete ground, See Fig 3.6 for common practice or start after field measurement
②The basement should be completely horizontal and make sure all the contactors can contact symmetrically.
③Ensure the the basement supports the vertical foldings of the front and back bottom plates directly, since its the actual bearing place.
④Macadam base is unnecessary. But cocrete surface should be roughed. The proportions used in mixing the concrete should be cement 1/sand 2/ pebble 4, including Φ10reinforced rebar. Even the surface of concrete. The edge of the basement should be chamfered.
⑤Drainage ditch should be arranged around the basement in order to drainage water around the unit.
⑥Please check endurance of the roof to ensure loading capacity could bear the weight.

4.4 Dimension (Unit: mm)

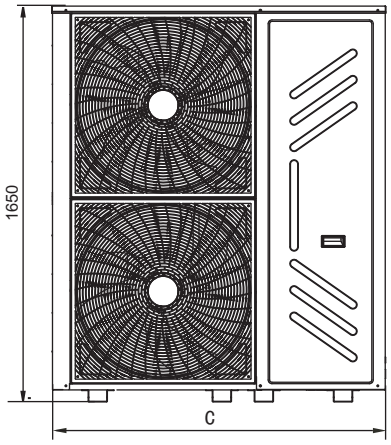


Fig.4-7

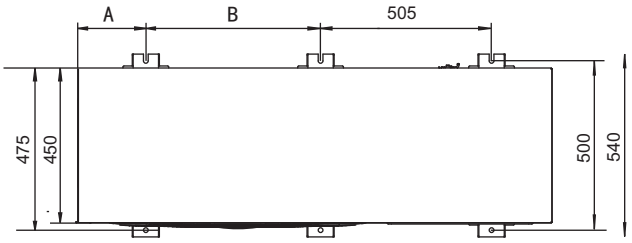


Fig.4-8

Table 4-1

Model \ Size	A	B	C
40kW	175	505	1360
45kW	225	555	1460

4.5 Pipe connection

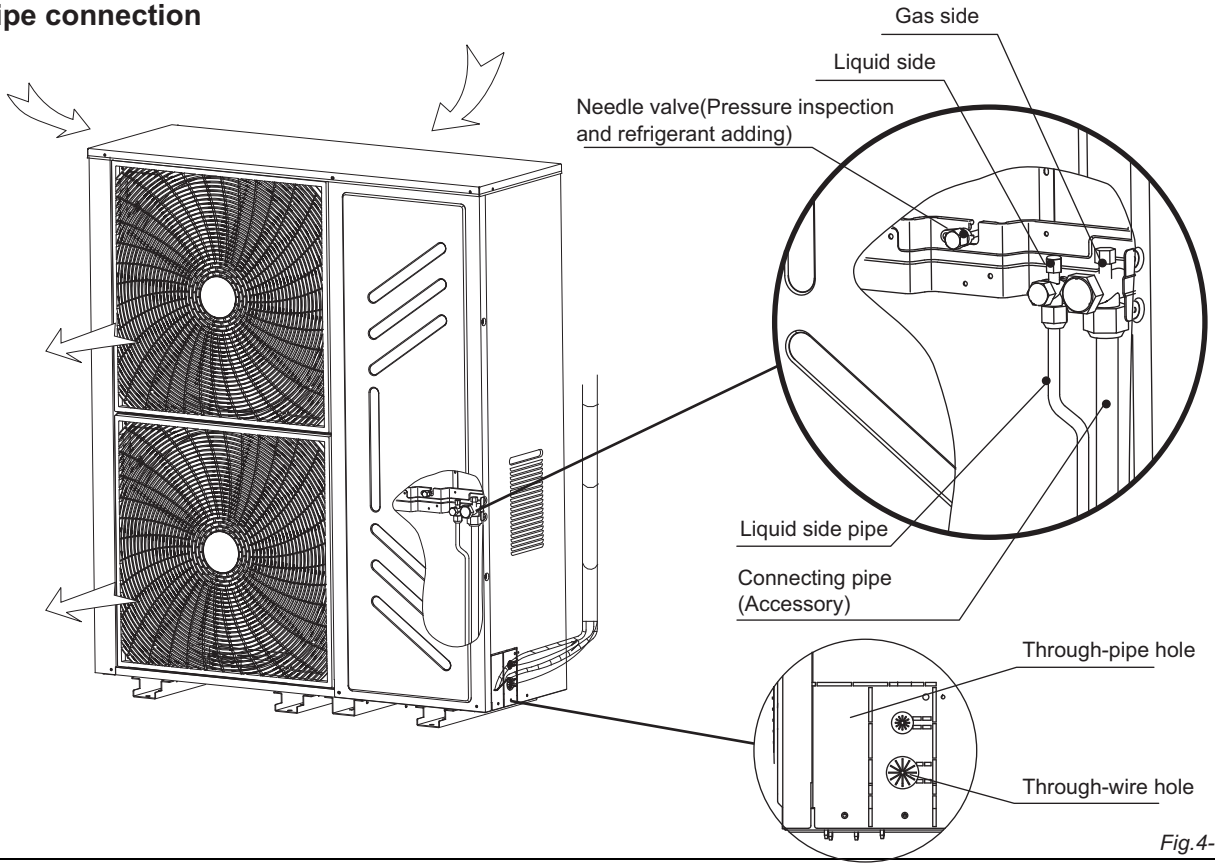


Fig.4-9

5. INSTALL THE CONNECTING PIPE

5.1 Refrigerant pipes

1.Flare

1）Cut the pipe with a knife.(See *Fig.5-1*)

2）Fit the pipe to the flare of connecting nut(Table 5-1)

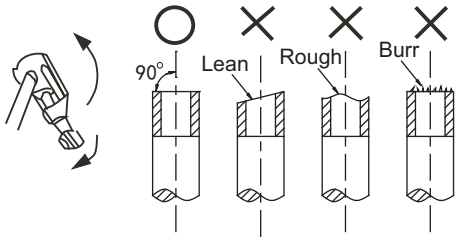
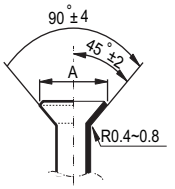


Fig.5-1

Table 5-1

OD (mm)	A (mm) Max.	A (mm) Min.
ϕ6.4	8.7	8.3
ϕ9.5	12.4	12.0
ϕ12.7	15.8	15.4
ϕ15.9	19.0	18.6
ϕ19.1	23.3	22.9
ϕ22.2	27.3	27.0



2.Fastening the nut

Align the connecting pipe and fastening the nut and then fasten it with a wrech. (See *Fig.5-2*)

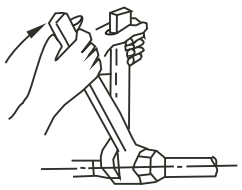


Fig.5-2

Table 5-2

Pipe dimensions	Tightening torque N.m
ϕ6.4	14.2~17.2 N.m (144~176 kgf.cm)
ϕ9.5	32.7~39.9 N.m (333~407 kgf.cm)
ϕ12.7	49.5~60.3 N.m (504~616 kgf.cm)
ϕ15.9	61.8~75.4 N.m (630~770 kgf.cm)
ϕ19.1	97.2~118.6 N.m (990~1210 kgf.cm)
ϕ22.2	109.5~133.7 N.m (1115~1364 kgf.cm)

CAUTION

When welding the refrigerant pipes, nitrogen flushing operation should be applied otherwise the oxidation crumbs will block the cooling system which will result in damage.

Large torque will distroy the flare, small torque will result in gas leakage because of loose. Please refer to Table 5-2 for the tightening torque.

5.2 Pipe types

Refrigerant settings

Table 5-3

Names	Piping position	Code
Main pipe	Pipe between the outdoor unit and indoor-side first manifold	L1
Indoor unit main pipe	Pipe which doesn't connect directly with the indoor unit the indoor-side first manifold	L2~L5
Outdoor unit main pipe	Piping components among main connecting pipe, main piping,and branch piping	a,b,c,d,e,f
Indoor unit manifold components	Pipe which connects directly with the indoor unit behind the manifold	A,B,C,D,E

- Connecting method 1

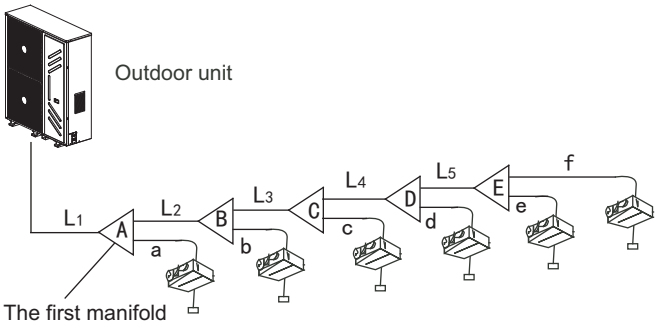


Fig.5-3

- Connecting method 2

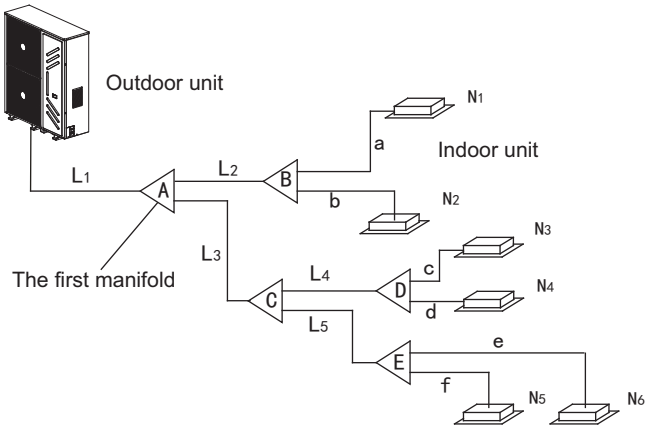


Fig.5-4

CAUTION

All the manifolds used should be specialized ones designated by Mundoclima. Fail to follow the requirements could lead to system error.

If the distance between the first manifold and the last one exceeds 15m, please apply the 2nd connecting way.

Distance between the indoor unit and the nearest manifold should less than 15m.

5.3 Diameters of indoor unit connecting pipe

1）Diameter reference table 4-4 of R410A indoor unit connecting pipe.

2）E.g. 1: The downstream connecting indoor unit capacity of L2 is 45×2＝90,the diameter of gas pipe and liquid pipe will be Φ15.9/Φ9.5 after checking.

Reference table of R410A indoor unit connecting pipe

Table 5-4

Downstream indoor unit capacity	Main pipe dimensions		Applicable manifolds
	Gas pipe	Liquid pipe	
A＜166	Φ15.9	Φ9.5	FQZHN-01D
166≤A＜230	Φ19.1	Φ9.5	FQZHN-01D
230≤A＜330	Φ22.2	Φ9.5	FQZHN-02D
330≤A＜460	Φ25.4	Ø12.7	FQZHN-02D
460≤A	Φ25.4	Ø12.7	FQZHN-02D

5.4 Diameters of outdoor unit connecting pipe

Reference table of R410A outdoor unit connecting pipe

Table 5-5

Outdoor unit capacity	Main pipe dimensions when equivalent length of liquid side and gas side pipe is ＜90m			Main pipe dimensions when equivalent length of liquid side and gas side pipe is ≥90m		
	Gas side (mm)	Liquid side (mm)	Indoor unit first manifold	Gas side (mm)	Liquid side (mm)	Indoor unit first manifold
40kW	Φ22.2	Φ12.7	FQZHN-02D	Φ25.4	Φ12.7	FQZHN-02D
45kW	Φ25.4	Φ12.7	FQZHN-02D	Φ28.6	Φ12.7	FQZHN-03D

CAUTION

The horizontal straight pipe distance between angle branch and its adjacent manifold should be at least 0.5m

The horizontal straight pipe distance between 2 adjacent 2 manifold should be at least 0.5m

The horizontal straight pipe distance that connets to indoor unit behind the manifold should be at least 0.5m

Use the maximum indoor and outdoor connecting pipe diameter.

- Joint dimension

Pipe diameters of the indoor unit joint

Table 5-6

Refrigerant	Indoor Unit Capacity A(x100W)	Gas Side (Φ)	Liquid Side (Φ)
R410A	A≤45	12.7(Flaring nut)	6.4(Flaring nut)
	A≥56	15.9(Flaring nut)	9.5(Flaring nut)

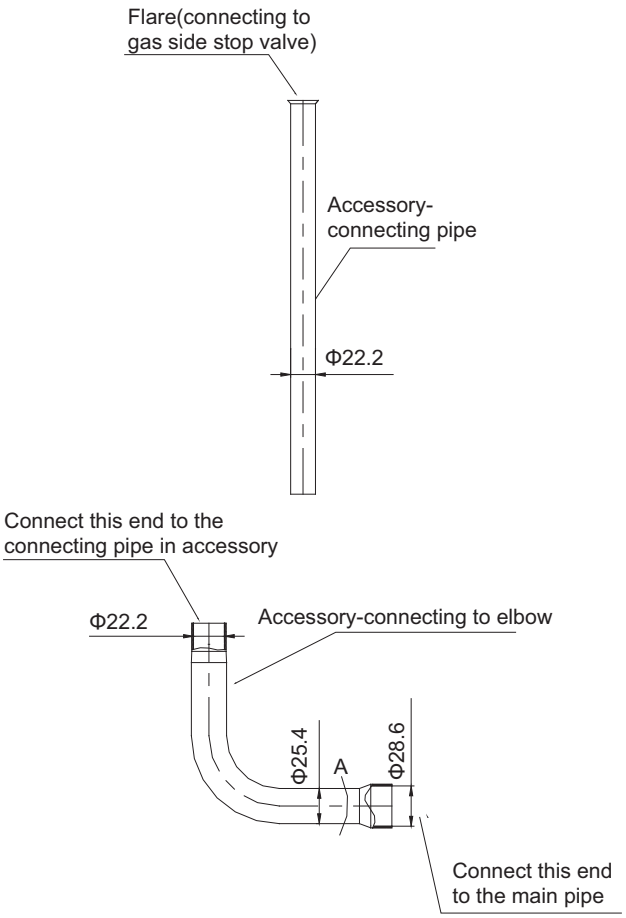
(A: the total capacity of indoor units)

Pipe diameters of the outdoor unit joint

Table 5-7

To pipe side / Model	Pipe diameters of the outdoor unit joint	
	Gas side	Liquid side
40kW	Φ22.2	Φ12.7
45kW	Φ25.4	

Dimensions of connecting pipe diameters in accessory



Elbow connecting instruction	
Main pipe diameters of connecting pipes	Connecting pipe bending process
Φ22.2	Cut the pipe at A, insert the main pipe and weld
Φ25.4	Cut the pipe at A, flare and weld
Φ28.6	Insert main pipe directly and weld

Table 4-8

Outdoor Unit (kW)	Capacity of Outdoor unit (kW)	Maximum Quantity of Indoor unit	Sum Capacity of Indoor unit
40kW	40	14	20000~52000
45kW	45	15	22000~58000

CAUTION

Capacity of indoor unit shouldn't be greater than the sum of 130% of outdoor unit loading.

When running with oversized bearings, attenuation will happen correspondingly.

Table 5-9

Classification of power	22	28	36	45	56	71
HP	0.8	1	1.2	1.7	2	2.5
Classification of power	80	90	100	112	125	140
HP	3	3.2	3.7	4	4.5	5

5.5 Examples

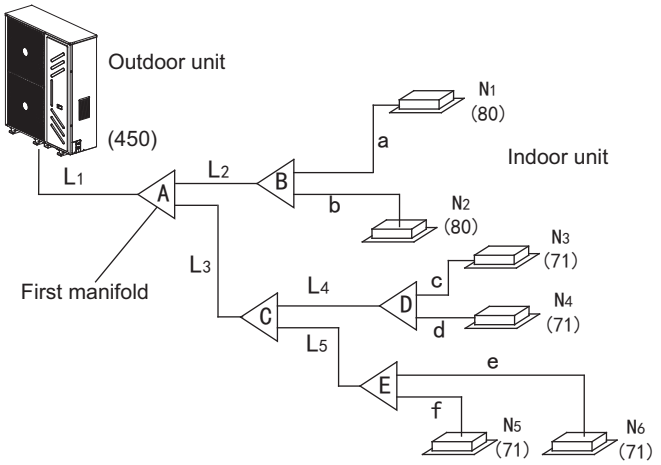


Fig.5-5

CAUTION

Suppose in the displayed piping system, the total equivalent piping length of air side + liquid side is longer than 90m.

1. Indoor unit branch pipe

Inner branch pipes are a~f, the size selection please refers to Table 5-6. Note: The max. length of the branch pipe should not longer than 15m.

2. The main pipes of indoor unit and the indoor unit branch pipe components

- The downstream inner units of the main pipe L2 are N1, N2, and its total capacity is 80×2=160, the size of pipe L2 isΦ15.9/Φ9.5, and the branch pipe B should be FQZHN-01C.
- The downstream inner units of the main pipe L4 are N3, N4, and its total capacity is 71×2=56, the size of pipe L4 isΦ15.9/Φ9.5, and the branch pipe D should be FQZHN-01C.
- The downstream inner units of the main pipe L5 are N5, N6, and its total capacity is 71×2=284, the size of pipe L5 isΦ15.9/Φ9.5, and the branch pipe E should be FQZHN-02C.
- The indoor unit below to the main pipe L3 are N3～N6, and its total capacity is 71×4=284, the size of pipe L3 isΦ15.9/Φ9.5, and he branch pipe C should be FQZHN-02C.
- The indoor unit below to the main pipe A are N1～N6, and its total capacity is71×4+80×2=444, and the branch pipe should be FQZHN-03C, and because the total piping length of liquid + air side is ≥90m, check Table.4-4, and the first branch pipe should apply FQZHN-03C, and according to the principle of maximum value, it should apply FQZHN-03C.

3. Main pipe (please refer to Table 5-5 and Table 5-7)

In *Fig.5-5*, main pipe L1, its outdoor unit capacity is 45kW. Its gas/liquid pipe diameter is Φ25.4/Φ12.7 according to Table 5-7. Because total piping length of liquid + air side is ≥90m, according to Table 5-5, its gas/liquid side is Φ28.6/Φ12.7. By maximum principle, adopt Φ28.6/Φ12.7.

- Connecting method

Table 5-10

	Gas side	Liquid side
Outdoor unit 40kW	Flare/welding	Flare/welding
Outdoor unit 45kW	Flare/welding	Flare/welding
Indoor unit	Flare	Flare
Manifold	Flare/welding	Flare/welding

- Allowable length and altitude difference of refrigerant pipe

Table 5-11(Liquid side pipe only)

				Pimitted value	Piping
40kW 45kW	Pipe Length	Total Pipe Length(Actual)		≤250m	L1+L2+L3+L4+L5+a+b+c+d+e+f
		Maximum Piping(L)	Actual Length	≤100m	L1+L2+L3+L4+L5+f (The first connect methond) or L1+L3+L5+f (The second connect methond)
			Equivalent Length	≤120m	
		Pipe Length(from the first line branch pipe to the furhtest indoor unit)(m)		≤40m	L2+L3+L4+L5+f (The first connect methond) or L3+L5+f (The second connect methond)
		Pipe Length(from the nearest branch pipe equivalent length(m)		≤15m	a,b,c,d,e,f
	Drop Height	Indoor Unit-Outdoor Unit Drop Height(H)	Outdoor Unit Down	≤30m	——
			Outdoor Unit up	≤20m	——
		Indoor Unit to Indoor Unit Drop Height(H)		≤8m	——

CAUTION

When the total equivalent piping length of liquid + gas side is ≥90m, it must increase the size of air side main pipe.
Besides, according to the distance of refrigerant pipe and the over matched state of inner unit, when the capacity is decreasing it still can increase the gas side main pipe size.

- The first connecting methond

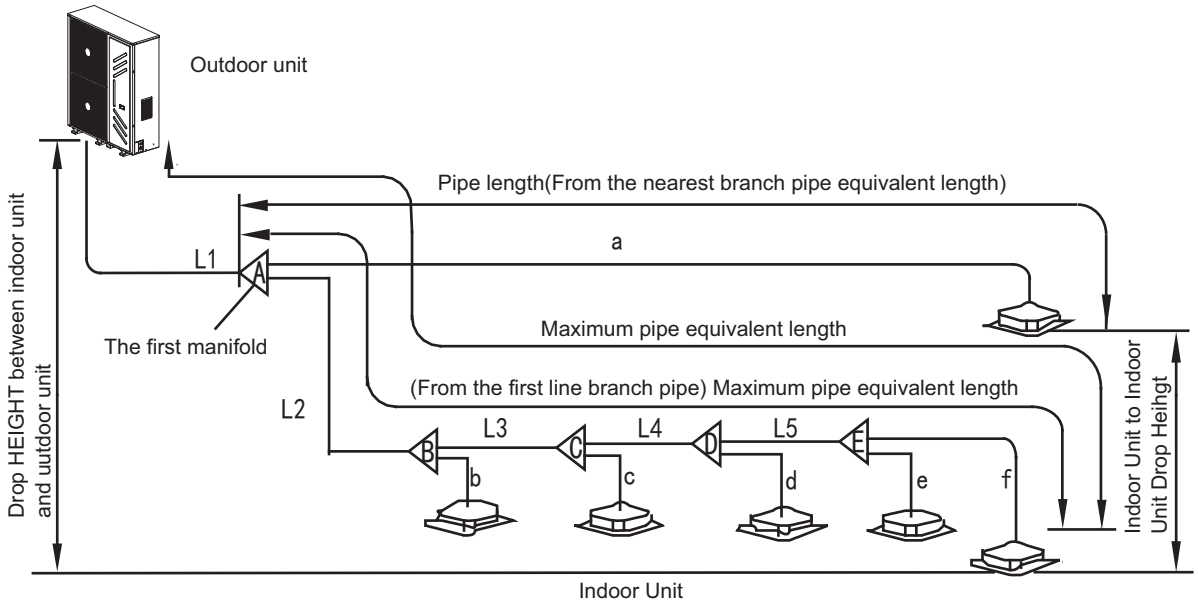


Fig.5-6

- The second connecting methond

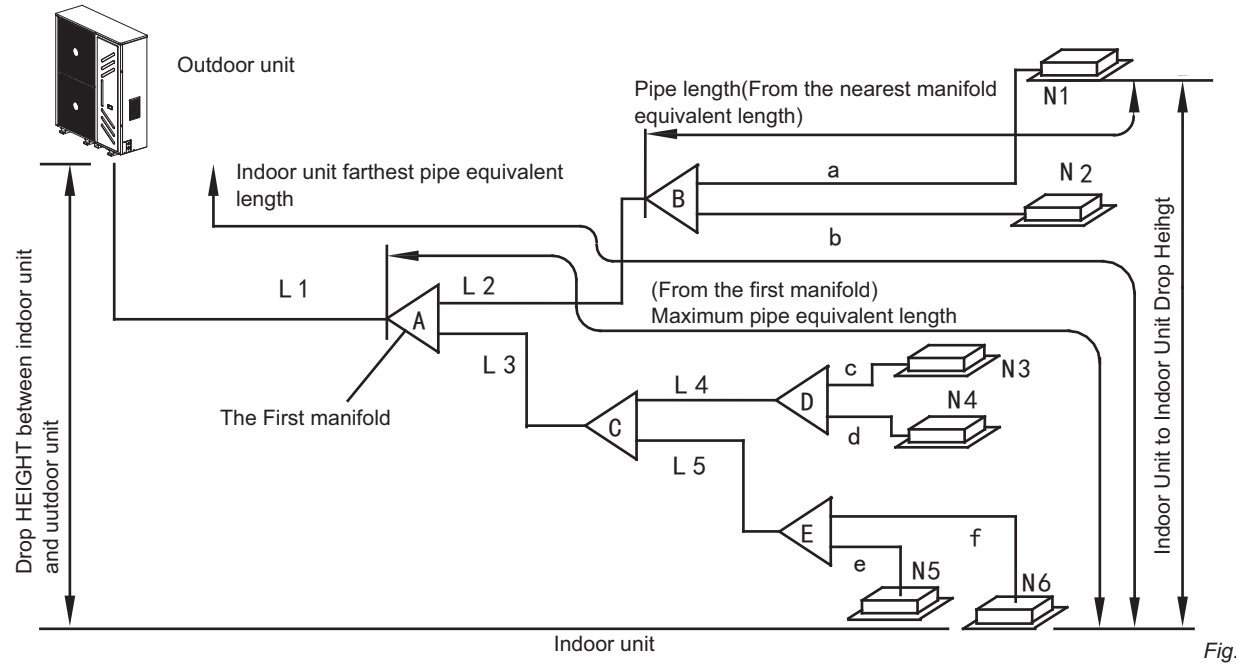


Fig.5-7

5.6 Remove Dirt or Water in the Pipe

1. Make sure there is no any dirt or water before connecting the pipe to the outdoor units.
2. Wash the pipe with high pressure nitrogen, never use refrigerant of outdoor unit.

5.7 Airtight Test

1. Connect the high pressure side pipe and liquid side stop valve after connecting indoor unit pipes.
2. Weld low pressure side pipe and meter connector.
3. Use vacuum pump to discharge air from valve core of liquid side stop valve and meter connector until the pressure reaches to -1kgf/cm^2.
4. Close the vacuum pump and fill nitrogen40kgf/cm^2.
5. At the end of air tightness test, the gas side stop valve and the low pressure side piping should be welded.

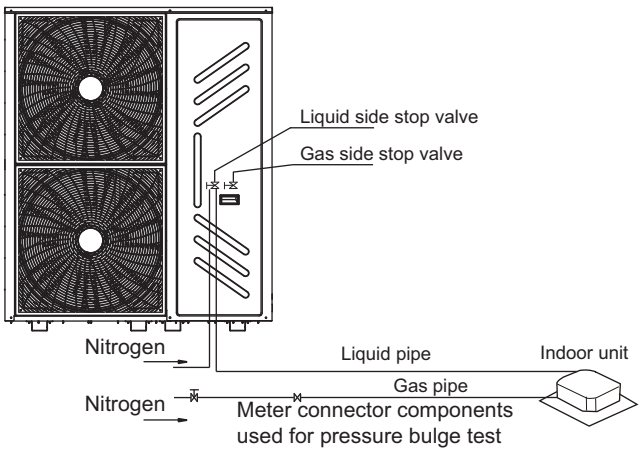


Fig.5-8

CAUTION

- Pressured nitrogen（3.9MPa (44kgf/cm^2) for R410A] should be used in the airtight test.
- DO NOT pressure to the stop valve directly.(See *Fig.5-8*)
- The airtight test should never use any oxygen,flammable gas or poisonous gas.
- Wrap the low pressure valve with a wet cloth for protection when welding.
- In case of damage, the holdup time shouldn't be too long.

5.8 Air Purge with Vacuum Pump

1. Use the vacuum pump with the relative vacuum degree of -0.1MPa, vacuum-pump efficiency of 40L/min

2. Outdoor unit needn't to be vacuumized. Do not open liquid/gas side stop valves of the outdoor unit.

3. Be sure when vacuum pump works for more than 2 hours, the relative vacuum degree is under -0.1MPa. If the degree is still under -0.1MPa for more than 3 hours, it demonstrate there's moistureor leakage. Check the pump.

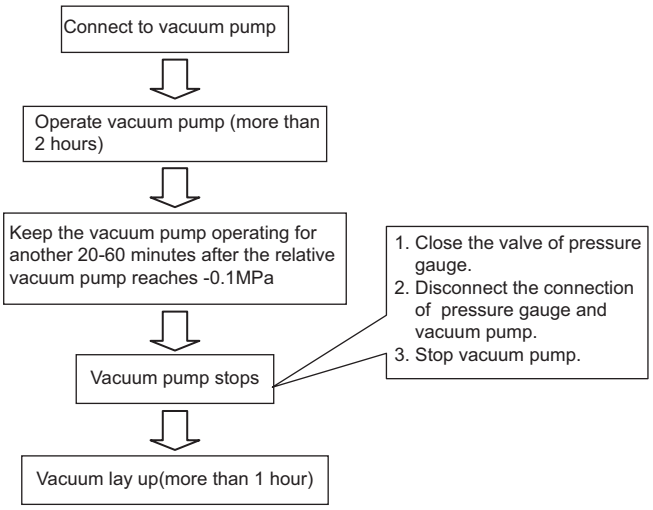


Fig.5-9

CAUTION

- Do not mixedly use tools used for different refriferant, tools and measuring instrument that directly contact refriferant. DO NOT use refriferant gas to air discharge.

- When vacuum degree can't reach -0.1MPa, consider if it leaks. If no leakage, please keep the vacuum pump working for another 1 to 2 hours.

5.9 Outdoor unit stop valve

- **Outdoor unit stop valve**

1. Before using stop valve, get familiar with every part of the valve, as shown in *Fig.4-10*. The stop valve is closed when leaving the factory.
2. Please use a proper tool. Because the stop valve in this unit is not a flare-seal type, if dismantling forcibly, it may cause valve damage. Please use hosepipe to fill in when maintenance.
3. When cooling in the outside in a low temperature, operation pressure will be low. Use silicone encapsulant to seal in case of freezing of flare nut of stop valve gas side.
4. Make sure if there is refrigerant leakage after fastening the bonnet.

- **Operational approach of closing the valve**

Prepare a hexagonal wrench(specification 6mm)

Open approach:
1. Insert a hexagonal wrench into the valve rod and spin anticlockwise.
2. When the valve rod can't be spinned any more, the valve is open

Close approach:
Insert a hexagonal wrench into the valve rod and spin clockwise.

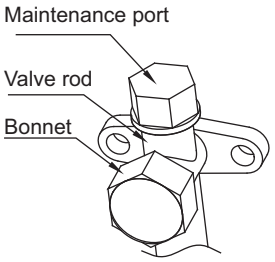


Fig.5-10

- **Bonnet caution**
  Tightening the bonnet after valve operation.

- **Main tenance port caution**
  Please operate with a filling hosepipe with a compression bar. Tightening the valve after operating.

Stop valve specification Table 5-12

Model	40kW	45kW
Liquid side stop valve	Φ12.7	Φ12.7
Gas side stop valve	Φ22.2	Φ25.4

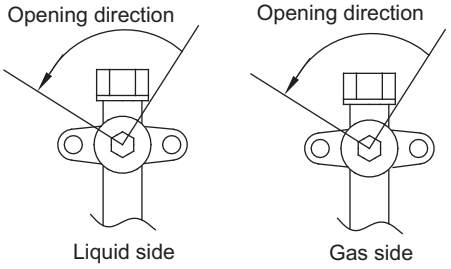


Fig.5-11

5.10 Leakage inspection

Inspect each joint to check if it leaks by using a leak detector or suds.(*Fig.5-12*)

NOTE: A liquid side stop valve
B gas side stop valve
C and D are the joint of the indoor unit connecting pipe.

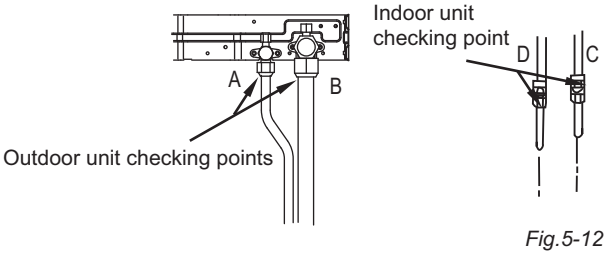


Fig.5-12

5.11 Heat Insulation

Do the heat insulation to the pipes of air side and liquid side separately. The temperature of the pipes of air side and liquid side when cooling, for avoiding condensation please do the heat insulation fully.(*Fig.5-13*)
1. The air side pipe should use closed cell foamed insulation material, which the fire-retardant is B1 grade and the heat resistance over 120°C.
2. When the external diameter of copper pipe≤Φ12.7mm, the thickness of the insulating layer at least more than 15mm;
When the external diameter of copper pipe≥Φ15.9mm, the thickness of the insulating layer at least more than 20mm.

3. Please use attached heat-insulating materials do the heat insulation without clearance for the connecting parts of the indoor unit pipes.

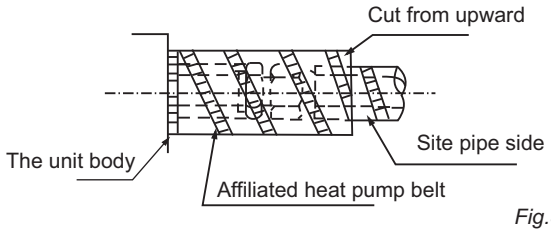


Fig.5-13

5.12 Refrigerant Amount to be Added

Calculate the added refrigerant according to the diameter and the length of the liquid side pipe of the outdoor unit/indoor unit connection. Calculate the refrigerant adding amount, adding refrigerant R410A.

Table 5-13

Liquid Side Piping Diameter	Refrigerant to be Added Permeter Piping
Φ6.4	0.022kg
Φ9.5	0.057kg
Φ12.7	0.110kg
Φ15.9	0.170kg

NOTE: R410A refrigerant should be added in liquid quantifiedly by electronic scale.

5-13 Manifold installation key points

Install it in a horizonal level, error angle should less than 10°. It may result in damage if installing in a wrong way

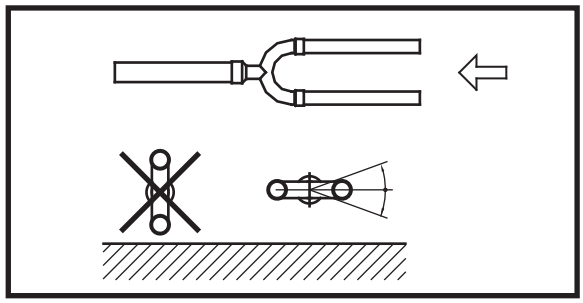


Fig.5-14

6. ELECTRICAL WIRING

CAUTION

- Please select power source for indoor unit and outdoor unit respectively.
- The power supply has specified branch circuit with leakage protector and manual switch.
- The outdoor unit model which corresponding to different outdoor unit power supply should refer to the nameplate.(Please set all the indoor unit power of one system into the same branch circuit.)
- Please put the connective wire system between indoor unit and outdoor unit with the refrigerant system together.
- Use 3-core shielded wire as indoor unit and outdoor unit signal wire.
- The installation should comply with local electric standard.
- Power wiring should be engaged by specialized electrician.

6.1 Outdoor unit wiring terminal instructions

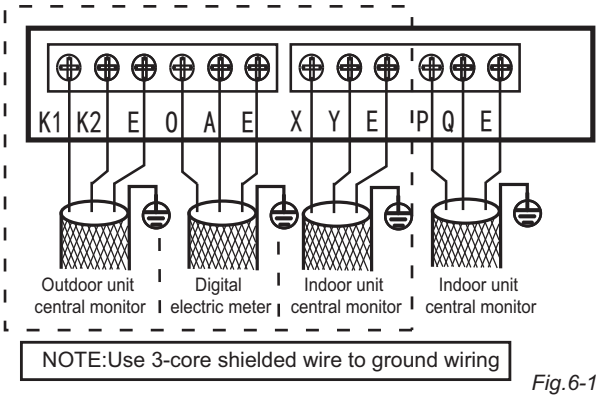


Fig.6-1

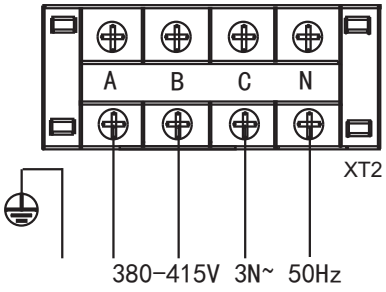


Fig.6-2

NOTE: Outdoor unit central monitor, digital electric meter, indoor unit central monitor are all optional components in the dotted box, if necessary, please contact to the local dealer to buy those.

6.2 Indoor unit system wiring

1. Individual power supply (without power supply device) (See the table below)

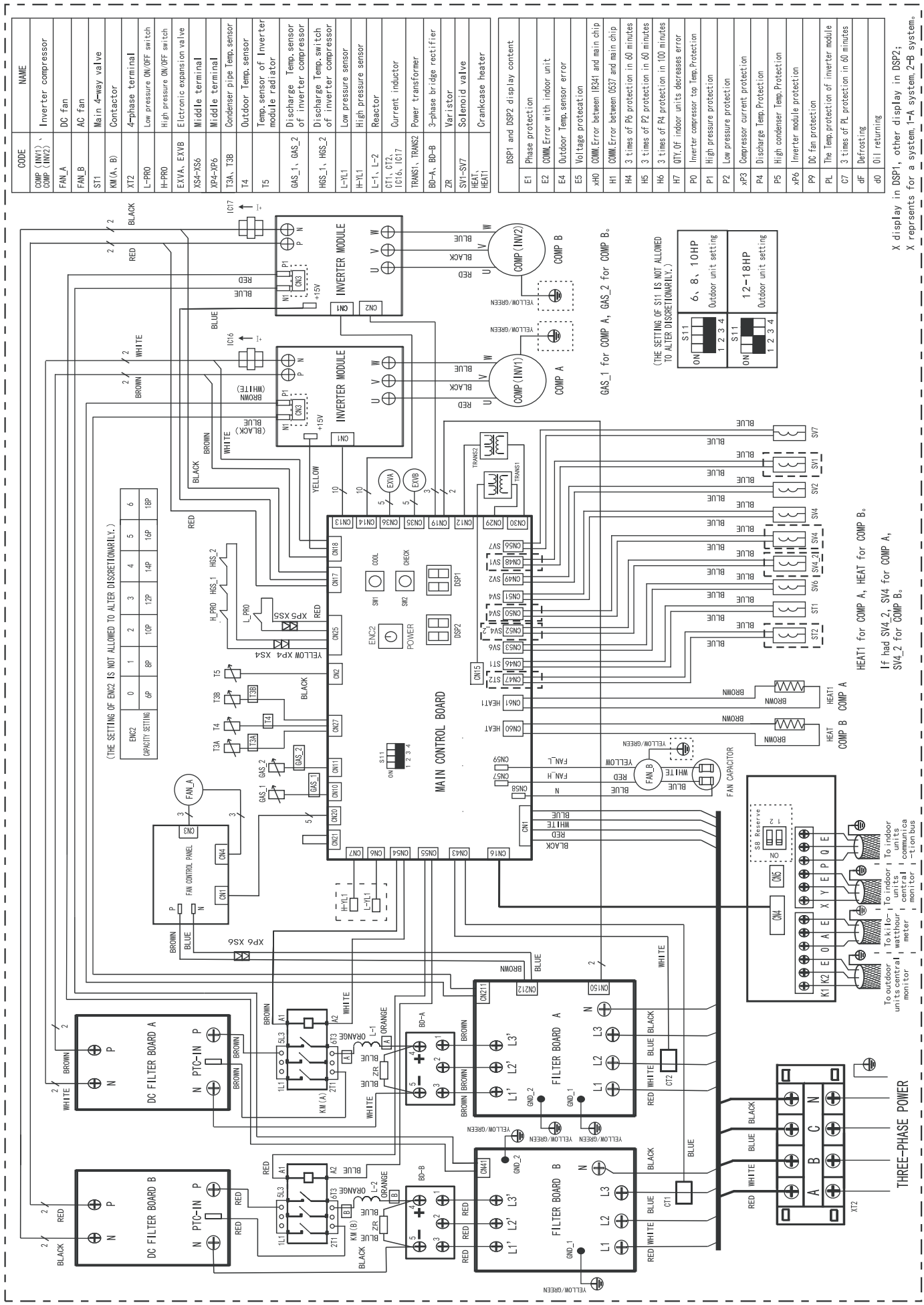
Table 6-1

Item / Model	Power Source	Thinnest electric wire diameter(mm^2) (Metal tube synthetic resin wiring)			Hand switch		Leakage protector
		Under 20m	Under 50m	Ground wire	Capacity	Fuse	
40kW	380-415V 3N~ 50Hz	4×16mm^2	4×25mm^2	16mm^2	100	70	Under 100mA 0.1 sec
45kW	380-415V 3N~ 50Hz	4×25mm^2	4×35mm^2	16mm^2	100	90	Under 100mA 0.1 sec

CAUTION

Wiring diameters and continuous lengths in the table are the situation that voltage decrease degree is within 2%, when the wiring continuous length exceeds the values in the table, choose the wire diameter according to regulations

6.3 Wiring diagram



6.4 Outdoor unit spot checking instruction

SW2 Query instructions

Table 6-2

NO.		Display content	Note
	Normal display	Operation frequency	
1	0. – –	Outdoor unit address	0
2	1. – –	Outdoor unit itself capacity	8，10，12，14，16，18
3	2. – –	Module outdoor unit quatity	Reserved
4	3. – –	Qty.setting of indoor units	Actual value
5	4. – –	Total capacity of outdoor unit	Reserved
6	5. – –	Total requirement of indoor unit capacity	Actual value
7	6. – –	Total requirement of main unit corrected capacity	Actual value
8	7. – –	Operation mode	0，2，3，4
9	8. – –	This outdoor unit actual operation capacity	Capacity requirements
10	9. – –	Speed of fan A	0，1，……，9，10
11	10. – –	Speed of fan B	0，1，……，9，10
12	11. – –	T2B/T2 average Temp.	Actual value
13	12. – –	T3/T3A pipe temp.	Actual value
14	13. – –	T4 ambient temp	Actual value
15	14. – –	Discharge Temp.of Inverter compressor A	Actual value
16	15. – –	Discharge Temp.of Inverter compressor B	Actual value
17	16. – –	Reserved	
18	17. – –	Current of inverter compressor A	Actual value
19	18. – –	Current of inverter compressor B	Actual value
20	19. – –	Opening angle of EXV A	
21	20. – –	Opening angle of EXV B	
22	21. – –	High pressure	Reserved
23	22. – –	T3B	
24	23. – –	Qty. of Indoor units	That can communicate with indoor units
25	24. – –	Qty. of the working Indoor units	Actual value
26	25. – –	Priority mode	0，1，2，3，4
27	26. – –	Night noise control mode	0，1，2，3
28	27. – –	Static pressure mode	Reserved
29	28. – –	DC voltage A	Actual value÷10
30	29. – –	DC voltage B	Actual value÷10
31	30. – –	Reserved	
32	– – –	Reserved	Display code 8.8.8
33	– – –	————	Check end

NOTE:

Normal display:When standby, the high position displays the address of the outdoor nuit,and the low position displays the Qty.of indoor units that can communicate with outdoor unit .When it is operating, it will display the rotation frequency of the compressor.

1)Operation mode:0——OFF; 2——Cooling; 3——Heating; 4——Constraint cooling;

2)Fan speed:0-stop; 1~10: speed increase sequentially, 10 is the max. fan speed.

3)EXV opening angle: Pulse count=display value*8;

4)Priority mode: 0-heating priority mode ; 1-cooling priority mode ; 2-open the priority mode first ; 3-respond the heating mode only ; 4-respond the cooling mode only.

5)Night noise control mode:0-Night noise control mode ; 1-silent mode ; 2-reserve; 3-no priority.

6.5 Outdoor unit main control board

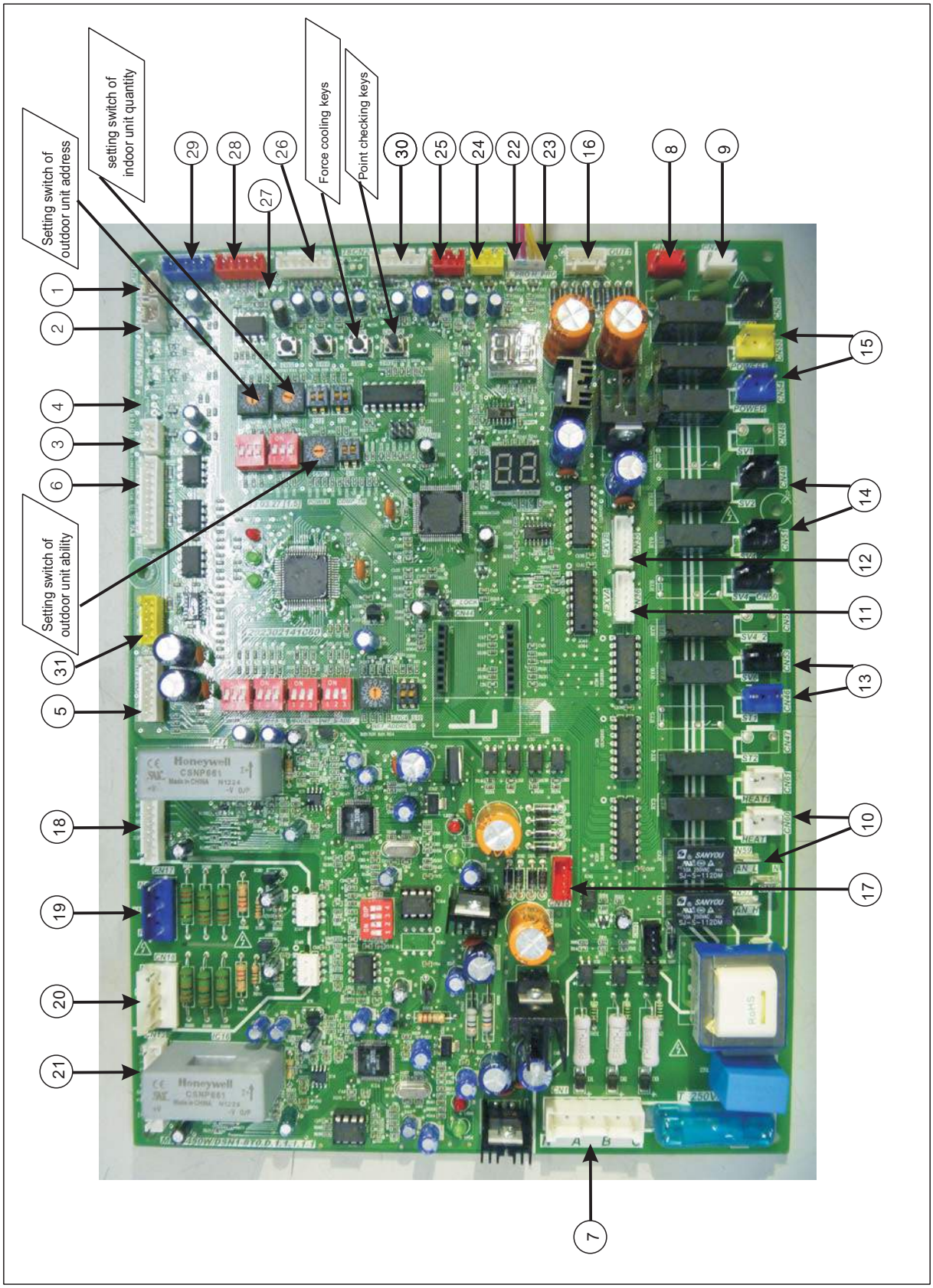


Fig.6-3

6.6 Outdoor main control board instructions

Table 6-3

NO.	Contents	NO.	Contents
1	Discharge temp. sensed port of the inverter compressor A	17	Power output of the No.2 transformer
2	Discharge temp. sensed port of the inverter compressor A or B	18	Activation port of inverter module B
3	Ttemp. sensed port of the inverter module radiator	19	Port for inverter module B voltage inspection
4	Reserved	20	Port for inverter module A voltage inspection
5	Reserved	21	Activation port of inverter module A
6	Wiring port for communication between indoor and out -door units,indoor unit network and network accounting	22	ON/OFF signal input port for system low pressure inspection
7	Phase inspection port	23	ON/OFF signal input port for system high pressure inspection
8	Power input of the No.1 transformer	24	Reserved
9	Power input of the No.2 transformer	25	Reserved
10	Loading output terminal	26	Inspection port for outdoor ambient temp. and condensator coil
11	EXV A driving port	27	Reserved
12	EXV B driving port	28	Control port of DC fan A
13	Loading output terminal	29	Control port of DC fan B
14	Loading output terminal	30	Current inspection port of the inverter compressor A and B
15	Loading output terminal	31	Power supply connected port of the main control panel
16	Power output of the No.1 transformer		——

6.7 Dial indication sign instructions

ENC3 and S12 function definition:

ENC3	S12 ON	Set the number of indoor units to 0-15
ENC3	S12 ON	Set the number of indoor units to 16-31
ENC3	S12 ON	Set the number of indoor units to 32-47
ENC3	S12 ON	Set the number of indoor units to 48-63

ENC1 function definition:

ENC1	Reserved

ENC2 function definition:

ENC2	Outdoor unit capacity dial code 4 represents 40kW 5 represents 45kW

ENC4 function definition:

ENC4	Outdoor unit net address dial code 0-F valid represents 0-15

S1 function definition:

S1 ON 1 2	Starting time is set about 5 minutes
S1 ON 1 2	Starting time is set about 12 minutes (Factory default)

NOTE:
S1,S2 function definition only for 40kW, S8 function definition only for 45kW.

S2 function definition:

S2 ON 1 2 3	Night time selection is 22h/6h (Factory default)
S2 ON 1 2 3	Night time selection is 00h/6h
S2 ON 1 2 3	Night time selection is 22h/8h
S2 ON 1 2 3	Night time selection is 00h/8h

S3 function definition:

S3 ON 1 2	Night silence mode (Factory default)
S3 ON 1 2	Silence mode
S3 ON 1 2	Super silence mode
S3 ON 1 2	Non-silence mode

S4 function definition:

S4 ON 1 2 3	Reserved (Factory default)
S4 ON 1 2 3	Reserved
S4 ON 1 2 3	Reserved
S4 ON 1 2 3	Reserved

S5 function definition:

S5 ON 1 2 3	Heating priority mode (Factory default)
S5 ON 1 2 3	Cooling priority mode
S5 ON 1 2 3	No.63 indoor unit running mode priority
S5 ON 1 2 3	Heating mode respondence only
S5 ON 1 2 3	Cooling mode respondence only

S6 function definition:

S6 ON 1 2 3	Auto address searching
S6 ON 1 2 3	Non-auto address searching (Factory default)
S6 ON 1 2 3	Clean the indoor unit address

S7 function definition:

S7 ON 1 2 3	Indoor unit quantity setting function is open (Factory default)
S7 ON 1 2 3	Indoor unit quantity setting function is closed

S8 function definition:

S8 ON 1 2 3	Reserved (Factory default)

S10 function definition:

S10 ON 1 2	Reserved

S11 function definition:

S11 ON 1 2 3 4	6–10HP Outdoor unit settings
S11 ON 1 2 3 4	12–18HP Outdoor unit settings

CAUTION

Code dialing must be operated after the power supply is cut off.

6.8 Electric system and installation

Electric wiring Notes

1. Please use private indoor and outdoor unit power supplies.
2. Power supply should apply specialized duplexure and should install RCCB and manual switch.
3. Power supply, RCCB and manual switch used for a same indoor unit should have universality.(Indoor unit power supply for the same unit should use the same circuit and ON/OFF simultaneously, or it could seriously affect the system service life and the unit may fail to power on).
4. Consider the indoor and outdoor unit connecting wiring system and refrigerant piping as a same system.
5. Suggest to use 3-core shield cable for outdoor unit signal wire to decrease noise disturb, don't use multi-core cable without shield.
6. Operate according to the relative electric national regulations.
7. Power supply wiring must be operated with a specialized person.

6.9 Electric control system wiring diagram

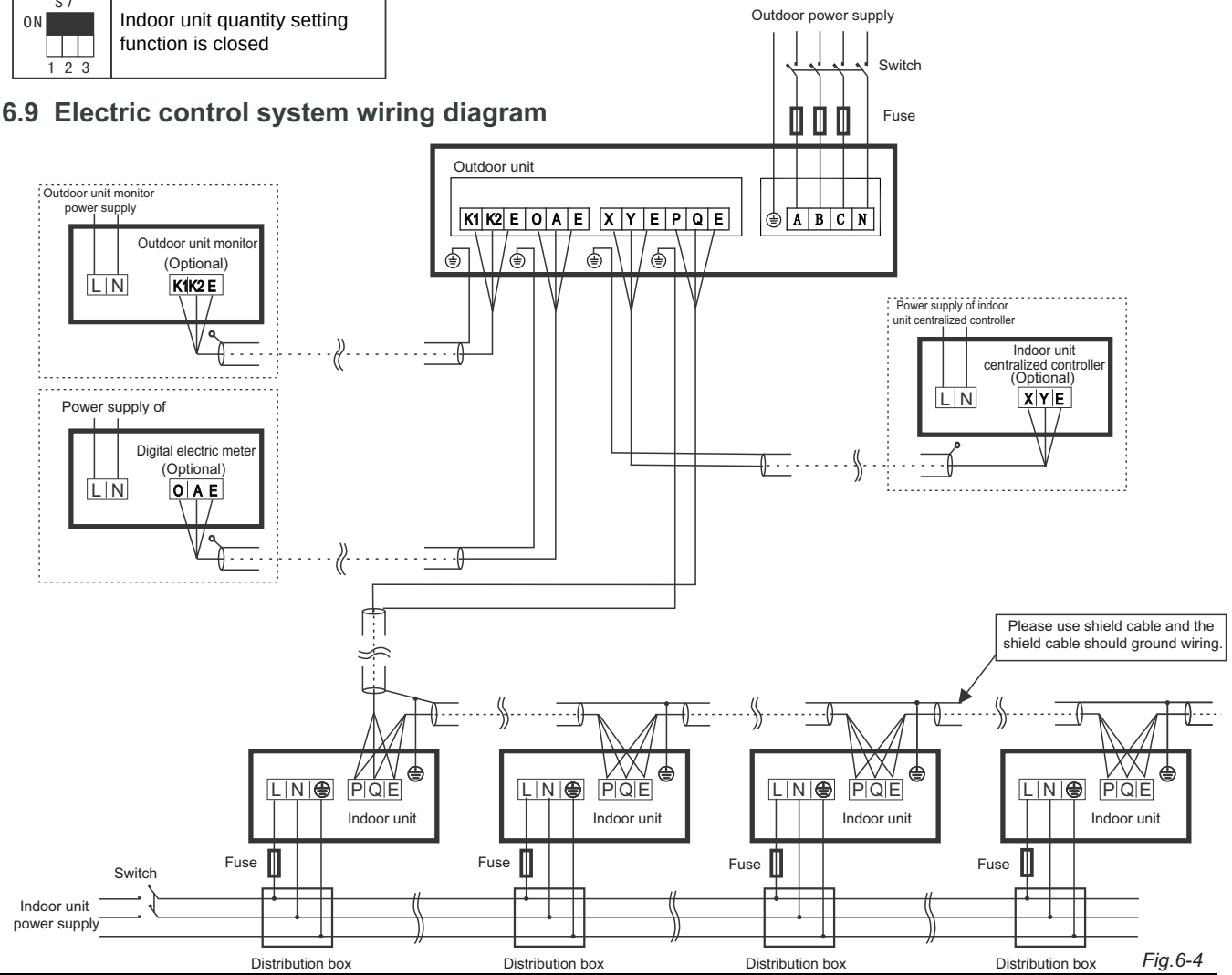


Fig.6-4

CAUTION

- Wrong wiring may damage copressor and other components.
- PQE connects to weak current signal wire, don't connect it to strong current.
- All the connecting terminal should be fastened reliably, ground wire should be grounded correctly.
- Use wiring terminal power supply wire with a torus. After power supply wire has been connected to the wiring base, it needs to be reliably fastened.
- Power on after a careful inspection and make sure there's no mistakes.

6.10 Indoor and outdoor unit control wiring

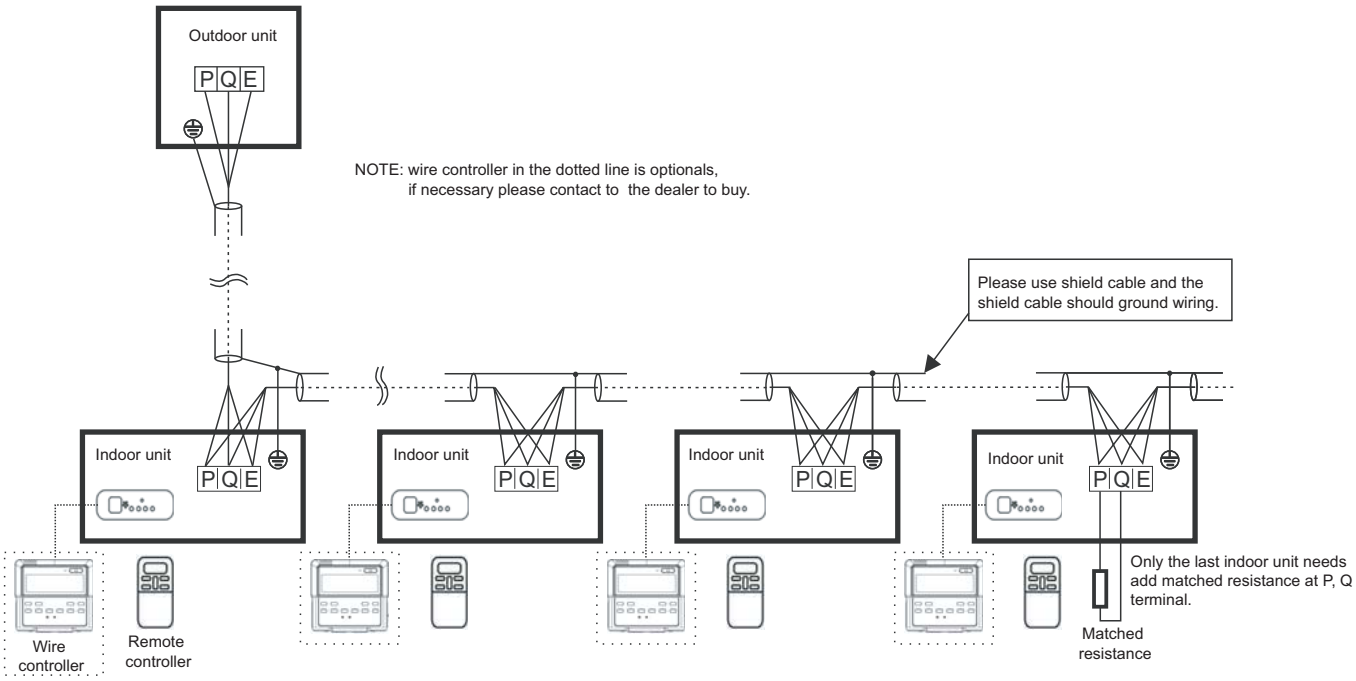
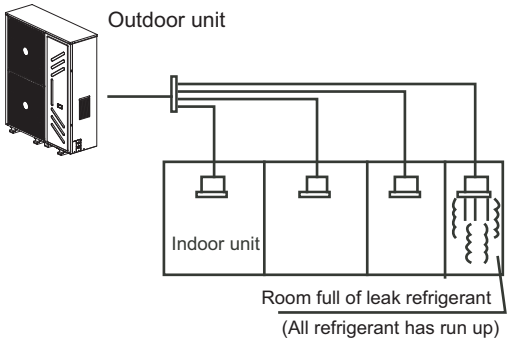


Fig.6-5

CAUTION

- Signal wire is 3-core, polarized wire. Use 3-core shield wire to prevent interference. The grounding method now is grounding the closed end of the shield wire and opening (insulating) at the end. Shield is to be grounded.(Reference distance: It is 300mm when current capacity of power cord is less than 10A, or 500mm when 50A).
- When power cord is parallel with signal wire, please put them into separate wire distribution pipes, and leave a proper distance.
- Display box, remote controller, and matched resistance are the accessories of indoor unit; wire controller is optional, if necessary please contact to the dealer to buy.



7. PRECAUTIONS ON REFRIGERANT LEAKAGE

This air conditioner(A/C) adopts inncouous and nonflammable refrigerant. The locating room of the A/C should big engough that any refrigerant leakage is unable to reach critical thickness. So certain esssential action can be taken on time.

- Critical thickness------the Max. thickness of Freon without any harm to person.
- Refrigerant critical thickness: 0.30[kg/m^3] for R410A.

Confirm the critical thickness through follow steps, and take necessary actions.

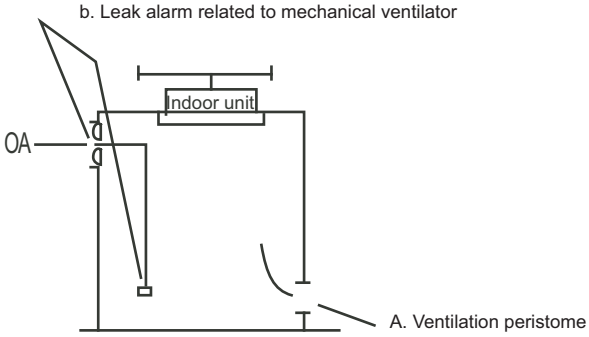
1. Calculate the sum of the charge volume (A[kg]).
   Total refrigerant volume of 10HP=factory refrigerant volume + super addition.
2. Calculate the indoor cubage (B[m]) (as the minimum cubage.
3. Calculate the refrigerant thickness.

$$\frac{A\ [kg]}{B\ [m^3]} \leqslant \text{Critical thickness}$$

Counter measure against over high thickness

1. Installmechanicalventilator to reduce the refrigerant thickness under critical level. (ventilate regularly).
2. Install leak alarm facility related to mechanical ventilator if you can not regularly ventilate.

b. Leak alarm related to mechanical ventilator



(Leak hunting siren should be installed in places easily keep refrigerant)

8. TEST RUNNING

8.1 Check points before test running

1. If indoor and outdoor units have been installed properly.
2. Whether piping and wiring is correct.
3. Whether has taken leakage inspection to the refrigerant pipe system.
4. Whether heat insulation has been properly applied.
5. If ground wire has been correctly connected.
6. Whether take a record of the piping length or refrigerant adding amount.
7. Whether the power supply voltage is equal with the rated voltage.
8. If there's barriers around air inlet/outlet.
9. Open gas side and liquid side stop valve.
10. Connect to power supply and pre-heat the AC.

8.2 Testing running

Control A/C to process cooling operation with remote controller, check the following points respectively, if it fails, please debug according to operation manual.

1. Indoor unit
- If the remote controller is normal.
- Whether each function keys is normal in the remote controller.
- If the air deflector operates normally .
- Whether room temp. adjustment is normal.
- Whether indicator lights up normally.
- If manual keys are normal.
- If water drainage is normal.
- If there's vibration and abnormal noise when operating.
- Test if heating function works normally for heating and cooling A/C.

2.Outdoor unit
- If there's vibration and abnormal noise when operating.
- Whether the wind and noise and condenser water could influence your neighbour.
- If there's refrigerant leakage.

CAUTION

When electrified, start the unit immediately or reboot after shutdown, A/C has protection fuction, compressor will start 5min delay.

9. TURN OVER TO CUSTOMER

The owner's manual of indoor unit and owner's manual of outdoor or unit must be turned over to the customer. Explain the contents in the owner's manual to the customers in details.

OWNER'S MANUAL

CONTENTS PAGE

1. IMPORTANT SAFETY INFORMATION

To prevent injury to the user or other people and property damage, the following instructions must be followed. Incorrect operation due to ignoring of instructions may cause harm or damage.

The safety precautions listed here are divided into two categories. In either case, important safety information is listed which must be read carefully.

WARNING

Failure to observe a warning may result in death. The appliance shall be installed in accordance with national wiring regulations.

CAUTION

Failure to observe a caution may result in injury or damage to the equipment.

WARNING

- **Ask your dealer for installation of the air conditioner.**
  Incomplete installation performed by yourself may result in a water leakage, electric shock, and fire.
- **Ask your dealer for improvement,repair,and maintenance.**
  Incomplete improvement, repair, and maintenance may result in a water leakage, electric shock, and fire.
- **In order to avoid electric shock, fire or injury, or if you detect any abnormality such as smell of fire, turn off the power supply and call your dealer for instructions.**
- **Never replace a fuse with that of wrong rated current or other wires when a fuse blows out.**
  Use of wire or copper wire may cause the unit to break down or cause a fire.
- **Do not insert fingers, rods or other objects into the air inlet or outlet.**
  When the fan is rotating at high speed, it will cause injury.
- **Never use a flammable spray such as hair spray, lacquers paint near the unit.**
  It may cause a fire.
- **Never touch the air outlet or the horizontal blades while the swing flap is in operation.**
  Fingers may become caught or the unit may break down.
- **The appliance shall be installed in accordance with national wiring regulations**
- **Never inspect or service the unit by yourself.**
  Ask a qualified service person to perform this work.
- **Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.**
- **Do not dispose of electrical appliances as unsorted municipal waste, use separate collection facilities.**
  Contact you local government for information regarding the connection systems available.
- **If electrical appliances are disposed of in landfills or dumps, hazardous substances can leak into the groundeater and get into the food chain, damaging your health and well-being.**
- **Keep far away from high-frequency equipment.**
- **Keep away from the following places:**
  a place where it is full of ail gas; a place where salty air surrounding or near the coast (except for the models with corrosion-resistant function); a place where is caustic gas(the sulfide in hot spring). Location in the following places may cause malfunction or shorten the life span of the machine.
- **In the case of extremely strong wind, please prevent the air from flowing backwards into the outdoor unit.**
- **Snow canopy is necessary in snowfall places on the outdoor unit. Please consult the local dealer for details.**
- **In the frequent thunderstruck place, lightningproof actions should be taken.**
- **To prevent refrigerant leak, contact your dealer.**
  When the system is installed and runs in a small room, it is required to keep the concentration of the refrigerant, if by any chance coming out, below the limit. Otherwise, oxygen in the room may be affected, resulting in a serious accident.
- **The refrigerant in the air conditioner is safe and normally does not leak.**
  If the refrigerant leaks in the room, contact with a fire of a burner, a heater or a cooker may result in a harmful gas.
- **Turn off any combustible heating devices, ventilate the room, and contact the dealer where you purchased the unit.**
  Do not use the air conditioner until a service person confirms that the portion where the refrigerant leaks is repaired.

CAUTION

- **Do not use the air conditioner for other purposes.**
  In order to avoid any quality deterioration, do not use the unit for cooling precision instruments, food, plants, animals or works of art.
- **Before cleaning, be sure to stop the operation, turn the breaker off or pull out the supply cord.**
  Otherwise, an electric shock and injury may result.
- **In order to avoid electric shock or fire, make sure that an earth leak detector is installed.**
- **Be sure the air conditioner is grounded.**
  In order to avoid electric shock, make sure that the unit is grounded and that the earth wire is not connected to gas or water pipe, lightning conductor or telephone earth wire.
- **In order to avoid injury, do not remove the fan guard of the outdoor unit.**
- **Do not operate the air conditioner with a wet hand.**
  An electric shock may happen.
- **Do not touch the heat exchanger fins.**
  These fins are sharp and could result in cutting injuries.
- **After a long use, check the unit stand and fitting for damage.**
  If damaged, the unit may fall and result in injury.
- **To avoid oxygen deficiency, ventilate the room sufficiently if equipment with burner is used together with the air conditioner.**
- **Arrange the drain hose to ensure smooth drainage.**
  Incomplete drainage may cause wetting of the building, furniture etc.
- **Never expose little children, plants or animals directly to the air flow.**
  Adverse influence to little children, animals and plants may result.
- **Notice to avoid places where operation noise may easily be spread away or be enhanced.**
- **Noise can be amplified by anything blocking the air outlet of outdoor unit.**
- **Choose a proper place that the noise and hot or cold wind blown out of the outdoor unit will not bring inconvenience to your neighbors and not affect the growth or animal or plant.**
- **Do not allow a child to mount on the outdoor unit or avoid placing any object on it.**
  Falling or tumbling may result in injury.
- **Do not operate the air conditioner when using a room fumigation - type insecticide.**
  Failure to observe could cause the chemicals to become deposited in the unit, which could endanger the health of those who are hypersensitive to chemicals.
- **Do not place appliances which produce open fire in places exposed to the air flow from the unit or under the indoor unit.**
  It may cause incomplete combustion or deformation of the unit due to the heat.
- **Do not install the air conditioner at any place where flammable gas may leak out.**
  If the gas leaks out and stays around the air conditioner, a fire may break out.
- **The appliance is not intended for use by young children or infirm persons withoutsupervision.**
- **Young children should be supervised to ensure that they do not play with the appliance**.

1.1 Electrical safety requirements

1. Wiring job must be done by the certified electrician.
2. Wiring work must comply to electrical safety specifications.
3. Be sure the air conditioner is grounded well which means the main power switch of air-conditioner grounded with reliable grounded wire.
4. Make sure the min. space between PTC electrical heating elements and flammable surface is>12mm.
5. Apply separate power which meet the rated parameters for the air-conditioner

1.2 Electrical performance requirements

Table 1-1

Model	Fuse(A)	Power supply specification
40kW	70	380-415V 3N~ 50Hz
45kW	90	

CAUTION

Under any situations, it can not break off the ground wire of the main power switch.

Can not use broken power wire, if there is any broken wire then change it immediately.

First use the unit or the unit under the power off state for a long time, power on and pre-heat the unit at least 12 hours before using.

2. OPERATION METHOD

2.1 Operation conditions under each mode

Use the unit in the following temperature for safe and effective operation.

Table 2-1

Cooling operation	Indoor temp.：21˚C to 32˚C
	Outdoor temp.：-5˚C to 48˚C
Heating operation	Indoor temp.：under 28˚C, above 0˚C
	Outdoor temp.：-15˚C to 24˚C

CAUTION

- Protection device may start if running the unit outside the above condition, which will prevent the unit from operation.
- Under “Cool” operation, room relative humidity should be less than 80%. If higher than 80%,the surface of indoor unit may be condensed or the condensate will be blown from air outlet.
  If less than 80%, please move the air leading bar to the largest air oultet position (which is vertical direction), and set the fan speed to be “High”.

2.2 Constraint Cooling

1. Constraint Cooling

Outdoor unit main control board has constraint cooling key: SW1 (see *Fig.2-1*). One press will send constraint cooling signal to all the indoor unit. Constrain all the indoor unit to constraint cooling operation. Outdoor units operate as the fixed frequency shown in Table 2-2. Indoor unit fan operate at a high speed and press the key again to log out constraint cooling mode.

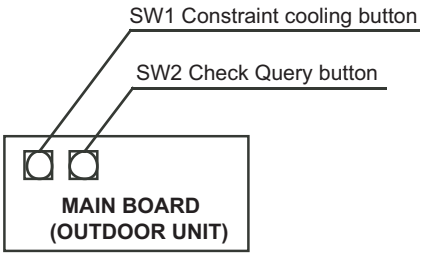


Fig.2-1

Table of force cooling frequency Table 2-2

Mode	Force cooling rate(Hz)
40kW	62
45kW	48

2. Spot check

Check in the outdoor main control panel is the spot check button (refer to Fig.2-1), and press this button, the digital pipe of the main control panel will circulating display the parameters (display one parameter every press this button) as the following table 2-3 sequence.

Table 2-3

NO.		Display content	Remarks
	Normal display	Operation frequency (Hz)	
1	0. - -	Outdoor unit address	0
2	1. - -	Outdoor unit capacity (HP)	8，10，12，14，16，18
3	2. - -	Module outdoor unit quantity	Reserved
4	3. - -	Qty.setting of indoor units	Actual value
5	4. - -	Total capacity of outdoor unit	Reserved
6	5. - -	Total requirement of indoor unit capacity	Actual value
7	6. - -	Total requirement of main unit corrected capacity	Actual value
8	7. - -	Operation mode	0，2，3，4
9	8. - -	This outdoor unit actual operation capacity	Capacity requirements
10	9. - -	Speed of fan A	0，1，……，9，10
11	10. - -	Speed of fan B	0，1，……，9，10
12	11. - -	T2B/T2 average Temp.	Actual value
13	12. - -	T3/T3A pipe temp.	Actual value
14	13. - -	T4 ambient temp	Actual value
15	14. - -	Discharge Temp.of Inverter compressor A	Actual value
16	15. - -	Discharge Temp.of Inverter compressor B	Actual value
17	16. - -	Reserved	
18	17. - -	Current of inverter compressor A	Actual value
19	18. - -	Current of inverter compressor B	Actual value
20	19. - -	Opening angle of EXV A	
21	20. - -	Opening angle of EXV B	
22	21. - -	High pressure	Reserved
23	22. - -	T3B	
24	23. - -	Qty. of Indoor units	Communicate with units
25	24. - -	Qty. of the working Indoor units	Actual value
26	25. - -	Priority mode	0，1，2，3，4
27	26. - -	Night noise control mode	0，1，2，3
28	27. - -	Static pressure mode	
29	28. - -	DC voltage A	Actual value÷10
30	29. - -	DC voltage B	Actual value÷10
31	30. - -	Reserved	Reserved
32	- - -	Reserved	Display code 8.8.8
33	- - -	————	Check end

NOTE：Normal display: When standby, the high position displays the address of the outdoor nuit, and the low position displays the Qty. of indoor units that can communicate with outdoor unit. When it is operating, it will display the rotation frequency of the compressor.

1) Operation mode: 0-OFF; 2-Cooling; 3-Heating; 4-Constraint cooling;
2) Fan speed: 0-stop; 1~10: speed increase sequentially, 10 is the max. fan speed.
3) EXV opening angle: Pulse count=display value*8;
4) Priority mode: 0-heating priority mode; 1-cooling priority mode; 2-VIP priority (nº 63); 3-respond the heating mode only; 4-respond the cooling mode only.
5) Night noise control mode: 0-Night silence mode; 1-silence mode; 2-super silence mode; 3-non silence mode.

2.3 5-minute protection feature

- A protection feature prevents the air conditioner from being activated for approximately 5 minuites when it restarts immediately after operation.

2.4 Cooling, Heating, operation of DC speed regulation central A/C

- The indoor unit can be controlled separately, but indoor units in the same system can not simultaneously operate the cooling and heating.
- If there is conflict between cooling mode and heating mode, the indoor unit under cooling operation will stop and the operating panel will display “Non-priority” or “Standing-by” code. The indoor unit under heating operation will operate normally.
- If the administrator has fixed set the cooling or heating operation, it can not do the operations beyond the setting. When do the operations beyond the setting, the operating panel will display “Non-priority” or “Standing-by” code and the unit stops.

2.5 Features of heating operation

- Warm air will not be blown out immediately at the beginning of the heating operation, 3~5minutes later (depends on the indoor and outdoor temperature), until the indoor heat exchanger become hot, then blows out warm air.
- During operation, the fan motor in the outdoor unit may stop running under high temperature.

2.6 Defrosting in heating operation

- During heating operation, outdoor unit sometimes will frost. To increase efficiency, the unit will start defrosting automatically (about 2~10 minutes), and then water will be drained out from outdoor unit.
- During defrosting, both the fan motors in the outdoor unit and indoor unit will stop running.

2.7 Heating capacity

- The heating operation is a heat-pump process that heat will be absorbed from outdoor air and released in doors. Once the outdoor temperature is decreased, heating capacity decreased correspondingly.
- Other heating equipment is suggested to be used together when outdoor temperature is too low.
- In alpine region where the temperature is extremely low, heating effect wil be better if users can buy an additional E-heat device.

2.8 About protection equipment

- This Protection Equipment will enable the Air Conditioner to stop when the Air Conditioner is to be directed running compulsively. When the Protection Equipment is activated, the Operation Indicator still lights while the Air Conditioner is not running.

  The protection equipment may be activated in following conditions:

- Under cooling operation, the air inlet or air outlet of outdoor unit is blocked. Strong wind is continuously blowing to the air outlet of the outdoor unit.
- Under heating operation, too much dust and rubbish adhere to t he dust filter in the indoor unit. The air outlet of indoor unit is choked.

CAUTION

- When the protection equipment starts, please shut down the manual power switch, and restart operation after problem is solved.

2.9 Mishandling in operation

- If mishandling happens because of lighting or mobile wireless, please shut off the manual power switch, and turn on again, then push the ON/OFF button.

2.10 About power cut

- If power is cut during operation, stop all the operation immediately.
- Power comes again. The lamp on the display panel of indoor unit flashes. And then unit will auto-restart.

3. REINSTALLATION

CAUTION

- A/C installation should comply with the regulations in GB17790-2008 and the requirements in Installation manual.
- When moving the A/C to another place, install the unit according to Installation manual by a specialized person.
- Improper installation could lead to electric shock or fire.

3.1 Users' instruction

1. Users should use the certified power supply corresponding to the A/C nameplate, actual voltage should be within 90％～110％ of the rated voltage.
2. RCCB and air switch should be installed in the power supply circuit, the capacity should be 1.5 times of A/C maximum current value. Be sure to use specialized circuit.
3. Use specified fuse or RCCB under installation manual.
4. Wiring operations should be applied by electricians, and must comply with electrical appliance safety regulations.
5. Make sure the A/C has been grounded wiring properly. The main switch of A/C must reliably ground wiring.
6. If the power supply cable needs to be change, please contact Mundoclima A/C customer service center or special technology service department to operate by a specialized person.

3.2 Installation position

1. Do not install the unit in such places

1) Don't install it in the place where TV, stereo phonographs and radio distance the unit less than 1m, noise made by A/C could affect those appliences.
2) Don't install high frequency equipment near the unit,(e.g. commercial sewing machine or massager),or the A/C may fail.
3) Do not place items which might be damaged by moisture under the indoor unit.
4) Don't install it in a salty place, such as nearby the sea.
5) Do not install the air conditioner at any place where flammable gas may leak out.
6) Don't install it in the place where there's strong wind, e.g. seashore, roof or high floor of a tall building.
7) Don't install it nearby a hot spring where sulfur gas leaks.
8) Don't install it in the ship or a moving crane.

2. For the detailed requirements, please go over Installation Manual

For the detailed information, please refer to Installation manual.

CAUTION

- Please intall the unit securely or abmormal noise and vibration will be heard.
- Install the outdoor unit where operation noise and discharged air couldn't affect neighbours.

4. MAINTENANCE

4.1 Confirmation before operating

1. Make sure if the ground wire is broken or fall off.
2. Make sure if a air strainer has been installed.
3. Start the power supply switch 24 hours before operating.

4.2 NON-A/C errors

1. For common protections, please refer to indoor unit operation manual.
2. For NON-A/C errors, please refer to indoor unit operation manual.

4.3 Error information and code

If the following situation happens, please stop the unit and cut off the power supply and contact with local customer service center.

Table 4-1

Display	Code	Malfunction or Protection	Remarks
1	E0	Outdoor unit COMM.Error	
2	E1	Phase protection	
3	E2	COMM.Error with indoor unit	In or after 20min,communication breaks 2 times for the first time to electrified
4	E3	Reserved	
5	E4	T4 ambient temp. and T3 pipe temp. sensor error	
6	E5	Voltage protecation	
7	E6	DC fan Protection	
8	E7	Discharge sensor error	If discharge temp. is below 15℃ for 5 min after 10 minutes operating, displays E7, when GAS is higher than 25℃, it recovers
9	E8	Outdoor unit address error	
10	xE9	Wrong drive model	X represents in which system, 1 is system A, 2 is system B
11	EL	E-lock error	Main chip can't communicate with the E-lock chip for 1 min for the first time to electrify
12	EA	5-min protection in A zone (heating fan)	
13	Eb	2 continuous E6 error in 10 min	
14	xH0	COMM. Error between IR341 and main chip	X represents in which system, 1 is system A, 2 is system B
15	H1	COMM. Error between 0537 and main chip	
16	H2	Reserved	
17	H3	Reserved	
18	xH4	3 times of P6 protection in 60 munites	X represents in which system, 1 is system A, 2 is system B, Not recoverable unitil re-power on
19	H5	3 times of P2 protection in 60 munites	Not recoverable until re-power on
20	H6	3 times of P4 protection in 100 munites	Not recoverable until re-power on
21	H7	Qty.of indoor units decreases error	Indoor unit lost for over 3 munites; not recoverable,until the unit qty. recover
22	H9	3 times of P9 protection in 60 minutes	Not recoverable until re-power on
23	Hb	Reserved	
24	HC	Reserved	
25	xHD	Reserved	
26	PL	The Temp.protection of inverter module	
27	C7	3 times of PL protection in 90 minutes	Not recoverable until re-power on
28	P1	High pressure protection or discharge temp. protection	
29	P2	Low pressure protection	
30	xP3	Compressor current protection	X represents in which system, 1 is system A, 2 is system B
31	P4	Discharge Temp.Protection	
32	P5	High condenser Temp.Protection	
33	PE	Evaporator T2 high temp. protection	
34	PF	E-lock unlocking	
35	xP6	Inverter module protection	X represents in which system, 1 is system A, 2 is system B
36	P7	Reserved	
37	P8	Reserved	
38	P9	DC fan protection	
39	xL0	DC compressor module error	X represents in which system, 1 is system A, 2 is system B
40	xL1	DC bus low pressure protection	X represents in which system, 1 is system A, 2 is system B

Display	Code	Malfunction or Protection	Remarks
41	xL2	DC bus high pressure protection	X represents in which system, 1 is system A, 2 is system B
42	xL3	Reserved	X represents in which system, 1 is system A, 2 is system B
43	xL4	MCE error/synchronization/closed loop	X represents in which system, 1 is system A, 2 is system B
44	xL5	Zero speed protection	X represents in which system, 1 is system A, 2 is system B
45	xL6	Reserved	X represents in which system, 1 is system A, 2 is system B
46	xL7	Phase error protection	X represents in which system, 1 is system A, 2 is system B
47	xL8	Protection of the speed change between a moment before and after is ＞15Hz	X represents in which system, 1 is system A, 2 is system B
48	xL9	Protection of the speed change between the setting speed and the actual speed ＞15Hz	X represents in which system, 1 is system A, 2 is system B

If the problem still existing, please contact the sales distributor or the service center, tell us your model No. and the detail of the error.

CAUTION

Please do not change the power supply by yourself incase of danger; and do not fix the air-conditioner by yourself.

4.4 Cleaning

WARNING

- Stop the unit and cut off the power before cleaning for safety's sake.
- Pay attention to T1 thermal bulb when cleaning. DO NOT drop T1 thermal bulb cable,or dismantle it before cleaning and reinstall after cleaning.

1. Outdoor units

1)Some metal edges and condenser blades are very sharp, improper operation could lead injury. Therefore, be extremely careful when cleaning these parts.

2)Inspect outdoor unit air outlet and inlet regularly, to check if they are block by dirt or lampblack.

3)Window-shade at right bottom side and back side are heat dissipation air inlet of electric control components, clean it regularly to avoid super hot in the components.

2. For detailed information about cleaning, please refer to Indoor unit operation manual.

4.5 Maintenance

CAUTION

After leaving unused for a long time, inspect the air inlet and air outlet port of indoor and outdoor unit. See if it has been blocked, if it is blocked, do cleaning immediately

Before a long-time idling, please do the following work:

1. Choose "air supply mode" and leave the indoor unit operates for a while for drying.
2. Cut off the power supply and stop the RCCB. Take battery out of the remote control.
3. Outdoor unit internal components should be inspected and cleaned regularly, please contact the service center or technical services department.

4.6 After-sale service

When the air-conditioner can't operate normally, please stop the unit and cut off the power supply. Please contact the service center or technical services department. For the detailed items, please refer to Users' guide in accessory.

5. APPLICABLE MODEL AND MAIN PARAMETERS

Table 5-1

MODEL		40kW	45kW
Rated cooling capacity (W)		40.000	45.000
Rated heating capacity (W)		45.000	50.000
Rated power (W)	Cooling	11.900	13.600
	Heating	11.100	12.700
Rated current (A)	Cooling	23.6	28.8
	Heating	22.2	24.5
Max. input power (W)		20.700	26.200
Max. input current (A)		33	44
Power supply (V/Hz)		380-415V 3N~ 50Hz	380-415V 3N~ 50Hz
Sound presure level (dB(A))		62	62
Dimensions (mm) (W x H x D)		1.360 x 1.650 x 475	1.460 x 1.650 x 475
Weight (kg)		240	275
Refrigerant	Type	R410A	R410A
	Factory charged (kg)	9.0	12.0
	Controlling method	EEV	EEV
Cooling engine oil	Type	FV50S	FV50S
	Adding amount (L)	2.5	3.6

Note:
1. Cooling capacity is tested in the indoor DB/WB temp. of 27℃/19℃, outdoor DB/WB temp. of 35℃/24℃; heating capacity is tested in the indoor DB/WB temp.of 20℃/15℃ outdoor DB/WB temp. of 35℃/24℃. Actual heating/cooling capacity will be different according to the indoor and outdoor ambient temp. and relative humidity.
2. Noise is tested in a semi-anechoic chamber noise test room according to the international standard, parameter in the table is the nominal value in regulated rated work conditions, it will be different according to different working conditions.
3. Due to product improvement, values above could be changed. Subject to the parameters in the nameplate.
4. Outside static pressure is 0Pa when air-conditioner is being tested.

MVD

MUNDOCLIMA®

www.mundoclima.com

ASK FOR MORE INFORMATION
Phone: (+34) 93 446 27 80
eMail: info@mundoclima.com

TECHNICAL ASSISTANCE
Phone: (+34) 93 652 53 57