INSTALLATION MANUAL

DC INVERTER FREE

Original instructions

Thank you very much for purchasing our air conditioner.

Before using your air conditioner, please read this manual carefully and keep it for future reference.

CONTENTS PAGE

PRECAUTIONS.....1
ATTACHED FITTINGS.....2
OUTDOOR UNIT INSTALLATION.....3
INSTALL THE CONNECTING PIPE.....4
ELECTRICAL WIRING.....9
TEST RUNNING.....12
CONFIGURATION.....12
PRECAUTIONS ON REFRIGERANT LEAKAGE.....13
ERROR CODES.....14
TURN OVER TO CUSTOMER.....14

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

New Refrigerant Air Conditioner Installation

THIS AIR CONDITIONER ADOPTS THE NEW HFC REFRIGERANT(R410A)WHICH DOES NOT DESTROY OZONE LAYER.

The characteristics of R410A refrigerant are; Hydrophilic, oxidizing membrane or oil, and its pressure is approx.1.6 times higher than that of refrigerant R22.Accompanied with the new refrigerant, refrigerating oil has also been changed ,Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigerating oil does not enter the refrigerating cycle.
To prevent charging an incorrect refrigerant and refrigerating oil, the sizes of connecting sections of charging port of the main unit and installation tools are charged from those for the conventional refrigerant.

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 directly.

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.
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 doer not leak.
If refeigerant 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.
The appliance shall be installed in accordance with national wiring regulations.
If the supply cord is damaged, it must be replaced by the manufacture 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 dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances in order to avoid a hazard.

The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube.

The power cord type designation is H05RN-For above/H07RN-F.

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.

For appliances intended for use at altitudes exceeding 2000m, the maximum altitude of use shall be stated.

Required tools for installation work

1) Philips screw driver
2) Hole core drill(65mm)
3) Spanner
4) Pipe cutter
5) Knife
6) Reamer
7) Gas leak detector
8) Tape measure
9) Thermometer
10) Mega-tester
11) Electro circuit tester
12) Hexagonal wrench
13) Flare tool
14) Pipe bender
15) Level vial
16) Metal saw
17) Gauge manifold (Charge hose:R410A special requirement)
18) Vacuum pump (Charge hose:R410A special requirement)
19) 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)
20) Copper pipe gauge adjusting projection margin
21) 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 manual		1
	2. Outdoor unit owner's manual		2
	3. Installation Instructions: Indoor Unit Manifold		1
	4.Water outlet connection pipe		1
	5.Matched resistance		2
	6.Waterproof chassis cover		2
	7.Connection pipe(26/28/33.5kW)		1

Refrigerant Piping

Piping kit used for the conventional refrigerant cannot be used.
Use copper pipe with 0.8 mm or more thickness for φ9.5.
Use copper pipe with 1.0 mm or more thickness for φ15.9.
Use copper pipe with 1.0 mm or more thickness for φ19.0.
Flare nut and flare works are also different form those of the conventional refrigerant.take out the flare nut attached to the main unit of the air conditioner, and use it.

Before installation

Be careful to the following items before installation.

Air purge

For air purge, use a vacuum pump.
Do not use refrigerant charged in the outdoor unit for air purge.
(The refrigerant for air purge is not contained in the outdoor unit.)

Electrical cabling

Be sure to fix the power cables and indoor/outdoor connecting cables with clamps so that they do not contact with the cabinet, etc.

Installation Place

A place which provides a specified space around the outdoor unit.
A place were the operation noise and discharged air are not given to your neighbors.
A place that is not exposed to a strong wind.
A place that does not block a passage.
When the outdoor unit is installed in an elevated position, make sure it's four feet securely installed.
There must be sufficient space for carrying in the unit.
A place where the drain water does not make any problem.

CAUTION

- Install the outdoor unit at a place where discharge air is not blocked.
- When an outdoor unit is installed in a place that is always exposed to a strong wind like a coast or on a high storey of a building, secure a normal fan operation by using a duct or a wind shield.

- 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, apply the windproof measures referring to the following examples.
- Install the unit so that its discharge port faces to the wall of the building. Keep a distance 3000mm or more between the unit and the wall surface.
- Do not mount the outdoor unit on a wall.

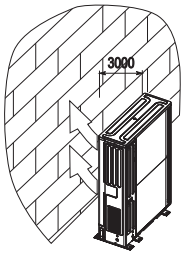


Fig.2-1

• Supposing the wind direction during the operation season of the discharge port is set at right angle to the wind direction.

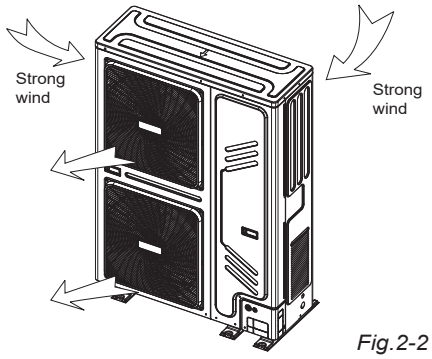


Fig.2-2

- Installation in the following places may result in some troubles. Do not install the unit in such places below.
  - A place full of machine oil.
  - A place full of sulphuric gas.
  - A place where high-frequency radio waves are likely to be generated as from audio quipment, welders, and medical equipment.

3. OUTDOOR UNIT INSTALLATION

3.1 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.

The insulation of the metal parts of the building and the air conditioner should comply with the regulation of National Electric Standard.

CAUTION

Keep indoor unit, outdoor unit, power supply wiring and transmission wiring at least 1 meter away from televisions and radios. This is to prevent image interference and noise in those electrical appliances. (Noise may be generated depending on the conditions under which the electric wave is generated, even if 1 meter is kept.)

3.2 Installation space (Unit:mm)

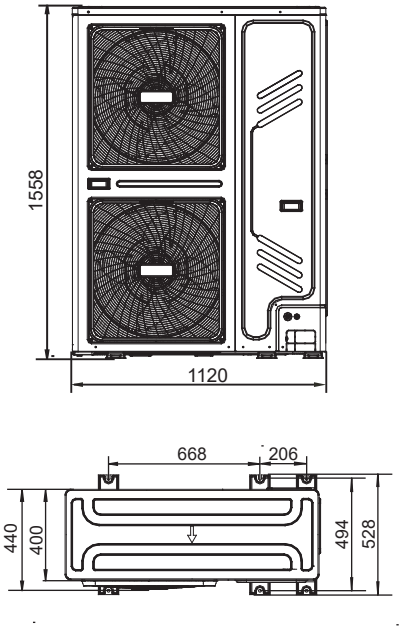


Fig.3-1

- Single unit installation

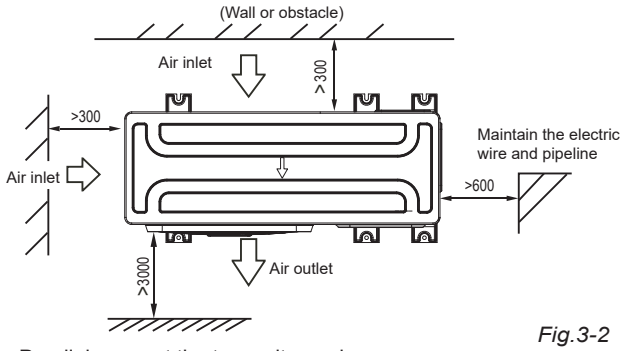


Fig.3-2

- Parallel connect the two units or above

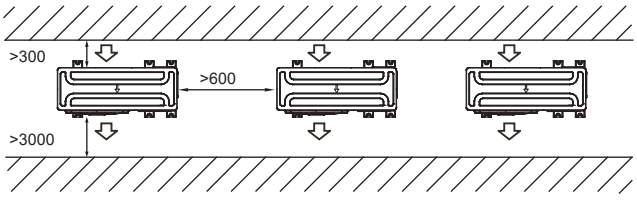


Fig.3-3

- Parallel connect the front with rear sides

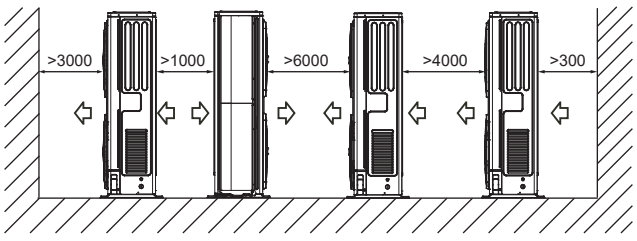


Fig.3-4

3.3 Moving and installation

- Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.
- Never hold the inlet of the outdoor unit to prevent it from deforming.
- Do not touch the fan with hands or other objects.
- Do not lean it more than 45°, and do not lay it sidelong.
- Make concrete foundation according to the sepecifications of the outdoor units.(refer to Fig.3-5)
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind. (refer to Fig.3-5)

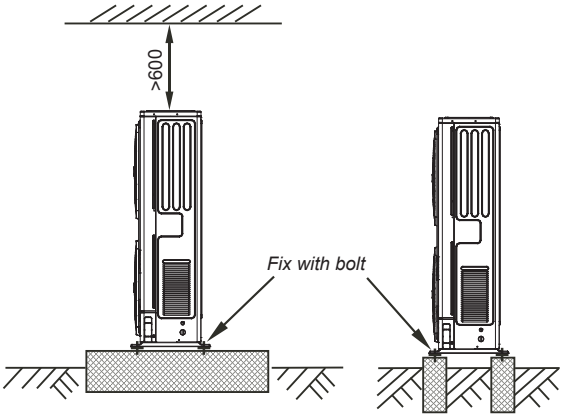


Fig.3-5

NOTE

All the pictures in this manual are for explanation purpose only. They may be slightly different from the air conditioner you purchased(depend on model).The actual shape shall prevail.

3.4 Centralized Chassis Drainage

When the outdoor unit requires centralized drainage, install the chassis and two waterproof covers for the chassis, as shown in Figure 3-6. Install the water outlet union pipe and sealing ring on the chassis, and then connect the drainage pipe to complete centralized drainage installation.

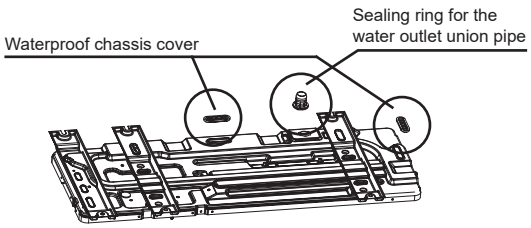


Fig.3-6

CAUTION

While installing the outdoor unit, pay attention to the installation place and the drainage pattern;
if it's installed at the alpine zone, the frozen condensed water will block up the water outlet, please pull out the rubber stopper of the reserve water outlet. If that still fails to satisfy for the water draining, please knock open the other two water outlets, and keep the water can drain in time.
Pay attention to the knock the reserve water outlet from outside to inside, and it will be beyond repair after knocking open, please pay attention to the installation place, lest cause the inconvenience.
Please do the moth proofing for the knocked out hole, to avoid the pest processing into and destroy the components.

4. INSTALL THE CONNECTING PIPE

Check whether the height drop between the indoor unit and outdoor unit, the length of refrigerant pipe, and the number of the bends meet the following requirements:

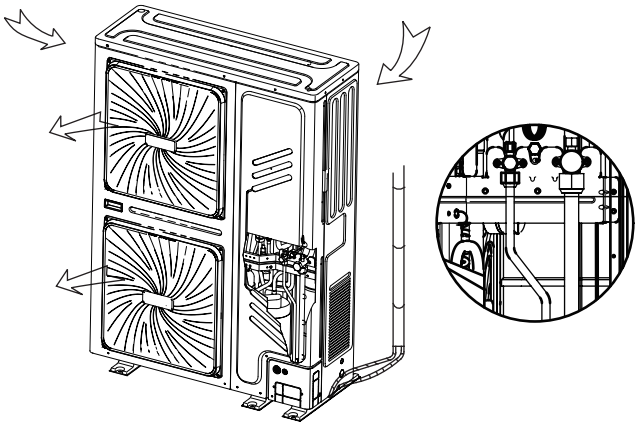


Fig.4-1

4.1 Refrigerant piping

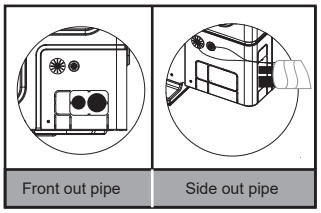
CAUTION

Please pay attention to avoid the components while connect to the connecting pipes.
To prevent the refrigerant piping from oxidizing inside when welding, it is necessary to charge nitrogen, or oxide will chock the circulation system.

The indoor and outdoor connecting pipe interface and power line outlet

Vavious piping and viring patterns can be selected,such as out from the front ,the back the side ,and undersurface, etc.（The follow display the locations of several piping and wiring knock-off interfaces）

Table 4-1



CAUTION

1. Side out pipe: cut the side hole of the pipe-outlet plate selectively. It is suggested to cut a piece of metal plate below to avoid the mouse come and destroy the machine wiring body.
2.Front out pipe: cut the frontal hole of the pipe-outlet plate selectively. It is suggested to cut a piece of metal plate right side to avoid the mouse come and destroy the machine wiring body.
3. Wiring of power cord: the strong and weak electrical wire should be out through the two plastic holes of the pipe-outlet plate, and binded with gas and liquid pipe together.

4.2 Leak Detection

Use soap water or leak detector to check every joint whether leak or not (Refer to Fig.4-2).Note:
A is low pressure side stop valve
B is high pressure side stop valve
C and D is connecting pipes interface of indoor and outdoor units

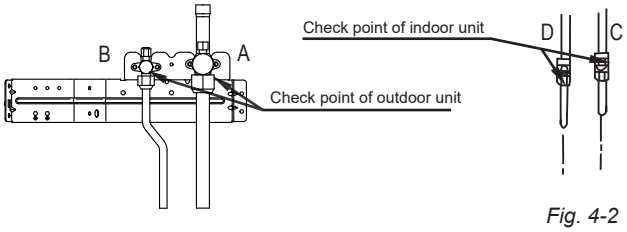


Fig. 4-2

4.3 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.

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

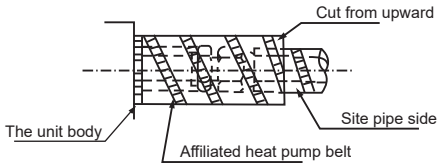


Fig. 4-3

4.4 Connecting method

■ **Select refrigerant pipe**

Table 4-2

pipe definition	pipe connect position	code
main pipe	The pipe between outdoor unit to the first branch of indoor unit.	L1
The main pipes of indoor unit	The pipe after the first branch do not direct connect with the indoor unit.	L2～L5
The branch pipes of indoor unit	The pipe after the branch connect with the indoor unit.	a, b, c, d, e, f
Indoor unit branch pipes components	The pipes connect with the main pipe、the branch pipe and the the main pipe of indoor unit.	A, B, C, D, E

- The first connect methond

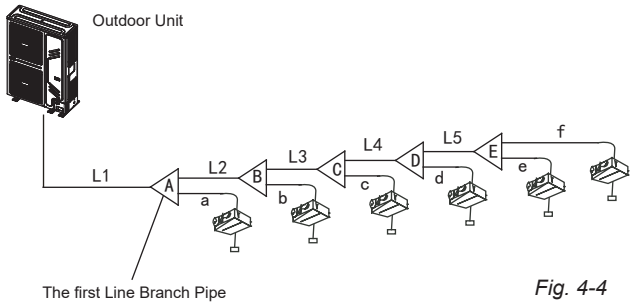


Fig. 4-4

- The second connect methond

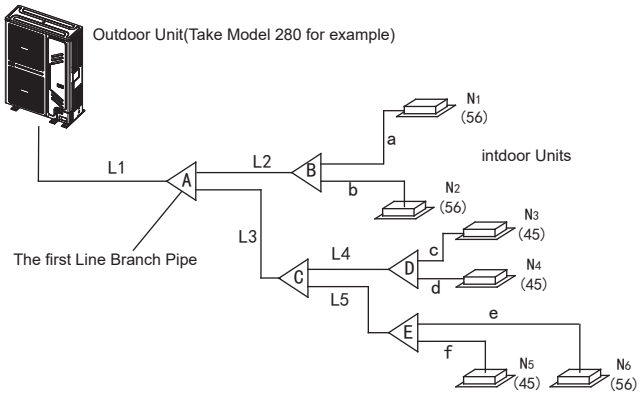


Fig. 4-5

NOTE

- The distance between the first branch to the last indoor unit is more than 15m,choose the second connect methond.
- The pipe between the indoor unit to the closest branch must less than 15m.

4.4 Confirmation for the diameters of indoor unit connecting pipes

■ Size of main pipe and corresponding branch joint and branch header

1) R410A Indoor unit connecting pipes diameters 4-3。
2) Example 1：In the Fig.4-5,The downstream inner units of the L4,and its total capacity is 45×2＝90，refers to the Table 4.4,the air/liquid side of L4 is：Φ15.9/Φ9.5。

R410A Indoor unit connecting pipes diameters Table 4-3

Capacity of the downstream indoor unit	Main pipe size (mm)		Applicable manifold
	Air 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＜470	Φ25. 4	Φ12. 7	FQZHN-03D

4.5 Confirmation for the diameters of outdoor unit connecting pipes

R410A outdoor unit connecting pipes diameters Table 4-4

Total capactiy of The outdoor units	Main pipe size when the total equivalent piping length of liquid + gas side is <90m			Main pipe size when the total equivalent piping length of liquid + gas side is ≥90m		
	Gas side (mm)	Liquid side(mm)	The first Line Branch Pipe	Gas side (mm)	Liquid side(mm)	The first Line Branch Pipe
20-28KW	Φ22.2	Φ9.5	FQZHN-02D	Φ25.4	Φ12.7	FQZHN-03D
33. 5KW	Φ25.4	Φ12.7	FQZHN-03D	Φ25.4	Φ12.7	FQZHN-03D

NOTE

- The straight distance between copper pipe turning and the contiguous branch pipe is at least 0.5m;
- The straight distance between the contiguous branchpipes is at least 0.5m;
- The straight distance which the branch pipes connected to the indoor unit is at least 0.5m;

- Branch header must be connected with indoor units directly, the further branch connection is not allowed.

- Select branch joint

  Select the branch joint according to the total designed capacity of indoor units which it connects to. If this capacity is more than that of the outdoor unit, then select the connection according to the outdoor unit.

- The selection of branch header depends on the quantity of branches it connects to.

■ Connection method

Table 4-5

	Gas side	Liquid side
Outdoor unit	Welding or Flaring	Welding or Flaring
Indoor unit	Flaring	Flaring
Branch pipe	Welding or Flaring	Welding or Flaring

■ Piping sizes at the branch pipe

Table 4-6

(A: the total capacity of indoor units)

Refrigerant	A (TYPE)	Air Side (Φ)	Liquid Side (Φ)
R410A	Wall mounted 22~45	12.7(Flaring nut)	6.4(Flaring nut)
	Wall mounted 56	15.9(Flaring nut)	9.5(Flaring nut)
	Four-sided air outlet 28~45	12.7(Flaring nut)	6.4(Flaring nut)
	Four-sided air outlet 56~80	15.9(Flaring nut)	9.5(Flaring nut)
	One-sided air outlet 18~45	12.7(Flaring nut)	6.4(Flaring nut)
	One-sided air outlet 56	15.9(Flaring nut)	9.5(Flaring nut)
	Low static pressure 18~45	12.7(Flaring nut)	6.4(Flaring nut)
	Low static pressure 56	15.9(Flaring nut)	9.5(Flaring nut)
	Thin duct type 71	15.9(Flaring nut)	9.5(Flaring nut)
	A5 duct type 22~45	12.7(Flaring nut)	6.4(Flaring nut)
	A5 duct type 56~140	15.9(Flaring nut)	9.5(Flaring nut)
	Four-way Cassette Type 15~45	12.7(Flaring nut)	6.4(Flaring nut)
	Console Type 22~45	12.7(Flaring nut)	6.4(Flaring nut)
	Tow-way Cassette Type 22~45	12.7(Flaring nut)	6.4(Flaring nut)
	Tow-way Cassette Type 56~71	15.9(Flaring nut)	9.5(Flaring nut)
	Ceiling And Floor Type 36~45	12.7(Flaring nut)	6.4(Flaring nut)
	Ceiling And Floor Type 56~160	15.9(Flaring nut)	9.5(Flaring nut)
	Expose And Concealed Floor-standing type 22~45	12.7(Flaring nut)	6.4(Flaring nut)
	Expose And Concealed Floor-standing type 56~80	15.9(Flaring nut)	9.5(Flaring nut)

■ Pipe diameter of the connector in the outdoor unit's body

Table 4-7

Piping connection side / Model(kW)	Pipe diameter of outdoor unit's connector(mm)	
	Gas Side	Liquid Side
20-22.4	Φ19.1	Φ12.7
26-28	Φ22.2	Φ12.7
33.5	Φ22.2	Φ12.7

Table 4-8

Outdoor Unit (kW)	Capacity of Outdoor unit (horsepower)	Maximum Quantity of Indoor unit	Sum Capacity of Indoor unit (horsepower)
20	7	11	50%~130%
22.4	8	13	
26	9	15	
28	10	16	
33.5	12	20	

When capacity of indoor unit greater than the sum of 100%, capacity of indoor unit will be attenuated.

When capacity of indoor unit greater than or equal to the sum of 120%, in order to ensure the effectiveness of machine, and then try to open the indoor units at different time.

NOTE

- The indoor unit capacity total can not exceed 130% of the outdoor unit load.
- Overloading reduces the corresponding capacity.

Table 4-9

Capacity ranking	Capacity (horsepower)	Capacity ranking	Capacity (horsepower)
18	0.6	80	2.8
22	0.8	90	3.2
28	1	100	3.5
36	1.3	112	4
45	1.6	120	4.3
56	2	125	4.5
71	2.5	140	5

■ When the outdoor unit connects one indoor unit

Table 4-10

MODEL (kW)	The max height drop(m)		The length of refrigerant pipe(m)	The number of bends
	When outdoor unit is top	When outdoor unit is bottom		
20-33.5	25	20	50	less than 10

4.6 Illustration

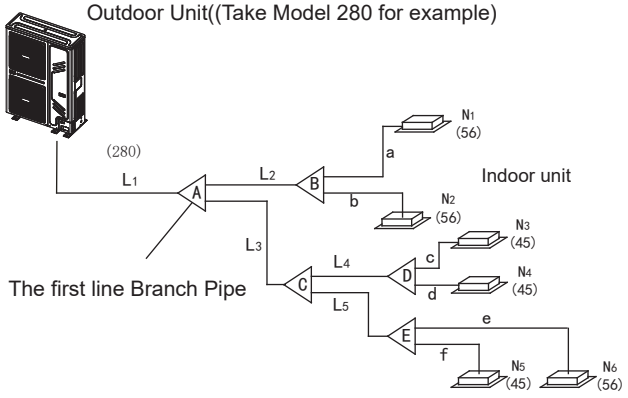


Fig.4-6

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

- Indoor unit branch pipe

  Inner branch pipes are a~f, the size selection please refers to Table4-6. Note: The max. length of the branch pipe should not longer than 15m.

- 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 56×2=112, the size of pipe L2 is Φ15.9/Φ9.5, and the branch pipe B should be FQZHN-01D.
  - The downstream inner units of the main pipe L4 are N3, N4, and its total capacity is 45×2=90, the size of pipe L4 isΦ15.9/Φ9.5, and the branch pipe D should be FQZHN-01D.
  - The downstream inner units of the main pipe L5 are N5, N6, and its total capacity is 45+56=101, the size of pipe L5 isΦ15.9/Φ9.5, and the branch pipe E should be FQZHN-01D.
  - The indoor unit below to the main pipe L3 are N3～N6, and its total capacity is 45×3+56=191, the size of pipe L3 isΦ19.1/Φ9.5, and the branch pipe C should be FQZHN-01D.
  - The indoor unit below to the main pipe A are N1～N6, and its total capacity is 45×5+56=281, and the branch pipe should be FQZHN-02D, and because the total piping length of liquid + air side is ≥90m, check Table.4-4, and the first branch pipe should apply FQZHN-02D, and according to the principle of maximum value, it should apply FQZHN-02D.

- Main pipe (Please refer to Fig.4-6 and Table 4-4)

  In Fig.4-6, the main pipe L1, the outdoor unit capacity is 28kW, and check the Table 4-4 to get the size of gas pipe/liquid pipe is Φ22.2/Φ9.5, and aslo the total equivalent length of liquid side and gas side pipes is >90m,then check the Table 4-4 to get the size of gas pipe/liquid pipe is Φ25.4/Φ12.7, and according to the maximum value principle, it should apply the Φ25.4/Φ12.7.

- Allowable length and altitude difference of refrigerant pipe

table 4-11

			Pimitted value	Piping
Pipe Length	Total Pipe Length(Actual)		≤150m	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	≤110m	
	Pipe Length(from the first line branch pipe to 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 up	≤50m	——
		Outdoor Unit Down	≤40m	——
	Indoor Unit to Indoor Unit Drop Heihgt(H)		≤15m	——

Note: 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 cennect methond

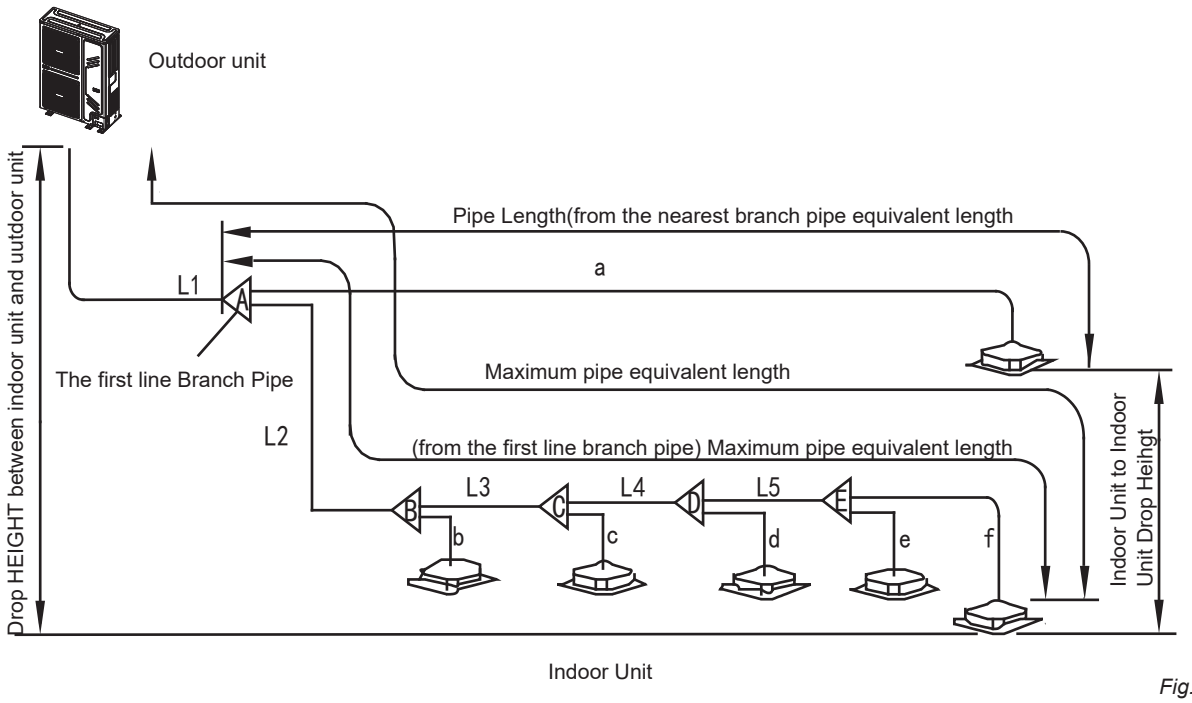


Fig.4-7

- The second cennect methond

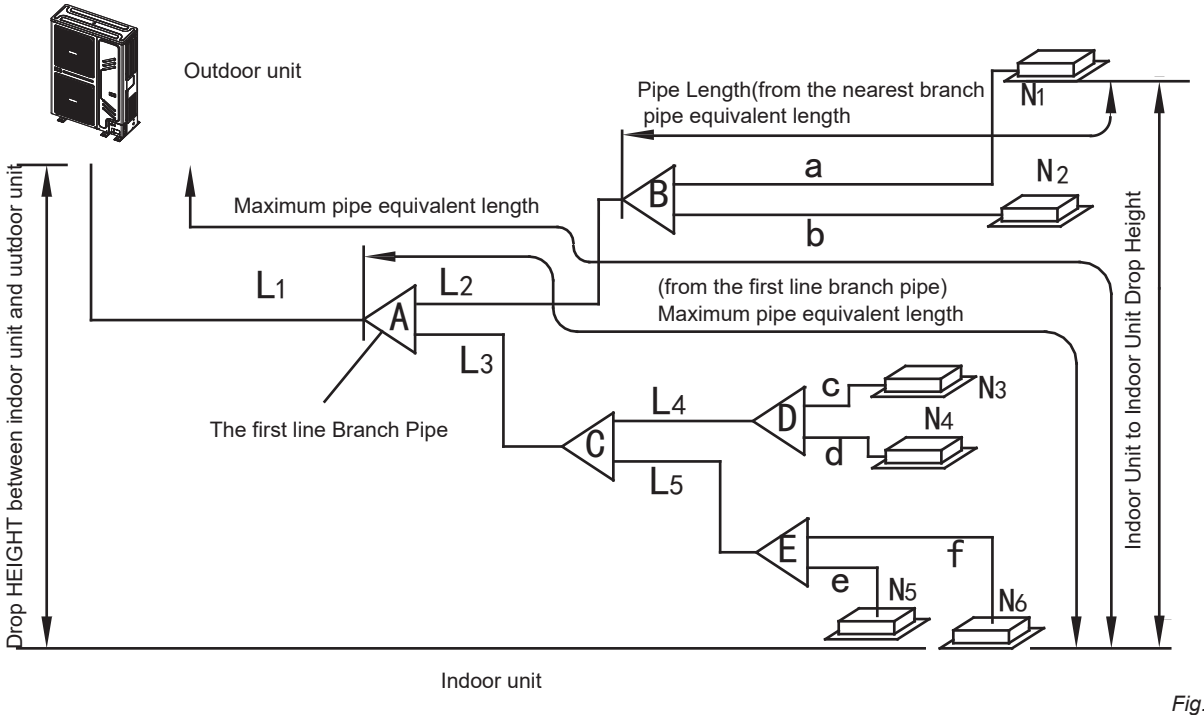


Fig.4-8

4.7 Remove Dirt or Water in the Piping

Make sure there is no any dirt or water before connectiong the piping to the outdoor units.

Wash the piping with high pressure nitrogen, never use refrigerant of outdoor unit.

4.8 Airtight Test

Charge pressured nitrogen after connecting indoor/outdoor unit piping to do airtight test.

CAUTION

1. Pressured nitrogen [4.3MPa (44kg/cm^2) for R410A] should be used in the airtight test.
2. Tighten high pressure/low pressure valves before applying pressured nitrogen.
3. Apply pressure from air vent mouth on the hight pressure/ low pressure valves.
4. The high pressure/low pressure valves are closed when applying pressured nitrogen.
5. The airtight test should never use any oxygen, flammable gas or poisonous gas.

4.9 Air Purge with Vacuum Pump

- Using vacuum pump to do the vacuum,never using refrigerant to expel the air.
- Vacuuming should be done from both liquid side and gas side simultaneously.

4.10 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.

■ When the outdoor unit connects 1 indoor unit:

Table 4-12

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
Φ19.1	0.260kg
Φ22.2	0.360kg

NOTE

Additional refrigerant volume of divergent pipe is 0.1kg per item (Consider the liquid side of divergent pipe only)

5. ELECTRICAL WIRING

CAUTION

- Design a dedicated power supply for the indoor unit and outdoor unit.
- If the power supply uses a branch loop, install an electricity leakage protector and a manual switch.
- The power supply, electric leakage protectors, and manual switches of the indoor units that connect to the same outdoor unit must be universal. Use the same loop for the indoor unit power connect to the same outdoor unit must be universal. Use the same loop for the indoor unit power supplies in the same system. Power on/off at the same time.
- Incorporate the outdoor unit and indoor unit connection wiring system and refrigerant pipe system for the same system.
- To reduce interference, use a three-core shielded twisted pair as the outdoor unit signal cable. Do not use a multi-core cable.
- Complete wiring according to national electrical standards.
- Employ an electrical engineer for wiring.

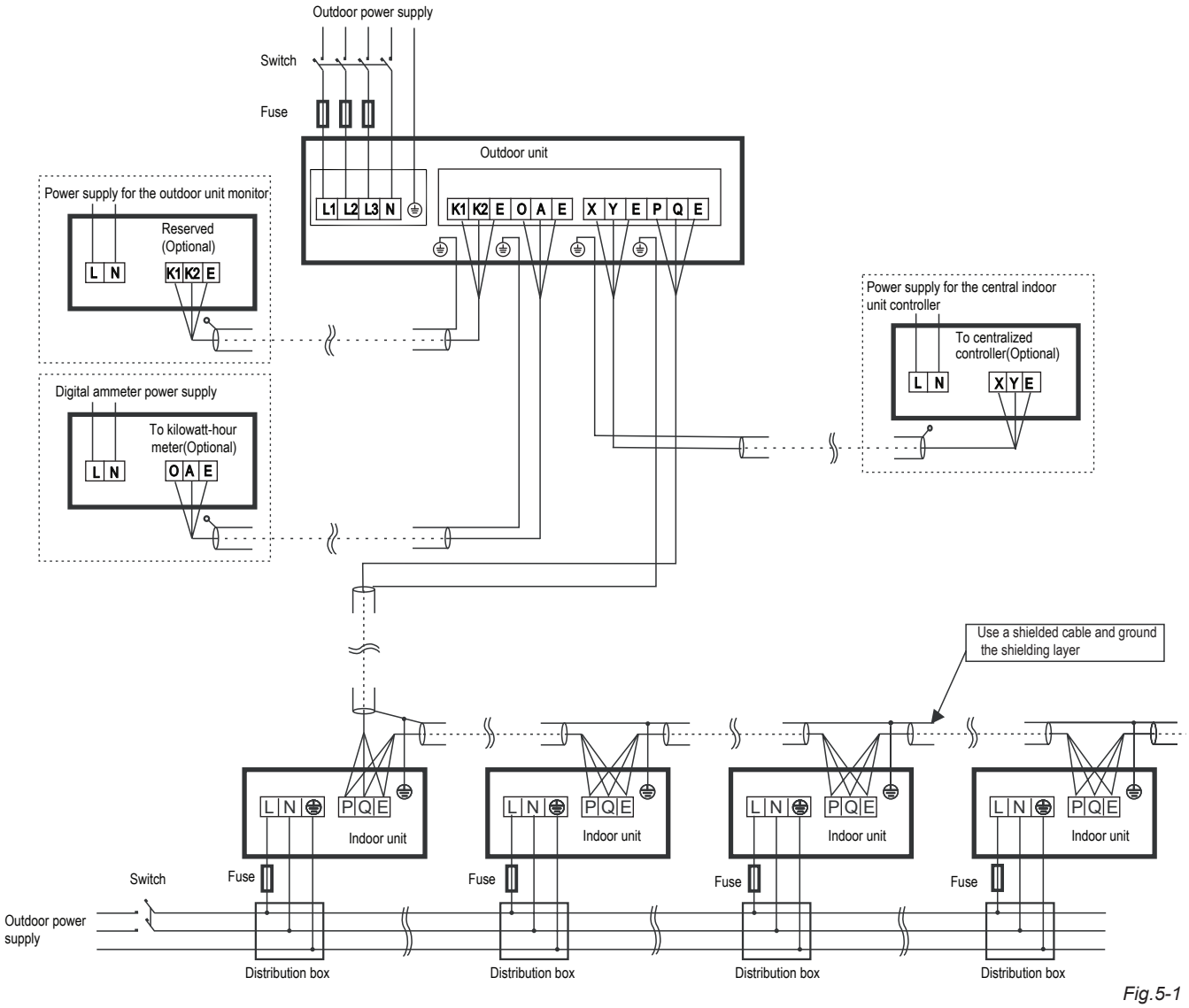
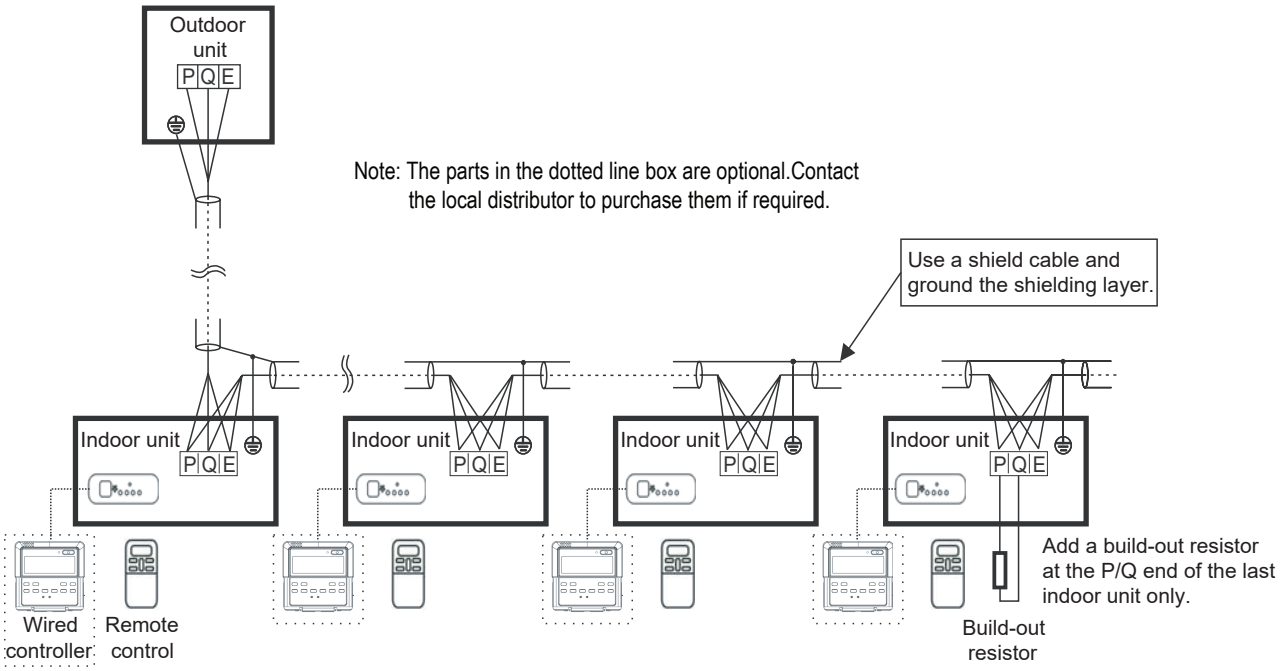


Fig.5-1

280 Three-phase electrical control system connection of the outdoor unit

CAUTION

- An incorrect connection configuration may damage the compressor or other components.
- PQE is a signal cable, which must be connected to a weak current. Do not connect it to strong current.
- All wiring terminals must be securely fixed. The grounding wire must be grounded as required.
- After connecting to the connector base, the power cable must be securely fixed.
- After all wires are connected, check the correctness all components before powering on.



Wiring the indoor unit and outdoor unit control

Fig. 5-2

CAUTION

- When the power cable is parallel to the signal cable, insert electric wires in their respective electric wire pipes and reserve a proper inter-wire distance. (distance between power cables: lower than 10 A –300 mm; lower than 50 A – 500 mm)
- Use a three-core shielded cable as the indoor/outdoor unit signal cable, and ground the shielding layer as required.
- The display box, remote control, and build-out resistor are accessories for the indoor unit. The wired controller is optional. To purchase a wired controller, contact your local distributor.

5.1 Outdoor Unit Wiring

Functions of Outdoor Unit Wiring Terminals

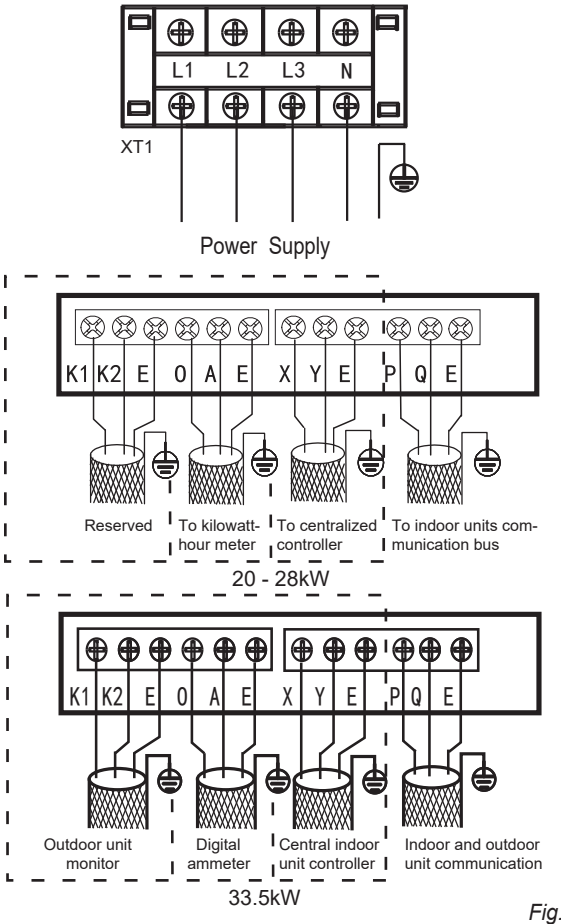


Fig. 5-3

Note:Use a three-core shielded cable, and ground the shielding layer

The Specification of Power — Table 5-1

Power Source		380-415V 3N~ 50 Hz				
Model	Capicity(kW)	20	22	26	28	33.5
Power Supply	Hz	50				
	Voltage	380-415				
	Min.(V)	342				
	Max.(V)	456				
	Min Circuit Amps.	19	19	20.5	21	26.4
	Total Over-current Amps.	24.3	24.3	24.3	24.3	33.2
	Max Fuse Amps.	25	25	25	25	32
Compressor	MSC	/	/	/	/	/
	RLA	12	12.4	15	18.4	19.6
OFM	kW	2×0.17				
	FLA	2.1+2.1				

CAUTION

- Equipment complying with IEC 61000-3-12. A disconnection device having an air gap contact separation in all active conductors should be incorporated in the fixed wiring according to the National Wiring Regulation.
- The reserved function is indicated in broken line table,users can select it when necessary.

Indoor/Outdoor Unit Signal Wire

Connect the wire according to their numbers.

Wrong connection may cause malfunction .

Wiring Connection

Seal the wiring connection with the insulation material , or the condensing dew will be caused.

NOTE

The air-conditioners can connect with Central Control Monitor (CCM). Before operation, please wiring correctly and set system address and network address of indoor units

5.2 Indoor Unit Wiring

- Power Supply

Table 5-2

Capicity(kW)		1.8~16
Indoor Unit Power	Specifications	220-240V~ 50Hz
	Power Wiring Size(mm²)	3x2.5
Circuit Breaker (A)		16
Indoor Unit /Outdoor Unit Signal Wire (mm^2) (Weak electric signal)		Three-core shielded wire 3x0.75

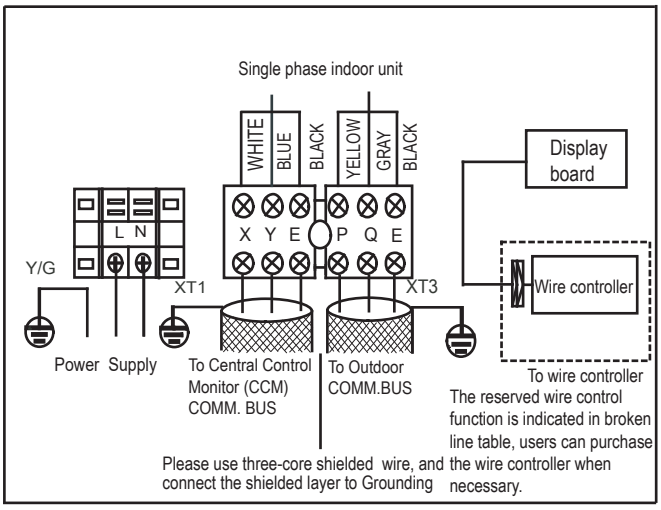


Fig. 5-4

1. Signal wire is three-core, polarized wire. Use three-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.
2. The control between outdoor unit and indoor unit is BUS type. Addresses is set on field during the installation.

CAUTION

Indoor/Outdoor unit signal wire is low voltage circuit. Do not let it touch the high voltage power wire and put it to gather with power cord in the same wire distribution pipe.

NOTE

The wire diameter and continuous length is under the condition that the voltage vibration is within 2%. If the continuous length is exceed showing value, choose the wire diameter follow relevant regulation.

Indoor unit power supply wiring

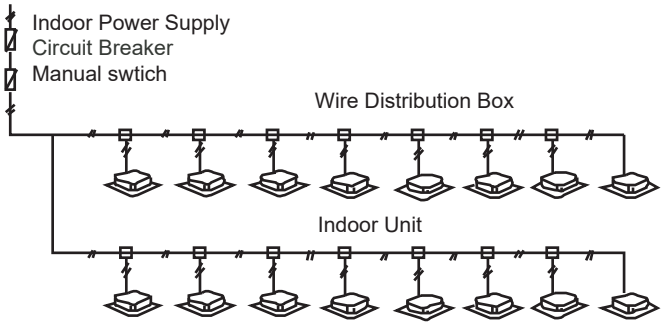


Fig. 5-5

CAUTION

1. Refrigerant piping system, indoor unit-indoor unit connection signal wires and indoor unit-outdoor unit connection singal wire are in the same system.
2. When power cord is parallel with signal wire, please put them into separate wire distribution pipes, and leave a proper distance. (Reference distance: It is 300mm when current capacity of power cord is less than 10A, or 500mm when 50A).

- Please use shield wire as indoor unit/outdoor unit signal wire.

Indoor/Outdoor unit signal wire wiring

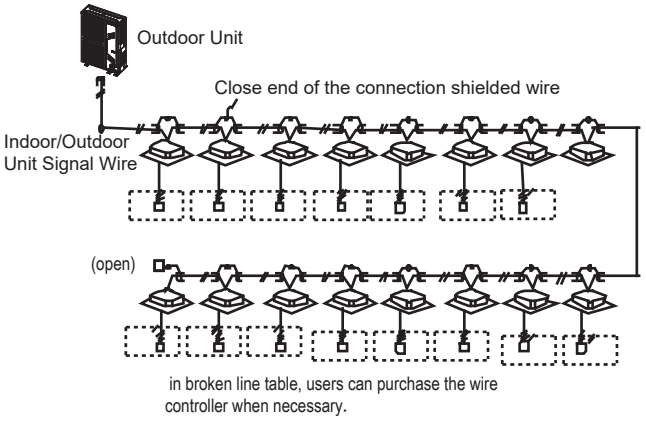


Fig. 5-6

CAUTION

The length of signal wire must not exceed 1200m. A communication error may result when the signal wiring exceeds these limitations.

6. TEST RUNNING

Operate according to "gist for test running" on the electric control box cover.

CAUTION

- Test running can not start until the outdoor unit has been connected to the power for 12hr.
- Test running can not start until all the valves are affirmed open.
- Never make the forced running. (Or the protector sits back, danger will occur.)

7. CONFIGURATION

7.1 Overview

This chapter describes how the system configuration can be implemented once the installation is complete, and other relevant information.
It contains the following information:
▪ Implement field settings
▪ Energy-saving and optimized operation

Information

The installation personnel should read this chapter.

7.2 Dial Switch Settings

Dial code definitions:



means 0



means 1

Table 7-1 For 200 to 280 unit only

Table 7-1

ENC1 & S9-3		0-F	The number of indoor units is in the range 0-15 0-9 on ENC1 indicate 0-9 indoor units; A-F on ENC1 indicate 10-15 indoor units
		0	
		0-F	The number of indoor units is in the range 16-31 0-9 on ENC1 indicate 16-25 indoor units; A-F on ENC1 indicate 26-31 indoor units
		1	
ENC3		0-7	Outdoor unit network address setting, Only 0 to 7 should be selected (default is 0).
S1-1		0	When connected to 2nd generation DC indoor unit(default)
		1	When connected to AC or 1st generation DC indoor unit
S1-2		0	Auto addressing (default)
		1	Clear indoor unit addresses
S1-3		0	Reserved
		1	Factory test only
S2		000	Auto priority (default)
		100	Cooling priority
		010	First ON priority
		110	Heating only
		001	Cooling only
		Other combinations,Heating priority	
S9-1 S9-2		00	Outdoor unit capacity,280
		01	Outdoor unit capacity,260
		10	Reserved
		11	Outdoor unit capacity,224/200(customer)

Table 7-2 For 335 unit only,335 unit adopt different PCB

Table 7-2

ENC1 & S9-3		0-F	The number of indoor units is in the range 0-15 0-9 on ENC1 indicate 0-9 indoor units; A-F on ENC1 indicate 10-15 indoor units
		0	
		0-F	The number of indoor units is in the range 16-31 0-9 on ENC1 indicate 16-25 indoor units; A-F on ENC1 indicate 26-31 indoor units
		1	
ENC3		0-7	Outdoor unit network address setting, Only 0 to 7 should be selected (default is 0).
S1-1		0	When connected to 2nd generation DC indoor unit(default)
		1	When connected to AC or 1st generation DC indoor unit
S1-2		0	Auto addressing (default)
		1	Clear indoor unit addresses
S1-3		0	Reserved
		1	Reserved
S2		000	Auto priority (default)
		100	Cooling priority
		010	First ON priority
		110	Heating only
		001	Cooling only
		Other combinations,Heating priority	
S9-1		0	Reserved
		1	Outdoor unit capacity,12HP
S9-2		0	Reserved
		1	Factory test only

NOTE

Please cut off the power supply when changing the dial switch

8. 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: 0.44[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 + superaddition
2. Calculate the indoor cubage (B[m^3]) (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.

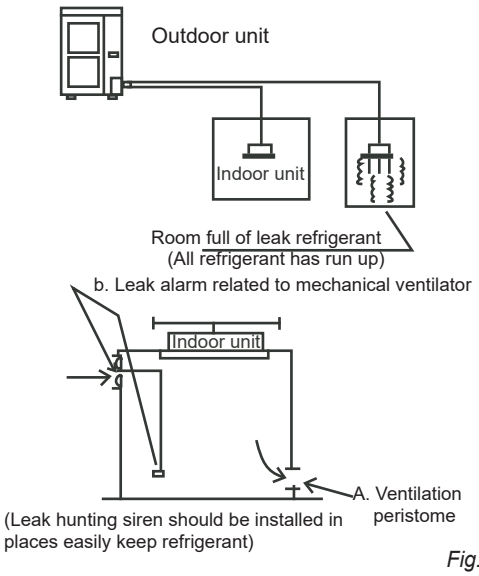


Fig. 8-1

8.1 Important information for the used refrigerant

This product has the fluorinated gas, it is forbidden to release to air.
Refrigerant type: R410A; Volume of GWP: 2088;
GWP=Global Warming Potential

Model	Factory charge	
	Refrigerant/kg	tonnes CO_2 equivalent
20-28kW	6.5	13.57
33.5kW	8	16.71

Attention:
Frequency of Refrigerant Leak Checks

1) For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO_2 equivalent or more,but of less than 50 tonnes of CO_2 equipment,at least every 12 months, or where a leakage detection system is installed, at least every 24 months
2) For equipment that contains fluorinated greenhouse gases in quantities of 50 tonnes of CO_2 equivalent or more,but of less than 500 tonnes of CO_2 equipment,at least every six months, or where a leakage detection system is installed, at least every 12 months.
3) For equipment that contains fluorinated greenhouse gases in quantities of 500 tonnes of CO_2 equivalent or more,at least every three months, or where a leakage detection system is installed, at least every six months.
4) Non-hermetically sealed equipment charged with fluorinated greenhouse gases shall only be sold to the end user where evidence is provide that the installation is to be carried out by an undertaking certified person.
5) Only certificated person is allowed to do installation, operation and maintenance.

9 ERRPOR CODES

Error code	Error description	Remarks
H0	Communication error between main board and compressor drive board	
H4	Inverter-module protection	
H5	3 times of P2 protection in 30 minutes	Irrecoverable
H7	Qty. of indoor units mismatching	Irrecoverable
H8	High pressure sensor error	
HF	M-HOME for the indoor and outdoor units does not match	Irrecoverable
E1	Phase sequence error	
E2	Communication error between indoor and master unit	
E4	T3 or T4 temperature sensor error	
E5	Abnormal power supply voltage	
E6	DC fan motor error	
Eb	E6 protection appears 6 times in 1 hour	Irrecoverable
E7	Discharge temperature sensor error	
EH	TL sensor fault	
P1	High pressure protection	
P2	Low pressure protection	
P3	Compressor current protection	
P4	Discharge Temp. protection	
P5	High Temp. protection of condenser	
P8	Typhoon protection	
PL	Inverter module Temp. protection	
L0	Inverter compressor module error	
L1	DC bus low voltage protection	
L2	DC bus high voltage protection	
L4	MCE error	
L5	Zero speed protection	
L7	Phase sequence protection	
L8	Compressor frequency variation greater than 15Hz within one second protection	
L9	Actual compressor frequency differs from target frequency by more than 15Hz protection	
F1	DC bus voltage error	DC bus voltage error
bH	PED protection board error	
bL	High pressure switch protection on driver board	

The troubleshooting for each error code, please refer to the service manual.

10. 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.

Cooling mode: Table.1

Information requirements for air-to-air conditioners

Model(s):MVi-200WV2GN1(A)
Test matching indoor units form, non-duct : 2×MI-45Q4+2×MI-56Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Type:compressor driven

If applicable:driver of compressor:electric motor

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	20	kW		Seasonal space cooling energy efficiency	$\eta_{s,c}$	281.4	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19℃（dry/wet bulb）					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=+35℃	P_{dc}	20	kW		T_j=+35℃	EER_d	3.79	--
T_j=+30℃	P_{dc}	14.811	kW		T_j=+30℃	EER_d	4.71	--
T_j=+25℃	P_{dc}	9.760	kW		T_j=+25℃	EER_d	9.11	--
T_j=+20℃	P_{dc}	6.378	kW		T_j=+20℃	EER_d	12.76	--
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	—					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.04	kW		Crankcase heater mode	P_{CK}	0	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air air conditioner:air flow rate,outdoor measured	—	9000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					

Contact details

(*)If $C_{dc}$is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split air conditioners,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Heating mode: Table.2

Information requirements for heat pumps

Model(s):MVi-200WV2GN1(A);
Test matching indoor units form, non-duct : 2×MI-45Q4+2×MI-56Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Idication if the heater is equipped with a supplementary heater:no

If applicable:driver of compressor:electric motor

Parameters shall be declared for the average heating season,parameters for the warmer and colder heating seasoms are optional

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{rated,h}$	20	kW		Seasonal space heating energy efficiency	$\eta_{s,h}$	155	%
Declared heating capacity for part load at indoor teperature 20℃ and outdoor temperatures T_j					Declared coefficient of performance or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=-7℃	P_{dh}	10.629	kW		T_j=-7℃	COP_d	3.19	--
T_j=+2℃	P_{dh}	6.471	kW		T_j=+2℃	COP_d	3.39	--
T_j=+7℃	P_{dh}	5.763	kW		T_j=+7℃	COP_d	6.62	--
T_j=+12℃	P_{dh}	3.652	kW		T_j=+12℃	COP_d	7.57	--
T_{biv}=bivalent temperature	P_{dh}	10.629	kW		T_{biv} =bivalent temperature	COP_d	3.19	--
T_{OL}=operation temperature	P_{dh}	12.310	kW		T_{OL} =operation temperature	COP_d	2.44	--
Bivalent temperature	T_{biv}	-7	℃					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	—					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.04	kW		Back-up heating capacity(*)	elbu	0	kW
Thermosat-off mode	P_{TO}	0.04	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air heat pump:air flow rate,outdoor measured	—	9000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					
Contact details								

(*)

(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split heat pumps,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Cooling mode:

Table.3

Information requirements for air-to-air conditioners

Model(s):MVi-224WV2GN1(A);
Test matching indoor units form, non-duct : 4×MI-56Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Type:compressor driven

If applicable:driver of compressor:electric motor

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	22.4	kW		Seasonal space cooling energy efficiency	$\eta_{s,c}$	270.2	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19℃（dry/wet bulb）					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=+35℃	P_{dc}	22.4	kW		T_j=+35℃	EER_d	3.31	--
T_j=+30℃	P_{dc}	16.645	kW		T_j=+30℃	EER_d	4.57	--
T_j=+25℃	P_{dc}	10.990	kW		T_j=+25℃	EER_d	8.61	--
T_j=+20℃	P_{dc}	6.399	kW		T_j=+20℃	EER_d	12.8	--
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	—					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.04	kW		Crankcase heater mode	P_{CK}	0	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air air conditioner:air flow rate,outdoor measured	—	9000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					

Contact details

(*)If $C_{dc}$is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split air conditioners,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Heating mode: Table.4

Information requirements for heat pumps

Model(s):MVi-224WV2GN1(A);
Test matching indoor units form, non-duct : 4×MI-56 Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Idication if the heater is equipped with a supplementary heater:no

If applicable:driver of compressor:electric motor

Parameters shall be declared for the average heating season,parameters for the warmer and colder heating seasoms are optional

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{rated,h}$	22.4	kW		Seasonal space heating energy efficiency	$\eta_{s,h}$	167.4	%
Declared heating capacity for part load at indoor teperature 20℃ and outdoor temperatures T_j					Declared coefficient of performance or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=-7℃	P_{dh}	12.113	kW		T_j=-7℃	COP_d	3.22	--
T_j=+2℃	P_{dh}	7.272	kW		T_j=+2℃	COP_d	3.56	--
T_j=+7℃	P_{dh}	5.825	kW		T_j=+7℃	COP_d	6.76	--
T_j=+12℃	P_{dh}	3.703	kW		T_j=+12℃	COP_d	7.76	--
T_{biv}=bivalent temperature	P_{dh}	12.113	kW		T_{biv} =bivalent temperature	COP_d	3.22	--
T_{OL}=operation temperature	P_{dh}	13.74	kW		T_{OL} =operation temperature	COP_d	2.35	--
Bivalent temperature	T_{biv}	-7	℃					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	—					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.04	kW		Back-up heating capacity(*)	elbu	0	kW
Thermosat-off mode	P_{TO}	0.04	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air heat pump:air flow rate,outdoor measured	—	9000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					
Contact details								

(*)

(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split heat pumps,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Cooling mode: Table.5

Information requirements for air-to-air conditioners

Model(s):MVi-260WV2GN1(A);
Test matching indoor units form, non-duct : 2×MI-45Q4+2×MI-90 Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Type:compressor driven

If applicable:driver of compressor:electric motor

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	26	kW		Seasonal space cooling energy efficiency	$\eta_{s,c}$	259	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19℃（dry/wet bulb）					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=+35℃	P_{dc}	26	kW		T_j=+35℃	EER_d	2.59	--
T_j=+30℃	P_{dc}	18.843	kW		T_j=+30℃	EER_d	4.53	--
T_j=+25℃	P_{dc}	12.745	kW		T_j=+25℃	EER_d	8.35	--
T_j=+20℃	P_{dc}	6.330	kW		T_j=+20℃	EER_d	12.66	--
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	—					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.04	kW		Crankcase heater mode	P_{CK}	0	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air air conditioner:air flow rate,outdoor measured	—	10000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					

Contact details

(*)If C_{dc} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split air conditioners,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Heating mode:

Table.6

Information requirements for heat pumps

Model(s):MVi-260WV2GN1(A);
Test matching indoor units form, non-duct : 2×MI-45Q4+2×MI-90 Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Idication if the heater is equipped with a supplementary heater:no

If applicable:driver of compressor:electric motor

Parameters shall be declared for the average heating season,parameters for the warmer and colder heating seasoms are optional

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{rated,h}$	26	kW		Seasonal space heating energy efficiency	$\eta_{s,h}$	178.2	%
Declared heating capacity for part load at indoor teperature 20℃ and outdoor temperatures T_j					Declared coefficient of performance or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=-7℃	P_{dh}	13.663	kW		T_j=-7℃	COP_d	3.17	--
T_j=+2℃	P_{dh}	8.703	kW		T_j=+2℃	COP_d	3.90	--
T_j=+7℃	P_{dh}	6.027	kW		T_j=+7℃	COP_d	7.17	--
T_j=+12℃	P_{dh}	3.881	kW		T_j=+12℃	COP_d	8.36	--
T_{biv}=bivalent temperature	P_{dh}	13.633	kW		T_{biv} =bivalent temperature	COP_d	3.17	--
T_{OL}=operation temperature	P_{dh}	15.861	kW		T_{OL} =operation temperature	COP_d	2.32	--
Bivalent temperature	T_{biv}	-7	℃					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	—					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.04	kW		Back-up heating capacity(*)	elbu	0	kW
Thermosat-off mode	P_{TO}	0.04	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air heat pump:air flow rate,outdoor measured	—	10000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					
Contact details								

(*)

(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split heat pumps,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Cooling mode: Table.7

Information requirements for air-to-air conditioners

Model(s):MVi-280WV2GN1(A);
Test matching indoor units form, non-duct : 2×MI-56Q4+2×MI-90Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Type:compressor driven

If applicable:driver of compressor:electric motor

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	28	kW		Seasonal space cooling energy efficiency	$\eta_{s,c}$	251	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19℃（dry/wet bulb）					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=+35℃	P_{dc}	28	kW		T_j=+35℃	EER_d	2.33	--
T_j=+30℃	P_{dc}	20.662	kW		T_j=+30℃	EER_d	4.31	--
T_j=+25℃	P_{dc}	13.537	kW		T_j=+25℃	EER_d	8.16	--
T_j=+20℃	P_{dc}	6.328	kW		T_j=+20℃	EER_d	12.66	--
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	—					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.04	kW		Crankcase heater mode	P_{CK}	0.04	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air air conditioner:air flow rate,outdoor measured	—	11000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					

Contact details

(*)If C_{dc} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split air conditioners,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Heating mode: Table.8

Information requirements for heat pumps

Model(s):MVi-280WV2GN1(A);
Test matching indoor units form, non-duct : 2×MI-56Q4+2×MI-90Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Idication if the heater is equipped with a supplementary heater:no

If applicable:driver of compressor:electric motor

Parameters shall be declared for the average heating season,parameters for the warmer and colder heating seasoms are optional

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{rated,h}$	28	kW		Seasonal space heating energy efficiency	$\eta_{s,h}$	179.4	%
Declared heating capacity for part load at indoor teperature 20℃ and outdoor temperatures T_j					Declared coefficient of performance or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=-7℃	P_{dh}	15.715	kW		T_j=-7℃	COP_d	2.93	--
T_j=+2℃	P_{dh}	9.445	kW		T_j=+2℃	COP_d	3.99	--
T_j=+7℃	P_{dh}	6.060	kW		T_j=+7℃	COP_d	7.26	--
T_j=+12℃	P_{dh}	3.906	kW		T_j=+12℃	COP_d	8.48	--
T_{biv}=bivalent temperature	P_{dh}	15.715	kW		T_{biv} =bivalent temperature	COP_d	2.93	--
T_{OL}=operation temperature	P_{dh}	17.534	kW		T_{OL} =operation temperature	COP_d	2.21	--
Bivalent temperature	T_{biv}	-7	℃					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	—					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.04	kW		Back-up heating capacity(*)	elbu	0	kW
Thermosat-off mode	P_{TO}	0.04	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0	kW		Standby mode	P_{SB}	0.04	kW
Other items								
Capacity control	variable				For air-to-air heat pump:air flow rate,outdoor measured	—	11000	m^3/h
Sound power level,outdoor	L_{WA}	78	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					
Contact details								

(*)

(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split heat pumps,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Cooling mode: Table.9

Information requirements for air-to-air conditioners

Model(s):MVi-335WV2GN1(A);
Test matching indoor units form, non-duct : 6×MI-56Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Type:compressor driven

If applicable:driver of compressor:electric motor

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	$P_{rated,c}$	33.5	kW		Seasonal space cooling energy efficiency	$\eta_{s,c}$	253.8	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19℃（dry/wet bulb）					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=+35℃	P_{dc}	33.500	kW		T_j=+35℃	EER_d	2.19	--
T_j=+30℃	P_{dc}	23.814	kW		T_j=+30℃	EER_d	4.21	--
T_j=+25℃	P_{dc}	15.216	kW		T_j=+25℃	EER_d	8.36	--
T_j=+20℃	P_{dc}	7.644	kW		T_j=+20℃	EER_d	15.29	--
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	—					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.03	kW		Crankcase heater mode	P_{CK}	0	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.03	kW
Other items								
Capacity control	variable				For air-to-air air conditioner:air flow rate,outdoor measured	—	11300	m^3/h
Sound power level,outdoor	L_{WA}	81	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					

Contact details

(*)If C_{dc} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split air conditioners,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

Heating mode: Table.10

Information requirements for heat pumps

Model(s):MVi-335WV2GN1(A);
Test matching indoor units form, non-duct : 6×MI-56Q4;

Outdoor side heat exchanger of air conditioner:air

Indoor side heat exchanger of air conditioner:air

Idication if the heater is equipped with a supplementary heater:no

If applicable:driver of compressor:electric motor

Parameters shall be declared for the average heating season,parameters for the warmer and colder heating seasoms are optional

Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{rated,h}$	33.5	kW		Seasonal space heating energy efficiency	$\eta_{s,h}$	155.4	%
Declared heating capacity for part load at indoor teperature 20℃ and outdoor temperatures T_j					Declared coefficient of performance or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
T_j=-7℃	P_{dh}	17.114	kW		T_j=-7℃	COP_d	2.3	--
T_j=+2℃	P_{dh}	10.512	kW		T_j=+2℃	COP_d	3.54	--
T_j=+7℃	P_{dh}	6.894	kW		T_j=+7℃	COP_d	7.00	--
T_j=+12℃	P_{dh}	3.214	kW		T_j=+12℃	COP_d	5.48	--
T_{biv}=bivalent temperature	P_{dh}	17.114	kW		T_{biv} =bivalent temperature	COP_d	230	--
T_{OL}=operation temperature	P_{dh}	19.50	kW		T_{OL} =operation temperature	COP_d	2.25	--
Bivalent temperature	T_{biv}	-7	℃					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	—					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.03	kW		Back-up heating capacity(*)	elbu	0.03	kW
Thermosat-off mode	P_{TO}	0.03	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0	kW		Standby mode	P_{SB}	0.03	kW
Other items								
Capacity control	variable				For air-to-air heat pump:air flow rate,outdoor measured	—	11300	m^3/h
Sound power level,outdoor	L_{WA}	81	dB					
GWP of the refrigerant		2088	kg $CO_{2\ eq}$(100years)					
Contact details								

(*)

(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Where information relates to multi-split heat pumps,the test result and performance data may be obtained on the basis of performance of the outdoor unit ,with a combination of indoor unit(s) recommended by the manufacturer or importer

16100101A13433 V1.0

印刷技术要求

此页不做印刷，仅做变更说明：

材质	双胶纸80g
规格	210*297(双面)
颜色	黑白
其他	/