

MINI MVD V6M OUTDOOR UNIT

Installation and owner's manual
and information requirements

MVD-V280W/DGN1

MVD-V335W/DGN1



Installation and owner's manual

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EU 2016/2281

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IMPORTANT

Thank you for selecting super quality Air Conditioners. To ensure satisfactory operation for many years to come, this manual should be read carefully before the installation and before using the air conditioner. After reading, store it in a safe place. Please refer to the manual for questions on use or in the event that any irregularities occur. This Air Conditioner should be used for household use.

This unit must be installed by a professional according to RD 795/2010, RD 1027/2007 and RD 238/2013.

WARNING

The power supply must be SINGLE-PHASE (one phase (L) and one neutral (N)) with its grounded power (GND)) or THREE-PHASE (three phase (L1, L2, L3) and one neutral (N) with its grounded power (GND)) and its manual switch. Any breach of these specifications involves a breach of the warranty conditions provided by the manufacturer.

NOTE

In line with the company's policy of continual product improvement, the aesthetic and dimensional characteristics, technical data and accessories of this appliance may be changed without notice.

ATTENTION

Read this manual carefully before installing or operating your new air conditioning unit. Make sure to save this manual for future reference.

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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

Refrigerant Air Conditioner Installation

THIS AIR CONDITIONER ADOPTS THE 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 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.





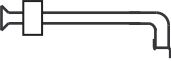
Required tools for installation work

- 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.

INSTALLATION FITTINGS	NAME	SHAPE	QUANTITY
	1. Outdoor unit installation and owner's manual		1
	2. Water outlet connection pipe		1
	3. Matched resistance		2
	4. Waterproof chassis cover		2
	5. Connection pipe		1

Refrigerant Piping

Piping kit used for the conventional refrigerant cannot be used.

Use copper pipe with 0.8 mm or more thickness for $\phi 9.5$.

Use copper pipe with 1.0 mm or more thickness for $\phi 15.9$.

Use copper pipe with 1.0 mm or more thickness for $\phi 19.0$.

Flare nut and flare works are also different from 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 where 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.

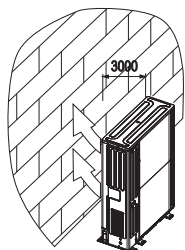


Fig. 2-1

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

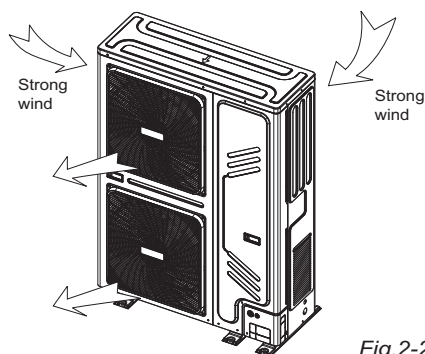


Fig. 2-2

- 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 equipment, 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 hot spring)
- 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)

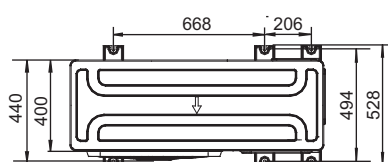
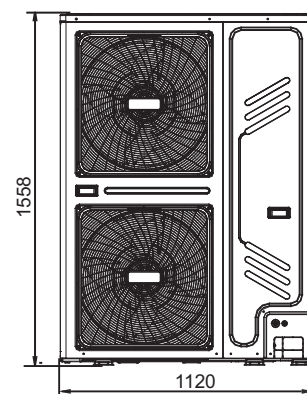


Fig. 3-1

- Single unit installation

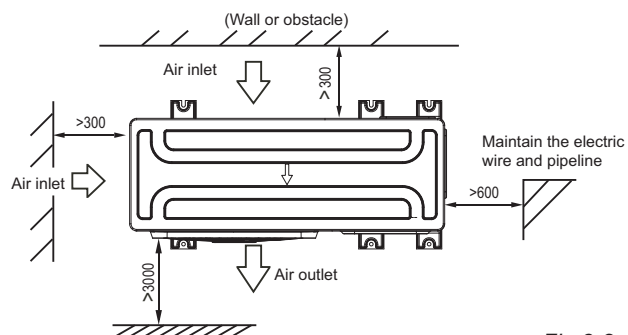


Fig. 3-2

- Parallel connect the two units or above

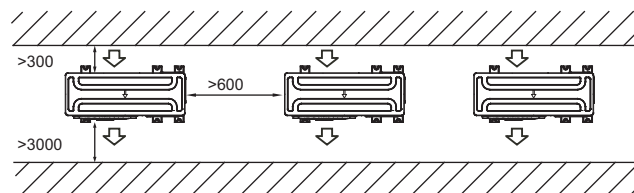


Fig. 3-3

- Parallel connect the front with rear sides

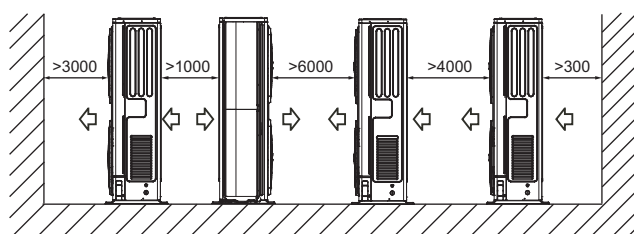


Fig. 3-4

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)

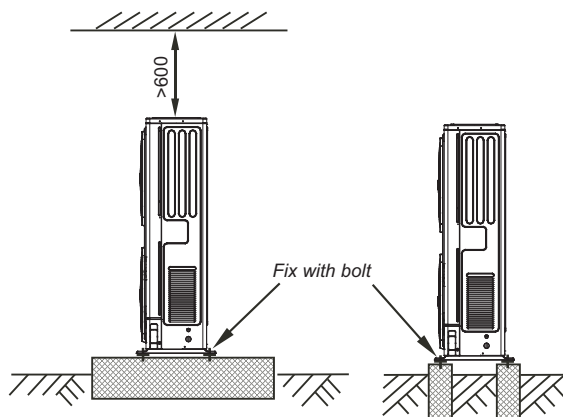


Fig.3-5



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.

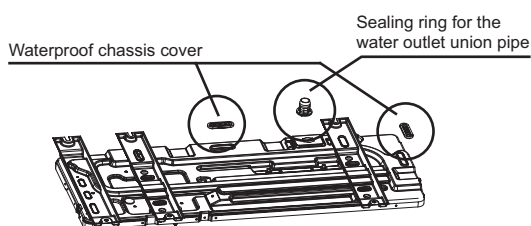


Fig.3-6



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:

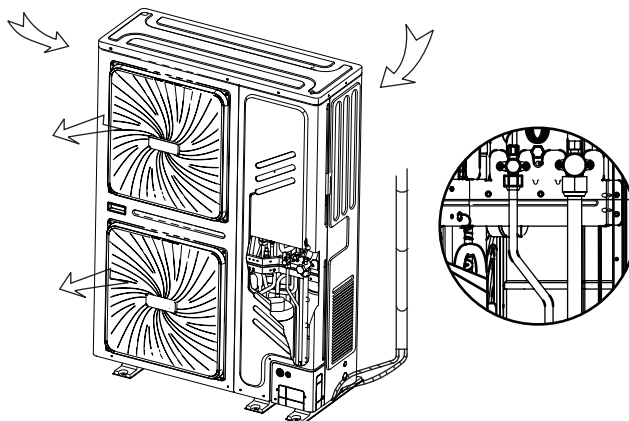


Fig.4-1

4.1 Refrigerant piping



CAUTION

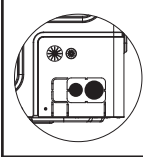
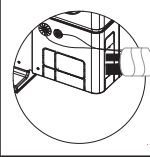
Please pay attention to avoid the components while connect to the connecting pipes.

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

	
Front out pipe	Side out pipe



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

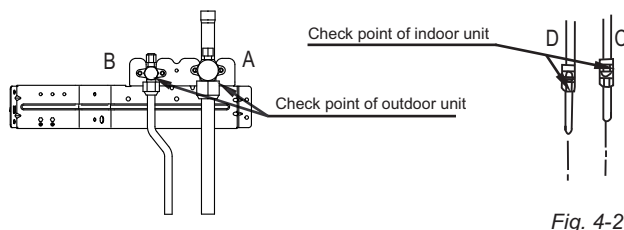


Fig. 4-2

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 $\leq \Phi 12.7\text{mm}$, the thickness of the insulating layer at least more than 15mm;
- When the external diameter of copper pipe $\geq \Phi 15.9\text{mm}$, 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.

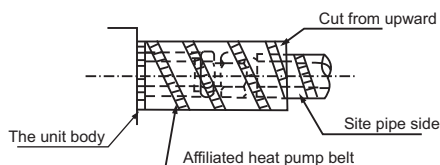


Fig. 4-3

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 main pipe of indoor unit.	A, B, C, D, E

● The first connect method

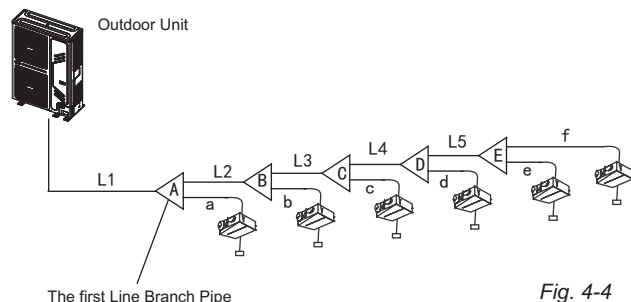


Fig. 4-4

● The second connect method

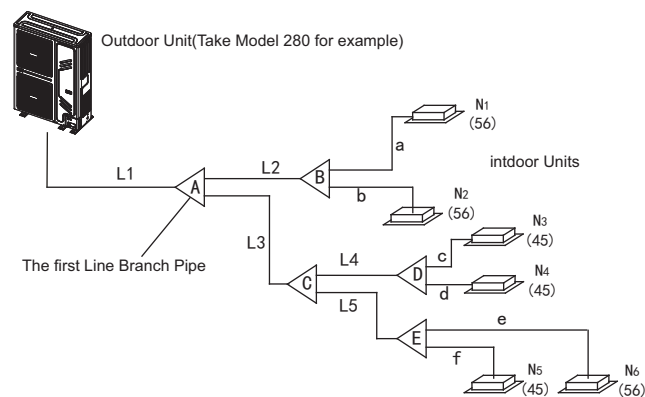


Fig. 4-5



NOTE

- The distance between the first branch to the last indoor unit is more than 15m, choose the second connect method.
- The pipe between the indoor unit to the closest branch must be 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 L2, and its total capacity is $45 \times 2 = 90$, refers to the Table 4.4, the air/liquid side of L2 is: $\Phi 15.9/\Phi 9.5$.

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	
$A < 166$	$\Phi 15.9$	$\Phi 9.5$	FQZHN-01D
$166 \leq A < 230$	$\Phi 19.1$	$\Phi 9.5$	FQZHN-01D
$230 \leq A < 330$	$\Phi 22.2$	$\Phi 9.5$	FQZHN-02D
$330 \leq A < 470$	$\Phi 25.4$	$\Phi 12.7$	FQZHN-03D

4.5 Confirmation for the diameters of outdoor unit connecting pipes

R410A outdoor unit connecting pipes diameters

Table 4-4

Total capacity of The outdoor units	Main pipe size when the total equivalent piping length of liquid + gas side is $< 90\text{m}$			Main pipe size when the total equivalent piping length of liquid + gas side is $\geq 90\text{m}$		
	Gas side (mm)	Liquid side (mm)	The first Line Branch Pipe	Gas side (mm)	Liquid side (mm)	The first Line Branch Pipe
28KW	$\Phi 22.2$	$\Phi 9.5$	FQZHN-02D	$\Phi 25.4$	$\Phi 12.7$	FQZHN-03D
33.5KW	$\Phi 25.4$	$\Phi 12.7$	FQZHN-03D	$\Phi 25.4$	$\Phi 12.7$	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 branch pipes 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

Model(kW)	Piping connection side	
	Gas Side	Liquid Side
28	Φ22.2	Φ12.7
33.5		

Table 4-8

Outdoor Unit (kW)	Capacity of Outdoor unit (horsepower)	Maximum Quantity of Indoor unit	Sum Capacity of Indoor unit (horsepower)
28	10	16	50%~130%
33.5	12	20	50%~130%

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

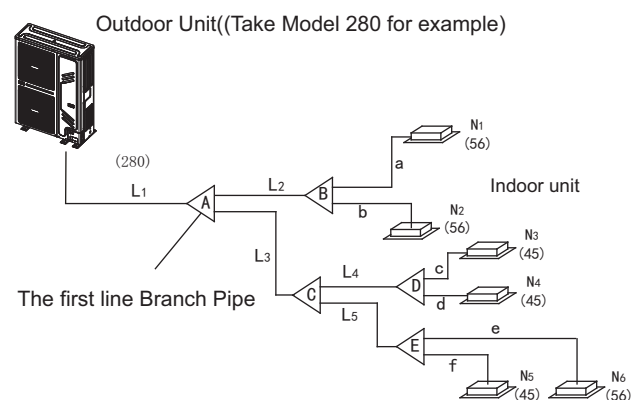
Capacity ranking	Capacity (horsepower)	Capacity ranking	Capacity (horsepower)
18	0.6	80	2.8
22	0.8	90	3.2
28	1	100	3.5
36	1.3	112	4
45	1.6	120	4.3
56	2	125	4.5
71	2.5	140	5

■ 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		
28	25	20	50	less than 10
33.5	25	20	50	

4.6 Illustration



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 Table 4-6. 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 $56 \times 2 = 112$, the size of pipe L2 is $\Phi 15.9/\Phi 9.5$, 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 $45 \times 2 = 90$, the size of pipe L4 is $\Phi 15.9/\Phi 9.5$, 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 is $\Phi 15.9/\Phi 9.5$, 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 $45 \times 3 + 56 = 191$, the size of pipe L3 is $\Phi 19.1/\Phi 9.5$, 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 $45 \times 5 + 56 = 281$, and the branch pipe should be FQZHN-02D, and because the total piping length of liquid + air side is $\geq 90\text{m}$, 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 Fig.4-6 to get the size of gas pipe/liquid pipe is $\Phi 22.2/\Phi 9.5$, and also the total equivalent length of liquid side and gas side pipes is $>90\text{m}$, then check the Table 4-4 to get the size of gas pipe/liquid pipe is $\Phi 25.4/\Phi 12.7$, and according to the maximum value principle, it should apply the $\Phi 25.4/\Phi 12.7$.

● Allowable length and altitude difference of refrigerant pipe

table 4-11

			Pimited value	Piping
Pipe Length	Total Pipe Length(Actual)		$\leq 150\text{m}$	$L1+L2+L3+L4+L5+a+b+c+d+e+f$
	Maximum Piping(L)	Actual Length	$\leq 100\text{m}$	$L1+L2+L3+L4+L5+f$ (The first connect methond)
		Equivalent Length	$\leq 110\text{m}$	or $L1+L3+L5+f$ (The second connect methond)
	Pipe Length(from the first line branch pipe to furthest indoor unit)(m)		$\leq 40\text{m}$	$L2+L3+L4+L5+f$ (The first connect methond) or $L3+L5+f$ (The second connect methond)
	Pipe Length(from the nearest branch pipe equivalent length(m)		$\leq 15\text{m}$	a, b, c, d, e, f
Drop Height	Indoor Unit-Outdoor Unit Drop Height(H)	Outdoor Unit up	$\leq 50\text{m}$	_____
		Outdoor Unit Down	$\leq 40\text{m}$	_____
	Indoor Unit to Indoor Unit Drop Height(H)		$\leq 15\text{m}$	_____

Note: When the total equivalent piping length of liquid + gas side is $\geq 90\text{m}$, 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 connect methond

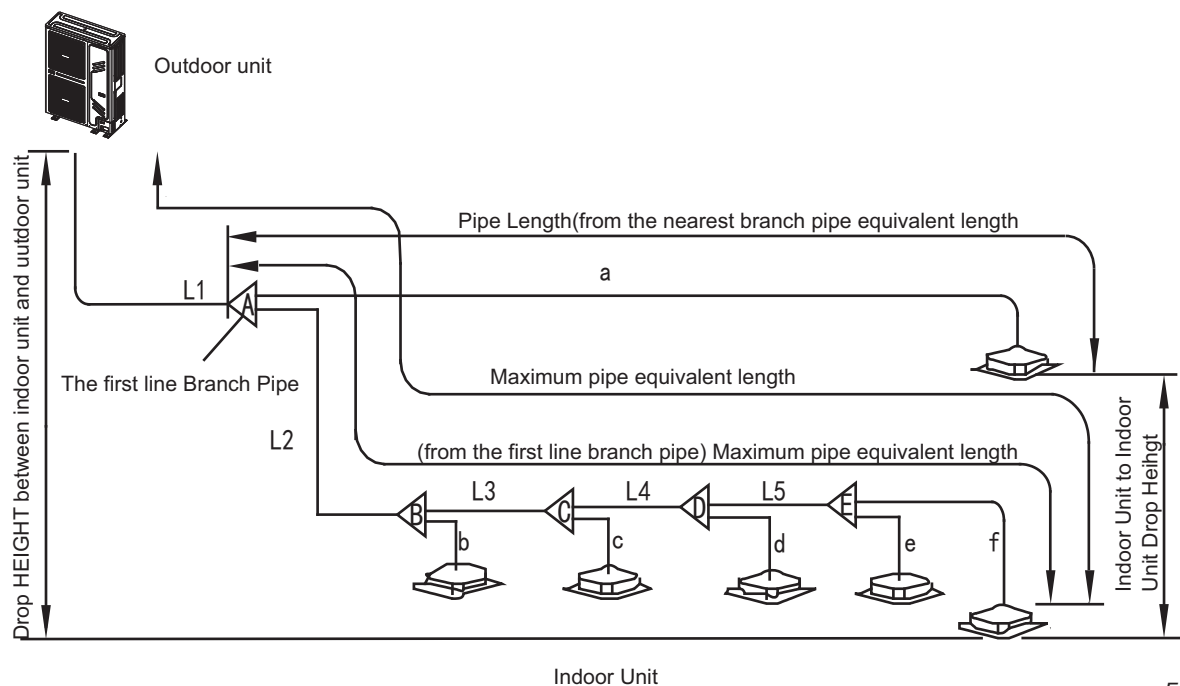


Fig.4-7

- The second connect method

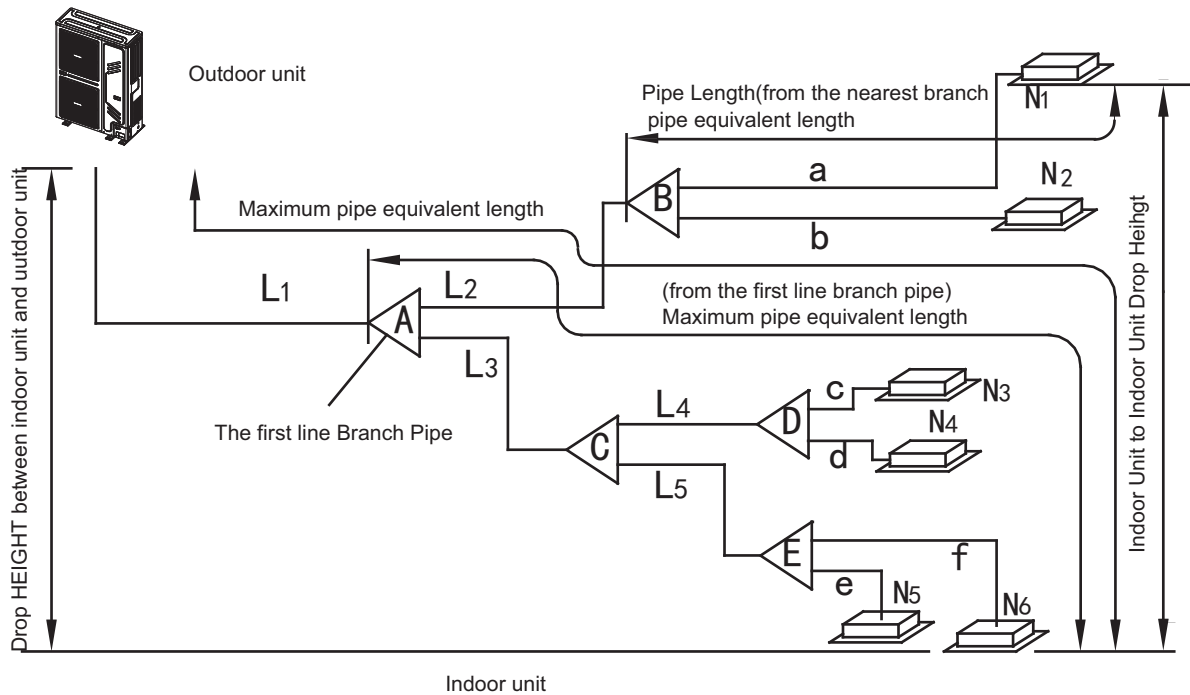


Fig.4-8

4.7 Remove Dirt or Water in the Piping

Make sure there is no any dirt or water before connecting 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/cm²) 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 high 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 Per meter 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.

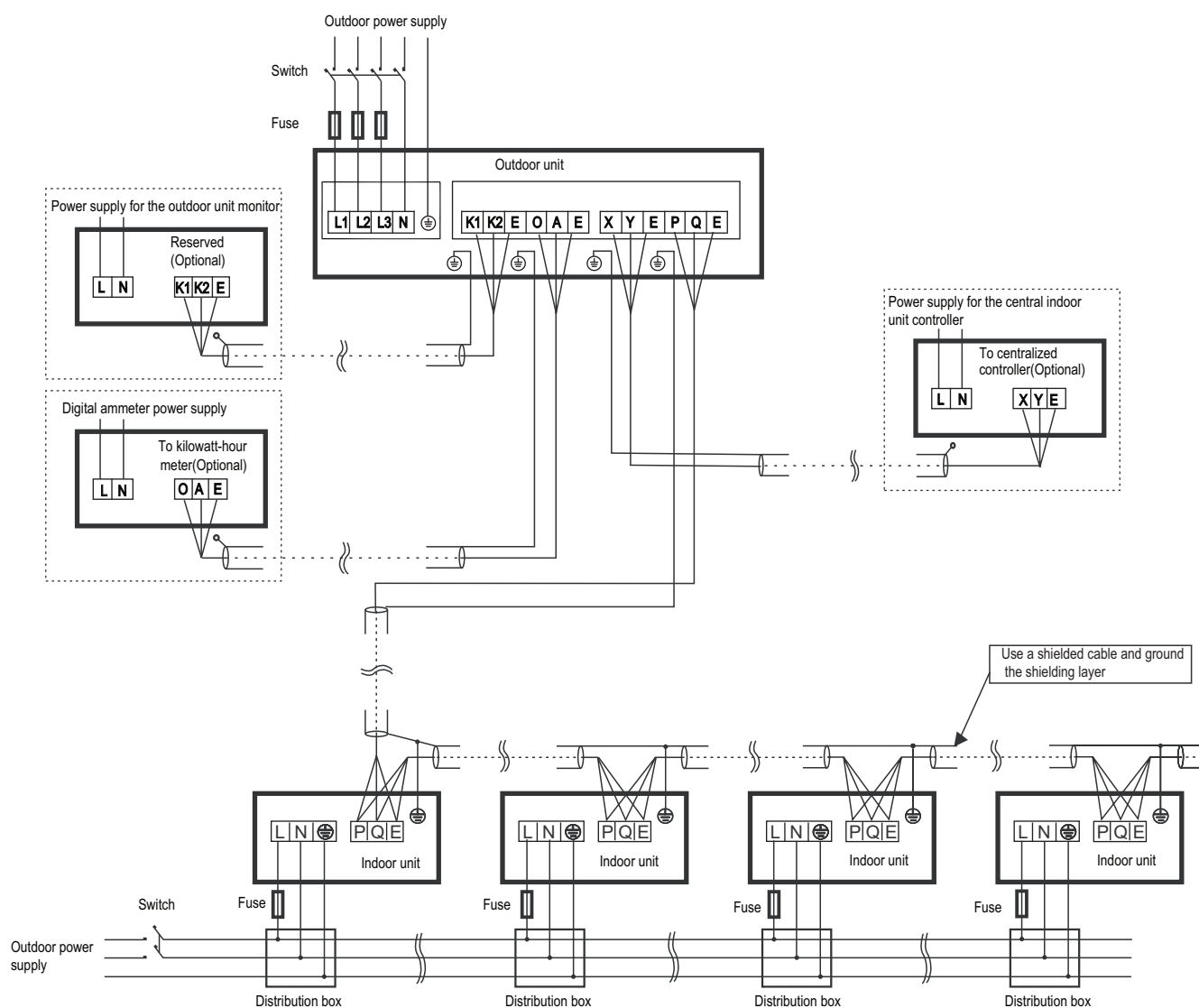


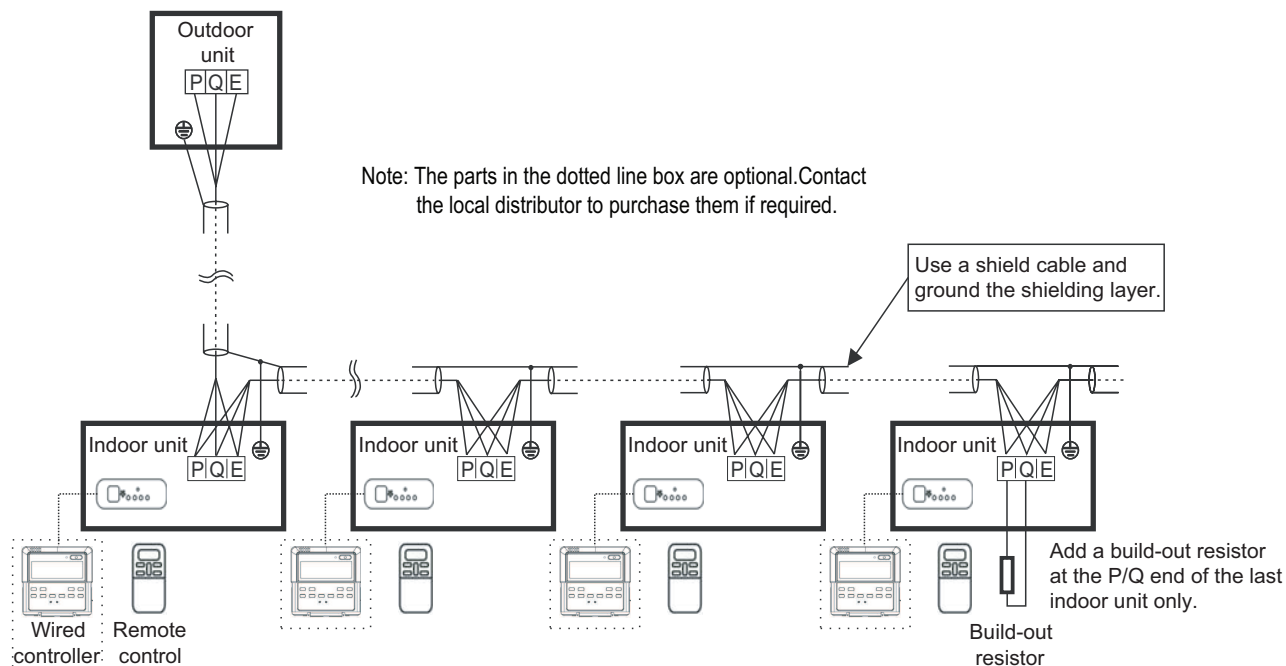
Fig. 5-1

280/335 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

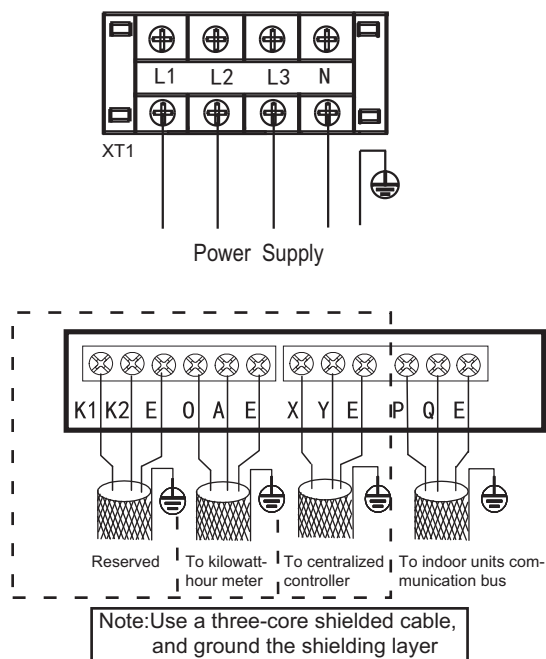


Fig. 5-3

The Specification of Power

Table 5-1

Power Source		380-415V 3N~ 50/60Hz	
Model	Capacity(kW)	28	33.5
Power Supply	Hz	50	50
	Voltage	380-415	380-415
	Min.(V)	342	342
	Max.(V)	456	456
	Min Circuit Amps.	25.85	26.4
	Total Over-current Amps.	33.2	33.2
	Max Fuse Amps.	32	32
Compressor	MSC	/	/
	RLA	19.0	19.6
OFM	kW	2×0.17	2×0.17
	FLA	2.1+2.1	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

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

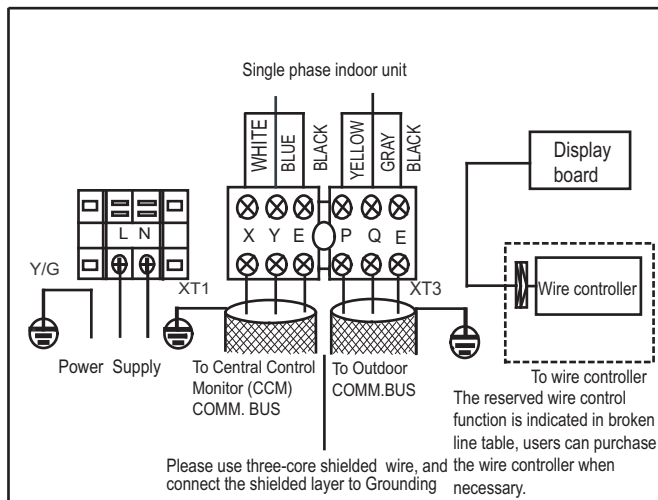


Fig. 5-4

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

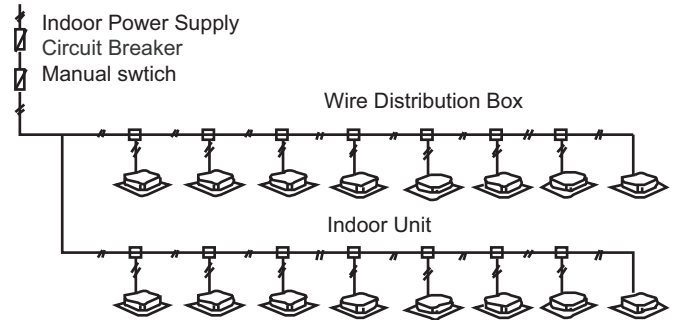


Fig. 5-5



CAUTION

1. Refrigerant piping system, indoor unit-indoor unit connection signal wires and indoor unit-outdoor unit connection signal 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

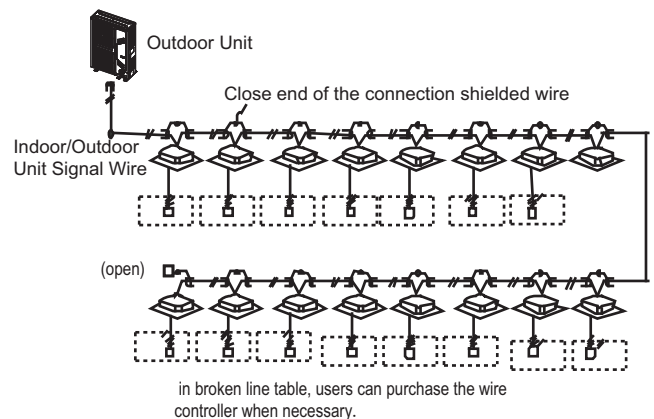


Fig. 5-6



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

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	Outdoor unit capacity, 10HP
		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 innocuous and nonflammable refrigerant. The locating room of the A/C should big enough that any refrigerant leakage is unable to reach critical thickness. So certain essential action can be taken on time.

- Critical thickness-----the Max. thickness of Freon without any harm to person.
- Refrigerant critical thickness: 0.44[kg/m³] 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[m³]) (as the minimum cubage.
3. Calculate the refrigerant thickness

$$\frac{A[\text{kg}]}{B[\text{m}^3]} \leq \text{critical thickness}$$

Counter measure against over high thickness

1. Install mechanical ventilator 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.

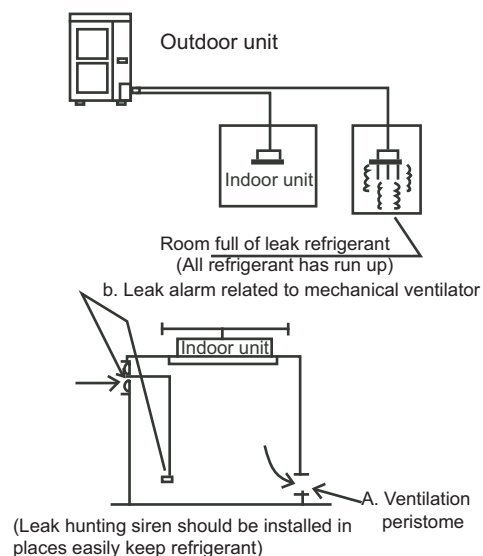


Fig. 8-1

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
28kW	8	16.71
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 CO₂ equivalent or more, but of less than 50 tonnes of CO₂ 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 CO₂ equivalent or more, but of less than 500 tonnes of CO₂ 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 CO₂ 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 provided 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 ERROR 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	

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 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
IMPORTANT SAFETY INFORMATION.....	16
OPERATION RANGE.....	17
OPERATION AND PERFORMANCE.....	17
MALFUNCTION CODE OF OUTDOOR UNIT	19
FOLLOWING SYMPTOMS ARE NOT AIR CONDITIONER TROUBLES.....	20
TROUBLESHOOTING.....	20
MAINTENANCE AND PEPAIR.....	22

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 let the indoor unit or the remote controller get wet. It may cause an electric shock or a fire.

Never press the button of the remote controller with a hard, pointed object.

The remote controller may be damaged.

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.

It is not good for your health to expose your body to the air flow for a long time.

where oil gas, salty air (near the coast), caustic gas (the sulfide in hot spring) exist, otherwise it may damage the unit and shorten the life span of the machine. If the situations above can't be avoided, choose an anticorrosive model.

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, lacquer or 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.

Never put any objects into the air inlet or outlet.

Objects touching the fan at high speed can be dangerous.

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 your 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 ground and get into the food chain, damaging your health and well-being.

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.

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified person in order to avoid a hazard.



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.

Do not place items which might be damaged by moisture under the indoor unit.

Condensation may form if the humidity is above 80%, the drain outlet is blocked or the filter is polluted.

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 touch the internal parts of the controller.
Do not remove the front panel. Some parts inside are dangerous to touch, and a machine trouble may happen.

Never expose little children, plants or animals directly to the air flow.

Adverse influence to little children, animals and plants may result.

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.

This appliance can be used by children age from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved, children should not play with This appliance. Cleaning and user maintenance should not be made by children without supervision.

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.

The outdoor unit window-shades should be periodic cleaning in case of being jammed.

This window-shapes is heat dissipation outlet of components, if being jammed will cause the components shorten their service life spans because of overheated for a long time.

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

5. Poor environmental conditions, the appliance should be maintained a month and a half or so; If the environment condition is good, may be extended appropriately maintenance cycle.

2. OPERATION RANGE

Use the system in the following temperature and pressure for safe and effective operation. The Max operation temperature for the air conditioner. (Cooling/Heating)

Table 2-1

Temperature Mode	Outdoor temperature	Room temperature
Cooling operation	-5℃~54℃	17℃~32℃
Heating operating	-20℃~24℃	0℃~28℃

Mode PS	High	Low
Parameter	4.4MP	2.6MP



NOTE

1. If air conditioner is used outside the above conditions, it may cause the unit to function abnormally.
2. The phenomenon is normal that the surface of air conditioning may condense water when the relative larger humidity in room, please close the door and window.
3. Optimum performance will be achieved within these operating temperature range.
4. The A-weighted sound pressure level is below 70 dB.
5. The temperature should be below 55℃ during transporting.

3 OPERATION AND PERFORMANCE

3.1 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. But the Check Indicator Lights.

The protection equipment may be activated in following conditions:

■ 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.

■ Heating Operation

- Too much dust and rubbish adhere to the dust filter in the indoor unit
- The air outlet of indoor unit is choked

**NOTE**

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

3.2 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.
- 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.

3.3 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 some extreme cold upland that buy another indoor unit equipped electrical heater will obtain better performance.(Refer to indoor unit owner's manual for details)

**NOTE**

1. The motor in Indoor Unit will continue running for 20~30 seconds for to remove residual heat when the Indoor Unit receiving OFF command during heating operation.
2. If the air conditioner malfunction occurs because of disturb, please reconnect the air conditioner to power, then turn on it again.

3.4 Five-minute protection feature

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

3.5 Cooling and heating operation

- The indoor unit of the intelligent inverter centralized air conditioner can be controlled solely, but the indoor unit in the same system can not run cooling and heating at the same time.
- When the Cooling and Heating operation confront with each other, the Indoor Unit which are running on Cooling Mode would stop and there will be Standby or No Priority displayed in the Control Panel. Those Indoor Units which are running on Heating Mode will run continuously.
- If the Air Conditioner Administrator has set running mode, then the air conditioner can not run on modes other than the presetted. Standby or No Priority will be displayed in the Control Panel.

3.6 Features of heating operation

- Warm air will not be blown out immediately at the beginning of the heating operation, 3~5 minutes ago (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.
- During Fan Operation, if other Indoor Units are running on Heating Mode, the fan may stop in order to prevent sending heat wind.

3.7 Defrost in the 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.

4 MALFUNCTION CODE OF OUTDOOR UNIT

Table 4-1

No.	Failure or Protection Type	Recovery Mode	Fault Code
1	Communication error between main board and compressor drive board	Recoverable	H0
2	DC bus voltage error	Recoverable	F1
3	Inverter-module protection	Recoverable	H4
4	3 times of P2 protection in 30 minutes	Irrecoverable	H5
5	Qty. of indoor units mismatching	Irrecoverable	H7
6	High pressure sensor fault	Recoverable	H8
7	M-HOME for the indoor and outdoor units does not match	Irrecoverable	HF
8	Phase sequence error	Recoverable	E1
9	Communication error between indoor and master unit	Recoverable	E2
10	T3 & T4 temperature sensor error	Recoverable	E4
11	Abnormal power supply voltage	Recoverable	E5
12	DC fan motor error	Recoverable	E6
13	Discharge temperature sensor error	Recoverable	E7
14	TL sensor error	Recoverable	EH
15	E6 protection appears 6 times in 1 hour	Irrecoverable	Eb
16	Inverter module Temp. protection	Recoverable	PL
17	High pressure protection	Recoverable	P1
18	Low pressure protection	Recoverable	P2
19	Compressor current protection	Recoverable	P3
20	Discharge Temp. protection	Recoverable	P4
21	High Temp. protection of condenser	Recoverable	P5
22	Typhoon protection	Recoverable	P8
23	Inverter compressor module error	Recoverable	L0
24	DC bus low voltage protection	Recoverable	L1
25	DC bus high voltage protection	Recoverable	L2
26	MCE error	Recoverable	L4
27	Zero speed protection	Recoverable	L5
28	Phase sequence protection	Recoverable	L7
29	Compressor frequency variation greater than 15Hz within one second protection	Recoverable	L8
30	Actual compressor frequency differs from target frequency by more than 15Hz protection	Recoverable	L9

Display Function Instruction

1. When stand by, LED displaying the amount of indoor units online which communicate with outdoor units.
2. When operation, LED displaying frequency value of compressor.
3. When defrost, LED displaying "dF".
4. The power cord type designation is H07RN-F.

5. FOLLOWING SYMPTOMS ARE NOT AIR CONDITIONER TROUBLES

Symptom 1: The system does not operate

- The air conditioner does not start immediately after the ON/OFF button on the remote controller is pressed.
If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 5 minutes after it is turned ON.
- If the operation lamp and the "PRE-DEF indicator(cooling and heating type) or fan only indicator(cooling only type)" light, it means you choose the heating model. When just starting, if the compressor has not started, the indoor unit appears "anti cold wind" protection because of its overflow outlet temperature.

Symptom 2: Change into the fan mode during cooling mode

- In order to prevent the indoor evaporator frosting, the system will change into fan mode automatically, restore to the cooling mode after soon.
- When the room temperature drops to the set temperature, the compressor goes off and the indoor unit changes to fan mode; when the temperature rises up, the compressor starts again. It is same in the heating mode.

Symptom 3: White mist comes out of a unit

Symptom 3.1: Indoor unit

- When humidity is high during cooling operation. If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the interior of the indoor unit. Ask your dealer for details on cleaning the unit. This operation requires a qualified service person.

Symptom 3.2: Indoor unit, outdoor unit

- When the system is changed over to heating operation after defrost operation. Moisture generated by defrost becomes steam and is exhausted.

Sptom 4: Noise of air conditionerscooling

Symptom 4.1: Indoor unit

- A continuous low "shah" sound is heard when the system is in cooling operation or at a stop.
When the drain pump (optional accessories) is in operation, this noise is heard.
- A "pishi-pishi" squeaking sound is heard when the system stops after heating operation.
Expansion and contraction of plastic parts caused by temperature change make this noise.

Symptom 4.2: Indoor unit, outdoor unit

- A continuous low hissing sound is heard when the system is in operation.
This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- A hissing sound which is heard at the start or immediately after stopping operation or defrost operation.
This is the noise of refrigerant caused by flow stop or flow change.

Symptom 4.3: Outdoor unit

- When the tone of operating noise changes.
This noise is caused by the change of frequency.

Symptom 5: Dust comes out of the unit

- When the unit is used for the first time in a long time.
This is because dust has gotten into the unit.

Symptom 6: The units can give off odours

- The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

Symptom 7: The outdoor unit fan does not spin.

- During operation. The speed of the fan is controlled in order to optimize product operation.

6. TROUBLESHOOTING

6.1. Troubles and causes of air conditioner

If one of the following malfunctions occur, stop operation, shut off the power, and contact with your dealer.

- The operation lamp is flashing rapidly (twice every second)
This lamp is still flashing rapidly after turn off the power and turn on again.
- Remote controller receives malfunction or the button does not work well.
- A safety device such as a fuse, a breaker frequently actuates.
- Obstacles and water enter the unit.
- Water leaks from indoor unit.
- Other malfunctions.

If the system does not properly operate except the above mentioned cases or the above mentioned malfunctions is evident, investigate the system according to the following procedures. (see in Table 6-1)

Table 6-1

Symptoms	Causes	Solution
Unit does not start	<ul style="list-style-type: none"> Power failure. Power switch is off. Fuse of power switch may have burned. Batteries of remote controller exhausted or other problem of controller. 	<ul style="list-style-type: none"> Wait for the comeback of power. Switch on the power. ReplLocation: Replace the batterises or check the controller.
Air flowing normally but completely can't cooling	<ul style="list-style-type: none"> Temperature is not set correctly. Be in 3 minutes protection of compressor. 	<ul style="list-style-type: none"> Set the temperature properly. Wait.
Units start or stop frequently	<ul style="list-style-type: none"> Refrigerant is too little or too much. Air or no concreting gas in the refrigerating circuit. Compressor is malfunction. Voltage is too high or too low. System circuit is blocked. 	<ul style="list-style-type: none"> Check leakage, and rightly recharge refrigerant. Vacuum and recharge refrigerant. Maintenance or change compressor. Install manostat. Find reasons and solution.
Low cooling effect	<ul style="list-style-type: none"> Outdoor unit and indoor unit heat exchanger is dirty. The air filter is dirty. Inlet/outlet of indoor/outdoor units is blocked. Doors and windows are open Sunlight directly shine. Too much heat resource. Outdoor temp. is too high. Leakage of refrigerant or lack of refrigerant. 	<ul style="list-style-type: none"> Clean the heat exchanger. Clean the air filter. Eliminate all dirties and make air smooth. Close doors and windows. Make curtains in order to shelter from sunshine. Reduce heat source. AC cooling capacity reduces (normal). Check leakage and rightly recharge refrigerant.
Low heating effect	<ul style="list-style-type: none"> Outdoor temperature is lower than 7°C Doors and windows not completely closed. Leakage of refrigerant or lack of refrigerant. 	<ul style="list-style-type: none"> Use heating device. Close doors and windows. Check leakage and rightly recharge refrigerant.

6.2 Troubles and causes of remote controller

Before asking for serving or repairing , check the following points.

(see in Table 6-2)

Table 6-2

Symptoms	Causes	Solution
The fan speed can not be changed.	<ul style="list-style-type: none"> Check whether the MODE indicated on the display is "AUTO" 	When the automatic mode is selected, the air conditioner will automatically change the fan speed.
	<ul style="list-style-type: none"> Check whether the MODE indicated on the display is "DRY" 	When dry operation is selected, the air conditioner automatically change the fan speed. The fan speed can be selected during "COOL" , "FAN ONLY", and "HEAT"
The remote controller signal is not transmitted even when the ON/OFF button is pushed.	<ul style="list-style-type: none"> Check whether the batteries in the remote controller are exhausted. 	The power supply is off.
The TEMP. indicator does not come on.	<ul style="list-style-type: none"> Check whether the MODE indicated on the display is FAN ONLY 	The temperature cannot be set during FAN mode.
The indication on the display disappears after a lapse of time.	<ul style="list-style-type: none"> Check whether the timer operation has come to an end when the TIMER OFF is indicated on the display. 	The air conditioner operation will stop up to the set time
The TIMER ON indicator goes off after a lapse of certain time.	<ul style="list-style-type: none"> Check whether the timer operation is started when the TIMER ON is indicated on the display. 	Up to the set time, the air conditioner will automatically start and the appropriate indicator will go off.
No receiving tone sounds from the indoor unit even when the ON/OFF button is pressed.	<ul style="list-style-type: none"> Check whether the signal transmitter of the remote controller is properly directed to the infrared signal receiver of the indoor unit when the ON/OFF button is pressed. 	Directly transmit the signal transmitter of the remote controller to the infrared signal receiver of the indoor unit, and then repeatedly push the ON/OFF button twice.

7 MAINTENANCE AND PEPAIR



Note

Do not check or repair the unit on your own. Please get relevant professionals to conduct any check or repairs.
Do not use substances like gasoline, diluent, and chemical dust cloth to wipe the operations panel of the controller. This may remove the surface layer of the controller. If the unit is dirty, immerse a cloth in diluted and neutral detergent, squeeze it dry, and then use it to clean the panel. Finally, wipe it with a dry cloth.



Warning

When the fuse melts, do not use any unspecified fuse or other wire to replace the original fuse. The use of electrical wires or copper wires may cause the unit to malfunction or cause a fire.



Warning

Do not insert fingers, sticks, or other items into the air inlet or outlet. Do not remove the fan mesh cover. When the fan rotates at a high speed, it may cause bodily injury.
It is very dangerous to check the unit when the fan is rotating. Make sure you turn off the main switch before any maintenance work begins.
Do check the supporting and base structure of the unit for any damages after a long period of use. The unit may drop and cause personal injury if there is any damage.

7.1 Maintenance after Unit has been Shut Down for a Long Period

For example, in early summer or winter.

- Check and remove all objects that may clog the air inlets and outlets of the indoor and outdoor units.
- Clean the air filter and external shell of the unit. Please contact the installation or maintenance personnel. The installation/operation manual of the indoor unit includes maintenance tips and cleaning procedures. Make sure that the clean air filter is installed in its original position.
- Turn on the main power supply 12 hours before this unit is operated in order to ensure that the unit runs smoothly. The user interface is displayed once the power is turned on.

7.2 Maintenance Before Unit is Shut Down for a Long Period

For example, at the end of winter and summer.

- Run the indoor unit in the fan mode for about half a day to dry the internal parts of the unit.
- Turn off the power supply.
- Clean the air filter and external shell of the unit. Please contact the installation or maintenance personnel to clean the air filter and external shell of the indoor unit. The installation/operation manual of the specialized indoor unit includes maintenance tips and cleaning procedures. Make sure that the clean air filter is installed in its original position.

7.3 About the Refrigerant

This product contains fluorinated greenhouse gases as stipulated in the Kyoto Protocol. Do not discharge the gas into the atmosphere.

Refrigerant Type: R410A

GWP Value: 2088

Based on the applicable law, the refrigerant must be checked regularly for leakages. Please contact the installation personnel for more information.



Warning

The refrigerant in the air conditioner is relatively safer, and usually does not leak. If the refrigerant leaks, and comes in contact with burning objects in the room, it will produce harmful gases. Shut down any flammable heating device, ventilate the room and contact the agent of the unit immediately. Do not use the air conditioner again until the maintenance personnel has confirmed that the refrigerant leakage has been sufficiently resolved.



Warning

The partial units shall only be connected to an appliance suitable for the same refrigerant. This unit is a partial unit air conditioner, complying with partial unit requirements of this International Standard, and must only be connected to other units that have been confirmed as complying to corresponding partial unit requirements of this International Standard.

7.4.2 Recommended maintenance and inspection

As the use of the unit for many years will eventually lead to a dust layer, the performance of the unit will degenerate to a certain extent. As professional skills are needed to dismantle and clean the unit, and for the optimal maintenance effects of this unit, please contact your agent for more details.

When you request the agent for assistance, please remember to state:

- Complete model name of the air conditioner.
- Date of installation.
- Details on the fault symptoms or errors, and any defects.



Warning

- Do not attempt to modify, dismantle, remove, reinstall or repair this unit, as the improper dismantling or installation may result in electric shock or fire. Please contact the agent.
- If the refrigerant accidentally leaks, make sure that there is no fire around the unit. The refrigerant itself is completely safe, non-toxic and non-flammable, but it will produce toxic gases when it accidentally leaks and comes in contact with flammable substances generated by existing heaters, and burning devices in the room. You must get a qualified maintenance personnel to verify that the point of leakage has been repaired or rectified before you restore the operations of the unit.

7.4.3 Shorter maintenance and replacement cycle

In the following situations, the "maintenance cycle" and "replacement cycle" may be shortened.

The unit is used in the following situations:

- Temperature and humidity fluctuations are outside the normal ranges.
- Large power fluctuations (voltage, frequency, waveform distortion etc.) (must not use the unit if the power fluctuations exceed the allowed range).
- Frequent collisions and vibrations.
- The air may contain dust, salt, harmful gas or oil such as sulphite and hydrogen sulphide.
- Frequent on and off of unit or operating time is too long (in places where the air conditioning is on for 24 hours a day).



NOTE

1. This equipment MVD-V335W/DGN1 complies with IEC 61000 -3-12 provided that the short-circuit power Ssc is greater than or equal to 6401472W at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to 6401472W.
2. This equipment MVD-V280W/DGN1 complies with IEC 61000 -3-12 provided that the short-circuit power Ssc is greater than or equal to 6280232W at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to 6280232W.

7.4 After-sales Service and Warranty

7.4.1 Warranty period

- This product contains the warranty card that was completed by the agent during installation. The customer must check the completed warranty card and keep it properly.
- If you need to repair the air conditioner during the warranty period, please contact the agent and provide the warranty card.

INFORMATION REQUIREMENTS (FOR UNITS > 12KW)

Cooling - Information requirements for air-to-air air conditioners

Information requirements for air-to-air conditioners								
Model(s): MVD-V335W/DGN1 Test matching indoor units from 1, non-duct: 6×MVD-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	$P_{\text{rated,c}}$	33.5	kW		Seasonal space cooling energy efficiency	$\eta_{\text{s,c}}$	199.8	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19°C (dry/wet bulb)					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
$T_j=+35^\circ\text{C}$	P_{dc}	33.500	kW		$T_j=+35^\circ\text{C}$	EER_d	2.30	-
$T_j=+30^\circ\text{C}$	P_{dc}	23.320	kW		$T_j=+30^\circ\text{C}$	EER_d	4.31	-
$T_j=+25^\circ\text{C}$	P_{dc}	15.462	kW		$T_j=+25^\circ\text{C}$	EER_d	6.11	-
$T_j=+20^\circ\text{C}$	P_{dc}	6.603	kW		$T_j=+20^\circ\text{C}$	EER_d	7.29	-
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	-					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.040	kW		Crankcase heater mode	P_{CK}	0.040	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.040	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}	77	dB					
GWP of the refrigerant		2088	kg CO ₂ eq (100years)					
Contact details	SALVADOR ESCODA SA NAPLES, 249 1st FLOOR			08025 BARCELONA (SPAIN) +34 93 446 27 80				
(*) 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 - Information requirements for heat pumps

Information requirements for air-to-air conditioners								
Model(s): MVD-V335W/DGN1 Test matching indoor units from1, non-duct: 6×MVD-56Q4*								
Outdoor side heat exchanger of air conditioner:air								
Indoor side heat exchanger of air conditioner:air								
Indication 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 seasons are optional								
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{\text{rated,h}}$	33.5	kW		Seasonal space heating energy efficiency	$\eta_{\text{s,h}}$	143.4	%
Declared heating capacity for part load at indoor temperature 20°C 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			
$T_j=-7^{\circ}\text{C}$	P_{dh}	21.434	kW		$T_j=-7^{\circ}\text{C}$	COP_d	2.53	-
$T_j=+2^{\circ}\text{C}$	P_{dh}	12.702	kW		$T_j=+2^{\circ}\text{C}$	COP_d	3.45	-
$T_j=+7^{\circ}\text{C}$	P_{dh}	8.381	kW		$T_j=+7^{\circ}\text{C}$	COP_d	5.21	-
$T_j=+12^{\circ}\text{C}$	P_{dh}	4.622	kW		$T_j=+12^{\circ}\text{C}$	COP_d	5.81	-
T_{biv} =bivalent temperature	P_{dh}	22.589	kW		T_{biv} =bivalent temperature	COP_d	2.21	-
T_{OL} =operation temperature	P_{dh}	22.589	kW		T_{OL} =operation temperature	COP_d	2.21	-
Bivalent temperature	P_{biv}	-10	°C					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	-					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.040	kW		Back-up heating capacity(*)	e_{lbu}	0.040	kW
Thermosat-off mode	P_{TO}	0.040	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0.040	kW		Standby mode	P_{SB}	0.040	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}	77	dB					
GWP of the refrigerant		2088	kg CO ₂ eq (100years)					
Contact details	SALVADOR ESCODA SA 08025 BARCELONA (SPAIN) NAPLES, 249 1st FLOOR +34 93 446 27 80							
(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25								

Cooling - Information requirements for air-to-air air conditioners

Information requirements for air-to-air conditioners								
Model(s): MVD-V280W/DGN1 Test matching indoor units from1, non-duct: 4×MVD-71Q4*								
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	$P_{\text{rated,c}}$	28.0	kW		Seasonal space cooling energy efficiency	$\eta_{\text{s,c}}$	201.0	%
Declared cooling capacity for part load at given outdoor temperatures T_j and indoor 27/19°C (dry/wet bulb)					Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T_j			
$T_j=+35^\circ\text{C}$	P_{dc}	28.0	kW		$T_j=+35^\circ\text{C}$	EER_d	2.31	-
$T_j=+30^\circ\text{C}$	P_{dc}	19.603	kW		$T_j=+30^\circ\text{C}$	EER_d	4.32	-
$T_j=+25^\circ\text{C}$	P_{dc}	12.880	kW		$T_j=+25^\circ\text{C}$	EER_d	6.21	-
$T_j=+20^\circ\text{C}$	P_{dc}	5.460	kW		$T_j=+20^\circ\text{C}$	EER_d	7.50	-
Degradation co-efficient for air conditioners(*)	C_{dc}	0.25	-					
Power consumption in modes other than "active mode"								
Off mode	P_{OFF}	0.040	kW		Crankcase heater mode	P_{CK}	0.040	kW
Thermosat-off mode	P_{TO}	0	kW		Standby mode	P_{SB}	0.040	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}	76	dB					
GWP of the refrigerant		2088	kg CO ₂ eq (100years)					
Contact details	SALVADOR ESCODA SA NAPLES, 249 1st FLOOR 08025 BARCELONA (SPAIN) +34 93 446 27 80							
(*)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 - Information requirements for heat pumps

Information requirements for air-to-air conditioners								
Model(s): MVD-V280W/DGN1 Test matching indoor units from1, non-duct: 4×MVD-71Q4*								
Outdoor side heat exchanger of air conditioner:air								
Indoor side heat exchanger of air conditioner:air								
Indication 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 seasons are optional								
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heating capacity	$P_{rated,h}$	28	kW		Seasonal space heating energy efficiency	$\eta_{s,h}$	143.4	%
Declared heating capacity for part load at indoor temperature 20°C 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			
$T_j=-7^{\circ}\text{C}$	P_{dh}	18.230	kW		$T_j=-7^{\circ}\text{C}$	COP_d	2.54	-
$T_j=+2^{\circ}\text{C}$	P_{dh}	10.90	kW		$T_j=+2^{\circ}\text{C}$	COP_d	3.47	-
$T_j=+7^{\circ}\text{C}$	P_{dh}	7.145	kW		$T_j=+7^{\circ}\text{C}$	COP_d	5.21	-
$T_j=+12^{\circ}\text{C}$	P_{dh}	3.950	kW		$T_j=+12^{\circ}\text{C}$	COP_d	5.90	-
T_{biv} =bivalent temperature	P_{dh}	19.215	kW		T_{biv} =bivalent temperature	COP_d	2.22	-
T_{OL} =operation temperature	P_{dh}	19.215	kW		T_{OL} =operation temperature	COP_d	2.22	-
Bivalent temperature	P_{biv}	-10	°C					
Degradation co-efficient for heat pumps(**)	C_{dh}	0.25	-					
Power consumption in modes other than "active mode"					Supplementary heater			
Off mode	P_{OFF}	0.040	kW		Back-up heating capacity(*)	el_{bu}	0.040	kW
Thermosat-off mode	P_{TO}	0.040	kW		Type of energy input			
Crankcase heater mode	P_{CK}	0.040	kW		Standby mode	P_{SB}	0.040	kW
Other items								
Capacity control	variable				For air-to-air heat pump:air flow rate,outdoor measured	-	11000	m³/h
Sound power level,outdoor	L_{WA}	76	dB					
GWP of the refrigerant		2088	kg CO ₂ eq (100years)					
Contact details	SALVADOR ESCODA SA NAPLES, 249 1st FLOOR 08025 BARCELONA (SPAIN) +34 93 446 27 80							
(**)If C_{dh} is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25								

MUNDO  CLIMA®



www.mundoclima.com

C/ NÁPOLES 249 P1
08013 BARCELONA
SPAIN
(+34) 93 446 27 80