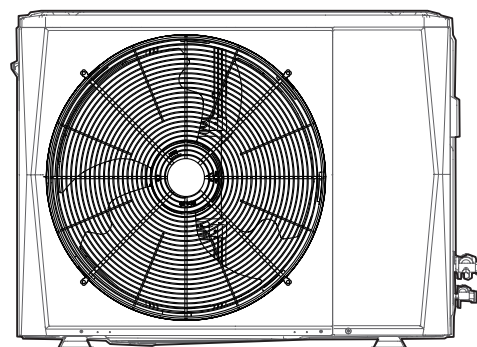


MINI MVD V6M OUTDOOR UNIT

Installation and owner's manual

MVD-V6M80W/DN1
MVD-V6M100W/DN1
MVD-V6M120W/DN1
MVD-V6M140W/DN1
MVD-V6M160W/DN1



Installation and owner's manual

CONTENTS

Installation manual	3
Owner's manual	17

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.

INSTALLATION MANUAL

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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

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 changed 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.

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



WARNING

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

An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring. The appliance shall be installed in accordance with national wiring regulations.

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

An all-pole disconnection device which has at least 3mm separation distance in all pole and a residual current device(RCD)with the rating of above 10mA shall be incorporated in the fixed wiring according to the national rule.

The power cord type designation is H05RN-R/H07RN-F or above. Ask an authorized dealer or qualified installation professional to install/maintain the air conditioner.

Inappropriate installation may result in water leakage, electric shock or fire.

Turn off the main power supply switch or breaker before attempting any electrical work.

Make sure all power switches are off. Failure to do so may cause electric shock.

Connect the connecting cable correctly.

If the connecting cable is connected in a wrong way, electric parts may be damaged.

When moving the air conditioner for the installation into another place, be very careful not to enter any gaseous matter other than the specified refrigerant into the refrigeration cycle.

If air or any other gas is mixed in refrigerant, the gas pressure in the refrigeration cycle becomes abnormally high and it may resultingly causes pipe burst and injuries on persons.

Do not modify this unit by removing any of the safety guards or by by-passing any of the safety interlock switches.

Exposure of unit to water or other moisture before installation may cause a short-circuit of electrical parts.

Do not store it in a wet basement or expose to rain or water.

After unpacking the unit, examine it carefully if there are possible damage.

Do not install in a place that might increase the vibration of the unit.

To avoid personal injury (with sharp edges), be careful when handling parts.

Perform installation work properly according to the Installation Manual.

Inappropriate installation may result in water leakage, electric shock or fire.

When the air conditioner is installed in a small room, provide appropriate measures to ensure that the concentration of refrigerant leakage occur in the room does not exceed the critical level.

Install the air conditioner securely in a location where the base can sustain the weight adequately.

Perform the specified installation work to guard against an earthquake.

If the air conditioner is not installed appropriately, accidents may occur due to the falling unit.

If refrigerant gas has leaked during the installation work, ventilate the room immediately.

If the leaked refrigerant gas comes in contact with fire, noxious gas may generate.

After the installation work, confirm that refrigerant gas does not leak.

If refrigerant gas leaks into the room and flows near a fire source, such as a cooking range, noxious gas might generate.

Electrical work must be performed by a qualified electrician in accordance with the Installation Manual. Make sure the air conditioner uses an exclusive power supply.

Equipment complying with IEC 61000-3-12

An insufficient power supply capacity or inappropriate installation may cause fire.

Use the specified cables for wiring connect the terminals securely fix. To prevent external forces applied to the terminals from affecting the terminals.

Be sure to provide grounding.

Do not connect ground wires to gas pipes, water pipes, lightning rods or ground wires for telephone cables.

Conform to the regulations of the local electric company when wiring the power supply.

Inappropriate grounding may cause electric shock.

Do not install the air conditioner in a location subject to a risk of exposure to a combustible gas.









If a combustible gas leaks, and stays around the unit, a fire may occur.

Required tools for installation work

- 1) Philips screw driver
- 2) Hole core drill(65mm)
- 3) Spanner
- 4) Pipe cutter
- 5) 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 manual		1
	2. Outdoor unit owner's manual		1
	3. Water outlet pipe connector		1
	4.Seal ring(8kW)		1
	5.Rubber wire ring (10/12kW)		2
	6.Network matching wires		2
	7.Connecting pipe (16kW)		1
	8.L-shaped pipe(14kW)		1



NOTE

- Check if any accessory in the above figure is missing. All the accessories must be kept properly.
- All the fittings should be MUNDOCLIMA fittings.
- Wired/Remote controller — purchase separately
- Outlet sealant — purchase separately.
- All the figures in the manual explain only the general appearance and dimensions of the unit. The air conditioner you purchased may not be completely consistent with the appearance and functions listed in the figures. Please refer to the actual product.

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 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 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 of 2000mm or more between the unit and the wall surface.

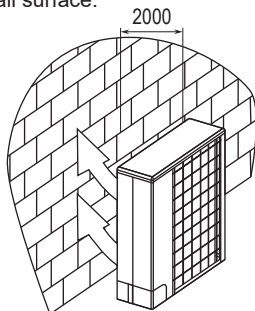


Fig. 2-1

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

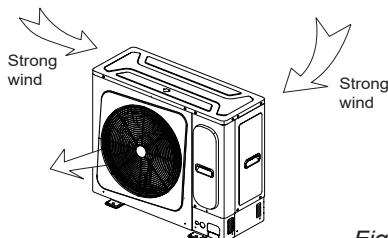


Fig. 2-2

- 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.
- Install the unit in the place that can offer enough space for installation and maintenance. Don't install it in the place that has a high requirement for noise, such as the bedroom.

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)

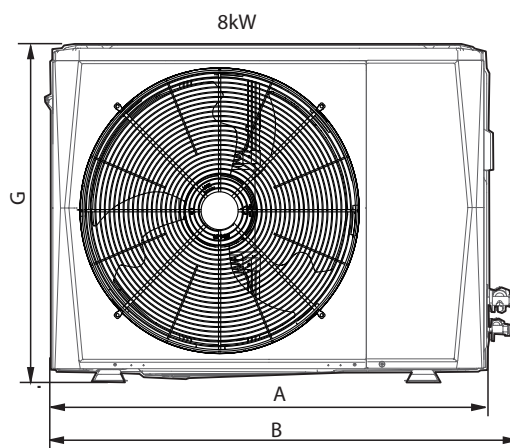


Fig. 3-1

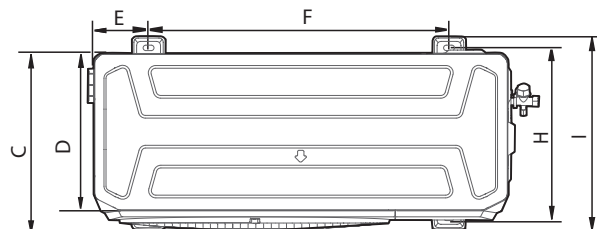


Fig. 3-2

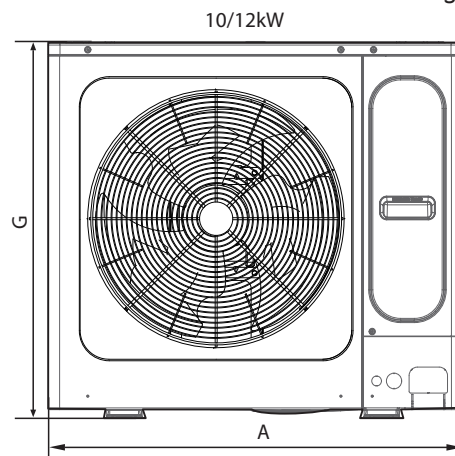


Fig. 3-3

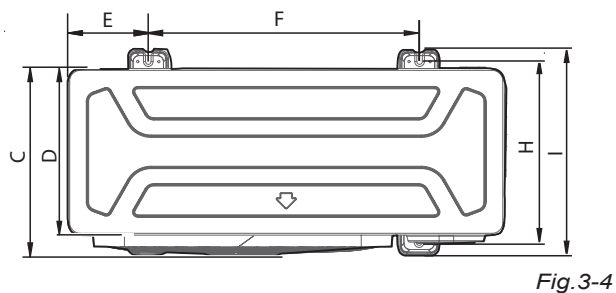


Fig. 3-4

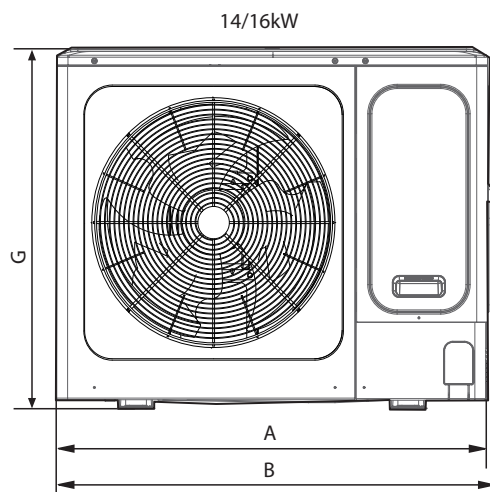


Fig. 3-5

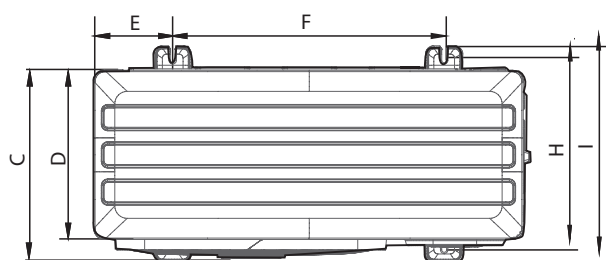


Fig. 3-6

Table 3-1 (unit: mm)

Model	80	100/120	140/160
A	910	950	1040
B	982	/	1053
C	390	406	452
D	345	360	410
E	120	175	191
F	663	590	656
G	712	840	865
H	375	390	463
I	426	440	523
Drawing No.	Fig. 3-1, Fig. 3-2	Fig. 3-3, Fig. 3-4	Fig. 3-5, Fig. 3-6

• Single unit installation

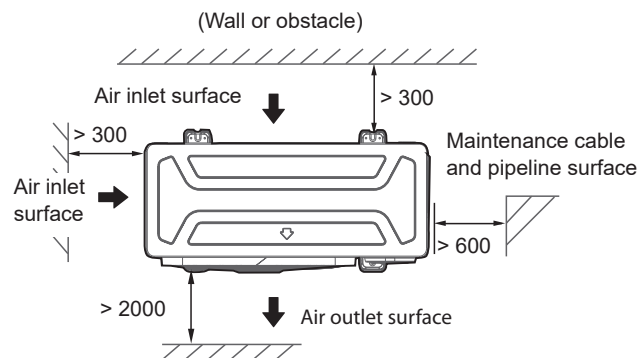


Fig. 3-4

• Parallel connect the two units or above

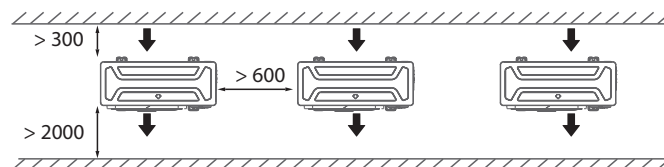


Fig. 3-5

• Parallel connect the front with rear sides

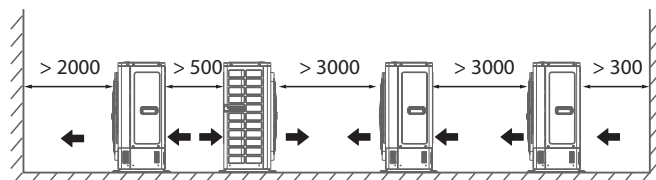


Fig. 3-6

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 specifications of the outdoor units. (refer to Fig. 3-7)
- Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind. (refer to Fig. 3-7)

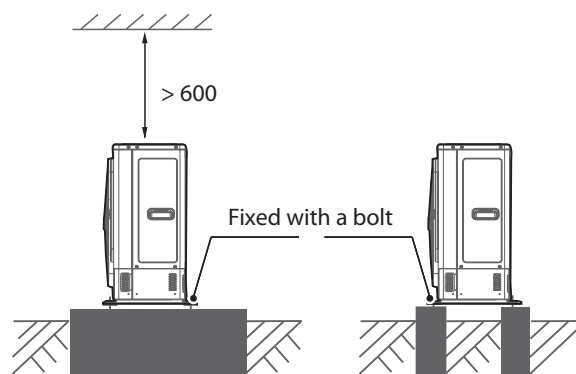


Fig. 3-7

**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.

**CAUTION**

Side out pipe: please remove the L-shape metal plate, otherwise can not wiring.

Back out pipe: please wipe off the piping support rubber blanket beside the inner outlet pipe cover of the machine while back side getting out pipes.

Front out pipe: cut the frontal hole of the pipe-outlet plate. The method of the out pipe in the same way of the back out pipe.

Undersurface outlet pipe: the knock out should from inside to outside, and then piping and wiring through this. Pay attention to the piping the fat connecting pipe should out from the largest hole, otherwise the pipes will be rubbed. 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:

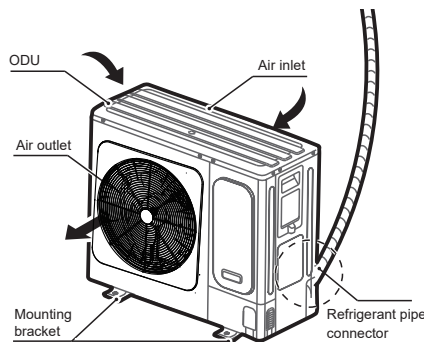


Fig. 4-1

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	Back out pipe	Undersurface out pipe

4.2 Leak Detection

Use soapy water or a leak detector to check whether air leaks at each joint.

A and B indicate check valves of ODU.

C and D indicate IDU connecting pipe ports.

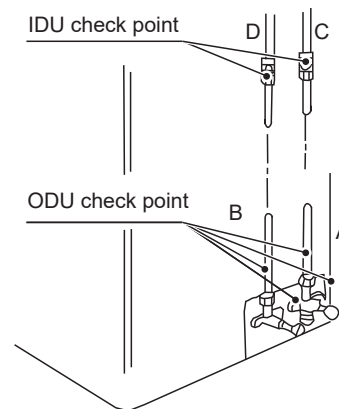


Fig. 4-2

4.3 Heat Insulation

Carry out heat insulation treatment for the pipes at the gas and liquid sides respectively. Pipes on the liquid and air sides have a low temperature during cooling. Take suficient insulation measures to prevent condensation (see the figure on the right).

■ The gas-side pipe must be treated with the closed-cell foam insulation material, which reaches the non-fammable level of B1 and heat resistance of over 120 °C.

■ When the outer diameter of the copper pipe is not greater than $\Phi 12.7$ mm, the thickness of insulation layer should be greater than 15 mm.

■ When the outer diameter of copper pipe is equal to or greater than $\Phi 15.9$ mm, the thickness of insulation layer should be greater than 20 mm.

■ The attached insulation material for the part of the IDU where the pipe connects must undergo heat insulation treatment that ayes no gaps.

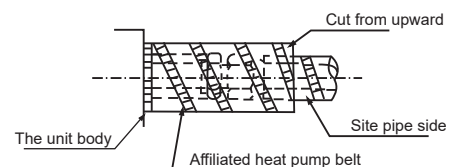


Fig. 4-3

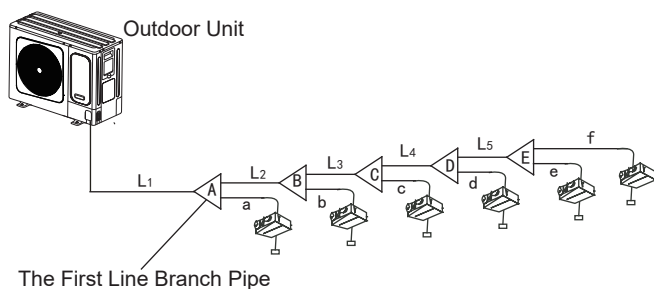
4.4 Connecting method

■ Select refrigerant pipe

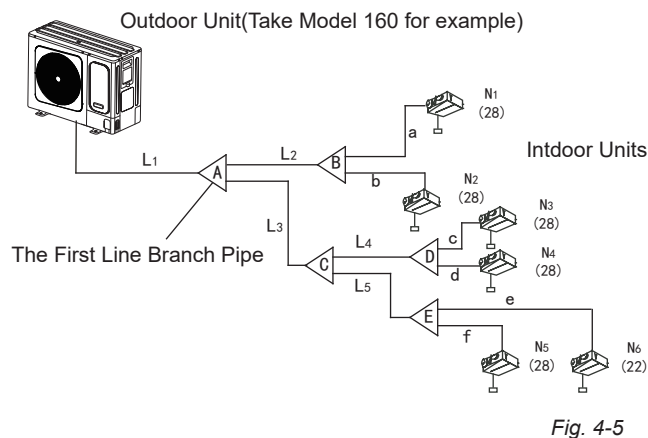
Table 4-2

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 method



● The second connect method



NOTE

- If the distance from the first branch pipe to the last IDU exceeds 15 m, use connection method 2.
- The connection distance between the IDU and branch pipe should not exceed 15 m.

4.4 Confirmation for the diameters of indoor unit connecting pipes

- 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 $28 \times 2 = 56$, 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

Total capacity of the downstream inner units	Main pipe size (mm)		Branch Pipe
	Air pipe	liquid pipe	
$A < 160$	$\Phi 15.9$	$\Phi 9.5$	FQZHN-01D
$160 \leq A < 230$	$\Phi 19.1$	$\Phi 9.5$	FQZHN-01D

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 + air side is <90m			Main pipe size when the total equivalent piping length of liquid + air side is ≥ 90 m		
	air side (mm)	liquid side (mm)	The first Line Branch Pipe	air side (mm)	liquid side (mm)	The first Line Branch Pipe
$A < 155$	$\Phi 15.9$	$\Phi 9.5$	FQZHN-01D	$\Phi 19.1$	$\Phi 9.5$	FQZHN-01D
$155 \leq A < 230$	$\Phi 19.1$	$\Phi 9.5$	FQZHN-01D	$\Phi 22.2$	$\Phi 9.5$	FQZHN-02D



NOTE

- The straight distance between copper pipe turning and the contiguous branch pipe is at least 0.5 m.
- The straight distance between the contiguous branch pipes is at least 0.5 m.
- The straight distance which the branch pipes connected to the IDU is at least 0.5 m.

● 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
8kW	Flaring	Flaring
10kW	Welding or Flaring	Flaring
12kW	Welding or Flaring	Flaring
14kW	Welding or Flaring	Flaring
16kW	Welding or Flaring	Flaring
Indoor unit	Flaring	Flaring
Branch pipe	Welding or Flaring	Welding or Flaring

■ Piping sizes at the branch pipe

Table 4-6

Refrigerant	Indoor Unit Capacity A(x100W)	Gas Side (Φ)	Liquid Side (Φ)
R410A	$A \leq 45$	12.7(Flaring nut)	6.4(Flaring nut)
	$A \geq 56$	15.9(Flaring nut)	9.5(Flaring nut)

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

Table 4-7

MODEL (kW)	Pipe diameter of outdoor unit's connector(mm)	
	Gas Side	Liquid Side
8	Φ 15.9	Φ 9.5
10	Φ 15.9	Φ 9.5
12	Φ 15.9	Φ 9.5
14	Φ 15.9	Φ 9.5
16	Φ 19.1	Φ 9.5

Table 4-8

Outdoor Unit (kW)	Capacity of ODU (horsepower)	Max. Number of IDUs	Sum Capacity of IDUs (horsepower)
8	2.5	4	50%~130%
10	3	6	50%~130%
12	4	7	50%~130%
14	5	8	50%~130%
16	6	9	50%~130%



CAUTION

The total capacity of the IDUs must not exceed 130% of the load of the ODU.
When the capacity of IDUs is greater than 100% of the load, the output of the IDUs will be de-rated.

Table 4-9

Capacity ranking	Capacity (horsepower)	Capacity ranking	Capacity (horsepower)
18	0.6	80	2.5
22	0.8	10.5	3
28	1	120	4
36	1.25	140	5
45	1.7	160	6
56	2		

■ 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		
8	10	10	8	less than 10
10	20	20	8	
12	20	20	8	
14	30	20	8	
16	30	20	8	

4.6 Illustration

Outdoor Unit(Take Model 160 for example)

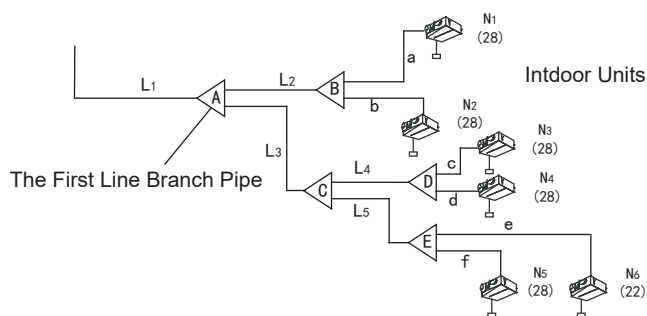


Fig.4-6

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 28×2=56, 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 28×2=56, the size of pipe L4 is Φ15.9/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 28+22=50, the size of pipe L5 is Φ15.9/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 28×3+22=106, the size of pipe L3 is Φ15.9/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 28×5+22=162, and the branch pipe should be FQZHN-01D, 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.4-5 and Fig.4-7)

In Fig.4-6, the main pipe L1, the outdoor unit capacity is 16kW, and check the Fig.4-7 to get the size of gas pipe/liquid pipe is Φ19.1/Φ9.5, and also the total equivalent length of liquid side and gas side pipes is >90m, then check the Fig.4-4 to get the size of gas pipe/liquid pipe is Φ22.2/Φ9.5, and according to the maximum value principle, it should apply the Φ22.2/Φ9.5.

● Allowable length and altitude difference of refrigerant pipe

table 4-11

			Pimitted value	Piping
Pipe Length	Total Pipe Length(Actual)		$\leq 50\text{m}$ (8kW) $\leq 65\text{m}$ (10/12kW) $\leq 100\text{m}$ (14/16kW)	$L1+L2+L3+L4+L5 +a+b+c+d+e+f$
	Maximum Piping(L)	Actual Length	$\leq 35\text{m}$ (8kW) $\leq 45\text{m}$ (10/12kW) $\leq 60\text{m}$ (14/16kW)	$L1+L2+L3+L4+L5+f$ (The first connect methond) or $L1+L3+L5+f$ (The second connect methond)
		Equivalent Length	$\leq 40\text{m}$ (8kW) $\leq 50\text{m}$ (10/12kW) $\leq 70\text{m}$ (14/16kW)	
	Pipe Length(from the first line branch pipe to furhtest indoor unit)(m)		$\leq 20\text{m}$	$L2+L3+L4+L5+f$ (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
Drop Height	Indoor Unit-Outdoor Unit Drop Height(H)	Outdoor Unit up	$\leq 10\text{m}$ (8kW) $\leq 20\text{m}$ (10/12kW) $\leq 30\text{m}$ (14/16kW)	_____
		Outdoor Unit Down	$\leq 10\text{m}$ (8kW) $\leq 20\text{m}$ (10/12kW) $\leq 20\text{m}$ (14/16kW)	_____
	Indoor Unit to Indoor Unit Drop Heihgt(H)		$\leq 8\text{m}$	_____

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

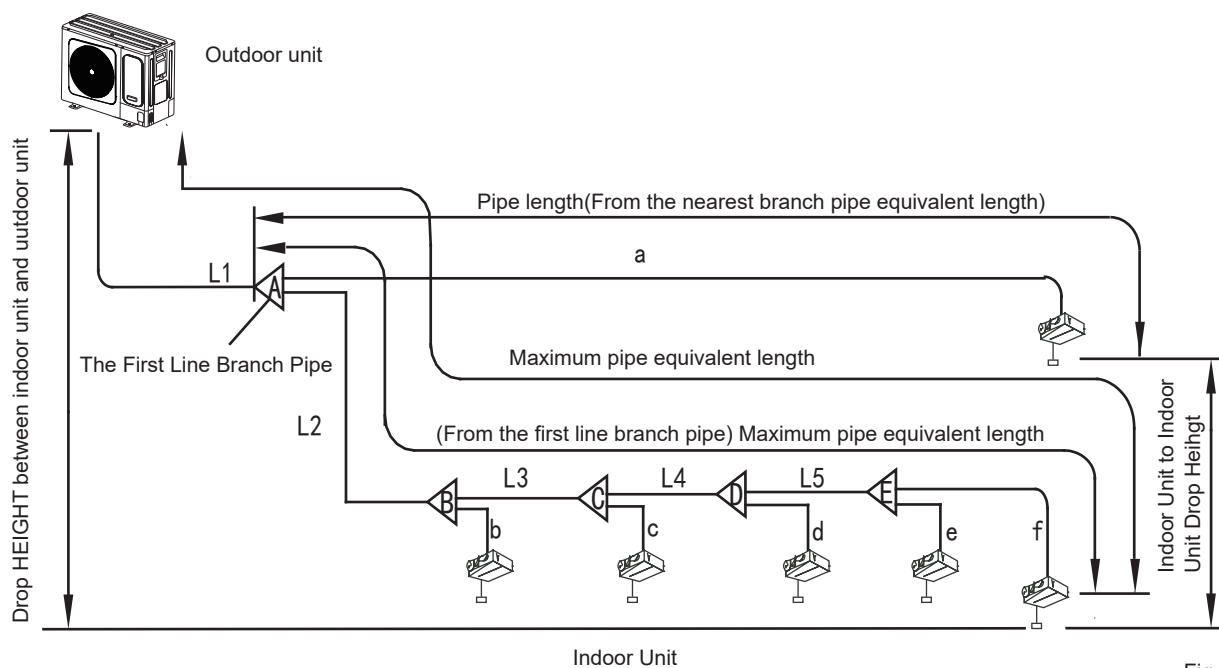


Fig.4-7

- The second connect method

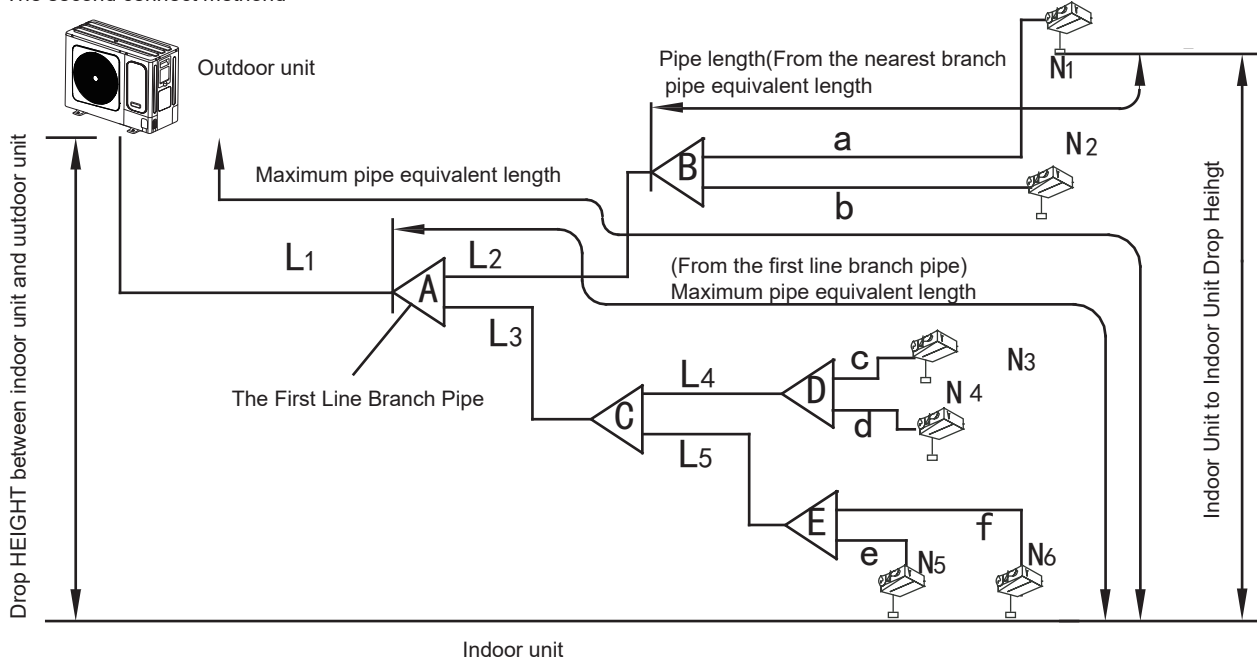


Fig.4-8

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

Air tightness test – nitrogen must be used. (See the figure on the right for the location of the maintenance access).

Increase the pressure from the liquid pipe and gas pipe to 4.0 MPa at the same time (not exceeding 4.0 MPa). If the pressure does not drop in 24 hours, the test is passed.

When the pressure drops, check the leakage position (after you make sure that there is no leakage, discharge the nitrogen).



CAUTION

Never use oxygen, combustible gas, or poisonous gas in the air tightness test.

To prevent damage to the equipment, the pressure must not be held for too long.

4.9 Air Purge with Vacuum Pump

- Use a vacuum pump that can evacuate the pipe to the pressure of less than -100.7 kPa (5 Torr, -755mmHg). When the pump is stopped, do not let the pump oil flow back into the refrigerant pipe.
- The liquid and gas pipes should be evacuated with a vacuum pump for more than two hours to the pressure of less than -100.7kPa. Then, place the pipes with the pressure of less than -100.7 kPa for more than one hour, and check whether the reading of the vacuum gauge rises. (If the reading rises, there is residual water or gas leakage in the system. The leakage must be checked and solved and the test should be performed again.) Water may enter into pipes in the following conditions: the installation is carried out in rainy seasons and the installation period is long; the pipes are condensed inside; rainwater enters the pipes.
- After the above vacuum drying of two hours, use nitrogen to increase the pressure to 0.05 MPa (vacuum breaking), and use a vacuum pump to decrease the pressure to lower than -100.7kPa or below and hold the pressure for one hour (vacuum drying).

(If the pressure cannot be decreased to lower than -100.7 kPa after two-hour vacuumizing, repeat the vacuum breaking and vacuum process.) After that, place the vacuum pipes for one hour, and then check whether the reading of the vacuum gauge rises.



CAUTION

Use a vacuum pump to perform the vacuumizing process. Do not use refrigerant gas to discharge air.

Use a vacuum pump that can vacuumize the pipe to the pressure of less than -100.7 kPa (5 Torr, -755 mmHg). When the pump is stopped, do not let the pump oil flow back into the refrigerant pipe.

In order to prevent the entry of impurities, the R410A special tool must be used to ensure the compression strength. Use a fling hose with a top rod to connect to the maintenance access of the check valve or the refrigerant fling port.

4.10 Refrigerant Amount to be Added

Calculate the amount of the R410A refrigerant to be added based on the diameter and length of the liquid pipes of the ODU and IDUs.

- When the outdoor unit connects 1 indoor unit:

Table 4-12

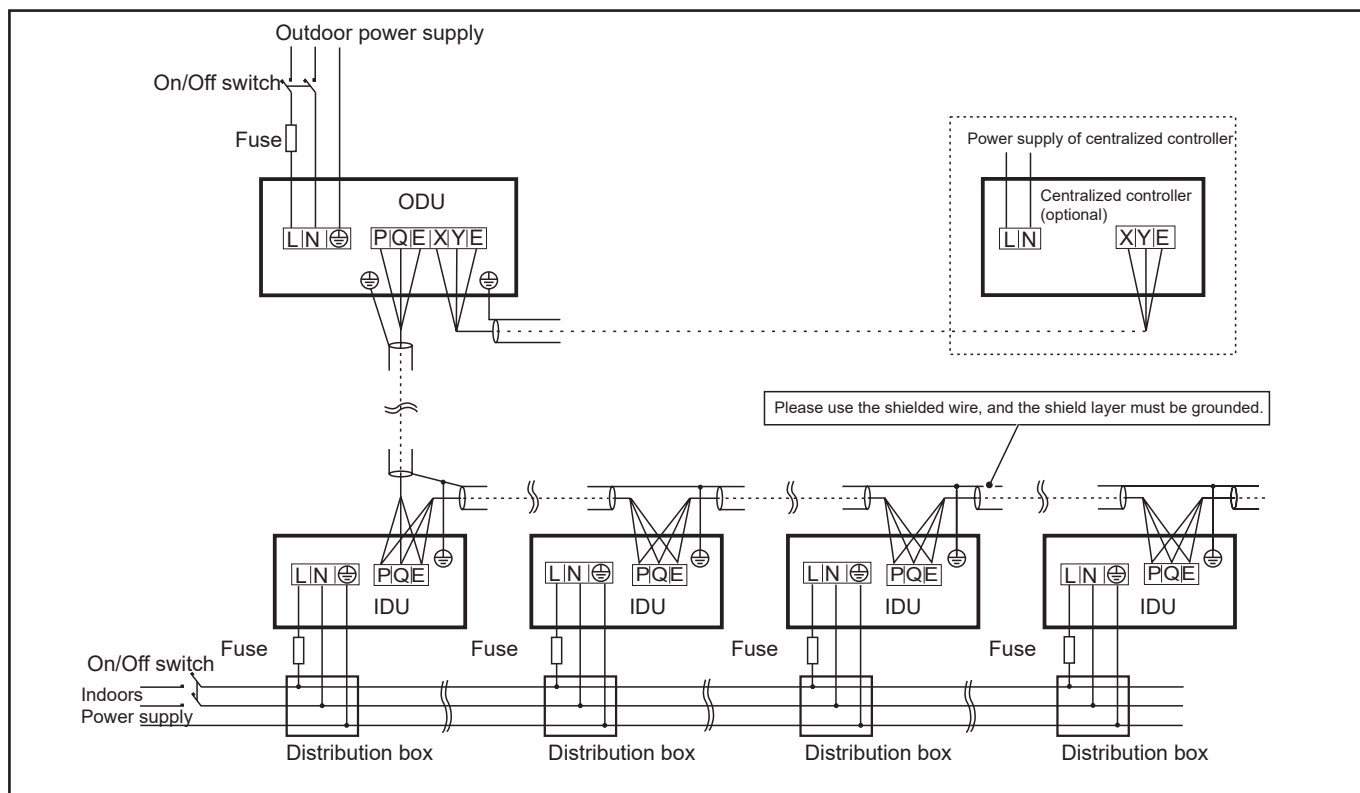
Liquid Side Piping Diameter	Refrigerant to be Added Per meter Piping
Φ6.4	0.022kg
Φ9.5	0.054kg
Φ12.7	0.110kg
Φ15.9	0.170kg



NOTE

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

5. ELECTRICAL WIRING



ODU electrical control system connection diagram

Fig. 5-1



CAUTION

- Please select power source for indoor unit and outdoor unit respectively
- The power supply has specified branch circuit with leakage protector and manual switch.
- The outdoor unit model which corresponding to different outdoor unit power supply should refer to the nameplate.(Please set all the

indoor unit power of one system into the same branch circuit.)

- Please put the connective wire system between indoor unit and outdoor unit with the refrigerant system together.
- Use 3-core shielded wire as indoor unit and outdoor unit signal wire.
- The installation should comply with local electric standard.
- Power wiring should be engaged by specialized electrician.

5.1 Outdoor Unit Wiring

■ The Specification of Power

Table 5-1

Power Source		220-240V~ 1Ph 50Hz				
Model	Capacity(kW)	8	10	12	14	16
Power Supply	Hz	50	50	50	50	50
	Voltage	220-240	220-240	220-240	220-240	220-240
	Min.(V)	198	198	198	198	198
	Max.(V)	264	264	264	264	264
	MCA	21.25	28.75	35	40	40
	TOCA	18.1A	24A	29A	33A	33A
	MFA	25	32	40	40	40
Compressor	MSC	Soft start	Soft star	Soft star	Soft star	Soft star
	RLA	9.45	9.45	6.5	6.5	6.5
OFM	kW	0.08	0.17	0.17	0.17	0.17
	FLA	1.0	1.52	1.52	1.52	1.52



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.



CAUTION

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 .

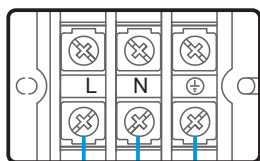
Wiring Connection

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

■ Wiring Terminal Description



ODU power supply
220V~240V 50Hz

Fig. 5-2

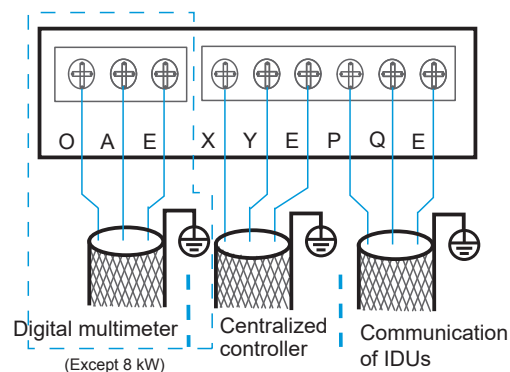


Fig. 5-3

**CAUTION**

Only the dedicated meter of can be used on the unit.
For the wiring method of the meter, please consult MUNDOCLIMA professional service personnel.
No digital multimeter interface for 8kW; and reserved digital multimeter interface for 10kW, 12kW, 14kW and 16kW.
The arrangement of OAE, XYE and PQE depends on the unit

■ Wiring Terminal Description

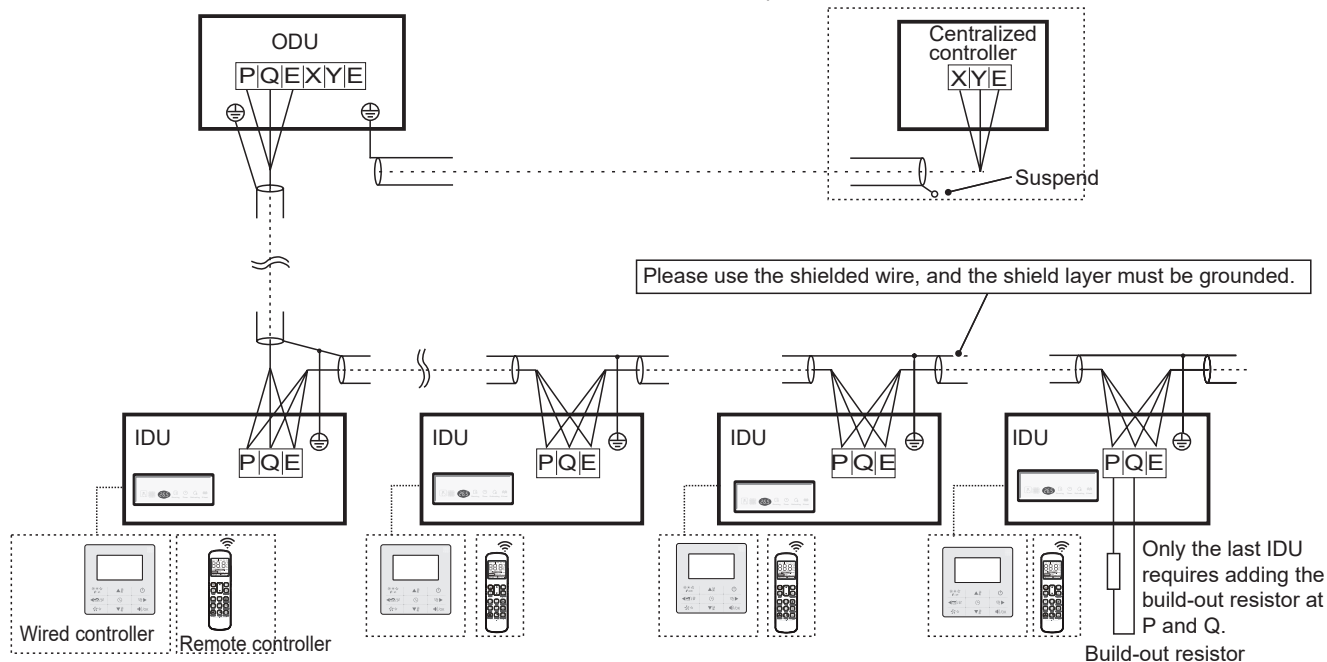


Fig. 5-4

CAUTION

- When the power cable is parallel to the signal wire, make sure that they are enclosed in respective conduits and are kept a reasonable wire spacing. (Distance between power cables: less than 10A-300mm; less than 50A-500mm)
- The three-core shielded cable is used as the signal cables of the IDUs and ODU, and the shield layer must be grounded as required.
- The display box and build-out resistor are IDU accessories. The remote controller, centralized controller and wired controller are optional accessories. If necessary, contact the local distributor for purchase. (Note: The BP3 series IDUs provide standard remote controllers.)

5.2 Indoor Unit Wiring

● Power Supply

Table 5-2

Capacity(kW)		1.8~16
Indoor Unit Power	Phase	1-Phase
	Voltage and Frequency	220-240V~ 50Hz
	Power Wiring Size	Refer to Table 5-3 for wire size
Circuit Breaker (A)		16
Indoor Unit /Outdoor Unit Signal Wire (mm ²) (Weak electric signal)		3-core shielded wire 3X0.75

5.2.2 Safety device requirements

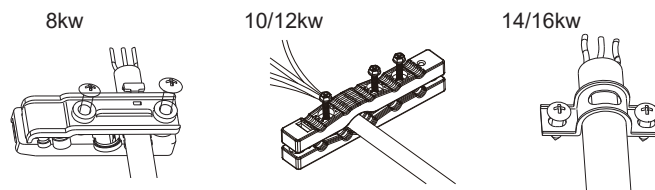
1. Select the wire diameters(minimum value) individually for each unit based on the table 5-1 and table 5-2, where the rated current in table 5-1 means MCA in table 5-3. In case the MCA exceeds 40A, the wire diameters should be selected according to the national wiring regulation.
2. Maximum allowable voltage range variation between phases is 2%.
3. Select circuit breaker that having a contact separation in all poles not less than 3 mm providing full disconnection, where MFA is used to select the current circuit breakers and residual current operation breakers:

Table 5-3

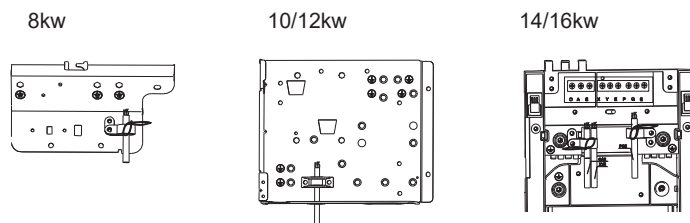
Rated current of appliance(A)	Nominal cross-sectional area (mm ²)	
	Flexible cords	Cable for fixed wiring
≤3	0.5 and 0.75	1 to 2.5
>3 and ≤6	0.75 and 1	1 to 2.5
>6 and ≤10	1 and 1.5	1 to 2.5
>10 and ≤16	1.5 and 2.5	1.5 to 4
>16 and ≤25	2.5 and 4	2.5 to 6
>25 and ≤32	4 and 6	4 to 10
>32 and ≤50	6 and 10	6 to 16
>50 and ≤63	10 and 16	10 to 25

5.2.3 The method of fixing the power cord and signal line:

1.The method of fixing the power cord :



2.The method of fixing the signal wire :



The fixed mode of signal wire 8kw and 14/16kw is shown in the figure. The signal wire goes through the wire clamp, and the cable is tightly tied to the clamp with a belt to prevent the signal wire from moving up and down.

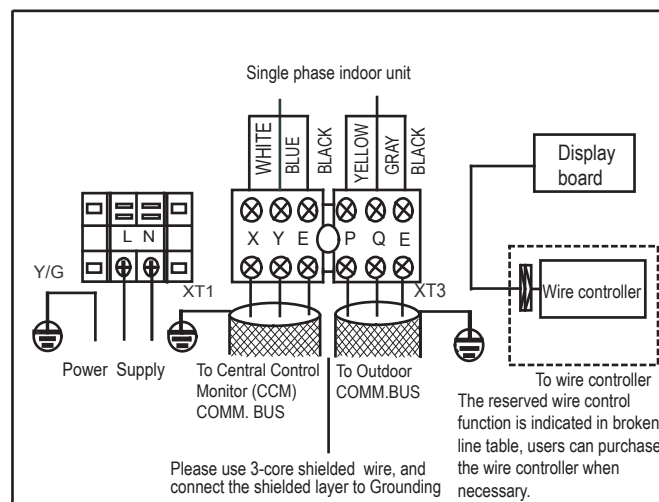


Fig. 5-5

1. Signal wire is 3-core, polarized wire. Use 3-core shield wire to prevent interference. The grounding method now is grounding the closed end of the shield wire and opening (insulating) at the end. Shield is to be grounded.
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.

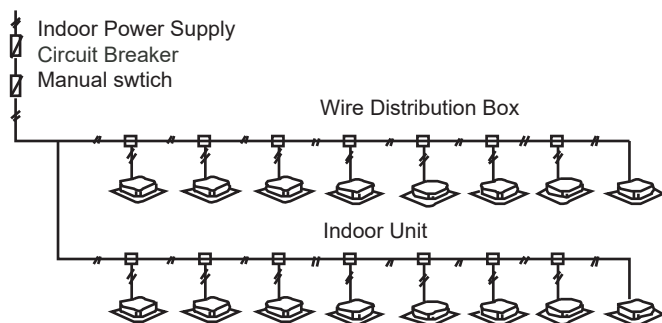
Indoor unit power supply wiring

Fig. 5-6

**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.

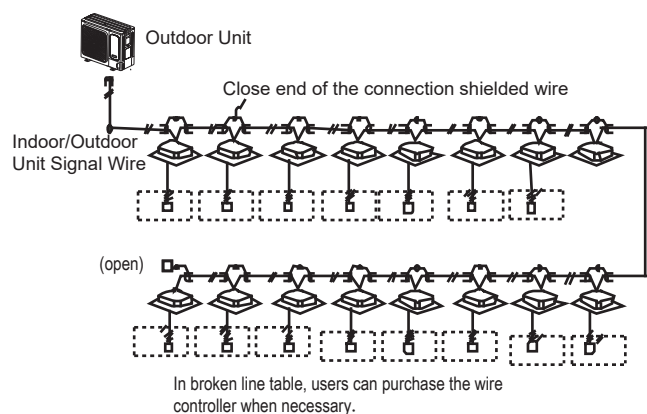
Indoor/Outdoor unit signal wire wiring

Fig. 5-7

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. 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.

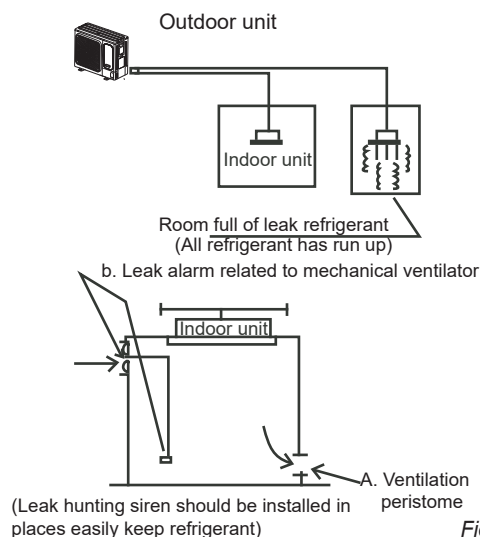


Fig. 7-1

**NOTE**

Please press "constraint cool" button to carry out refrigerant recycling process. Keep the low pressure above 0.2MPa, otherwise compressor may be burnt out.

7.1 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
8kW	2.20	4.59
10kW	2.35	4.91
12kW	3.00	6.26
14kW	3.40	7.10
16kW	3.80	7.93

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.

8. 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.

**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.

16kW complying with IEC 61000-3-12.

OWNER'S MANUAL

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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

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance.

Cleaning and user maintenance shall not be made by children without supervision. (Only European)

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

The partial units shall only be connected to an appliance suitable for the same refrigerant.

The units 8-16kW are partial unit air conditioners, 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.

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.

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 groundwater 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.



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.

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.

The sound pressure level is below 56 dB(A).

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

2. PARTS NAMES

The air conditioner consists of the indoor unit, the outdoor unit, the connecting pipe and the remote controller. (see Fig.1)

Operate the switches and push buttons with an insulated stick (such as a closed ball-point pen) or insulating gloves to avoid touching of live parts

Force Cooling Control

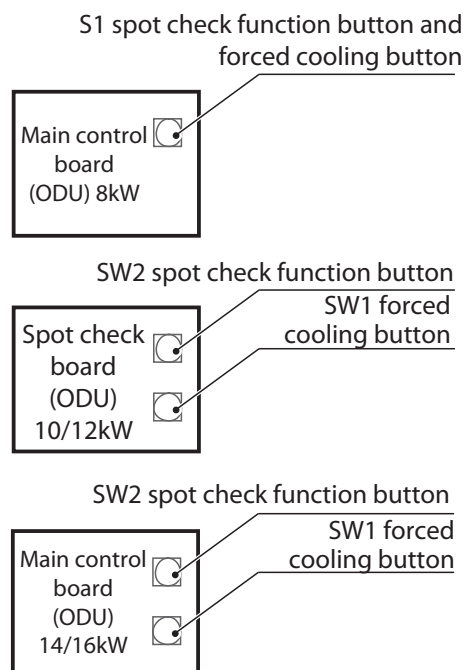


Fig.2-1

Force Cooling Control

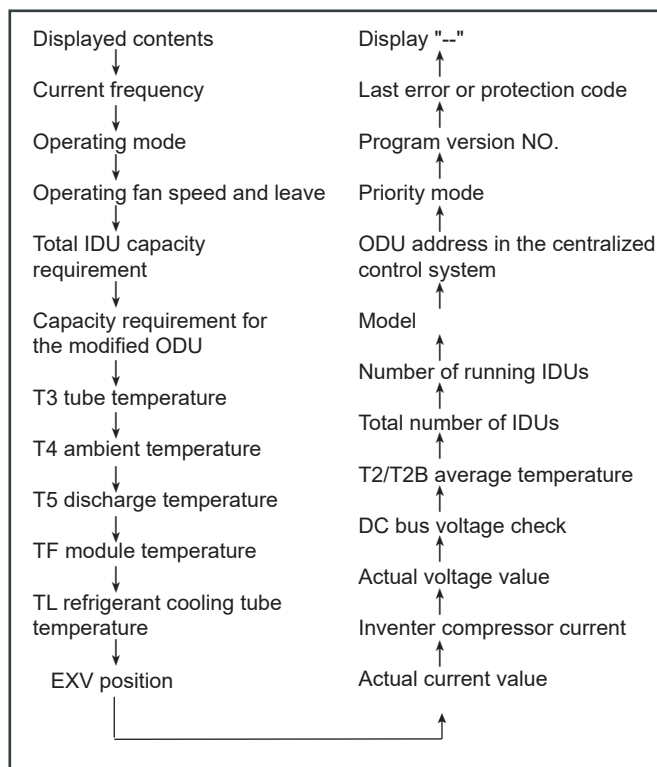
The ODU main control board is provided with a forced cooling button SW1. The button is pressed once to send a forced cooling signal (for 8kW models, the button is long pressed for over 5s) to all IDUs at once, forcing all IDUs to start cooling. The outdoor compressor runs at a fixed frequency according to the table and the IDU fan operates at a high speed. Press the button again to exit the forced cooling operation (for 8kW models, the button is long pressed for over 5s).

Forced cooling frequency table

Model	8kW single phase	10/12/14/16kW single phase
Forced cooling frequency (Hz)	44	44

Display function

The ODU main control board is equipped with the spot check function button (In the above figure: S1 for 8kW and SW2 for 10/12/14/16kW). The digital tubes on the main control board will show the parameters of the air conditioner in the following order (the button displays one parameter at a time). For 8kW models, the Compressor Current Value and System Address display "--".

**NOTE**

- 12 hours preheating is imperative after turn on the power switch. Please do not shut down the power when the unit is supposed to stop running in 24h or shorter time. (This is to warm the crankcase heat box to avoid compulsive start of condenser.)
- Pay attention not to block the air inlet and outlet. Blocks may decrease the efficiency of the unit or startup the protector, which will stop running.
- Operate the switches and push buttons with an insulated stick (such as a closed ball-point pen) to avoid touching of live parts.

3. OPERATION RANGE

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

Table 3-1

Model		8/10/12kW	14/16kW
Cooling	Room temperature	17°C to 32°C	17°C to 32°C
	Outdoor temperature	-5°C to 55°C	-5°C to 55°C
Heating	Room temperature	0°C to 30°C	0°C to 30°C
	Outdoor temperature	-15°C to 27°C	-15°C to 27°C
Dehumidification	Room temperature	12°C to 32°C	12°C to 32°C
	Outdoor temperature	-5°C to 55°C	-5°C to 55°C

**NOTE**

- 1 If the above operating conditions cannot be met, the safety protection function may be triggered and the air conditioner may malfunction.
- 2 When the unit operates in "cooling" mode in a relatively humid environment (relative humidity higher than 80%), condensation may occur on the surface of the IDU and water may drip. In this case, turn the air guide to the maximum air outlet position and set the fan speed to "High".

4. OPERATION AND PERFORMANCE

4.1 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.

4.2 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.

4.3 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.

4.4 Three-minute protection feature

- A protection feature prevents the air conditioner from being activated for approximately 3 minutes when it restarts immediately after operation.

4.5 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 preset. Standby or No Priority will be displayed in the Control Panel.

4.6 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.

4.7 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.

5 MALFUNCTION CODE OF OUTDOOR UNIT

Table 5-1 (8KW)

No.	Fault or protection type	Recovery mode	Error code
1	Module board stop abnormally	Recoverable	EE
2	Communication error between indoor and outdoor unit	Recoverable	E2
3	Outdoor heat exchanger temperature sensor (T3) error or outdoor ambient temperature sensor (T4) error	Recoverable	E4
4	Input voltage protection	Recoverable	E5
5	DC fan protection	Recoverable	E6
6	Discharge pipe temperature sensor error	Recoverable	E7
7	EEPROM mismatch	Unrecoverable	E9
8	Compressor parameters mismatch	Unrecoverable	E.9.
9	E6 error occurs more than six times in an hour.	Unrecoverable	Eb
10	PFC error (reserved)	Recoverable	EF
11	Heat exchanger temperature sensor(reserved)	Recoverable	EH
12	Cooling ambient temperature is below -5 degrees Celsius	Recoverable	EP
13	Communication fault between main board and module board	Recoverable	H0
14	M-Home mismatch(reserved)	Recoverable	HF
15	L0 error occurs three times in one hour.	Unrecoverable	H4
16	Number of indoor units decreased or increased error	Recoverable	H7
17	IPM module protection	Recoverable	L0
18	DC bus low voltage protection	Recoverable	L1
19	DC bus high voltage protection	Recoverable	L2
20	MCE error (reserved)	Recoverable	L4
21	Zero speed protection	Recoverable	L5
22	Phase sequence error	Recoverable	L7
23	Compressor over-current protection	Recoverable	LA
24	Compressor current sampling circuit fault (reserved)	Recoverable	LC
25	Compressor start-up error (reserved)	Recoverable	LH
26	Radiator surface high temperature protection	Recoverable	PL
27	System high voltage protection (reserved)	Recoverable	P1
28	System low voltage protection	Recoverable	P2
29	Over-current protection	Recoverable	P3
30	Discharge temperature (T5) protection	Recoverable	P4
31	Outdoor heat exchanger temperature(T3) protection	Recoverable	P5
32	Typhoon protection	Recoverable	P8
33	T2 indoor unit evaporator temperature protection	Recoverable	PE

Table 5-2 (10/12KW)

No.	Fault or protection type	Recovery mode	Error code
1	Communication fault between main control board and communication terminals block	Recoverable	C0
2	IDU communication error	Recoverable	E2
3	T3 or T4 temperature sensor error	Recoverable	E4
4	Input voltage protection	Recoverable	E5
5	DC fan protection	Recoverable	E6
6	EEPROM error	Unrecoverable	E9
7	Wrong compressor parameters	Unrecoverable	E.9.
8	E6 fault occurs more than six times in an hour.	Unrecoverable	Eb
9	PFC fault	Unrecoverable	EF
10	Refrigerant radiator temperature sensor error	Recoverable	EH
11	Cooling ambient temperature lower than -5℃	Recoverable	EP
12	DC bus voltage protection	Recoverable	F1
13	Communication between the main control board and the inverter fails.	Recoverable	H0
14	M-Home mismatch(reserved)	Recoverable	HF
15	L (L0/L1) fault occurs three times in one hour.	Unrecoverable	H4
16	The fault is increased or reduced on the IDU.	Recoverable	H7
17	IPM protection	Recoverable	L0
18	DC bus low voltage protection	Recoverable	L1
19	DC bus high voltage protection	Recoverable	L2
20	MCE error	Recoverable	L4
21	Zero speed protection	Recoverable	L5
22	Compressor phase sequence error	Recoverable	L7
23	Protection for compressor speed change > 15Hz	Recoverable	L8
24	Protection for the difference between the set speed and the running speed of the compressor > 15Hz	Recoverable	L9
25	Radiator surface temperature protection	Recoverable	PL
26	System high pressure protection	Recoverable	P1
27	System low pressure protection	Recoverable	P2
28	Overcurrent protection	Recoverable	P3
29	Discharge temperature T5 protection	Recoverable	P4
30	Outdoor condenser temperature T3 protection	Recoverable	P5
31	Typhoon protection	Recoverable	P8
32	IDU evaporator temperature T2 protection	Recoverable	PE

Table 5-3 (14/16KW)

No.	Fault or protection type	Recovery mode	Error code
1	Communication error between IDU and ODU	Recoverable	E2
2	T3 or T4 temperature sensor error	Recoverable	E4
3	Input voltage protection	Recoverable	E5
4	DC fan protection	Recoverable	E6
5	EEPROM fault	Unrecoverable	E9
6	Wrong compressor parameters	Unrecoverable	E.9.
7	E6 fault occurs more than six times in an hour.	Unrecoverable	Eb
8	PFC error	Unrecoverable	EF
9	Refrigerant radiator temperature sensor error	Recoverable	EH
10	DC bus voltage protection	Recoverable	F1
11	Communication between the main control board and the inverter fails.	Recoverable	H0
12	M-Home mismatch(reserved)	Recoverable	HF
13	L (L0/L1) fault occurs three times in one hour.	Unrecoverable	H4
14	The fault is increased or reduced on the IDU.	Recoverable	H7
15	IPM protection	Recoverable	L0
16	DC bus low voltage protection	Recoverable	L1
17	DC bus high voltage protection	Recoverable	L2
18	MCE error	Recoverable	L4
19	Zero speed protection	Recoverable	L5
20	Compressor phase sequence error	Recoverable	L7
21	Protection for compressor speed change > 15Hz	Recoverable	L8
22	Protection for the difference between the set speed and the running speed of the compressor > 15Hz	Recoverable	L9
23	Radiator surface temperature protection	Recoverable	PL
24	System high pressure protection	Recoverable	P1
25	System low pressure protection	Recoverable	P2
26	Overcurrent protection	Recoverable	P3
27	T5 discharge temperature protection	Recoverable	P4
28	T3 outdoor condenser temperature protection	Recoverable	P5
29	Typhoon protection	Recoverable	P8
30	T2 IDU evaporator temperature protection	Recoverable	PE
31	Ambient temperature less than or equal to -5 °C in cooling mode (ODU reports the fault)	Recoverable	EP

If the problem remains, please contact the distributor or MUNDOCLIMA's air conditioner customer service center, and provide info about the product model and the fault details.

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".

6. 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 3 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 conditioners cooling

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.

7. TROUBLESHOOTING

7.1. 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 7-1)

Table 7-1

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.

7.2 Troubles and causes of remote controller

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

(see in Table 7-2)

Table 7-2

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.

8. CONFIGURATION

8.1 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.



NOTE

Please cut off the power supply when changing the dial switch

8.2 Dial Switch Settings

Dial code definitions:



means 0



means 1

Table 8-1 (8 kW)

Switch	Setting	Switch positions	Description
SW1	1.Spot check 2.Force cooling		Spot check button and force cooling button(long pressed over 5 seconds would into forced cooling mode, long pressed over 5 seconds again would exit forced cooling mode)
S1	S1-1		S1-1 is ON, Clearing of indoor unit address S1-1 is OFF, Automatic addressing (default)
	S1-2		S1-2 is ON, Forced implementation of old indoor unit protocol S1-2 is OFF, Automatically adapting to indoor unit protocol(default)
S2	S2=00		Automatic priority mode
	S2=01		Cooling priority mode
	S2=10		Heating priority mode
	S2=11		First on priority mode (default))

Table 8-2 (10/12 kW)















Switch	Setting	Switch positions ¹	Description
SW1	Force cooling		Press SW1 to enter the forced cooling mode; press it once again to exit the forced cooling mode
SW2	Spot check		Spot check button
ENC3	Network address		DIP switch for network address of ODU Valid at 0–7, 0–7 for addresses 0–7
S1	S1-1		S1-1 is ON, Forced implementation of old IDU protocol S1-1 is OFF, Automatic selection of the new or old protocol (default)
	S1-2		S1-2 is ON, Forced clearing of IDU address S1-2 is OFF, Automatic addressing(default)
	S1-3		S1-3 is ON, Automatically judging EXV control mode of ODU in cooling mode S1-3 is OFF, ODU EXV of forced discharge temperature control in cooling mode(default)
S2	S2=000		First on priority mode (default)
	S2=100		Cooling priority mode
	S2=010		Automatic priority mode
	S2=110		In response to heating mode only
	S2=001		In response to cooling mode only
	S2=011 111, 101		Heating priority mode at other DIP combinations
S3	S3=100		ODU capacity DIP: 10KW
	S3=010		ODU capacity DIP: 12KW

Table 8-3 (14/16 kW)














Switch	Setting	Switch positions ¹	Description
SW1	Force cooling		Press SW1 to enter the forced cooling function; press it again to exit the forced cooling function
SW2	Spot check		Spot check button
ENC2	Capacity of ODU		"POWER" - ODU capacity code (3--14KW; 4--16KW)
ENC3	Network address		DIP switch for network address of ODU Valid at 0-7, 0-7 for addresses 0-7 (0 by default)
S1	S1-1		S1-1 is ON, Forced implementation of old IDU protocol S1-1 is OFF, Automatic selection of the new or old protocol (default)
	S1-2		S1-2 is ON, Forced clearing of IDU address S1-2 is OFF, Automatic addressing(default)
	S1-3		S1-3 is ON, Automatically judging EXV control mode of ODU in cooling mode S1-3 is OFF, ODU EXV of forced discharge temperature control in cooling mode(default)
S2	S2=000		First on priority mode (by default)
	S2=100		Cooling priority mode
	S2=010		Automatic priority mode
	S2=110		In response to heating mode only
	S2=001		In response to cooling mode only
	S2=011		Heating priority mode

Table 8-4 Spot check display table (for all model)

DSP1 content	Parameters displayed on DSP2	Remarks
0.--	Operating frequency	Actual value = value displayed
1.--	Operating mode	Refer to Note 1
2.--	Operating fan speed level	Refer to Note 2
3.--	Total capacity requirement of indoor units	
4.--	Total capacity requirement for the modified ODU	
5.--	T3 Condenser temperature(°C)	Actual value = value displayed
6.--	T4 Outdoor ambient temperature(°C)	Actual value = value displayed
7.--	TP discharge temperature(°C)	Actual value = value displayed
8.--	TF invert module Temperature(°C)	Actual value = value displayed
9.--	TL refrigerant cooling tube temperature (°C)	Actual value = value displayed
10.--	EXVA position	Actual value = value displayed× 8
11.--	Actual current (A)	Actual value = value displayed
12.--	Inverter compressor current (A)	Actual value = value displayed
13.--	Actual voltage (V)	Actual value = value displayed
14.--	DC bus voltage (V)	Actual value = value displayed
15.--	Indoor heat exchanger pipe (T2/T2B) average temperature (°C)	Actual value = value displayed
16.--	Total number of IDUs	Actual value = value displayed
17.--	Number of Operating IDUs	
18.--	Model	
19.--	System address	ODU address in the centralized control system
20.--	Priority mode	Refer to Note 3
21.--	Version of the program	
22.--	Most recent error or protection code	"nn" is displayed if no error or protection events have occurred since start-up
23.--	Display "--"	

Notes:

- Operating mode:
 - 0: standby; 2: cooling; 3: heating; 4: forced cooling.
- The fan speed index is related to the fan speed in rpm and can take any integer value in the range 0 (0-off) to 8 (fastest).
- Priority mode:
 - 0: first ON priority; 1: cooling priority; 2: Automatic selection of priority mode; 3: heating only; 4: cooling only; 5: heating priority

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