

Airwell

Just feel well

SERVICE MANUAL

Convertible Type Indoor Unit
FVVA Range R410a
English Manual

FVVA-025N-01M22

FVVA-050/045/035N-01M22

FVVA-090/080/070N-01M22

FVVA-140/110N-01M22

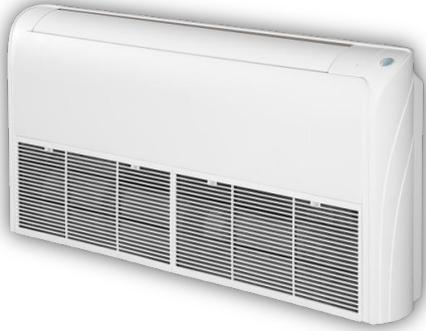


IMPORTANT NOTE:

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

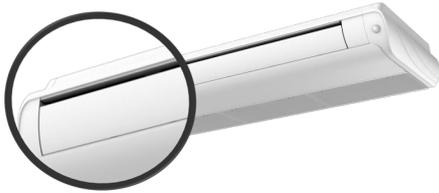
1. Convertible Type Indoor Unit

1.1 Features



FVVA-025N-01M22
FVVA-050/045/035N-01M22
FVVA-090/080/070N-01M22
FVVA-140/110N-01M22

- Appearance without screw, easy care



- New DC fan motor
- Flexible installation ,on the floor or on the ceiling
- Turbo mode 4.2m(14KW) which is flexible for installation choice;
- Left and right swing controlled simultaneously

1.2 Specification

MODEL		FVVA-025N-01M22	FVVA-035N-01M22	FVVA-045N-01M22	
Power supply		Ph-V-Hz	1,220~230,50/60	1,220~230,50/60	1,220~230,50/60
Cooling	Capacity	kBtu/h	9.5	12.3	15.4
	Capacity	kW	2.8	3.6	4.5
	Power input	W	35	35	45
	Current	A	0.14	0.14	0.16
Heating	Capacity	kBtu/h	10.9	13.6	17.1
	Capacity	kW	3.2	4.0	5
	Power input	W	35	35	45
	Current	A	0.14	0.14	0.16
	Heating capacity at low temp.	kW	2.5	3.2	4
Operating current		A	0.14	0.14	0.16
Power consumption		kW	3.0	3.0	3.0
Indoor motor	Brand		zhongshan broad-ocean	zhongshan broad-ocean	zhongshan broad-ocean
	Model		ZWK511A800053	ZWK511A800053	ZWK511A800053
	Type		DC	DC	DC
	Insulation class		E class	E class	E class
	IP class		IP40	IP40	IP40
	Power input	W	35	35	45
	Power output	W	90	90	90
	Capacitor	μF	/	/	/
	Speed (High/Middle/Low)	rpm	800/750/700	800/750/700	900/800/700
Indoor fan	Brand		Haier	Haier	Haier
	Type		centrifugal	centrifugal	centrifugal
	Quantity		2	2	2
Indoor coil	a. Number of rows		2	2	2
	b. Tube pitch (a)×row pitch (b)	mm	21*18.186	21*18.186	21*18.186
	c. Fin spacing	mm	1.3	1.3	1.3
	d. Fin type (code)		Hydrophilic aluminum		
	e. Tube outside dia. and type	mm	Φ7 Inner groove tube		
	f. Coil length×height×width	mm	697×294×36.4	697×294×36.4	697×294×36.4
	g. Number of circuits		3	3	3

MODEL			FVVA-025N-01M22	FVVA-035N-01M22	FVVA-045N-01M22
Cabinet	Cabinet coating type		Plastic	Plastic	Plastic
	Cabinet salt spray test duration	Hour	/	/	/
	Control box IP class		IP20	IP20	IP20
Construction	Sheet metal thickness		/	/	/
	Drain pan material		PS	PS	PS
	Drain pan insulation		20	20	20
	Drain pump option		NO	NO	NO
	Branch outlet option		NO	NO	NO
Indoor wall	Material		Plastic	Plastic	Plastic
	Thickness	mm	/	/	/
	Double or single skin		single	single	single
Air filter	Material		PP	PP	PP
	Mesh		100	100	100
	Pressure drop	Pa	5	5	5
Piping dimension	Liquid pipe	mm	6.35	6.35	6.35
	Gas pipe	mm	9.52	12.7	12.7
	Drain hose	mm	20	20	20
Fresh air dimension	mm	20	20	20	
Sound pressure level (H/M/L)	dB (A)		38/36/34	38/36/34	42/38/35
Sound power level (H/M/L)	dB (A)		52/50/47	52/50/47	55/51/48
Standard static pressure	Pa		/	/	/
Indoor air flow (H/M/L)	m ³ /h		820/750/690	820/750/690	950/820/690
Dimension (W*H*D)	mm		1000*230*680	1000*230*680	1000*230*680
Packing (W*H*D)	mm		1100*305*779	1100*305*779	1100*305*779
Net weight / Gross weight	kg		27.9/33.6	27.9/33.6	27.9/33.6
Nominal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C) Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.					

MODEL		FVVA-050N-01M22	FVVA-070N-01M22	FVVA-080N-01M22
Power supply		Ph-V-Hz	1,220~230,50/60	1,220~230,50/60
Cooling	Capacity	kBtu/h	19.1	24.2
	Capacity	kW	5.6	7.1
	Power input	W	45	80
	Current	A	0.16	0.21
Heating	Capacity	kBtu/h	21.5	27.3
	Capacity	kW	6.3	8
	Power input	W	45	80
	Current	A	0.16	0.21
	Heating capacity at low temp.	kW	5	6.3
Operating current		A	0.16	0.21
Power consumption		kW	3.0	3.0
Indoor motor	Brand		zhongshan broad-ocean	zhongshan broad-ocean
	Model		ZWK511A800053	ZWK511A800054
	Type		DC	DC
	Insulation class		E class	E class
	IP class		IP40	IP40
	Power input	W	45	80
	Power output	W	90	120
	Capacitor	μF	/	/
	Speed (High/Middle/Low)	rpm	900/800/700	900/850/800
Indoor fan	Brand		Haier	Haier
	Type		centrifugal	centrifugal
	Quantity		2	3
Indoor coil	a. Number of rows		2	2
	b. Tube pitch (a)×row pitch (b)	mm	21*18.186	21*18.186
	c. Fin spacing	mm	1.3	1.3
	d. Fin type (code)		Hydrophilic aluminum	
	e. Tube outside dia. and type	mm	Φ7 Inner groove tube	Φ7 Inner groove tube
	f. Coil length×height×width	mm	697×294×36.4	1005×294×36.4
	g. Number of circuits		3	7

MODEL			FVVA-050N-01M22	FVVA-070N-01M22	FVVA-080N-01M22
Cabinet	Cabinet coating type		Plastic	Plastic	Plastic
	Cabinet salt spray test duration	Hour	/	/	/
	Control box IP class		IP20	IP20	IP20
Construction	Sheet metal thickness		/	/	/
	Drain pan material		PS	PS	PS
	Drain pan insulation		20	20	20
	Drain pump option		NO	NO	No
	Branch outlet option		NO	NO	No
Indoor wall	Material		Plastic	Plastic	Plastic
	Thickness	mm	/	/	/
	Double or single skin		single	single	Single
Air filter	Material		PP	PP	PP
	Mesh		100	100	100
	Pressure drop	Pa	5	5	5
Piping dimension	Liquid pipe	mm	6.35	9.52	9.52
	Gas pipe	mm	12.7	15.88	15.88
	Drain hose	mm	20	20	25
Fresh air dimension	mm	20	20	Φ200	
Sound pressure level (H/M/L)	dB (A)		42/38/35	46/44/41	47/44/41
Sound power level (H/M/L)	dB (A)		55/51/48	60/58/54	61/58/54
Standard static pressure	Pa		/	/	/
Indoor air flow (H/M/L)	m ³ /h		950/820/690	1420/1270/1240	1570/1420/1240
Dimension (W*H*D)	mm		1000*230*680	1325*230*680	1325*230*680
Packing (W*H*D)	mm		1100*305*779	1425*305*779	1425*305*779
Net weight / Gross weight	kg		27.9/33.6	35.8/42.1	35.8/42.1
Nominal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C) Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.					

MODEL		FVVA-090N-01M22	FVVA-110N-01M22
Power supply		Ph-V-Hz	1,220~230,50/60
Cooling	Capacity	kBtu/h	30.7
	Capacity	kW	9
	Power input	W	105
	Current	A	0.23
Heating	Capacity	kBtu/h	34.1
	Capacity	kW	10
	Power input	W	105
	Current	A	0.23
	Heating capacity at low temp.	kW	8
Operating current		A	0.23
Power consumption		kW	3.0
Indoor motor	Brand		zhongshan broad-ocean
	Model		ZWK511A800054
	Type		DC
	Insulation class		E class
	IP class		IP40
	Power input	W	105
	Power output	W	120
	Capacitor	μF	/
	Speed (High/Middle/Low)	rpm	1000/900/800
Indoor fan	Brand		Haier
	Type		centrifugal
	Quantity		3
Indoor coil	a. Number of rows		2
	b. Tube pitch (a)×row pitch (b)	mm	21*18.186
	c. Fin spacing	mm	1.3
	d. Fin type (code)		
	e. Tube outside dia. and type	mm	
	f. Coil length×height×width	mm	1005×294×36.4
	g. Number of circuits		7

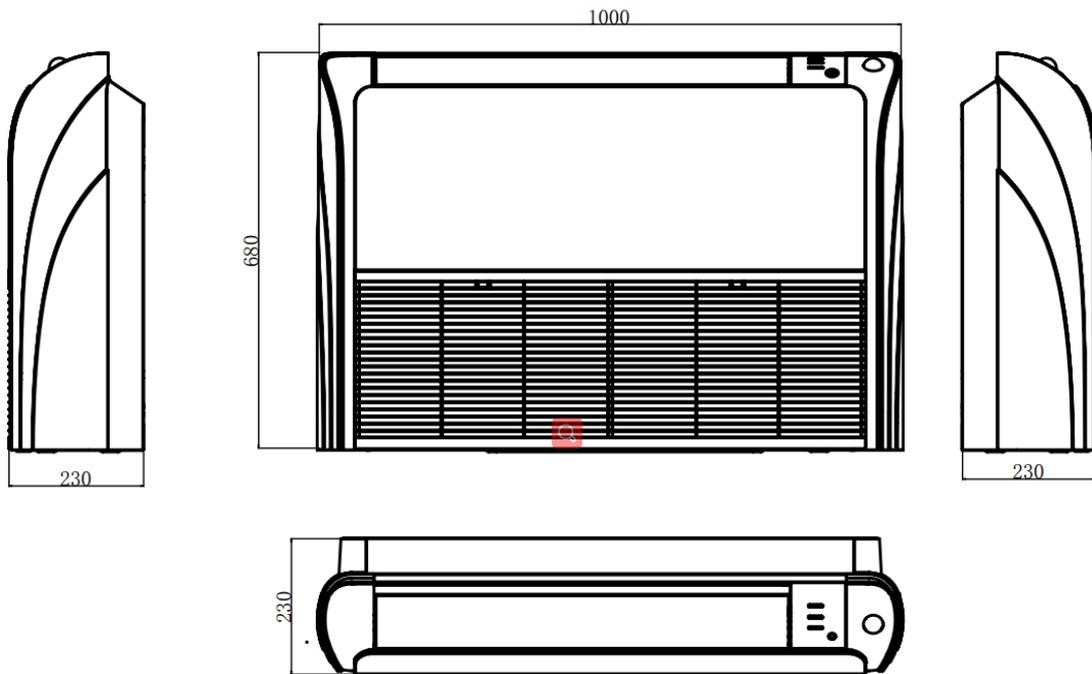
MODEL			FVVA-090N-01M22	FVVA-110N-01M22
Cabinet	Cabinet coating type		Plastic	Plastic
	Cabinet salt spray test duration	Hour	/	/
	Control box IP class		IP20	IP20
Construction	Sheet metal thickness		/	/
	Drain pan material		PS	PS
	Drain pan insulation		20	20
	Drain pump option		NO	NO
	Branch outlet option		NO	NO
Indoor wall	Material		Plastic	Plastic
	Thickness	mm	/	/
	Double or single skin		single	single
Air filter	Material		PP	PP
	Mesh		100	100
	Pressure drop	Pa	5	5
Piping dimension	Liquid pipe	mm	9.52	9.52
	Gas pipe	mm	15.88	15.88
	Drain hose	mm	25	25
Fresh air dimension	mm	25	25	
Sound pressure level (H/M/L)	dB (A)	47/44/41	50/46/43	
Sound power level (H/M/L)	dB (A)	61/58/55	63/60/57	
Standard static pressure	Pa	/	/	
Indoor air flow (H/M/L)	m ³ /h	1570/1420/1240	2110/1990/1750	
Dimension (W*H*D)	mm	1325*230*680	1650*230*680	
Packing (W*H*D)	mm	1425*305*779	1750*305*779	
Net weight / Gross weight	kg	35.8/42.1	43.5/50.5	
Nominal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C)				
Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C)				
The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.				

MODEL		FVVA-140N-01M22	
Power supply		Ph-V-Hz	1,220~230,50/60
Cooling	Capacity	kBtu/h	48.0
	Capacity	kW	14.0
	Power input	W	126
	Current	A	0.51
Heating	Capacity	kBtu/h	55.0
	Capacity	kW	16.0
	Power input	W	126
	Current	A	0.51
	Heating capacity at low temp.	kW	12.5
Operating current		A	0.51
Power consumption		kW	3.0
Indoor motor	Brand		zhongshan broad-ocean
	Model		ZWK511B500030
	Type		DC
	Insulation class		E class
	IP class		IP40
	Power input	W	126
	Power output	W	150
	Capacitor	μF	/
	Speed (High/Middle/Low)	rpm	1050/1000/900
Indoor fan	Brand		Haier
	Type		centrifugal
	Quantity		4
Indoor coil	a. Number of rows		2
	b. Tube pitch (a)×row pitch (b)	mm	21*18.186
	c. Fin spacing	mm	1.3
	d. Fin type (code)		Hydrophilic aluminum
	e. Tube outside dia. and type	mm	Φ7.0 Inner groove tube
	f. Coil length×height×width	mm	Φ7.0 Inner groove tube
	g. Number of circuits		1330×294×36.4

MODEL			FVVA-140N-01M22
Cabinet	Cabinet coating type		Plastic
	Cabinet salt spray test duration	Hour	/
	Control box IP class		IP20
Construction	Sheet metal thickness		/
	Drain pan material		PS
	Drain pan insulation		20
	Drain pump option		NO
	Branch outlet option		NO
Indoor wall	Material		Plastic
	Thickness	mm	/
	Double or single skin		single
Air filter	Material		PP
	Mesh		100
	Pressure drop	Pa	5
Piping dimension	Liquid pipe	mm	9.52
	Gas pipe	mm	15.88
	Drain hose	mm	25
Fresh air dimension	mm	25	
Sound pressure level (H/M/L)	dB (A)		50/46/43
Sound power level (H/M/L)	dB (A)		63/60/57
Standard static pressure	Pa		/
Indoor air flow (H/M/L)	m ³ /h		2110/1990/1750
Dimension (W*H*D)	mm		1650*230*680
Packing (W*H*D)	mm		1750*305*779
Net weight / Gross weight	kg		43.5/50.5
Nominal condition: indoor temperature (cooling): 27DB (°C)/19WB (°C), indoor temperature (heating): 20DB (°C) Outdoor temperature (cooling): 35DB (°C)/24WB (°C), outdoor temperature (heating): 7DB (°C)/6WB (°C) The noise level will be measured in the third octave band limited values, using a Real Time Analyser calibrated sound intensity meter. It is a sound pressure noise level.			

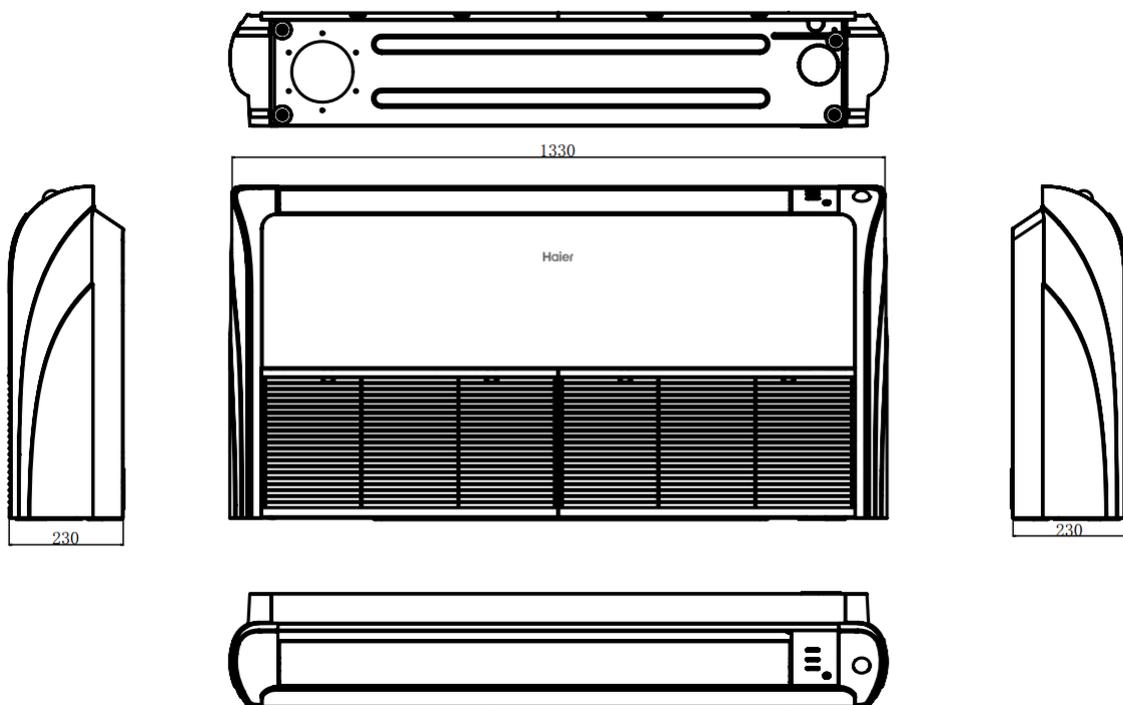
1.3 Dimension

FVVA-025N-01M22
FVVA-050/045/035N-01M22

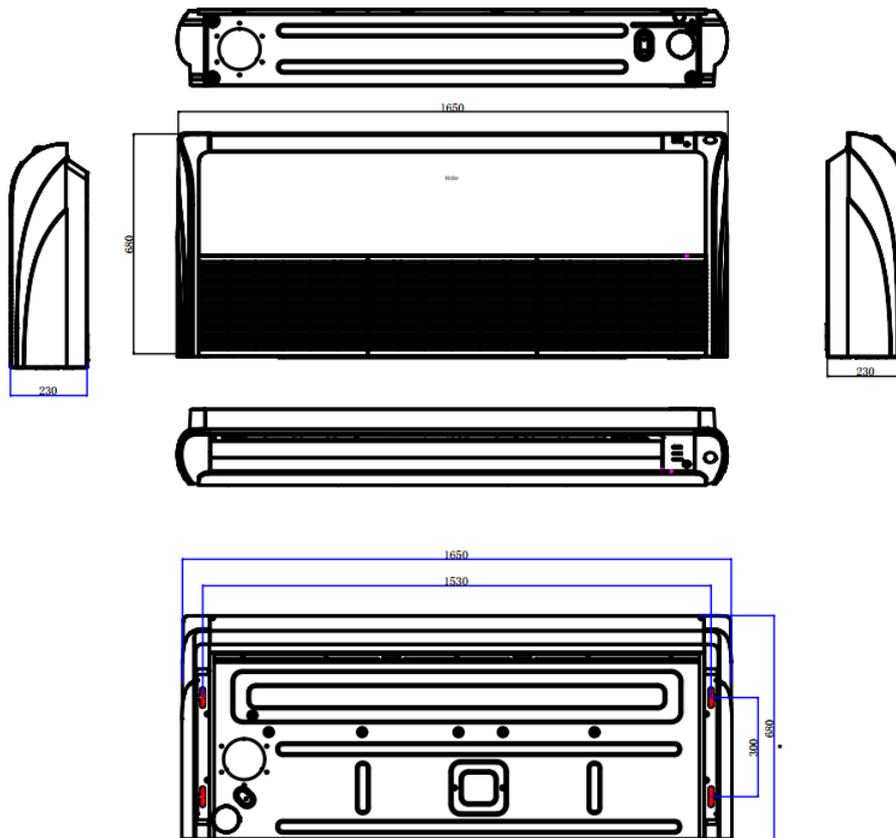


Convertible Type
Indoor Unit

FVVA-090/080/070N-01M22

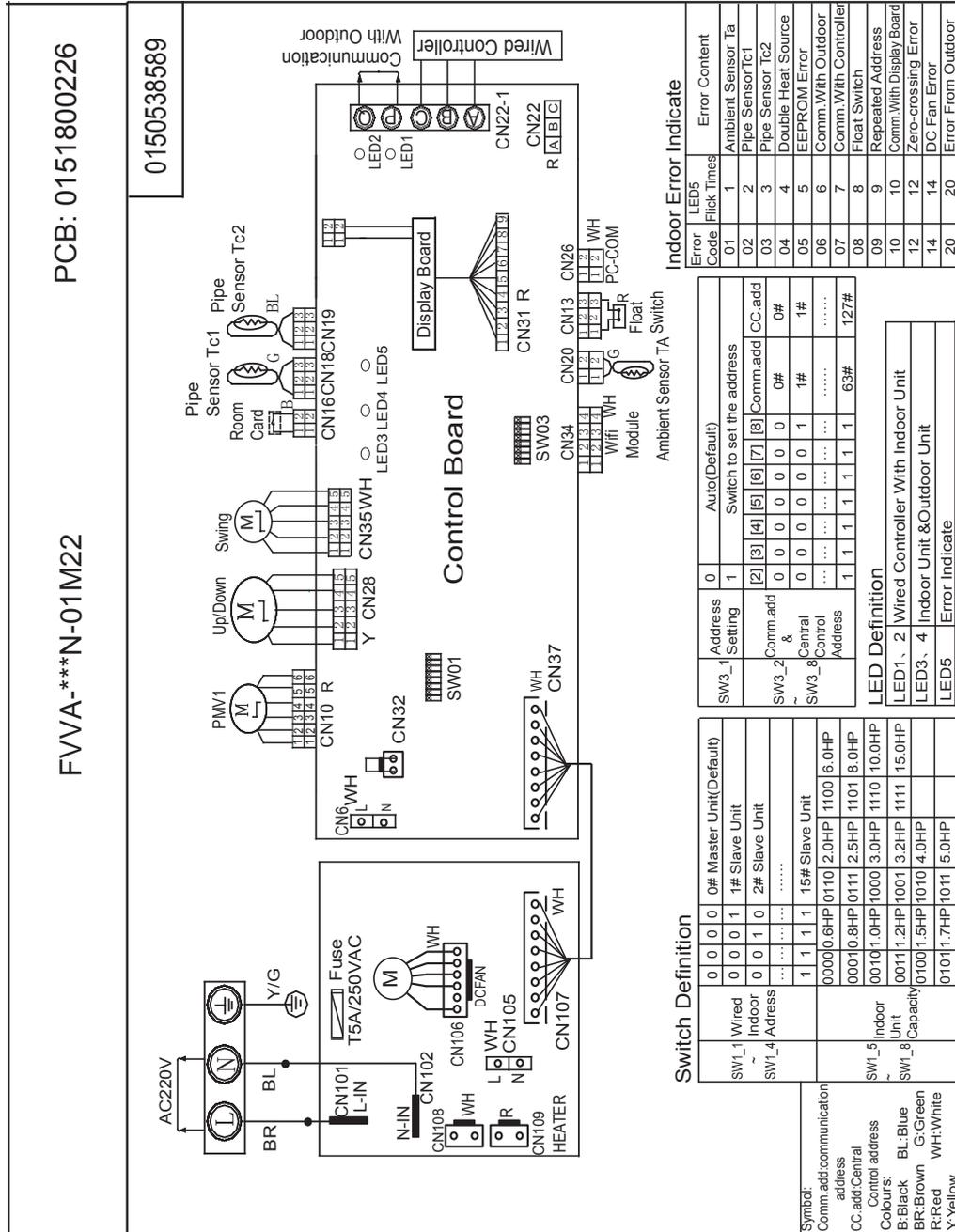


FVVA-140/110N-01M22



Convertible Type
Indoor Unit

1.5 Wiring diagram



Convertible Type Indoor Unit

1.6 Electric characteristics

Model	Units				Power supply		Indoor fan motor		Power input (W)	
	Phase	FQY	Voltage	Volt. range	MCA	MFA	Output (W)	FLA	Cooling	Heating
AC092MDERA	1	50/60	220-230	198~253	0.18	0.4	90	0.14	35	35
AC122MDERA	1	50/61	220-230	198~253	0.18	0.4	90	0.14	35	35
AC162MDERA	1	50/62	220-230	198~253	0.20	0.5	90	0.16	45	45
AC182MDERA	1	50/63	220-230	198~253	0.20	0.5	90	0.16	45	45
AC242MDERA	1	50/64	220-230	198~253	0.26	0.6	120	0.21	80	80
AC282MDERA	1	50/65	220-230	198~253	0.29	0.7	120	0.23	105	105
AC302MDERA	1	50/66	220-230	198~253	0.29	0.7	120	0.23	105	105
AC382MDERA	1	50/67	220-230	198~253	0.64	1.5	150	0.51	126	126
AC482MDERA	1	50/68	220-230	198~253	0.64	1.5	150	0.51	126	126

Symbols:

MCA: Min. circuit amps (A)

MFA: Max. fuse amps of circuit breaker Output: Fan motor rated output (w) FLA: Full load amps (A)

Notes:

1. Voltage range

The units are applicable for the electrical systems where voltage supplied to unit is in the range.

2. Maximum allowable voltage unbalance between phases is 2%.

3. $MCA=1.25*FLA$ $MFA\leq 4*FLA$.

4. Power supply uses the circuit breaker.

1.7 Air velocity and temperature distribution

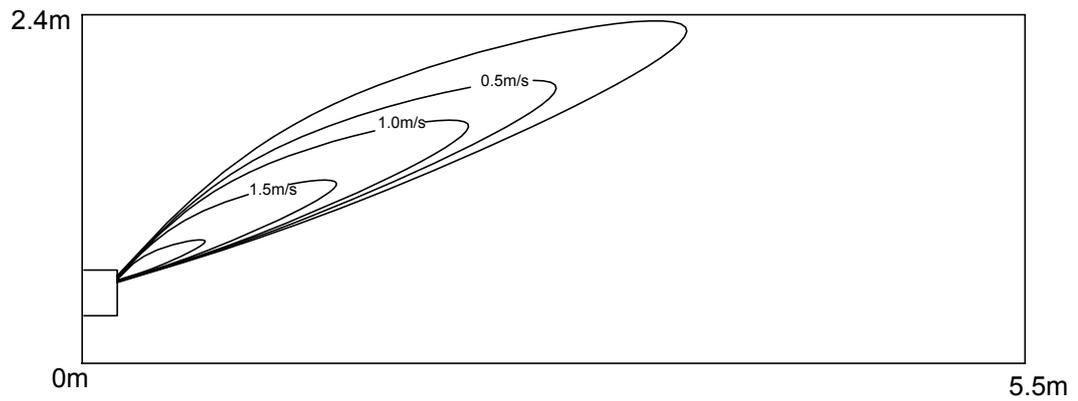
A) On the floor

a. Cooling / Air velocity distribution

Cooling

Blow angle: 25

Air velocity distribution

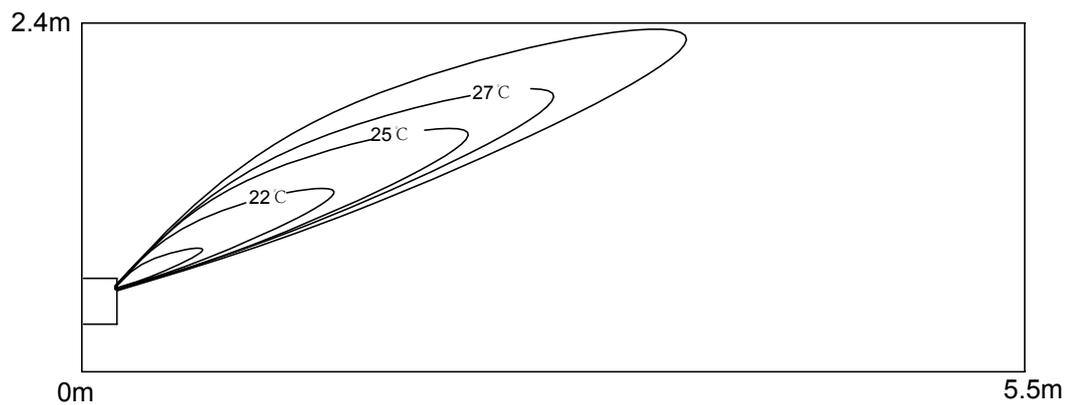


b. Cooling / Temperature distribution

Cooling

Blow angle: 25

Temperature distribution

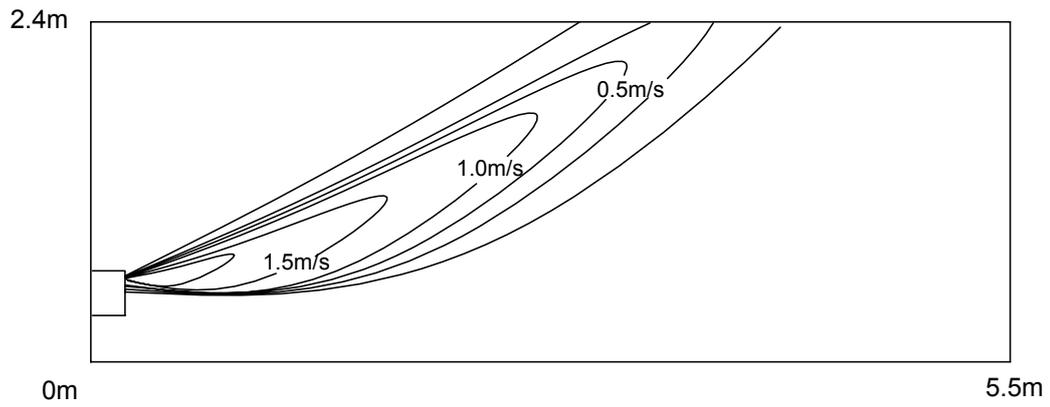


c. Heating / Air velocity distribution

Heating

Blow angle: 5

Air velocity distribution

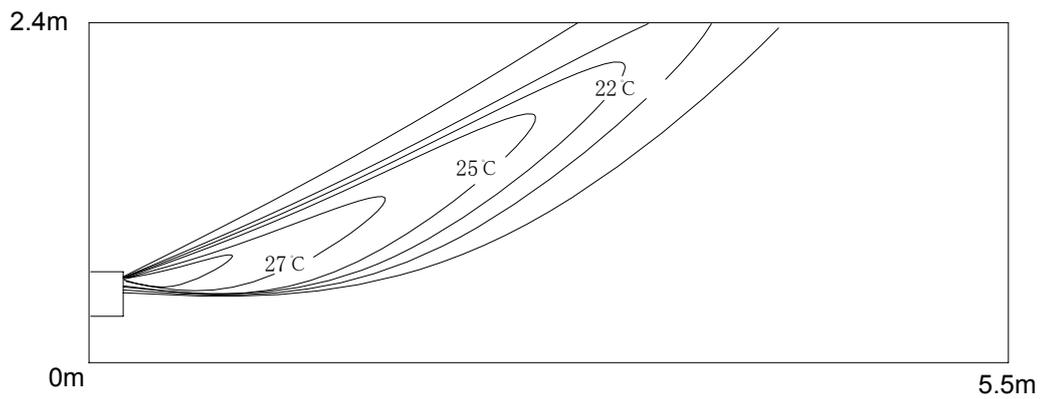


d. Heating / Temperature distribution

Heating

Blow angle: 5

Temperature distribution



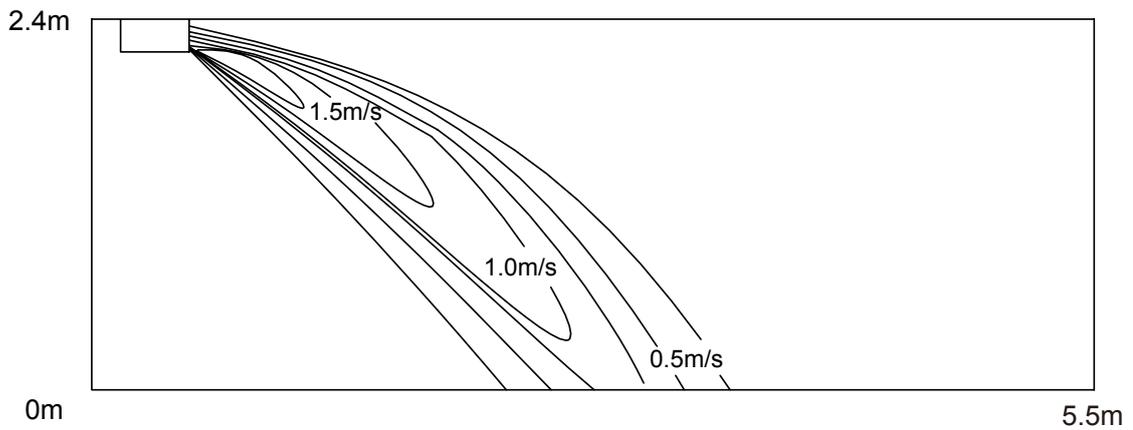
B) Ceiling

a. Cooling / Air velocity distribution

Cooling

Blow angle: 25

Air velocity distribution

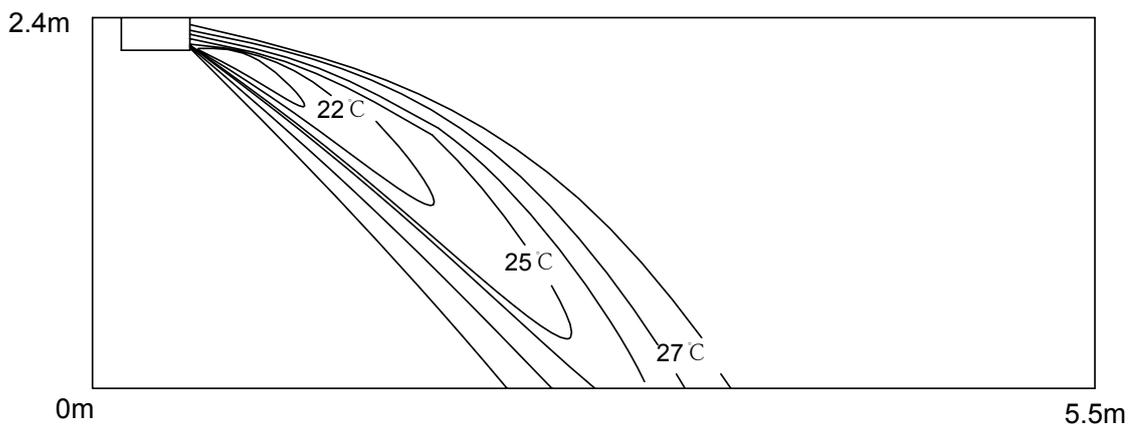


b. Cooling / Temperature distribution

Cooling

Blow angle: 25

Temperature distribution



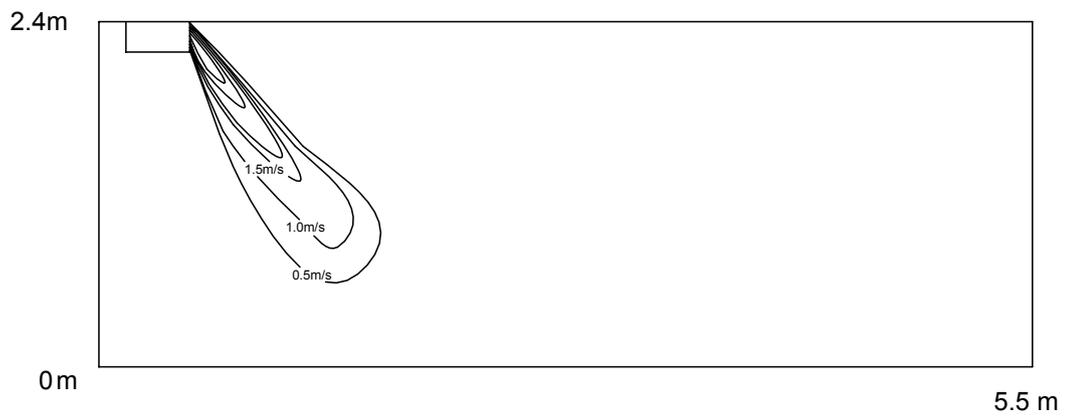
Convertible Type
Indoor Unit

c. Heating / Air velocity distribution

Heating

Blow angle: 65

Air velocity distribution

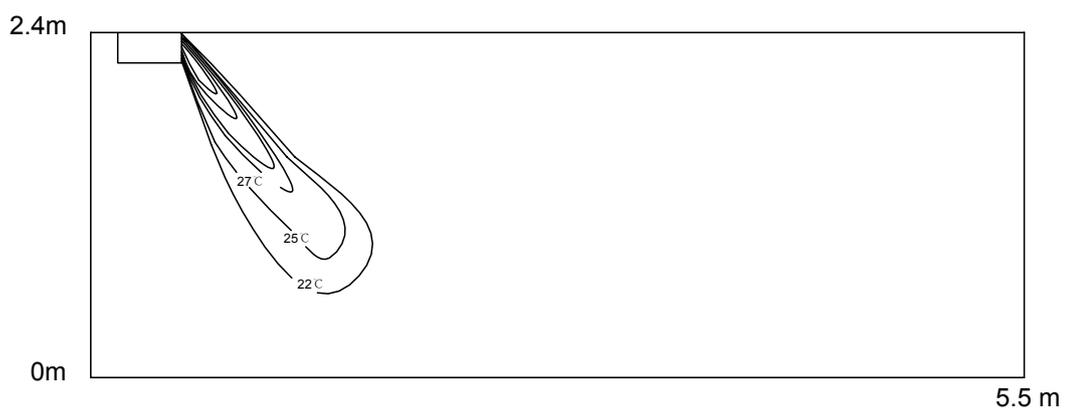


d. Heating / Temperature distribution

Heating

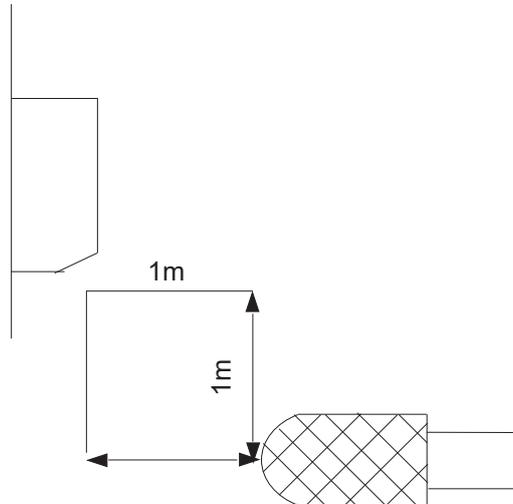
Blow angle: 65

Temperature distribution



1.8 Sound pressure level

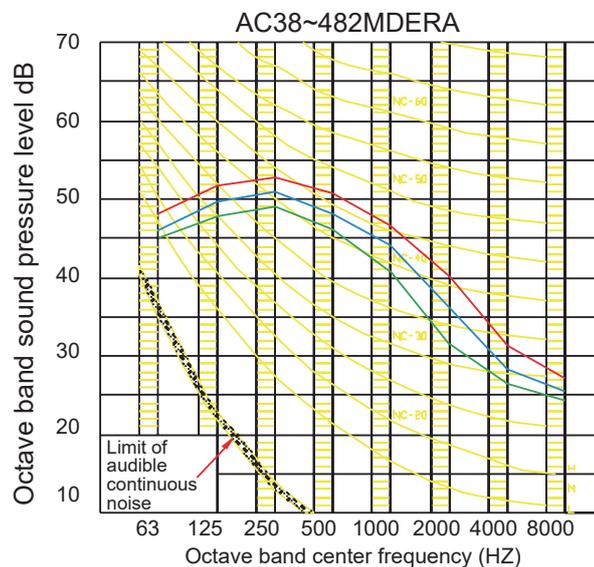
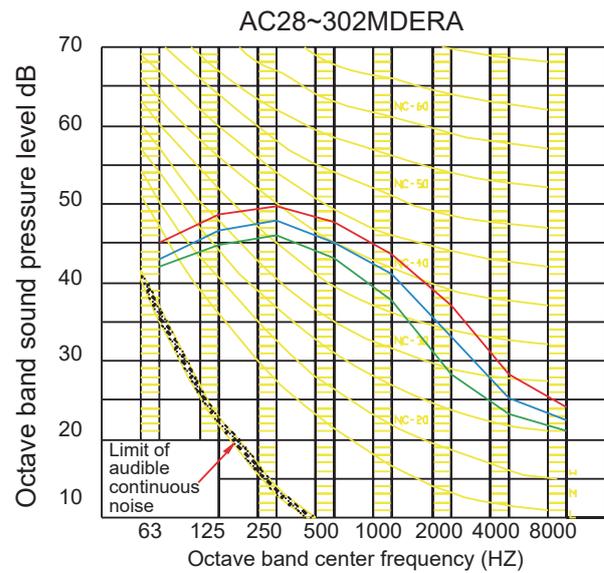
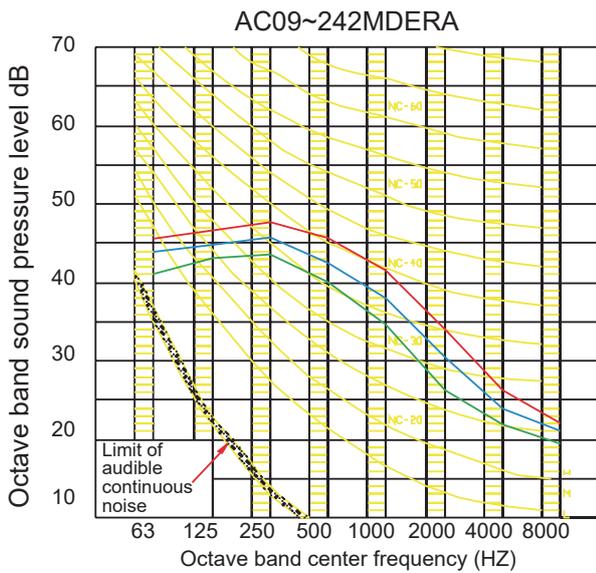
(1) Testing illustrate:



(2) Testing condition:

- a. Unit running in the nominal condition
- b. Test in the semi-anechoic chamber
- c. Noise level varies from the actual factors such as room structure, etc.

(3) Octave band level:



1.9 Installation

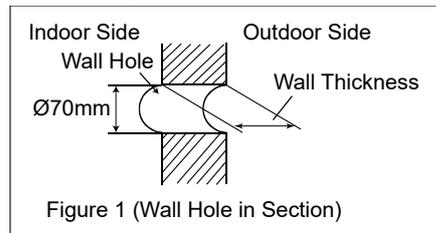
Installing Indoor Unit

1. The distance from air outlet to floor surface shall not exceed 2.7m.
2. Make sure that outlet airflow covers the whole room area; and arrange connecting tubes, wires and drain pipes to proper outdoor positions.
3. Make sure that ceiling structures are capable of bearing unit weight.
4. Connecting tubes, drain pipes and connecting wires can be put across walls to connect indoor unit and outdoor unit.
5. Connecting tubes and drain pipes between indoor and outdoor units shall be shorter for better.
6. Please refer to outdoor installation manual when refrigerant charging volume adjusting is necessary.
7. Joint flanges shall be prepared by users.
8. Valuables (e.g., TV sets, instruments, equipments, artworks, pianos, wireless devices) shall not be placed below the indoor unit lest condensed water drips upon the same.

Installing and Fixing

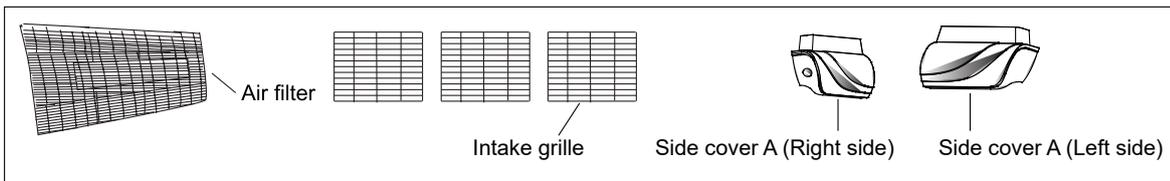
1. Drilling Wall Holes

Drill a wall hole (dia.70mm, see figure 1), slightly tilted downwards on the outside; fix guard ring to finalize before sealing the wall hole with gesso or putty.



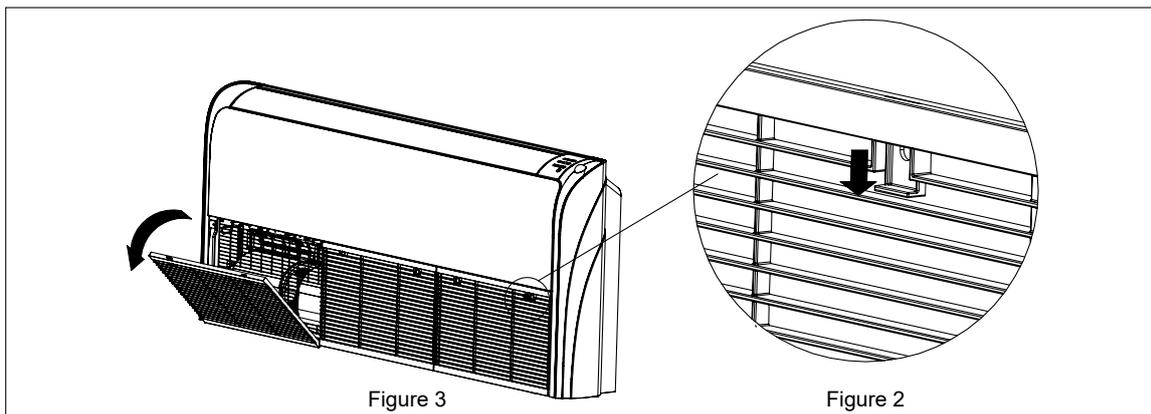
2. Preparation prior to Installing Indoor Unit

- (1) Open the intake grill
- (2) Remove the Side cover(Right and left side)
- (3) This air conditioner can be set up to intake fresh air. The information about how to install for fresh-air intake, refer to "Fresh air intake".



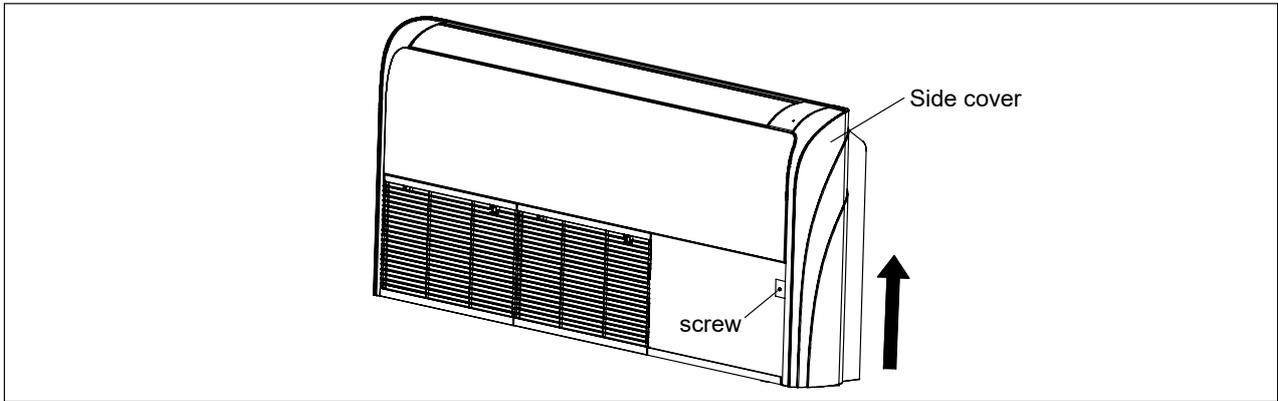
Open the intake grill

- (1) Push the embedding switch according to the direction of the arrowhead.(Refer to Figure 2)
- (2) Turn into the intake grill according to the direction of the arrowhead.(Refer to Figure 3)



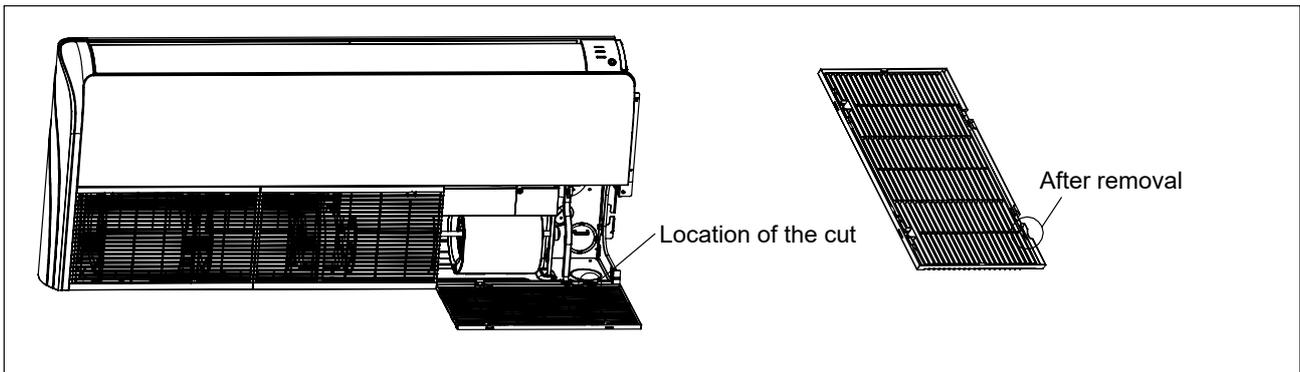
Remove the Side cover

- (1) Remove the screw.
- (2) Push the Side cover according to the direction of the arrowhead.
- (3) Then remove the Side cover.



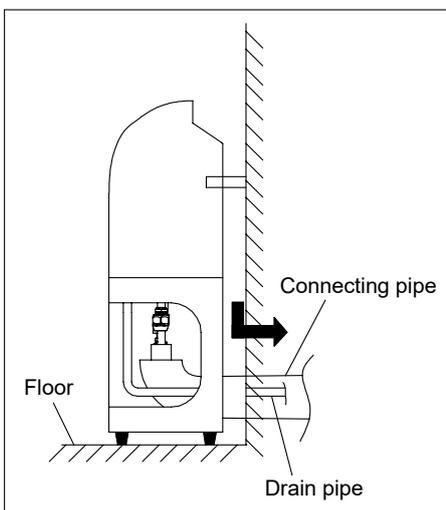
Cut intake grill for drain pipe

- (1) Tools: Knife or Pliers.
- (2) Cut the intake grill before installing the drain pipe, Then, pass the drain pipe through the hole. As the following schematic

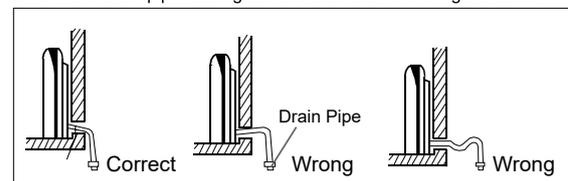


3. Floor Type Installation

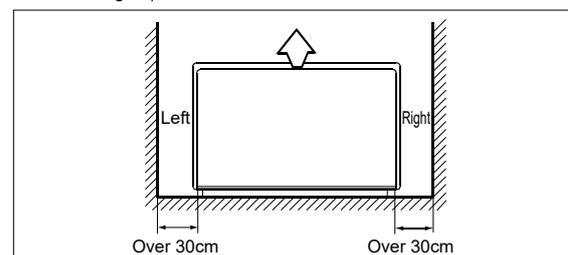
When the unit is installed on the floor, installing them as below:



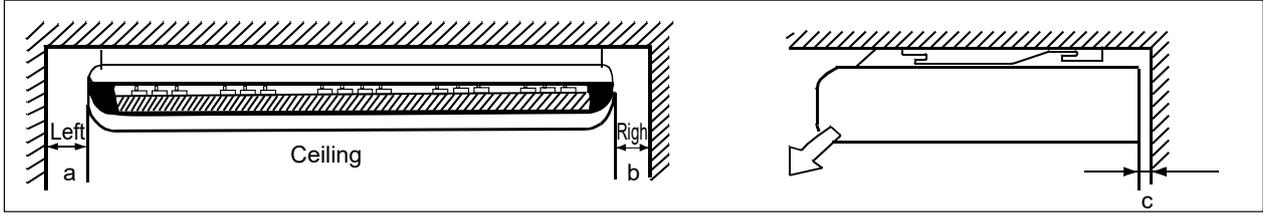
CAUTION: drain pipe leading-out direction shown with figure below.



Attention to distance from the unit to household usables or obstacles (as shown with figure).



4. Ceiling Installation



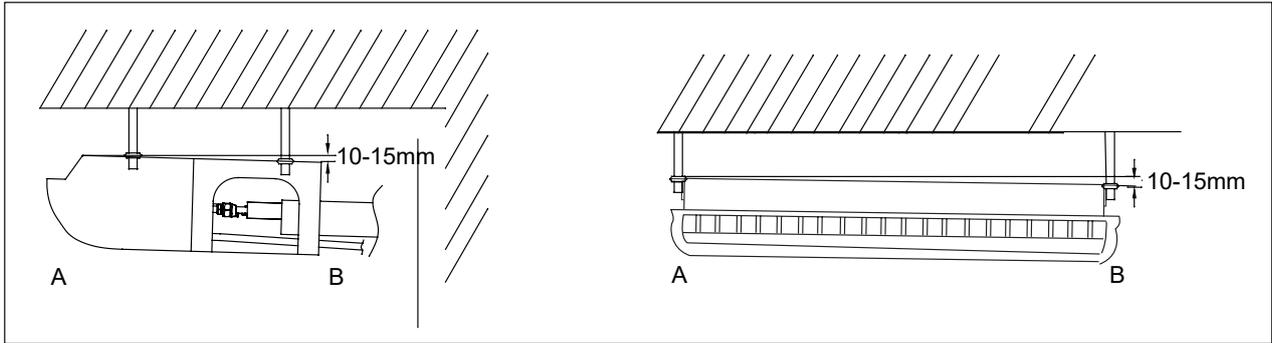
Model	a	b	c
AC092~182MDERA	Over 30cm	Over 30cm	Over 2cm
AC242~482MDERA	Over 80cm	Over 150cm	Over 10cm

Ceiling Installation

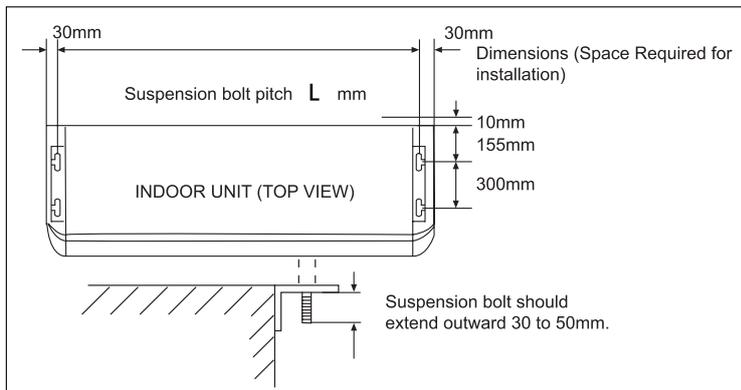
(1) Use $\varnothing 10$ hanger bolts, prepared on the site.

Please refer to figure on the right when installing.

When the unit is installed in the ceiling, side B is lower than side A for condensate discharge. As below.

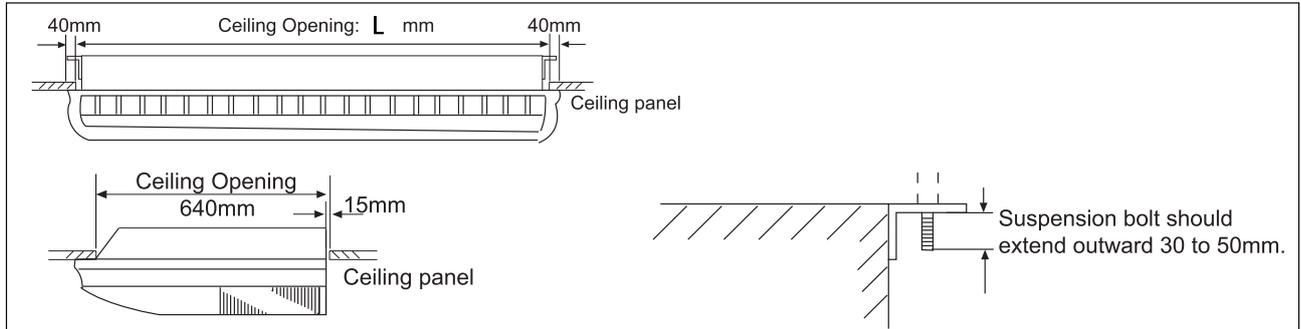


(2) Location of ceiling suspension bolts



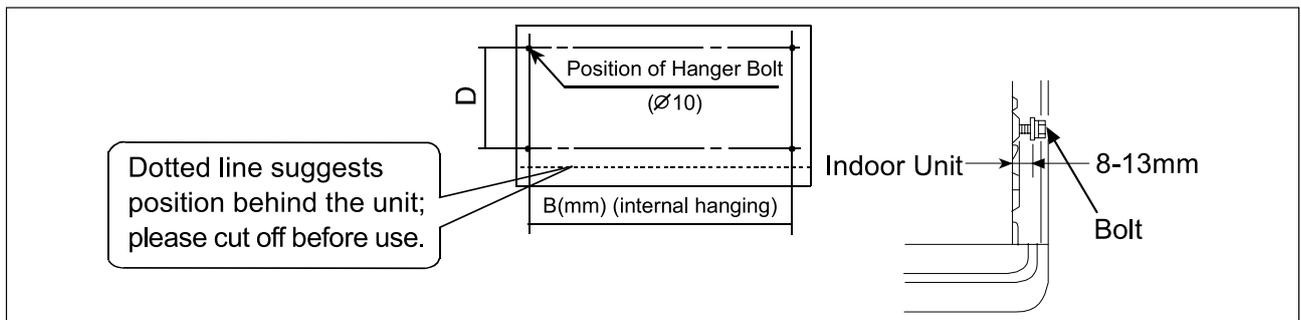
Model	L
AC092MDERA AC122MDERA AC162MDERA AC182MDERA	880
AC242MDERA AC282MDERA AC302MDERA	1204
AC382MDERA AC482MDERA	1530

For half-concealed installation
Suspension-bolt pitch should be as shown below



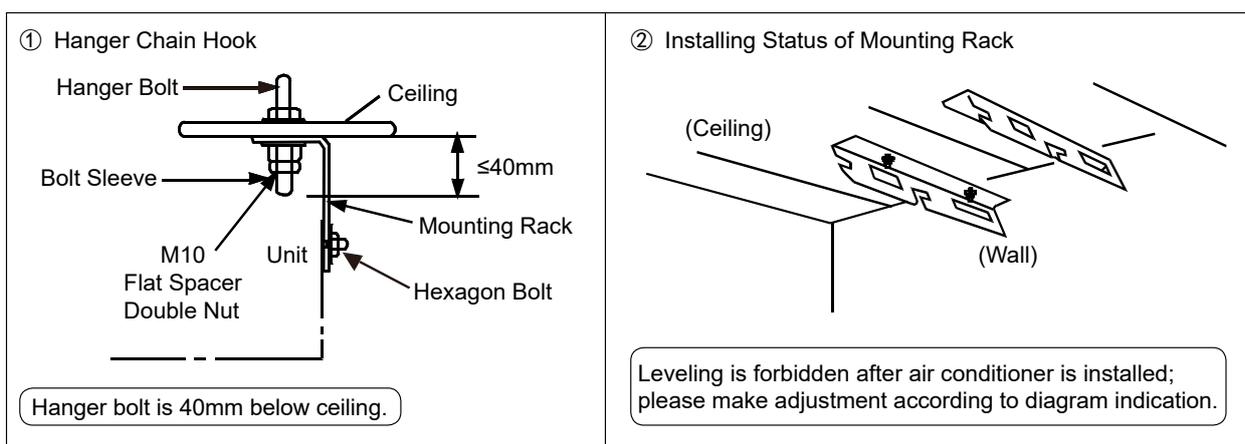
(3) Installing Hanger Bolt

Use M10 hanger bolt (prepared on the site) featuring 60mm hole depth, clearance fixed according to size proposed in the air conditioner external view; install according to different building structure specifications to guard against safety faults; and leveling instruments shall be available to ensure balanced installation.



(4) Please use hexagon bolts when installing

(5) Air Conditioner Installation Diagram



③ Installing Air Conditioner

Mounting Rack

Bolt

Insert hexagon bolt into slot

Screw tight hexagon bolt to fix air conditioner

④ Drain Pipe Leading-out Direction

CAUTION:
drain pipe shall be positioned high inside and low outside.

According to requirements on the site, drain pipes shall be prepared by users on their own resources and make sure that these are connected to drain pipes previously available with the unit (make sure that measures are taken to guard against water leakage in junction areas); heat preservation shall be available with certain indoor drain pipes through using heat insulant to prevent condensation.

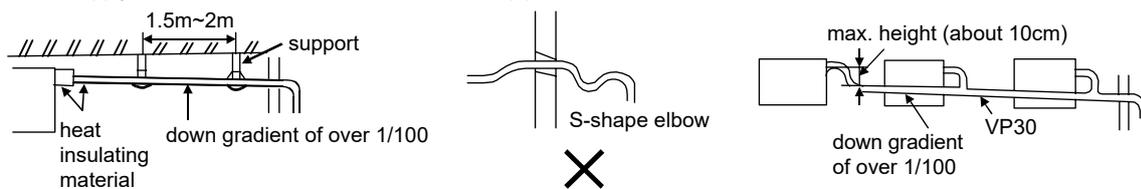
(6) Installing Deco Plate and Inlet Grille (after pipeline laying and electric wiring are done).

⚠ Attention

- For normal drainage, the water drainage piping should be connected according to the installation manual. Heat insulation should be performed to avoid condensation. Improper pipe connection may cause water going into the machine.

Requirements:

- Heat insulating treatment should be made for the water drainpipes of the indoor units.
- Heat preservation should be made for the connection with the indoor units. Improper heat preservation may cause condensing.
- The drainpipe should be designed with a down gradient of 1/100. The midway of the elbow shouldn't be made in S shape. Or abnormal noise may be caused.
- The lateral length of the drainpipe should be kept within 20m. Under the condition of long pipe, a support should be provided every 1.52~2m to avoid unevenness.
- The central piping can be connected according the following figure.
- Don't apply external force to the connection of drainpipes.



Piping Materials & Heat Insulating Materials

As to prevent condensation, heat insulating treatment should be performed. The heat insulating treatment for piping should be done respectively.

Piping Material	Hard PVC tube VP31.5mm(inner bore)
Heat Insulating Material	Vesicant polythene thickness: over 7mm

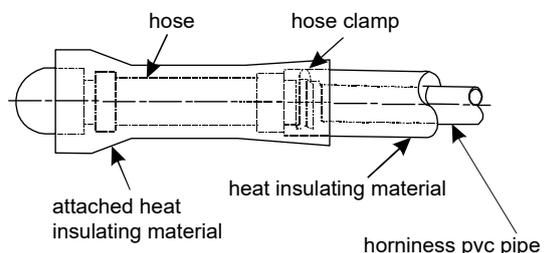
Hose

The drainage hose is made of Ø19.05mm (3/4") PVC tube, which can adjust the eccentricity and the angle of the hard PVC tube.

- Stretch the hose directly to make connections as to avoid distortion. The soft end of the hose should be positioned with a clamp.
- The hose should be used in the horizon direction.

Heat Insulating Treatment:

- Wrap the connection between the clamp and the root segment of the indoor unit without any gap with heat insulating materials as shown in the drawing



Confirming water drainage

During the test run, check the condition of water drainage and make sure that there is no leakage on the connection of piping, which should also be performed during the winter.

Tubing Permissible Length & Height Difference

Please refer to the attached manual of outdoor units.

Tubing Permissible Length & Height Difference

Model		AC092MDERA	AC122-182MDERA	AC242-482MDER
Tubing Size (mm)	Gas pipe	Ø9.52	Ø12.7	Ø15.88
	Liquid pipe	Ø6.35	Ø6.35	Ø9.52
Tubing Material		Phosphor deoxybronze seamless pipe (TP2) for air conditioner		

Refrigerant Filling Amount

Add the refrigerant according to the installation instruction of outdoor unit. The addition of R410A refrigerant must be performed with a measure gage to ensure the specified amount while compressor failure can be caused by filling too much or little refrigerant.

Connecting Procedures of Refrigerant Tubing

Proceed the flare tube connecting operation to connect all the refrigerant tubes.

- Dual wrenches must be used in the connection of indoor unit tubing.
- Mounting torque refers to the right table



Outer Diameter of Tubing (mm)	Mounting Torque (N-m)	Increase mounting Torque (N-m)
Ø6.35	11.8(1.2kgf-m)	13.7(1.4kgf-m)
Ø9.52	24.5(2.5kgf-m)	29.4(3.0kgf-m)
Ø12.7	49.0(5.0kgf-m)	53.9(5.5kgf-m)
Ø15.88	78.4(8.0kgf-m)	98.0(10.0kgf-m)

Cutting and Enlarging

Cutting or enlarging pipes should be proceeded by installation personnel according to the operating criterion if the tube is too long or flare opening is broken.

Vacuuminizing

Vacuuminize from the stop valve of outdoor units with vacuum pump. Refrigerant sealed in indoor machine is not allowed to use for vacuuminization.

Open All Valves

Open all the valves of outdoor units. [NB: oil balancing stop valve must be shut up completely when connected one main unit.]

Checkup for Air Leakage

Check if there is any leakage at the connecting part and bonnet with hydrophone or soapsuds.

Connecting

1. Connecting circular terminals:

The connecting method of circular terminal is shown in the Fig. Take off the screw, connect it to the terminal tier after heading it through the ring at the end of the lead and then tighten it.

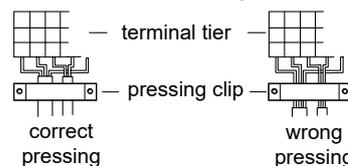


2. Connecting straight terminals:

The connection methods for the circular terminals are shown as follows: loosen the screw before putting the line terminal into the terminal tier, tighten the screw and confirm it has been clamped by pulling the line gently.

3. Pressing connecting line

After connecting line is completed, press the connecting line with clips which should press on the protective sleeve of the connecting line.



1.9.1 Electrical wiring

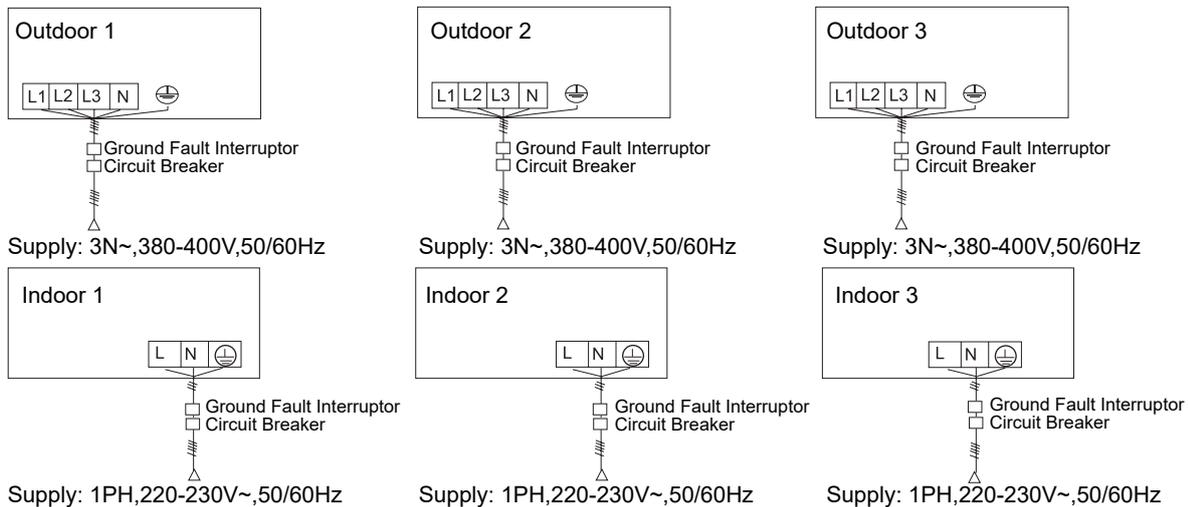
⚠WARNING

- Electrical construction should be made with specific mains circuit by the qualified personnel according to the installation instruction. Electric shock and fire may be caused if the capacity of power supply is not sufficient.
- During arranging the wiring layout, specified cables should be used as the mains line, which accords with the local regulations on wiring. Connecting and fastening should be performed reliably to avoid the external force of cables from transmitting to the terminals. Improper connection or fastness may lead to burning or fire accidents.
- There must be the ground connection according to the criterion. Unreliable grounding may cause electrical shocks. Do not connect the grounding line to the gas pipe, water pipe, lightning rod and telephone line.

⚠ Attention

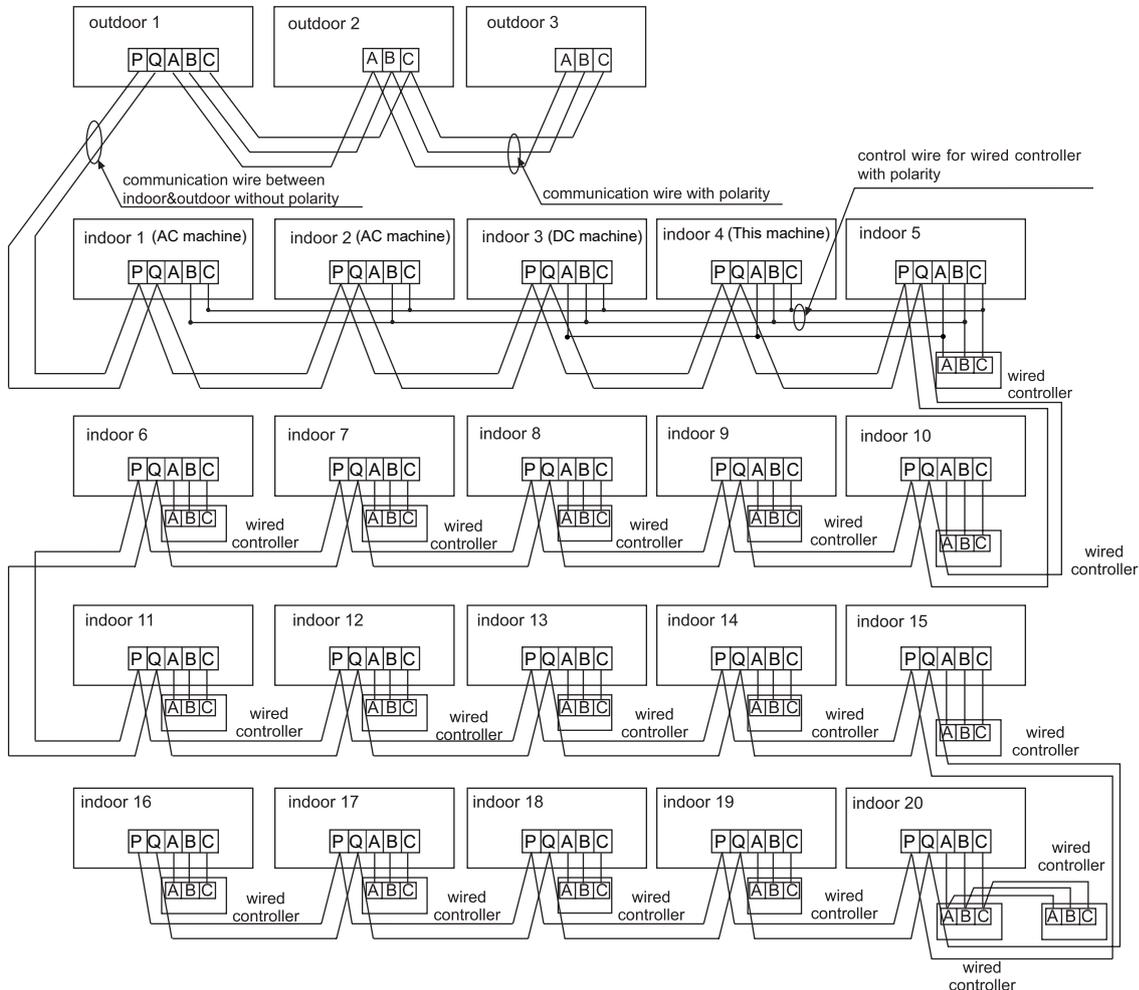
- Only copper wire can be used. Breaker for electric leakage should be provided, or electric shock may occur.
- The wiring of the mains line is of Y type. The power plug L should be connected to the live wire and plug N connected to null wire while ⊕ should be connected to the ground wire. For the type with auxiliary electrically heating function, the live wire and the null wire should not be misconnected, or the surface of electrical heating body will be electrified. If the power line is damaged, replace it by the professional personnel of the manufacturer or service center.
- The power line of indoor units should be arranged according to the installation instruction of indoor units.
- The electrical wiring should be out of contact with the high-temperature sections of tubing as to avoid melting the insulating layer of cables, which may cause accidents.
- After connected to the terminal tier, the tubing should be curved into be a U-type elbow and fastened with the pressing clip.
- Controller wiring and refrigerant tubing can be arranged and fixed together.
- The machine can't be powered on before electrical operation. Maintenance should be done while the power is shut down.
- Seal the thread hole with heat insulating materials to avoid condensation.
- Signal line and power line are separately independent, which can't share one line. [Note: the power line, signal line are provided by users. Parameters for power lines are shown as below: $3 \times (1.0-1.5) \text{ mm}^2$; parameters for signal line: $2 \times (0.75-1.25) \text{ mm}^2$ (shielded line)]
- 5 butt lines (1.5mm) are equipped in the machine before delivery, which are used in connection between the valve box and the electrical system of the machine. The detailed connection is displayed in the circuit diagram.

Supply Wiring Drawing



- Indoor units and outdoor units should be connected to the power source separately. Indoor units must share one single electrical source, but its capacity and specifications should be calculated. Indoor & outdoor units should be equipped with the power leakage breaker and the overflow breaker.
- Indoor and outdoor connection cable: H05RN-F 4G 2.5mm² (Note: If the indoor and outdoor unit connection cable length L satisfied condition $40\text{m} < L < 55\text{m}$, please change the connection cables specification to H07RN-F 4G 4.0mm². If the indoor and outdoor unit connection cable length L satisfied condition $55\text{m} \leq L \leq 75\text{m}$, please change the connection cables specification to H07RN-F 4G 6.0mm²)

Signal Wiring Drawing



Outdoor units are of parallel connection via three lines with polarity. The main unit, central control and all indoor units are of parallel connection via two lines without polarity.

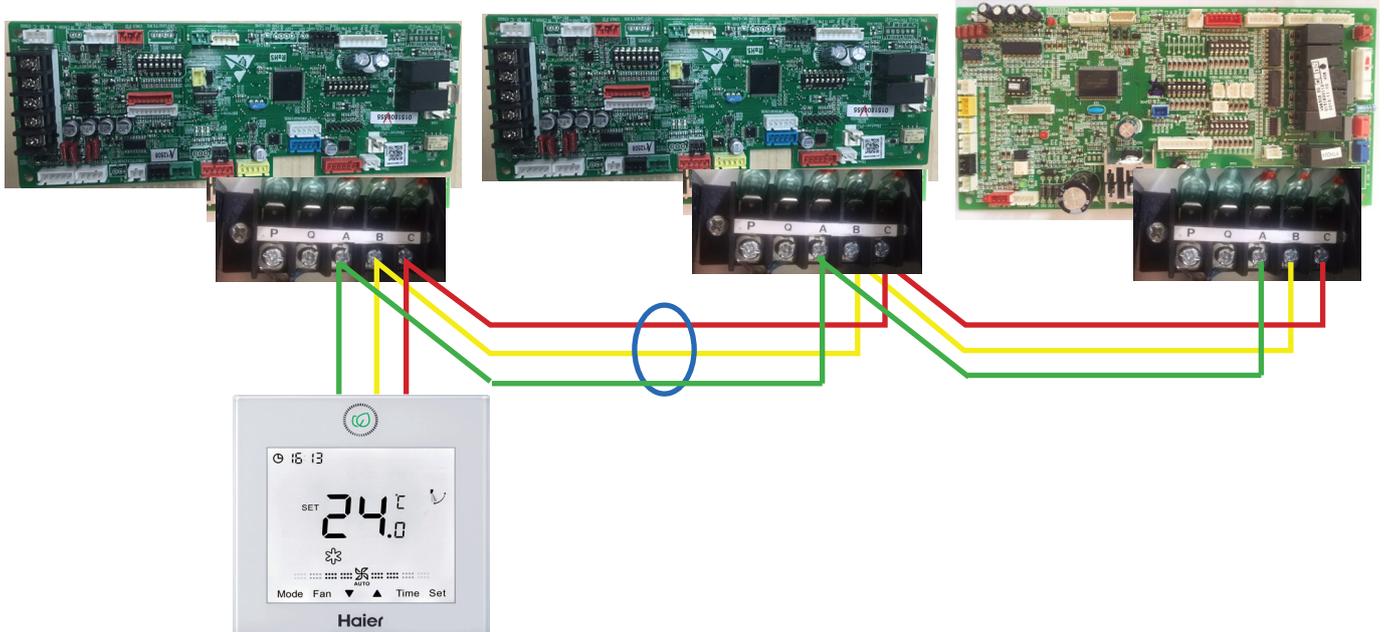
There are three connecting ways between line control and indoor units:

- A. One line control controls multiple units, i.e. 2-16 indoor units, as shown in the above figure, (1-5 indoor units). The indoor unit 5 is the line-controlled main unit (directly connected to the indoor unit of line control) and others are the line-controlled sub units. Among them, the 4 indoor unit is this unit, the 3 indoor unit is the other DC models, 1 indoor unit and 2 indoor unit are the AC models. The line control device is connected with the line-controlled main unit and DC models through three lines with polarity. Other indoor units and the main unit are connected via two lines with polarity. SW01 on the main unit of line control is set to 0 while SW01 on other sub units of line control are set to 1, 2, 3 and so on in turn. (Please refer to the code setting)
- B. One line control controls one indoor unit, as shown in the above figure (indoor unit 6-19). The indoor unit and the line control are connected via three lines with polarity.
- C. Two line controls control one indoor unit, as shown in the figure (indoor unit 20). Either of the line controls can be set to be the master line control while the other is set to be the auxiliary line control. The master line control and indoor units, and the master and auxiliary line controls are connected via three lines with polarity.

When the indoor units are controlled by the remote control, switch over the modes by Switching Mode of Line-Controlled Main Unit/ Line-Controlled Sub Units/ Remote-Controlled Types. The signal terminals needn't to be equipped with wires and connected to the line control.

C. One wired controller controls multiple units

00151800555 PCB



Note:

1. Plug the wired controller terminal to the CN22 terminal of master unit which wired address is 0, the slave unit also connects ABC terminal.
2. Wired address setting

		[1]	[2]	[3]	[4]	Wired control address
SW01_1 SW01_2 SW01_3 SW01_4	Wired control address	OFF	OFF	OFF	OFF	Master unit in group control
		OFF	OFF	OFF	ON	Slave unit 1 in group control
		OFF	OFF	ON	OFF	Slave unit 2 in group control
		OFF	OFF	ON	ON	Slave unit 3 in group control
	
		ON	ON	ON	ON	Slave unit 15 in group control

3. One controller can Max. control 16 indoor units.
4. Hand-in-hand connection method
5. The signal line is polarity

Indoor power supply wiring & signal wiring between indoor and outdoor & signal wiring between indoor.

Items Total current of indoor units (A)	Cross section (mm ²)	Length (m)	Rated current of overflow breaker (A)	Rated current of residual circuit breaker (A) Ground fault Interrupter (mA) Response time (S)	Cross sectional area of signal Line	
					Outdoor -indoor (mm ²)	Indoor -indoor (mm ²)
<7	2.5	20	10	10 A, 30 mA, 0.1S or below	2 cores×(0.75-2.0) mm ² shielded line	
≥7 and <11	4	20	16	16 A, 30 mA, 0.1S or below		
≥11 and <16	6	25	20	20 A, 30 mA, 0.1S or below		
≥16 and <22	8	30	32	32 A, 30 mA, 0.1S or below		
≥22 and <27	10	40	32	32 A, 30 mA, 0.1S or below		

- ※ The electrical power line and signal lines must be fastened tightly.
- ※ Every indoor unit must have the ground connection.
- ※ The power line should be enlarged if it exceeds the permissible length.
- ※ Shielded lays of all the indoor and outdoor units should be connected together, with the shielded lay at the side of signal lines of outdoor units grounded at one point.
- ※ It is not permissible if the whole length of signal line exceeds 1000m.

Signal wiring of wired controller

Length of signal line (m)	Wiring dimensions
≤ 250	0.75mm ² ×3 core shielded line

- ※ The shielding lay of the signal line must be grounded at one end.
- ※ The total length of the signal line shall not be more than 250m.

1.9.2 Test run

Before Test Run

- Before switching it on, test the supply terminal tier (L, N terminals) and grounding points with 500V megaohm meter and check if the resistance is above 1MΩ. It can't be operated if it is below 1MΩ.
- Connect it to the power supply of outdoor units to energize the heating belt of the compressor. To protect the compressor at startup, power it on 12 hours prior to the operation.

Check if the arrangements of the drainpipe and connection line are correct.

The drainpipe shall be placed at the lower part while the connection line placed at the upper part. Heat preservation measures should be taken such as winding the drainpipe esp. in the indoor units with heating insulating materials. The drain pipe should be made a slope type to avoid protruding at the upper part and concaving at the lower part on the way.

Checkup of installation

- Check if the mains voltage is matching
- Check if there is air leakage at the piping joints
- Check if the connections of mains power and indoor & outdoor units are correct
- Check if the serial numbers of terminals are matching
- Check if the installation place meets the requirement
- Check if there is too much noise
- Check if the connecting line is fastened
- Check if the connectors for tubing are heat insulated
- Check if the water is drained to the outside
- Check if the indoor units are positioned
-

Ways of Test Run

Do ask the installation personnel to make a test run. Take the testing procedures according to the manual and check if the temperature regulator works properly.

When the machine fails to start due to the room temperature, the following procedures can be taken to do the compulsive running. The function is not provided for the type with remote control.

- Set the wired controller to cooling/heating mode, press "ON/ OFF" button for 5 seconds to enter into the compulsive cooling/heating mode. Reprress "ON/ OFF" button to quit the compulsive running and stop the operation of the air conditioner.

Airwell

Just feel well

WARNING :

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.

ATTENTION :

Le design et les données techniques sont donnés à titre indicatif et peuvent être modifiés sans préavis.



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