

Digital Scroll Central Air Conditioner FOUR-WAY CASSETTE TYPE (INDOOR UNIT)

INSTALLATION MANUAL

Model:

MDV-D28Q₄/N₂	MDV-D36Q₄/N₂
MDV-D45Q₄/N₂	MDV-D56Q₄/N₂
MDV-D71Q₄/N₂	MDV-D80Q₄/N₂
MDV-D90Q₄/N₂	MDV-D112Q₄/N₂

- Please read this installation manual carefully before installing your air conditioner.
- Please keep this manual in a safe place for future reference.







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PRECAUTION



- This manual is suitable for indoor unit.
- Refer to outdoor unit installation manual to install outdoor unit.
- The indoor unit and the outdoor unit should not share one power supply.

ACCESSORIES

Name	Quantity	Outline	Function
Installation manual	1	This manual	_____
Heat insulation pipe	2		For heat insulation of pipes connection part.
Installation paper pattern	1	_____	For illustrating the unit body location on the ceiling
Fixing screws for paper pattern	4	M5X16	For installing the paper pattern.
Heat insulation material	1		For heat insulation of drain pipe connection part.
Gasket	8		For hanging the body.
Hose band	1		For connecting the drain pipe.
Flexible hose	1		For connecting the drain pipe.
Heat insulation material	1		For sealing at the piping connection part.
Installation indicator	1	_____	For confirming the location on the ceiling (With the installation paper pattern).
Electric throttle part	1	_____	
Remote controller subassembly	1	_____	Remote control the air-conditioner.
Drainage plate installation screws	4	_____	For installing drainage plate.
Drain pipe loop	1	_____	For installing drain pipe.
Drain pipe loop bolt	1	_____	For installing drain pipe.
Drain pipe loop bracket	1	_____	For installing drain pipe.


SAFETY PRECAUTION

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

 WARNING	This indication shows the possibility of causing death or serious injury.
 CAUTION	This indication shows the possibility of causing injury or damage to properties only.

NOTE :

1. Injury means causing harmed, burned, electrical shocked, but not serious for hospitalization.
 2. Damage of property means disrepair of property, material.
- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

 WARNING
● Engage dealer or specialist for installation. If installation done by the user is defective, it will cause water leakage, electrical shock or fire.
● Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
● Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
● Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
● For electrical work, follow the local national wiring standard, regulation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire.
● When carrying out piping connection, take care not to let air or other substances other than the specified refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pressure in the refrigeration cycle, explosion and injury.
● Grounding is necessary. It may cause electrical shock if grounding is not perfect.
● Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.

INSTALLATION LOCATIONS

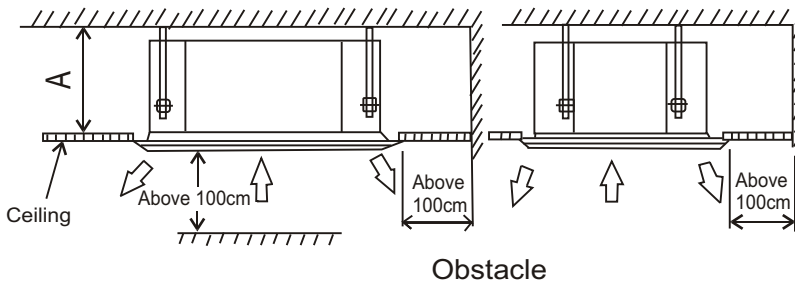
⚠ CAUTIONS

1. Location in the following places may cause malfunction of the machine. (If unavoidable, please consult your local dealer)

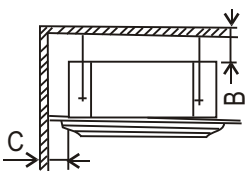
- A place where there is inflammable gas leakage.
- There is salty air surrounding (near the coast).
- There is caustic gas (the sulfide, for example) existing in the air (near a hot spring).
- A place where can not bear the weight of the machine.
- In kitchen where it is full of oil gas.
- There is strong electromagnetic wave existing.
- There is acid or alkaline liquid evaporating.
- A place where air circulation is not enough.

2. Electrical Insulation must be done on the air conditioner and the building complying to National Regulations.

INSTALLATION SPACE



Models	Size A(mm) Ceiling Height
MDV-D28(36、45、56、71、80)Q4/N2	Above 315
MDV-90(112)Q4/N2	Above 365



Wall material	Flammable material	Fire-proof material or other nonflammable materials other than metal	Fire-proof structure
Up(B)	Above 10cm	Above 10cm	Above 10cm
Sides(C)	Above 5cm	Above 5cm	—

HEIGHT BETWEEN CEILING AND FLOOR

Models	Height(m)
MDV-D28(36)Q4/N2	Below 2.7
MDV-D45-80Q4/N2	Below 3.5
MDV-D90-112Q4/N2	Below 4

Installation height	Model (MDV-D)		
	28-36Q4/N2	45-80Q4/N2	90-112Q4/N2
2.7m < h < 3m	○	—	—
2.7m < h < 3m	×	○	○
3m < h < 3.5m	×	○	○

INDOOR UNIT INSTALLATION



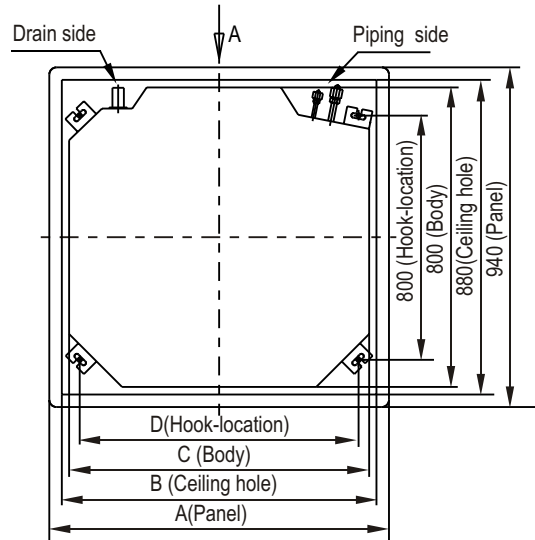
Please select a place where sound enough to bear the indoor unit when installation

The Indoor Unit is possible to fall if the place is not sound enough.



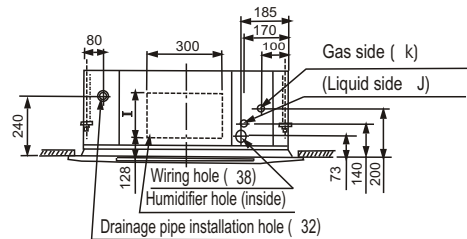
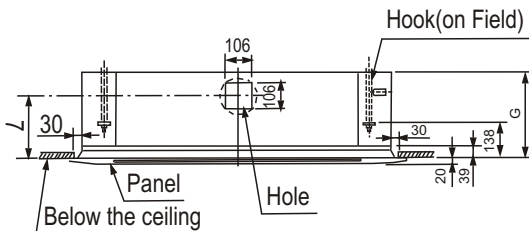
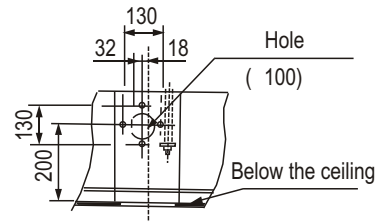
To take precautions against typhoon/earth quake.

Be sure to install strictly according to related specification. Wrong installation will cause the unit to fall.



Model(MDV-D)	A	B	C	D	E	F
28~36Q4/N ₂	940	880	820	620	405	400
71~80Q4/N ₂						
90~112Q4/N ₂	1350	1290	1230	1030	610	605

Model(MDV-D)	G	H	I	J	K	L	M
28~45Q4/N ₂	260	536	130	9.5	19.0	196	136
56~80Q4/N ₂							
90~112Q4/N ₂	320	946	180			246	186



Select installation location considering piping and wiring connection after the Indoor Unit has been hanged. Then decide the piping wiring leading direction.

- Be sure to lead the refrigerant pipes, drain pipes and connection wires out to its connection location before hanging the unit if the opening on the ceiling has been decided.
- Confirm sizes of the indoor unit and ceiling opening with the attached installation paper pattern. (Please fix the paper pattern below the body with M5X16 screws (4).)

CEILING HOLE AND THE HOOK INSTALLATION

Preparation Work on the Ceiling

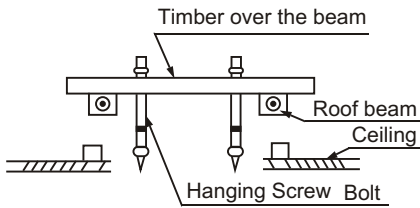
- Installation method should be changed under the different construction structure. Please consult the professional for the detailed information.
- After opening a hole, the ceiling should be horizontal and strong to prevent vibration.
 - ① Cut the beams at the hole and remove them.
 - ② Reinforcing the beams that have been cut and the beams fixing the ceiling .

Installation of the hanging screw bolt

Bolt with M10 whorl is to be used. The center distance between the bolts is decided by the size of the unit . Use the following method to install:

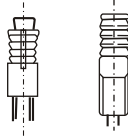
Wooden construction

Put the square timber over the roof beam, then install the hanging screw bolts.



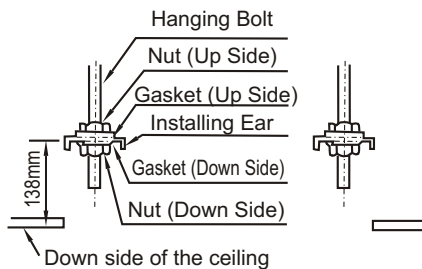
For finished concrete bricks

Install the hanging hook with expansible bolt into the concrete deep to 45~50mm to prevent loose.



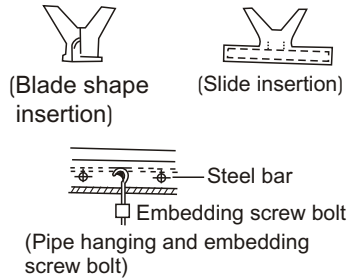
Overhanging the indoor unit

Adjust the gasket (down side) to 138mm over the ceiling.



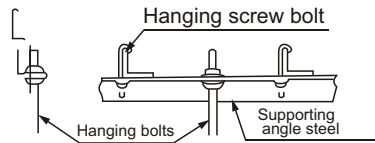
New Concrete Bricks

Inlaying or embedding the screw bolts.

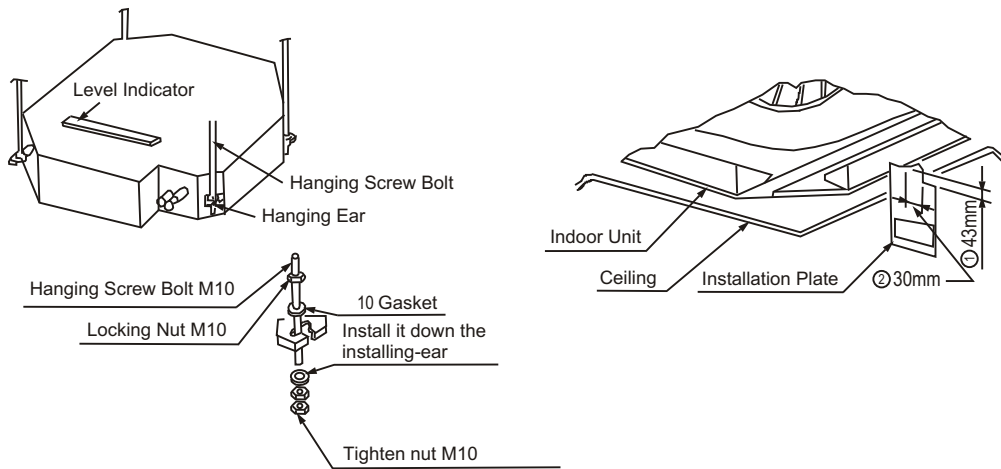


Steel roof beam structure

Install the supporting angle steel.



- Install the hanging bolt into T groove of the hanging tool. Overhang the indoor unit and ensure it is level using a level indicator.



PANEL INSTALLATION (SOLD SEPARATELY)

- Panel installation should be done after piping and wiring.
- Refer to panel installation manual for detailed information about installing the panel.
- Be sure that the indoor unit and ceiling hole installation size is right before installation.

CAUTION

Be sure to seal the connection parts between the panel - the ceiling and the panel - the indoor unit ,or even small gaps may cause wind/water leakage or condensing water.

DRAINAGE PIPE INSTALLATION

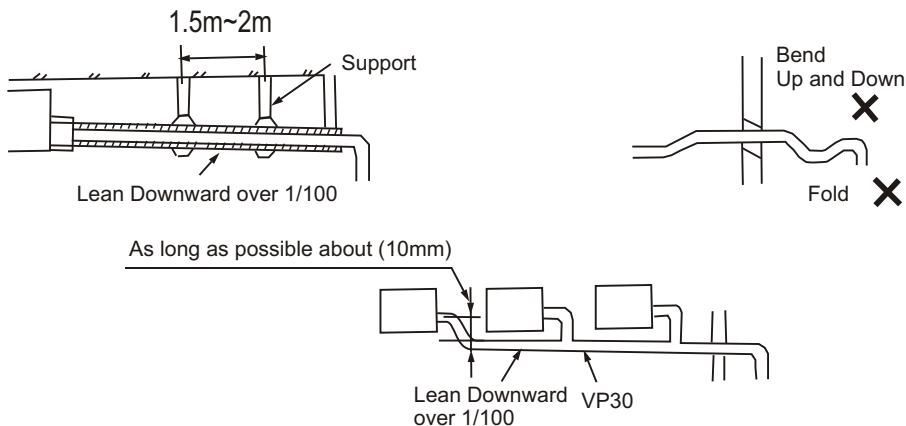
CAUTION

Be sure to follow this Installation Manual during drainage installation, the drainage pipe must have the heat insulation to prevent condensing.



! CAUTION

- The drain pipe of indoor unit must have the heat insulation , or it will condense dew, as well as the connections of the indoor unit.
- The declivity of the drain pipe downwards should not be over 1/100, and no winding and bending.
- The total length of the drain pipe when pulled out transversely shall not exceed 20m , when the pipe is over long, a prop stand must be installed every 1.5 to 2m to prevent winding.
- Refer to the following figures about the installation of the pipes.
- Do not impose any pressure on the connection part of the drainage pipe.



Drainage Pipe Material, Heat-insulating Material

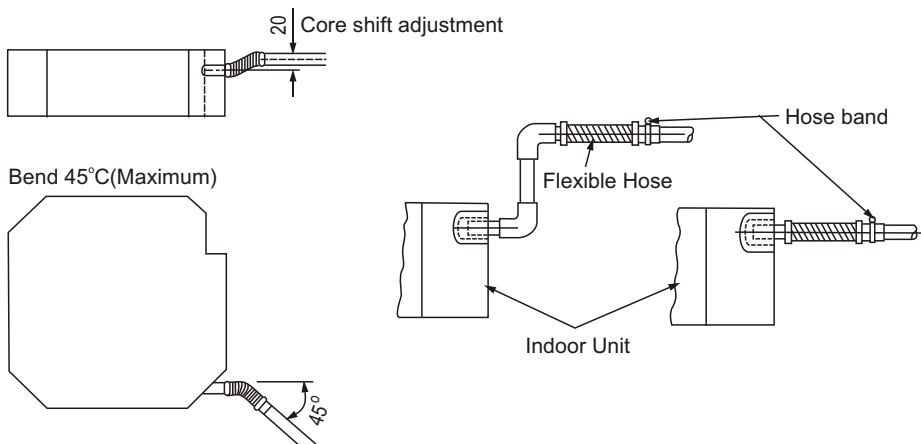
The listed material should be used:

Drainage Pipe Material	Polyvinyl chloride pipe (32mm outer diameter)
Heat Insulation Material	Foamed polyethylene insulation plate (10mm thickness)

Flexible Hose

Measure diameter of the hard pipe using cutting method, and adjust the joining angle.

- Pull out the flexible hose, do not over deform than illustrated below.
- Be sure to bind it with the attached band.
- Please place the flexible hose horizontally.



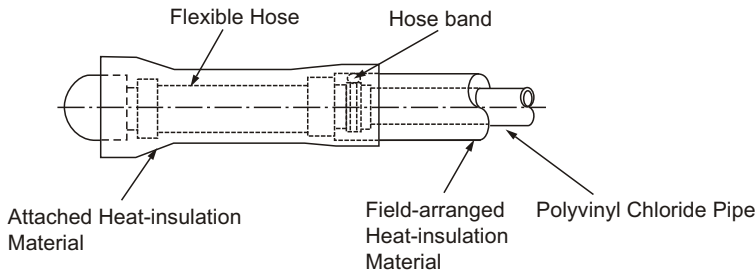
Connection Procedure

Connect the transparent pipe with the polyvinyl chloride pipe.

- Use polyvinyl chloride glue at the connection part of the drainage pipe, be sure no water leakage.
- Paste glue at the front 40mm of the polyvinyl chloride pipe, insert it into the transparent pipe.
- It needs 10 minutes for the glue to dry. Do not impose pressure on the connection during the drying period.

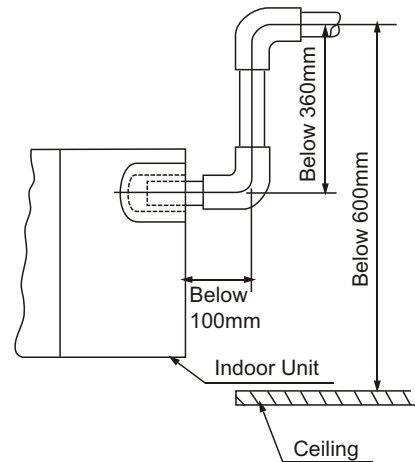
Heat Insulation

Wrap the flexible hose carefully with the attached heat insulation material from the start to the end (to indoor part)



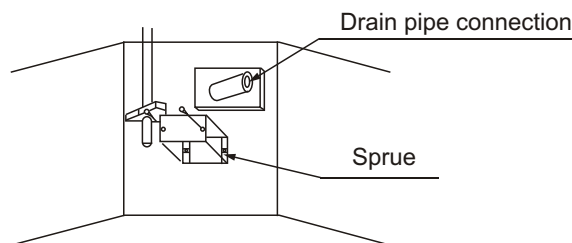
Drainage Upward

To make sure that the drainage pipe would not slant downward, lead it upward to a height 360mm maximum, then downward lead it.



Drainage Test

- Check whether the drain pipe is unhindered before testing.
 - 1) Stow water from sprue to check.
 - 2) Stow 600cc water with pot or hose from sprue slowly , preventing touching the drain pump motor.
 - 3) After the preparation work , disconnect the water level switch ,power 220-240VAC to (L) (N) of terminal board, and the drain pump start up immediately.
 - 4) After drain pump run 2 min.,reset the water level pin, and the drain pump motor will stop after running 1 min..



Motor Sound Test

- The drainage test is doing during checking the drain pump motor running sound .
- Reset the water level switch connection to the original position after the drainage test .

REFRIGERANT PIPE INSTALLATION



CAUTION

Ventilate the air if there was any refrigerant leakage during the installation.

Leaked refrigerant will generate poisonous gas if meeting fire.



Make sure there is no refrigerant leakage after the installation.

Leaked refrigerant will generate poisonous gas if meeting fire.



Allowed Length and Drop of Pipes

Requirements are different when installing the outdoor unit, please refer to outdoor unit installation manual for detailed information.

Material and Size of the Pipes

Three length (3m,5m,10m) of pipes are available to purchase.

Pipe Material	Copper Pipe for Air Conditioner	
Size(mm)	Gas side	19
	Liquid side	9.53

Refrigerant Volume to Be Added

Refrigerant volume to be added is calculated according to outdoor unit installation manual (R407C). Be sure to add refrigerant measuring by a scale.

CAUTION

- If the added refrigerant volume is inadequate (too much or insufficient), the compressor malfunction will be caused. Be sure to calculate the refrigerant volume carefully.
- The service man should write down the piping length and the added refrigerant volume in the nameplate, which is on the electric control box cover of outdoor unit, for diagnosing the compressor and refrigeration circulation malfunction.

Connection of the Refrigerant Pipe

- Double-span should be used when connecting the pipes.
- The wrench torque follow the below table:

Pipe external diameter	wrench torque	Added wrench torque
9.5	24.5(2.5kgf.m)	29.4(3.0kgf.m)
19.0	98.8(10.0kgf.m)	117.7(12.0kgf.m)

Air Purging

Use a vacuum pump, to vacuum from the gas side refrigerant adding mouth of the outdoor unit.

- Don't use the refrigerant of the outdoor unit to do the vacuum. (A certain volume of refrigerant had been added into the outdoor unit in factory.)

Open/Close the valves

Open/Close the spools or the valves of outdoor unit with a 5mm hexagon spanner.

Leakage Test

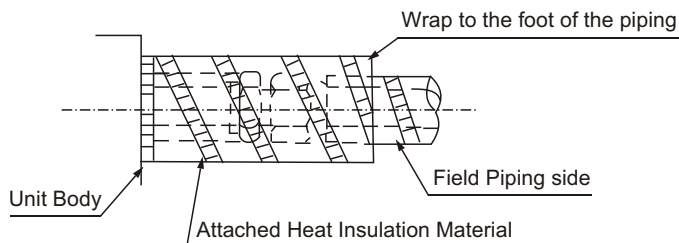
Test if there is any leakage on the connections of the piping with soap water.

Heat Insulation

Heat insulation for the gas and liquid pipe separately.

Heat insulation should be fully and carefully done, because the liquid side pipe and gas side pipe are easy to condense water due to low temperature when cooling.

- Heat proof above 120°C material should be used at the gas side pipe.
- The indoor unit connection parts should be no-gap heat-insulated with the attached heat insulation materials.



ELECTRIC WIRING

WARNING

Specified power cables should be used. Do not apply any pressure on the terminals used to connect.

Improper connection may cause fire.



Grounding must be properly done.

The grounding wire should be away from gas pipes, water pipes, telephone, lightning rods or other grounding wires. Improper grounding may cause electric shock.



Electric Wiring must be done by professionals. Use a separate circuit according to national regulations.

If the wiring capacity is not enough, electric shock or fire may occur.



CAUTION

Be sure to Install Current Leakage Protection Switch. Or electric shock may occur.

CAUTION

- Power cord is to be selected according to national regulations.
- Outdoor unit power cord should be selected and connected according to the outdoor unit installation manual.
- Wiring should be away from high temperature components, or the insulation layer of the wires may melt down.
- Use wire clamp to fix the wires and terminal block after connection.
- Control wire should be wrapped together with heat insulated refrigerant pipes.
- Connect the indoor unit to power only after the refrigerant has been vacuumed.
- Don't connect the power wire to the signal wire connection end.

Wiring Specifications

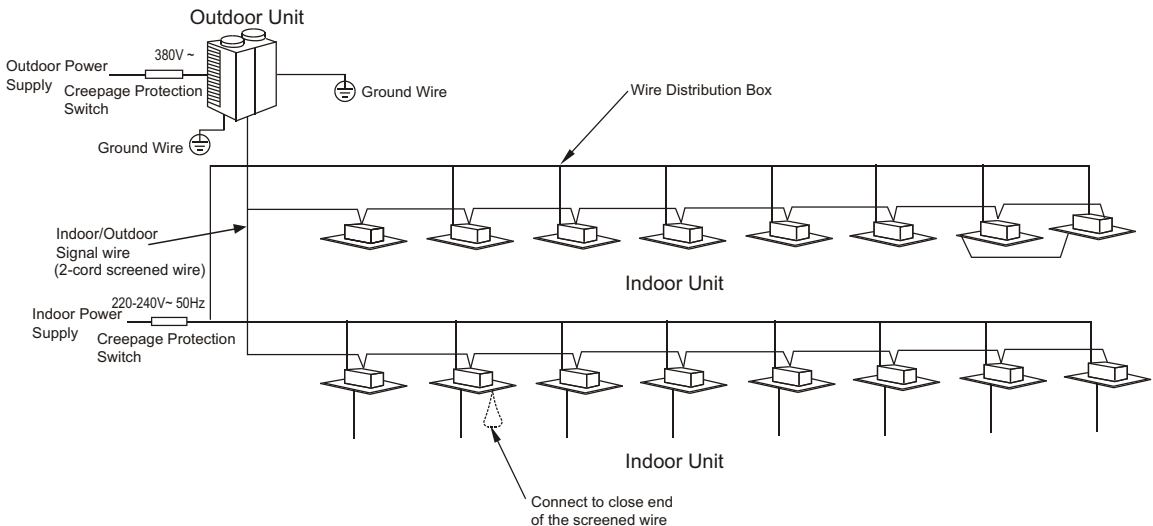
Wiring specifications are listed below, insufficient capacity would over-heat the wire or destroy the machine.

Model	Items	Power Cord of the Indoor Unit				Control Wire		Ground Wire	
		Power	Power Switch		Power Cord		Indoor/Outdoor Unit Signal Wire		
			Capacity	Fuse	Below 20m	Below 50m	Quantity		Diameter
MDV-D28~112Q4/N2	Single Phase 220-240V~ 50Hz	15A	15A	Twisted-pair 2mm ²	Twisted-pair 6mm ²	2	Not longer than 1500m 2mm ² 2-core screened wire	Single-Wire 1.5mm	

Note: This wiring specification is only for the reference ,please refer to the specified model and the related electric standard to do the wiring.

Indoor unit power supply and the signal wire wiring

- The indoor unit power source should not be shared with outdoor unit.
- The indoor units that connect to the same outdoor unit should use the same power source, creepage protector and main switch.
- The indoor power wire should be connected to the L、 N terminal , and the indoor/outdoor signal wire should adopt the 2-core screened wire . The indoor /outdoor signal wire should be connected to A、 B terminal and should be corresponding with the A、 B of the outdoor terminal. Connect the screened layer to (E).



Indoor/Outdoor Unit Signal Wire

Connect the wire according to their numbers.
Wrong connection may cause malfunction .

Wiring Connection

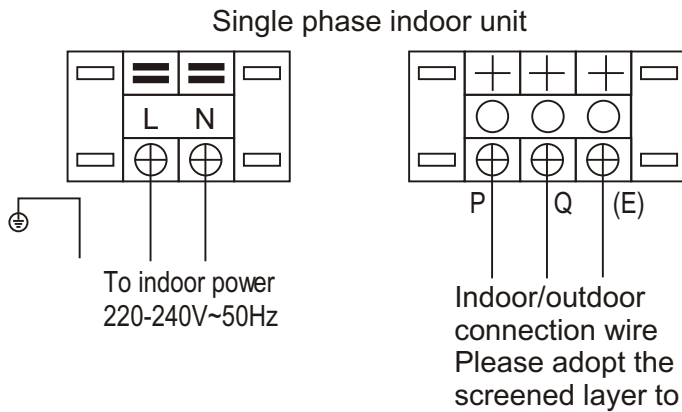
Seal the wiring connection with the insulation material , or the condensing dew will be caused.

Panel Wiring

Connect the Swing Motor terminal block according to the Panel Installation Manual.

Terminal Board Diagram

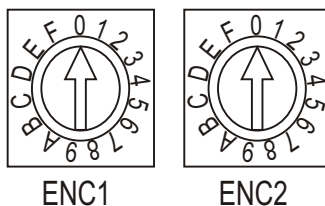
Please refer to the indoor unit wiring diagram for the wiring.



CONTROL

- As per the different usages to set the moving switch on the PCB in the electric control box of indoor unit.
- After the setting , be sure to cut down the main power supply switch , then turn it on again
- Setting would be invalid without disconnecting the power.

Please number the indoor units during the installation . For example, for the first outdoor unit ,the number of the first indoor unit is 1-1, the second indoor unit is 1-2, and the set address is 1 and 2 respectively , the others is analogical.

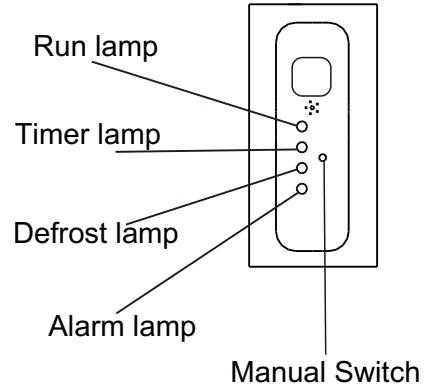


ENC1	TOGGLE SWITCH	FOR SETTING ADDRESS
<p>'0-F' show the address '0-F' respectively, that is, '0-15' indoor unit (together 16 units), and the others follow the analogy. If two addresses are the same in one system, the abnormal operation will occur.</p>		

ENC2	Toggle switch	For set horsepower
<p>Note: The horsepower has been set before leaving the factory, anyone can't modify it except the maintenance person.</p>	Code	Capacity(Horsepower)
	0	2200W(0.8HP)
	1	2800W(1.0HP)
	2	3600W(1.2HP)
	3	4500W(1.5HP)
	4	5600W(2.0HP)
	5	7100W(2.5HP)
	6	8000W(3.0HP)
	7	9000W(3.2HP)
	8	11200W(4.0HP)
9	14000W(5.0HP)	

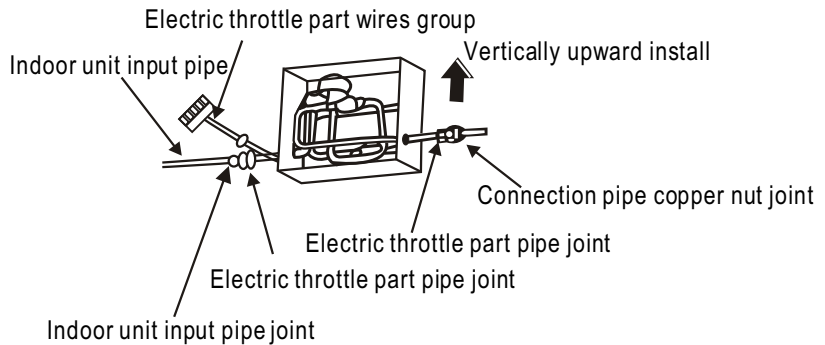
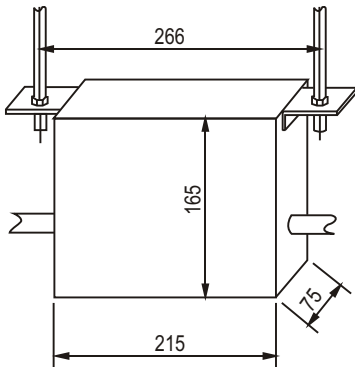
TROUBLE SHOOTING

No.	Type	Contents	LED Lamp flash	Remarks
1	Malfunction	The evaporator sensor check point is abnormal, or room temp. sensor is abnormal.	Run lamp flashes at 2.5Hz.	After the malfunctions disappear, it restores automatically.
2	Malfunction	Indoor/outdoor unit communication is abnormal.	The timer lamp flashes at 2.5Hz.	After the malfunctions disappear, it restores automatically.
3	Malfunction	Condenser sensor check point is abnormal or outdoor temp. sensor is abnormal.	All the indoor alarm lamps flash at 0.5Hz.	After the malfunctions disappear, it restores automatically.
4	Malfunction	Water level switch is abnormal	Alarm lamp flashes at 2.5Hz.	If the malfunctions can't be solved in three min. all the indoor alarm lamps flash at 0.5Hz. Turn off the power to restore.
5	Alarm	Mode conflict	Defrost lamp flashes at 2.5Hz.	When the indoor unit turns to heating mode or is turned off, the alarm will disappear.



INSTALL ELECTRIC THROTTLE PART

- Please refer to the following figures to install.
- The installation size is as follows:



NOTE

- The electric throttle part should be installed vertically upward, the slant and inversion are not allowed.
- Use two spanners to connect the electric throttle parts with indoor/outdoor pipes to avoid the copper pipe cracking.
- Please pay attention to the connection orientation when connecting. (Refer to the label sticking on the electric throttle part.)
- The size of electric throttle part : 215(L)X165(W)X75(H)mm.
- The electric throttle part wires group connector is corresponding to the connector CN 15 on the indoor PCB.

6292aW