Haier

Slim Duct DC

Service Manual

SYJS-10-2018 REV.A Edition: 2018-10

CONTENTS

1. Features

MVAD007MV2AA
MVAD009MV2AA
MVAD012MV2AA

MVAD018MV2AA
MVAD024MV2AA

1.185mm height ultra thin design and 420mm depth
2. Built in drain pump
3. Ultra low noise: realize 21dB (A) operation noise
4. Rear air return
5. Static pressure 0-30Pa
6. 7 models ranging from 7500 Btu to 24000 Btu

2. Specification

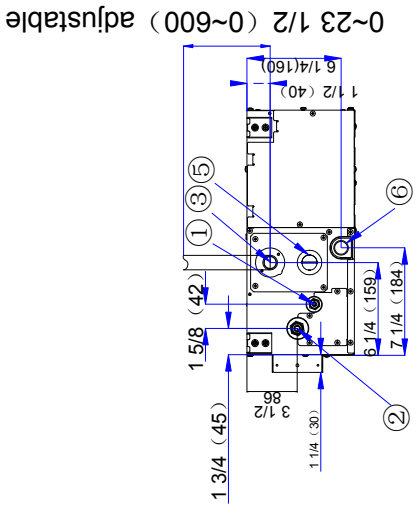
MODEL	MVAD007MV2AA
Rated Cooling Capacity Btu/hr	7,500
Rated Heating Capacity Btu/hr	8,500
Voltage, Cycle, Phase V/Hz/-	208-230/60/1
Fan Speed Stages	5+Auto
Airflow (Turbo/High/Med/Low/Quiet) CFM	540/480/420/360/300
Motor Speed (Turbo/High/Med/Low/Quiet) RPM	850/770/690/640/590
Max. External Static Pressure in.W.G (Pa)	0.12(30)
Indoor Sound Level dB (Turbo/High/Med/Low/Quiet)	32/30/28/25/22
Dimension: Height in (mm)	7 5/16 (185)
Dimension: Width in (mm)	33 7/16 (850)
Dimension: Depth in (mm)	16 9/16 (420)
Weight (Ship/Net)- lbs (kg)	49.6/38.6 (22.5/17.5)
Connections	Flare
Liquid O.D. in	1/4
Suction O.D. in	3/8
Drainpipe Size O.D. in	1
Internal Condensate Pump	Standard
Max. Drain-Lift height in(mm)	27 9/16 (700)
Panel Inlet grille	PAD0890SA
Panel Outlet grille	PAD0890RA

MODEL	MVAD009MV2AA	MVAD012MV2AA
Rated Cooling Capacity Btu/hr	9,500	12,000
Rated Heating Capacity Btu/hr	10,500	13,500
Voltage, Cycle, Phase V/Hz/-	208-230/60/1	208-230/60/1
Fan Speed Stages	5+Auto	5+Auto
Airflow (Turbo/High/Med/Low/Quiet) CFM	540/480/420/360/300	640/550/430/370/330
Motor Speed (Turbo/High/Med/Low/Quiet) RPM	850/770/690/640/590	1100/1015/900/790/715
Max. External Static Pressure in.W.G (Pa)	0.12(30)	0.12(30)
Indoor Sound Level dB (Turbo/High/Med/Low/Quiet)	32/30/28/25/22	34/32/29/26/24
Dimension: Height in (mm)	7 5/16 (185)	7 5/16 (185)
Dimension: Width in (mm)	33 7/16 (850)	33 7/16 (850)
Dimension: Depth in (mm)	16 9/16 (420)	16 9/16 (420)
Weight (Ship/Net)- lbs (kg)	49.6/38.6 (22.5/17.5)	49.6/38.6 (22.5/17.5)
Connections	Flare	Flare
Liquid O.D. in	1/4	1/4
Suction O.D. in	3/8	1/2
Drainpipe Size O.D. in	1	1
Internal Condensate Pump	Standard	Standard
Max. Drain-Lift height in(mm)	27 9/16 (700)	27 9/16 (700)
Panel Inlet grille	PAD0890SA	PAD0890SA
Panel Outlet grille	PAD0890RA	PAD0890RA

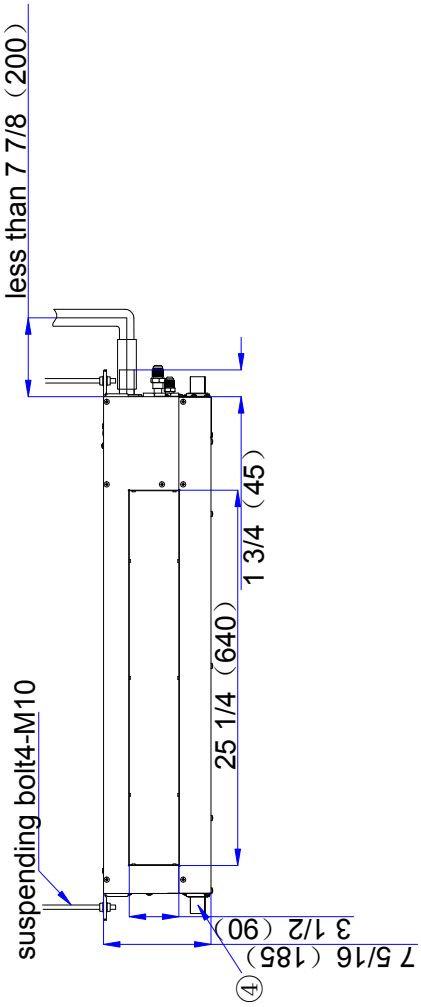
MODEL	MVAD018MV2AA	MVAD024MV2AA
Rated Cooling Capacity Btu/hr	18,000	24,000
Rated Heating Capacity Btu/hr	20,000	27,000
Voltage, Cycle, Phase V/Hz/-	208-230/60/1	208-230/60/1
Fan Speed Stages	5+Auto	5+Auto
Airflow (Turbo/High/Med/Low/Quiet) CFM	950/800/690/580/440	1020/930/850/750/645
Motor Speed (Turbo/High/Med/Low/Quiet) RPM	1010/930/870/810/735	1180/1090/1010/920/825
Max. External Static Pressure in.W.G (Pa)	0.12(30)	0.12(30)
Indoor Sound Level dB (Turbo/High/Med/Low/Quiet)	38/35/33/30/26	39/36/33/31/29
Dimension: Height in (mm)	7 5/16 (185)	7 5/16 (185)
Dimension: Width in (mm)	46 1/16(1170)	46 1/16(1170)
Dimension: Depth in (mm)	16 9/16 (420)	16 9/16 (420)
Weight (Ship/Net)- lbs (kg)	62.8/48.9 (28.5/22.2)	66.1/52.9 (30/24)
Connections	Flare	Flare
Liquid O.D. in	1/4	3/8
Suction O.D. in	1/2	5/8
Drainpipe Size O.D. in	1	1
Internal Condensate Pump	Standard	Standard
Max. Drain-Lift height in(mm)	27 9/16 (700)	27 9/16 (700)
Panel Inlet grille	PAD1210SA	PAD1210SA
Panel Outlet grille	PAD1210RA	PAD1210RA

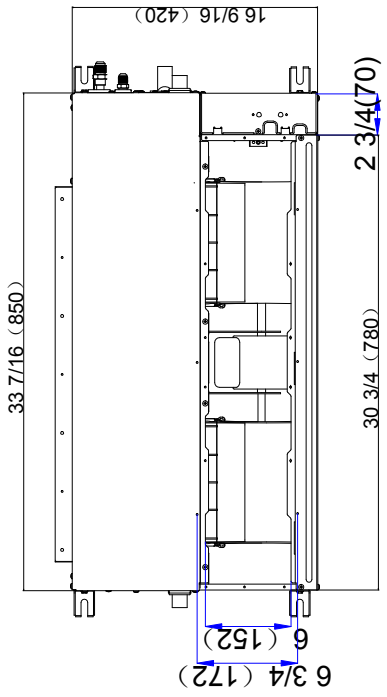
3. Dimension

MVAD007-012MV2AA unit：inch(mm)

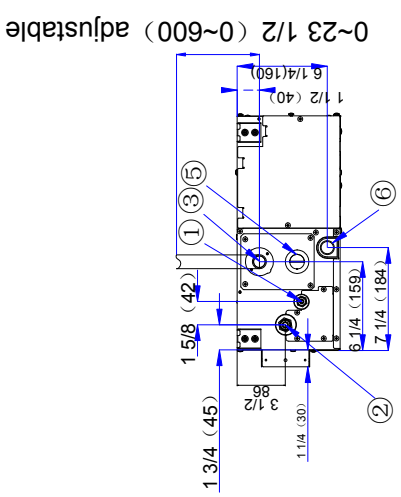


SN	Part Name
1	liquid pipe connection
2	gas pipe connection
3	drain hose with pump
4	drain hose(accessory)
5	checking hole
6	drain outlet

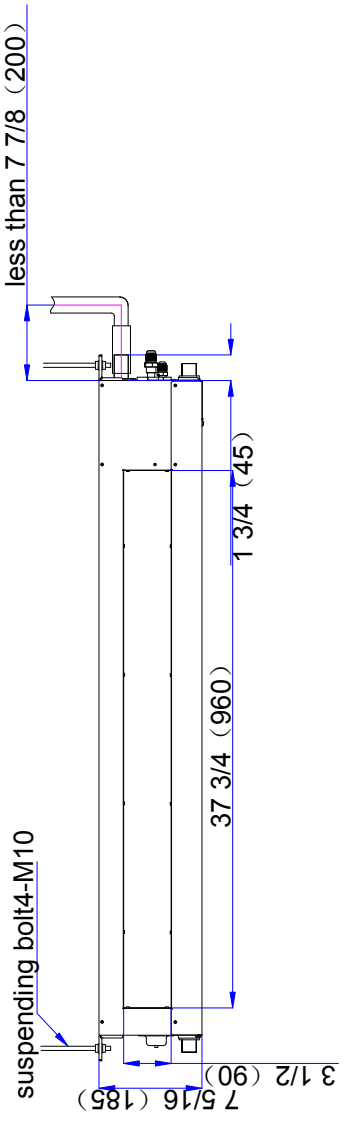


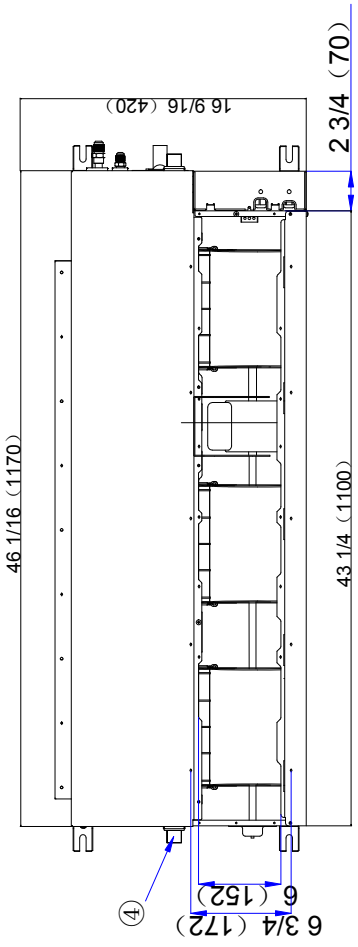


MVAD018-024MV2AA unit：inch(mm)

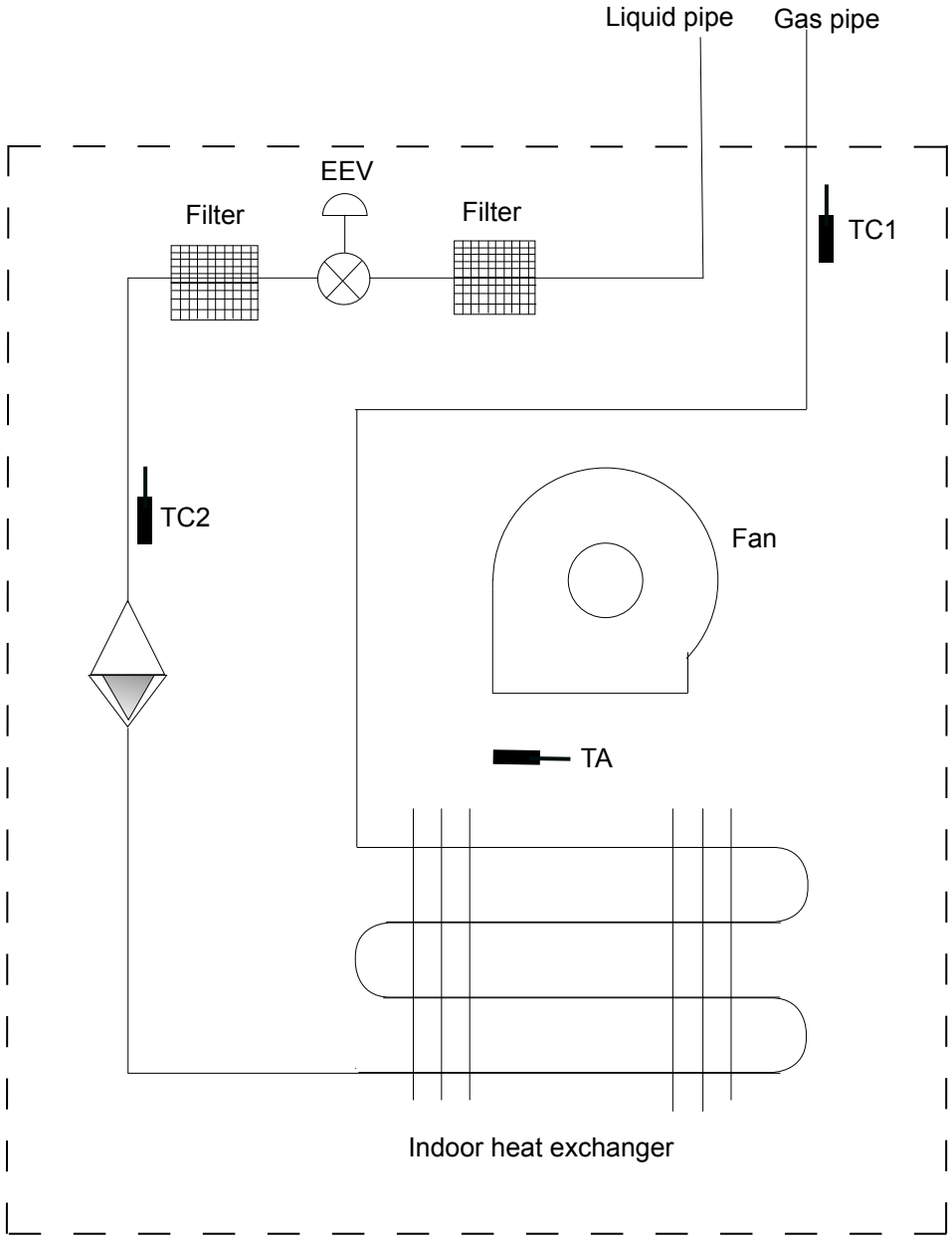


SN	Part Name
1	liquid pipe connection
2	gas pipe connection
3	drain hose with pump
4	drain hose(accessory)
5	checking hole
6	drain outlet

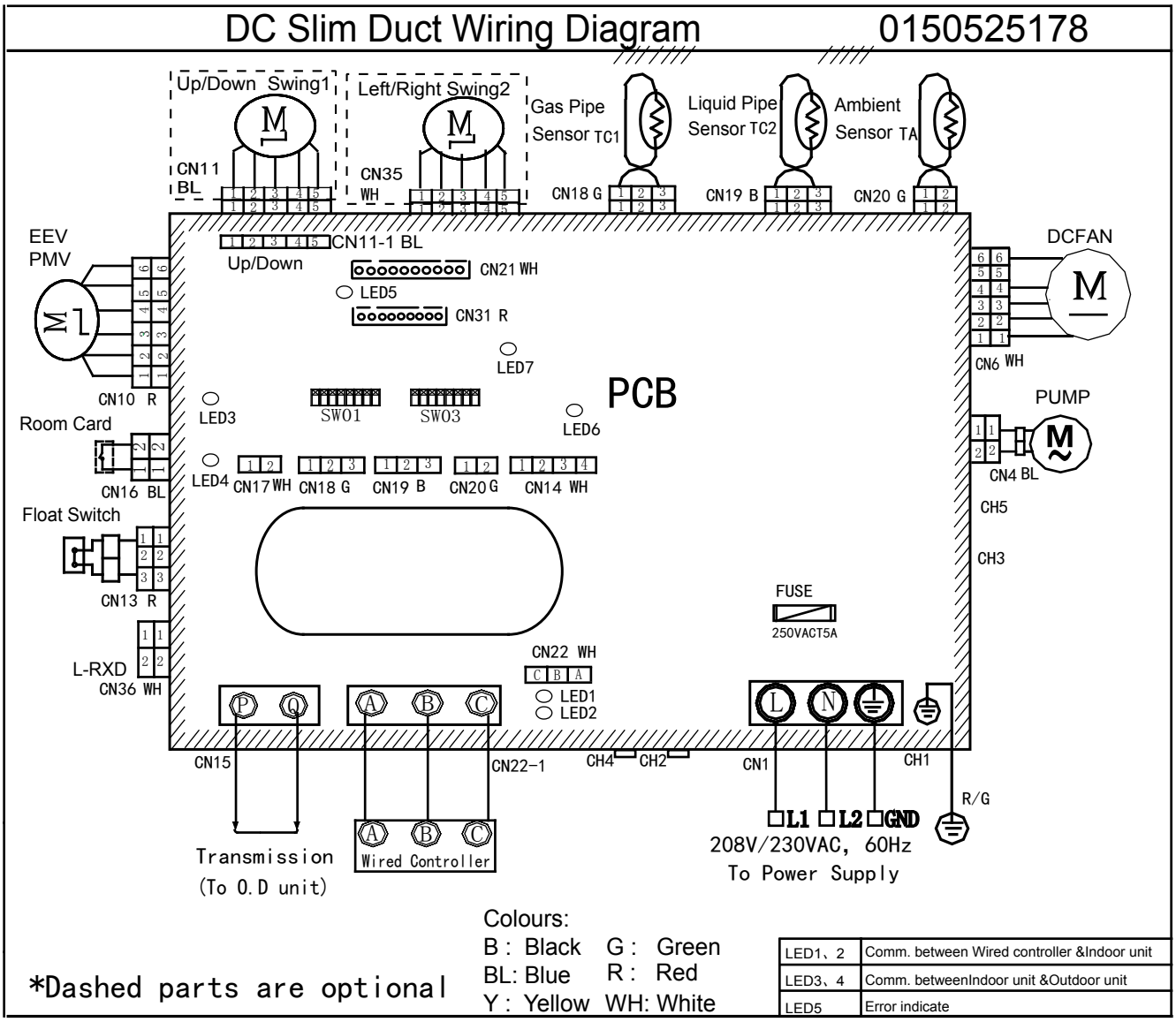




4. Piping diagram



5. Wiring diagram



6. Electric characteristics

Units					Power supply		Indoor fan motor		Power input (w)	
Model	Phase	FQY	Voltage	Volt range	MCA	MFA	Output (W)	FLA	Cooling	Heating
MVAD007MV2AA	1	50/60	220	198-242	0.24	0.76	50	0.19	31	31
MVAD009MV2AA	1	50/60	220	198-242	0.24	0.76	50	0.19	31	31
MVAD012MV2AA	1	50/60	220	198-242	0.38	1.2	50	0.3	31	31
MVAD018MV2AA	1	50/60	220	198-242	0.38	1.2	45	0.47	40	40
MVAD024MV2AA	1	50/60	220	198-242	0.59	2.12	45	0.53	50	50

Symbols:

MCA: Min. circuit amps (A)

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

Note:

1. Voltage range

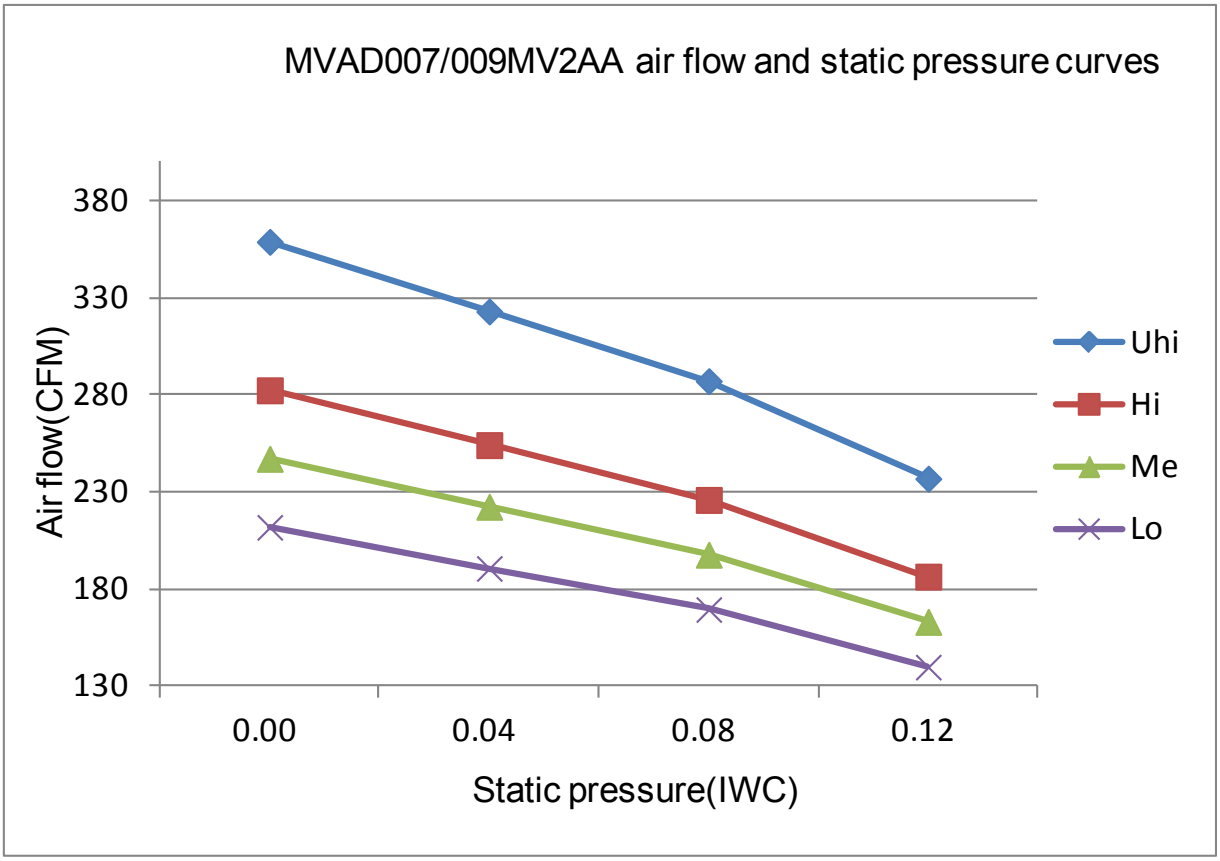
The units are applicable for the electrical systems where voltage supplied to unit is in the range.

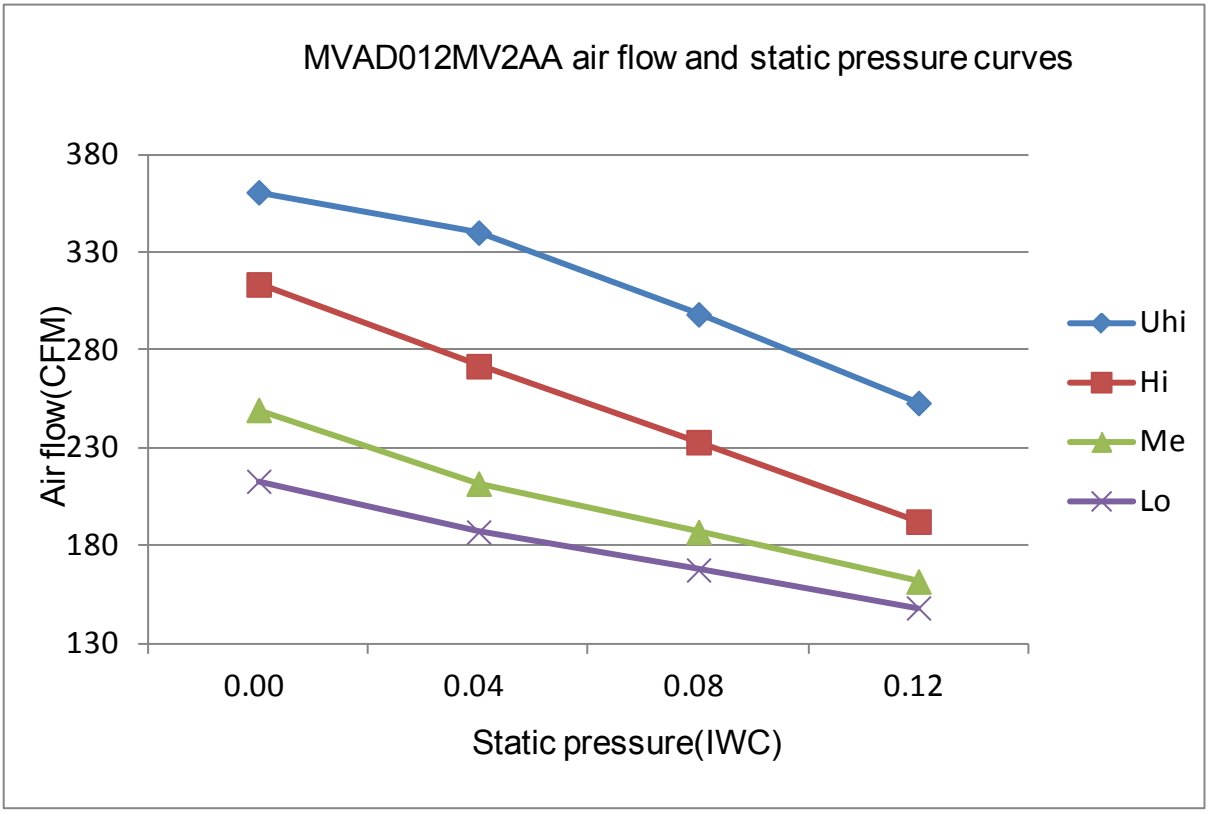
2. Maximum allowable voltage unbalance between phases is 2%.

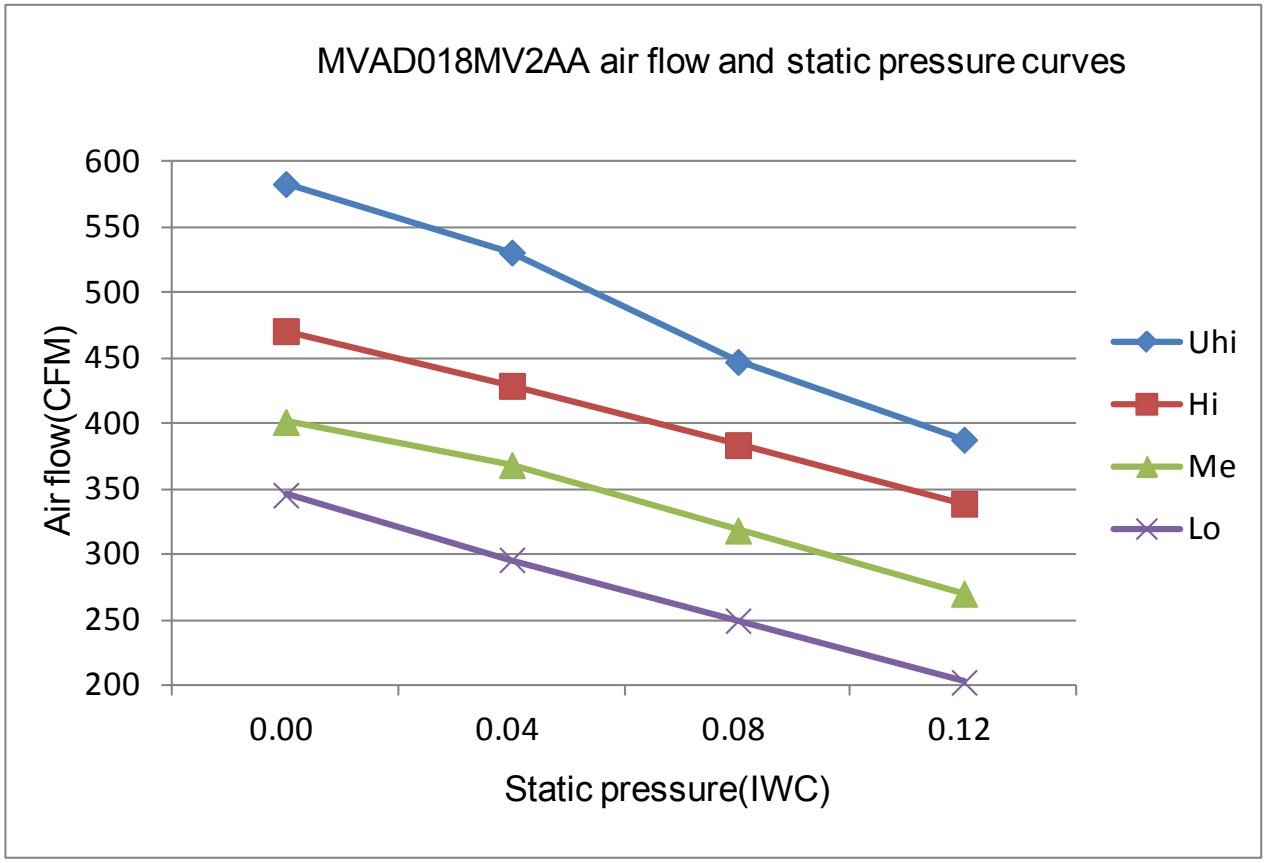
*3. MCA=1.25*FLA MFA≤4*FLA*

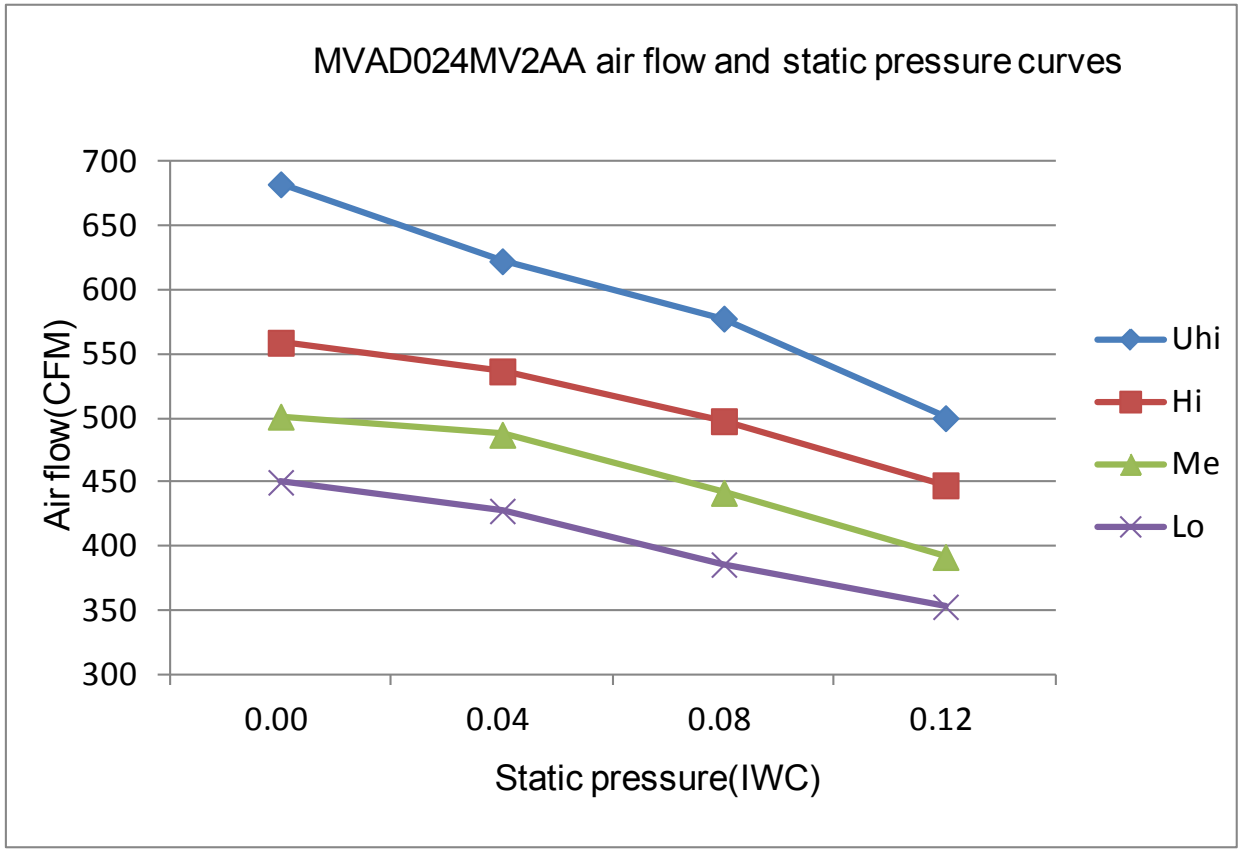
4. Power supply uses the circuit breaker.

7. Air flow and static pressure curves





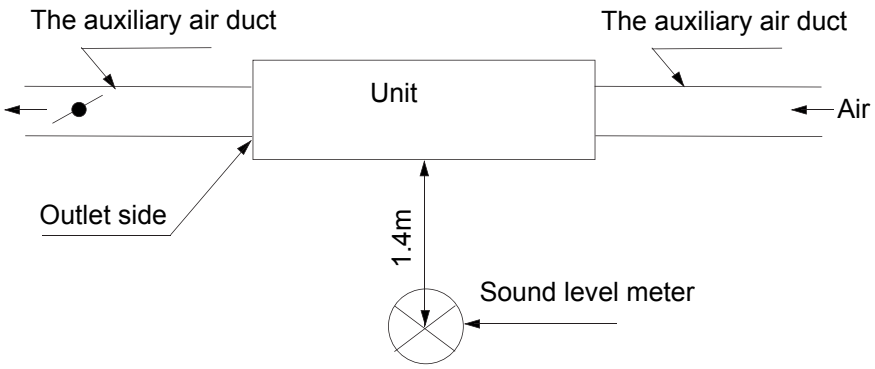

MVAD018MV2AA air flow and static pressure curves
600
550
500
450
400
350
300
250
200
Air flow(CFM)
0.00
0.04
0.08
0.12
Static pressure(IWC)
Uhi
Hi
Me
Lo


MVAD024MV2AA air flow and static pressure curves
700
650
600
550
500
450
400
350
300
Air flow(CFM)
0.00
0.04
0.08
0.12
Static pressure(IWC)
Uhi
Hi
Me
Lo

8. Sound pressure level

Slim duct type running noise

(1) Testing illustrate:



Testing position just below the central of the unit

Note: *The length of the auxiliary air duct is 2m*

(2) Testing condition:

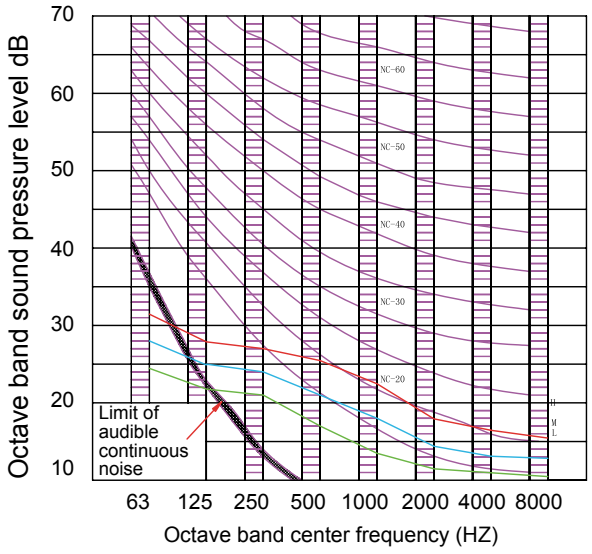
a. Unit running in the standard condition

b. Test in the semi-anechoic chamber

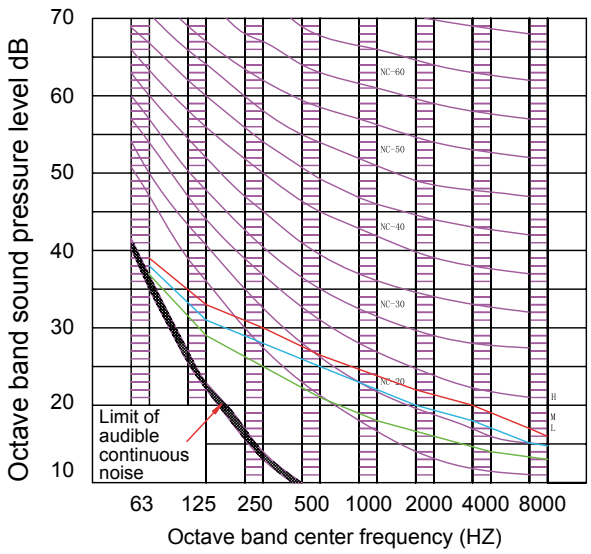
c. Noise level varies from the actual factors such as room structure, etc.

(3) Octave band level:

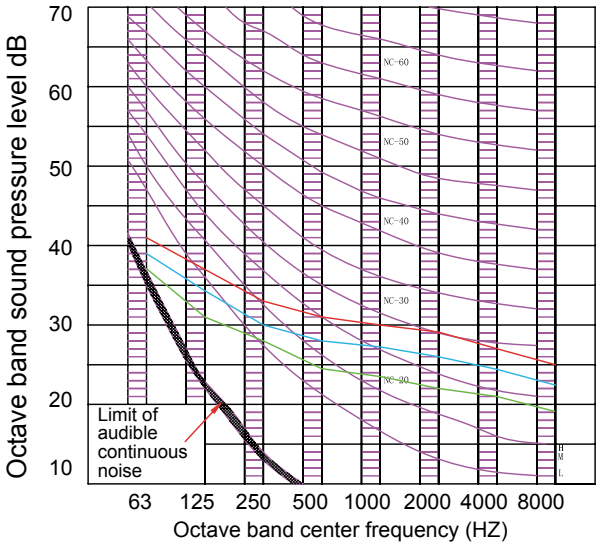
MVAD007-009MV2AA



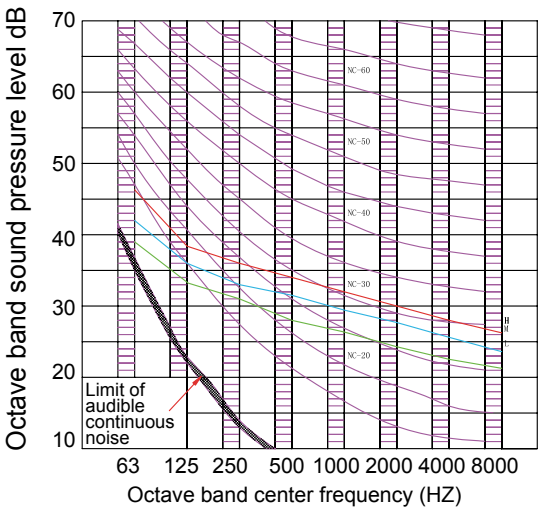
MVAD012MV2AA



MVAD018MV2AA

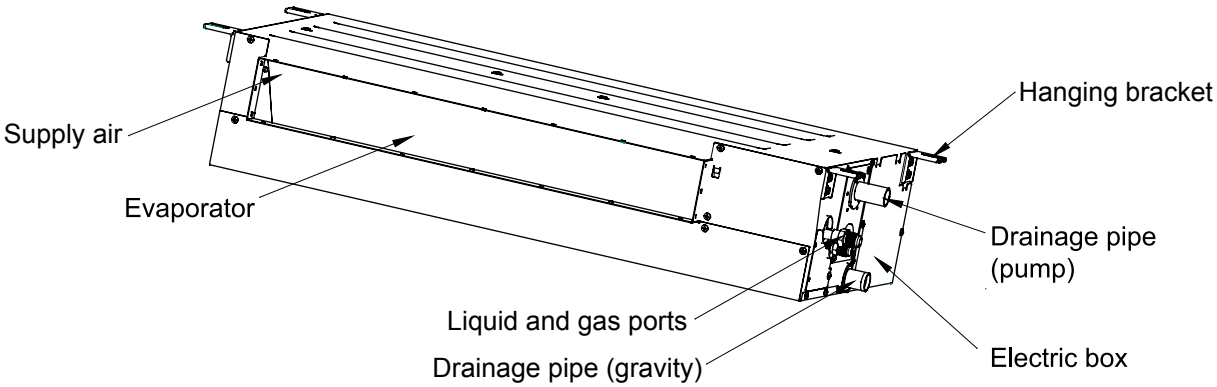


MVAD024MV2AA



9. Installation

9.1 Parts and Functions



9.2 Safety

- This manual should be saved and stored close to this air conditioning equipment.
- There are two types if indications. Both are related to safety and should be strictly followed. "⚠Warning" highlights issues that pose a risk of major injury or death. "⚠Caution" highlights issues that pose a risk of equipment or bodily injury.
- After installation and start-up commissioning, please give the manual to the user. The manual should be kept in safe place and close to the unit.

⚠WARNING

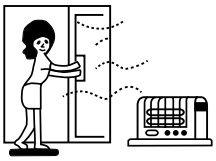
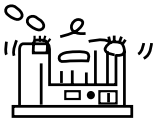
- Installation and maintenance should be performed by an authorized agency. The wrong operation of this air condition equipment may cause water damage, electric shock or fire.
- Please install the unit on the top of a solid foundation or structure which is strong enough to support the unit.
- The installation of this condition equipment should follow local building codes.
- Use the right cable size, secure the terminal firmly, organize the cables well and make sure no tension is added on cables. Cable insulation should not be damaged. Improper wire installation may lead to fire.
- This unit is only compatible with R-410A refrigerant. If any other gas enters the system, it may lead to abnormal high pressure which may cause damage or injury.
- Only use branches supplied by Haier. Use of any other branches will void warranty.
- Keep the condensate drain pipe away from toxic gas vents to prevent possible pollution of indoor environment.
- Care should be taken to ensure that there are no refrigerant leaks. R-410A is a heavy gas and will displace oxygen. Ventilate the area if a leak if found.
- The unit is not explosion-proof. Please keep it away from flammable gases.
- The drain pipe should be installed per this manual to ensure proper drainage. The pipe should be well insulated to avoid condensation. Wrong installation may lead to water damage.
- Both liquid pipe and the vapor pipe should be also well insulated. Not enough insulation may lead to system performance deterioration or condensate formation.
- This equipment should not be used or serviced by personnel who have not been properly trained in its operation and maintenance.
- Children should be supervised to ensure that they do not play on or near the equipment.
- Keep the appliance and its cord out of reach of children.
- The appliances are not intended to be operated by means of an external timer or separate remote-control system.

⚠CAUTION

- Grounding wire should be connected to the grounding bar. The grounding wire cannot be connected to the gas pipe, water pipe, lightening rod or the telephone grounding wire. Improper grounding may cause electric shock.
- A circuit breaker should be installed. If not, it may cause electric shocks or accidents.
- After installation, the air condition equipment should be powered on and passed the electric leakage current lest.
- If the ambient humidity is more than 80%, if the water discharge hole is blocked or the filter becomes dirty or the airflow speed changes, this may lead to condensate water leaks. There may also be some drops of water spraying out.

Haier

Notices during Operation

⚠ Attention	
• Do not put any heating apparatus under the indoor units. The heat may cause distortion of the units.	• 3-minutes protection To protect the unit, there is a 3-minute time-out after the unit stops or after power is applied.
• Pay attention to the ventilation to avoid anoxic injury. 	• Close the window to avoid outdoor air getting in. Curtains or window shutters can be put down to avoid the sunshine. 
• Do not place an open flame in the path of blowing air. 	• Do not touch the power switch with the wet hand to avoid power shock.
• Do not install in a corrosive environment. If the base collapses, the unit may fall and cause damage, product failure, personal injury or death.	• Turn off the system and remove power when servicing the unit.
• Do not use the unit for special purposes such as preserving foods, works of art etc. It is an air conditioner for comfort cooling / heating, not a precision refrigeration system.	• Don't remove power while system is running.
• Use the correctly rated breaker or fuse. Improper breaker or fuse may lead to fire, electric shock, explosion, personal injury or death.	• Do not clean the unit with water spray. There is risk of unit failure, fire, electric shock, personal injury or death. 
• Do not permit water or steam to enter the unit and the wired controller. There is risk of unit failure, fire, electric shock, personal injury or death.	• Keep flammable gas or combustibles away from the unit. There is risk of product failure, fire, personal injury or death.
• Turn off the power to save energy if the unit will be not used for a long period. If the unit is not powered off, it will consume power.	• Please keep children away from this air condition equipment.

9.3 Maintenance

Cleaning the air filter & air inlet grid.

- Don't remove the air filter except for cleaning, or faults may occur.
- When the air conditioner operates in the environment with too much dust, clean the air filter on a more regular basis (generally once every two weeks).

Cleaning the Air Inlet/Outlet Grilles:

⚠ Attention

- Do not use gasoline, benzene, diluents, polishing powder or liquid insecticide to clean them.
- Do not clean them with hot water of over 122°F(50°C) to avoid fading or distorting.

- Wipe them with a soft dry cloth.
- Water or neutral dry cleaner is recommended if the dust cannot be removed.

Cleaning Air Filter:

⚠ Attention

- Don't rinse the air filter with hot water of above 122ºF(50°C) to avoid fading and distorting.
- Don't put the air cleaner near fire to dry to avoid catching fire.

(A) Brush off dirt and vacuum.

(B) Wash with soft cloth and mild detergent.
(C) Shake water off and allow the filter to fully air dry before reinstalling.

9.4 Fault Checkup

Please check the following when consigning repair service:

	Symptoms	Reasons
All these are not problems	Water flow sound	Water flow sound can be heard during starting operation, during operation or immediately after stopping operation. When it starts for 2-3 minutes, the sound may become louder, which is the flowing sound of refrigerant or the draining sound of condensate water.
	Cracking sound	During operation, the air conditioner may make a crackling sound, which is caused from the temperature changes of the heat exchanger.
	Bad smell in outlet air	Clean filters and confirm the condensate drain pan and line are clean and clear.
	Flashing operating indicator	When switching it on again after power failure, turning on the manual power switch will show the operating indicator flashes.
	Awaiting indication	It displays the waiting indication as it fails to perform refrigerating operation while other indoor units are in heating operation. When the operator set it to the cooing or heating mode and the operation is opposite to the setting, it displays the waiting indication.
	Idle indoor unit still has sound of refrigerant flowing and radiating temperatures.	To prevent oil and refrigerant from blocking the valve of idle units (off or satisfied) while other indoor units are operating, some refrigerant flow is allowed to pass through. This may result in some radiating temperature and flow noise.
	Clicking sound when unit comes on.	When the conditioner is powered on, the sound is made due to the expansion valve resetting.
Please make another check.	Start or stop working automatically	Check if it is set to Timer-ON and Timer-OFF.
	Failure to work 	Check if there is a power failure. Check if the supply fuse and breaker are disconnected. Check if the unit is displaying any faults. Check if wait symbol is displayed. This is due to other indoor units connected to the same outdoor unit are running in the opposite mode. System cannot heat and cool simultaneously.
	• Poor cooling &heating effects	Check if air intake port and air outlet port of outdoor units are blocked. Check if the door and windows are open. Check if the filtering screen of the air cleaner is blocked with debris or dust. Check if the fan setting is too low. Check if the mode set to Fan mode. Check if the temperature is set correctly.

Under the following circumstances, immediately stop the operation, disconnect the manual supply switch and contact the after-service personnel.

- When buttons are not flexible and actuated;
- When there are foreign objects or ice in the unit;
- When it cannot be operated after exiting the protection mode;
- When other abnormal conditions occur.

9.5 Installation Procedures

This manual cannot completely illustrate all the properties of the products you bought. Please contact the local Haier distribution center if you have any question or request.

Caution: Choose a suitable installation location.
Avoid places with high salinity (salt water) and high sulfur gas. Unit will corrode and damage will not be covered by warranty.
Avoid excess oil (including mechanical oil) and steam. This can reduce efficiencies and product performance.
Avoid areas where machines generate high frequency electromagnetic waves. They can cause control issues.

Warning:
protect the machine from winds or earthquake, install according to regulations. Improper installation will cause accidents due to unit coming loose and falling.

Indoor Units

1. The distance between air outlet and the ground should not be more than 8.8ft (2.7m).
2. Select appropriate places for installation where the airflow can be spread evenly throughout the house. Arrange proper locations for connecting pipes and lines as well as the drainpipe to the outdoor.
3. Ceiling construction must be sturdy enough to hold the weight of the unit.
4. Make sure that the connecting pipe, the drainpipe and connecting guide line can be put into walls to connect the outdoor units.
5. It is recommended to make the connecting pipe between the outdoor and indoor units and the drainpipe as short as possible.
6. Please read the attached installation instruction of the outdoor unit for refrigerant charging if necessary.
7. The connecting flange should be checked by users.
8. Electrical appliances such as television, instruments, devices, artwork, piano, wireless equipment and other valuables should not be placed under the indoor unit as to prevent condensate from dropping onto them and causing damage.

Required Tools for Installation
- Brazing torch
- 15% silver phosphorous copper brazing alloy
- Wire stripper
- Soap-and-water solution or gas leakage detector
- Torque wrench
- 17mm, 22mm, 26mm
- Tubing cutter
- Reaming tool
- Flaring tool
- Razor knife
- Measuring tape
- Level
- Vacuum pump
- Micron gauge
- Nitrogen
- Mini-Split AD-87 Adapter (1/4” to 5/16”)
- Non-adhesive Tape
- Adhesive Tape
- Electrical wiring

The following steps can be taken after selecting the installation place:

1. Cut a hole in the wall and insert connection pipe and connecting wires through a field supplied PVC pipe. The hole should be inclined slightly downward with an inclination of at least 1/100 (see Figure 1).

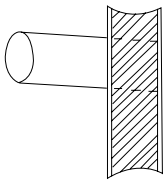
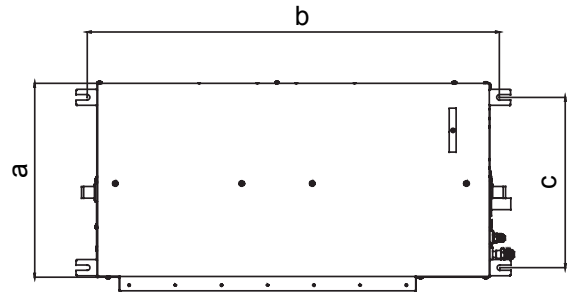


Figure 1

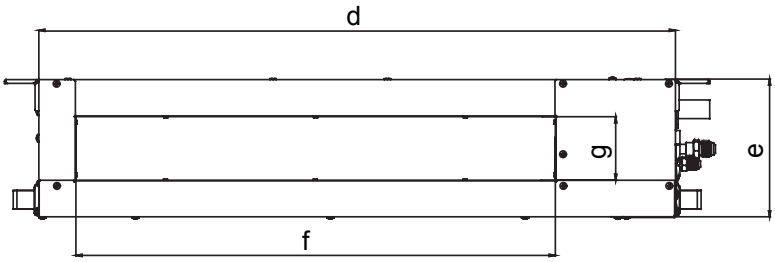
2. Before cutting the hole, ensure no pipe or rebar is placed behind the cutting position. Avoid cutting a hole near wires or connection pipes.
3. Hang the unit on a horizontal and firm roof. If the unit base is not stable, it may cause noise, vibration or leakage.
4. Support the unit firmly and shape the connection pipe, connecting wires and drain pipe to allow them to easily get through the hole.

Dimension (unit: in.).

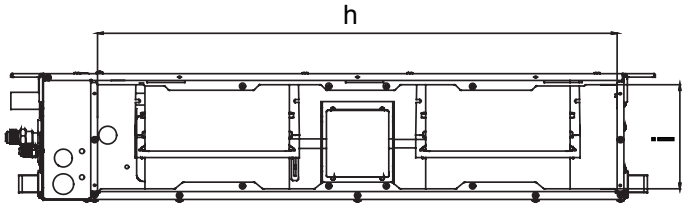
Model	a	b	c	d	e	f	g	h	i
MVAD007~12MV2AA	16.5	35.1	14.6	33.5	7.3	25.2	3.6	29.9	6.0
MVAD018~24MV2AA	16.5	47.7	14.6	46.1	7.3	37.8	3.6	42.5	6.0



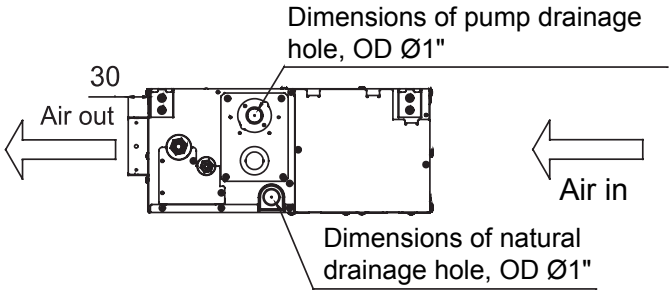
Hanger dimensions



Dimensions of air outlet



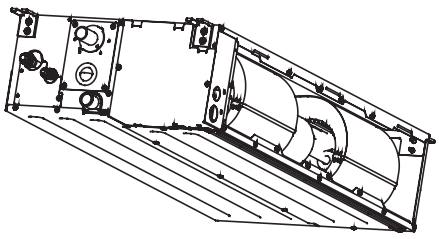
Dimensions of return air inlet

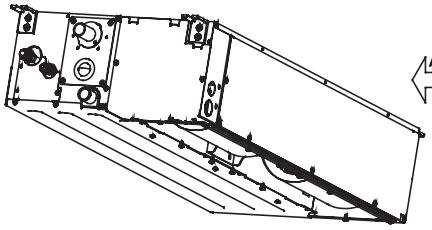


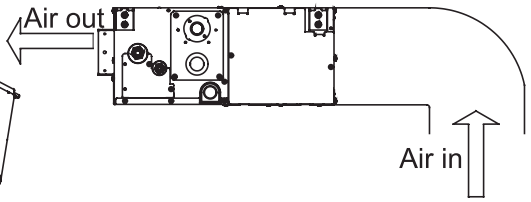
Dimensions of drain hose

Installation modes of Indoor unit

This series of air conditioners can be arranged in two air return modes: 1. Air return from the back (Factory default); 2. Air return from the bottom (can be adjusted on site. See the following figures.)


Air return from the back


Air return from the bottom 1



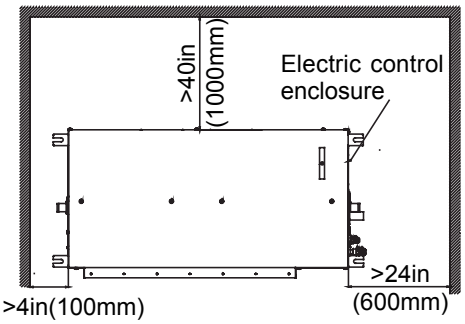
Air return from the bottom 2

Note:
The downward air return mode will increase noise 3-5dB(A). It is recommended to install the air conditioner in downward return air mode 2 if enough space is available.

Installation space and method

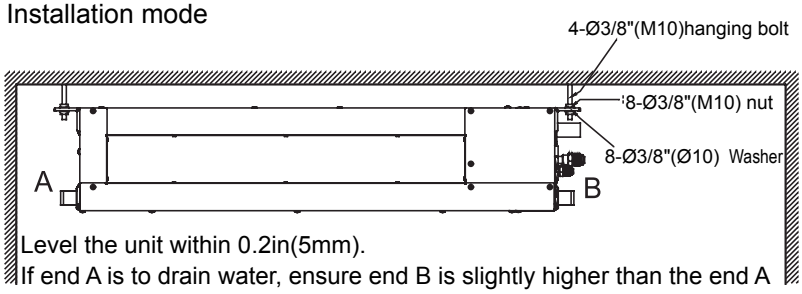
Body installation
1.Use 3/8" (M10) lifting bolts.
2.Ceiling removal: For different building structures, please consult with building personnel about actual conditions.
a. Ceiling reinforcement: Ensure the ceiling is horizontal and will not shake. The ceiling base frame must be reinforced.
b. Cut off and remove the ceiling base frame.
c. Reinforce the faces left when the ceiling is removed and further reinforce the base frame that fix both ends of the ceiling.
d. After the unit installation is complete, it is time to install pipes and wires. Before installation, choose a suitable installation position and determine the outgoing direction of pipes. Especially in case that a ceiling exists, please pull refrigerant tubing, drain hose, indoor and outdoor connecting wires, control wires to their connection positions prior to hanging the machine.

Installation space



Reserve 24in×24in
(600mm×600mm) access hole

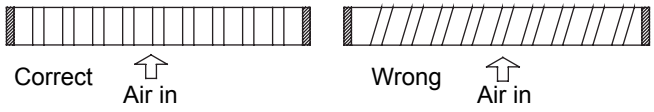
Installation mode



Level the unit within 0.2in(5mm).
If end A is to drain water, ensure end B is slightly higher than the end A to facilitate drainage.
Otherwise, ensure end A is slightly higher than end B.

Installation of air-inlet grille

The angle of air-inlet grille should be parallel with that of air inlet direction, otherwise it will cause more noise. Example shown to the right.



Duct Installation of Indoor Units:

1.Installation of the duct work:
With a square supply duct, the bore shouldn't be less than the sizes of air outlet duct.
2.Installation of the air return duct: Connect one side of the air return duct to the air return of the indoor units with rivets, with the other side connected to air return shutter, as shown in Fig. 1.
3.Insulating Supply Ducts: Supply and return air ducts should be insulated.

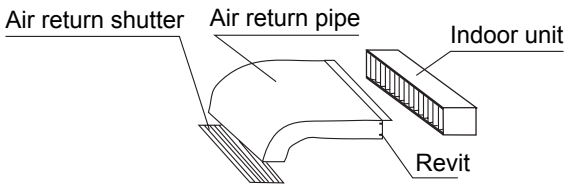


Fig.1
Connection of oil return pipe

Selection of fan outlet

This machine uses a DC motor. Multiple ESP adjustments are available. The factory default is standard ESP. The ESP & Silent mode can be set according to the static pressure and the noise requirement. Setting ranges are as follows:

Model	Ultra-Silent	Silent	Standard ESP default	High ESP	Super High ESP
Grade	1	2	3	4	5

Operation:

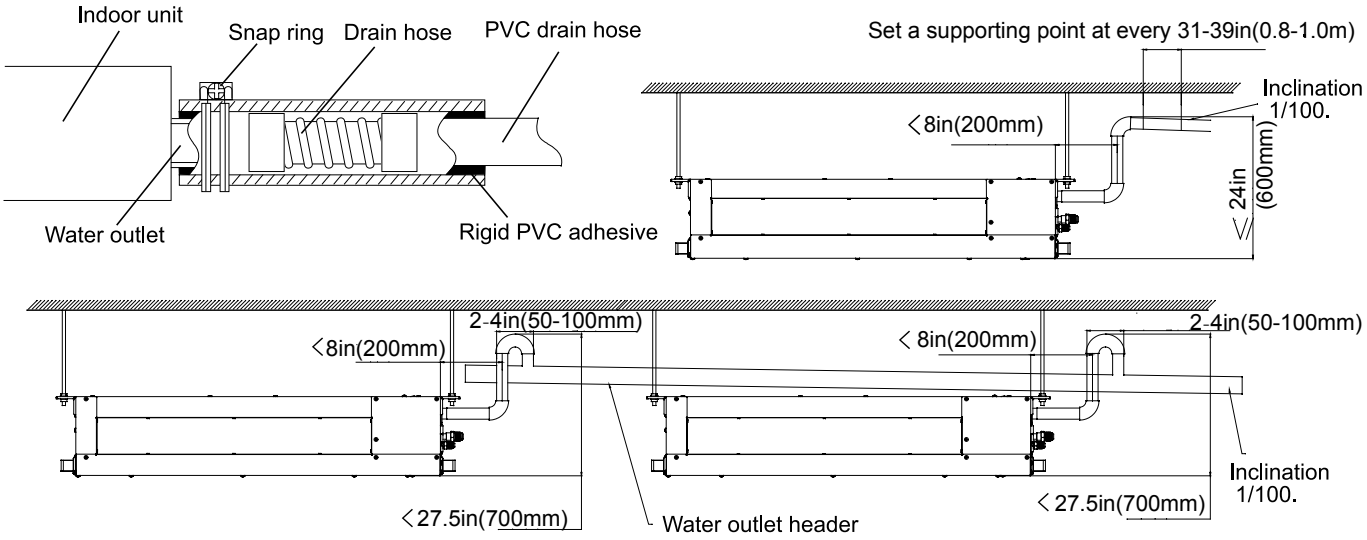
YR-E17 wired controller: With the display on, press Fan + Set keys for 5s to enter static pressure set mode. The static pressure icon will flash and current static pressure will display. Press ▼▲ key to change static pressure grade, then press the Set key to confirm.

Note:
This series are low ESP duct, all the sets above must be handled by a wired controller.

Installation of drain hose

Connection of indoor drain hose

1. Please use the accessory drain hose to connect indoor unit's water outlet and PVC pipe. Use snap rings to tighten them as shown in the following figure:
2. Please use rigid PVC adhesive for connection of other pipes and ensure there is no leakage.
3. Drain hose must be wrapped with insulation sleeve and tightened with a strap to prevent air leakage from producing condensate.
4. To prevent water flowing back into air conditioner when the unit stops running, drain hose should decline to the drainage side with an inclination of above 1/100. Drain hose expansion or water accumulation should be prevented, or else it will cause abnormal noise.
5. When connecting the drain hose, do not pull on it to avoid the pipe connections from getting loose or disconnected. Drain hose should not be pulled out laterally for more than 8in(200mm) and should be supported every 31-39in(0.8-1.0m) to avoid bending.
6. The end of drain hose should be more than 2in(50mm) away from the ground or the bottom of drainage tank. It should not be put in water. To directly drain condensate into drainage ditch, the drain hose must be U-shaped to avoid smell from entering through the hose into room.



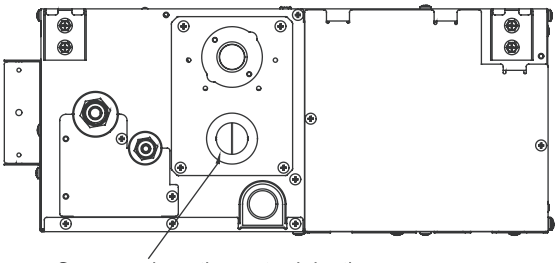
Multiple units use water outlet header to drain water into drainage ditch.

Drainage test

Before the test, ensure the drain hose is clear and all connections are tightly sealed.

Then perform the drainage test as follows:

1. Add about 0.132gal (500ml) of water into the water pan through water injection hole.
2. Switch on the power and operate the unit in cooling mode. Check that the water outlet drains water normally and that there are no leakages at the connections. After the drainage test is complete, replace the water injection hole plug. For the position of water injection hole, see the figure on the right:



Open or close the water injection hole by rotating the hole plug

Pipe Length & Height Difference

Please refer to the attached manual of outdoor units.

Model		MVAD007~018MV2AA	MVAD024MV2AA
Tubing Size in(mm)	Gas pipe	Ø1/2"(Ø12.7)	Ø5/8"(Ø15.88)
	Liquid pipe	Ø1/4"(Ø6.35)	Ø3/8"(Ø9.52)
Tubing Material	Seamless copper pipe rated for R410A refrigerant		

Tubing Materials & Specifications

Special tools for R410A should be used for cutting and enlarging pipes.

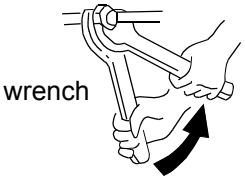
Refrigerant Recharge Amount

Add the refrigerant according to the installation instruction of outdoor unit. The addition of R410A refrigerant must be performed with a digital scale to ensure the proper charge. Compressor failure can be caused by over or under charging the system.

Connecting Procedures of Refrigerant Tubing

Connect all the refrigerant tubes via flare connections.

- Dual wrenches must be used in the connection of indoor unit tubing.
- For tightening torque refer to the right table.



Outer Diameter of Tubing in(mm)	Mounting Torque lb-in(N-m)	Flare Torque Spec ft-lb (N-m)
Ø1/4"(Ø6.35)	104.4(11.8)	13 (18)
Ø3/8"(Ø9.52)	216.8(24.5)	30 (40)
Ø1/2"(Ø12.7)	443.7(49.0)	43 (59)

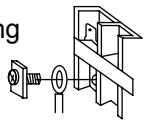
Cutting and Enlarging

- Cut the tube to the needed length.
- Ream the cut to remove shoulder. Do this with the tube facing down to help fillings fall out.
- Add supplied flare nut to tube.
- Use 45° flare tool to create flare.

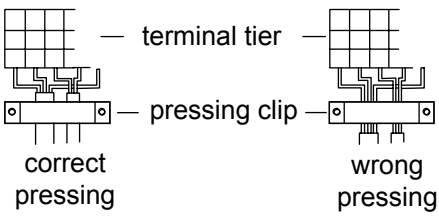
Wire Connections

1. Connecting using circular crimp terminals:
   The method of using circular terminal is shown in the figure. Take off the screw, connect it to the terminal after placing it through the ring at the end of the lead and tighten it down.

Connecting circular terminals:



2. Connecting using straight terminals:
   The method of using straight terminals is shown as follows: loosen the screw before putting the wire into the terminal block, tighten the screw and confirm it has been tightened by pulling the line gently.
3. Clamp the wires:
   Secure the wires with clips which should press on the insulation of the wires.



9.6 Electrical Wiring

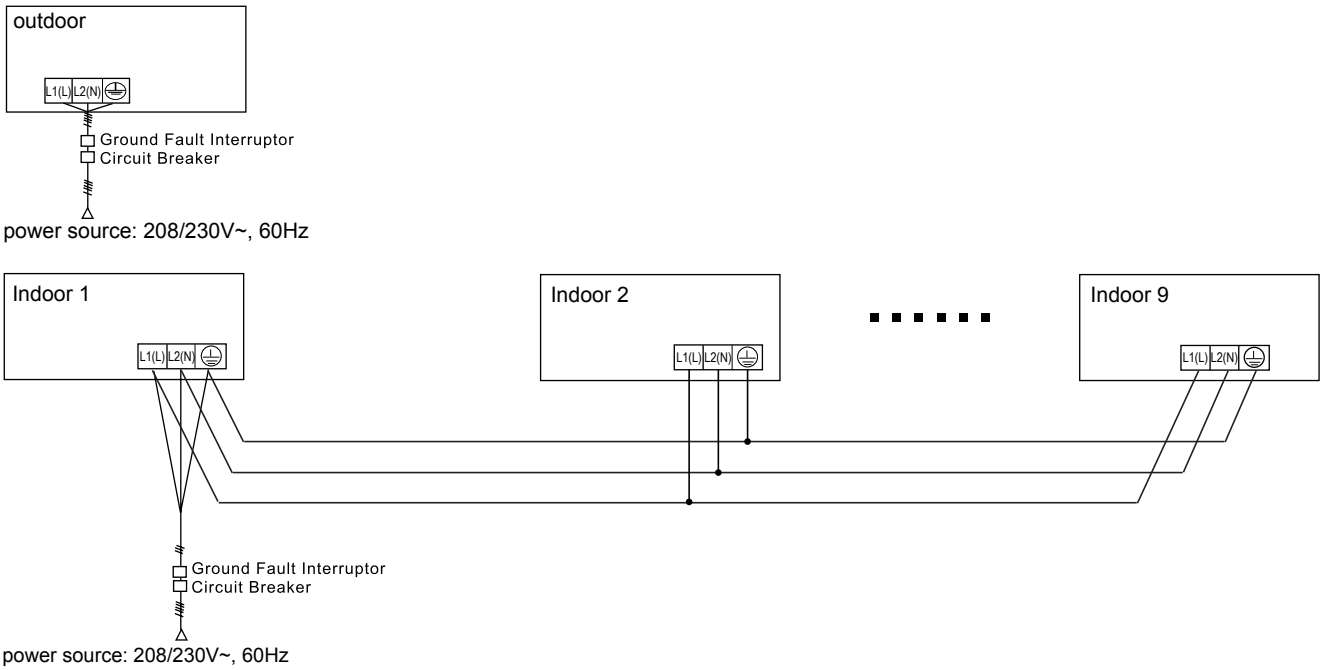
⚠WARNING

- Follow local codes when selecting wire gauge and connecting to house power.
- Use the cable strain relief clips and locking conduit clamps to prevent wires from being pulled off terminal posts.
- Unit must be properly grounded. Do not use water or gas piping, phone ground or lightning rod.

⚠ Attention

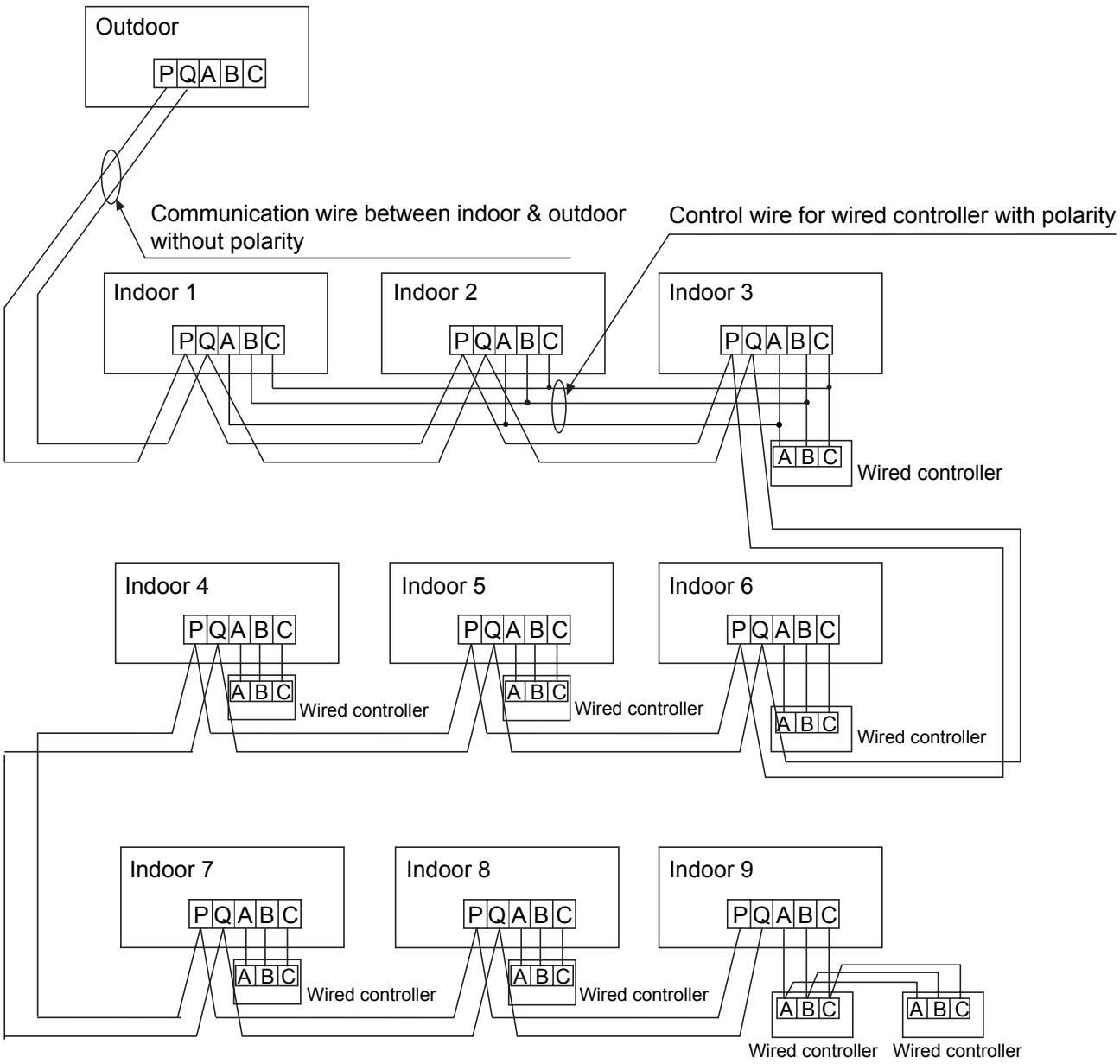
- Only copper wire can be used. A properly sized breaker should be provided, or electric shock may occur.
- Unit requires 208/230VAC - 2 voltage wires and a ground. No neutral.
- All indoor units should be wired to the same breaker to prevent some of the units from being powered off while others are energized.
- Controller wiring and refrigerant tubing can be arranged and ran together.
- Disconnect power from both outdoor and indoor units prior to servicing any component in the system.

Supply Wiring Drawing



- Indoor units and outdoor units should be connected to separate power breakers.
- Indoor units must share one single electrical breaker. Circuit breaker specifications should be calculated. It is recommended to have both indoor & outdoor units connected to GFCI and surge devices.

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 ways of connecting the line control and indoor units:

A. One wired control to control multiple units, i.e. 2-9 indoor units, as shown in the above figure, (1-3 indoor units). The indoor unit 3 is the wire controlled main unit and others are the wired controlled sub units. The remote control and the main unit (directly connected to the indoor unit of wired control) are connected via three wires with polarity. Other indoor units and the main unit are connected via three lines with polarity. SW01 on the main unit of wired control is set to 0 while SW01 on other sub units of wired control are set to 1, 2 and so on in turn. (Please refer to the code setting A at page 14)

B. One wired control controls one indoor unit, as shown in the above figure (indoor unit 4-8). The indoor units and the wired control are connected via three lines with polarity.

C. Two wired controls control one indoor unit, as shown in the figure (indoor unit 9). Either of the wired controls can be set to be the master wired control while the other is set to be the auxiliary wired control. The master wired control and indoor units, and the master and auxiliary line controls are connected via three lines with polarity. Note: For DC motor/low ESP duct type, the PCB comes with the terminal blocks. Please be sure to pay attention to do the wiring according to the labels. The power lines and signal lines go through the metal wire hole separately with the protective sleeve of the connecting line.

Wire gauge size and breaker size for total indoor amp draw. Current NEC guidelines and local codes will trump this chart.

Items / Total Current of Indoor Units(A)	Cross Section AWG (mm^2)	Length in.(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
<7	14(2.5)	65.6(20)	10	10 A,30 mA,0.1S or below	16 AWG (1.25mm^2)
≥7 and <11	12(4)	65.6(20)	15	15 A,30 mA,0.1S or below	
≥11and <16	10(6)	82(25)	20	20 A,30 mA,0.1S or below	
≥16 and <22	8(8)	98.4(30)	30	30 A,30 mA,0.1S or below	
≥22 and <27	6(10)	131(40)	30	30 A,30 mA,0.1S or below	

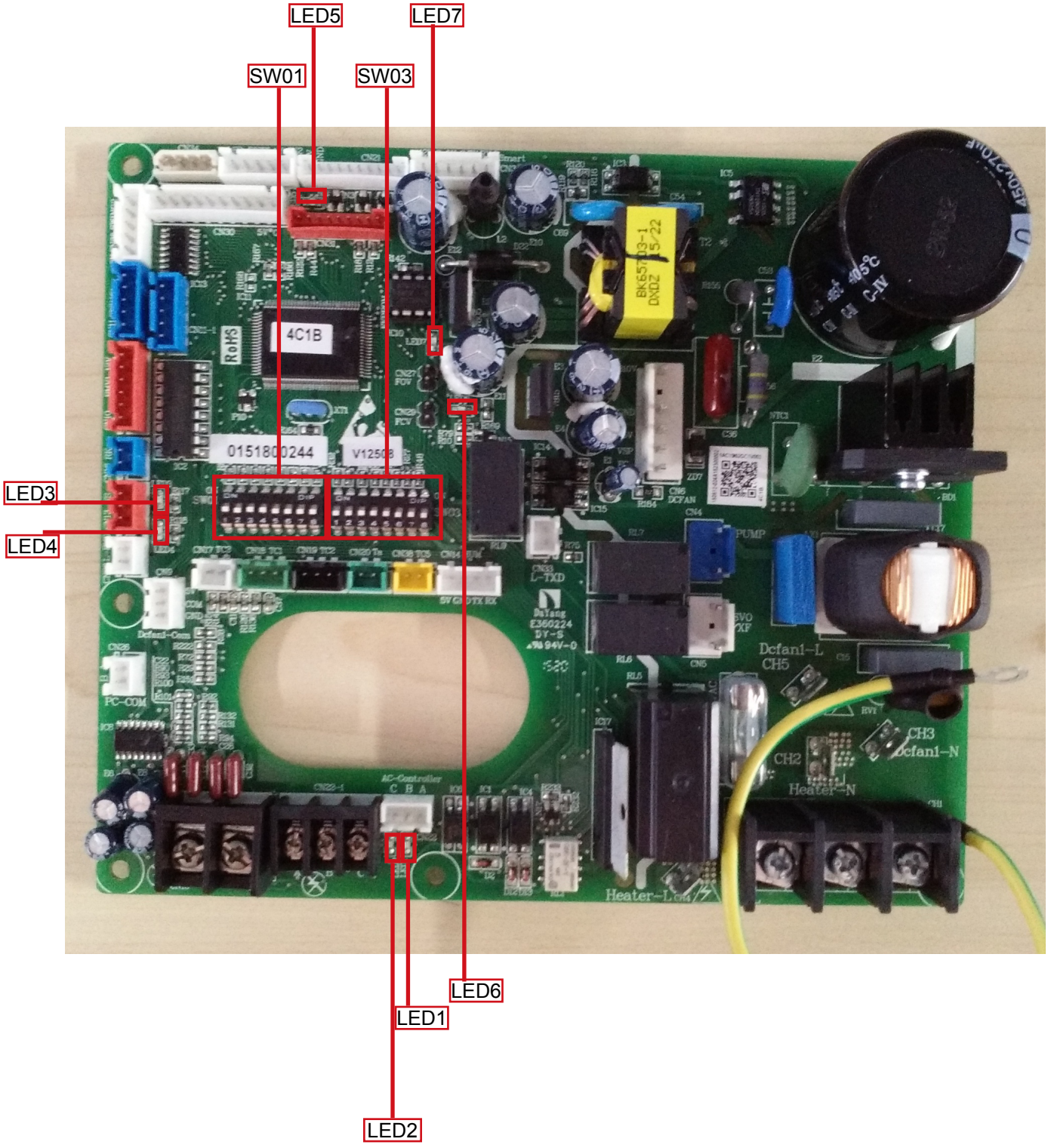
- The electrical power line and signal lines must be tightened.
- Every indoor unit must have a ground connection.
- The power wire should be size up if it exceeds the permissible length.
- Shielding of the wire of all the indoor and outdoor units should be connected together and grounded at one point.
- Signal lines should not exceed 3280ft(1000m).

Wired Controller ABC Chart

Length of Controller Wire ft (m)	Wiring Dimensions AWG (mm^2)
<328(100)	22(0.3) x 3 core shielding line
≥328(100) and <656(200)	20(0.5) x 3 core shielding line
≥656(200)and <984(300)	18(0.75) x 3 core shielding line
≥984(300) and <1312(400)	16(1.25) x 3 core shielding line
≥1312(400) and <1968(600)	14(2) x 3 core shielding line

- The shielding lay of the controller wire must be grounded at one end.
- The total length of the controller wire shall not be more than 1968ft(600m).

10. 0151800244 PCB dip switch setting



LED light introduction:

• LED1, LED2: communication lamp between indoor unit and wired controller.
These two lamps flicker alternately under normal condition; once occurs the communication faulty, these two lamps will light or not light at the same time.

• LED3, LED4: communication lamp between indoor unit and outdoor unit.
These two lamps flicker alternately under normal condition; once occurs the communication faulty, these two lamps will light or not light at the same time.

• LED5: malfunction lamp of indoor unit.
This lamp not light under normal condition; once indoor unit occurs malfunction this lamp will flicker, flicker times indicate the corresponding failure code.

•LED6, LED7: for factory testing

Dip switch introduction

Definition of SW01:

(A) SW01_1-4 is used to set indoor address when grouping multiple indoor units connected to single wired controller YR-E16B or YR-E17.

SW01_5-8 set capacity of the indoor unit (factory set). Must only set when replacing board.

SW01_1 SW01_2 SW01_3 SW01_4	Address of wire controlled indoor unit (group address) (*Note 1)	[1]	[2]	[3]	[4]	Address of wire controlled indoor unit (group address)
		OFF	**OFF**	**OFF**	**OFF**	0# (wire controlled master unit) (default)
		OFF	OFF	OFF	ON	1# (wire controlled slave unit)
		OFF	OFF	ON	ON	2# (wire controlled slave unit)
		OFF	OFF	ON	ON	3# (wire controlled slave unit)
		…	…	…	…	……
		ON	ON	ON	ON	15# (wire controlled slave unit)
SW01_5 SW01_6 SW01_7 SW01_8	Capability of indoor unit	[5]	[6]	[7]	[8]	Capability of indoor unit
		OFF	OFF	OFF	ON	7000BTU (MVAD007MV2AA)
		OFF	OFF	ON	OFF	9000BTU (MVAD009MV2AA)
		OFF	OFF	ON	ON	12000BTU (MVAD012MV2AA)
		OFF	ON	ON	OFF	18000BTU (MVAD018MV2AA)
		OFF	ON	ON	ON	24000BTU (MVAD024MV2AA)

Note 1: *A wired controller can control max. 16 DC slim duct indoor units.*

(B) Definition and description of SW03

										Communication address	Central control address
SW03	Set the communication and central control address by dip switch (*Note 2)	ON	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**	0 (default)	0 (default)
		ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	1	1
		ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	2	2
		…	…	…	…	…	…	…	…	…	…
		ON	OFF	ON	ON	ON	ON	ON	ON	63	63
		ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	0	64
		ON	ON	OFF	OFF	OFF	OFF	OFF	ON	1	65
		ON	ON	OFF	OFF	OFF	OFF	ON	OFF	2	66
		…	…	…	…	…	…	…	…	…	…
		ON	ON	ON	ON	ON	ON	ON	ON	63	127
		OFF	…	…	…	…	…	…	…	Set the address by wired controller or automatically (default)	

Note 2:

- *Set the address by dip switch when connecting the centralized controller or gateway or charge system.*
- *Address of centralized controller =communication address + 0 or +64.*
  SW03_ 2=OFF, address of centralized controller =communication address+0=communication address SW03_ 2=ON, address of centralized controller=communication address+64 (applies when centralized controller is used and there are more than 64 indoor units)
- *To use with 0010451181A in use, it is required to use code for address setting. Set SW03_1=0N and SW03_ 2=OFF; SW03_3, SW03_ 4, SW03_5, SW03_6, SW03_7 and SW03_ 8 are address codes which are set according to actual address.*

(C) Jumper definition description
Electronic expansion valve PMV manual control settings (CN27, CN29)
Manually fully open CN27: short circuit CN27 for 2 seconds after power, the PMV fully opened.
Manually fully close CN29: short circuit CN29 for 2 seconds after power, the PMV fully closed.

(D) 26°C Lock function Activation:
Default: Deactivated
Activation: Press "Health" button on remote controller 8 times in 5 seconds, and you hear 4 times beep, then activate the function.
Deactivation: Press "Health" button on remote controller 8 times in 5 seconds, and you hear 2 times beep, then deactivate the function.

11. Indoor unit control

11.1 Cooling operation

Set temp. in cooling: Ts=set temp. wired controller;
After startup, indoor unit will send the request to outdoor according to the temp. difference between the set temp. and the room temp.

11.2 Heating operation

Set temp. in heating: Ts=set temp. wired controller+TA correcting value.
After startup, indoor unit will send the request to outdoor according to the temp. difference between the set temp. and the room temp.

11.3 Dry operation

Room temp. - set temp. > 2°C indoor operation is identical with the cooling operation, and send the cooling mode to outdoor;
Room temp. - set temp. ≤ 2°C indoor will send the dry signal to outdoor, and indoor fan motor will run at low speed compulsorily when compressor is running; when room temp. <16°C indoor stops and sends stop signal to outdoor.
In dry operation, the auto mode of indoor fan motor is identical with the cooling mode; EEV control mode is identical with the cooling operation.

11.4 Fan operation

Indoor fan motor will run at the speed set on the wired controller and sends stop signal to outdoor.

11.5 Abnormal operation

When the requested mode collides with the outdoor mode, the entering earlier will be in prior. After indoor receives the startup command from wired controller (remote controller), firstly judge the outdoor current mode. If it is normal mode, the indoor will run as the request of wired controller; if it is abnormal mode, the command can not be executed, and indoor keeps stop; wired controller displays standby mode (if in remote control type, the buzzer will sound twice and the remote controller can not receive the signal). Until the outdoor stops or the outdoor mode is accordant with the requested mode of wired controller (remote controller), the outdoor will work. COOL (including AUTO COOL), DRY, RECOVERY are regarded as the same mode;
HEAT, RECOVERY are as abnormal mode.

11.6 Fan speed control of indoor fan motor

a. Adjustment by hand
Set high/ mid/ low fan speed as the request.
b. Auto fan speed
Confirm the fan speed as the temp. difference between room temp. TA and the set temp.
c. Anti-cool air control
In heating mode, after compressor startup, the unit will control indoor fan motor state due to the indoor coil temp.
In anti-cool air period, indoor sends pre-heat signal to wired controller; in outdoor defrosting period, indoor fan motor will stop, and sends defrost signal to wired controller;
After being switched off in heating mode, indoor fan motor will run at low speed and 30 seconds later will stop.

11.7 Set EEV open angle by hand

When being switched off, short connect CN27 to open the valve fully compulsorily for 2 minutes; When being switched off, short connect CN29 to close the valve fully compulsorily for 2 minutes.

11.8 Anti-freezed protection

In cooling mode, execute the anti-freezed protection due to the measured indoor coil temp. to avoid the indoor heat exchanger causing frost or ice.

11.9 Swing motor control

Indoor will control swing motor ON/OFF due to the swing signal from wired controller.

11.10 Auxiliary electric heater control

In heating mode, if the below conditions can be met, the electric heater will work:
(1) Indoor fan motor and compressor are running;
(2) Air inlet temp. is no more than 22°C;
(3) Room temp. is lower over 2°C than the set temp.;
(4) Compressor has run for 5 seconds;
Either below condition is met, the electric heater will stop:
(1) Indoor fan motor or compressor not runs;
(2) Indoor air inlet temp. is over 23°C;
(3) Indoor air inlet temp. is higher over -1°C than the set temp.;
(4) Unit stops or quit the heating mode.

11.11 Filter cleaning

Check and memorize the running time of indoor fan motor, once arriving the requested time (set by SW07-6), indoor will send filter cleaning signal to wired controller; when indoor receives the filter reset signal from wired controller, if the time exceeds the requested time, the filter will reset.

11.12 Compulsory defrosting

After indoor receives the compulsory defrosting signal from wired controller, it will send compulsory defrosting signal to outdoor continuously for 10 times. In the sending period, indoor will execute the normal defrost.

11.13 Trial operation

Set the mode as cooling (heating), press ON/OFF for 5 seconds to enter compulsory cooling (heating).
In compulsory cooling, display "LL" and COOL will flash;
In compulsory heating, display "HH" and HEAT will flash, fan speed is AUTO. At this time, only ON/OFF, TEMP +/- are valid.

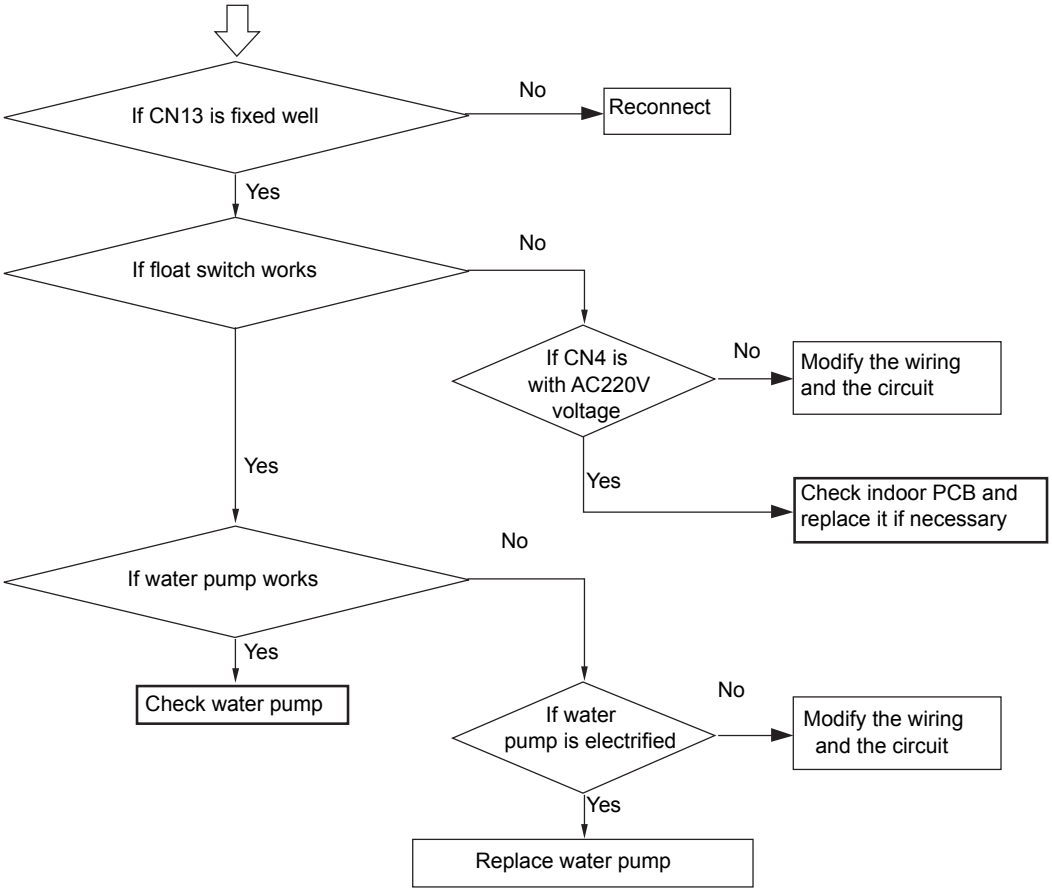
12. Failure code

Failure code at wired controller (hex)	PCB LED5(Indoor Units)/ Receiver Timer Lamp(Remote Controller)	Fault Descriptions
01	1	Indoor ambient temp. sensor TA failure
02	2	Indoor coil pipe temp. sensor TC1 failure
03	3	Indoor coil pipe temp. sensor TC2 failure
05	5	Indoor EEPROM failure
06	6	Communication between indoor and outdoor failure
07	7	Communication between indoor and wired controller failure
08	8	Indoor float switch failure
09	9	Indoor address repeated failure
0C	12	Indoor unit 50Hz Zero-crossing failure
0E	14	DC motor failure
12	18	The 4-way valve of 3-pipe valve box reversing failure
	20	Outdoor failure code

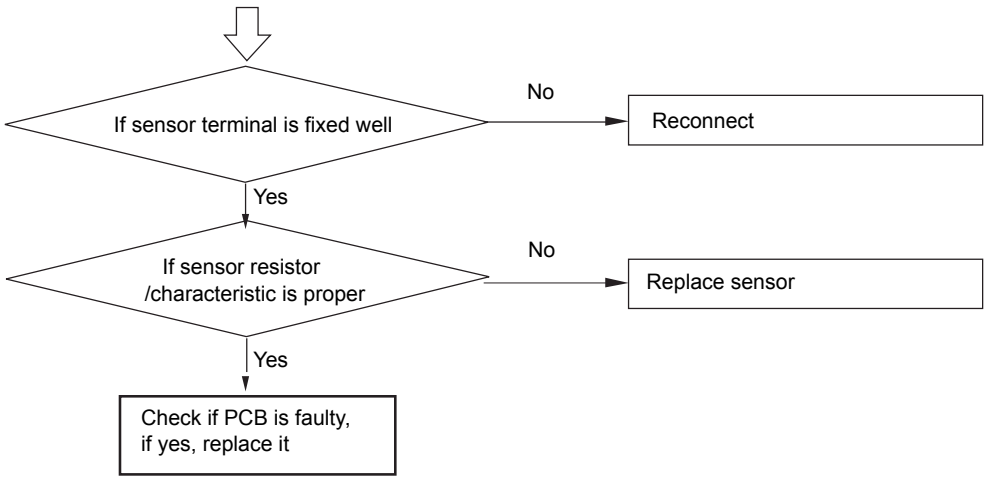
13. Troubleshooting

Indoor failure diagnose

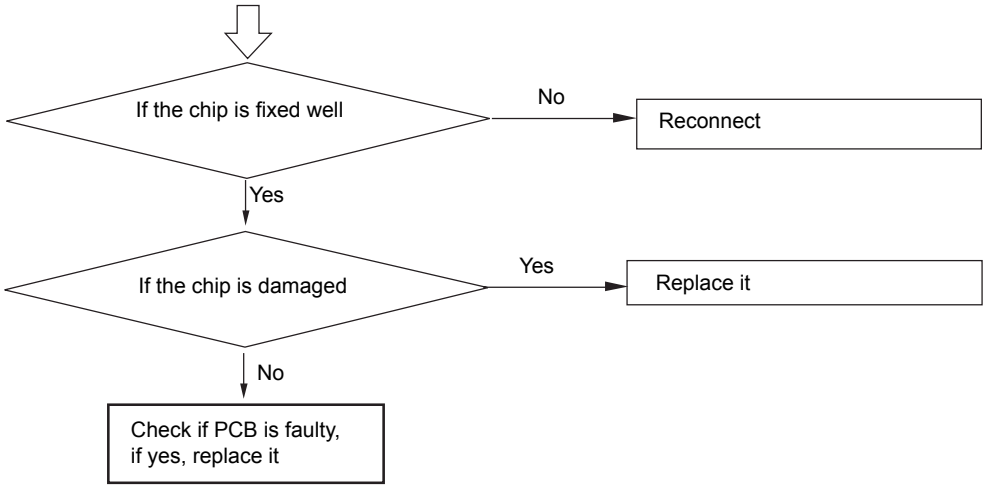
[08] Indoor drainage system failure/float switch circuit on indoor PCB failure



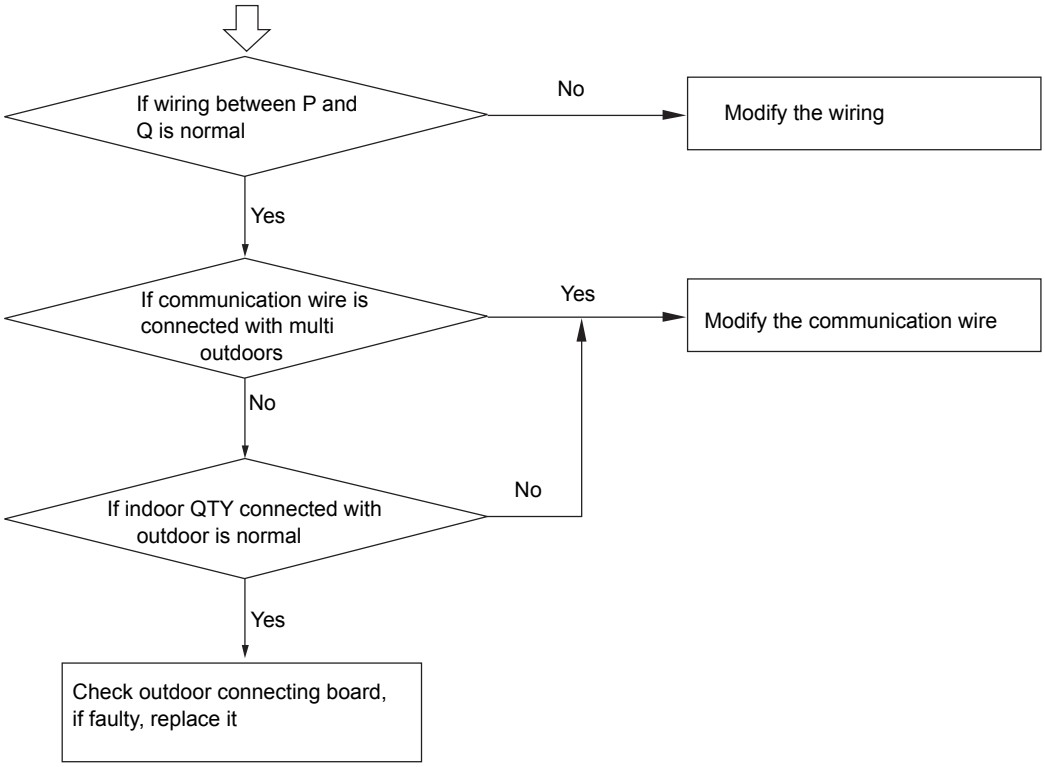
[1/2/3/4/15] Indoor sensor failure



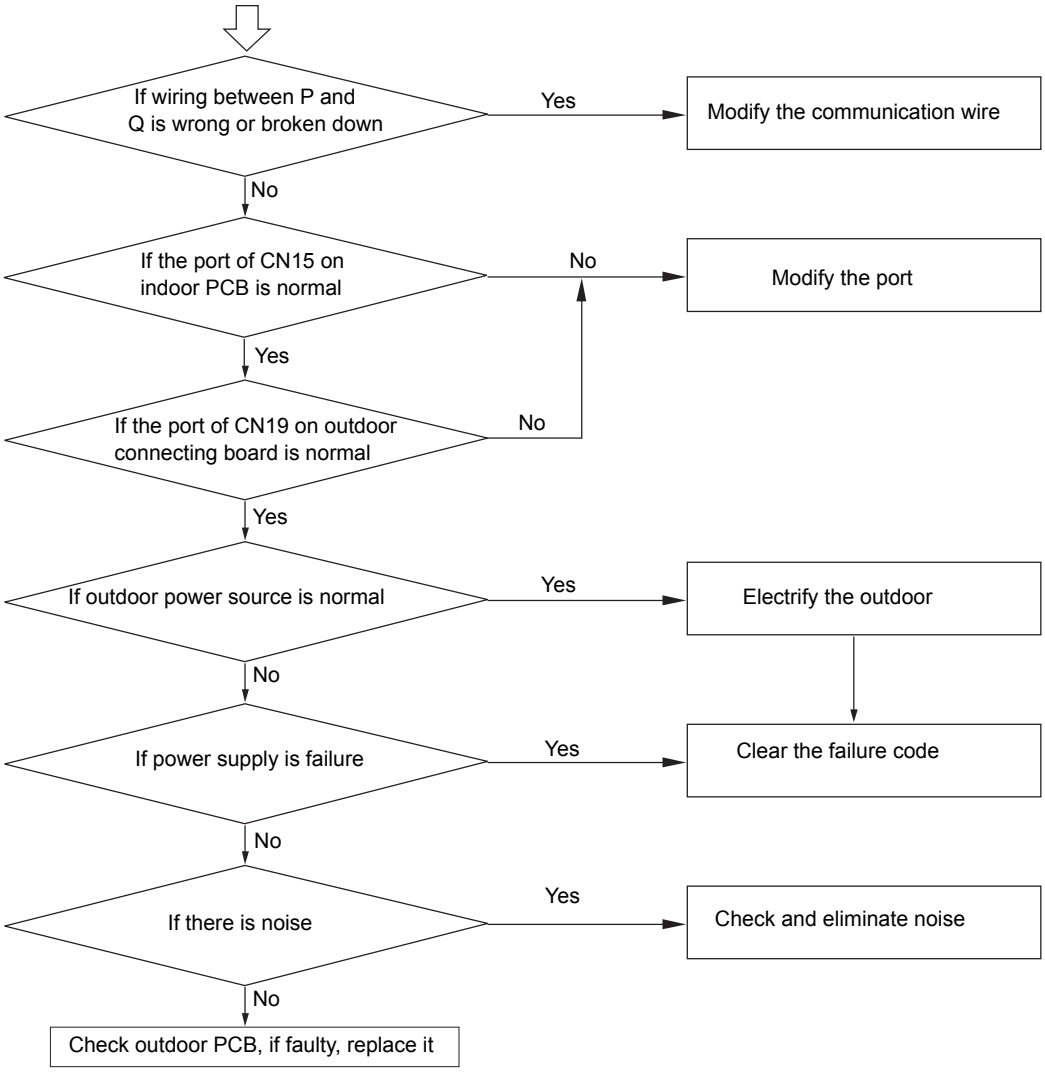
[05] EEPROM failure



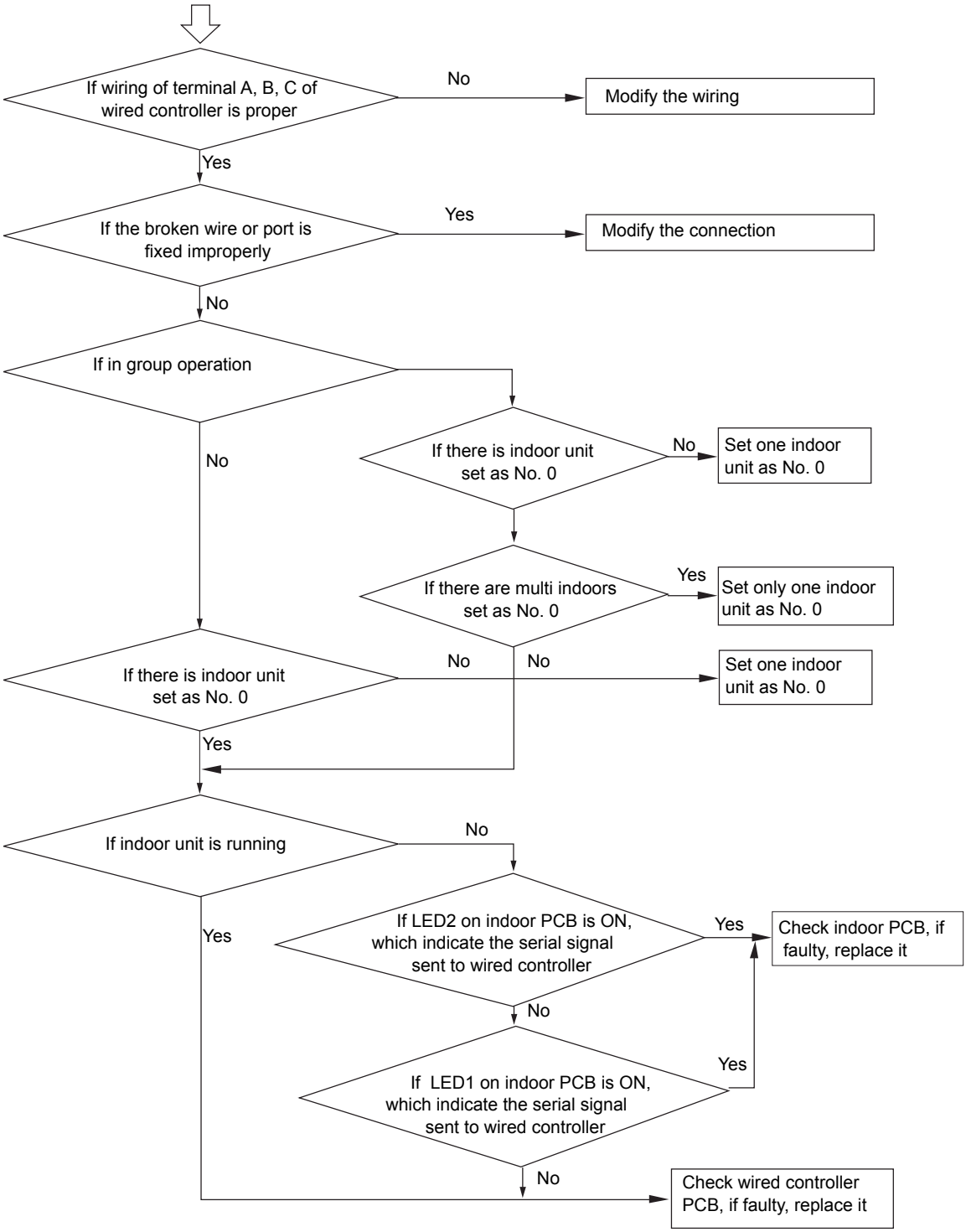
[09] Indoor address repeated



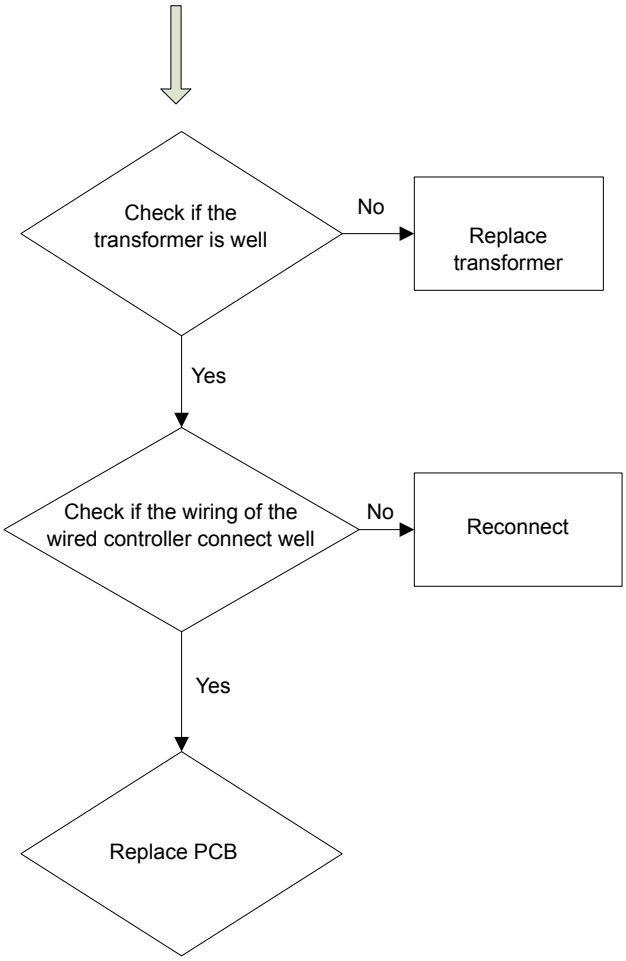
[06] Communication circuit between indoor and outdoor



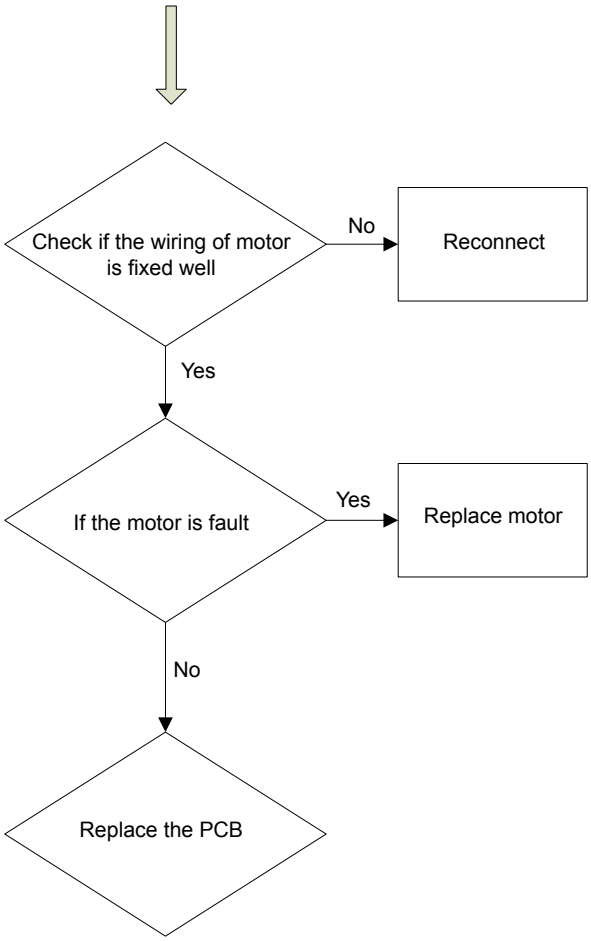
[07] Communication abnormal between indoor and wired controller



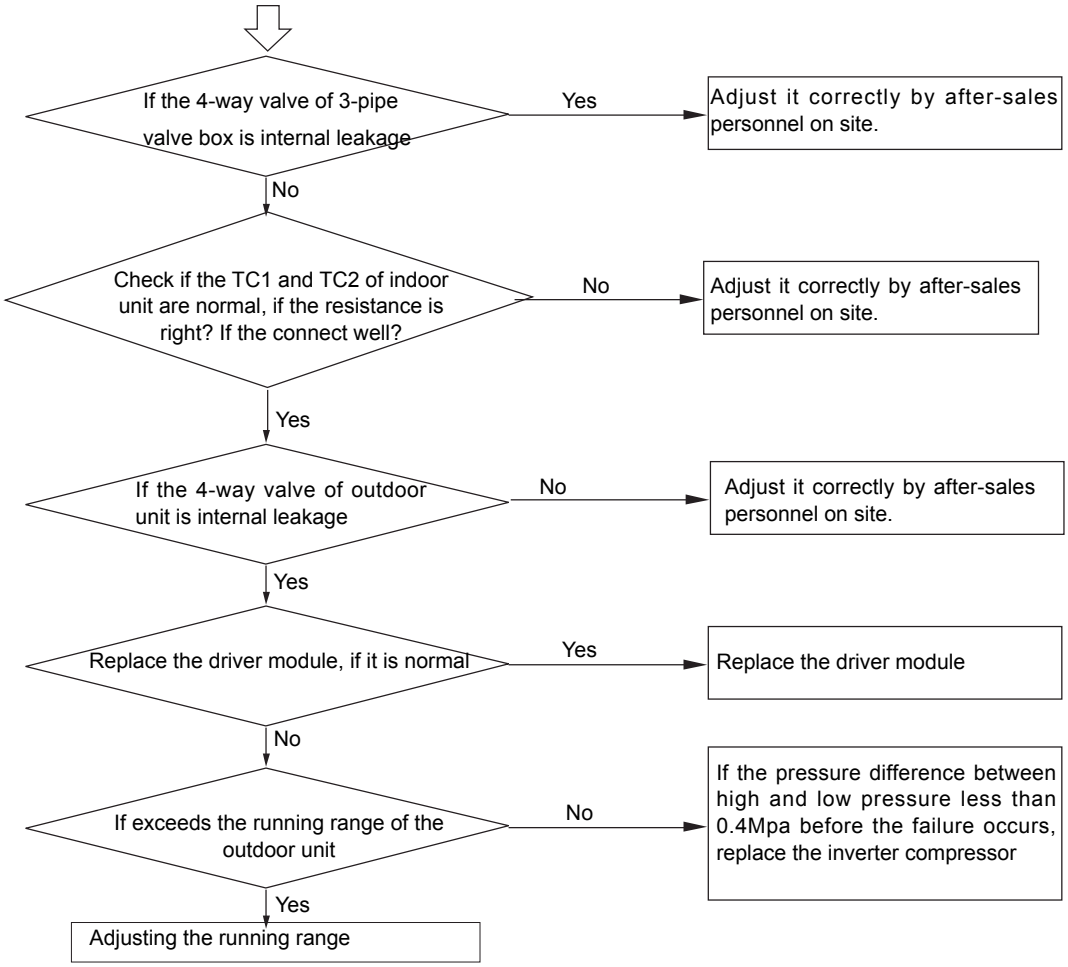
[12] No 50Hz zero passage signal



[14] DC motor failure



[18] The 4-way valve of 3-pipe valve box reversing failure



Note: abnomity confirmation conditions
For MRVIII-RC system, the outdoor unit is running normally, when the 4-way valve of valve box is power on and its connected heating indoor unit's parameter satisfy following conditions

- & • When 4-way valve of valve box is ON
  - • TC2 ≤ CT-20°C lasts for 5min
  - • or • TC1 ≤ 0°C lasts for 5min
    - • TC1 ≤ master unit Ps_temp+10°C lasts for 5min

14. Capacity

(CA: total capacity; SHC: sensible heat capacity)

Cooling

Model	Outdoor temp.	Indoor temp.													
		70.7°F DB 59°F WB		73.4°F DB 60.8°F WB		77°F DB 64.4°F WB		80.6°F DB 66.2°F WB		82.4°F DB 68°F WB		86°F DB 71.6°F WB		89.6°F DB 75.2°F WB	
	°F DB	CA (Btu/h)	SHC (Btu/h)	CA (Btu/h)	SHC (Btu/h)	CA (Btu/h)	SHC (Btu/h)	CA (Btu/h)	SHC (Btu/h)	CA (Btu/h)	SHC (Btu/h)	CA (Btu/h)	SHC (Btu/h)	CA (Btu/h)	SHC (Btu/h)
MVAD007 MV2AA	68	7500	6136	7500	6477	7841	6477	7841	6477	8182	6818	8523	6477	8864	6477
	72.5	7159	6136	7500	6477	7841	6136	7841	6477	8182	6477	8182	6477	8523	6477
	77	7159	6136	7500	6477	7500	6136	7841	6477	7841	6477	8182	6477	8523	6477
	81.5	7159	6136	7159	6477	7500	6136	7841	6477	7841	6477	8182	6477	8523	6136
	86	7159	6136	7159	6477	7500	6136	7500	6477	7841	6477	8182	6477	8523	6136
	90.5	6818	6136	7159	6136	7500	6136	7500	6136	7841	6477	8182	6477	8182	6136
	95	6818	6136	7159	6136	7500	6136	7500	6136	7500	6477	7841	6477	8182	6136
	99.5	6818	6136	6818	6136	7159	6136	7500	6136	7500	6477	7841	6477	8182	6136
	104	6818	6136	6818	6136	7159	6136	7500	6136	7500	6477	7841	6136	8182	6136
	109.4	6818	5795	6818	6136	7159	6136	7159	6136	7500	6477	7841	6136	7841	6136
MVAD009 MV2AA	68	9161	7464	9500	7464	9839	7464	10179	7464	10179	7804	10518	7464	10857	7464
	72.5	9161	7464	9500	7464	9839	7464	9839	7464	10179	7804	10518	7464	10857	7464
	77	9161	7125	9161	7464	9839	7464	9839	7464	10179	7804	10518	7464	10857	7125
	81.5	9161	7125	9161	7464	9500	7464	9839	7464	9839	7464	10518	7464	10857	7125
	86	8821	7125	9161	7464	9500	7125	9839	7464	9839	7464	10179	7464	10518	7125
	90.5	8821	7125	9161	7464	9500	7125	9500	7125	9839	7464	10179	7464	10518	7125
	95	8821	7125	8821	7125	9161	7125	9500	7125	9839	7464	10179	7464	10518	7125
	99.5	8482	7125	8821	7125	9161	7125	9500	7125	9500	7464	9839	7464	10518	7125
	104	8482	7125	8821	7125	9161	7125	9161	7125	9500	7464	9839	7125	10179	7125
	109.4	8482	6786	8482	7125	9161	7125	9161	7125	9500	7464	9839	7125	10179	7125
MVAD012 MV2AA	68	11667	9000	12000	9333	12333	9000	12667	9000	13000	9333	13333	9000	14000	9000
	72.5	11667	9000	12000	9000	12333	9000	12667	9000	13000	9333	13333	9000	13667	9000
	77	11667	9000	11667	9000	12333	9000	12333	9000	12667	9333	13333	9000	13667	8667
	81.5	11333	8667	11667	9000	12000	9000	12333	9000	12667	9333	13000	9000	13667	8667
	86	11333	8667	11667	9000	12000	8667	12333	9000	12333	9333	13000	9000	13333	8667
	90.5	11000	8667	11333	9000	12000	8667	12000	9000	12333	9000	13000	9000	13333	8667
	95	11000	8667	11333	9000	11667	8667	12000	8667	12333	9000	12667	9000	13333	8667
	99.5	11000	8667	11000	8667	11667	8667	12000	8667	12000	9000	12667	9000	13000	8667
	104	10667	8667	11000	8667	11667	8667	11667	8667	12000	9000	12333	8667	13000	8667
	109.4	10667	8333	11000	8667	11333	8667	11667	8667	12000	9000	12333	8667	12667	8667
MVAD018 MV2AA	68	17679	12536	18000	12857	18643	12536	18964	12536	19286	12857	20250	12536	20893	12214
	72.5	17357	12536	17679	12536	18643	12536	18964	12536	19286	12857	19929	12536	20571	12214
	77	17357	12214	17679	12536	18321	12214	18643	12214	18964	12857	19929	12214	20571	11893
	81.5	17036	12214	17357	12536	18321	12214	18643	12214	18964	12536	19607	12214	20250	11893
	86	17036	12214	17357	12536	18000	12214	18321	12214	18643	12536	19286	12214	20250	11893
	90.5	16714	12214	17036	12214	17679	11893	18321	12214	18643	12536	19286	12214	19929	11893
	95	16714	11893	17036	12214	17679	11893	18000	11893	18321	12536	18964	12214	19929	11893
	99.5	16393	11893	16714	12214	17357	11893	17679	11893	18321	12214	18964	11893	19607	11571
	104	16071	11893	16714	12214	17357	11893	17679	11893	18000	12214	18643	11893	19286	11571
	109.4	16071	11571	16393	11893	17036	11571	17357	11893	17679	12214	18643	11893	19286	11571
MVAD024 MV2AA	68	23662	17239	24000	17577	25014	17239	25352	17239	26028	17915	27042	17577	27718	16901
	72.5	23324	17239	23662	17577	24676	17239	25352	17239	25690	17915	26704	17239	27718	16901
	77	22986	16901	23662	17577	24338	16901	25014	17239	25352	17577	26366	17239	27380	16901
	81.5	22648	16901	23324	17239	24338	16901	24676	17239	25352	17577	26028	17239	27042	16563
	86	22648	16901	22986	17239	24000	16901	24338	16901	25014	17577	26028	16901	27042	16563
	90.5	22310	16563	22648	17239	23662	16563	24338	16901	24676	17577	25690	16901	26704	16563
	95	21972	16563	22648	16901	23662	16563	24000	16901	24338	17239	25352	16901	26366	16563
	99.5	21972	16563	22310	16901	23324	16563	23662	16563	24338	17239	25352	16901	26028	16225
	104	21634	16225	21972	16901	22986	16563	23662	16563	24000	17239	25014	16563	26028	16225
	109.4	21296	16225	21634	16563	22648	16225	23324	16563	23662	16901	24676	16563	25690	16225

Heating

Model	Outdoor temp.	Indoor temp.(°FDB)			
		59	68.0	77.0	80.6
	°FDB	SHC(Btu/h)	SHC(Btu/h)	SHC(Btu/h)	SHC(Btu/h)
MVAD007MV2AA	5	5780	5440	5440	5440
	14	6460	6460	6460	5780
	23	7140	7140	6460	5780
	32	8160	8160	6460	5780
	36.5	8500	8500	6460	5780
	42.8	8500	8500	6460	5780
	43.7	8840	8500	6460	5780
	50	9520	8500	6460	5780
	54.5	10200	8500	6460	5780
	59.9	10200	8500	6460	5780
MVAD009MV2AA	5	6891	6891	6891	6891
	14	7875	7875	7875	7219
	23	8859	8859	8203	7219
	32	10172	9844	8203	7219
	36.5	10500	10500	8203	7219
	42.8	10500	10500	8203	7219
	43.7	11156	10500	8203	7219
	50	11813	10500	8203	7219
	54.5	12469	10500	8203	7219
	59.9	12797	10500	8203	7219
MVAD012MV2AA	5	9113	8775	8775	8775
	14	10463	10125	10125	9450
	23	11475	11475	10463	9450
	32	12825	12825	10463	9450
	36.5	13500	13500	10463	9450
	42.8	13500	13500	10463	9450
	43.7	14175	13500	10463	9450
	50	15188	13500	10463	9450
	54.5	16200	13500	10463	9450
	59.9	16200	13500	10463	9450
MVAD018MV2AA	5	13333	13333	13016	13016
	14	15238	15238	14921	13651
	23	17143	16825	15556	13651
	32	19048	18730	15556	13651
	36.5	20000	19683	15556	13651
	42.8	20317	20000	15556	13651
	43.7	20952	20000	15556	13651
	50	22540	20000	15556	13651
	54.5	23810	20000	15556	13651
	59.9	24127	20000	15556	13651
MVAD024MV2AA	5	18225	17888	17550	17550
	14	20588	20250	20250	18563
	23	23288	22950	20925	18563
	32	25650	25313	20925	18563
	36.5	27000	26663	20925	18563
	42.8	27338	27000	20925	18563
	43.7	28350	27000	20925	18563
	50	30375	27000	20925	18563
	54.5	32400	27000	20925	18563
	59.9	32738	27000	20925	18563

Haier Commercial Air Condition

ADDRESS: No.1 Haier Road, Hi-tech Zone, Qingdao 266101 P.R.China

Web: Http://www.haier.com