

HEAT CONTROLLER

SERVICE MANUAL

**Inverter Single Zone
Ductless Mini Split Heat Pump**

VMH Series Version C

VMH30SC-1

VMH36SC-1

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1. Precaution

1.1 Safety Precaution

- To prevent injury to the user or other people and property damage, the following instructions must be followed.
- Incorrect operation due to ignoring instructions will cause harm or damage.
- Before servicing unit, be sure to read this service manual.

1.2 WARNING

► Installation

- Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

There is a risk of fire or electric shock.

- For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center.

Do not disassemble or repair the product, there is a risk of fire or electric shock.

- Always ground the product.

There is a risk of fire or electric shock.

- Install the panel and the cover of control box securely.

There is a risk of fire or electric shock.

- Always install a dedicated circuit and breaker.

Improper wiring or installation may cause fire or electric shock.

- Use a correctly rated breaker or fuse.

There is risk of fire or electric shock.

- Do not install, remove, or reinstall the unit by yourself (customer).

There is risk of fire, electric shock, explosion, or injury.

- Use caution when unpacking and installing the product.

Sharp edges could cause injury, be especially careful of the case edges and the fins on the condenser and evaporator.

- **For installation, always contact the dealer or an Authorized service center.**

There is a risk of fire or electric shock.

- **Do not install this product on a defective installation stand.**

It may cause injury, accident, or damage to the product.

- **Be sure the installation area does not deteriorate with age.**

If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

- **Do not let the air conditioner run for a long time when the humidity is very high and a door or a window is left open.**

Moisture may condense and wet or damage furniture

- **Take care to ensure that the power cable can not be pulled out or damaged during operation.**

There is a risk of fire or electric shock.

- **Do not place anything on the power cable.**

There is a risk of fire or electric shock.

- **Do not touch this product with wet hands during operation.**

There is a risk of fire or electric shock.

- **Do not place a heater or other appliance near the power cable.**

There is a risk of fire or electric shock.

- **Do not store or use flammable gas or combustibles near this product.**

There is risk of fire or failure of product.

- **Do not use this product in a tightly closed space for a long time.**

Oxygen deficiency could occur.

- **In the event of flammable gas leaks, turn off the gas, open a window for ventilation, and repair leaks before turning the product on.**

Do not use the telephone or turn power switches on or off.

There is risk of explosion or fire.

- **If strange sounds, smells, or smoke come from product, turn the breaker off or disconnect the power supply.**

There is a risk of electric shock or fire.

- **Do not open the inlet grill of this product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)**

There is risk of physical injury, electric shock, or product failure.

- **Use caution that water does not enter the product.**

There is risk of fire, electric shock, or product damage.

- **Turn the main power off when cleaning or maintaining this product.**

There is risk of electric shock.

- **When this product is not used for a long time, disconnect the power supply or turn off the breaker.**

There is risk of product damage or failure, or unintended operation.

► CAUTION

- **Always check for gas (refrigerant) leakage after installation or repair of product.**

Low refrigerant levels may cause failure of product.

- **Install the drain hose to ensure that water is drained away properly.**

- **Keep level even when installing the product.**

It can avoid vibration or water leakage.

- **Do not install this product where noise or hot air from the outdoor unit could damage the neighboring property.**

It may cause a problem for your neighbors.

■ **Use two or more people to lift and transport this product.**

Avoid personal injury.

■ **Do not install this product where it will be exposed to sea wind (salt spray) directly.**

It may cause corrosion. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

► **OPERATIONAL**

■ **Do not expose skin directly to cool air for long periods of time. (Do not sit in the draft).**

This could cause harm to your health.

■ **Do not use this product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigerant system.**

There is risk of damage or loss of property.

■ **Do not block the inlet or outlet of air flow.**

It may cause product failure.

■ **Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.**

There is a risk of fire, electric shock, or damage to the plastic parts of the product.

■ **Do not touch the coil fins when removing the air filter. They are very sharp.**

There is risk of personal injury.

■ **Do not step on or put anything on this product. (outdoor units)**

There is risk of personal injury and failure of product.

■ **Always insert the filter securely. Clean the filter every two weeks or more often if necessary.**

A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.

■ **Do not insert hands or other objects through air inlet or outlet while this product is operating.**

There are sharp and moving parts that could cause personal injury.

■ **Do not drink the water drained from this product.**

It is not sanitary could cause serious health issues.

- **Use a firm stool or ladder when cleaning or maintaining this product.**

Be careful to avoid personal injury.

- **Replace all batteries in the remote control with new ones at the same type. Do not mix old and new batteries or different types of batteries.**

There is risk of fire or explosion.

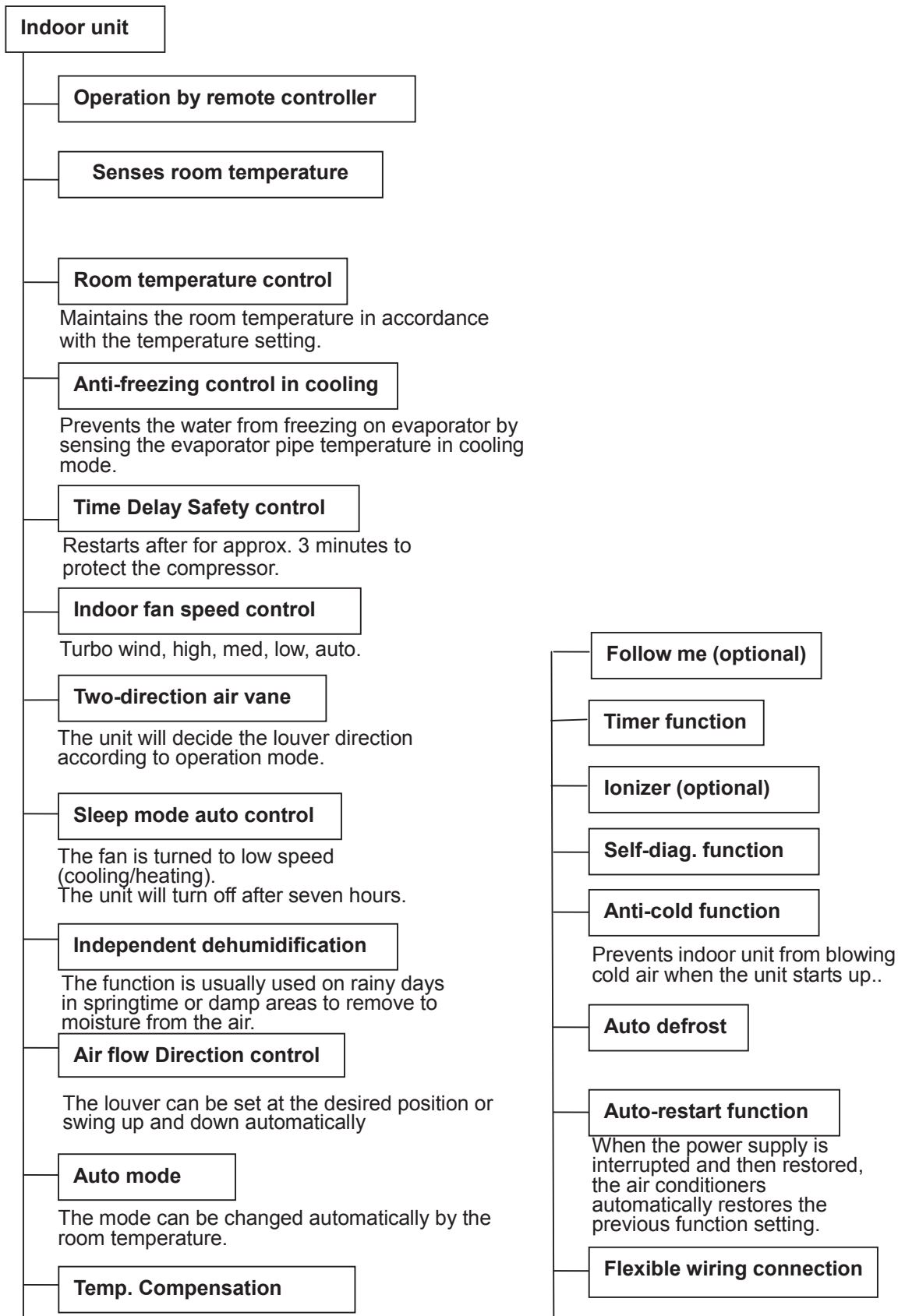
- **Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.**

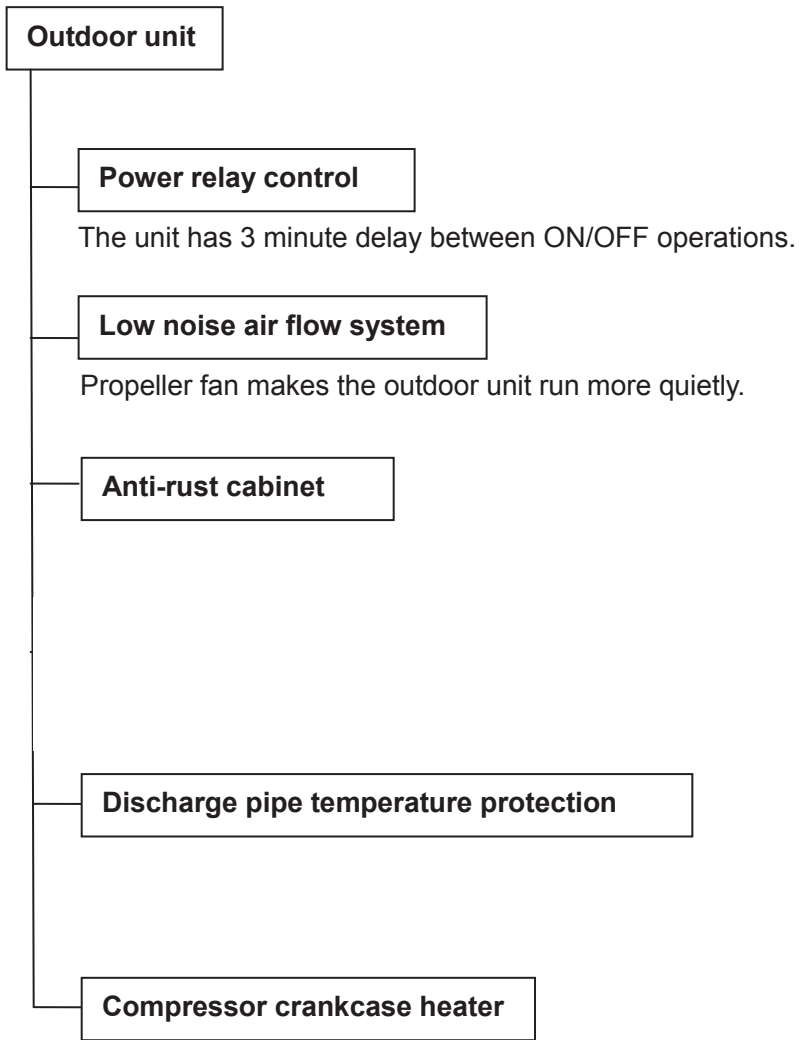
They may burn or explode.

- **If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if the batteries have leaked.**

The chemical in batteries could cause burns or other health hazards.

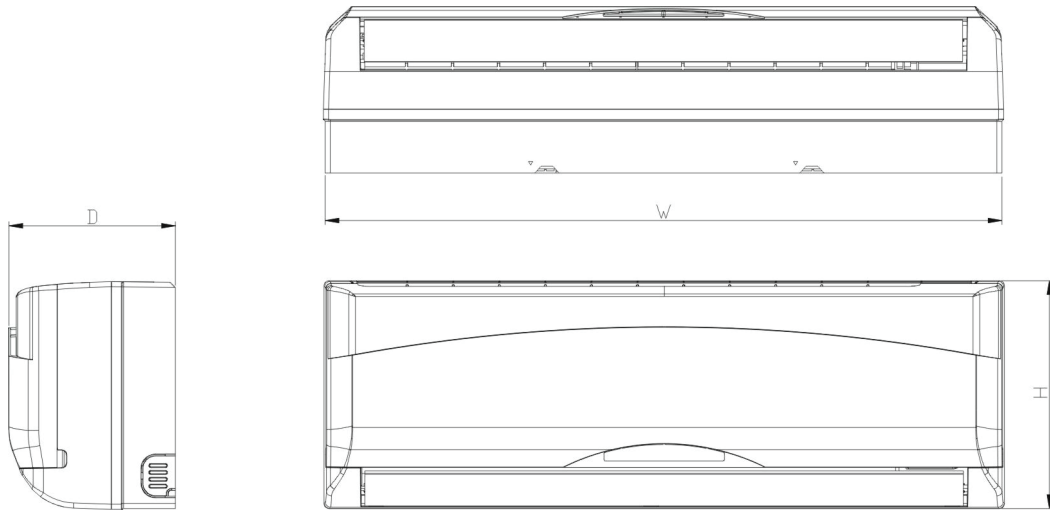
2. Function



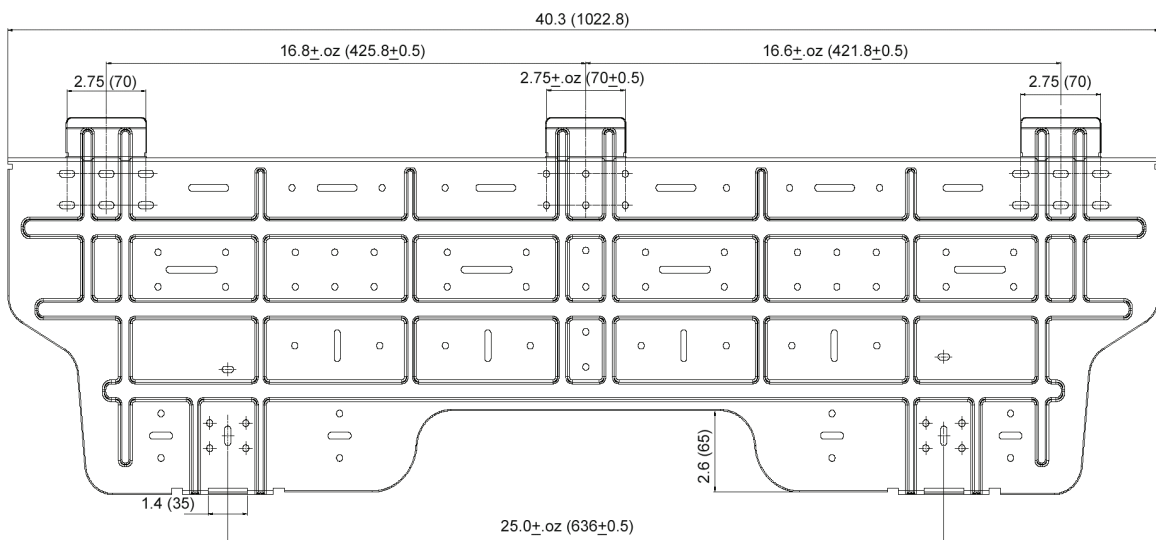


3. Dimension

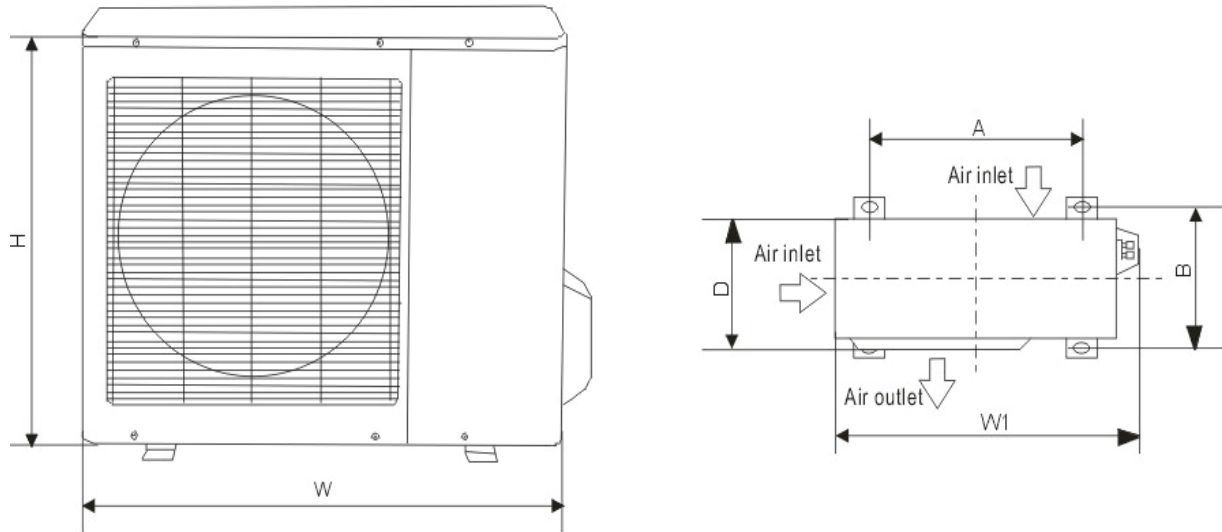
3.1 Indoor Unit



Model	W in.(mm)	D in.(mm)	H in.(mm)
B-VMH30SC-1	56.9(1445)	8.9(277)	13.4(340)
B-VMH36SC-1			

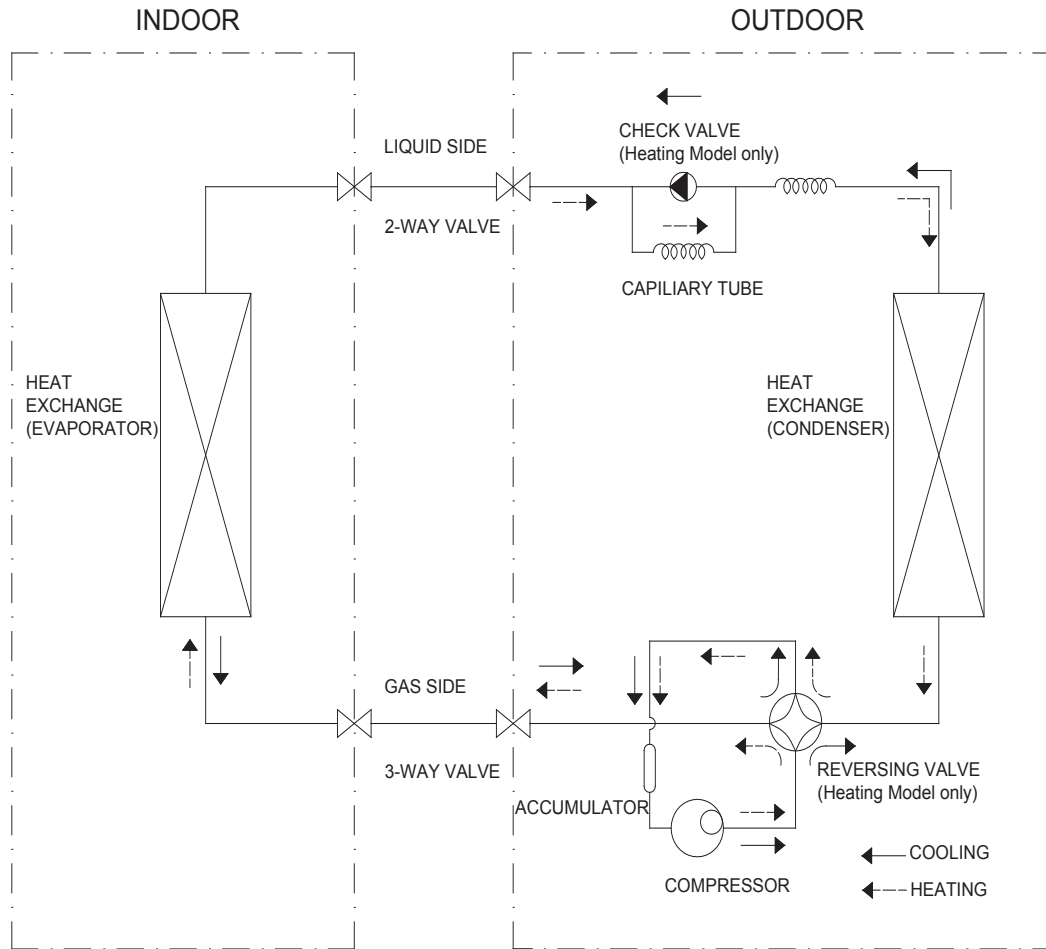


3.2 Outdoor Unit



Dimension Mode	W in.(mm)	D in.(mm)	H in.(mm)	W1 in.(mm)	A in.(mm)	B in.(mm)
A-VMH30SC-1	35.4(900)	12.4(315)	33.9(860)	38.9(980)	23.2(590)	13.1(333)
A-VMH36SC-1	39.0(990)	13.6(345)	38.0(965)	42.3(1075)	24.5(624)	14.4(366)

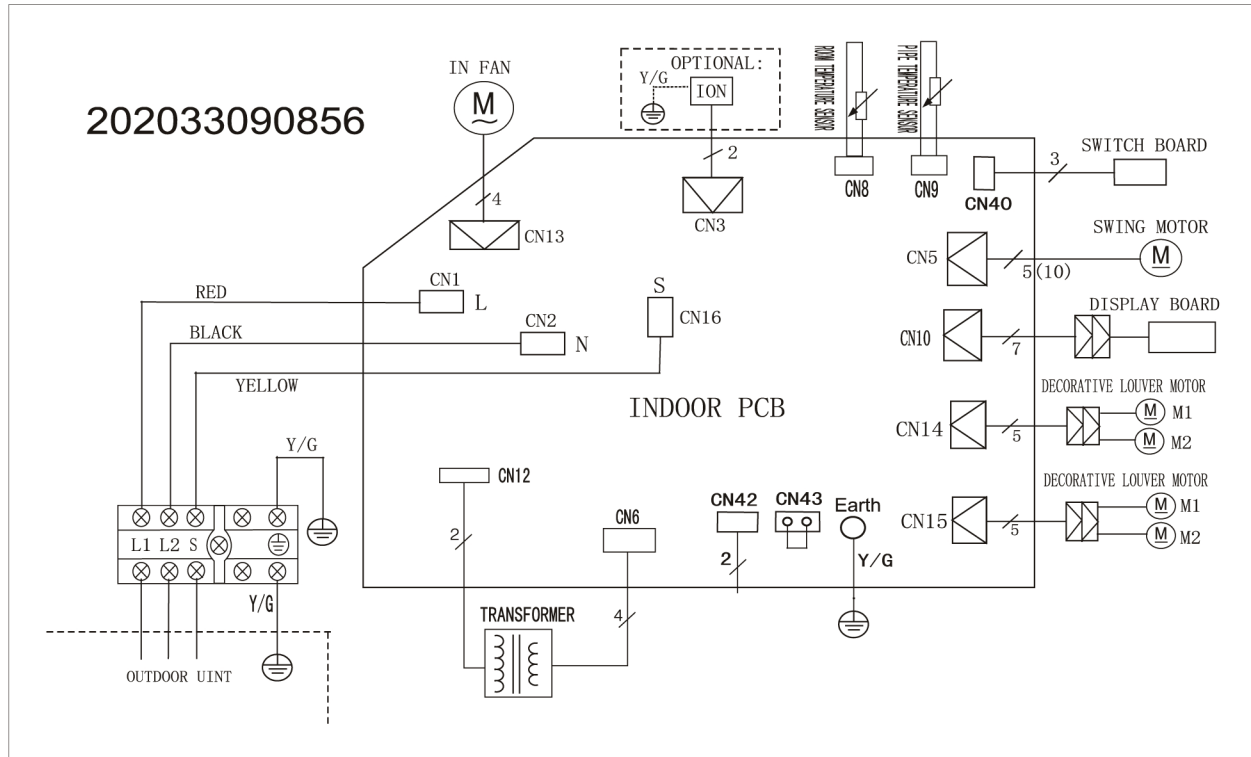
4. Refrigerant Cycle Diagram



5. Wiring Diagram

5.1 Indoor Unit

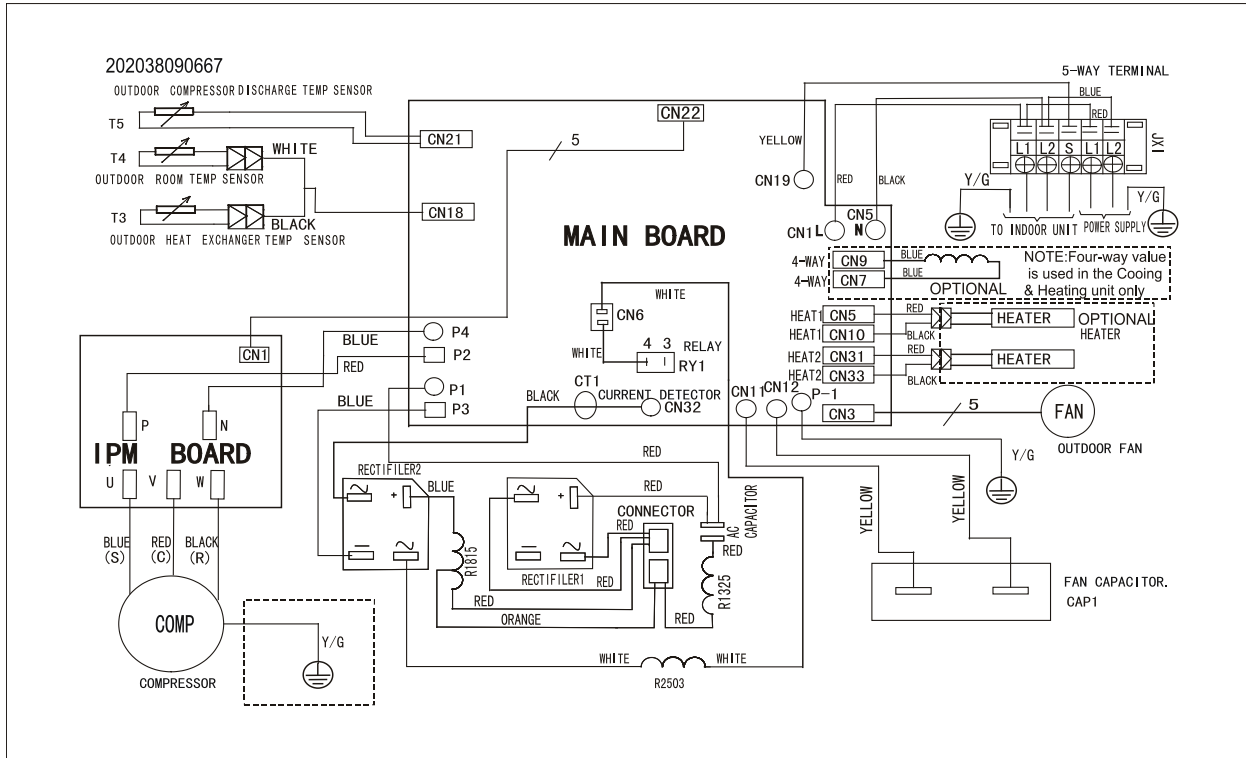
B-VMH30SC-1 and B-VMH36SC-1



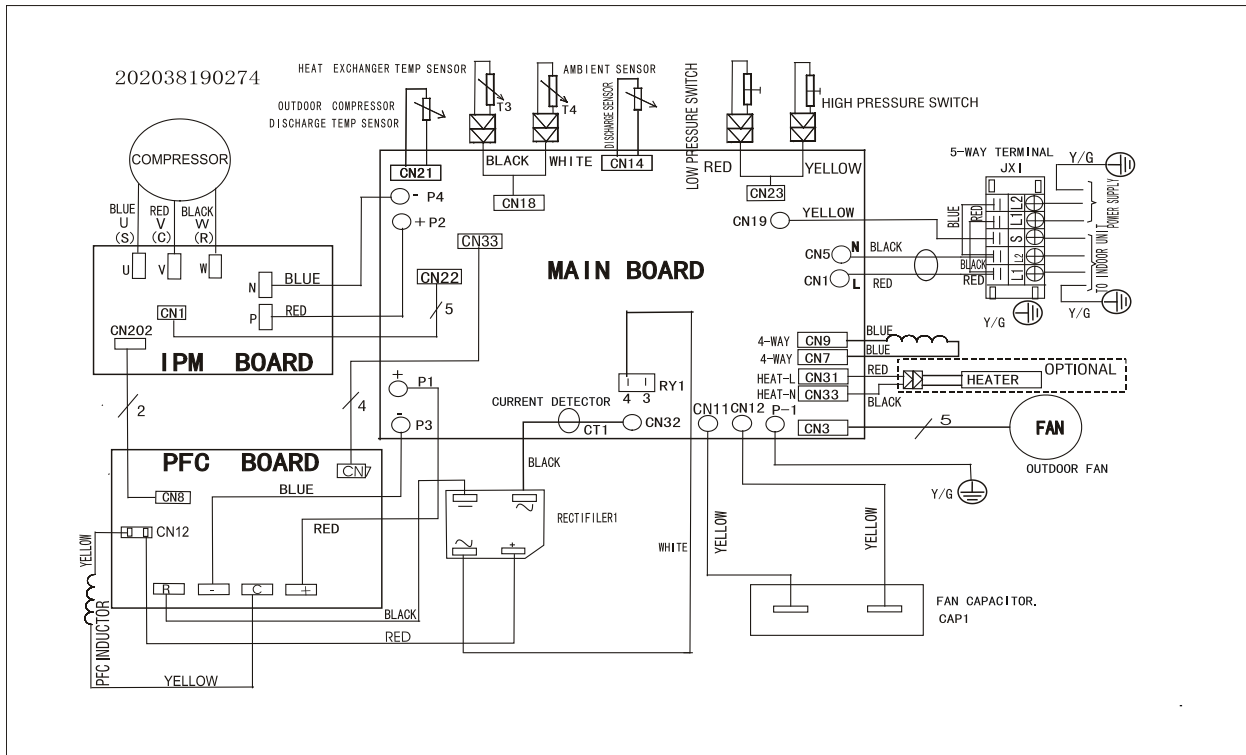
***Plasma feature is non-standard.**

5.2 Outdoor Unit

A-VMH30SC-1



A-VMH36SC-1



6 Installation details

6.1 Wrench torque sheet for installation

Outside diameter		Torque	Additional tightening
mm	inch	N.cm	N.cm
Φ6.35	1/4	1500	1600
Φ9.52	3/8	2500	2600
Φ12.7	1/2	3500	3700
Φ16	5/8	4500	4700
Φ19	3/4	6500	6700

6.2 Power wiring & connecting cables

➤ Power Wiring

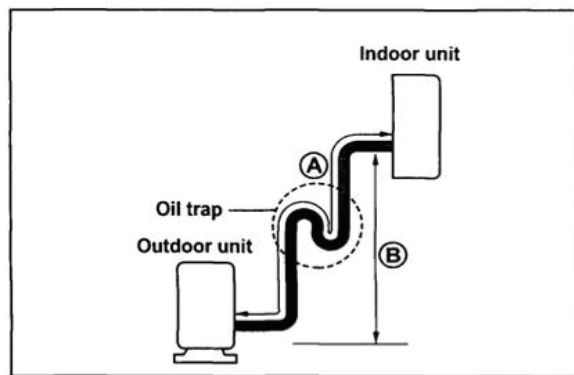
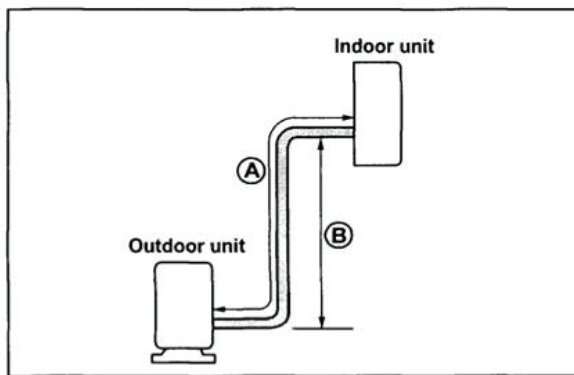
- Consult local building codes, NEC (National Electric Code) or CEC (Canadian Electric Code) for special requirements.
- Connecting Cables: Voltage drop on the connecting cable should be kept to a minimum. The operating voltage will vary between -24V to 24V DC.
-

Use cable:

Model Size	Power Source	Min. Ckt Amp Max. Fuse/CB Amp	AWG (min.) Connecting Cable (outdoor to indoor)
30K	208/230V-60-1	16.0/25.0	14/4 Copper Stranded
36K		20.0/30.0	

6.3 Pipe length and the elevation

Capacity Btu/h	Pipe size		Standard length ft. (m)	Max. Elevation B ft. (m)	Max. Length A ft. (m)	Additional refrigerant oz/ft. (g/m)
	Gas	Liquid				
30K	5/8"	3/8"	16.5(5)	33(10)	50(15)	0.4(40)
36K	(Φ16)	(Φ9.52)			50(15)	



Caution:

Unit charge on rating plate includes enough refrigerant for 16.5 ft. (5m) of line set. The capacity is based on standard length and the maximum permissible length is based on the system reliability.

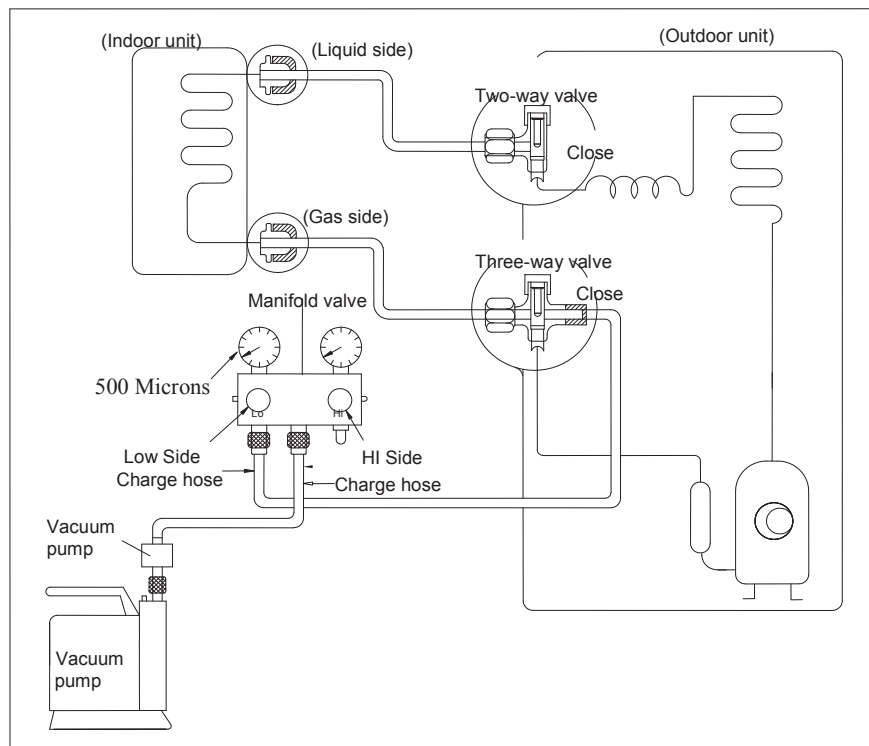
Oil trap should be installed per 16.5-23 ft. (5-7 meters.) when outdoor unit is installed 16.5 ft. (5m) higher than the indoor unit. It is not necessary to install oil traps when outdoor unit is located lower than indoor unit. Charge adjustment is not required for line set lengths less than 16.5 ft. (5m).

6.4 Pressure Test & Evacuation

Air and moisture in the refrigerant system will have undesirable effects.

- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Refrigerant lines and indoor coil should be evacuated using the recommended deep vacuum method of 500 microns. The alternate triple evacuation method may be used if the procedure outlined is followed.

1. System Evacuation and Charging



1. Completely tighten the flare nuts of the indoor and outdoor units, connect manifold gauge low side hose to low side service valve.
2. Connect the manifold gauge charge hose to the vacuum pump.
3. Fully open the low side of manifold gauge.
4. Start vacuum pump.
5. Evacuate using either deep vacuum or triple evacuation method.
6. After evacuation is complete, fully close the low side of manifold gauge and shut off vacuum pump.
7. The factory charge contained in the outdoor unit is good for up to 16.5 ft. of line length. For line set lengths over 16.5 ft., adjust charge according to chart in section 6.3.
8. Disconnect charge hose from low side service valve.
9. Fully open both high and low side service valves and securely tighten caps.

2. Deep Vacuum Method

The deep vacuum method requires a vacuum pump capable of pulling a vacuum of 500 microns and a vacuum of 500 microns and vacuum gage capable of accurately measuring the vacuum depth. The deep vacuum method is the most positive way of assuring a system is free of air and liquid water.

1. Vacuum pressure should pull down below 500 microns in 2 minutes.
2. Evacuate system for 30 minutes.
3. Shut valve to vacuum pump off.
4. After 10 minutes read pressure.
If pressure remains below 1000 microns, system is ready.
If pressure is between 1000 and 2000 microns continue evacuation for additional 30 minutes.
If pressure is above 2000 microns, there is a leak in the system.

3. Triple Evacuation Method

The triple evacuation method should only be used when vacuum pump is only capable of pumping down to a 28" Hg. vacuum and system does not contain any liquid water.

1. Pump system down to 28"Hg. and allow pump to continue operating for an additional 15 minutes.
2. Close high and low side valves on gauge manifold and shut off vacuum pump.
3. Connect a nitrogen cylinder and regulator to system and open until system pressure is 2 psig.
4. Close service valve and allow system to stand for 1 hour. This will allow dry nitrogen to diffuse throughout the system absorbing moisture.
5. Complete this procedure until system until it is able to hold a deep vacuum then release charge into system.

4. Final Tubing Check

IMPORTANT: Check to be certain factory tubing on both indoor and outdoor unit has not shifted during shipment. Ensure tubes are not rubbing against each other or any sheet metal. Pay close attention to feeder tubes, making sure wire ties on feeder tubes are secure and tight.

7. Operation characteristics

Mode	Cooling operation	Heating operation	Drying operation
Room temperature	$\geq 17^{\circ}\text{C}(62^{\circ}\text{F})$	$\leq 30^{\circ}\text{C}(88^{\circ}\text{F})$	$> 10^{\circ}\text{C}(50^{\circ}\text{F})$
Outdoor temperature	$-15^{\circ}\text{C}\sim 50^{\circ}\text{C}/5^{\circ}\text{F}\sim 122^{\circ}\text{F}$	$-15^{\circ}\text{C}\sim 34^{\circ}\text{C}$ $(5^{\circ}\text{F}\sim 92^{\circ}\text{F})$	$0^{\circ}\text{C}\sim 50^{\circ}\text{C}$ $(32^{\circ}\text{F}\sim 122^{\circ}\text{F})$

CAUTION:

1. Operation of air conditioner beyond the above conditions may cause certain protections to occur.
2. Room relative humidity should be less than 80%. If the air conditioner operates in excess of this value, the surface of the air conditioner may cause condensation. If condensation does occur, place the vertical air louver to it's maximum angle (vertically to the floor) and set the fan to high speed.

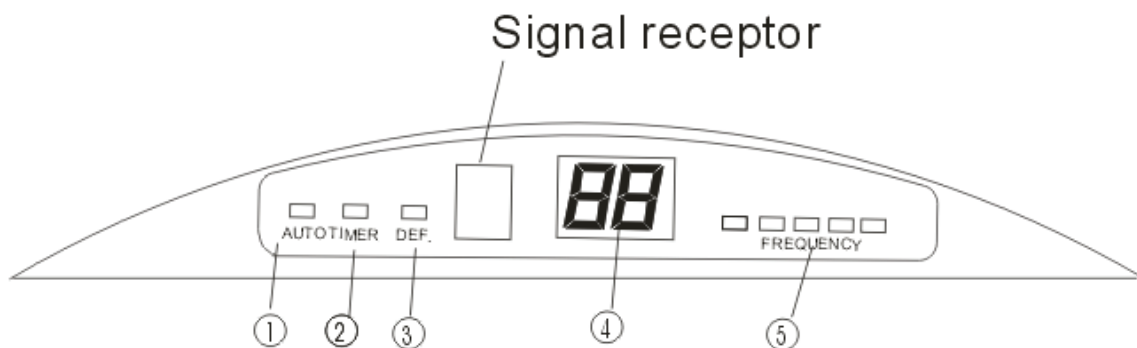
8. Electronic functions

8.1 Abbreviation

- T1: Indoor room temperature
 T2: Coil temperature of evaporator
 T3: Coil temperature of condenser
 T4: Outdoor ambient temperature
 T5: Compressor discharge temperature
 TS: Preset temperature

8.2 Display function

8.2.1 Icon explanation on indoor display board.



① Auto indicator

This indicator illuminates when the air conditioner is in AUTO operation.

② Timer indicator

This indicator illuminates when TIMER is set ON/OFF.

③ PRE.-DEF. Indicator

This indicator illuminates when the air conditioner starts defrosting automatically or when the warm air control feature is activated in heating mode.

④ TEMPERATURE indicator

Usually this displays the temperature settings. When changing the setting temperature, this indicator begins to flash, and stops 20 seconds later. It displays the room temperature when the air conditioner is in FAN only operation, and the range of that is 32~122°F (or 50°C). When the unit stops operation, it returns to original factory settings. It will also display the codes when a fault occurs.

⑤ Frequency indicator

This indicator appears only when the compressor is in operation and indicates the current operating frequency.

8.2.2 LED display control function.

Pressing "LED display" button on remote controller will turn off all displays on indoor unit.

Pressing once again, all displays resume.

8.3 Main Protection

8.3.1 Three Minute Delay at restart for compressor.

---- 1 minute delay for the 1st time start-up and 3 minute delay for others.

8.3.2 Temperature protection of compressor top.

---- Top temp. protector will cut off for 30 seconds and restart the compressor after 3 minute delay.

8.3.3 Temperature protection of compressor discharge.

----When the compressor discharge temp. raises, the running frequency will be limited as follow:

----When compressor discharge temp. $T_5 > 239^{\circ}\text{F}(115^{\circ}\text{C})$ for 5 seconds, compressor stops.

---- $226^{\circ}\text{F}(108^{\circ}\text{C}) < T_5 < 239^{\circ}\text{F}(115^{\circ}\text{C})$, decrease the frequency every 3 minutes.

---- $194^{\circ}\text{F}(90^{\circ}\text{C}) < T_5 < 221^{\circ}\text{F}(105^{\circ}\text{C})$, keep running at the current frequency.

---- $T_5 < 194^{\circ}\text{F}(90^{\circ}\text{C})$ no limit for frequency.

8.3.4 Fan Speed is out of control.

----When Indoor Fan Speed is too low or too high for a certain time, the unit will stop and the LED will display this code on indoor.

8.3.5 Inverter module Protection.

----The Inverter module itself has a protection function against current, voltage and temperature. If these protections happen, the corresponding code will display on indoor unit.

8.3.6 Indoor fan delayed open function

----When the system starts up, the louver will be active immediately and the indoor fan louver will open 10 seconds later.

8.3.7 Compressor preheating functions.

----Preheating permitting condition:

If T_4 (outdoor ambient temperature) $< 37^\circ\text{F}(3^\circ\text{C})$ and the machine connects to power supply for the first time or if $T_4 < 37^\circ\text{F}(3^\circ\text{C})$ and compressor has stopped for over 3 hours, the compressor crankcase heater will turn on.

----Preheating mode:

A weak current flow through the coil of the compressor from the wiring terminal of the compressor, the compressor will be heated without operation.

----Preheating release condition:

If $T_4 > 41^\circ\text{F}(5^\circ\text{C})$ or the compressor starts running, preheating function will stop.

---- Heating cable

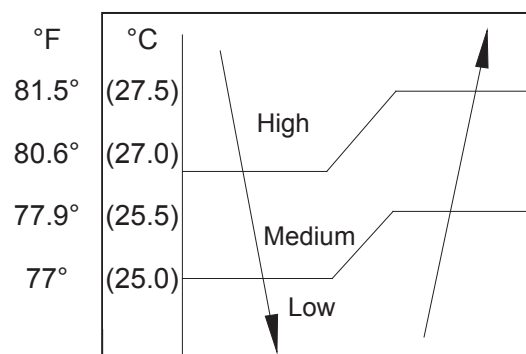
Starts when $T_4 < 41^\circ\text{F}(5^\circ\text{C})$ and stops when $T_4 > 59^\circ\text{F}(15^\circ\text{C})$

8.4 Operation Modes and Functions

8.4.1 Fan mode.

- (1) Outdoor compressor stop.
- (2) Temperature setting function is disabled, and no setting temperature is displayed.
- (3) Indoor fan can be set to high/med/low/auto.
- (4) The louver operates same as in cooling mode.
- (5) Auto fan:

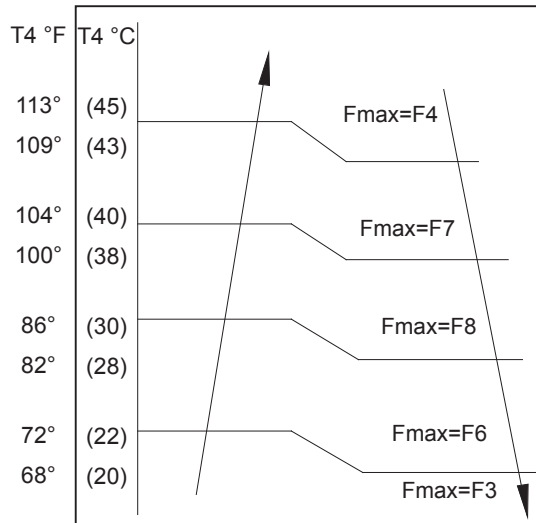
The action of auto fan in fan-only mode is the same as auto fan in cooling mode with $75.2^\circ\text{F}(24^\circ\text{C})$ set temperature.



8.4.2 Cooling Mode

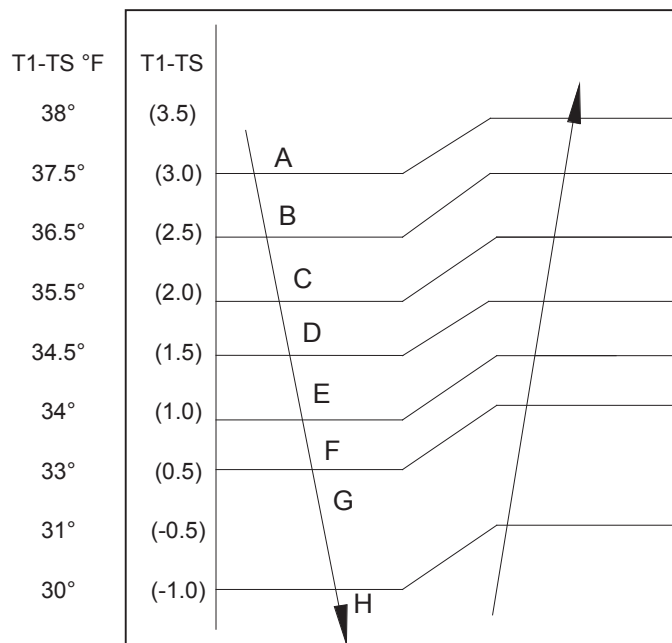
8.4.2.1 Compressor running rules:

The operation frequency of compressor after starting submits to the following rule.



If users switch on AC by remote controller, the compressor will run at the Fmax frequency for 7 minutes according to outdoor ambient temp. During the 7 minutes, frequency limitation is active.

7 minutes later, the compressor running frequency will be controlled as below:



While

Temp. zone	A	B	C	D	E	F	G
Frequency	F8	F8	F7	F6	F5	F3	F1

Note:

When the value of T1 minus TS stays in the same temp. zone for 3 minutes, the compressor will run as the below rules:

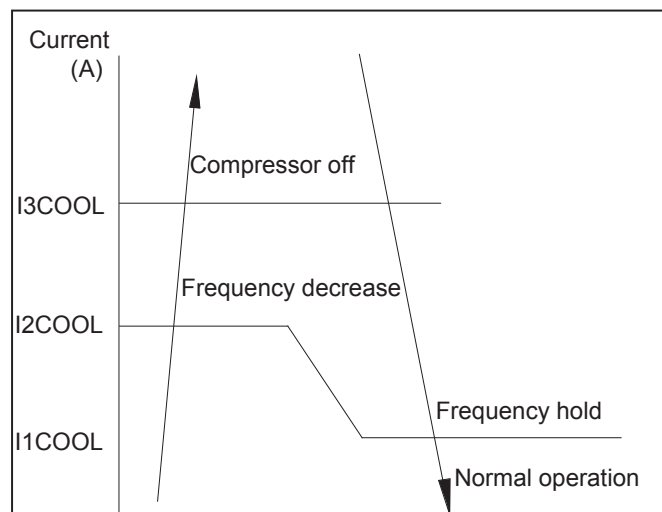
A~E: Increases the frequency to higher level until to F8.

F: Keeps the current frequency.

G: Decreases the frequency to the lower level until F1.

H: Runs at F1 for 1hour (If T1-TS<35°F (2°C), the compressor will stop).

Meanwhile, the compressor running frequency is limited by the current.



Off: Compressor stop.

Decrease: Decrease the running frequency to the lower level.

Hold: Keep the current frequency.

Resume: No limitation for frequency.

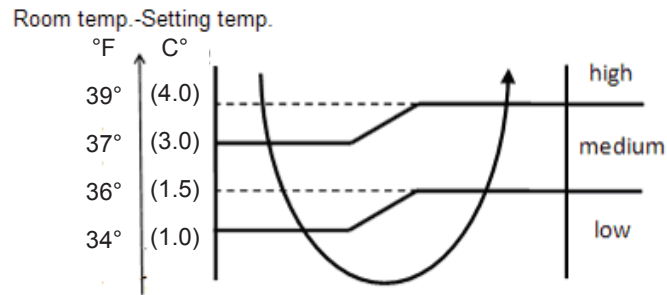
Note:

When AC is in “hold” zone for 3 minutes, the compressor frequency will rise to the higher level. (The frequency will increase twice at most)

8.4.2.2 Indoor fan running rules

In cooling mode, indoor fan runs all the time and the speed can be selected as high, medium, low and auto.

Auto fan in cooling mode acts as follow:



8.4.2.3 Condenser high temperature T3 protection.

When 131°F (55°C) $< T3 < 140^{\circ}\text{F}$ (60°C), the compressor frequency will decrease to the lower level until to F1 and then runs at F1.

When $T3 < 129^{\circ}\text{F}$ (54°C), the compressor will keep running at the current frequency.

When $T3 < 125.5^{\circ}\text{F}$ (52°C), the compressor will not limit the frequency and resume to the former frequency.

When $T3 < 140^{\circ}\text{F}$ (60°C) for 5 seconds, the compressor will stop until $T3 < 125.6^{\circ}\text{F}$ (52°C).

8.4.2.4 Evaporator low temperature T2 protection.

When $T2 < 32^{\circ}\text{F}$ (0°C), the compressor will stop and restart when $T2 \geq 41^{\circ}\text{F}$ (5°C).

When 32°F (0°C) $\leq T2 < 40^{\circ}\text{F}$ (4°C), the compressor frequency will be limited and decreased to the lower level every minute.

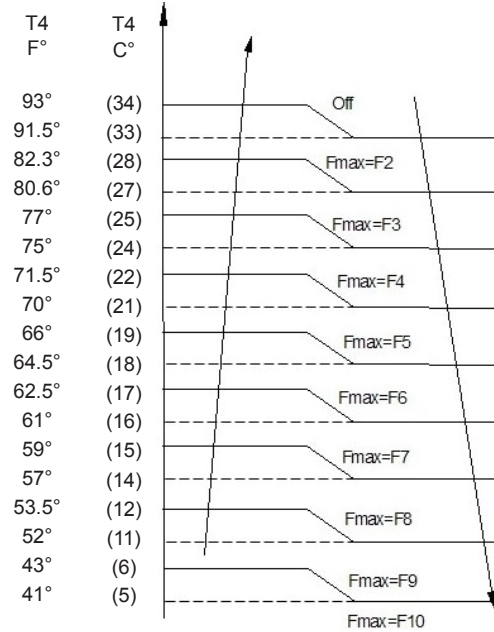
When 40°F (4°C) $\leq T2 \leq 44.5^{\circ}\text{F}$ (7°C), the compressor will keep the current frequency.

When $T2 > 44.5^{\circ}\text{F}$ (7°C), the compressor frequency will not be limited.

8.4.3 Heating Mode

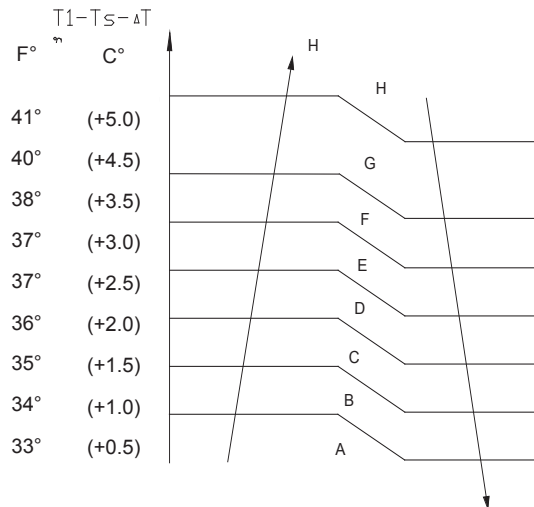
8.4.3.1 Compressor running rules:

The operation frequency of compressor after starting submits to following rule.



After AC starts up, the compressor will run at the Fmax frequency for 7 minutes according to outdoor ambient temp. During the 7 minutes, frequency limitation is available.

7 minutes later, compressor running frequency will be controlled as below:



While

Temp. zone	A	B	C	D	E	F	G	H
Frequency	F10	F9	F8	F7	F5	F3	F1	F0

$\Delta T = 32^{\circ}F(0^{\circ}C)$ as default.

Note:

When T1-TS keeps in the same temp. zone for 3 minutes, the compressor will run by the following rules:

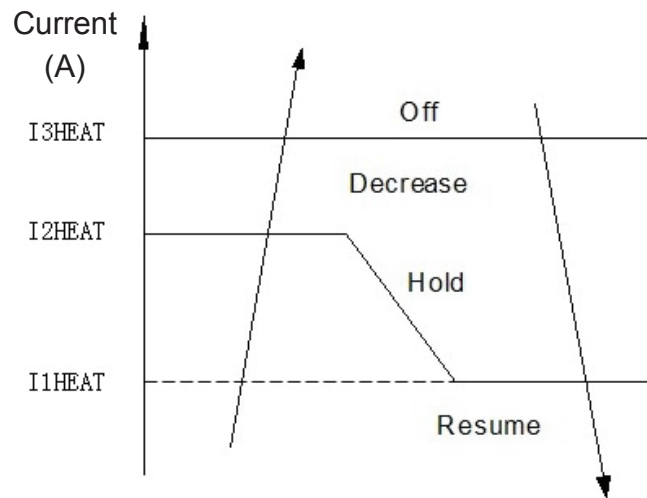
A~E: Increase the frequency to higher level until F10.

F: Keep the current frequency.

G: Decrease the frequency to lower level until to F1.

H: Run at F1 for 1hour (If $T1-TS-\Delta T > 43^{\circ}F(6^{\circ}C)$, the compressor will stop).

Meanwhile, the compressor running frequency is limited by the current.



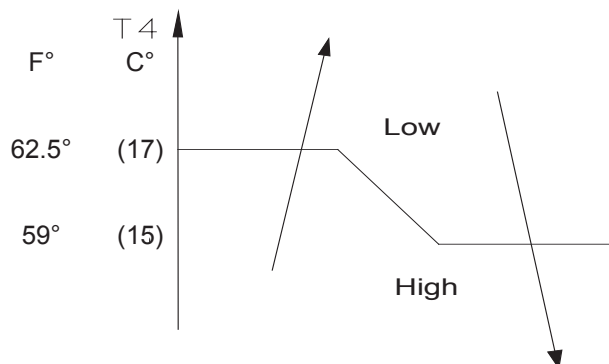
Off: Compressor stop. Decrease: Running frequency decrease to lower level. Hold: Keep the current frequency.

Resume: No limitation for frequency.

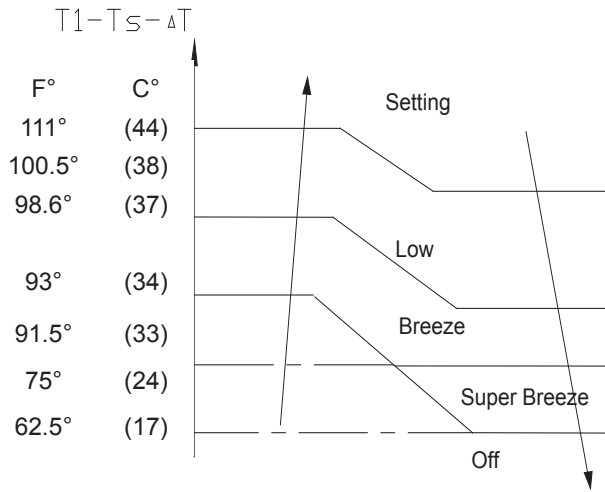
Note:

When AC is in “hold” zone for 3 minutes, the compressor frequency will rise to higher level.(frequency increases twice at most)

8.4.3.2 Outdoor fan running rules:



8.4.3.3 Indoor fan running rules:

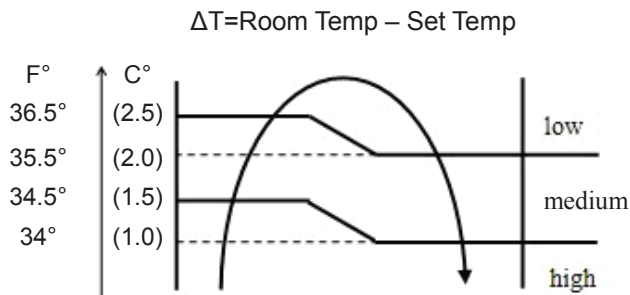


If the compressor stops caused by room temperature rising, indoor fan will be forced to run 127 seconds with breeze. During this period, anti-cold-wind is disabled. After this, anti-cold –wind function is available.

If the machine runs in rating capacity test mode, indoor fan runs with rating speed, and anti-cold-wind is disabled.

Indoor fan speed can be set on high, medium, low or auto models, but the anti-cold-wind function has the priority.

The auto fan action in heating mode:



8.4.3.4 Defrosting mode:

The condition of defrosting:

Condition 1: If $T_4 > 32^\circ\text{F} (0^\circ\text{C})$,

When the units are running, if the following two items are satisfied the units start defrosting:

The unit runs with $T3 < 37.5^{\circ}\text{F}(3^{\circ}\text{C})$ for 40 minutes and $T3$ stays lower than $21^{\circ}\text{F}(-6^{\circ}\text{C})$ for more than 3 minutes.

The unit runs with $T3 < 37.5^{\circ}\text{F}(3^{\circ}\text{C})$ for 80 minutes and $T3$ stays lower than $25^{\circ}\text{F}(-4^{\circ}\text{C})$ for more than 3 minutes.

Condition 2: If $T4 > 32^{\circ}\text{F}(0^{\circ}\text{C})$,

The program judges according to condition 1, if the two items are satisfied, then it judges if $T2$ has decreased more than $9^{\circ}\text{F}(5^{\circ}\text{C})$. When $T2$ has decreased more than $9^{\circ}\text{F}(5^{\circ}\text{C})$, it enter the defrosting mode.

Condition 3: No matter what value $T4$ is, if the machine runs with $T3 < 37.5^{\circ}\text{F}(3^{\circ}\text{C})$ for more than 120 minutes and $T3$ keeps lower than $25^{\circ}\text{F}(-4^{\circ}\text{C})$ for more than 3 minutes, the machine will defrost, no matter if $T2$ drops for more than $9^{\circ}\text{F}(5^{\circ}\text{C})$ or not.

Condition of ending defrosting:

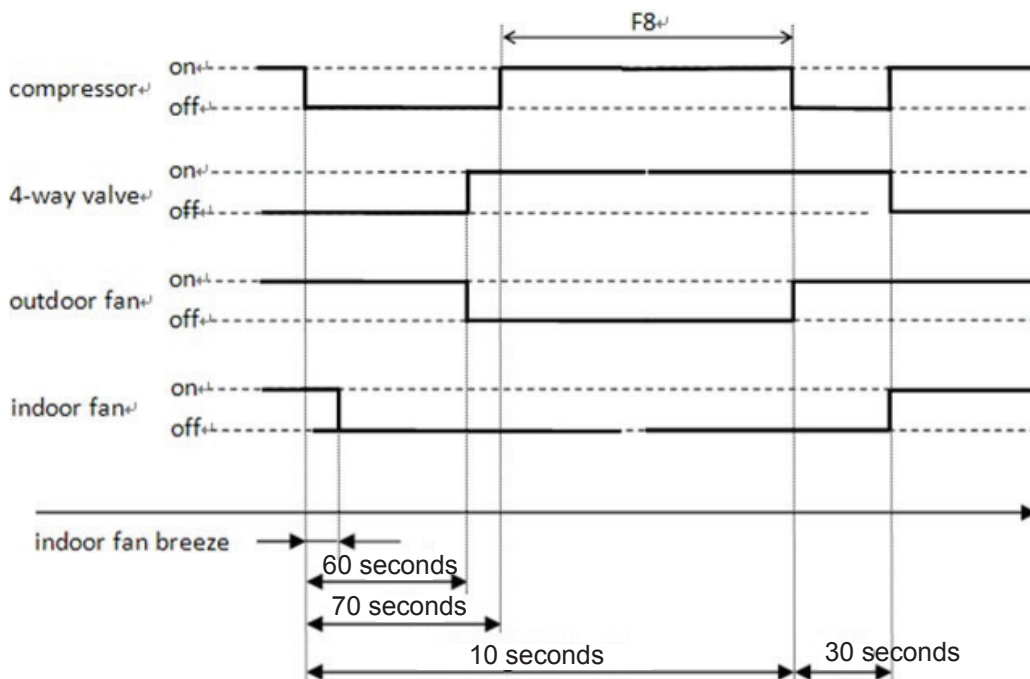
If any one of following items is satisfied, defrosting will finish and the machine will turn to normal heating mode.

$T3$ rises to be higher than $59^{\circ}\text{F}(15^{\circ}\text{C})$.

$T3$ rises to be higher than $46^{\circ}\text{F}(8^{\circ}\text{C})$ and remains for 80 seconds.

The machine has run for 10 minutes in defrosting.

The defrosting action:



8.4.3.5 High evaporator coil temp.T2 protection:

(1) $T_2 > 127.5^\circ\text{F}(53^\circ\text{C})$, compressor running frequency decreases to the lower level and runs for 20 seconds.

When the frequency decreases to F2 and the T_2 exceeds $127.5^\circ\text{F}(53^\circ\text{C})$ for 3 minutes, the compressor will stop.

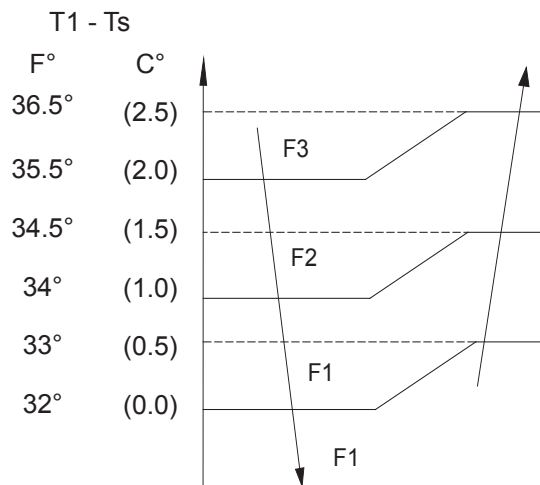
(2) If $T_2 < 118.5^\circ\text{F}(48^\circ\text{C})$ or T_2 stays in $118.5^\circ\text{F}(48^\circ\text{C}) \sim 127.5^\circ\text{F}(53^\circ\text{C})$ for 6 minutes, the frequency will not be limited by T_2 .

(3) If $T_2 > 1$, the compressor will stop and restart when $T_2 < 118.5^\circ\text{F}(48^\circ\text{C})$.

8.4.4 Drying mode

8.4.4.1 Indoor fan speed is fixed at breeze and can't be changed. The louver angle is the same as cooling mode.

8.4.4.2 Compressor running rules



8.4.4.3 Too low room temperature protection

In drying mode, if room temperature is lower than $50^\circ\text{F}(10^\circ\text{C})$, the compressor will stop and not resume until room temperature exceeds $53.5^\circ\text{F}(12^\circ\text{C})$.

8.4.4.4 Evaporator anti-freezing protection, condenser high temperature protection and outdoor unit frequency limit are active just as in cooling mode.

8.4.4.5 The outdoor fan operates the same as in cooling mode.

8.4.5 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between 62.5°F(17°C)~86°F(30°C).

In auto mode, the machine will choose cooling or fan-only mode according to ΔT ($\Delta T = T1 - Ts$).

$\Delta T = T1 - Ts$	Running mode
$\Delta T > 1.8^\circ F (1^\circ C)$	Cooling
$-1 < \Delta T \leq 1^\circ C \quad 1.8^\circ F (1^\circ C)$	Fan-only
$\Delta T \leq -1^\circ C \quad 1.8^\circ F (2^\circ C)$	Heating

Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode.

If the setting temperature is modified, the machine will choose running mode and function again.

8.4.6 Forced operation function

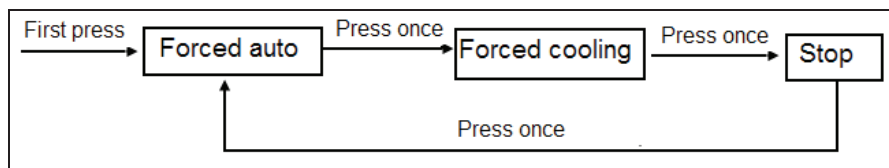
8.4.6.1 Forced cooling and auto function can be activated with a touch button. In these two modes, the machine can be changed by remote controller to any other mode.

8.4.6.2 When the machine is off, pressing the touch button will carry the machine to forced auto mode, Pressing the button once again within 5 seconds. Will switch unto to forced cooling mode. In forced auto, forced cooling, or any other operation mode, pressing touch button will turn off the machine. In forced operation, remote control is available.

8.4.6.3 In forced operation mode, all general protections are available.

8.4.6.4 The compressor runs at F2 frequency and indoor fan runs as breeze. After running for 30 minutes the machine will turn to auto mode at 75°F(24°C) setting temperature.

8.4.6.5 The action of forced auto mode is the same as normal auto mode which temperature is 75°F(24°C).



8.4.7 Timer function

8.4.7.1 Timing range is 24 hours, and the minimum increment is 15 minutes.

8.4.7.2 Timer on. After turning off, the machine will turn on automatically when reaching the setting time.

8.4.7.3 Timer off. After turning on, the machine will turn off automatically when reaching the setting time.

8.4.7.4 Timer on/off. After turning off, the machine will turn on automatically when reaching the setting "on" time, and then turn off automatically when reaching the setting "off" time.

8.4.7.5 Timer off/on. After turning on, the machine will turn off automatically when reaching the setting "off" time, and then turn on automatically when reaching the setting "on" time.

8.4.7.6 The setting time is relative time, not clock time.

8.4.7.7 The tolerance of timer is 1 minute per hour.

8.4.8 Sleep function mode

8.4.8.1 Operation time in sleep mode is 7 hours. After 7 hours the AC quits this mode and turns off.

8.4.8.2. Operation process in sleep mode is as follow:

After pressing ECONOMIC or SLEEP button on controller, the machine will turn to sleep mode.

When cooling, the setting temperature rises (below 86°F(30°C) every one hour, 2 hours later the setting temperature stops rising and indoor fan is fixed at low speed.

8.4.8.3 Timer setting is available

8.4.8.4 When user uses timer off function in sleep mode(or sleep function in timer off mode), if the timing is less than 7 hours, sleep function will be cancelled when reaching the setting time. If the timing is more than 7 hours, the machine will not stop until reaching the setting time in sleep mode.

8.4.9 Auto-Restart function

The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart module. In case of a sudden power failure, the module remembers the setting conditions before the power failure. The unit will resume the previous operation setting (not including Swing function) automatically after 3 minutes when power returns.

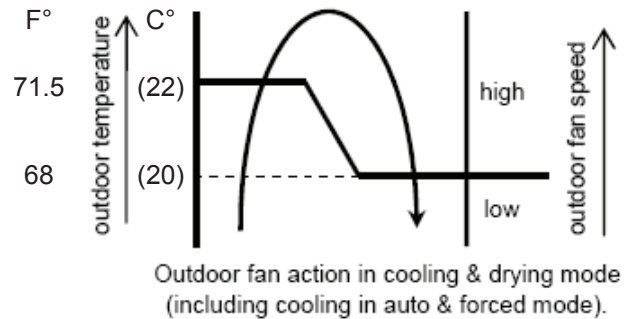
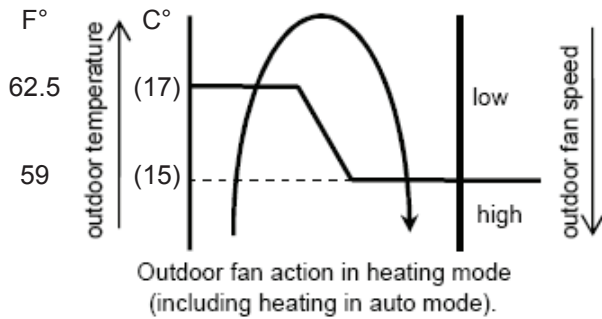
If the memorized condition is forced cooling mode, the unit will run in cooling mode for 30 minutes and turn to auto mode as 75°F(24°C) setting temp.

If A/C is off before power loss and AC is required to start up now, the compressor will have 1 minute delay when power on. Other conditions, the compressor will have 3 minutes delay upon restart.

8.4.10 Two speed outdoor fan function

8.4.10.1 Outdoor fan starts at the same time with compressor, but stops 30 seconds later after compressor stop.

8.4.10.2 Outdoor fan action in heating mode (including heating in auto mode).



8.4.10.3 Outdoor fan action in cooling & drying mode (including cooling in auto & forced mode).

Please refer to the picture above.

8.4.11 Ionizer/ function (optional)

9. Troubleshooting

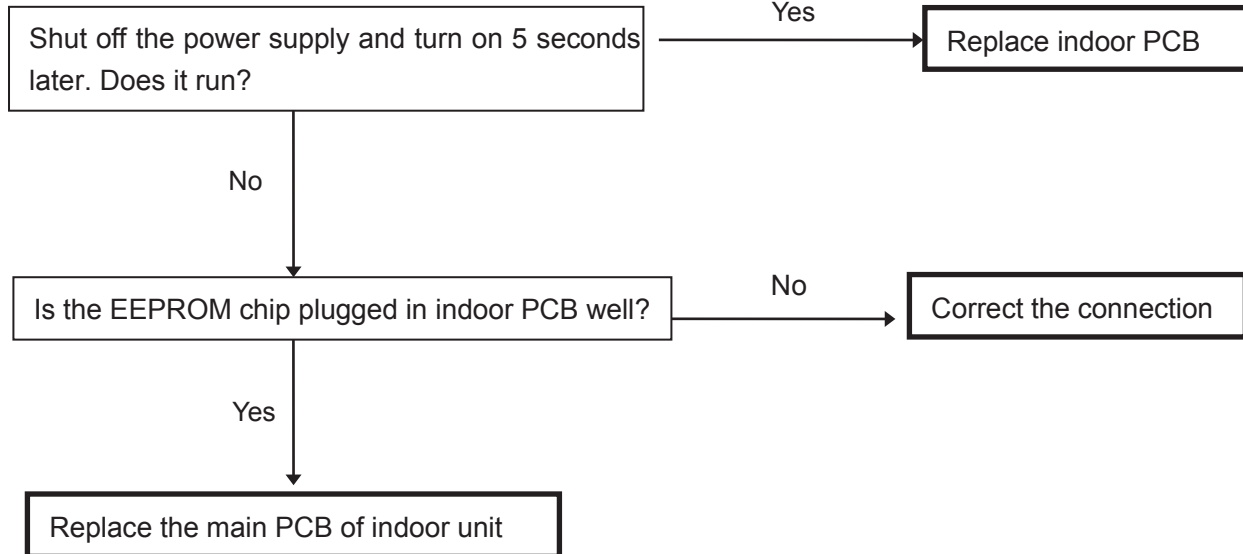
9.1 Indoor Unit Error Display

Display	LED STATUS	Def	Timer	Auto	Operation
E0	EEPROM parameter error	○	○	○	○
E1	Indoor / outdoor units communication protection	☆	☆	☆	☆
E2	Zero-crossing signal error	○	○	☆	☆
E3	Indoor fan speed has been out of control	○	○	☆	☆
E5	Open or short circuit of outdoor temperature sensor	X	○	X	☆
E6	Open or short circuit of room or evaporator temperature sensor	○	○	○	☆
E7	Outdoor fan has been speed out of control	○	○	☆	☆
P0	IBM malfunction or IGBT over-strong current protection	X	X	○	☆
P1	Excessive voltage or voltage too low protection	X	○	○	☆
P2	High temperature protection of compressor top	○	X	X	☆
P4	Inverter compressor drive error	○	X	☆	☆

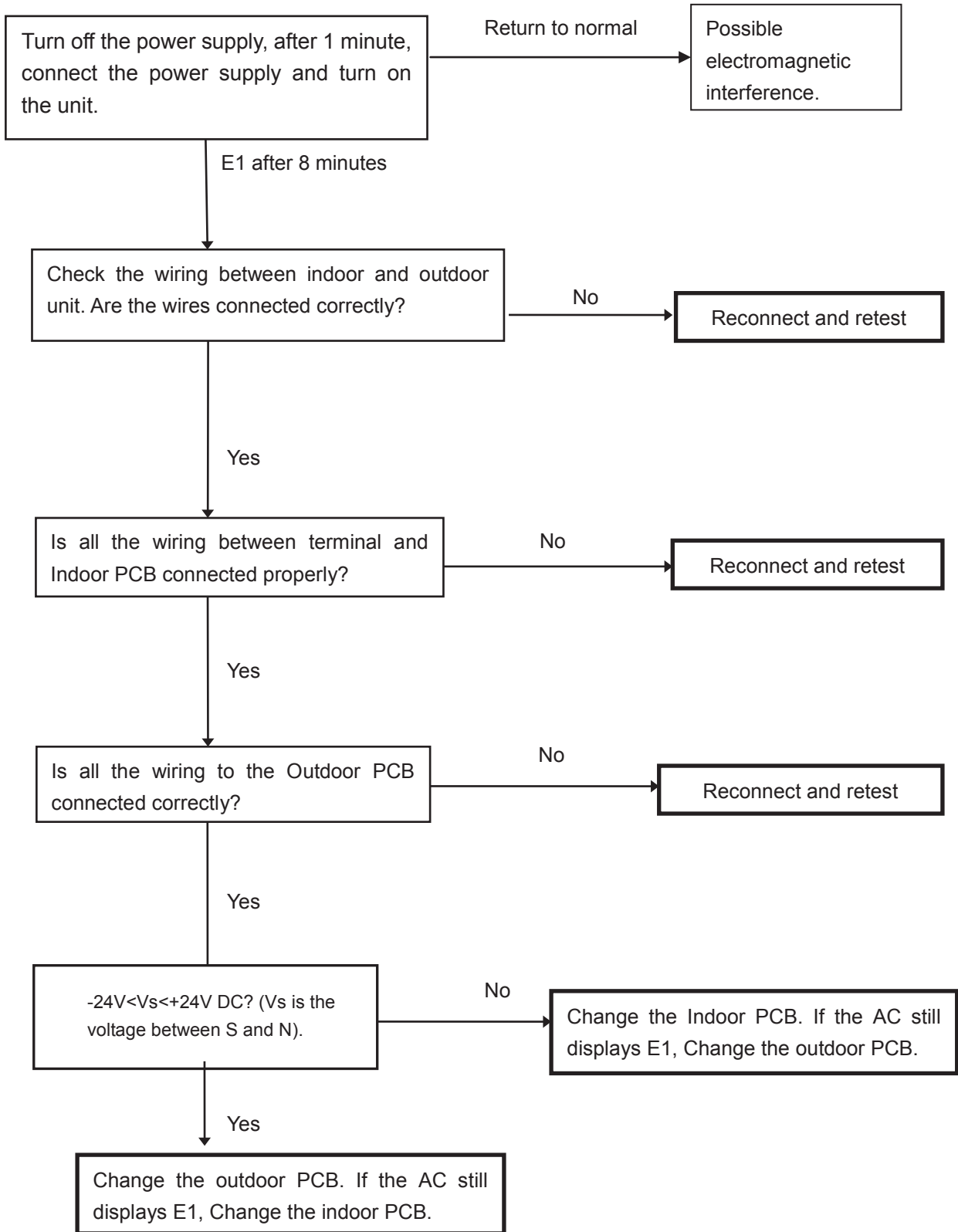
Note: E4 & P3: Reserved functions

9.2 Diagnosis and Solution

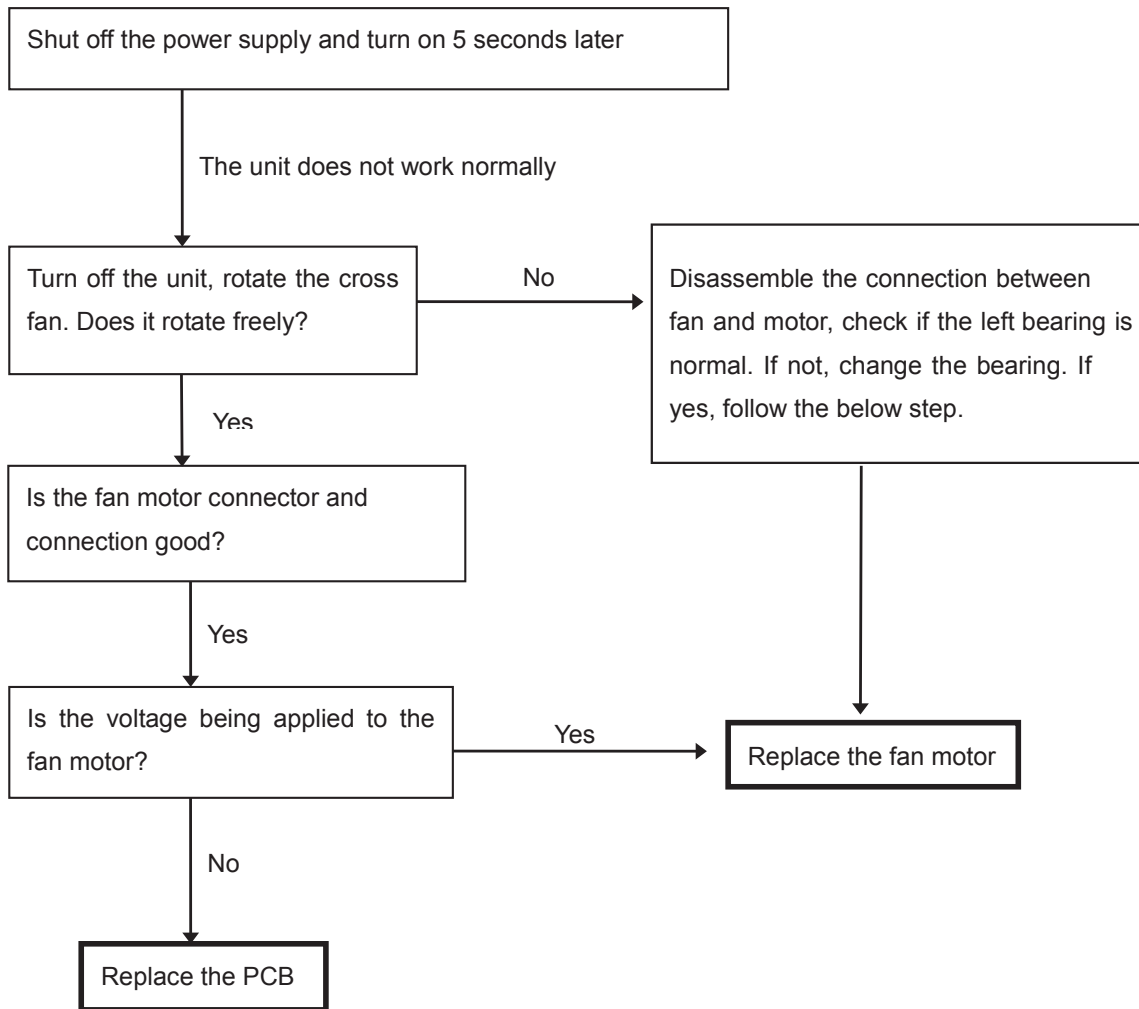
9.2.1 EEPROM parameter error diagnosis and solution



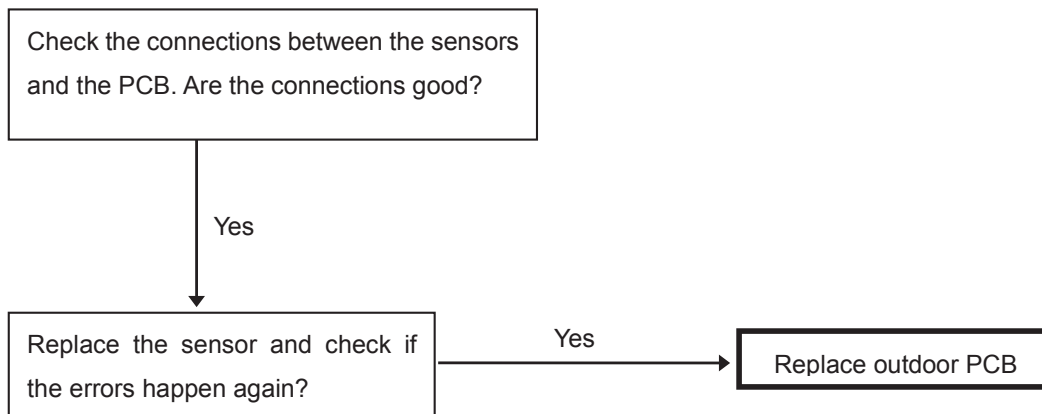
9.2.2 Indoor / outdoor unit's communication error

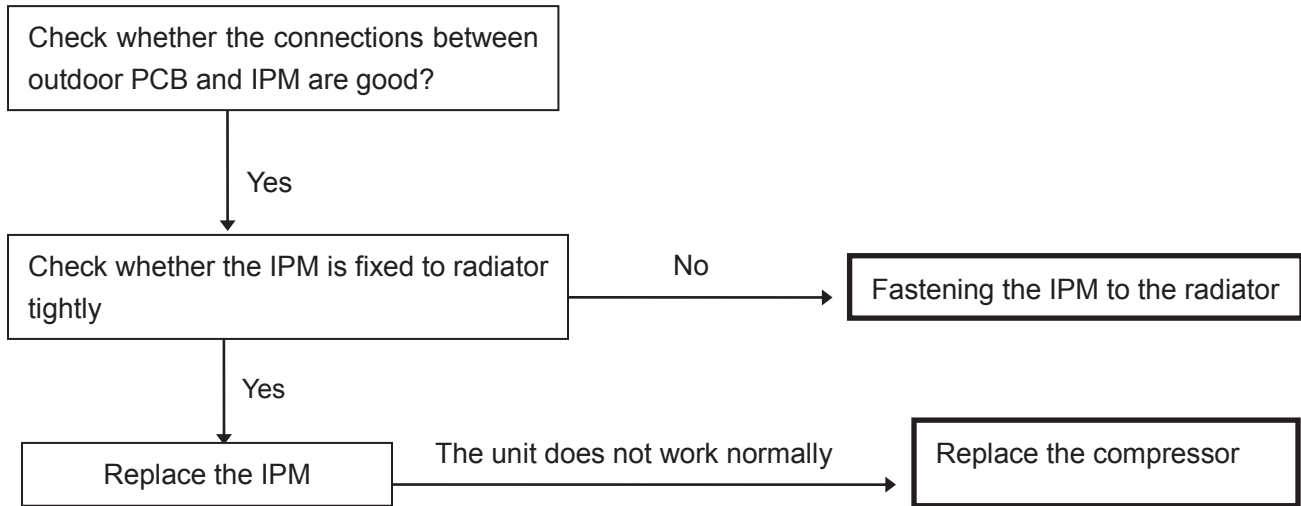
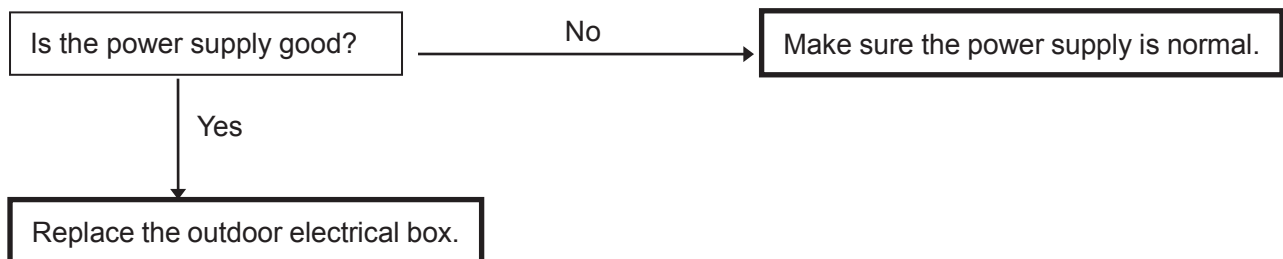


9.2.3 Fan speed has been out of control

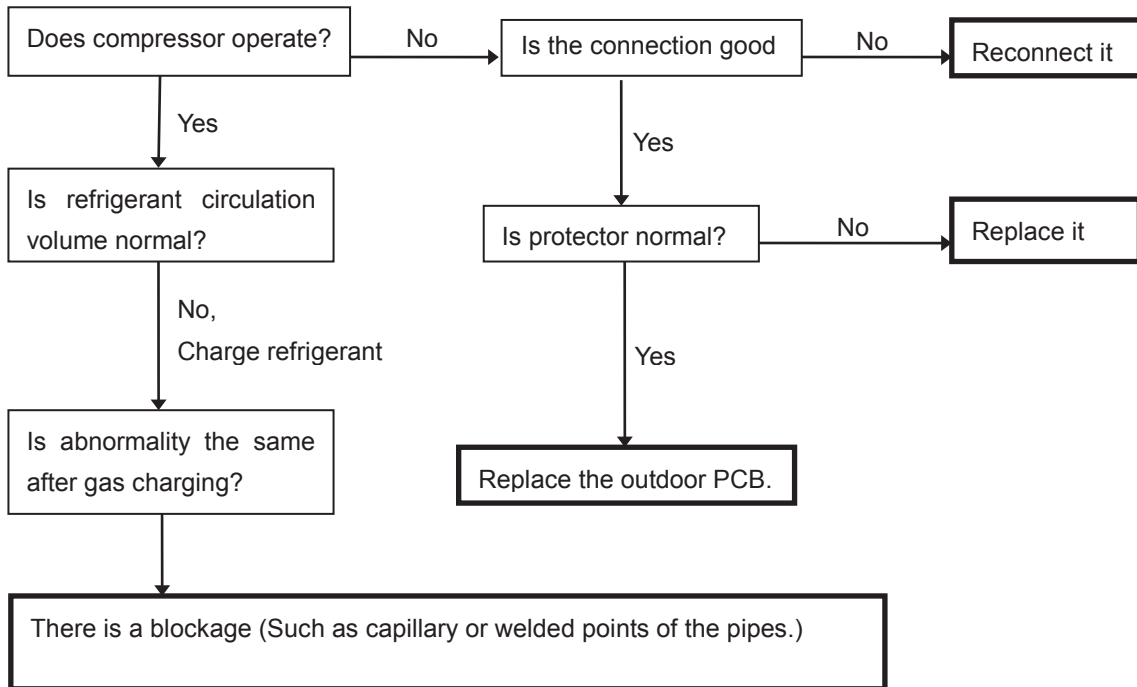


9.2.4 Open or short circuit of temperature sensor diagnosis and solution.

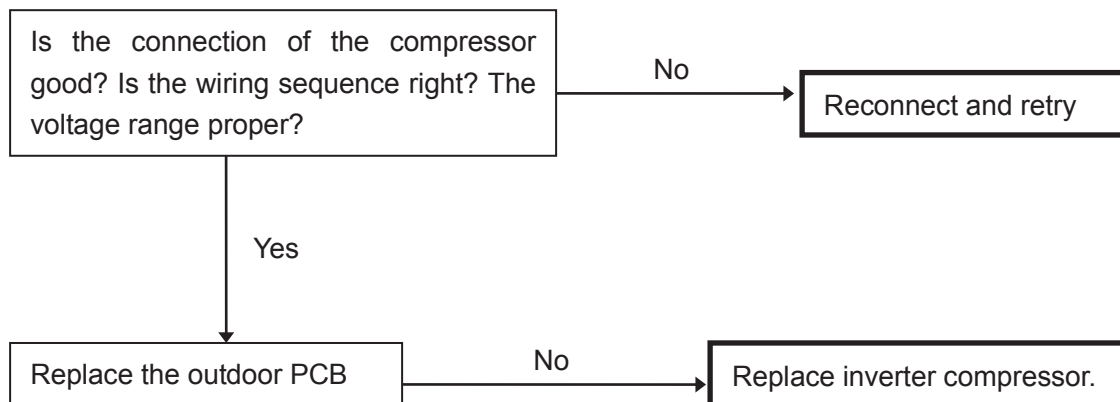


9.2.5 IGBT over-strong current protection diagnosis and solution.**9.2.6 Excessive voltage or voltage too low protection diagnosis and solution.**

9.2.7 High temperature protection of compressor top diagnosis and solution.



9.2.8 Inverter compressor drive error diagnosis and solution.



Due to ongoing product improvements, specifications and dimensions are subject to change and correction without notice or incurring obligations. Determining the application and suitability for use of any product is the responsibility of the installer. Additionally, the installer is responsible for verifying dimensional data on the actual product prior to beginning any installation preparations.

Incentive and rebate programs have precise requirements as to product performance and certification. All products meet applicable regulations in effect on date of manufacture; however, certifications are not necessarily granted for the life of a product. Therefore, it is the responsibility of the applicant to determine whether a specific model qualifies for these incentive/rebate programs.

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