

AWS 091HX 121HX 181HX 241HX
AOS 091HX 121HX 181HX 241HX



AWS091HX AWS121HX
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AOS091HX



AOS121HX



AOS181HX



AOS241HX

HIGH WALL SPLIT AIR CONDITIONER

Installation manual

Foreword

Air conditioners are units that should have the professional technicians do the installation for you.

This Instruction Guide is the universal-purpose version for the models of split wall-mounted air conditioners manufactured by our Co. The appearance of the units that you purchase might be slightly different from the ones described in the Guide, but it does not affect your proper operations and usage.

Please read carefully the sections corresponding to the specific model you choose, and keep the Guide properly so as to facilitate your reference at later time.

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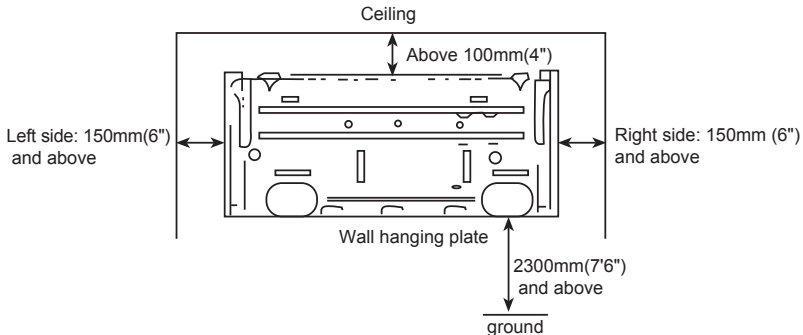
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* Selection of installation positions for indoor unit*

- * To be installed at the position where the air delivered from the unit can reach every corner of the room;
- * To avoid being affected by the outdoor air;
- * To avoid blockage to the air inlet or outlet of the unit;
- * To avoid too much oil smoke or steam;
- * To avoid possible generation, inflow, lingering or leakage of flammable gases;
- * To avoid high-frequency facilities (such as high frequency arc welders, etc.);
- * To avoid the places where acid solutions are frequently used;
- * To avoid the places where some special sprayers (sulfides) are frequently used.
- * Not to install a fire alarming device near the air outlet of the unit (during operation, the fire alarm device might be erroneously triggered by the warm air from the unit);

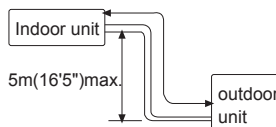
* Make sure of enough space for installation and maintenance.

- * To take into consideration the operational convenience and safety in installation, it is recommended to ensure enough space between the unit and the walls.



* Height limits of indoor and outdoor units.

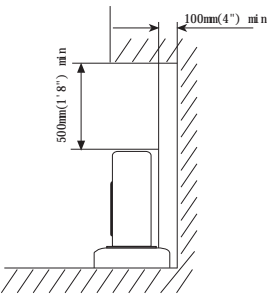
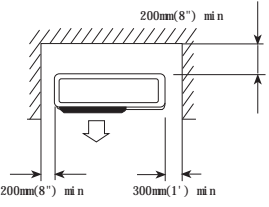
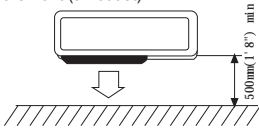
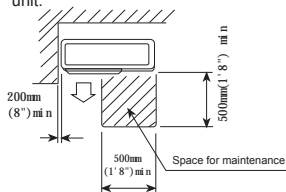
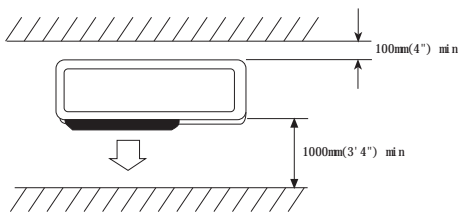
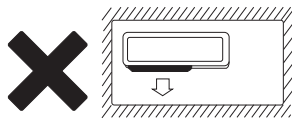
- * Either the indoor unit or the outdoor unit can be higher, but the height difference must comply the stated requirements.
- * Try to reduce the bending of the piping line as much as possible so as to avoid possible negative impacts upon the performances of the units.



Selection of installation positions for outdoor unit

- * To install the outdoor unit at the places which can stand the load of the machine weight and will not cause big vibrations and noises;
- * To install the unit at the places not to be exposed to rain or direct sunshine, and the places with good ventilation;
- * The noises generated from the unit will not affect the neighboring places;
- * Do not install the unit on non-metal frame;
- * Not to install the unit at the places where there might occur the generation, inflow, stay or leakage of inflammable gases;
- * Pay attention to the drainage of the condensed water from the base plate during operations;
- * To avoid the air outlet being directly against the wind.

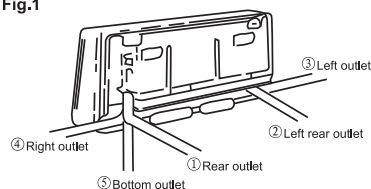
Detailed space requirements around the outdoor unit

<p>1. When there are obstacles above the unit</p> 	<p>2. When the front (air outlet) is open</p> 	<p>3. When there are obstacles only in the front (air outlet)</p>  <p>Space for maintenance Shown as in the following figure. Keep the maintenance space in front of the unit.</p> 
<p>4. When there are obstacles at the front and rear sides.</p> 		<p>5. When there are obstacles all around the unit on four sides. Although the top side is open, the installation is not to be done if there are obstacles all around.</p>  <p>* At least two sides should be kept open.</p>

Installation fixture of indoor unit

Pipelines can be connected in the directions of ①、②、③、④、 and ⑤ as indicated in Fig.1. When the pipelines are connected to the directions of ③、④ and ⑤, a groove for the pipes has to be opened at the proper place on the base stand.

Fig.1



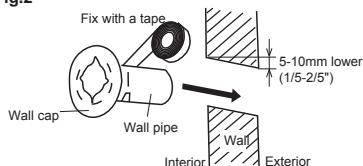
1.Installation of wall-mounting plate

Fix the wall-mounting plate firmly on the wall with screws. Make sure of the leveling of the plate. Slanted wall-mounting plate might jeopardize the smooth discharge of the condensed water.

2.Drill holes on the wall

Drill holes at places slightly below the wall-mounting plate, with hole diameter of 65mm(2-3/5") and the outer edge of the hole 5-10mm(1/5-2/5") lower (Fig.2) so that the condensed water can smoothly flow out. Cut the wall penetrating pipe to proper length according to the thickness of the wall (3-5mm(1/10-1/5") longer than the wall thickness) and insert the pipe as indicated in Fig.2.

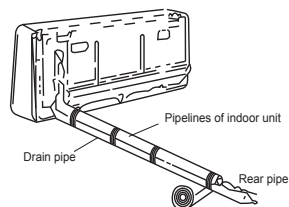
Fig.2



3.Installation of drain pipe

Install the pipelines of the indoor unit in accordance with the direction of the wall holes. Wrap tightly the drain pipe and the pipelines with tape. Make sure that the drain pipe is underneath the pipelines. (Fig.3) (When the drain pipe passes the room interior, some condensed water might occur to its surfaces if the humidity is very high).

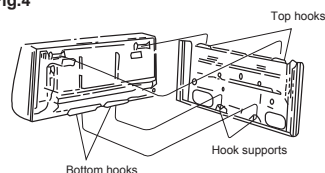
Fig.3



4.Installation of indoor unit

Pass the connection wires, connecting pipelines and drain pipe through the wall hole. Hang the indoor unit on the hooks at the top of the wall-mounting plate so that the hooks at the bottom of the indoor unit match the hooks of the wall-mounting plate. (Fig.4)

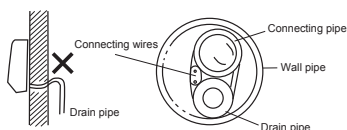
Fig.4



Inspections:

- Check if the hooks at the top and bottom are firmly fixed.
- Check if the position of the master unit is properly leveled.
- The drain pipe should not curve upward (Fig.5).
- The drain pipe should be at the lower part of the wall pipes (Fig. 5).

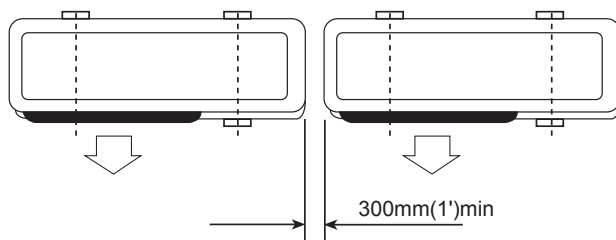
Fig.5



* Installation fixture of outdoor unit *

- * Try to ship the product to the installation location in its original package;
- * As the gravity center of the unit is not at the installation center, special caution should be taken when using hoisting cables to lift it up;
- * During shipping, the outdoor unit must not be slanted to over 45 degrees (Do not store the unit in a horizontal way).
- * Use expansion bolts to fix the mounting supports on the wall;
- * Use bolts and nuts to fix the outdoor unit firmly on the supports and keep on the same level;
- * If the unit is installed on the wall or at the rooftop, the supports have to be firmly fixed so as to resist earthquake or strong wind.

Dimensions for parallel units installations



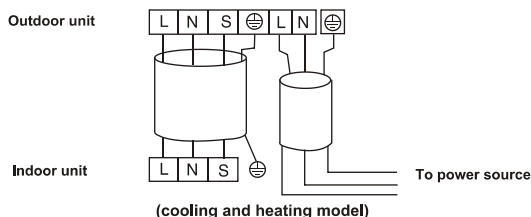
【Installation of electric components】

Points of attention

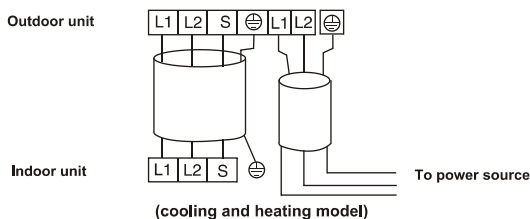
- HACR type breaker should be utilized along with proper installation;
- Make sure of the applicable voltage and cables or wires for the specific model to be used, before doing the connections;
- Read the prompts at the terminal board for wiring. Make sure the wiring is done correctly.
- Pay attention to the poles of the signal terminal and connect the terminals to match the identification numbers.
- When the wiring connections are wrong, the compressor will not work.
- The connecting wires are not supplied.
- The provision for connection of one of the wiring systems that in accordance with the National Electric Code shall be had. ANSI/NFPA 70-1990 would be acceptable for it.
- **AWOS091HX/AWOS121HX MODEL:** The connecting wires specification is 14 AWG, VW-1 (or THHW), copper core and 90°C (or 194°F). Their set screw diameter is 4 mm. The power source is 115V, 60Hz and 1 phase. Minimum circuit ampacity of the wiring systems is 15A.
- **AWOS181HX/AWOS241HX MODEL:** The connecting wires specification is 14 AWG, VW-1 (or THHW), copper core and 105°C (or 221°F). Their set screw diameter is 4 mm. The power source is 220-240V, 60Hz and 1 phase. Minimum circuit ampacity of the wiring systems is 15A.

Connection of wires for outdoor unit

AWOS091HX/AWOS121HX MODEL:



AWOS181HX/AWOS241HX MODEL:



Note:

- The environment conditions must be taken into consideration when the connections of power cable are made (such as the ambient temperature, direct exposure to heat/direct exposure to sunlight);
- The specifications for the power cable refer to the minimum values of the metal core wires. Taking into consideration the voltage losses, the core wire of power cable must be one size larger than the specifications;
- The grounding wire must be connected to the indoor units and outdoor units;
- The laying of power cables must be done by qualified electricians and comply with the regulations of the local power supply authorities and with the standards of the electric appliances;

*Pipelines connection *

*Ordinary pipelines connection (it is suitable for non-quick coupler)

No dust ,foreign articles,air or moisture should be allowed to enter the air conditioning system.Careful attention should be paid when pipeline connection for outdoor unit is made.Try to avoid repeated curves as much as possible,otherwise hardening or cracks might be caused to the copper pipes.Suitable wrenches should be used when the pipeline connection is done so as to ensure appropriate torque(refer to following torque Table 1).Excessive torque might damage the joints while too little torque might lead to leakage.

Table 1 Torque based upon the wrench to be used

	Tightening torque	Strengthened tightening torque
Ø 6.35(1/4")	160kgf.cm(63kgf.inch)	200kgf.cm(79kgf.inch)
Ø 9.52(3/8")	300kgf.cm(118kgf.inch)	350kgf.cm(138kgf.inch)
Ø 12.7(1/2")	500kgf.cm(197kgf.inch)	550kgf.cm(216kgf.inch)
Ø 15.88(5/8")	750kgf.cm(295kgf.inch)	800kgf.cm(315kgf.inch)
Ø 19.05(3/4")	1200kgf.cm(472kgf.inch)	1400kgf.cm(551kgf.inch)

Air Purging

Air and moisture remaining in the refrigerant system have undesirable effects as indicated below.

- Pressure in the system rises.
- Operating current rises.
- Cooling(or heating) efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigeration system.

Therefore, the indoor unit and tubing between the indoor and outdoor unit must be leak tested and evacuated to remove any noncondensables and moisture from the system.

Air purging With Vacuum Pump

Preparation

- Check that each tubing(both liquid and gas side tubes) between the indoor and outdoor units have been properly connected and all wiring for the test run has been completed. Remove the service valve caps from both the gas and the liquid side on the outdoor unit. Note that both the liquid and the gas side service valves on the outdoor unit are kept closed at this stage.

Leak test

- Connect the manifold valve(with pressure gauges) and dry nitrogen gas cylinder to this service port with charge hoses.

CAUTION

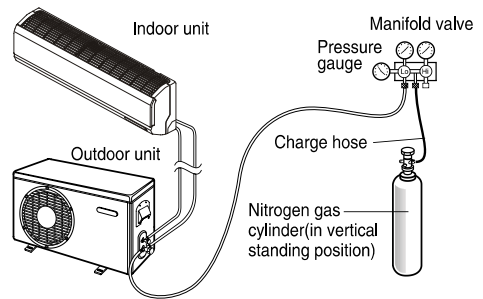
Be sure to use a manifold valve for air purging. If it is not available, use a stop valve for this purpose. The "Hi" knob of the manifold valve must always be kept close.

- Pressurize the system to no more than 150 P.S.I.G. with dry nitrogen gas and close the cylinder valve when the gauge reading reached 150 P.S.I.G. Next, test for leaks with liquid soap.

CAUTION

To avoid nitrogen entering the refrigerant system in a liquid state, the top of the cylinder must be higher than its bottom when you pressurize the system. Usually, the cylinder is used in a vertical standing position.

- Do a leak test of all joints of the tubing(both indoor and outdoor) and both gas and liquid side service valves. Bubbles indicate a leak. Be sure to wipe off the soap with a clean cloth.
- After the system is found to be free of leaks, relieve the nitrogen pressure by loosening the charge hose connector at the nitrogen cylinder. When the system pressure is reduced to normal, disconnect the hose from the cylinder.



Soap water method

- (1) Remove the caps from the gas side and liquid side valves.
- (2) Remove the service-port cap from the gas side valve.
- (3) To open the gas side valve turn the valve stem counterclockwise approximately 90°, wait for about 2~3 seconds, and close it.
- (4) Apply a soap water or a liquid neutral detergent on the indoor unit connection or outdoor unit connections by a soft brush to check for leakage of the connecting points of the piping.
- (5) If bubbles come out, the pipes have leakage.

Evacuation

- Connect the charge hose end described in the preceding steps to the vacuum pump to evacuate the tubing and indoor unit. Confirm the "Lo" knob of the manifold valve is open. Then, run the vacuum pump. The operation time for evacuation varies with tubing length and capacity of the pump. The following table shows the time required for evacuation.

Required time for evacuation when 30 gal/h vacuum pump is used	
If tubing length is less than 10m (33 ft)	if tubing length is longer than 10m (33 ft)
10 min. or more	15 min. or more

- When the desired vacuum is reached, close the "Lo" knob of the manifold valve and stop the vacuum pump.

Adding refrigerant

Refrigerant must be added if the piping measures more than 7.5 metres (25") in length. This operation can only be performed by a professional technician, for the additional amount, see the table 3 below.

Table 3

Additional refrigerant amount	
Liquid pipe diameter $\varnothing 6.35(1/4")$	Liquid pipe diameter: $\varnothing 9.52(3/8")$
(piping length-7.5)m x 20g or (piping length-25)ft x 0.2oz	(piping length-7.5)m x 30g or (piping length-25)ft x 0.3oz

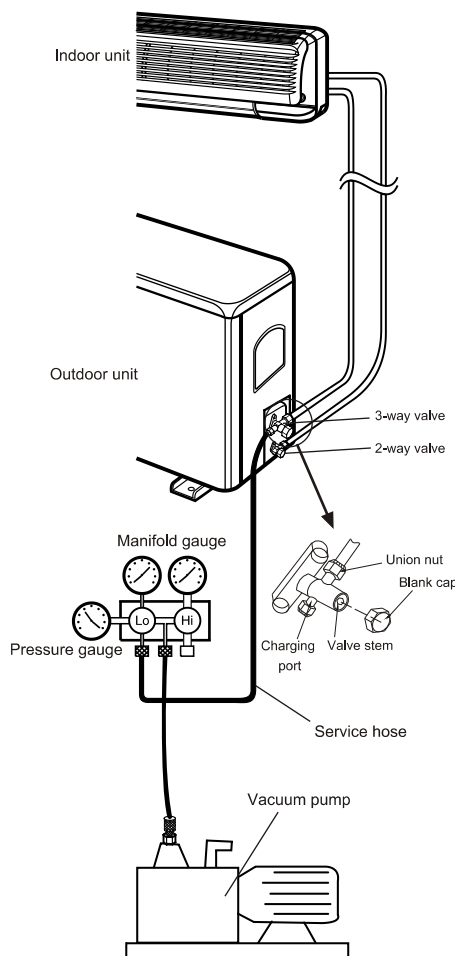


Fig.6

Finishing the job

- With a service valve wrench, turn the valve stem of liquid side valve counter-clockwise to fully open the valve.
- Turn the valve stem of gas side valve counter- clockwise to fully open the valve.
- Loosen the charge hose connected to the gas side service port slightly to release the pressure, then remove the hose.
- Replace the flare nut and its bonnet on the gas side service port and fasten the flare nut securely with an adjustable wrench. This process is very important to prevent leakage from the system.
- Replace the valve caps at both gas and liquid side service valves and fasten them tight.

This completes air purging with a vacuum pump.

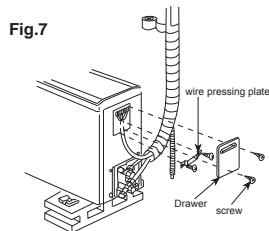
The air conditioner is now ready to test run.

Gas leakage inspection

After the pipeline connection is done, use a leakage inspection device or soap suds to carefully check if there is any leakage at the joints. This is an important step to ensure the quality of installation. Once a leakage is detected, proper treatment should be taken immediately.

Connection of power cable

- 1.Remove the drawer of the outdoor unit.
- 2.Connect the indoor power and control wires with the matched outdoor wires in accordance with the electric schematic diagram and make sure that the connection is firmly done(Fig.7)
- 3.Use a press plate to fix the wires firmly,and re-install the drawer.



Note:Do not connect the wires in a wrong way,otherwise electric malfunctions will be caused and even damages to the units will occur.The appliance shall be installed in accordance with national wiring regulation.If the supply cord is damaged,it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.The plug shall be accessible after installing the appliance.If the model have not plug that a switch which have a contact separation of at least 3 mm(1/10") in all poles shall be added in fixed wiring.

* Finishing touches *

- * Use thermal tube to wrap the joints and wrap the tube tightly with ethylene tapes.
- * Fix the wrapped pipelines on the exterior wall with clamps.
- * Fill in the gaps left over by the pipeline hole and wall hole to prevent rain-water from entering.

* Test running*

- * Connect to the power source,check if the function selection keys on the remote controller are working properly.
- * Check if the room temperature adjustments and timer settings are working properly.
- * Check if the drain is smooth.
- * Check if there is any abnormal noise or vibration during operation.
- * Check if there is leakage of refrigerant.

* Is the unit installed correctly? *

* Suitable Installation Position

*Isn't there anything which prevents ventilation or obstructs operation in front of the indoor unit ?
Do not install the unit following place .

*Inflammable gases may leak .

*Oil splashes a lot .

*In case where the unit is used in such places as poisonous or sultry gases are generated or seaside district exposed to sea breezes corrosion may cause malfunction . Consult with your distributor .

*Air conditioner body and remote controller must be 1 m(39-3/4") or more away from a TV or a radio.
Drain the dehumidified water from the indoor unit to a place which drains well .

* Pay attention to operation noise

*When installing the unit , choose a place which can stand the weight of the unit well and does not increase the operation noise or vibration . Especially where there is a possibility that vibration be transmitted to the house , fix the unit by inserting attached vibration -proof pads between the unit and fittings .

*Choose the place where hot air and operation noise from the outlet of the outdoor unit do not annoy the neighborhood .

*Things left near the outlet and inlet of the outdoor unit cause malfunction or increased operation noise . Do not leave obstacles near the outlet and inlet .

*If irregular sound is heard during operation , consult with your distributor .

*Inspection and Maintenance

*According to the service conditions and operating environment , the inside of the air conditioner will become dirty after several seasons (3 to 5years) of service , resulting in decreased operating performance .Inspection and maintenance are recommended in addition to usual cleaning (The air conditioner can be used for a longer period and without anxiety .)

*As to inspection and maintenance , consult your dealer or any one of business offices of dealing companies .(Service charge is required in this case .)

*We recommend to perform inspection and maintenance during an off seasons.

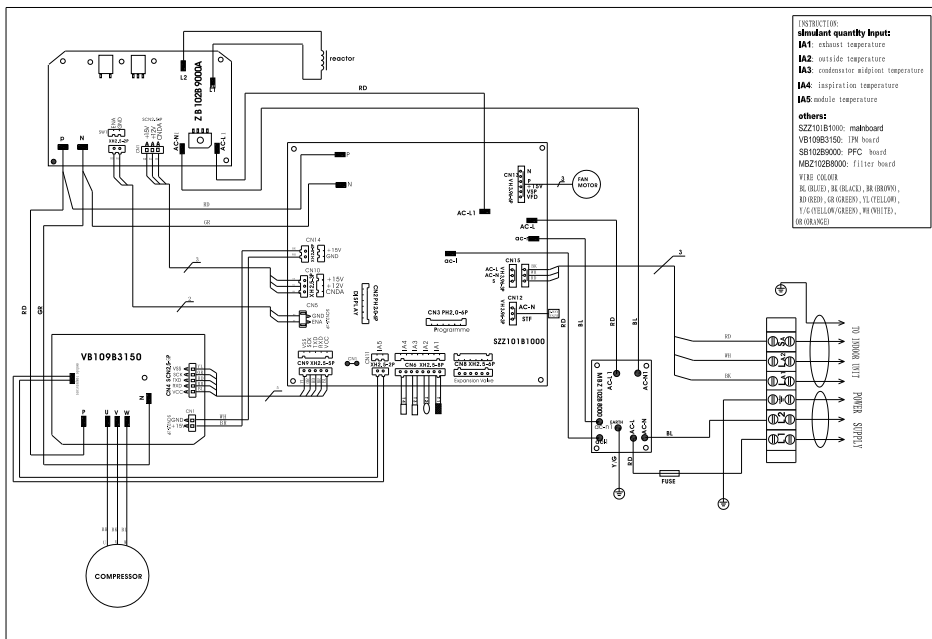
Self Diagnosis Functions

Our company provides the thoughtful services for customer,air conditioners had been installed self diagnosis system to display the information for the units.

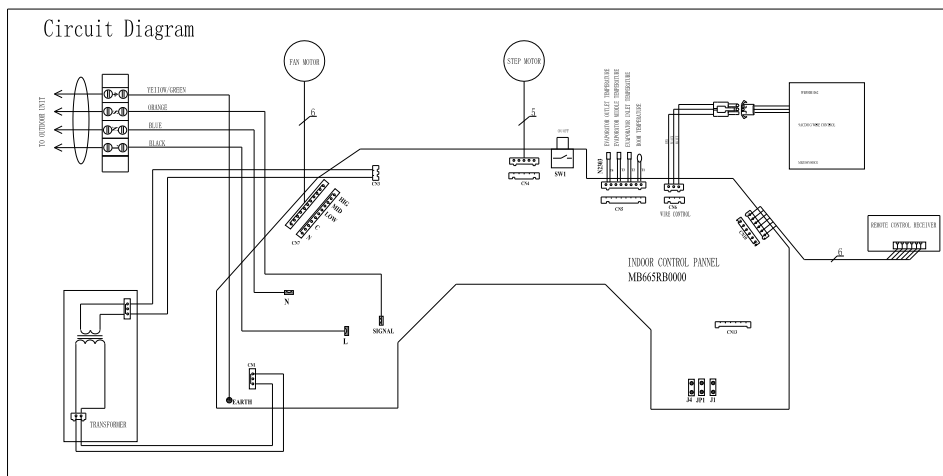
<i>Self-check information</i>	<i>Digital self-check code</i>
Indoor and outdoor communication failure	F1
Indoor temperature sensor failure	F2
Indoor coil air outlet /inlet/midpoint temperature sensor failure	F3
Defrosting	DF
Outdoor transducer module protection failure	P2
Excessive outdoor current	P3
Outdoor compressor air exhaust temperature too high/outdoor ambient temperature too high /compressor encloser temperature switch break off/module temperature too high	P4
Outdoor direct current generatrix voltage abnormality	P7
Lack of fluorin or conversion valve failure	P8
Outdoor sensor failure	F6
Outdoor unit drive failure/compressor startup failure	FC
Outdoor fan failure	FF

Note:Above self check information is commonly applicable in our most air conditioners,but some are special,you can refer to the User's Manual for information or contact the dealer or authorized maintenance people for help.

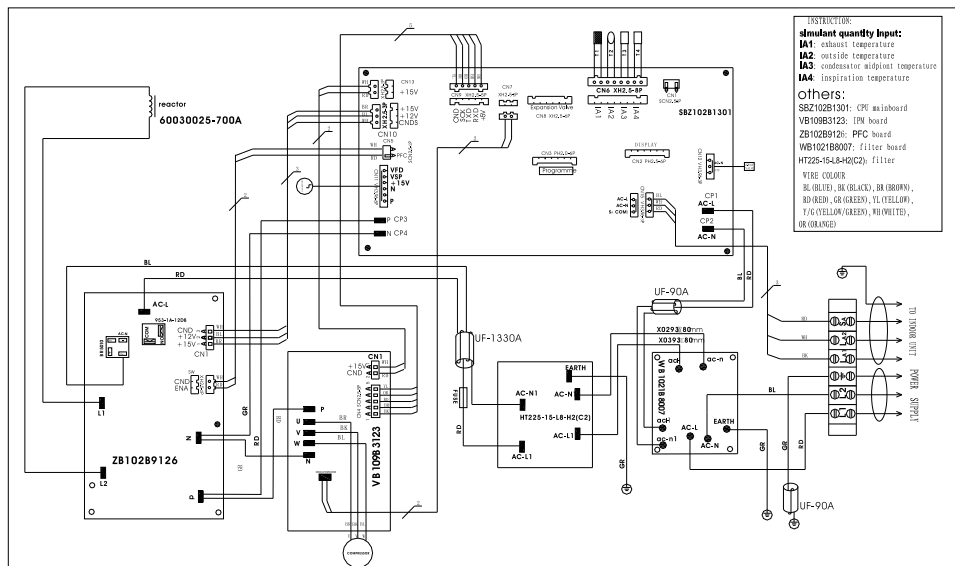
AOS091HX outdoor wire diagram



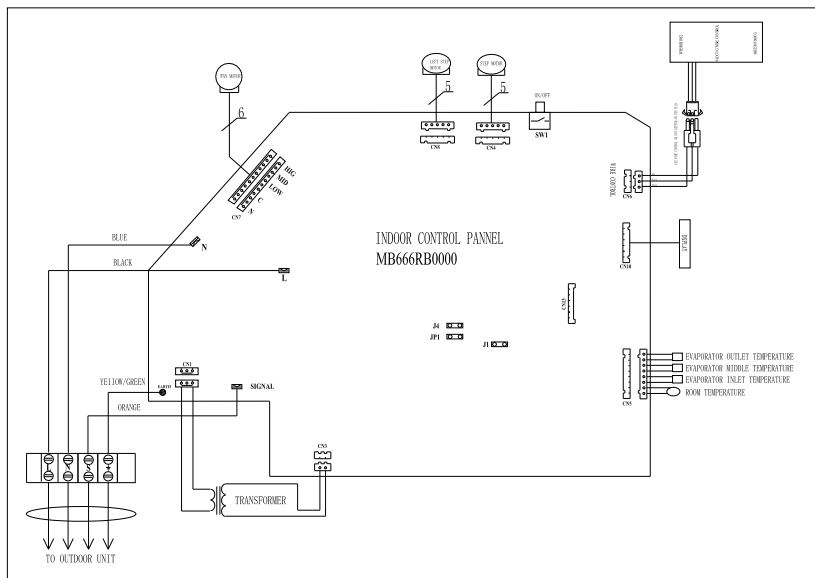
AOS091HX indoor wire diagram:



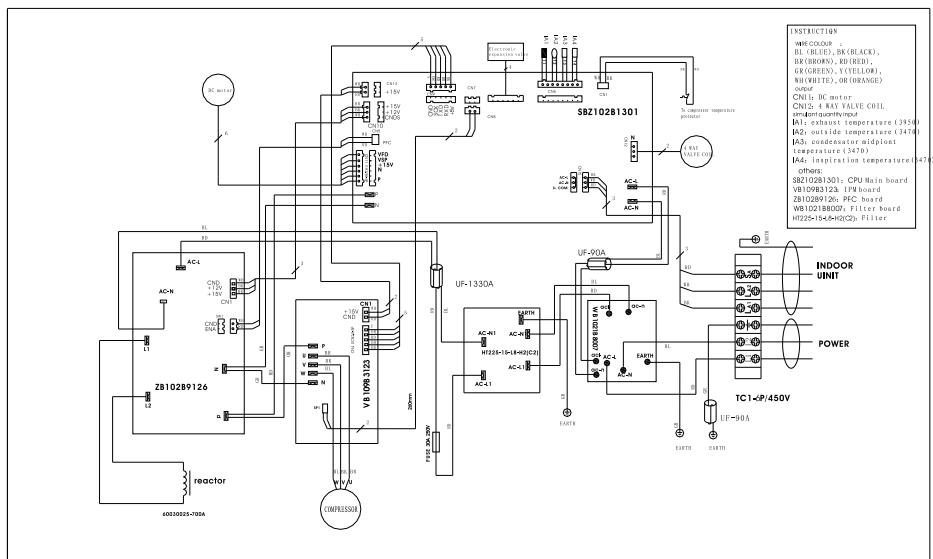
AOS121HX outdoor wire diagram



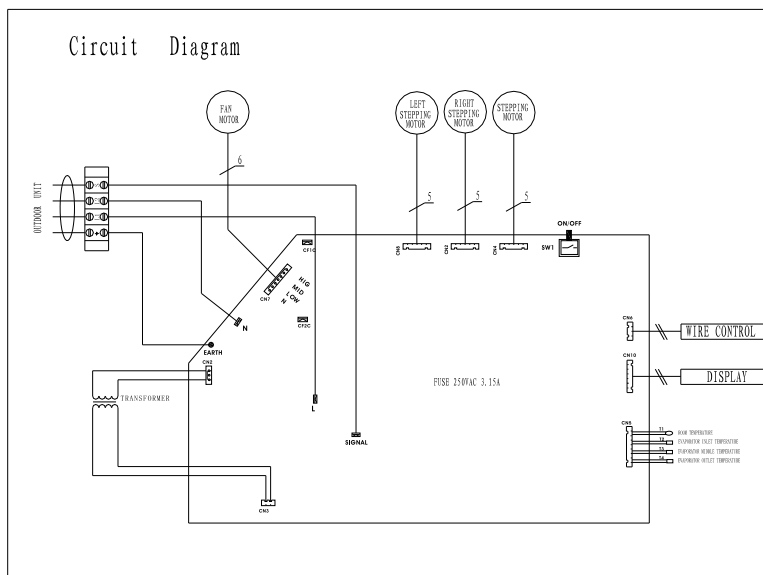
AWS121HX indoor wire diagram:



AOS181HX outdoor wire diagram



AWS181HX indoor wire diagram:



AOS241HX outdoor wire diagram

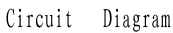


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INSTRUCTION:
output:
CN17: DC motor
STF, 4 WAY VALVE COIL
simulant quantity input:
IA1: exhaust temperature (3956)
IA2: outside temperature (3470)
IA3: condenser midpoint temperature
(3470)
IA4: aspiration temperature (3470)
others:
S8210281202: Mainboard
S8210282202: output board
Z810289121: PFC board
W8102188007: Filter board
M1225-154-H2 (C2), Filter
```

INDOOR UNIT

POWER

AWS241HX indoor wire diagram:



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