Installation Manual for Outdoor Unit

AWAU-YCV080-H11

AWAU-YCV180-H13

No.0150510082

- Please read this manual carefully before using
- Keep this operation manual for future reference

User Manual

Flow Logic II seriesadopts "simultaneous control" type, all indoors should be heating or cooling simultaneously.

To protect compressor, before startup, the unit should be electrified for over 12 hours. If the unit is not used for a long time, please cut off the power to save energy, or the unit will consume the power.

CONTENT

whole model	brief model
AWAU-YCV080-H11	YCV080
AWAU-YCV180-H13	YCV180

The brief model is used in this manual for above models.

Operation condition:

To use the air conditioner normally, please perform as to the below conditions.

Operating Range of Air Conditioner

cooling dry	indoor	max.	DB: 32℃	WB: 23℃
		min.	DB: 18℃	WB: 14℃
	outdoor	max.	DB: 43℃	WB: 26℃
		min.	DB: -5℃	
heating	indoor	max.	DB: 27℃	
		min.	DB: 15℃	
	outdoor	max.	DB: 21℃	WB: 15.5℃
		min.	DB: -15℃	

Safety precaution

- If the air conditioner is transferred to the others, this manual should be tranferred together.
- Before installation, please read "Safety precaution" carefully to confirm the correct installation.
- The mentioned precaustion includes "⚠WARNING" and "⚠CAUTION". The precausion caused death or heavy injury for faulty installation will be listed in "⚠WARNING". Even the cautions listed in "⚠CAUTION" also may cause serious accident. So both of them are related to the safety, and should be executed severely.
- After installation, perform a trial and confirm everything normal, then introduce the operation manual to the user. Besides, put the manual to the user and ask them to preserve it carefully.

⚠ WARNING

- The installation or the maintenance should be performed by the authorized agency. Or the non-specialized operation will cause water leakage, electric shock or fire etc accidents.
- The installation should be executed as per the manual, or the faulty installation will cause water leakage, electric shock or fire etc accidents.
- Please install the unit at the space which can bear the weight. Or the unit will drop down to cause the human injury.
- The installation should defend against the typhoon, and the earthquake etc. Abnormal installation will cause the unit fall down.
- Use the correct cable and make reliable earthing. Fix the terminal firmly and the loose connection will cause heating or fire etc accident.
- The wiring should be in shape and can not be raised. Be earthed firmly and can not be clipped by the electric box cover or the other plate. The incorrect installation will cause heating or fire.
- When setting or transferring the unit, there should not be other air into the refrigerant system except for R410A. The gas mixture will cause the abnormal high pressure which will cause break or human injury etc accidents.
- When installation, please use the accessories with the unit or the special parts, or it will cause water leakage, electric shock, fire, refrigerant leakage etc accidents.
- Don't lead the water drainage pipe into the drainage groove with the poisonous gas, such as sulphur. Or the poisonous gas will enter indoor.
- In installation or after installation, please confirm if there is refriegerant leakage, please take measures for ventilation. The refrigerant will cause poisonous gas as meeting fire.
- Don't install the unit at the place where there may be flammable gas leakage. In case the gas leaks and gather around the unit, it will cause fire.
- The drainage pipe should be installed as per the manual to confirm the fluent drainage. Also take measures for heat insulation against dew drop. Incorrect water pipe installation will cause water leakage even and make the things wet.
- For the liquid pipe and the gas pipe, take measures for heat insulation too. If there is no heat insulation, the dew drop will wet the things.
- This appliance is not intended for use by persons (including children) with reducedphysical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

Safety precaution

⚠ CAUTION

- Execute earthing for the unit. But the earthing wire can not be connected to the gas pipe, water pipe, lightening rod or the telephone earthing wire. Improper earthing will cause electric shock.
- Don't install the unit at the place where leaks the flammable gas. Or it will cause fire.
- Execute the water drainage pipe according to the manual, improper installation will cause water leakage to wet the family things.
- The outdoor fan can not face to the flower or the other vegetable, or the blowing gas will make the flower dried up.
- Please ensure the maintenance room, if not, it will cause the maintenance person damaged.
- When installing the unit on the roof or the other high place, to prevent the person falling down, please set the fixed ladder and the railing at the passage.
- Use the two-end spanner, and fasten the nut at proper torque. Don't fasten the nut excessively against the flared setion broken. Or it will cause refrigerant leakage and lack of oxygen.
- Take measures for heat insulation to the refrigerant pipe, or there will be water leakage or dew drop to wet the family things.
- After finishing the refrigerant pipe, make leakage test by charging the nitrogen. In case the refrigerant leaks in a small room and exceeds the limited concentration, it will cause lack of oxygen.
- Don't use the other refrigerant except for R410A. The R410A pressure is 1.6 times higher than R22 pressure. The refrigerant R410A tank is marked with pink sign.
- Against charging different refrigerant, we changed the stop valve diameter of the R410A unit. To enhance the compression consistance, we also changed the flared pipe dimension. Prepare the R410A specially tools according to the below table.

	R410A specially tool	Remarks
a	gauge manifold	range:HP＞4.5MPa,LP＞2MPa
b	charge hose	pressure:HP:5.3MPa,LP:3.5MPa
c	electronic balance for charging R410A	can not use the measurable charging tank
d	torque spanner	
e	flare tool	
f	copper pipe gauge for adjusting projecting margin	
g	vacuum pump adapter	must be with reverse stop valve
h	leakage detector	can not use freon leakage detector, but the He detector

- When charging refrigerant, the refrigerant must be taken out as liquid state from the tank.
- When installing indoor unit, outdoor, power cable and connecting wire, leave them at least 1m away from the TV set or the radio against interference for the image or the noise.
- In the room with fluorescent lamp (reverse phase or rapid start type), the remote signal may be not reach the pre-set distance. The farther that indoor is away from fluorescent lamp, the better.

Installation instruction

In installation, please check specially the below items:

- If the connected units quantity and the total capacity is in the allowable range?
- If the refrigerant pipe length is in the limited range?
- If the pipe size is proper? And if the pipe is installed horizontally?
- If the branch pipe is installed horinzontally or vertically?
- If the additional refrigerant is counted correctly and weighed by the standard balance?
- If there is refrigerant leakage?
- If all the indoor power supplies can be on/off simultaneously?
- If the power voltage is in compliance with the data marked on the rating label?
- If the address of indoors has been set?

(1) Before installation

1) Before installation, check if the model, power supply, pipe, wires and parts purchased respectively are correct.
2) Check if the indoors and outdoors can be combined as the following.

outdoor		indoor	
capacity (100W)	combination type	indoor Qty	total indoor capacity (100W)
80	single	5	40-104
180	single	9	90-234

Notice:
Total capacities of indoor units being used ≤ 100% of rated capacities of outdoor unit

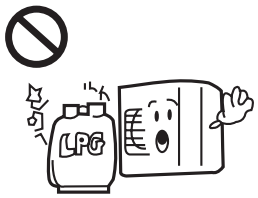
indoor capacity (100W)
22
28
36
40
45
56
71

total indoor capacity (100W)	branch pipe (optional)
less than 335	TAU335

Installation instruction

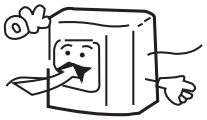
(2) Installation place selection

Air-conditioner can't be installed in the place with inflammable gas. Or it will cause fire hazard.



The unit should be installed at the place where the cold/hot air or noise will not interfere the neighbours.

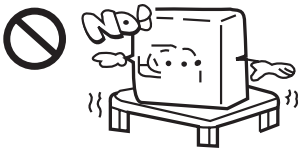
The unit should be installed at the place with good ventilation. No obstacle at the air inlet/outlet. And no strong wind blows the unit.



The installation space refers to the latter info.

- The place where the water can flow fluently.
- The place where no other heat source will affect the unit.
- Pay attention to the snow against clogging the outdoor.
- In installation, install the anti-vibration rubber between the unit and the bracket.

The unit should be installed at the strong enough place. Or it will cause vibration and noise.



- The unit is better not be installed at the below places, or it will cause damage.
- The place where there is corrosive gas (spa area etc).

  The place blowing salty air (seaside etc).
- Exsits the strong coal smoke.
- The place with high humidity.
- The place where there is device emitting Hertzian waves.
- The place where voltage changes greatly.

Note:

1.The place where outdoor unit located must be keep out of water.

2. In snowy area, install the unit under the bracket or the snow-proof cover against the accumulative snow on the unit.

3. Do not install the unit at the place where the flammable gas will leak.

4. Install the unit at the strong enough place.

5. Install the unit at the flat place.

6. When being installed at the place with strong wind, set the air outlet of the unit and the wind direction vertical. Also fix the unit with the screw.

7. When opening the electric box cover for maintenance, please fix the cover with screw firmly.

(3) Transportation

- In transportation, please don't dismantle the packaging, and move the unit to the installation location as closely as possible.
- If the packaging must be dismantled, hang up the unit with rope against damage.
- Don't hang the unit only at two points. When hanging the unit, don't sit on the unit. The unit should be upright.
- When removing the unit with the forklift, put the fork into the special hole at bottom of the unit.
- When being hanged, the rope should be 4 pieces of steel cable with over 6mm diameter.
- Put the cushion at the contact section between steel cable and the unit against the distortion or damage.

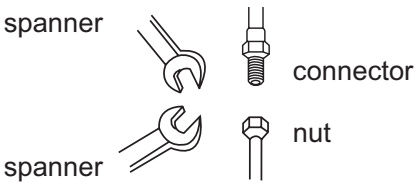
Installation procedure

A. Refrigerant pipe connection

Pipe connection method:

- To ensure the efficiency, the pipe should be as short as possible.
- Daub the refrigerant oil on the connector and the flare nut.
- When bending the pipe, the bending semi-diameter should be as large as possible against the pipe being broken or bent.
- When connecting the pipe, aim at the center to thread the nut by hand and tighten it with the double spanners.
- Don't let the impurity such as sand, water etc into the pipe.

When fastening and loosing the nut, operate with double spanners, because only one spanner cannot execute firmly.



If threading the nut as not aiming at the center, the screw thread will be damaged, further it will cause leakage.

Cautions in piping installation:

1. When welding the connector with hard solder, charge nitrogen into the pipe against oxidation. Or the oxygen film in the pipe will clog the capillary and the expansion valve, even caue the deathy accident.
2. The refrigerant pipe should be clean. If the water and the other impurity enter the pipe, charge the nitrogen to clean the pipe. The nitrogen should flow under the pressure of about 0.5Mpa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).
3. The piping installation should be executed after the stop valves are closed.
4. Before welding the valve and the pipes, use the wet cloth to cool down the valve and the pipes.
5. When the connection pipe and the branch pipe need to be cut down, please use the special shears and cannot use the saw.

Pipe material and specs selection

1. Please select the refrigerant pipe of the below material.
   Material: the phosphoric oxidize seamless copper pipe, model: C1220T-1/2H (diameter is over 19.05); C1220T-0(diameter is below 15.88).
2. Thickness and specs:
   Confirm the pipe thickness and specs according to the pipe selection method(the unit is with R410A, if the pipe over 19.05 is 0-type, the pressure preservation will be bad, thus it must be 1/2H type and over the min. thickness.
3. The branch pipe must be from Airwell.
4. When installing the stop valve, refer to the relative operation instruction.
5. The pipe installation should be in the allowable range.
6. The installation of branch pipe and gather pipe should be performed according to the relative manual.

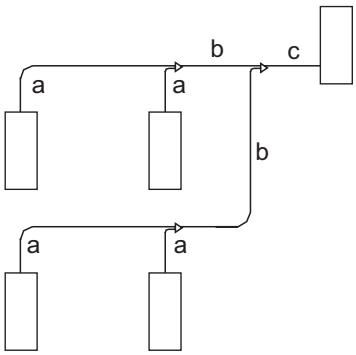
Installation procedure

Pipe specification:

1. Pipe “a” diameter (between indoor and branch pipe) (depends on indoor pipe)

Indoor (x100W)	Gas pipe	Liquid pipe
22~28	Ø9.52*	Ø6.35
36~56	Ø12.7	Ø6.35
71	Ø15.88	Ø9.52

*HAV009's gas pipe is Ø12.7



2. Pipe “b” diameter (between branch pipes)

Total indoor capacity after the branch pipe (x100W)	Gas pipe	Liquid pipe
<112	Ø15.88	Ø9.52
112≤X<234	Ø19.05	Ø9.52

3. Pipe “c” diameter (outdoor pipe diameter)

Outdoor capacity(100W)	Gas pipe	Liquid pipe
80	Ø15.88	Ø9.52
180	Ø19.05	Ø9.52

Note:
When the distance from outdoor to the longest indoor is over 30m, the main pipe should be the enlarged diameter.

Copper pipe selection:

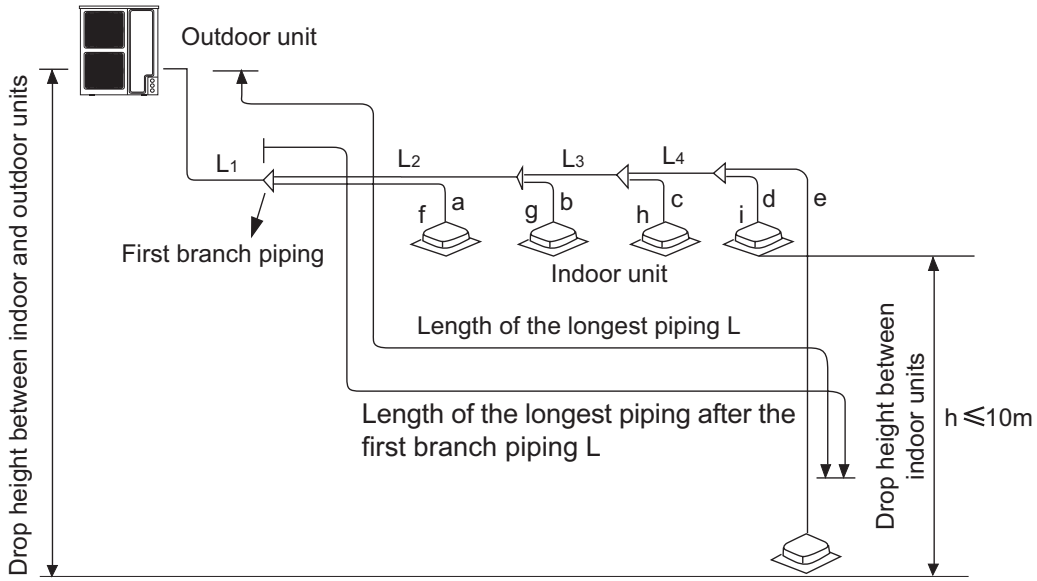
hardness	softness				Half-hardness			
Outer diameter	Ø6.35	Ø9.52	Ø12.7	Ø15.88	Ø19.05	Ø22.22	Ø25.24	Ø28.58
Min. thickness	0.8	0.8	1.0	1.0	1.0	1.1	1.2	1.4

Note: If the copper pipe with outer diameter 19.05 is coil pipe, the thickness should be over 1.1.

Installation procedure

Long pipe and high drop

1. Allowable pipe length and height difference



YCV080: Maximal length and drop height permissible of refrigerant piping

			Permissible value	Piping part
Piping length	Total length of piping (actual length)		50m	L1+L2+L3+L4+a +b+c+d+e
	Longest piping L	Actual length	35m	L1+L2+L3+L4+e
	Piping length of indoor unit which is furthest to the first branch piping L（※）		15m	L2+L3+L4+e
Drop height	Drop height between indoor and outdoor unit H	Up outdoor	30m	——
		Under outdoor	20m	——
	Drop height between indoor units h		10m	——

YCV180: Maximal length and drop height permissible of refrigerant piping

			Permissible value	Piping part
Piping length	Total length of piping (actual length)		100m	L1+L2+L3+L4+a +b+c+d+e
	Longest piping L	Actual length	70m	L1+L2+L3+L4+e
	Piping length of indoor unit which is furthest to the first branch piping L（※）		30m	L2+L3+L4+e
Drop height	Drop height between indoor and outdoor unit H	Up outdoor	30m	——
		Under outdoor	20m	——
	Drop height between indoor units h		10m	——

Installation procedure

Unit pipe spec and connection method (unit: mm)

A. Outdoor unit

Model	Gas pipe side		Liquid pipe side	
	Diameter	Connecting method	Diameter	Connecting method
YCV080	Ø15.88	Flared joint	Ø9.52	Flared joint
YCV180	Ø19.05		Ø9.52	

B. Indoor unit

Model Capacity	Gas pipe side		Liquid pipe side	
	Diameter	Connecting method	Diameter	Connecting method
09	Ø9.52	Flared joint	Ø6.35	Flared joint
12	Ø12.7		Ø6.35	
16	Ø12.7		Ø6.35	
18	Ø12.7		Ø6.35	
24	Ø15.88		Ø9.52	

C. Pipe spec and the torque

diameter	Thickness(mm)	Torque(N.m)
Ø6.35	0.8	16~20
Ø9.52	0.8	40~50
Ø12.7	1.0	
Ø15.88	1.0	90~120
Ø19.05	1.0	100~140
Ø22.22	1.1	——
Ø25.4	1.2	——
Not less than Ø28.58	More than 1.4	——

Note: If the copper pipe with outer diameter 19.05 is coil pipe, the thickness should be over 1.1.

Installation procedure

Branch pipe

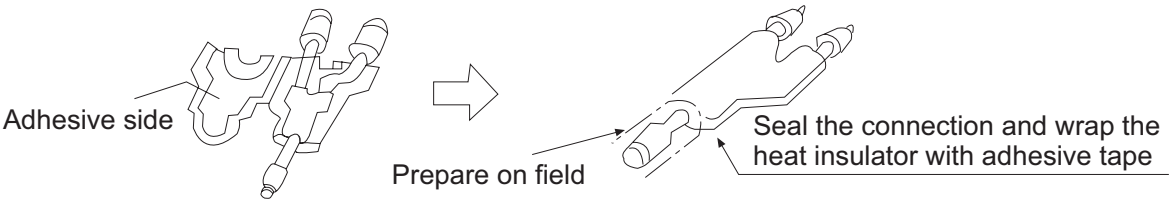
Outdoor unit type

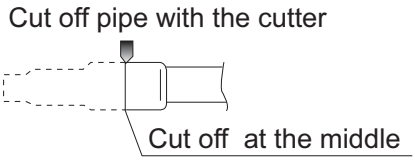
Branch pipe selection:

total indoor capacity(100W)	model(optional)
less than 335	TAU335

Note:

1. When connecting the pipe and the outdoor, please pay attention to the outdoor pipe dimension.
2. When adjusting the diameter among pipes and among the units, please must execute at the branch pipe side.
3. When welding with hard solder, please must blow nitrogen. If not, a number of oxide will be produced and cause heavy damage.Besides,to prevent water and dust into the pipe, please make the brim as outer roll.





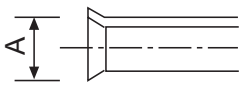
Installation procedure

Piping installation

Important

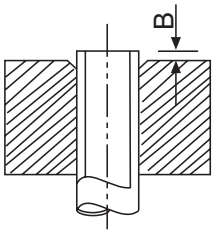
- Please don't let the pipe and the parts in the unit collide each other.
- When connecting the pipes, close the valves fully.
- Protect the pipe end against the water, impurity into the pipes (welding after being flat, or being sealed with adhesive tape).
- Bend the pipe as large semi-diameter as possible(over 4 times of the pipe diameter).
- The connection between outdoor liquid pipe and the distributing pipe is flared type. Please expand the pipe with the special tool for R410A after installing the expanding nut. But if the projecting pipe length has been adjusted with the copper pipe gauge, you can use the original tool to expand the pipe.
- Since the unit is with R410A, the expanding oil is ester oil, not the mineral oil.
- When connecting the expanding pipe, fasten the pipes with double-spanner. The torque refers to the former info.

Expanding pipe:A(mm)



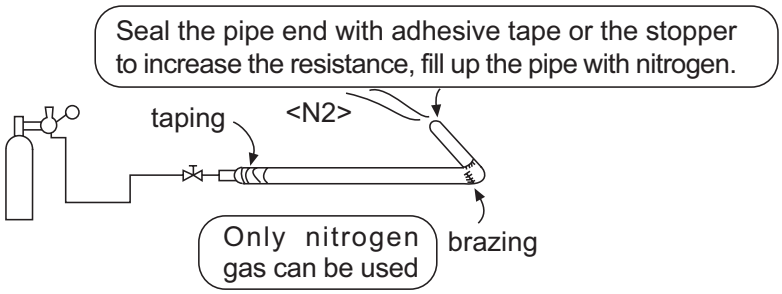
pipe outer diameter	A 0 -0.4
Ø6.35	9.1
Ø9.52	13.2
Ø12.7	16.6
Ø15.88	19.7

Projecting length of pipe to be expanded:B(mm)

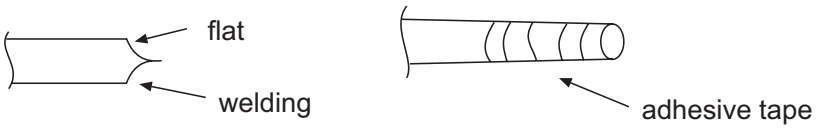


pipe outer diameter	when it is hard pipe	
	special tool for R410A	the former tool
Ø6.35	0-0.5	1.0-1.5
Ø9.52		
Ø12.7		
Ø15.88		

- The outdoor gas pipe and the refrigerant distributing pipe, as well the refrigerant distributing pipe and the branch pipe should be welded with hard solder.
- Weld the pipe at the same time charge the nitrogen. Or it will cause a number of impurity (a film of oxidation) to clog the capillary and the expansion valve, further cause the deadly failure.

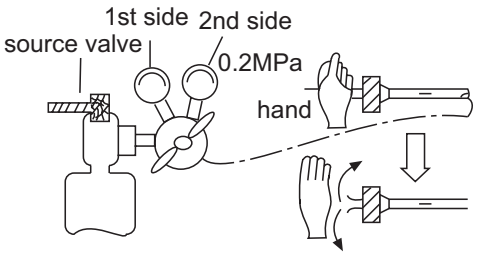


- Protect the pipe end against the water, impurity into the pipes (welding after being flat, or being sealed with adhesive tape).



Installation procedure

- The refrigerant pipe should be clean. The nitrogen should flow under the pressure of about 0.2Mpa and when charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then loose the hand (meanwhile stop up the other end).



- When connecting the pipes, close the valves fully.
- When welding the valve and the pipes, use the wet cloth to cool down the valve and the pipes.

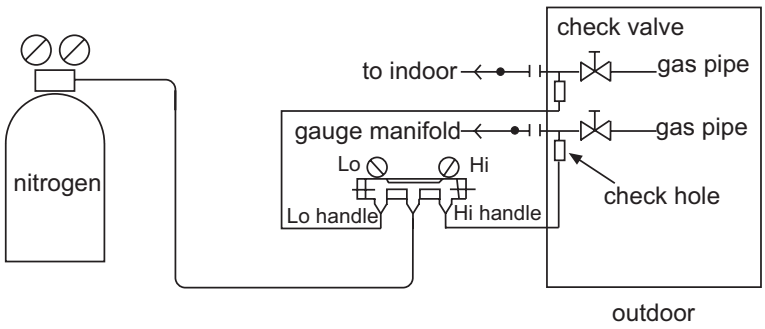
B. Leakage test

1. The outdoor unit has been executed the leakage test in the factory. After connecting the distributing pipe, execute the leakage test from the outdoor check valve and the indoor. Besides, while testing, the valves should be close.

2. Refer to the below figure to charge the nitrogen into the unit to take a test. Never use the chlorin, oxygen, flammable gas in the leakage test. Apply pressure both on the gas pipe and the liquid pipe.

3. Apply the pressure step by step to the target pressure.
a. Apply the pressure to 0.5MPa for more than 5 minutes, confirm if pressure goes down.
b. Apply the pressure to 1.5MPa for more than 5 minutes, confirm if pressure goes down.
c. Apply the pressure to the target pressure (4.0MPa), record the temp. and the pressure.
d. Leave it at 4.0MPa for over 1 day, if pressure does not go down, the test is passed. Meanwhile, when the temp. changes for 1degree, pressure will change 0.01MPa as well. Correct the pressure.
e. After confirmation of a~d, if pressure goes down, there is leakage. Check the brazing position, flared position by laying on the soap. modify the leakage point and take another leakage test.

4. After leakage test, must execute the evacuation.

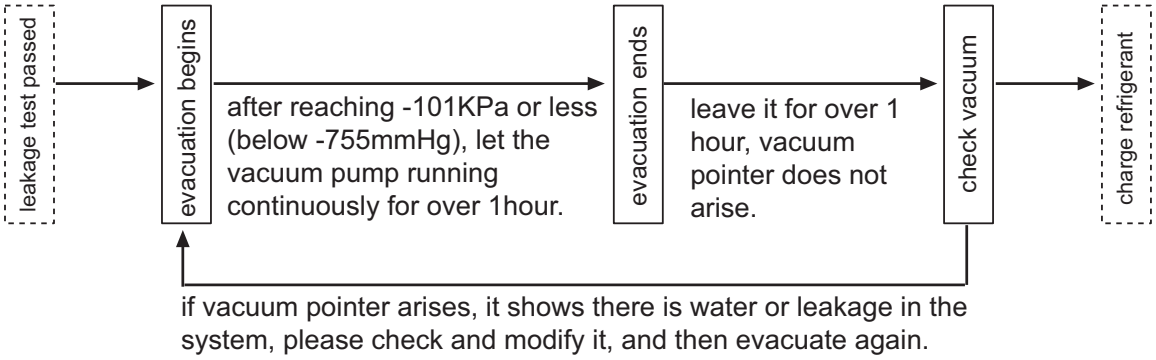


Installation procedure

C. Evacuation

Evacute at the check valve of liquid stop valve and both sides of the gas stop valve.

Operation procedure:



Because the unit is with refrigerant R410A, the below issues should be paid attention:

- To prevent the different oil into the pipe, please use the special tool for R410A, especially for gauge manifold and charging hose.
- To prevent the compressor oil into the refrigerant cycle, please use the anti-counter-flow adapter.

D. Check valve operation

Open/close method:

- Take down the valve cap.
- Turn the liquid stop valve and the gas stop valve with hexangular spanner until it stops. If opening the valve strongly, the valve will be damaged.
- Tighten the valve cap.

Tighten torque as the table below:

Tighten torque N.m			
	shaft (valve body)	cap (cover)	T-shape nut (check joint)
for gas pipe	less than 7	less than 30	13
for liquid pipe	7.85 (MAX15.7)	29.4 (MAX39.2)	8.8 (MAX14.7)

E. Additional refrigerant charging

Charge the additional refrigerant as liquid state with the gauge.
If the additional refrigerant can not be charged totally when the outdoor stops, charge it at the trial mode.
If the unit runs for a long period in the state of lack of refrigerant, compressor will occur failure.
(the charging must be finished within 30 minutes especially when the unit is running, menawhile charging the refrigerant).

Installation procedure

A. Charging amount when out of factory excludes the refrigerant in the pipe.
B. The unit only is charged the standard volume of refrigerant (distributing pipe length is 0m).
Additional charging amount=actual length of liquid pipe x additional amount per meter liquid pipe
Additional charging amount=L1×0.35+L2×0.25+L3×0.17+L4×0.11+L5×0.054+L6×0.022
L1: total length of 22.22 liquid pipe L2: total length of 19.05 liquid pipe
L3: total length of 15.88 liquid pipe L4: total length of 12.7 liquid pipe
L5: total length of 9.52 liquid pipe L6:total length of 6.35 liquid pipe
C. Refrigerant charging and additional charging

	additonal refrigerant charging per meter(kg/m)						charge when out of factory
Model	Ø22.22	Ø19.05	Ø15.88	Ø12.7	Ø9.52	Ø6.35	
YCV080	0.35	0.25	0.17	0.11	0.054	0.022	2.6kg
YCV180							5.0kg

Note: For YCV080, when pipe diameter isØ6.35, if the pipe length is within 15m, additional refrigerant is unnecessary.

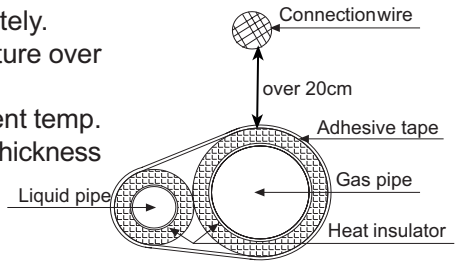
Note:
- To prevent the different oil into the pipe, please use the special tool for R410A, especially for gauge manifold and charging hose.
- Mark the refrigerant type in different colour on the tank. R410A is pink.
- Must not use the charging cylinder, because the R410A will change when transferring to the cylinder.
- When charging refrigerant, the refrigerant should be taken out from the tank as liquid state.
- Mark the counted refrigerant volume due to the distributing pipe length on the label.

Fix the refrigerant pipe

- In operation, the pipe will vibrate and expand or shrink. If not being fixed, the refrigerant will focus on one part to cause the broken pipe.
- To prevent the central stress, fix the pipe for every 2-3m.

Heat insulation

- Gas pipe and liquid pipe should be heat insulated separately.
- The material for gas pipe should endure the high temperature over 120℃.That for liquid pipe should be over 70℃.
- The material thickness should be over 10mm, when ambient temp. is 30℃, and the relative humidity is over 80%, the material thickness should be over 15mm.
- he material should cling the pipe closely without gap, then be wrapped with adhesive tape. The connection wire can not be put together with the heat insulation material and should be far at least 20cm.



Trial operation and the performance

5-minute delay function

- If starting up the unit after being powered off, the compressor will run about 5 minutes later against being damaged.

Cooling/heating operation

- Indoor units can be controlled individually, but cannot run in cool and heat mode at the same time. If the cool mode and the heat mode are existing simultaneously, the unit set latter will be standby, and the unit set earlier will run normally. If the A/C manager sets the unit at cooling or heating mode fixedly, the unit can not run at the other modes.

Heating mode characteristic

- In operation if outdoor temp. arises, indoor fan motor will turn to low speed or stop.

Defrosting in heating mode

- In heating mode, outdoor defrosting will affect the heating efficiency. The unit will defrost for about 2~10 minutes automatically, at this time, the condensate will flow from outdoor, also in defrosting, the vapour will appear at outdoor, which is normal. Indoor motor will run at low speed or stop, and outdoor motor will stop.

The unit operation condition

- To use the unit properly, please operate the unit under the allowed condition range. If operating beyond the range, the protection device will act.
- The relative humidity should be lower than 80%. If the unit runs at the humidity over 80% for a long period, the dew on the unit will drop down and the vapour will be blowed from air outlet.

Protection device (such as high pressure switch)

High pressure switch is the device which can stop the unit automatically when the unit runs abnormally.

When the high pressure switch acts, the cooling/heating mode will stop but the running LED on wired controller will be light still. The wired controller will display failure code.

When the following cases occur, the protection device will act:

In cooling mode, air outlet and air inlet of outdoor are clogged.

In heating mode, indoor filter is sticked with duct; indoor air outlet is clogged.

When protection device acts, please cut off the power source and re-start up after eliminating the trouble.

Trial operation and the performance

When power is failure

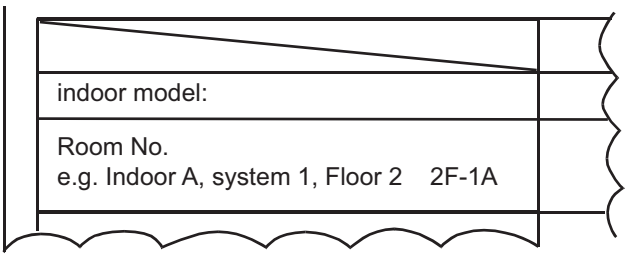
- When power is failure in running, all the operations will stop.
- After being electrified again, if with re-satrt up function, the unit can resume to the state before power off automatically; if without re-satrt up function, the unit needs to be switched on again.
- When abnormal occurs in running because of the thunder, the lightning, the interference of car or radio, etc, please cut off the power source, after eliminating the failure, press "ON/OFF" button to start up the unit.

Heating capacity

- The heating mode adopts the heat pump type that absorbs outdoor heat energy and releases into indoor. So if outdoor temperature goes down, the heating capacity will decrease.

System marks

- On the condition that multi systems are installed, in order to confirm the relationship between outdoor and indoor, please make marks on outdoor electric control box cover to indicate the connected indoor unit. As the below figure:

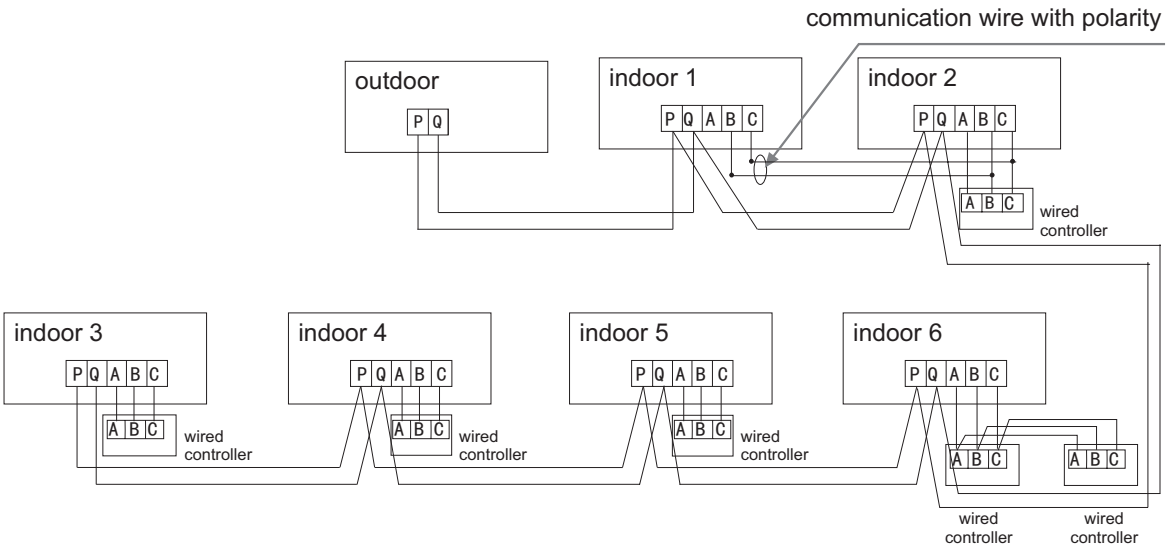


Trial operation

- Before trial operation:
  Before being electrified, measure the resistor between power terminal block (live wire and neutral wire) and the earthed point with a multimeter, and check if it is over 1M Ω . If not, the unit can not operate.
  To protect compressor, electrify the outdoor unit for at least 12 hours before the unit runs.If the crankcase heater is not electrified for 6 hours, the compressor will not work.
  Confirm the compressor bottom getting hot.
  Except for the condition that there is only one master unit connected (no slave unit), under the other conditions, open fully the outdoor operating valves (gas side, liquid side). If operating the unit without opening the valves, compressor failure will occur.
  Confirm all indoor units being electrified. If not, water leakage will occur.
  Measure the system pressure with pressure gauge, at the same time, operate the unit.
- Trial operation
  In trial operation, refer to the information of performance section. When the unit can not start up at the room temperature, make trial operation for outdoor.

Electric wiring and the application

Communication wiring figure



The outdoor and all indoor units are in parallel through 2 non-polar wires.

Three wiring methods between wired controller and indoor unit:

A. 1 to multi (group control): one wired controller controls 2~16 indoors, as shown in above figure, indoor 1~indoor 2: indoor 2 is wired control master unit, the others are wired control slave units. Wired controller and the master indoor (directly connected to wired controller) is connected by 3 polar wires; the other indoors and the master indoors are connected by 2 polar wires.

B. 1 to 1 (one wired controller controls one indoor): as shown in above figure, indoor 3~ indoor 4, indoor and wired controller are connected by 3 polar wires.

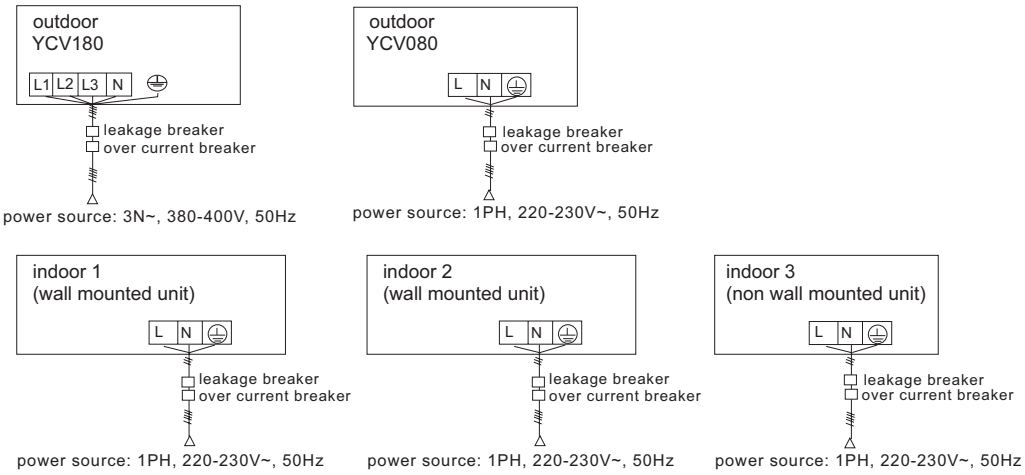
C. 2 to 1 (two wired controller controls one indoor): as shown in above figure, indoor 6. Either of wired controllers can be set as master wired controller, and the other is slave wired controller. Master/slave wired controller, and master/indoor are connected by 3 polar wires.
When indoor is controlled by remote controller, refer to the "wired control master unit/wired control slave unit/remote control unit table".A, B, C on signal terminal block need not wires and not connect the wired controller.

Internal wiring diagram for power cable installation

Note: The power wire cannot touch any refrigerant pipe.

Electric wiring and the application

Power wiring figure



Indoor and outdoor use their individual power source. All indoors use one power source. Must install the leakage breaker and the over current breaker, or electric shock will occur.

Specs for power cable and communication wire

1. Outdoor power source and power cable

item / model		power source	power cable section (mm^2)	circuit breaker (A)	rated current of residual current circuit breaker(A) leakage current (mA) response time(s)	earthing wire	
						section (mm^2)	screw
individual power	YCV080	1PH, 220-230V~, 50Hz	6	30	30A 30mA below 0.1S	6	M5
	YCV180	3N~, 380-400V, 50Hz	4	20	20A 30mA below 0.1S	4	M5

a. Power cable model:
YCV080: H05RN-F; YCV180: H07RN-F
b. The diameter of earth cable cannot be smaller than power cable's.
c. Power cable must be fixed firmly.
d. Each outdoor must be earthed well.
e. When power cable exceeds the range, thicken it appropriately.
f. The temperature of refrigerant circuit will be high, please keep the power cable away from the copper tube.
g. An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring.

Electric wiring and the application

2. Indoor power source, communication wire between indoor and outdoor, among indoors

item / indoor total current (A)	power cable section (mm2)	wire length (m)	rated current of overcurrent breaker(A)	rated current of residual current circuit breaker(A) leakage current (mA) response time(s)	communication wire section	
					outdoor/indoor (mm^2)	indoor/indoor (mm^2)
＜10	2	23	20	20A, 30mA, below 0.1s	2-core × (0.75-2.0mm^2) shielded wire	
≥10 and ＜15	3.5	24	30	30A, 30mA, below 0.1s		
≥15 and ＜22	5.5	27	40	40A, 30mA, below 0.1s		
≥22 and ＜27	10	42	50	50A, 30mA, below 0.1s		

a. Indoor power cable model: H05VV-F;
b. Power cable and communication wire must be fixed firmly.
c. Each indoor must be earthed well.
d. When power cable exceeds the range, thicken it appropriately.
e. Shielded layer of communication wires must be connected together and be earthed at single point.
f. Communication wire total length cannot exceed 1000m.

3. Communication wire for wired controller

wire length(m)	wire spec	wire length(m)	wire spec
＜100	0.3mm^2 ×(3-core) shielded wire	≥300 and ＜400	1.25mm^2 ×(3-core) shielded wire
≥100 and ＜200	0.5mm^2 × (3-core) shielded wire	≥400 and ＜600	2mm^2 × (3-core) shielded wire
≥200 and ＜300	0.75mm^2 × (3-core) shielded wire		

a. Shielded layer of communication wire must be earthed at one end.
b. The total length cannot exceed 600m.

4. Control type and the switchover
a) Indoor unit can be controlled by wired controller or remote controller.
b) When installation, the installer must set the unit due to the control type and wiring type.
Switchover between wired control master/slave unit /remote control unit, set when installation:

control type / socket /dip switch	wired control master unit	wired control slave unit	remote control
CN23	short connected	disconnected	disconnected
CN30	short connected	short connected	disconnected
CN21	blank	blank	to remote receiver
SW08-[6]	ON	ON	OFF
signal terminal block	A,B,C to wired controller	B,C to wired controller	A,B,C not to wired controller

Note:
1. In the above figure, the state in the frame is set when out of factory.
2. The indoor controlled by master/slave wired controller and the indoor controlled by individual wired controller are all wired controlled master indoor.
3. The remote receiver is equipped with a wire which can be inserted in CN21.

Electric wiring and the application

1. Indoor central control address setting method

No.	setting type	setting method	remarks
1	Set by hand	1.SW02 on indoor PCB is ON (upper); 2. The detailed position refers to the below table.	set on field
2	Set by wired controller	1. SW02 on indoor PCB is OFF(down), set when out of factory. 2. Press "FILTER" on wired controller continuously for 10 seconds into central control setting mode, and select the indoor central control address by "TEMP+/-". 3. Temp. area indicates: system address+XX, press "TEMP+/-", the unit number will change "00~3F" (00 is No.1, 3F is No.64), and the initialization is 00. 4. After selecting the number, press "SET" to save it; if pressing other buttons or no pressing within 15 seconds, it will quit automatically and keep the former setting.	set on field

Indoor central control address table (set by hand)

SW02								central control address	SW02								central control address	SW02								central control address
1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8	
1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	23	1	0	1	0	1	0	1	1	44
1	0	0	0	0	0	0	1	2	1	0	0	1	0	1	1	1	24	1	0	1	0	1	1	0	0	45
1	0	0	0	0	0	1	0	3	1	0	0	1	1	0	0	0	25	1	0	1	0	1	1	0	1	46
1	0	0	0	0	0	1	1	4	1	0	0	1	1	0	0	1	26	1	0	1	0	1	1	1	0	47
1	0	0	0	0	1	0	0	5	1	0	0	1	1	0	1	0	27	1	0	1	0	1	1	1	1	48
1	0	0	0	0	1	0	1	6	1	0	0	1	1	0	1	1	28	1	0	1	1	0	0	0	0	49
1	0	0	0	0	1	1	0	7	1	0	0	1	1	1	0	0	29	1	0	1	1	0	0	0	1	50
1	0	0	0	0	1	1	1	8	1	0	0	1	1	1	0	1	30	1	0	1	1	0	0	1	0	51
1	0	0	0	1	0	0	0	9	1	0	0	1	1	1	1	0	31	1	0	1	1	0	0	1	1	52
1	0	0	0	1	0	0	1	10	1	0	0	1	1	1	1	1	32	1	0	1	1	0	1	0	0	53
1	0	0	0	1	0	1	0	11	1	0	1	0	0	0	0	0	33	1	0	1	1	0	1	0	1	54
1	0	0	0	1	0	1	1	12	1	0	1	0	0	0	0	1	34	1	0	1	1	0	1	1	0	55
1	0	0	0	1	1	0	0	13	1	0	1	0	0	0	1	0	35	1	0	1	1	0	1	1	1	56
1	0	0	0	1	1	0	1	14	1	0	1	0	0	0	1	1	36	1	0	1	1	1	0	0	0	57
1	0	0	0	1	1	1	0	15	1	0	1	0	0	1	0	0	37	1	0	1	1	1	0	0	1	58
1	0	0	0	1	1	1	1	16	1	0	1	0	0	1	0	1	38	1	0	1	1	1	0	1	0	59
1	0	0	1	0	0	0	0	17	1	0	1	0	0	1	1	0	39	1	0	1	1	1	0	1	1	60
1	0	0	1	0	0	0	1	18	1	0	1	0	0	1	1	1	40	1	0	1	1	1	1	0	0	61
1	0	0	1	0	0	1	0	19	1	0	1	0	1	0	0	0	41	1	0	1	1	1	1	0	1	62
1	0	0	1	0	0	1	1	20	1	0	1	0	1	0	0	1	42	1	0	1	1	1	1	1	0	63
1	0	0	1	0	1	0	0	21	1	0	1	0	1	0	1	0	43	1	0	1	1	1	1	1	1	64
1	0	0	1	0	1	0	1	22																		

Communication address between indoor and outdoor setting by hand:
1st, 2nd bit of SW03 are ON, the latter six bits can confirm the communication address, the address setting refers to the "central control address setting table". For example, the communication address is 8, the dip switch of SW03 is 11000111.

Electric wiring and the application

2. Indoor control type selection

indoor PCB	wired control master unit	wired control slave unit	remote control	remarks
CN23	short connected	disconnected	disconnected	1.The communication address between master/slave wired controller and the outdoor is different. 2. If central control is necessary, all indoor central control addresses in one group are identical, while the indoor address in different groups is different too.
CN30	short connected	short connected	disconnected	
CN21	blank	blank	to remote receiver	
SW08-[6]	ON	ON	OFF	
SW01 [1]-[4]	"0"	1~15 (different dialing setting on SW01 for the slave units in one group	"0"	
signal terminal block	A,B,C to wired controller	B,C to wired controller	A,B,C not to wired controller	

Note: In the above figure, the state in the frame is set when out of factory.

3.Setting state and the function defination of PCB and wired controller when out of factory

item	parts		state	function
indoor PCB	dip switch	SW01 [1]-[4]	at "0"	1. When one wired controller controls one indoor, multiple wired controllers control one indoor, or indoor is controlled by remote controller, the switch needs not be changed. 2. When one wired controller controls multiple indoors, the switch of master unit is 0, while the slave units are at the position from 1 to 15.
		SW02	all at "OFF"	1. When setting central controlled address by wired controller, it need not change. 2. When setting central controlled address by hand, refers to the setting table1.
		SW03	all at "OFF"	When setting communication address between indoor and outdoor automatically, it needs not change. When setting by hand or by wired controller, refers to the setting table2.
	jumper	CN23	connected	When being controlled by wired controller, it is connected; when being controlled by remote controller, it is disconnected.
		CN25	disconnected	
		CN26	disconnected	output in series, connected to testing device.
		CN27	disconnected	connected after being powered on, indoor EEV opens 2 minutes fully.
		CN28	disconnected	connected after being powered on, indoor in time shorting function

Electric wiring and the application

<table>
<tr><th>item</th><th colspan="2">parts</th><th>state</th><th>function</th></tr>
<tr><td rowspan="11">indoor PCB</td><td rowspan="3">jumper</td><td>CN29</td><td>disconnected</td><td>connected after being powered on, indoor EEV closes 2 minutes fully.</td></tr>
<tr><td>CN30</td><td>connected</td><td>When being controlled by wired controller, it is connected; when being controlled by remote controller, it is disconnected.</td></tr>
<tr><td>CN31</td><td>disconnected</td><td>indoor trial operation</td></tr>
<tr><td rowspan="3">dip switch</td><td>SW07 -[5]</td><td>ON</td><td rowspan="3"><table><tr><td colspan="3">Air inlet temp. TA compensation value</td></tr><tr><td>SW07-[5]</td><td>SW07-[4]</td><td>TA correction value</td></tr><tr><td>OFF</td><td>OFF</td><td>12℃</td></tr><tr><td>OFF</td><td>ON</td><td>8℃</td></tr><tr><td>ON</td><td>OFF</td><td>4℃</td></tr><tr><td>ON</td><td>ON</td><td>0℃(out of factory)</td></tr></table></td></tr>
<tr><td>SW07 -[4]</td><td>ON</td></tr>
<tr><td>SW08 -[1]</td><td>ON</td><td>ON: change high/mid/low fan speed; OFF: the fixed fan speed(for duct type).</td></tr>
<tr><td>SW08 -[6]</td><td>ON</td><td>ON: be controlled by wired controller; OFF: be controlled by remote controller</td></tr>
<tr><td rowspan="7">indicator</td><td>LED1</td><td>red</td><td>indicator of communication with wired controller. Shows indoor sending signal to wired controller</td></tr>
<tr><td rowspan="2">LED2</td><td rowspan="2">green</td><td>indicator of communication with wired controller. Shows indoor receiving signal from wired controller</td></tr>
<tr><td>LED1, LED2 used in combination. If communication between wired controller and indoor is normal, LED1, LED2 will flash regularly.If there is slave wired controller, FQY of LED1 of slave controller will be low.</td></tr>
<tr><td>LED3</td><td>red</td><td>indicator of communication with outdoor. Shows indoor sending signal to outdoor</td></tr>
<tr><td rowspan="2">LED4</td><td rowspan="2">green</td><td>indicator of communication with outdoor. Shows indoor receiving signal to outdoor</td></tr>
<tr><td>LED3, LED4 used in combination. If communication between indoor and outdoor is normal, LED1, LED2 will flash regularly. FQY of red LED is lower than that of green LED.</td></tr>
<tr><td>LED5</td><td>failure</td><td>in normal state, it is OFF. Confirm the failure due to the indicator flashes times</td></tr>
<tr><td>LED6</td><td>yellow</td><td>in normal state, it is OFF. Indicate when EEV is open/close fully.</td></tr>
</table>

Electric wiring and the application

item	parts		state	function		
wired controller	dip switch	SW01 -1	OFF	changeover between master and slave wired controller	ON	set as slave wired controller
					OFF	set as master wired controller
		SW01 -2	OFF	changeover between celsius and fahrenheit	ON	set as Fahrenheit
					OFF	set as celsius
	resistor	J03	1	selection of room temp. display	0	no room temp. display
					1	room temp. display
		J06	1	position selection of room temp.sensor	0	adopt the room temp.sensor in indoor
					1	adopt the room temp.sensor in wired controller
	diode	J07	0	auto restart selection	0	with auto restart function
					1	without auto restart function
		D1	OFF	time-shorting function	ON	indoor time shorting
					OFF	without time shorting
		D2	OFF	compulsory defrost	ON	send compulsory defrost signal to indoor
					OFF	normal state

Only when two wired controllers control one indoor, one of the wired controllers can be set as slave wired controller.

Method of installation and trial run

Method of installation and trial run

1. Function explanation of switch SW01, SW02 of control panel of outdoor unit.
We can know the number of some parameters by using forck board ,but must to connected other frock borad.
which is not in the control board.The forck board must be bought from manufacturer.

SW01	SW02	Display of numeral pipe light with seven segments
0	0	Checking code of outdoor unit Display: --- When no checking code When total capacity of indoor units exceeds 130% of rated capacity of outdoor unit, display: F F F
	1	Operation mode of outdoor units: Cooling: -C, Heating: -H , Defrosting: -J
	2-3	No used
	4	Target of operating frequency of compressor (Decimal number):
	5	Actual operating frequency of compressor (Decimal number):
	6	Indoor units connected (Decimal number):
	7-13	No used
	14	Compulsory cooling: 0; compulsory heating: 1; without compulsory operation: --
	15	Cdjust frequency by hand, display the set frequency; without set manually, --
1	0	Sensor TD Air Discharge value (℃)(decimal number):
	1	Sensor TA Environment timP. value (℃)(decimal number):
	2	Sensor TS Air suction value (℃) (decimal number):
	3	Sensor TE Defrost value (℃)(decimal number):
	4	Sensor TC middle part of Condenser value (℃) (decimal number):
	5	No used
	6	No used
	7	Opening of outdoor unit PMV (decimal number):
	8	Magnet valve SV2: ON:1 OFF: 0
	9	Magnet valve SV1: ON:1 OFF: 0
	10	Current value of compressor when operating(decimal number)
	11	Blower fan mode of outdoor Low speed: -1 Medium speed:-2 High speed:-3
	12	No used
	13	On position of 4-way valve display: ON: 1, OFF: 0
	14	DC voltage
	15	Overheat value
2	0	target frequency
	1	current frequency

Method of installation and trial run

SW01	SW02	Display of numeral pipe light with seven segments
	2	discharging frequency
	3	low pressure protection frequency in heating mode
	4	indoor coil average temperature
	5-15	No used
3	0-15	No used
4	0-15	No used
5	0-15	Indoor unit capacity (Pi): CODE : 0.8 denote 0.8(pi) ; 1 denote 1(pi) ; 1.2 denote 1.2(pi) ; 1.5 denote 1.5(pi) ; 2 denote 2(pi) ; 2.5 denote 2.5(pi) ; 3 denote 3(pi) ; 4denote 4(pi) ;
6	0-15	Required capacity of indoor unit (Decimal number): indoor S-CODE
7	0-15	Opening of indoor unit PMV (Decimal number):
8	0-15	No used
9	1-16	Sensor temperature (℃) of indoor unit TA (Decimal number): -26.0~67.0℃
10	1-16	Sensor temperature (℃) of indoor unit TC1 (Decimal number): -26.0~100.0℃
11	1-16	Sensor temperature (℃) of indoor unit TC2 (Decimal number): -26.0~100.0℃
12	1-16	No used
13	1-16	No used

Failure code

The nixie light of the outdoor unit control panel displays malfunction code directly when malfunction occurs. (This malfunction table only applies to the follow models referred in this manual.)

YCV080,YCV180 Malfunction code and malfunction confirming

Malfunction code	indication on wired controller	Malfunction position
1	21	Circuit TE of defrosting temperature sensor
2	22	Circuit TA of environment temperature sensor
3	23	Circuit TS of compressor suction temperature sensor
4	24	Circuit TD of compressor discharge temperature sensor
5	25	Circuit TC of condenser middle part temperature sensor
6		AC over current (reserved)
7		No used
9	29	IPM alarm
10	2A	Fault of reading EEROM
11	2B	Protecting action of compressor discharge temperature (TD)
12	2C	Protecting action of IPM temperature.(YCV080)
13	2D	Protection action of high pressure switch
14	2E	Protection action of low pressure switch
15	2F	Discharging temp. too low of inverter compressor
16	30	Protecting action of compressor suction temperature (TS)
19		Protecting action of compressor discharge temperature of low frequency(TD） (reserved)
20	34	Communicating fault of control panel and IPM
21	35	compressor over current
22	36	Communicating fault of indoor and outdoor units
23	37	IPM fault (Fo signal trip)
24	38	IPM temperature too high
25	39	Over current at acceleration state (hardware trip)
26	3A	Over current at steady state (hardware trip)
27	3B	Over current at deceleration state (hardware trip)
28	3C	DC bus under voltage
29	3D	DC bus over voltage
30	3E	Over current at acceleration state (software trip)

Failure code

Malfunction code	indication on wired controller	Malfunction position
31	3F	Overload trip
32	40	Over current at steady state (software trip)
33	41	Over current at decelaration state (software trip)
34	42	Compressor is not connected
35	43	Communication loss time out between IPM and control PCB
36	44	changeover failure
37	45	out of step
38	46	microchip reset
39	47	temp. sensor failure or 8~20Hz increasing frequency failure
40	48	DC current test circuit abnormal(YCV080)

Indoor failure code list

failure code on master unit	indication on wired controller	flash times of LED5 on indoor PCB/timer LED on remote receiver	failure code definition
01	01	1	indoor ambient temp. sensor TA failure
02	02	2	indoor coil temp. sensor TC1 failure
03	03	3	indoor pipe temp. sensor TC2 failure
04	04	4	indoor TES sensor failure
05	05	5	indoor EEPROM failure
06	06	6	communication between indoor and outdoor failure
07	07	7	communication between indoor and wired controller failure
08	08	8	indoor drainage failure
09	09	9	indoor repeated address failure
0A	0A	10	indoor repeated central control address failure
outdoor code	outdoor code	20	outdoor corresponding failure

Disposal

DISPOSAL:

Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.

It is prohibited to dispose of this appliance in domestic household waste.

For disposal there are several possibilities:

a) The municipality has established collection systems, where electronic waste can be disposed of ate least free of charge to the user.

b) When buying a new product, the retailer will take back the old product at least free of charge.

c) The manufacturer will take back the old appliance for disposal at least free of charge to user.

d) As old products contain valuable resources, they can be sold to scrap metal dealers.

Wild disposal of waste in forests and landscapes endangers your health when hazardous substances leak into the ground-water and find their way into the food chain.

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