



SPLIT-TYPE AIR CONDITIONER

INDOOR UNIT

OUTDOOR UNIT

Model Code:	AR09JSALBWKNCV(115V)	AR09JSALBWKXCV(115V)
	AR12JSALBWKNCV(115V)	AR12JSALBWKXCV(115V)
	AR09JSFLBWKNCV(230V)	AR09JSFLBWKXCV(230V)
	AR12JSFLBWKNCV(230V)	AR12JSFLBWKXCV(230V)
	AR18JSFLBWKNCV(230V)	AR18JSFLBWKXCV(230V)
	AR24JSFLBWKNCV(230V)	AR24JSFLBWKXCV(230V)

SERVICE *Manual*

AIR CONDITIONER



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1. Precautions

1-1 Installing the air conditioner

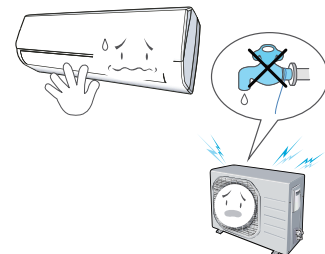
- Uses should not install the air conditioner by themselves.
Ask the dealer or authorized company to install the air conditioner except window-type air conditioner in U.S.A and Canada.
- If you don't install the air conditioner properly, it may cause a fire, a water leakage or an electric shock.
- You must install the air conditioner according to the national wiring regulations and safety regulations.
- Install the indoor unit higher than 2.5m from the floor to avoid the injury caused by the operation of the fan.
(except the window-type air conditioner)
- The manufacturer is not responsible for any accidents or injury caused by an incorrect installation.
- When installing the built-in type air conditioner, keep all electric cables such as the power cable and the connection cord in pipes, ducts, or cable channels to protect them from the danger of impact or any other incidents.

1-2 Power supply and circuit breaker

- If the power cord of the air conditioner is damaged, it must be replaced by the manufacturer or a qualified person in order to avoid a hazard.
- The air conditioner must be plugged into an independent circuit if applicable or connect the power cable to the auxiliary circuit breaker.
An all pole disconnection form the power supply must be incorporated in the fixed wiring with a contact opening of >3mm.
- Do not extend an electric cord to the air conditioner.
- The air conditioner must be plugged in after you complete the installation.

1-3 During operation

- Do not repair the air conditioner at your discretion.
It is recommended to contact a service center directly.
- Never spill any kind of liquid on the air conditioner.
If this happens, turn off the air conditioner and contact an authorized service center.
- Do not insert anything between the airflow blades to prevent damage of the inner fan and consequent injury.
Keep children away from the air conditioner.
- Do not place any obstacles in front of the air conditioner.
- Do not spray any kind of liquid into the indoor unit. If this happens, turn off the air conditioner and contact a service center.
- Make sure that the air conditioner is well ventilated at all times.
Do not place a cloth or other materials over it.
- Remove the batteries if you don't use the remote control for a long time. (If applicable)
- Use the remote control within 7 meters from the indoor unit. (If applicable)

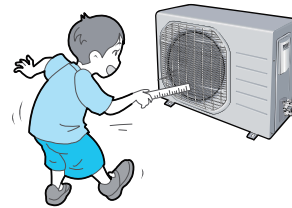


1-4 Disposing of the unit

- Before the throwing out the air conditioner, remove the batteries from the remote control.
- When you dispose of the air conditioner, consult your dealer. If pipes are removed incorrectly, refrigerant may blow out and cause air pollution. When it contacts with your skin, it can cause skin injury.
- The package of the air conditioner should be recycled or disposed of properly for environmental reasons.

1-5 Others

- Never store or load the air conditioner upside down or sideways to prevent the damage to the compressor.
- Young children or infirm persons should be always supervised when they use the air conditioner.
- Max current is measured according to IEC standard for safety.
- Current is measured according to ISO standard for energy efficiency.



2. Product Specifications

2-1 The Feature of Product

Cool Summer Offer

On those hot sweltering summer days and long restless nights, there is no better escape from the heat than the cool comforts of home. Your new air conditioner brings an end to exhausting hot summer days and lets you rest. Beat the heat with your own air conditioner this summer.

Fast cooling

If you want the strong and cool air, just select Fast function! It will get you the strongest air!

Single User

Use Single User function when you are alone at home. This function will set the temperature range limit to help you save energy while the air conditioner is operating in Cool/Heat mode.

good'sleepfunction

good'sleep function will allow you to have deep, good night's sleep by adjusting the temperature, fan speed and air flow direction.

2-2 Product Specifications

Model				Development Model
Item				AR09JSALBWKNCV (115V)
Type				WALL MOUNTED
Design	Indoor			
	Outdoor			
Performance	Cooling /Heating		W	2640/2640
			Btu/h	9000/9000
	Cooling /Heating		Kcal/h	2268/2268
	Dehumidifying		l/h	0.8
	Noise	Indoor/Outdoor	dB(H/L)	44↓/53↓
	EER	Cooling /Heating	W/W	3.82/3.72
		Cooling /Heating	Btu/Wh	13.04/12.68
	Power		V/Hz	115V/60Hz
Power	Power Consumption	Cooling /Heating	W	690/710
		Cooling /Heating	Btu/Wh	-
	Operating Current	Cooling /Heating	A	5.9/6.2
		Cooling /Heating		-
	Power Factor	Cooling/Heating	%	99%
	Power Cord	Length	m	-
		Number of Core Wire	-	-
		Capacity	A	14
Size	Outer Dimension	Indoor	W*H*D	31.49×11.02×7.28
		Outdoor	(inch)	27.56×21.73×10.08
	Weight(net)	Indoor	lbs	19.8
		Outdoor		66.0
	Refrigerant Pipe	Liquid	D*L(mm)	6.35
		Gas		9.52
	Drain Hose		D*L(mm)	Φ 21*600
Heat Exchanger		Indoor	mm	Φ7×2×15×617 1 in 2 out
		Outdoor	mm	Φ7×2×24×687 2 in 1 out
Refrigerant			lbs	2.09, R410A
Freezer Oil Capacity			cc	-
Refrigerant Control Unit				EEV
Compressor				ASN98D32UEZ
Protection Device(OLP)				internal
Air Purifying System				-
Cooling Test Condition				INDOOR UNIT : DB80.6 °F/WB66.2°F, OUTDOOR UNIT : DB95//WB75.2°F
Cooling Operating Condition				INDOOR UNIT : 62.6°F~89.6°F, OUTDOOR UNIT : 14°F~114.8°F
Heating Operating Condition				INDOOR UNIT : 19.4°F~80.6°F, OUTDOOR UNIT : 5°F~75.2°F

2-2 Product Specifications

Model				Development Model
Item				AR12JSALBWKNCV (115V)
Type				WALL MOUNTED
Design	Indoor			
	Outdoor			
Performance	Cooling /Heating		W	3520/3520
			Btu/h	12000/12000
	Cooling /Heating		Kcal/h	3024/3024
	Dehumidifying		l/h	1.0
	Noise	Indoor/Outdoor	dB(H/L)	45↓/59↓
	EER	Cooling /Heating	W/W	3.74/3.38
		Cooling /Heating	Btu/Wh	12.77/11.54
	Power		V/Hz	115V/60Hz
Power	Power Consumption	Cooling /Heating	W	940/1040
		Cooling /Heating	Btu/Wh	-
	Operating Current	Cooling /Heating	A	8.2/8.5
		Cooling /Heating	A	-
	Power Factor	Cooling/Heating	%	99%
	Power Cord	Length	m	-
		Number of Core Wire	-	-
		Capacity	A	14
Size	Outer Dimension	Indoor	W*H*D (inch)	35.43×11.02×7.95
		Outdoor		30.71×23.82×11.42
	Weight(net)	Indoor	lbs	26.4
		Outdoor		77.0
	Refrigerant Pipe	Liquid	D*L(mm)	6.35
		Gas		9.52
	Drain Hose		D*L(mm)	Φ 21*600
Heat Exchanger		Indoor	mm	Φ7×2×15×705 3 in 3 out
		Outdoor	mm	Φ7×2×26×732 4 in 2 out
Refrigerant			lbs	2.54 ,R410A
Freezer Oil Capacity			cc	-
Refrigerant Control Unit				EEV
Compressor				ASD102UKTA7JT
Protection Device(OLP)				internal
Air Purifying System				-
Cooling Test Condition				INDOOR UNIT : DB80.6 °F/WB66.2°F, OUTDOOR UNIT : DB95/WB75.2°F
Cooling Operating Condition				INDOOR UNIT : 62.6°F~89.6°F, OUTDOOR UNIT : 14°F~114.8°F
Heating Operating Condition				INDOOR UNIT : 19.4°F~80.6°F, OUTDOOR UNIT : 5°F~75.2°F

2-2 Product Specifications

Model				Development Model
Item				AR09JSFLBWKNVCV(230V)
Type				WALL MOUNTED
Design	Indoor			
	Outdoor			
Performance	Cooling /Heating		W	2640/2640
			Btu/h	9000/9000
	Cooling /Heating		Kcal/h	2268/2268
	Dehumidifying		l/h	0.8
	Noise	Indoor/Outdoor	dB(H/L)	44↓/53↓
	EER	Cooling /Heating	W/W	3.82/3.72
		Cooling /Heating	Btu/Wh	13.04/12.68
	Power		V/Hz	208-230V/60Hz
Power	Power Consumption	Cooling /Heating	W	690/710
		Cooling /Heating	Btu/Wh	-
	Operating Current	Cooling /Heating	A	3.5/3.9
		Cooling /Heating	A	-
	Power Factor	Cooling/Heating	%	80%
	Power Cord	Length	m	-
		Number of Core Wire	-	-
		Capacity	A	14
Size	Outer Dimension	Indoor	W*H*D (inch)	31.49×11.02×7.28
		Outdoor		27.56×21.73×10.08
	Weight(net)	Indoor	lbs	19.8
		Outdoor		66.0
	Refrigerant Pipe	Liquid	D*L(mm)	6.35
		Gas		9.52
	Drain Hose		D*L(mm)	Φ 21*600
Heat Exchanger		Indoor	mm	Φ7×2×15×617 1 in 2 out
		Outdoor	mm	Φ7×2×24×687 2 in 1 out
Refrigerant			lbs	2.09, R410A
Freezer Oil Capacity			cc	-
Refrigerant Control Unit				EEV
Compressor				ASN98D32UEZ
Protection Device(OLP)				internal
Air Purifying System				-
Cooling Test Condition				INDOOR UNIT : DB80.6 °F/WB66.2°F, OUTDOOR UNIT : DB95//WB75.2°F
Cooling Operating Condition				INDOOR UNIT : 62.6°F~89.6°F, OUTDOOR UNIT : 14°F~114.8°F
Heating Operating Condition				INDOOR UNIT : 19.4°F~80.6°F, OUTDOOR UNIT : 5°F~75.2°F

2-2 Product Specifications

Model				Development Model
Item				AR12JSFLBWKNVCV(230V)
Type				WALL MOUNTED
Design	Indoor			
	Outdoor			
Performance	Cooling /Heating		W	3520/3520
			Btu/h	12000/12000
	Cooling /Heating		Kcal/h	3024/3024
	Dehumidifying		l/h	1.0
	Noise	Indoor/Outdoor	dB(H/L)	45↓/59↓
	EER	Cooling /Heating	W/W	3.74/3.38
		Cooling /Heating		12.77/11.54
	Power		V/Hz	208-230V/60Hz
Power	Power Consumption	Cooling /Heating	W	940/1040
		Cooling /Heating	Btu/Wh	-
	Operating Current	Cooling /Heating	A	5.0/5.2
		Cooling /Heating	A	-
	Power Factor	Cooling/Heating	%	80%
	Power Cord	Length	m	-
		Number of Core Wire	-	-
		Capacity	A	14
Size	Outer Dimension	Indoor	W*H*D (inch)	35.43×11.02×7.95
		Outdoor		30.71×23.82×11.42
	Weight(net)	Indoor	lbs	26.4
		Outdoor		77.0
	Refrigerant Pipe	Liquid	D*L(mm)	6.35
		Gas		9.52
	Drain Hose		D*L(mm)	Φ 21*600
Heat Exchanger		Indoor	mm	Φ7×2×15×705 3 in 3 out
		Outdoor	mm	Φ7×2×26×732 4 in 2 out
Refrigerant			lbs	2.54, R410A
Freezer Oil Capacity			cc	-
Refrigerant Control Unit				EEV
Compressor				ASD102UKTA7JT
Protection Device(OLP)				internal
Air Purifying System				-
Cooling Test Condition				INDOOR UNIT : DB80.6 °F/WB66.2°F, OUTDOOR UNIT : DB95/WB75.2°F
Cooling Operating Condition				INDOOR UNIT : 62.6°F~89.6°F, OUTDOOR UNIT : 14°F~114.8°F
Heating Operating Condition				INDOOR UNIT : 19.4°F~80.6°F, OUTDOOR UNIT : 5°F~75.2°F

2-2 Product Specifications

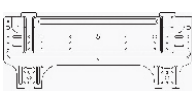
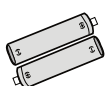
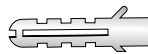
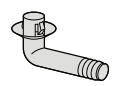
Model				Development Model
Item				AR18JSFLBWKNVCV(230V)
Type				WALL MOUNTED
Design	Indoor			
	Outdoor			
Performance	Cooling /Heating		W	5280/5570
			Btu/h	18000/19000
	Cooling /Heating		Kcal/h	4536/4788
	Dehumidifying		l/h	1.8
	Noise	Indoor/Outdoor	dB(H/L)	53↓/60↓
	EER	Cooling /Heating	W/W	3.56/3.31
		Cooling /Heating	Btu/Wh	12.16/11.31
	Power		V/Hz	208-230V/60Hz
Power	Power Consumption	Cooling /Heating	W	1480/1680
		Cooling /Heating	Btu/Wh	-
	Operating Current	Cooling /Heating	A	7.8/8.9
		Cooling /Heating	A	-
	Power Factor	Cooling/Heating	%	81%
	Power Cord	Length	m	-
		Number of Core Wire	-	-
		Capacity	A	14
Size	Outer Dimension	Indoor	W*H*D (inch)	40.67×12.32×7.95
		Outdoor		35.51×25.59×12.09
	Weight(net)	Indoor	lbs	28.6
		Outdoor		94.6
	Refrigerant Pipe	Liquid	D*L(mm)	6.35
		Gas		12.7
	Drain Hose		D*L(mm)	Φ 21*600
Heat Exchanger		Indoor	mm	Φ7×2×19×797 4 in 4 out
		Outdoor	mm	Φ7×2×28×894 5 in 5 out
Refrigerant			lbs	3.86, R410A
Freezer Oil Capacity			cc	-
Refrigerant Control Unit				EEV
Compressor				DA150S1C-20FZ
Protection Device(OLP)				internal
Air Purifying System				
Cooling Test Condition				INDOOR UNIT : DB80.6 °F/WB66.2°F, OUTDOOR UNIT : DB95/WB75.2°F
Cooling Operating Condition				INDOOR UNIT : 62.6°F~89.6°F, OUTDOOR UNIT : 14°F~114.8°F
Heating Operating Condition				INDOOR UNIT : 19.4°F~80.6°F, OUTDOOR UNIT : 5°F~75.2°F

2-2 Product Specifications

Model				Development Model
Item				AR24JSFLBWKNVCV(230V)
Type				WALL MOUNTED
Design	Indoor			
	Outdoor			
Performance	Cooling /Heating		W	6450/7030
			Btu/h	22000/24000
	Cooling /Heating		Kcal/h	5544/6048
	Dehumidifying		l/h	2.8
	Noise	Indoor/Outdoor	dB(H/L)	52↓/61↓
	EER	Cooling /Heating	W/W	3.56/3.27
		Cooling /Heating	Btu/Wh	12.15/11.16
	Power		V/Hz	208-230V/60Hz
Power	Power Consumption	Cooling /Heating	W	1810/2150
		Cooling /Heating	Btu/Wh	-
	Operating Current	Cooling /Heating	A	9.3/11.4
		Cooling /Heating	A	-
	Power Factor	Cooling/Heating	%	81%
	Power Cord	Length	m	-
		Number of Core Wire	-	-
		Capacity	A	14
Size	Outer Dimension	Indoor	W*H*D	46.69×13.39×10.24
		Outdoor	(inch)	35.43×31.96×14.17
	Weight(net)	Indoor	lbs	37.4
		Outdoor	lbs	136.4
	Refrigerant Pipe	Liquid	D*L(mm)	9.52
		Gas	D*L(mm)	15.88
	Drain Hose		D*L(mm)	Φ21×1300
Heat Exchanger	Indoor	mm		Φ7×2×19×896 6 in 6 out
	Outdoor	mm		Φ7×2×36×998 6 in 6 out
Refrigerant			lbs	4.74, R410A
Freezer Oil Capacity			cc	-
Refrigerant Control Unit				EEV
Compressor				DA200S2C-10MT
Protection Device(OLP)				internal
Air Purifying System				
Cooling Test Condition				INDOOR UNIT : DB80.6 °F/WB66.2°F, OUTDOOR UNIT : DB95//WB75.2°F
Cooling Operating Condition				INDOOR UNIT : 62.6°F~89.6°F, OUTDOOR UNIT : 14°F~114.8°F
Heating Operating Condition				INDOOR UNIT : 19.4°F~80.6°F, OUTDOOR UNIT : 5°F~75.2°F

2-3 Accessory and Option Specifications

Accessories in the indoor unit case

Installation Plate (1) ** 9**12**  DB82-02428A	Installation Plate (1) **18**24**  DB82-02429A	Remote controller (1)  DB82-02651A	User's & Installation Manual (1) 
Batteries for Remote controller (2) 	Clip anchor **12/18** (6) **24** (8) 	Self-tapping screw **12/18** (6) **24** (8) 	Self-tapping screw **12/18/24** (2) 
Drain Plug (1) 			

Accessories in the outdoor unit case

Rubber Leg (4) 

3. Alignment and Adjustments

3-1 Checking before use

Operation ranges

The table below indicates the temperature and humidity ranges the air conditioner can be operated within. Refer to the table for efficient use.

Mode	Indoor temperature	Outdoor temperature	Indoor humidity
Cooling	62.6°F~89.6°F	14°F~114.8°F	Relative humidity 80% or less
Heating	9.4°F~80.6°F,	5°F~75.2°F	-

- ▶ If the air conditioner operates in cooling mode for long period of time in high humidity area, dew may be formed.
- ▶ If the outdoor temperature goes down to -5 °C, heating capacity may decrease as much as 60 %~70 % of specified capacity according to the using conditions.

Maintaining your air conditioner

Internal protections via the unit control system

- ▶ This internal protection operates if an internal fault occurs in the air conditioner.

Type	Description
Against cold air	The internal fan will be off to prevent cold air when the heat pump is heating.
Defrost cycle	The internal fan will be off to defrost ice when the heat pump is heating.
Protect compressor	The air conditioner does not start operating immediately to help protect the compressor of the outdoor unit after it has been started.



NOTE

- If the heat pump is operating in Heat mode, defrost cycle is actuated to help remove frost from an outdoor unit that may have deposited at low temperatures.
The internal fan is switched off automatically and restarted only after the defrost cycle is completed.

3-2 Display Error and Check Method

3-2-1 Indoor Display Error and Check Method

9/12/18/24K

Digital display(LED)	Fault type
E0	Indoor unit/ outdoor unit communication fault
E1	Indoor room temp. sensor(IRT) fault
E2	Indoor pipe temp. sensor (IPT) fault
E3	Outdoor pipe temp. sensor (OPT) fault
E4	Abnormal system(Lack of refrigerant fault)
E6	Indoor fan motor fault
E7	Outdoor temp. sensor fault
E8	Discharge temp. sensor fault
E9	Inverter driver fault
EF	Outdoor fan motor fault (DC motor) , 16 times means no signal from motor, 20 times means protection of motor
EA	Current sensor fault
EE	Indoor unit EEPROM fault 、 Outdoor unit EEPROM fault
EP	Temp. switch fault (on top of the compressor)
EU	Voltage sensor fault

3-3 Checking the remote controller

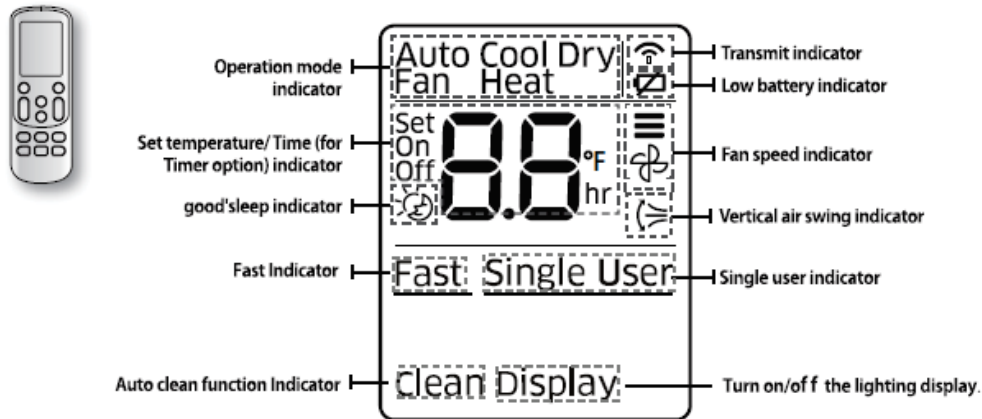
- Point the remote controller towards the remote controller receiver of the indoor unit.
- When you properly press the button on the remote controller, you will hear beep sound from the indoor unit and a transmit and a transmit indicator() appears on the remote controller display.

3-3-1 Remote controller buttons



• In case you wish to cancel the options or settings that you have just set, press the **Options** or **Settings** button again, then the most recently selected item will blink and you may simply cancel it by pressing the **SET** button while selected item is blinking.

3-3-2 Remote controller display



• Make sure that the water does not get to the remote controller.

Low Battery warning

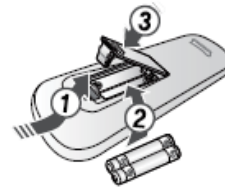
When the battery is exhausted, (🔋) will be displayed in the remote controller display. When the icon appears, change the batteries. The remote controller requires two 1.5 V AAA type batteries.

Storing the remote controller

When you do not use the remote controller for long time, remove the batteries from the remote controller and store it.

Inserting the batteries

1. Push the lever as arrow indicates on the rear side of the remote controller and pull up.
2. Insert two AAA batteries.
Check and match the "+" and "-" signs accordingly. Make sure you have inserted the batteries in correct position.
3. Close the cover by place it back to its original position.
You should hear click sound when the cover is locked properly.



- The signal may not be received properly if electronic fluorescent lamps such as inverter fluorescent lamps are operating in the same space.
- If other electrical products operate by the remote controller, call your nearest contact center.

4. Disassembly and Reassembly

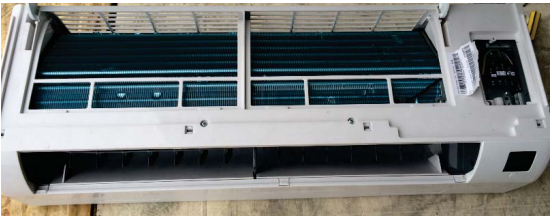
■ Necessary Tools

Item	Remark
+SCREW DRIVER	
MONKEY SPANNER	
- SCREW DRIVER	

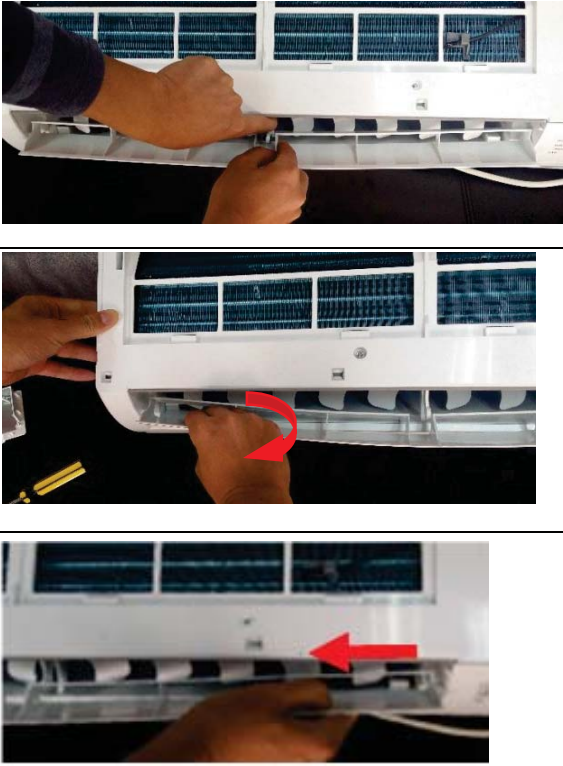
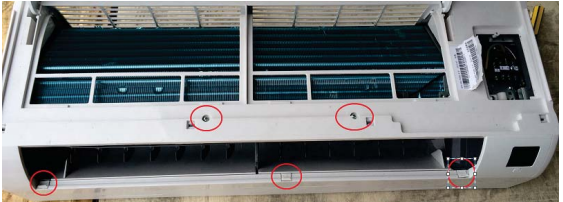
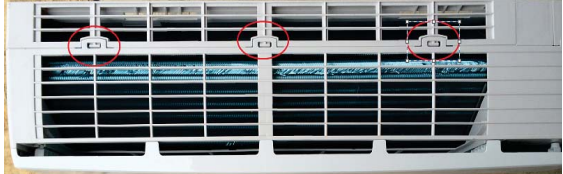
4-1. Indoor Unit

AR09JSALBWKNCV (115V)
AR09JSFLBWKNCV(230V)

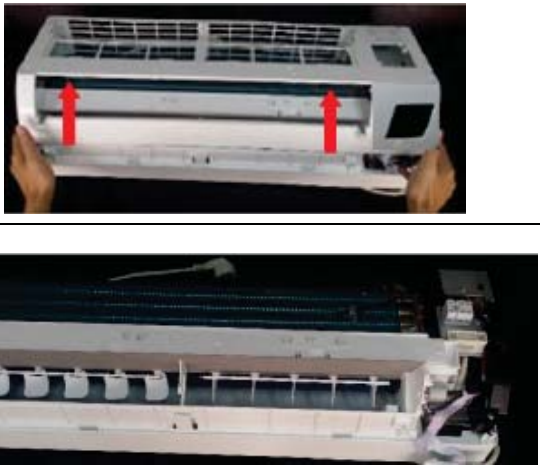
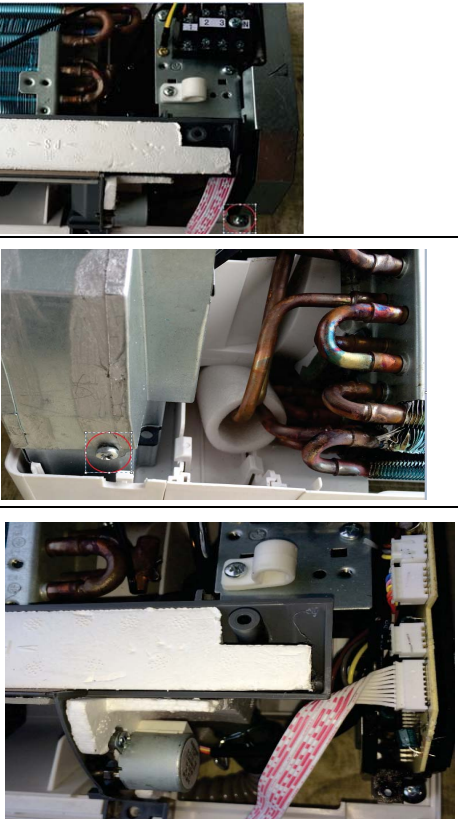
AR12JSALBWKNCV (115V)
AR12JSALBWKNCV (230V)

No.	Content	Picture
1	Open the front panel and remove it.	
2	Remove 1 screw fixing on the terminal cover.	
3	Remove the terminal cover and security cover.	
4	Slide out the 2 air filters.	 

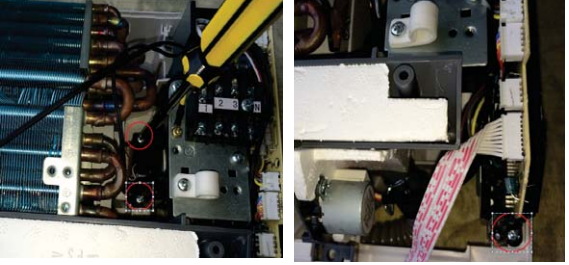
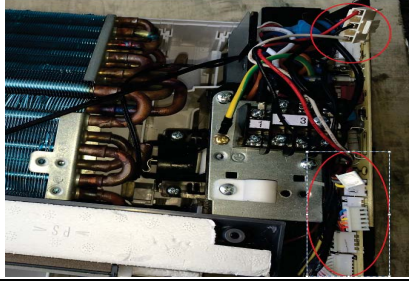
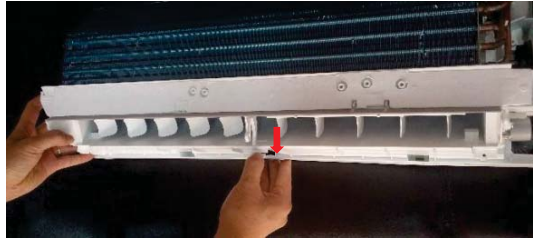
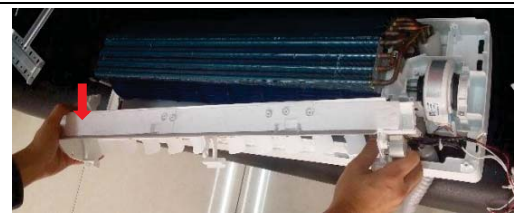
4-1. Indoor Unit

5	Take out the vane from the water drainage assembly.	
6	Take out the screw cover and remove screws fixing on the frame.	
7	Unfasten the front panel and pull forward it slightly. (2 circled positions hooked.)	
8	Take the display PCB cover off.	

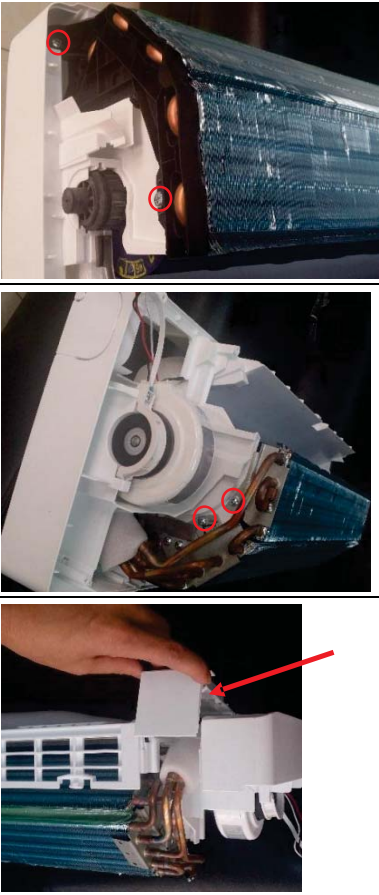
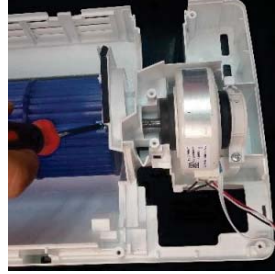
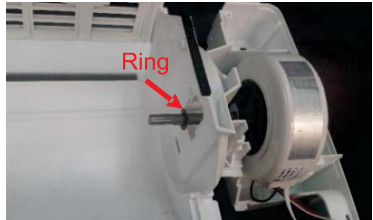
4-1. Indoor Unit

9	Take out the face frame.	
10	Remove 2 screws and take out the electronic box cover.	

4-1. Indoor Unit

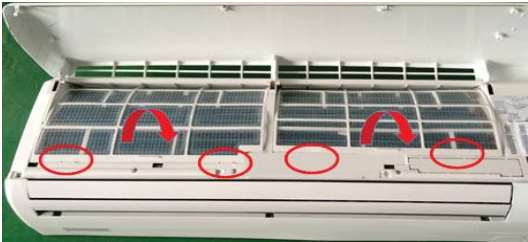
11	Remove the screws, connectors and take out the control box.	  
12	Take out the water drainage assemble.	  

4-1. Indoor Unit

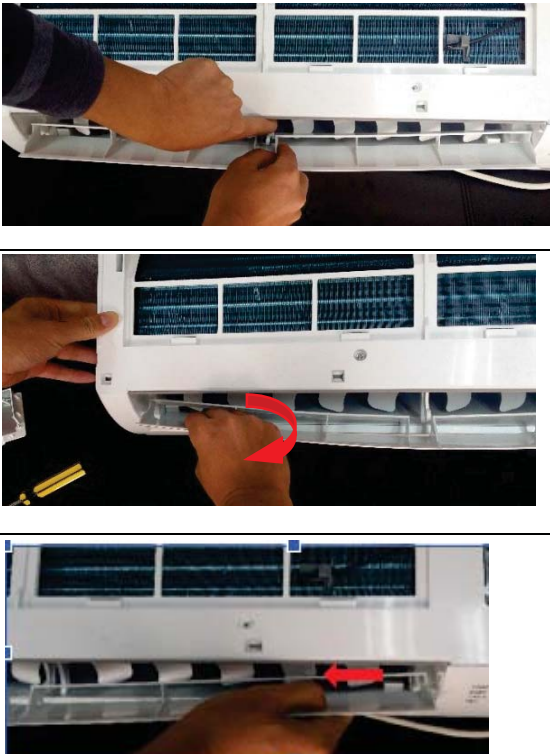
13	Remove 4 screws and the In and Out Pipe Fixer.	 The first photograph shows the top of the indoor unit with four screws circled in red. The second photograph shows the unit with the screws removed and the In and Out Pipe Fixer being detached. The third photograph shows a hand using a screwdriver to remove a screw from the unit, with a red arrow pointing to the screw.
14	Take out the evaporator	 The photograph shows the evaporator coil, which is a blue, ribbed metal tube, being removed from the indoor unit.
15	Loosen the screw of cross flow fan and separate the cross flow fan and fan motor	 The photograph shows the cross flow fan and fan motor being loosened. A screwdriver is used to loosen the screw that holds the fan to the motor.
16	Remark: When assembling, insert the cross flow fan to the ring position.	 The photograph shows the cross flow fan being inserted into the ring position. A red arrow points to the fan, and the word "Ring" is written in red above it.

4-1. Indoor Unit

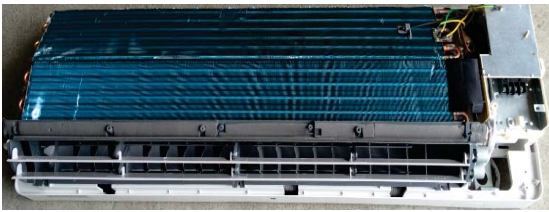
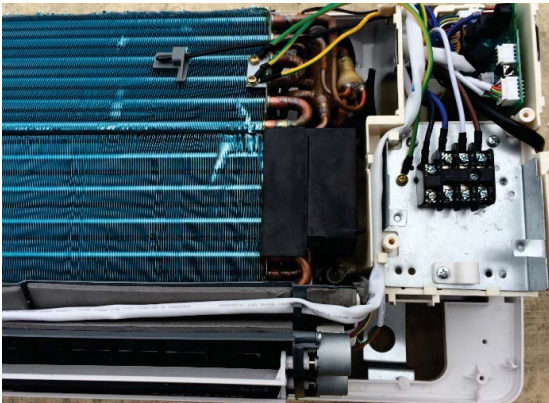
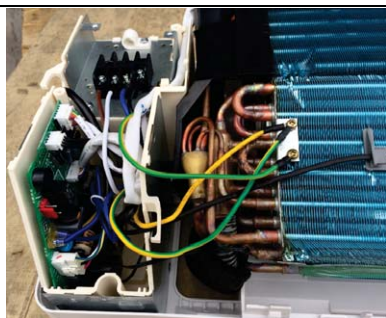
AR18JSFLBWKNCV(230V)

No.	Content	Picture
1	Open the front panel and remove it.	
2	Remove 1 screw fixing on the terminal cover.	
3	Remove the terminal cover	
4	Slide out the 2 air filters.	 

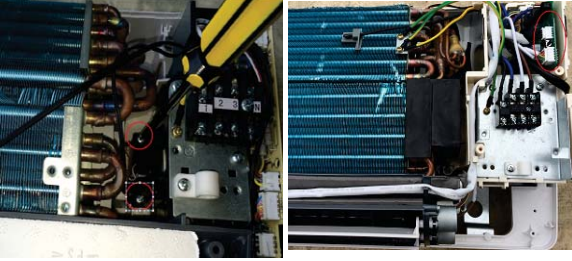
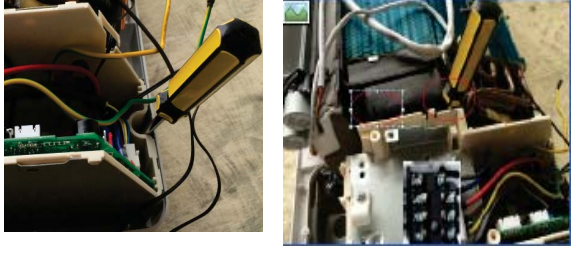
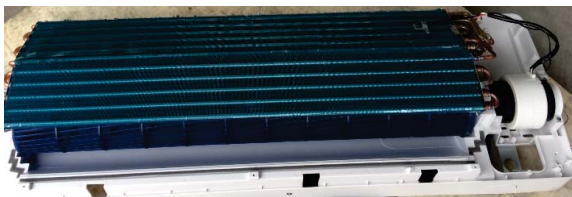
4-1. Indoor Unit

5	Take out the vane from the water drainage assembly.	
6	Take out the screw cover and remove screws fixing on the frame.	
7	Unfasten the front panel and pull forward it slightly. (2 circled positions hooked.)	
8	Take the display PCB cover off.	

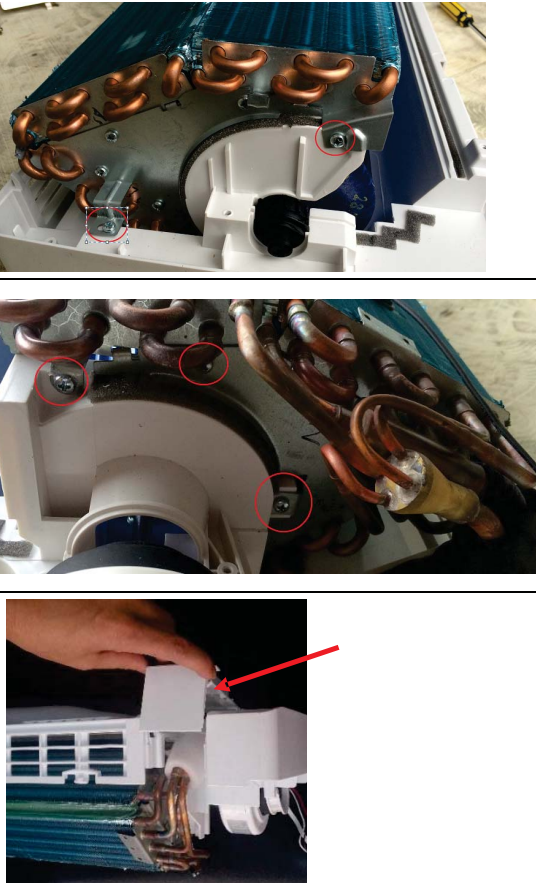
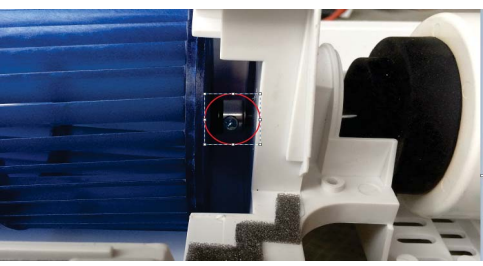
4-1. Indoor Unit

9	Take out the face frame.	 
10	Remove 2 screws and take out the electronic box cover.	 

4-1. Indoor Unit

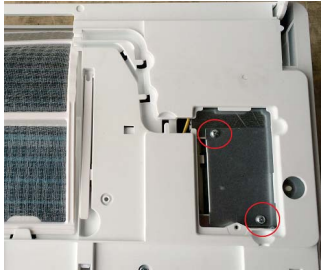
11	Remove the screws, connectors and take out the control box.	  
12	Take out the water drainage assemble.	  

4-1. Indoor Unit

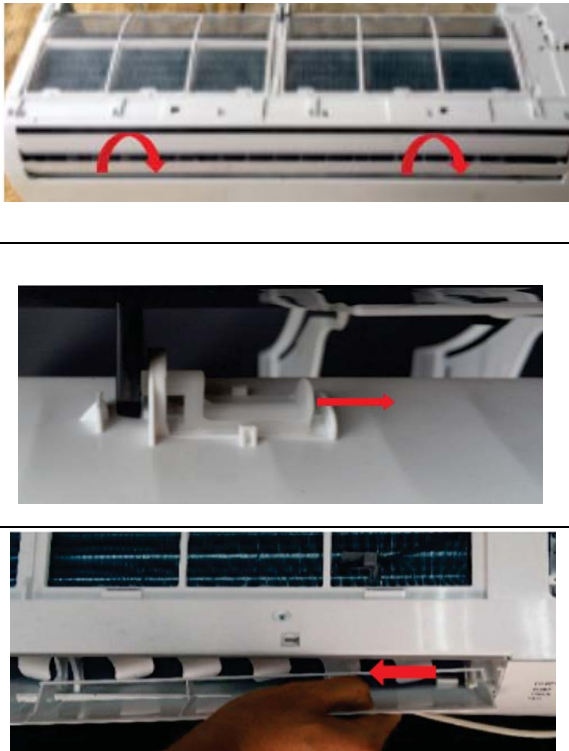
13	Remove 4 screws and the In and Out Pipe Fixer.	
14	Take out the evaporator	
15	Loosen the screw of cross flow fan and separate the cross flow fan and fan motor	
16	Remark: When assembling, insert the cross flow fan to the ring position.	

4-1. Indoor Unit

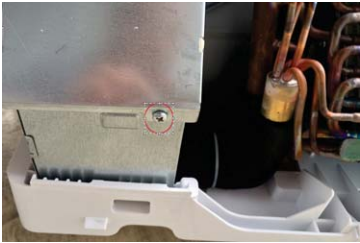
AR24JSFLBWKNVCV(230V)

No.	Content	Picture
1	Open the front panel and remove it.	
2	Remove 1 screw fixing on the terminal cover.	
3	Remove the terminal cover	
4	Slide out the 2 air filters.	 

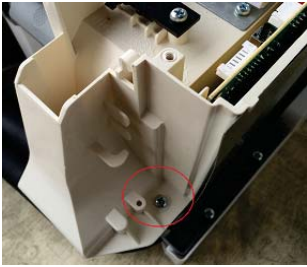
4-1. Indoor Unit

5	Take out the vane from the water drainage assembly.	 The first image shows the front of the indoor unit with red curved arrows indicating the vane is to be lifted. The second image is a close-up of the vane being pushed out of its housing, with a red arrow pointing right. The third image shows a hand pulling the vane out of the drainage assembly, with a red arrow pointing left.
6	Take out the screw cover and remove screws fixing on the frame.	 The image shows the bottom of the indoor unit frame with several screw covers circled in red, indicating they should be removed.
7	Unfasten the front panel and pull forward it slightly. (2 circled positions hooked.)	 The image shows the front panel of the indoor unit with two positions circled in red, indicating where it is hooked to the frame.
8	Take the display PCB cover off.	 The image shows a hand pulling the display PCB cover off the front panel, with a red curved arrow indicating the direction of removal.

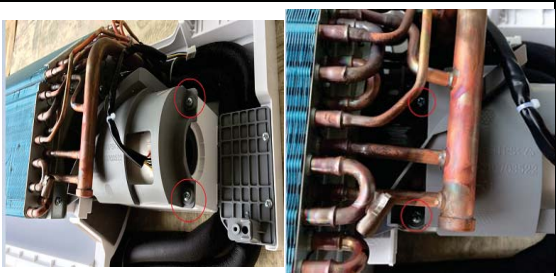
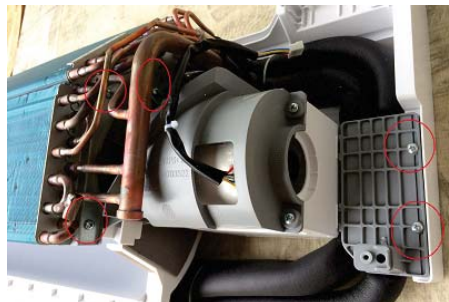
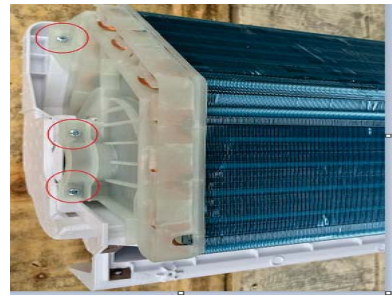
4-1. Indoor Unit

9	Take out the face frame.	 
10	Remove 2 screws and take out the electronic box cover.	  

4-1. Indoor Unit

11	Remove the screws, connectors and take out the control box.	  
12	Take out the water drainage assemble.	  

4-1. Indoor Unit

13	Remove the 12 screws	  
14	Take out the evaporator	
15	Loosen the screw of cross flow fan and separate the cross flow fan and fan motor	
16	Remark: When assembling, insert the cross flow fan to the ring position.	

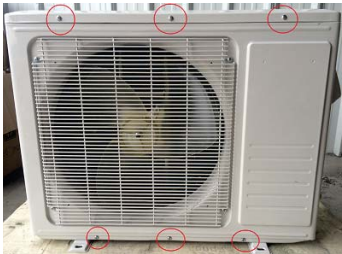
4-2. Outdoor Unit

AR09JSALBWKNVCV (115V)
AR09JSFLBWKNVCV (230V)

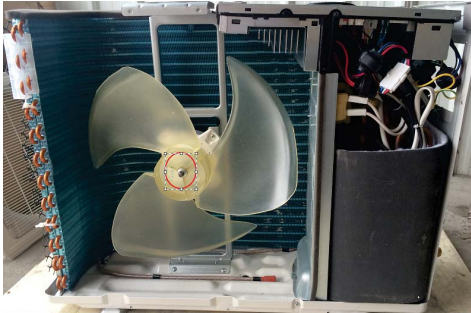
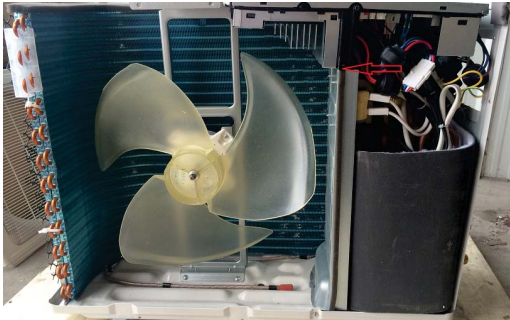
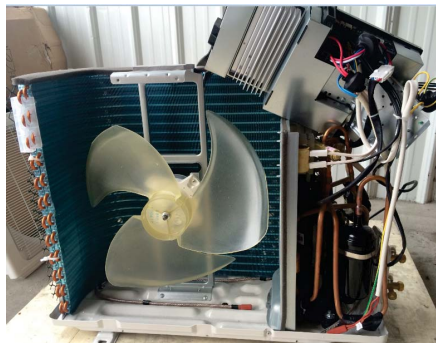
AR12JSALBWKNVCV (115V)
AR12JSALBWKNVCV (230V)

No.	Content	Picture
1	Remove the fixed screw and control box cover.	
2	Take out the 2 screws on the right side of top plate.	
3	Take out screws on the left side of top plate.	

4-2. Outdoor Unit

4	The screws on the front panel removed.	 A photograph of the front of a white outdoor air conditioning unit. The fan grille is visible. Six screws are circled in red: three along the top edge and three along the bottom edge.
5	The screws on the left and back side of grille supporter removed.	  Two photographs showing the removal of the grille supporter. The top photo is a left-side view showing the blue mesh filter and one screw circled in red at the bottom. The bottom photo is a back view showing the blue mesh filter and one screw circled in red at the bottom right.
6	The screws on the right side of right plate removed.	 A photograph of the right side of the outdoor unit. Two screws are circled in red at the bottom, near the refrigerant lines.
7	Unscrew screws on the back side of right plate and removed the right plate.	 A photograph of the back of the outdoor unit. Three screws are circled in red on the left side of the blue mesh filter.

4-2. Outdoor Unit

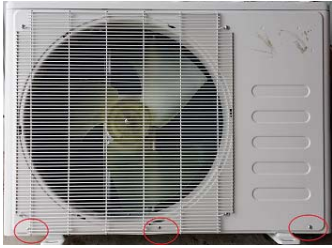
8	Remove the screws fixed on the control box.	
9	Remove the flange nut and take out the outdoor fan.	
10	Remove the screw fixing the PCB box	 

4-2. Outdoor Unit

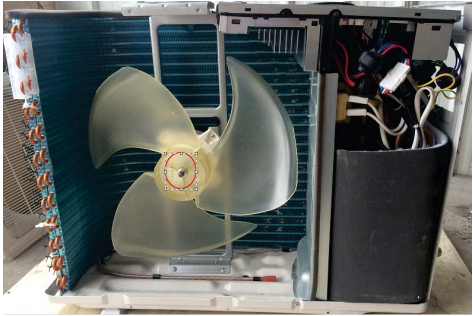
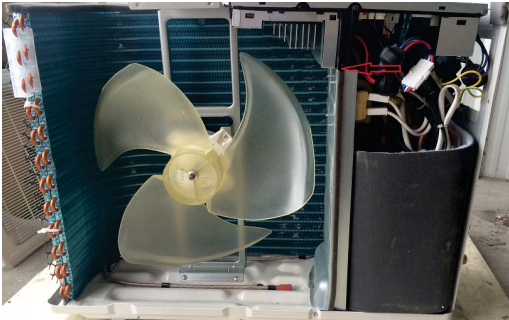
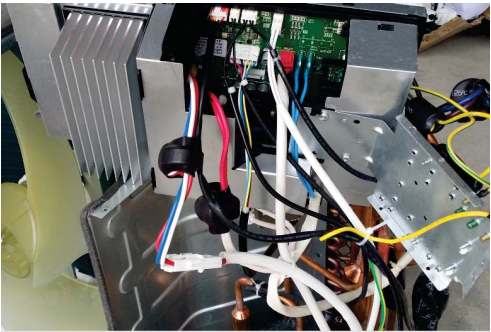
AR18JSFLBWKNCV(230V)

No.	Content	Picture
1	Remove the fixed screw and control box cover.	
2	Take out the 2 screws on the right side of top plate.	
3	Take out screws on the left side of top plate.	

4-2. Outdoor Unit

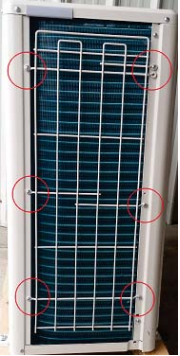
4	The screws on the front panel removed.	
5	The screws on the left and back side of grille supporter removed.	
6	The screws on the right side of right plate removed.	
7	Unscrew screws on the back side of right plate and removed the right plate.	

4-2. Outdoor Unit

8	Remove the screws fixed on the control box.	
9	Remove the flange nut and take out the outdoor fan.	
10	Remove the screw fixing the PCB box	 

4-2. Outdoor Unit

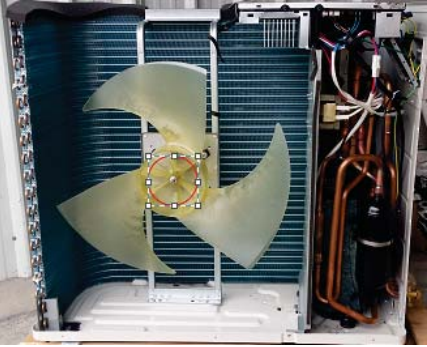
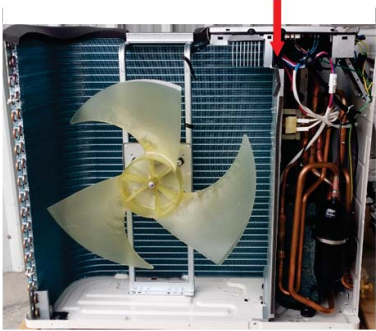
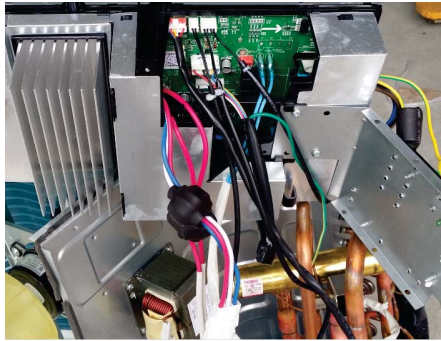
AR24JSFLBWKNCV(230V)

No.	Content	Picture
1	Remove the fixed screw and control box cover.	
2	Take out the 2 screws on the right side of top plate.	
3	Take out screws on the left side of top plate.	
4	The screws on the left side of grille removed	

4-2. Outdoor Unit

5	The screws on the front panel removed.	
6	The screws on the left and back side of grille supporter removed.	
7	The screws on the right side of right plate removed.	
8	Unscrew screws on the back side of right plate and removed the right plate.	

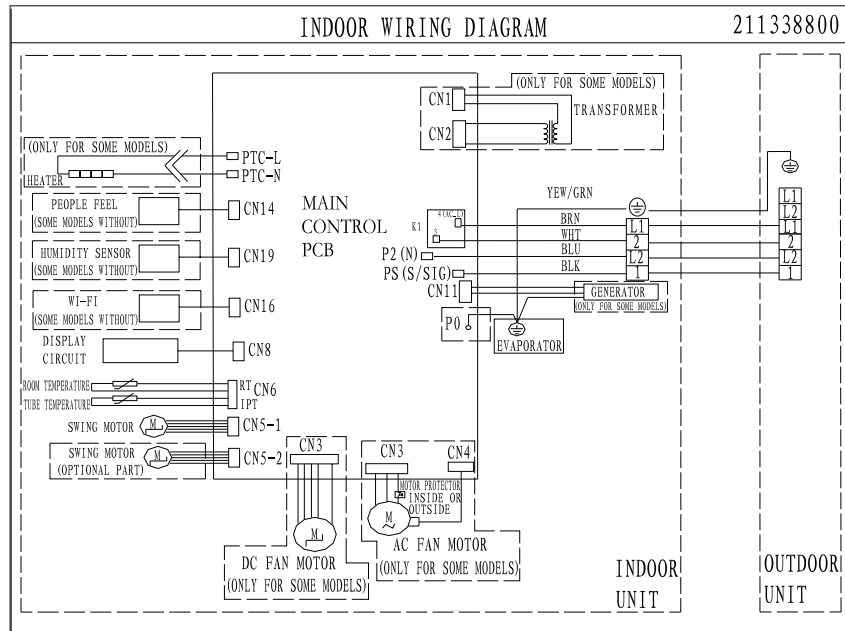
4-2. Outdoor Unit

9	Remove the screws fixed on the control box.	
10	Remove the flange nut and take out the outdoor fan.	
11	Remove the screw fixing the PCB box	 

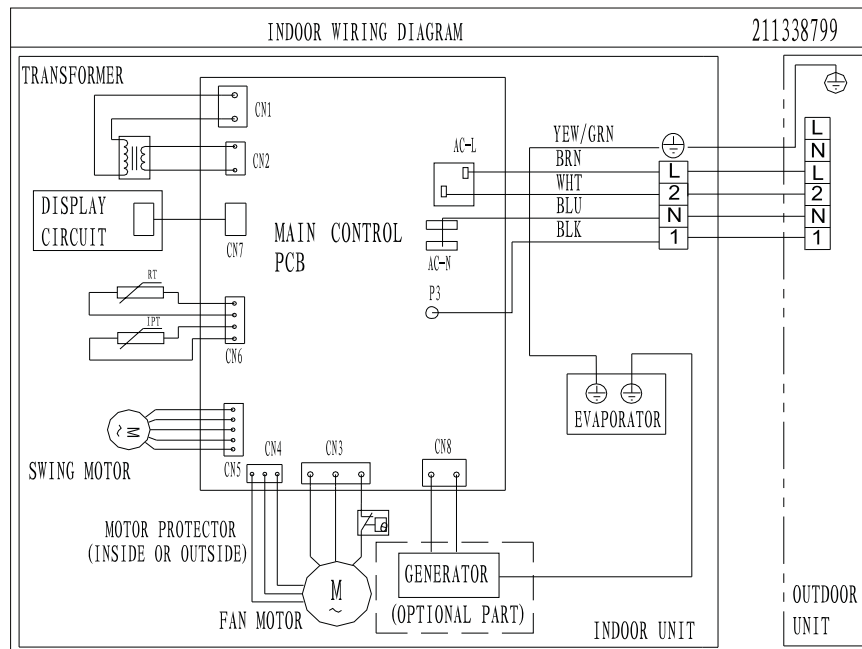
5. Wiring Diagram

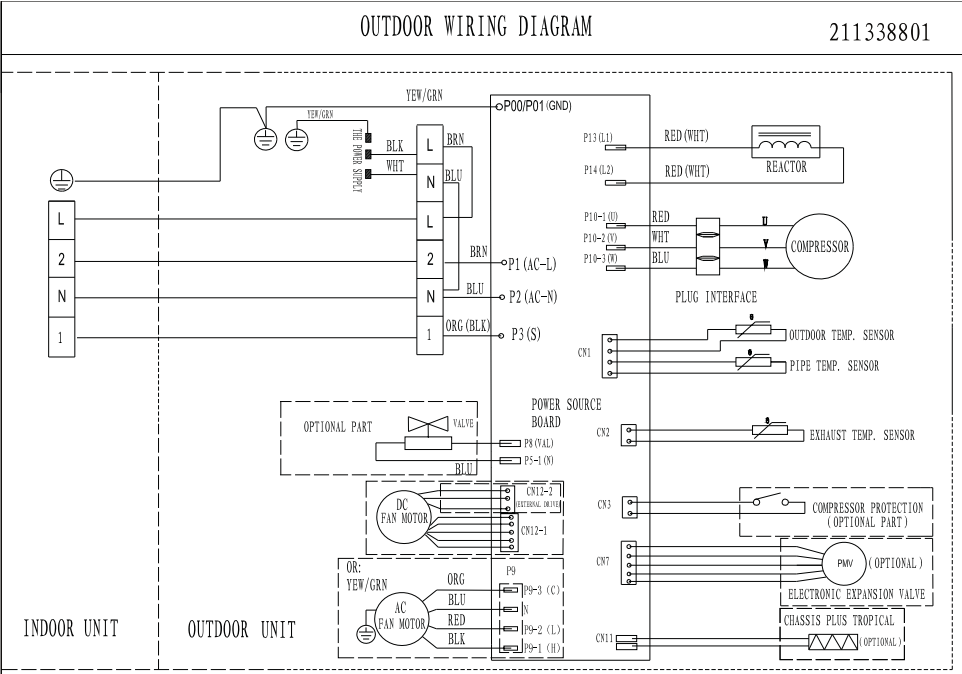
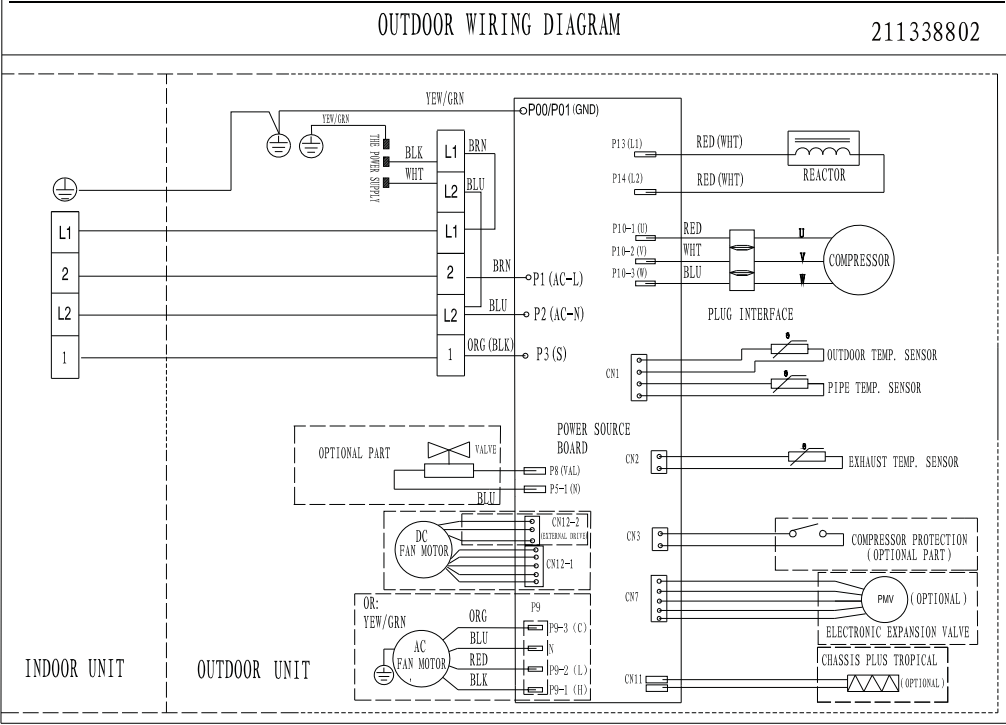
5-1 Indoor Unit

AR09/12/18/24



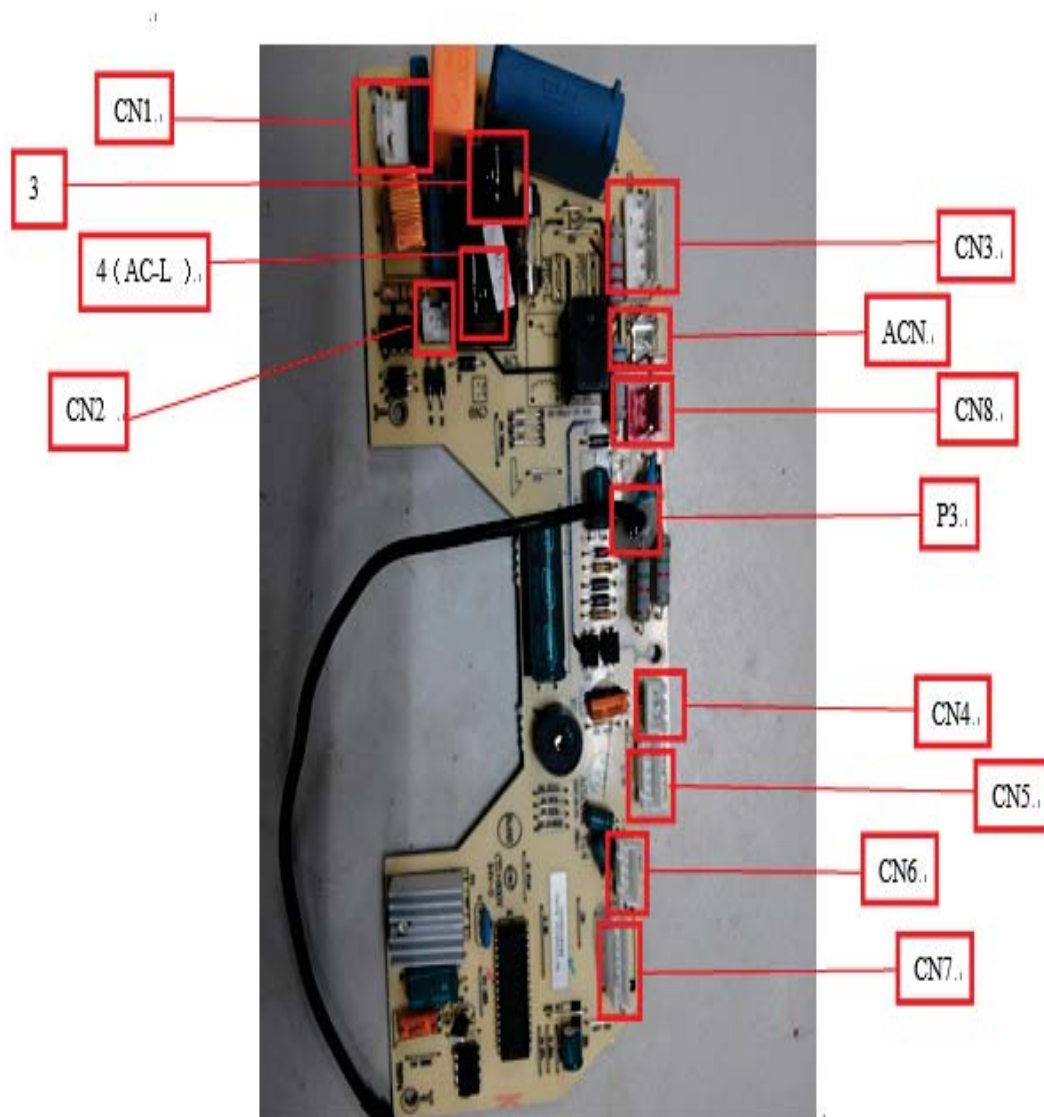
AR09 (115V)





6. PCB Diagram -Indoor Main PCB

6-1 Indoor main PCB--9k/12k

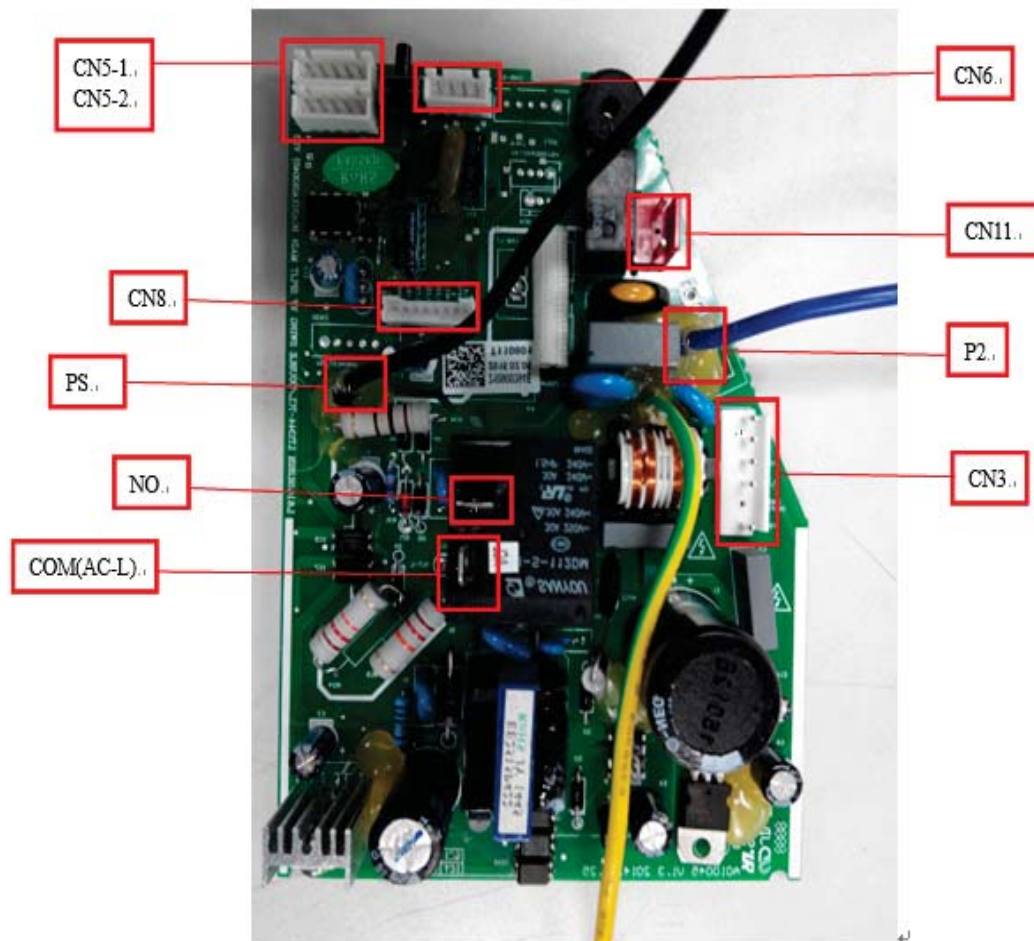


6-1 Indoor main PCB--9k/12k

CN1:transformer IN #1:POWER L #3:POWER N	3:POWER L (OUT) 1# POWER L(OUT)	4(AC-L):POWER L (IN) 1#POWER L (IN)
CN2:transformer OUT #1:12V AC #2: 12V AC	CN3:AC-MOTOR #1:Motor start capacitor #3:AC phase control singal #5:Power N	ACN:POWER N #1:POWER N #2:POWER N
CN8:Ion #1:AC phase control singa #3:POWER N	P3:Communication line #1:signal of communication	CN4:MOTOR_F/B #1:DC 5V #2:Feedback signal input #3:GND
CN5:STEP MOTOR #1~4: STEP MOTOR signal #5: GND	CN6:TEMPERATURE SENSOR #1:RT_TEMP #2~3:GND #4:IPT_TEMP	CN4:MOTOR_F/B #1:DC 5V #2:Feedback signal input CN7:DISPLAY #1:+5V #2:GND #3:REC #4:LED1 #5:LED2 #6:LED3 #7:KEY #8:CLK #9:DATA

6.PCB Diagram

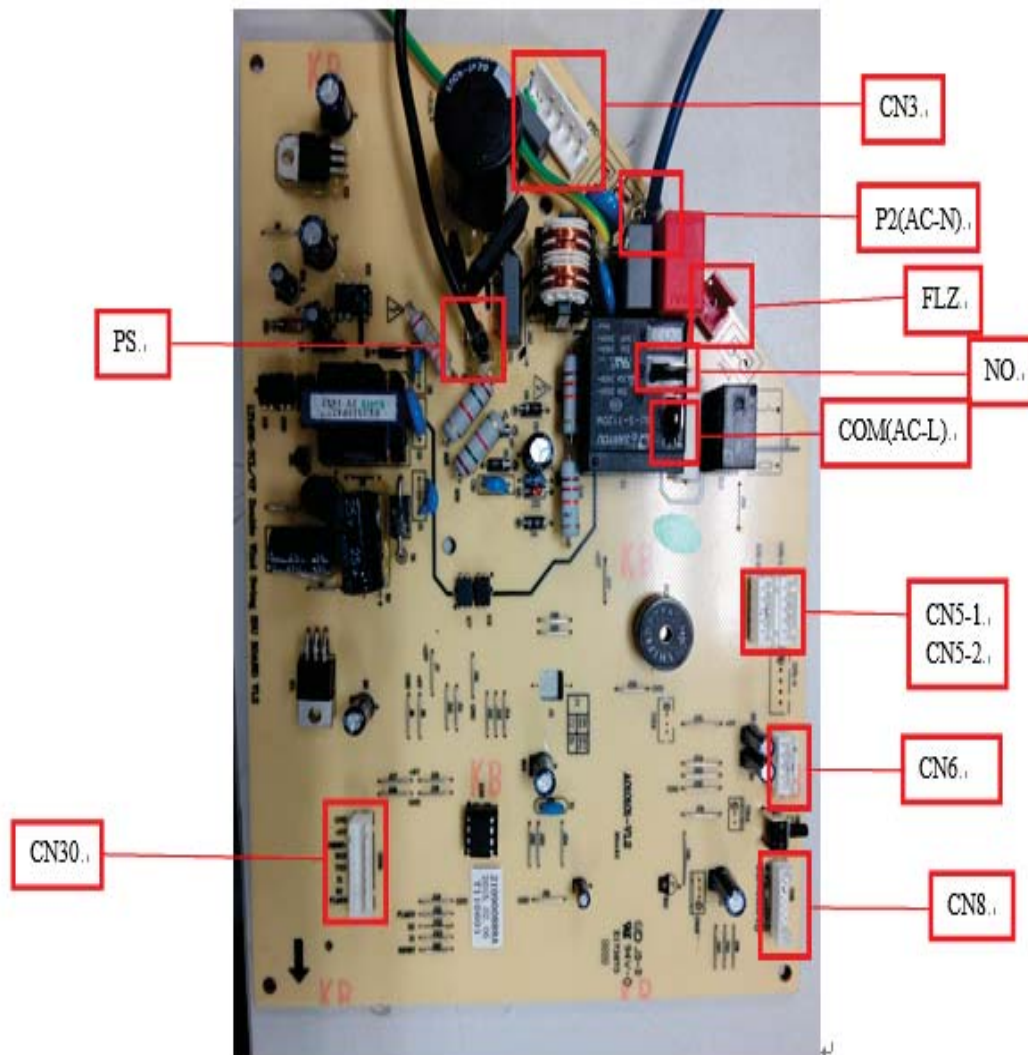
6-2 Indoor main PCB--18k



P2:POWER N #1:POWER N	NO:POWER L (OUT) 1# POWER L (OUT)	COM(AC-L):POWER L (IN) 1#POWER L (IN)
CN11:lon #1:AC phase control singa #3:POWER N	CN3:DC-MOTOR #1:Feedback signal input #2: DC phase control singa #3:+15V #4: GND(hot) #5: #6: +310VDC	CN5-1:STEP MOTOR CN5-2:STEP MOTOR #1: +12V #2~5:STEP MOTOR signal
CN6:TEMPERATURE SENSOR #1:RT_TEMP #2~3:GND #4:IPT_TEMP	PS:Communication line #1: signal of communication	CN8:DISPLAY #1:GND #2:+5V #3:LED3 #4:LED2 #5:LED1 #6:REC #7:DATA #8:CLK

6.PCB Diagram

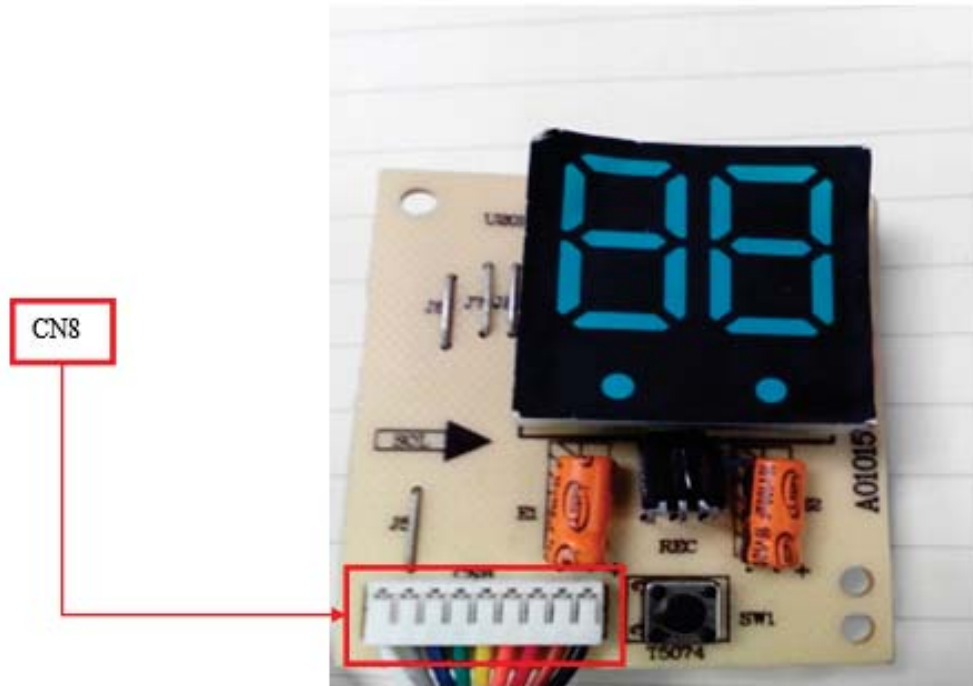
6-3 Indoor main PCB--24k



6-3 Indoor main PCB--24k

CN5-1:STEP MOTOR CN5-2:STEP MOTOR #1: +12V #2~5:STEP MOTOR signal	NO:POWER L (OUT) 1# POWER L (OUT)	COM(AC-L):POWER L (IN) 1#POWER L (IN)
CN6:TEMPERATURE SENSOR #1:RT_TEMP #2~3:GND #4:IPT_TEMP	CN3:DC-MOTOR #1:Feedback signal input #2: DC phase control signal #3:+15V #4: GND(hot) #5: #6: +310VDC	P2(AC-N):POWER N #1:POWER N #2:POWER N
FLZ:Ion #1:AC phase control signal #3:POWER N	P3:Communication line #1: signal of communication	CN30:Programmer port #1:GND #2:+5V #3:RESET #4:RXD #5:TXD #6:X1 #7:X2 #8:FLMD0
CN8:DISPLAY #1:GND #2:+5V #3:LED #4:SHI #5:GE #6:REC #7:SDA #8:CLK		

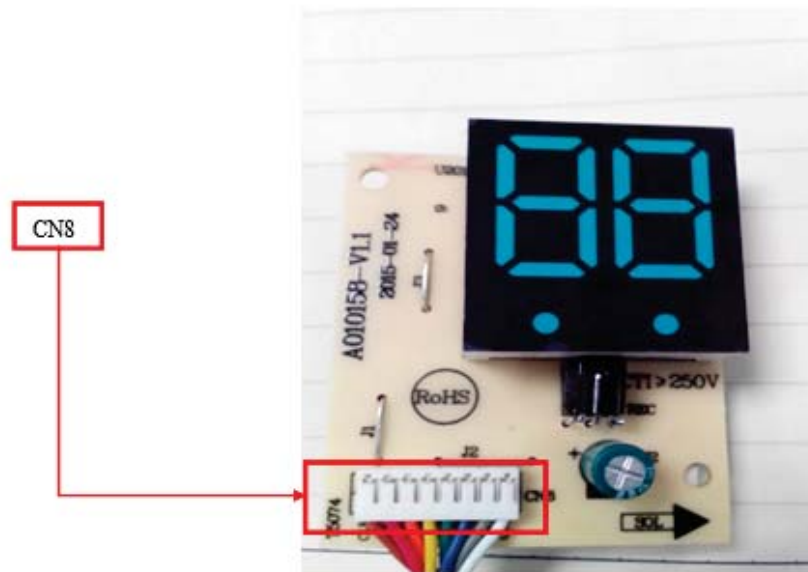
6-4 Indoor display PBA-9K/12K



CN8:DISPLAY

- #1:+5V
- #2:GND
- #3:REC
- #4:LED1
- #5:LED2
- #6:LED3
- #7:KEY
- #8:CLK
- #9:DATA

6- 5 Indoor display PBA-18K24K



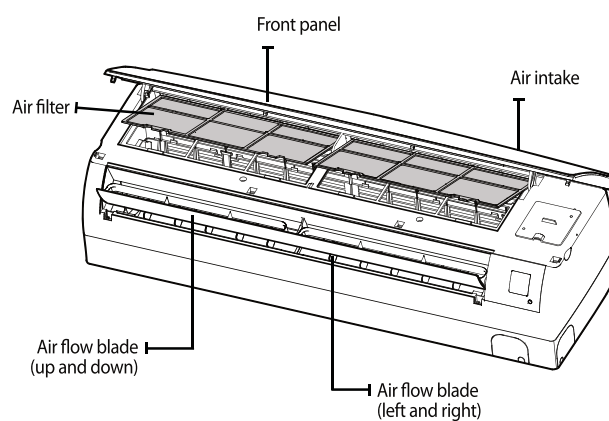
CN8:DISPLAY

- #1:GND
- #2:+5V
- #3:LED
- #4:SHI
- #5:GE
- #6:REC
- #7:SDA
- #8:CLK

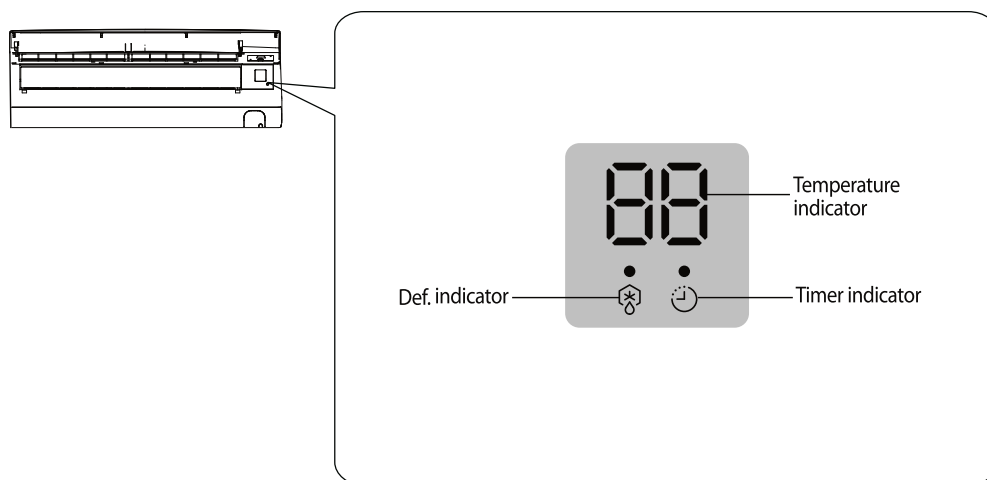
7. Operating Instructions

7-1 Name of Each Part

Main parts



Display

**Def. indicator**

(Enabled on cooling & heating models only):
Lights up when the air conditioner starts defrosting automatically

Temperature indicator

- Displays the temperature remote controller setting.

8. Troubleshooting

8-1 Items to be checked first

1. The input voltage should be rating voltage $\pm 10\%$ range.
The air conditioner may not operate properly if the voltage is out of this range.
2. Is the line cable linking the indoor unit and the outdoor unit linked properly?
The indoor unit and the outdoor unit shall be linked by 5 cables.
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the air conditioner may not operate properly.
3. When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the air conditioner.

NO	Operation of air conditioner	Explanation
1	The OPERATION indication LED(BLUE) blinks when a power plug of the indoor unit is plugged in for first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the INDOOR FAN should operate. [In case of heat pump model] In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew.
3	Fan speed setting is not allowed in DRY  mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in Dry  mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Timer LED(ORANGE) of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
6	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.
7	[In case of heat pump model] Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes(maximum) until the deice is completed.
8	[In case of heat pump model] The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
9	[In case of heat pump model] Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation.

8-2 Trouble shooting procedure

8-2-1

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	E0	Indoor unit/ Outdoor unit communication fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	7

● LED ON

Analysis:

Energize and observe for around 10 minutes. If E0 is always displayed:

- a. Tight or correct wiring connection between indoor and outdoor ?

The terminal L and N shall correspond to each other on indoor and outdoor units. Measure the voltage on outdoor terminal L and N . If the voltage is “0”, replace the indoor main PCB

- b. If the L & N voltage is normal, measure the voltage between the outdoor terminal N and 1.

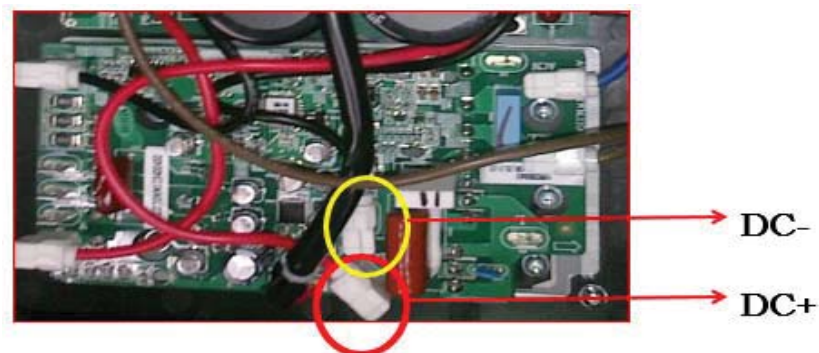
If the voltage change occurs between 0~24V (change pulse voltage) , replace the indoor main PCB ; If the voltage change occurs between 0~12V(change pulse voltage), but there is no 24V, replace the outdoor power source board

- c. If the L & N voltage is normal, measure the voltage between the outdoor terminal N and 1.

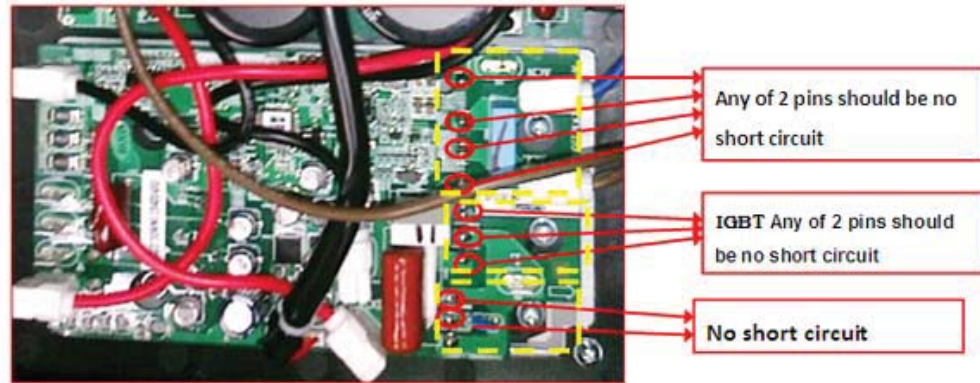
If the voltage has no change, Firstly replace the indoor main PCB. If the fault remains unsolved, replace the outdoor power source board.

- d. Indicator on outdoor power source board:

- 1) Check if PFC board is burnt, If it is, replace PFC board.
- 2) If no damage, test the DC voltage between DC+ and DC-. If the voltage is around 300V, replace the power source board.
- 3) If no damage, test the DC voltage between DC+ and DC-. If the voltage is 0V, replace the PFC board



- e. Is there any burnt appearance on PCB? If no, test the rectifier, FRD, IGBT etc. if any component broken, replace the board.



- f. If the problem cannot be solved by using the methods above, Firstly replace the intelligent power module. If the problem remains unsolved, replace the indoor main PCB, power source board and PFC board

Indoor display		
LED DISPLAY	DISPLAY	DESCRIPTION
●	E1	Indoor room temp. sensor(IRT) fault
Outdoor display		
LED DISPLAY	DISPLAY	Outdoor unit LED Flashes (times)
/	/	25

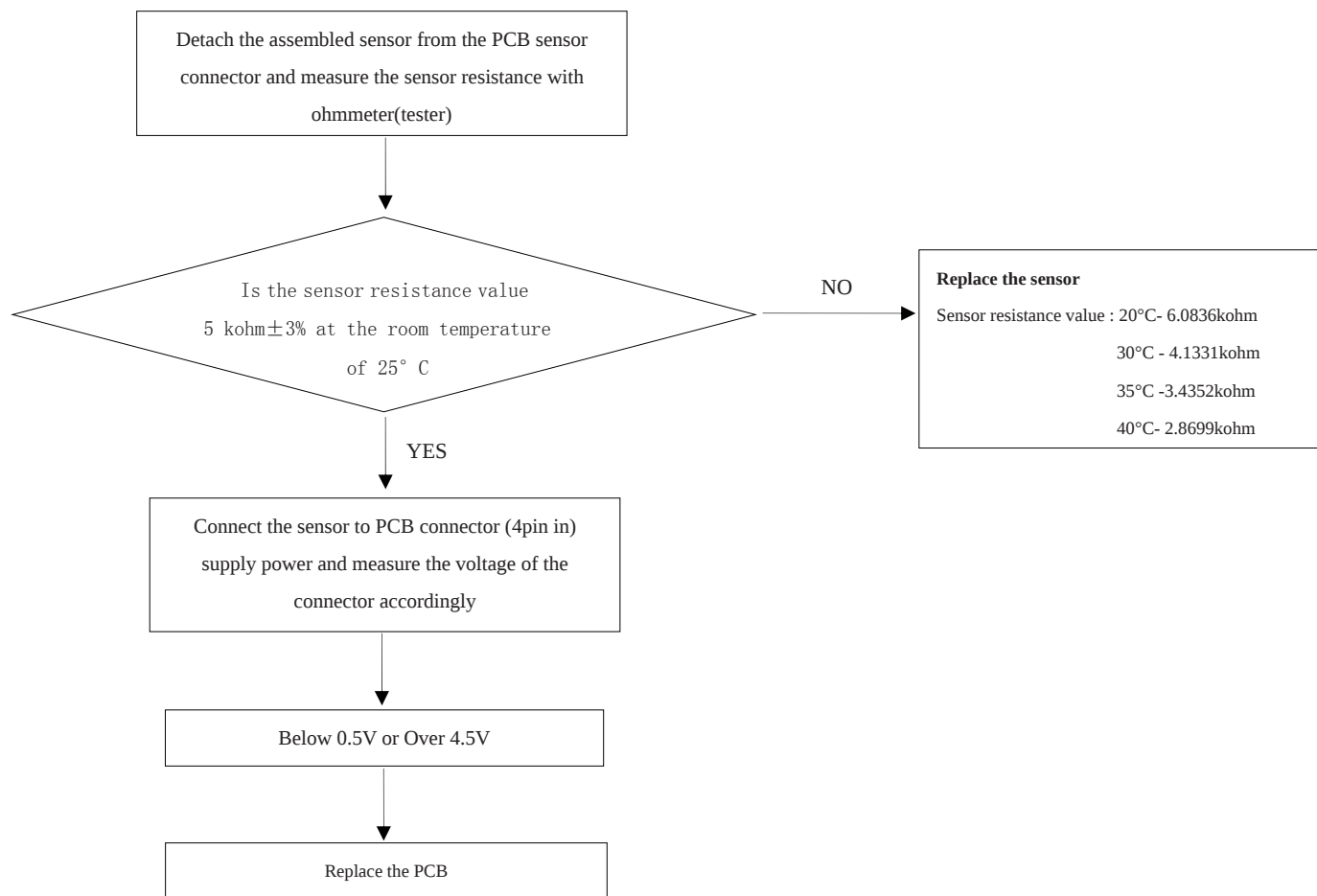
Indoor display		
LED DISPLAY	DISPLAY	DESCRIPTION
●	E2	Indoor pipe temp. sensor(IRT) fault
Outdoor display		
LED DISPLAY	DISPLAY	Outdoor unit LED Flashes (times)
/	/	26

● LED ON

A Checklist:

- Is the indoor units temperature sensor connected correctly?
- Is the sensor placed correctly?
- Does the sensor satisfy the resistance value in accordance with temperature?

B Trouble shooting procedure



8-2-3

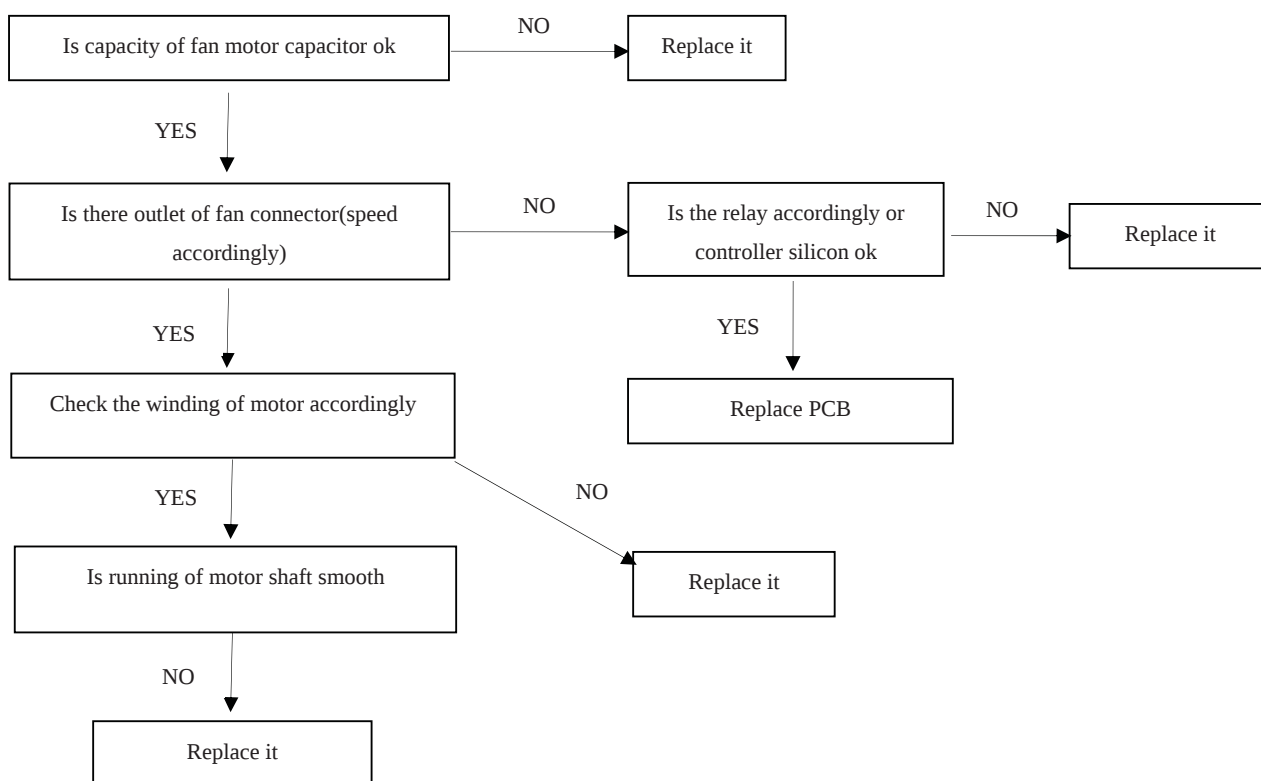
Indoor display			
LED DISPLAY	Indoor Display of LED	DESCRIPTION	Indoor unit LED Flashes (times)
●	E6	Indoor fan motor fault	28

● LED ON

A Checklist:

- 1) Is the indoor unit fan motor connected properly?
- 2) Is the AC power supply voltage correct?

B Trouble shooting procedure



8-2-4

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	E3	Outdoor pipe temp. sensor(OPT) fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	10

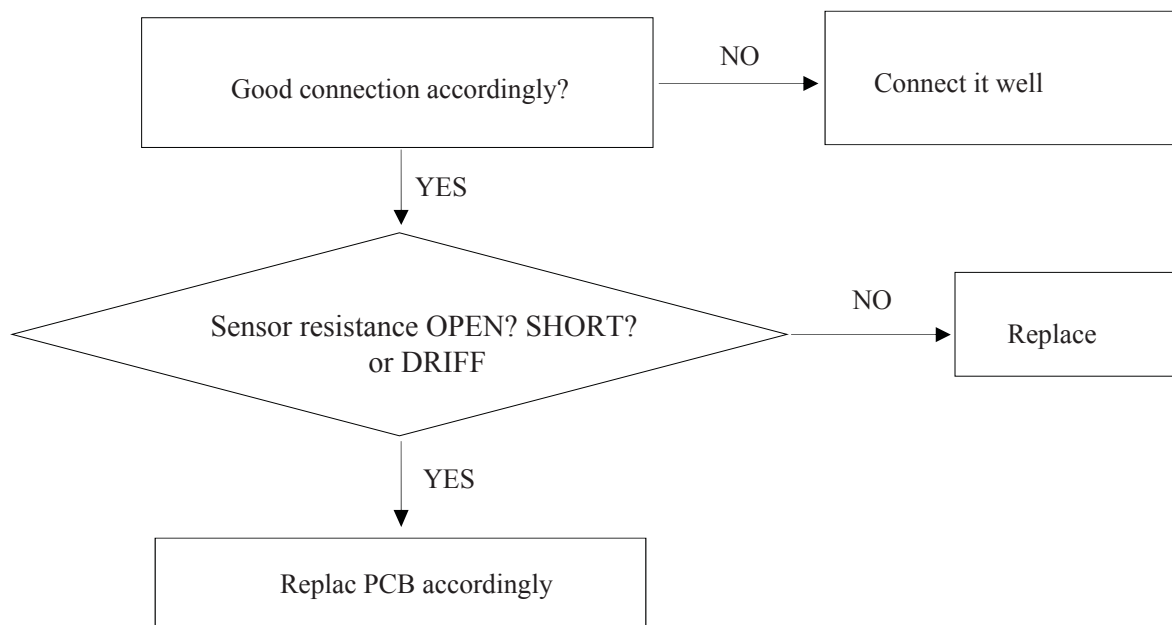
Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	E7	Outdoor temp. sensor fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	9

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	E8	Discharge temp. sensor fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	11

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	EP	Indoor fan motor fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Temp. switch fault (on top of the compressor)
/	/	16, 20

● LED ON

Trouble shooting:



8-2-5

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	EA	Current sensor fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	13

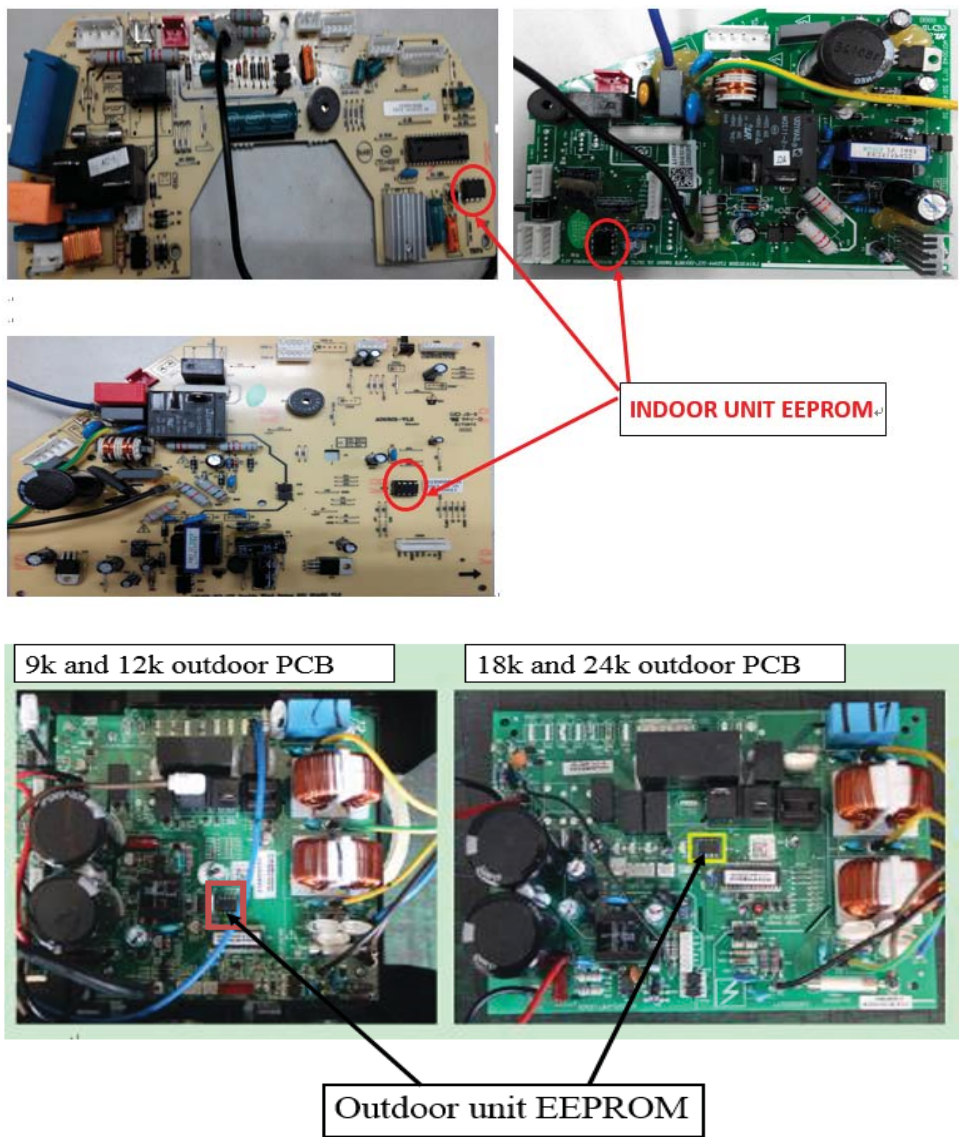
8-2-6

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	EE	EEPROM fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	27, 19

● LED ON

Checklist:

- Check whether the EEPROM is loose or not;
- If the installation is good, replace the indoor main PCB
- If the fault remains unsolved after replacement of the indoor control board, replace outdoor power source board

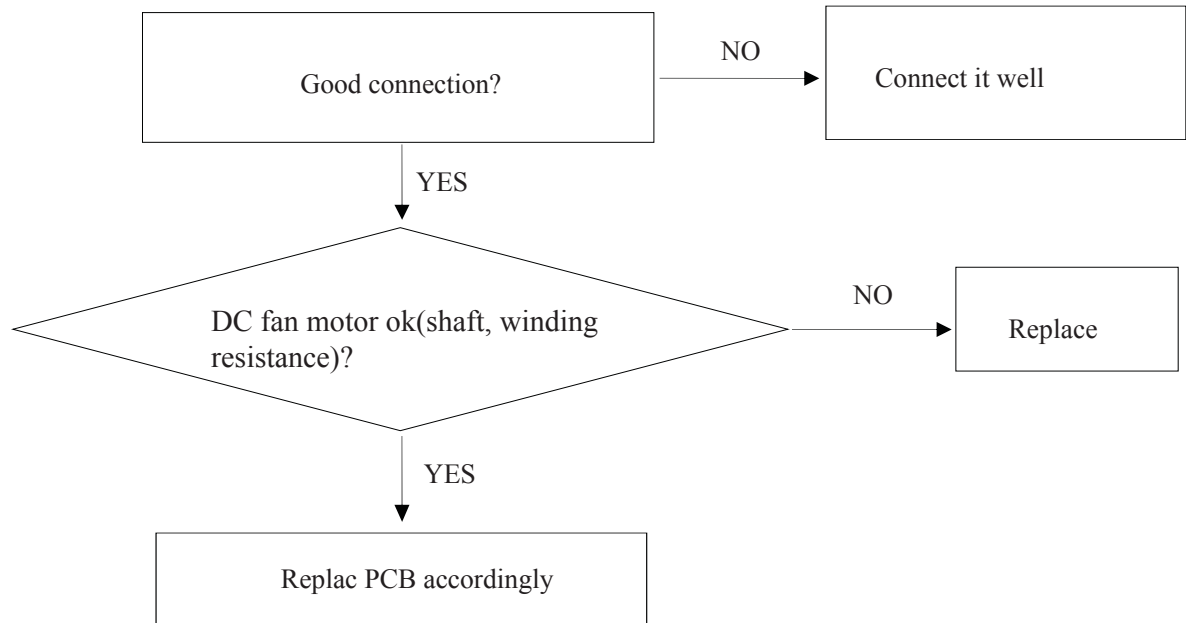


8-2-7

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	EF	Outdoor fan motor fault (DC motor)
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	16, 20

● LED ON

Trouble shooting:



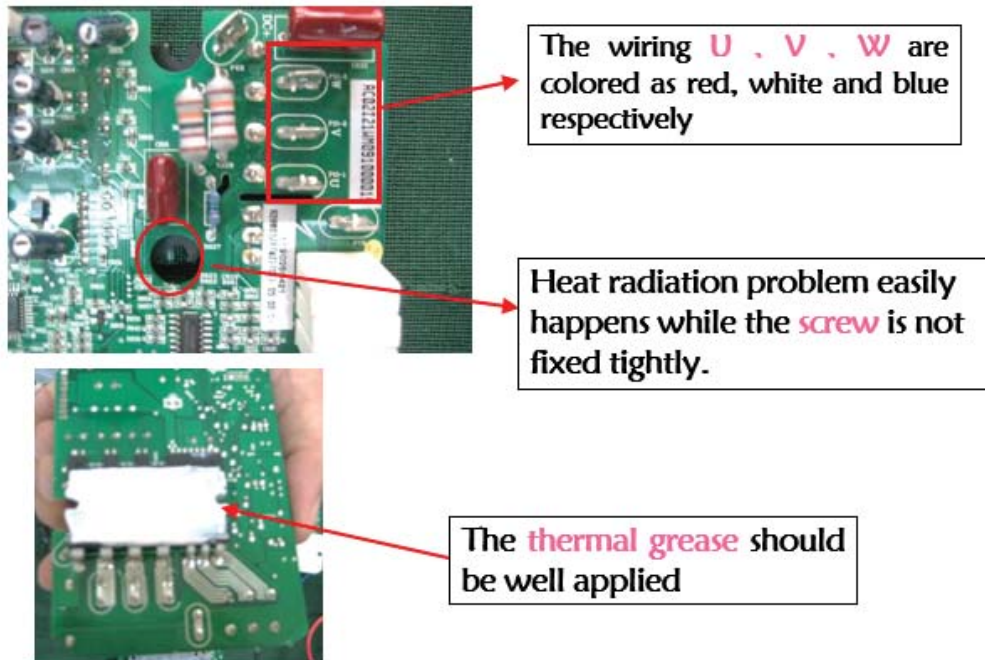
8-2-8

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	/	IPM module protection
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	14

● LED ON

Checklist:

- If the protection happens: compressor starts up for only a few second or even not start to work----check whether the compressor connection is ok.
- If the protection happens in the process of A/C operation: check whether ventilation is smooth or not? Whether IPM fixed well or not? A/C gas leakage or overcharge?
- If the step a and b all right, replace outdoor PCB.



8-2-9

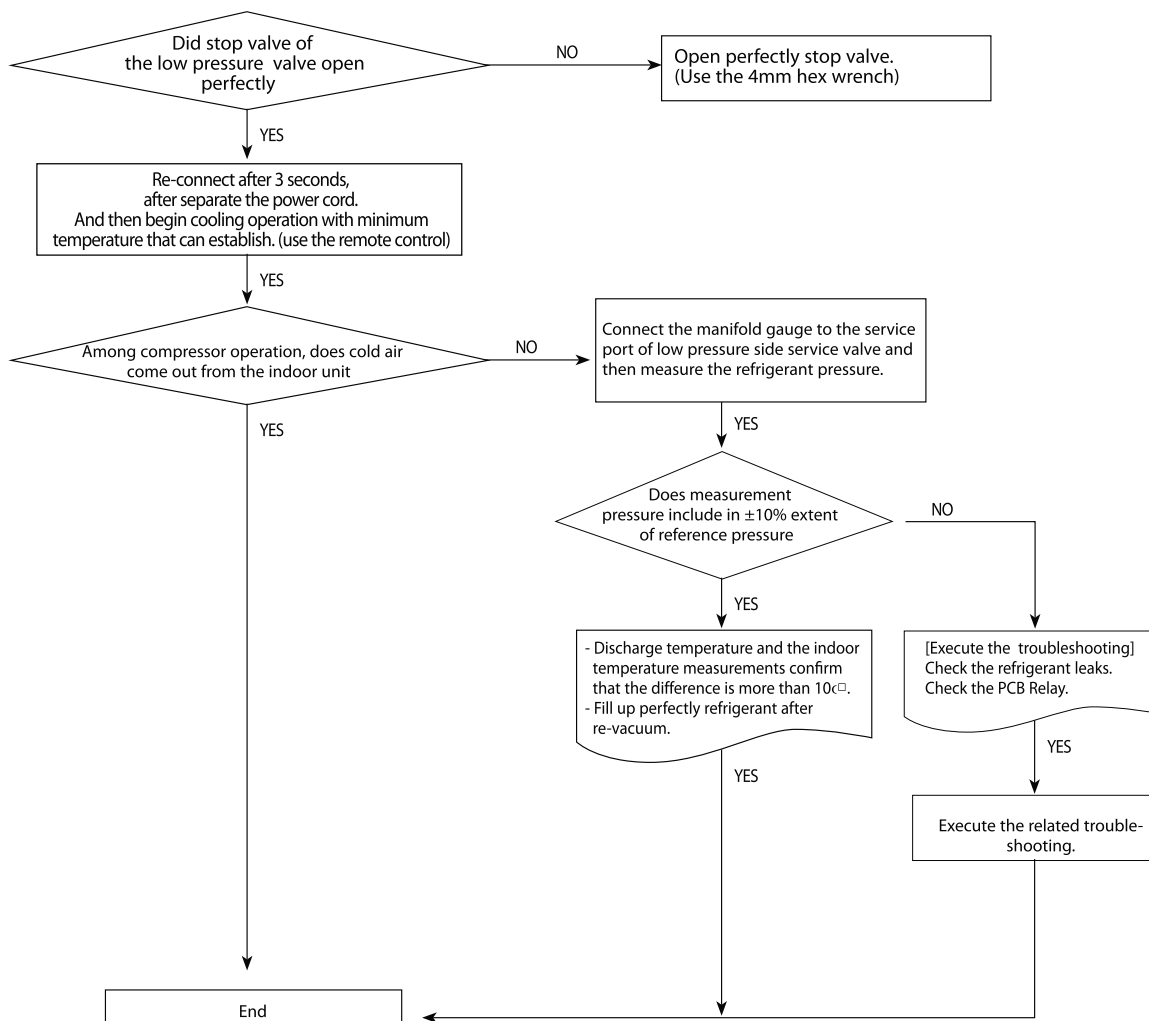
Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	E4	lack of refrigerant error
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	23

● LED ON

1. Checklist :

- 1) Check the leakage region.(Use leakage detection liquid or soapy water)
- 2) When leakage region is found from service valve and piping connection flare nut part : After the related measures to check the refrigerant supplements and operation.
- 3) If the leakage region is pipe welding part : Weld leakage region after refrigerant gas release.(Brass parts should only apply)
- 4) If the leakage region is surface area (Heat exchanger or pipe welding region is not) : Replace parts.
- 5) Check the PBA Relay
 - Display of indoor unit : Ensure that the operating pilot lamp has been lighted.
 - Ensure that the Relay input voltage of indoor unit PBA is normally.(If the PBA is defective, replace)

2. Troubleshooting procedure



8-2-10

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	E9	Compressor frequency drive fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	30

● LED ON

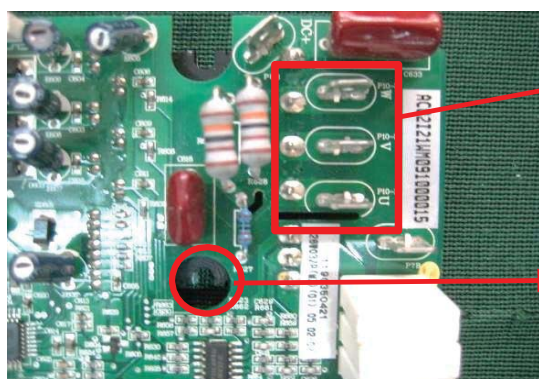
Check list

Re-energize and check the protection code on display. Firstly display P0.

- 1 If this code is displayed when the compressor is started for several seconds or even not started, check the compressor connection for correctness, if no insert wrong, replace outdoor PCB.
- 2 Check if the outdoor module is tightly installed onto the radiating fins and if the silicone is applied evenly, fix the screws again if loose.
- 3 Check the system pressure, recharge refrigerant if the pressure is low, and discharge some refrigerant if the pressure is too high.
- 4 Check the outdoor ventilation and if there is any obstruction that affects the normal radiating of the air conditioner, and installation again.
- 5 If the above inspections are normal, but the fault remains unsolved, please replace the outdoor PCB.

Re-energize and check the protection code on display. Firstly display P9.

- a) Check the U,V, W connection, if is correctness or loose please connect again.
- b) If this code is displayed when the compressor is started for several seconds or even not started, check the compressor connection for correctness, if no insert wrong, replace outdoor PCB.
- c) When the compressor is restarted immediately after stop, this might also cause P9 protection because the cooling system is not stable, try starting the air conditioner again after a longer period of stop.



The wiring U,V,W are closed as red, white and blue respectively.

Heat radiation problem easily happened while the screw is not fixed tightly.

8-2-11

Indoor display		
LED DISPLAY	Indoor Display of LED	DESCRIPTION
●	EU	Voltage sensor fault
Outdoor display		
LED DISPLAY	Outdoor display of LED	Outdoor unit LED Flashes (times)
/	/	13

● LED ON

- 1 Cause: Voltage sensor fault.
Solution: Please replace outdoor PCB.

8-3 PCB Inspection Method

8-3-1 Pre-inspection Notices

1. Check if you pulled out the AC power plug when you eliminate the PCB or front panel.
2. Don't hold the PCB side not impose excessive force on it to eliminate the PCB.
3. Don't pull the lead wire but hold the whole housing to connect or disconnect a connector to the PCB.
4. In case of outdoor PCB disassembly, check first the complete discharge of condenser after 1 minute power off.

8-3-2 Inspection procedure

1. Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken.
2. The PCB is composed of 3 parts.
 - . Indoor Main part : MICOM and surrounding circuit, relay, fan motor sensing and driving circuit, temperature sensing circuit power circuit of SMPS, buzzer circuit. Communication circuit.
 - . Display part : LED lamp, Switch, Remote-control module.

8-3-3 Indoor detailed inspection procedure

No	procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the control box Check the PCB fuse.	Is 1st fuse disconnected?	. Over current. . Indoor Fan motor short. . AC part and pattern short of Indoor PCB.
2	Power voltage	Check the power voltage	
		1) Is the input voltage of power supply 200Vac ~240Vac?	. Power cord is fault, Fuse open, Wrong Power cable Wiring, AC part is faulty.
		2) Is the voltage between both terminal of C101(+)-(-) 12Vdc?	. Switching Trans of Power circuit is faulty.
		3) Is the voltage between both terminal of C103(+)-(-) 5Vdc?	. Power circuit is faulty, Load short.

9. Installation Diagram of Indoor Unit and Outdoor Unit

9-1 Air-Purge Procedure

- 1) Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.



- 2) Connect the charging hose of low pressure side of manifold gauge to the packed valve having a service port (3/8" Packed valve) as shown at the figure.



- 3) Open the valve of the low pressure side of manifold gauge counter-clockwise.



- 4) Purge the air from the system using vacuum pump for about 30 minutes.
 - After that, please recheck that pressure is stabilized.
 - Close the valve of the low pressure side of manifold gauge clockwise.
 - Remove the hose of the low pressure side of manifold gauge.



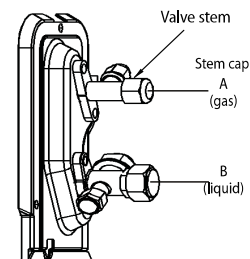
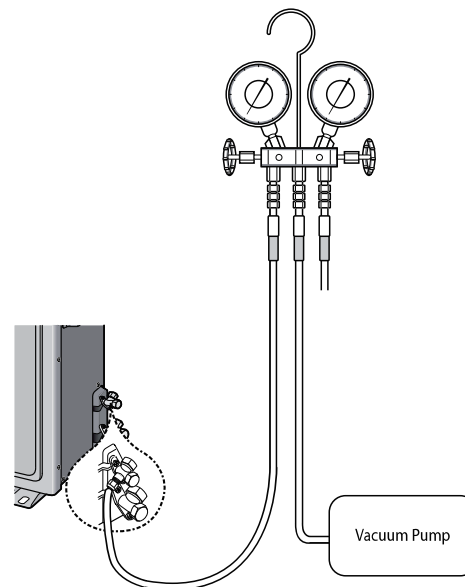
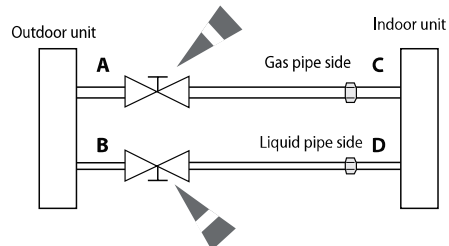
- 5) Set valve cork of both liquid side and gas side of packed valve to the open position.



- 6) Mount the valve stem nuts to the 2 way and 3 way valve. And mount the service port cap to 3 way valve.



- 7) Check for gas leakage.
 - At this time, especially check for gas leakage from the 3 way valve's stem nuts, and from the service port cap.



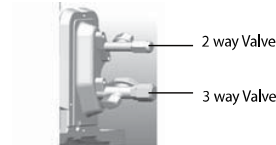
9-2 "Pump down" Procedure

Pump down will be carried out when an evaporator is replaced or when the unit is relocated in another area.

- 1) Remove the caps from the 3 way valve and the 3 way valve.



- 2) Turn the 3 way valve clockwise to close and connect a pressure gauge (low pressure side) to the service valve, and open the 3 way valve again.



- 3) Set the unit to cool operation mode.
(Check if the compressor is operating.)



- 4) Turn the 3 way valve clockwise to close.



- 5) When the pressure gauge indicates "0" turn the 3 way valve clockwise to close.



- 6) Stop operation of the air conditioner.



- 7) Close the cap of each valve.



Remarks

Relocation of the air conditioner

- Refer to this procedure when the unit is relocated.
- Carry out the pump down procedure (refer to the details of 'pump down').
- Remove the power cord.
- Disconnect the assembly cable from the indoor and outdoor units.
- Remove the flare nut connecting the indoor unit and the pipe.
- At this time, cover the pipe of the indoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
- Disconnect the pipe connected to the outdoor unit.
- At this time, cover the valve of the outdoor unit and the other pipe using a cap or vinyl plug to avoid foreign material entering.
- Make sure you do not bend the connection pipes in the middle and store together with the cables.
- Move the indoor and outdoor units to a new location.
- Remove the mounting plate for the indoor unit and move it to a new location.

9-2-1 Pre-inspection Notices

1. Check if you pulled out the AC power plug when you eliminate the PCB or front panel
2. Don't hold the PCB side not impose excessive force on it to eliminate the PCB
3. Don't pull the lead wire but hold the whole housing to connect or disconnect a connector to the PCB
4. In case of outdoor PCB disassembly, check first the complete discharge of condenser after 1 minute power off

9-2-2 Inspection procedure

1. Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken
2. The PCB is composed of 3 parts
 - Indoor Main part : MICOM and surrounding circuit, relay, fan motor sensing and driving circuit, temperature sensing circuit power circuit of SMPS, buzzer circuit. Communication circuit
 - Display part : LED lamp, Switch, Remote-control module
 - Outdoor Main part : MICOM and surround circuit, fan motor sensing and driving circuit, compressor driving circuit power circuit of SMPS, PFC control circuit, 4way circuit, communication circuit, OPTION (EEV control circuit, temperature sensing circuit)

9-2-3 Indoor detailed inspection procedure

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the control box Check the PCB fuse	1) Is 1st fuse disconnected? 2) Is 2nd fuse disconnected?	. Over current . Indoor Fan motor short . AC part and pattern short of Indoor PBA
2	Supply power If the operating lamp twinkles at this time , the above 1)~3) have no relation	Check the power voltage	
		1) Is the BD71 input voltage 200Vac~240Vac?	. Power cord is fault, Fuse open, Wrong Power cable Wiring, AC part is faulty
		2) Is the voltage between both terminal of IC02 pin #1-#2 12Vdc?	. Switching Trans of Power circuit is faulty
		3) Is the voltage between both terminal of IC02 pin #2-#3 5Vdc?	. Power circuit is faulty, Load short

9-2-4 Outdoor detailed inspection procedure

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the control box Check the PCB fuse (Wait 3 minutes after power off)	1) Is 1st fuse disconnected?	. Over current . AC part and pattern short of Outdoor PBA
2	Check the Wiring	1) Is the Compressor wire connected clock-wise? 2) Is the Reactor wire connected normal? 3) Is the Fan wire connected normal? 4) Is the 4way wire connected normal? 5) Is the sensor wire connected normal? 6) Is the EEV wire connected normal?	. Wrong assembly . Installation(service) condition is bad
3	"Supply power and operate the set (Use Remote-control, button in indoor set)"	Check the power voltage	
		1) Is the voltage between Terminal block L-N 200Vac~240Vac?	. Power cord is faulty, Wrong Power cable Wiring
		2) Is the C006 voltage 200Vac~240Vac?	. Fuse open . L,N,F1,F2 wire wrong wiring (Terminal Block-PBA)
		2) Is the CN150 voltage 200Vac~240Vac?	. Power circuit is faulty . Load short
		4) Is the PFC050(#26-#27) voltage 200Vac~240Vac after 3 minutes later?	. Fuse open . L,N,F1,F2 wire wrong wiring (Terminal Block-PBA) . PTC020 open . RY021, RY022 is faulty . Outdoor Micom(IC201) error
		5) Is the CE101 voltage 280Vdc~320dc after 3 minutes later?	. PFC050 is faulty . Reactor wire is wrong connection . Power circuit is faulty, Load short . BLDC Fan motor error
		6) Is the voltage CN151 #1-#2 voltage 15Vdc?	. Switching Trans of Power circuit is faulty . Load short
		7) Is the voltage CN152 #1-#2 voltage 12Vdc?	. Switching Trans of Power circuit is faulty . Load short
		8) Is the voltage CN151 #3-#2 voltage 5Vdc?	. Switching Trans of Power circuit is faulty . Load short
4	Check the LED lamp display	1) Normal : RED on, GRN blink, YEL off 2) Abnormal - All off : check no power - abnormal display : check error mode	. F1,F2 wire wrong wiring . Outdoor PBA is faulty

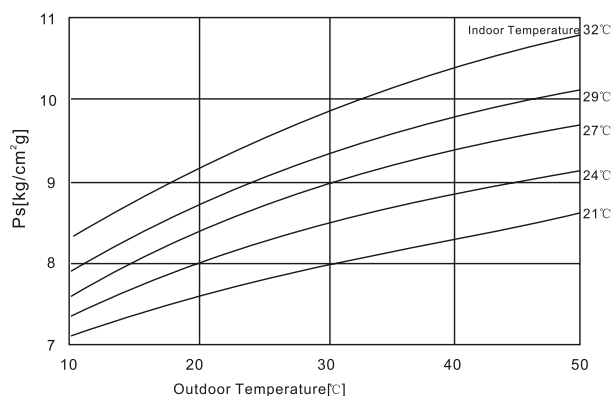
10. Reference Sheet

10-1 Low Refrigerant Pressure Distribution

Note : Please measure the refrigerant pressure after the air conditioner operates on testing cooling mode during more than 10 minutes.

■ Indoor Temp. Variation : 20°C ~ 32°C

■ Outdoor Temp. Variation : -5°C ~ 48°C



10-2 Pressure & Capacity mark

■ Power/Heat

W	cal/s	kcal/h	Btu/h	HP	kg.m/s	lb.m/s
1	0.23885	0.85985	3.4121	0.001341	0.10197	0.73756
4.1868	1	3.6	14.286	0.0056146	0.42693	3.088
1.163	0.27778	1	3.9683	0.0015596	0.11859	0.85778
0.29307	0.06999	0.252	1	3.9302x10 ⁻⁴	0.029885	0.21616
745.7	178.11	641.19	2,544.4	1	76.04	550
9.8067	2.3423	8.4322	33.462	0.013151	1	7.233
1.3558	0.32383	1.0658	4.6262	0.0018182	0.13826	1

10-3 Q & A for Non-trouble

Classification	Class	Description
Cooling	Q	The cooling is weak.
	A	When it is hot outside, its cooling capacity decreases due to the increase of the ambient temperature. When the dust filter gets blocked or warm outside air gets in, the cooling capacity will decrease. So, make sure to clean the dust filter frequently, prevent heat loss by closing the doors and insulate the cooling area by using curtains, blinds, shades or window tinting.
	Q	The cooling is good generally. But, it gets weak when it is considerably hot.
	A	It occurs when the outdoor unit is exposed to direct sun light and heat-up air is not ventilated well. So, set up a sunblind over the outdoor unit and keep stuff away from the unit to increase the ventilation. When the cooling capacity decreases during a heat wave, clean the heat exchanger of the outdoor unit or spray some cold water to the heat exchanger to increase the cooling capability.
	Q	The cooling is weak. Does it need refrigerant charging?
	A	It is not correct charging refrigerant regularly. Except that you have moved in several times or the connection pipes are broken, the refrigerant does not run low. So, when refrigerant is additionally charged, it could be costly and cause a product's failure. When the refrigerant leaks, all of it will escape in a short time resulting in cooling failure and no water coming out of the drain hose. So, if water comes out from the drain hose, it indicates the normal operation of the product and it does not need refrigerant charging.
	Q	It fails to do cooling.
	A	When the air conditioner is set to ventilation or the desired temperature is set higher than the current temperature, it fails to do cooling. In this case, select cooling or set the desired temperature lower.
Leakage	Q	It floods the floor.
	A	Place the drain hose properly. When it is not placed properly, the drain water would flow back flooding the floor. So, straighten out the drain hose for the water to be drained well.
	Q	Water drips at the drain connection (service valve) of the outdoor unit.
	A	When a glass bottle is taken out of the refrigerator, moisture gets condensed on its surface due to the temperature differences. The same principle applies to the air conditioner. When cold refrigerant goes through the copper tube, moisture gets condensed on the surface of the tube and the connection areas. To prevent the water condensation, the pipes are insulated. But, the connection areas of the outdoor unit are not insulated for the purpose of maintenance or repair, and water gets condensed due to the temperature differences and drips down. Generally, it evaporates right away. But, when it drips much during muggy days, put a water pan on the floor.
	Q	It leaks even though a drain pump is used.
	A	It occurs when the drain pump is plugged out or it is out of order. Check the power of the drain pump and the position of the drain hose, and when the pump is faulty, contact the drain pump manufacturer. Samsung Electronics do not manufacture drain pumps. So, we are not able to correct the drain pump problems.
Smells	Q	Whenever the air conditioner is turned on, it irritates my eyes and gives me a headache.
	A	There are no components in the air conditioner irritating the eyes and sending out chemical smells. But, when the air conditioner is turned on, other smell sources are sucked into the air conditioner and get out of it. So find and root out the smell sources. Generally, it occurs at a interior renovated place, a pharmacy, a gasoline handling place, a tire shop, a second-hand book shop or an electronic component handling place, when its chemical or musty smells are sucked in and sent out, it can be misled that the air conditioner generates them.

10-3 Q & A for Non-trouble

Classification	Class	Description
Smells	Q	Whenever the air conditioner is turned on, it stinks.
	A	When are no components in the air conditioner sending out chemical smells. But, when the air conditioner is turned on, other smell sources are sucked into the air conditioner and get out of it. So, find and root out the smell sources. Generally, when the drain hose is taken out to the washing room or there are sources of smells such as a diaper bin, a shoe shelf or a socks bin, bad smells generate. Also, it occurs where glass cleaners or air fresheners are used; when they are sucked in interacting with dusts and moistures inside, bad smells generate. these kinds of organic materials noxious to human bodies. So, we recommend against the use of them.
	Q	Whenever the air conditioner is turned on, it smells sour.
	A	When the room is papered recently, its paste smells would be sucked inside. Also, when the air conditioner is installed in the study room of young boys loving sweat-generating activities such as the basketball, excessive sweats evaporate and get sucked into the air conditioner resulting in bad smells. So, find and root out problem or refresh the room frequently.
	Q	Whenever the air conditioner is turned on, it smells musty.
	A	It is due to the improper keeping of the product after its use. When keeping the product, dry up the inside with the operation of ventilation to prevent must. When the product is kept without drying up the inside with ventilation, mold would grow inside resulting in must. So, open the windows and switch on the ventilation function to get rid of the saturated smell inside.
	Q	Whenever the air conditioner is turned on, it sends out bad smells such as stale smells.
	A	It occurs generally when there are pet animals in the house. Their smells stay at the same place. But, when the air conditioner is turned on, the air gets circulated resulting in the circulation of the smells. So, find and root out the problem or refresh the room frequently.
	Q	It sends out bad smells.
	A	When the air filter is filthy, it could send out bad smells. So, clean the filter and ventilate the room with the windows open while operating the ventilation function.
Operation	Q	It won't start.
	A	There is a power failure or it is plugged out. Also, check if the power distribution panel is switched off.
	Q	It goes off during operation.
	A	When the hot air does not escape properly, it goes off during operation. it occurs when it does not ventilate properly because the outdoor unit is covered, the back of the outdoor unit is blocked by a cardboard or a plywood panel, and the front of the outdoor unit is blocked by the closed window or other obstacles. Clear the above obstacles from the outdoor unit.
	Q	It generally works properly. But, when it's considerably hot, it goes off during operation.
	A	It occurs when the outdoor unit is exposed to direct sunlight and the hot air does not escape properly. Set up a sun blind over the outdoor unit and clear the neighboring obstacles from the outdoor unit to provide good ventilation. When it goes off frequently during a heat wave, it would prevent the turn-off and increase the cooling capacity cleaning the outdoor unit or spraying some water to the heat exchanger.
	Q	The remote controller won't operate.
	A	When the batteries run out or the transmitter or receiver of the remote controller is blocked by obstacles, change the batteries or keep the obstacles away from the controlling area. Also, the remote controller may not work under intensive light from a 3-wave length lamp or a neon sign due to the EMI. In this case, take the remote controller closer to the receiver.

10-3 Q & A for Non-trouble

Classification	Class	Description
Installation	Q	Who installs the air conditioner? (Relocation/Re-installation)
	A	When relocating or re-installing the air conditioner, make sure to contact Samsung Electronics Service Center or Authorized Service Agent and have them to do the job. (If not, it could cause personal injury or product damage.) The cost for the relocation/re-installation of the air conditioner is subject to the customer's expense. There is a cost table. But, our service engineer needs to visit to total up the cost correctly. When you move in, make sure to contact Samsung Electronics Service Center or Authorized Service Agent in advance to streamline the process.
	Q	Is it possible to install the outdoor unit outside?
	A	It is possible to install it at a designated place in the apartment or on the rooftop nearby. But, it's illegal hanging an angle iron case with the outdoor unit in it outside the apartment. Also, it is illegal obstructing passers-by with the outdoor unit installed outside.
	Q	What can be done to install the outdoor unit facing the road because it is a commercial building?
	A	The following is an excerpt from building code going into effect from JUNE 1 st 2005. "The exhaust pipe of a cooling or ventilation facility installed in a building adjacent to the streets of commercial or residential areas shall be installed higher than 2 m to prevent the exhaust air from blowing directly to passers-by and the current facilities shall be corrected by MAY 31 st 2005." So, please install it higher than 2 m or not to blow the hot exhausting air directly to passers-by.
	Q	What about installing a windscreen during installation not to blow hot air directly to passers-by?
	A	When the hot air from the front of the outdoor unit is blocked, the product's performance will be affected and it will fail to operate properly. So, keep it at least 300mm away from its surrounding walls and give it good ventilation.

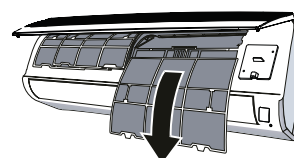
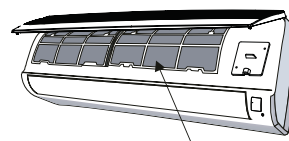
10-4 Cleaning /Filter Change

10-4-1 Cleaning your Air Conditioner

To get the best possible use out of your air conditioner, you must clean it regularly to remove the dust that accumulates on the air filter.

Removing the Air filter

1. Open the front panel following the direction of the arrow.
2. Keeping the front panel raised with one hand, take out the air filter with the other hand.
3. Install the air filter back into position.
4. Close the front panel.



Cleaning the air filter

Washable foam based air filter captures large particles from the air. The filter is cleaned with a vacuum or by hand washing.

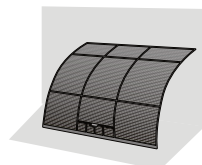
Remove the Air filter from the main body.

Clean the Air filter with a vacuum cleaner or soft brush.
If dust is too heavy, rinse it with running water.



Insert the Air filter back in its original position.

Dry the Air filter in a ventilated area.



- Clean the air freshening filter at least once a month.
- If the Air filter dries in a confined (or humid) area, odors may generate. If it occurs, re-clean and dry it in a well-ventilated area.
- If the filter is soiled with oil, it can be washed with warm water (not exceeding 45°C). Leave to dry in a cool and dry place.

10-5 Installation

10-5-1 Before Installation

Keep the air conditioner outlet and inlet free from its surroundings.
In case of installation, keep the symmetry and fix it to prevent vibration.
The pipe length shall meet the standard as far as possible.

10-5-2 Installation Procedure

■ Location

Install the product in an area to guarantee the best cooling effect, convenience of piping and electric work, and inexistence of vibration or wind.

■ Wall Drilling

Drill the wall downward in a diameter of 60 to 65mm.

■ Fixing Indoor Unit & Outdoor Unit

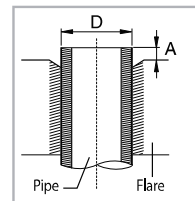
Fix the air conditioner indoor unit securely to the wall. Secure the outdoor unit in a suitable position.

■ Pipe Spooling & Connectingt

You shall cut the pipe with a pipe cutter and grind all the burrs of the cut surface.
pipe expansion may continue until the pipe surface becomes uneven or torn apart.
Be sure to use a torque wrench to tighten pipes or flare nuts.

<Torque & Depth>

Outer Diameter (D)	Torque(kgf-cm)	Depth(A)
ø6.35 mm(1/4")	140~170	1.3 mm
ø9.52 mm(3/8")	250~280	1.8 mm
ø12.70 mm(1/2")	380~420	2.0 mm
ø15.88 mm(5/8")	440~480	2.2 mm
ø19.05 mm(4/4")	9900~1,210	2.2 mm



■ Leak Test

Put an inset gas like nitrogen in the outdoor unit pipe and put soap bubbles or other test liquids on the pipe surface for the leak test.

■ Drain Hose Connecting

Install the drain hose downward to drain water naturally. Be sure to pour water into the hose to check if it drains well.

■ Electric & Earth Work

Electric and earth work shall meet the "Electric Facility Technology Standard" and the "Internal Wire Regulation" of the Electric Business Laws.

■ Inspection & Trial Run

Upon completion of the tests, you shall make a trial run while you explain the main functions of the air conditioner to finish the installation.

10-6 Installation Diagram of Indoor Unit and Outdoor Unit

10-6-1 Air-Purge Procedure

The outdoor unit is loaded with sufficient R22 refrigerant. You should evacuate the air in the indoor unit and in the pipe. If air remains in the refrigerant pipes, it affects the compressor. It may cause reduction of cooling capacity and malfunction.



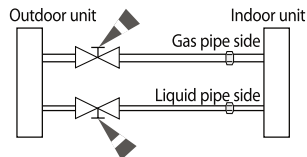
- When installing, make sure there is no leakage. When recovering the refrigerant, ground the compressor first before removing the connection pipe. If the refrigerant pipe is not properly connected and the compressor works with the service valve open, the pipe inhales the air and it makes the pressure inside of the refrigerant cycle abnormally high. It may cause explosion and injury.

1. Connect each assembly pipe to the appropriate valve on the outdoor unit and tighten the flare nut.
2. Tighten the flare nut first with your hands, and then with a torque wrench, applying the following torque.

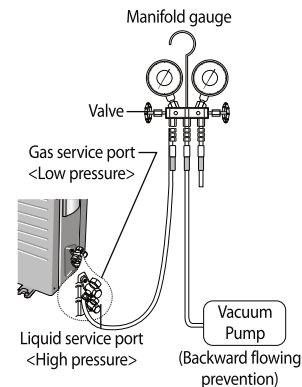


- Excessive torque can be cause of gas leakage.

3. Connect the charging hose of the low-pressure side of manifold gauge to a gas service port as seen in the picture.
4. Open the valve of the low pressure side of manifold gauge counterclockwise.
5. Evacuate the air in the connected pipes using the vacuum pump for about 15 minutes.
 - ▶ Make sure that pressure gauge shows -0.1 MPa(-76 cmHg) after about 10 minutes.
This procedure is very important to avoid a gas leak.
 - ▶ Close the valve of the low pressure side of manifold gauge clockwise.
 - ▶ Turn off the vacuum pump.
 - ▶ Check for 2 minutes if there is any pressure change.
 - ▶ Remove the hose of the low pressure side of manifold gauge.
6. Set a valve cork of liquid and gas service port to the open position.



Outer Diameter	Torque	
	N·m	kgf·cm
ø6.35 mm	14~18	140~180
ø9.52 mm	34~42	350~430
ø12.70 mm	49~61	500~620
ø15.88 mm	68~82	690~830



10-7 Reference Sheet

Index for Model Name

* Project model code for overseas from 2007(For RAC Export Models)

Model Code

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th
Project	Capacity	Sell	Feature	Series	Color	Unit	Export						
A	R	1	2	J	S	F	L	B	W	K	N/X	C	V

ITEM	1ST	2ND
RAC	A	R

Item	Reference	3TH	4TH
1	Export	1	2
2	Export	1	8
3	Export	2	4

Item	5TH
12Year	E
13Year	F
14Year	H
15Year	J
16Year	K

Item	6TH
INVERTER HP	S
INVERTER CO	V

Item1	Item2	7TH
Export	The virus doctor (The India / Latin America A / PAC K besides)	S
Export	NO virus doctor (the India / Latin America A / PAC K besides)	F
Special instructions: About AR**FSSCUR/SA ,the 7TH is "S", but there is no virus doctor in these models.		

9TH DIGIT		
Export	1st MODEL	A
Export	2nd	B
Export	3rd MODEL	C
Export	4th MODEL	D
Export	5th MODEL	E

Item 1	Item 2	Item 3	8TH
Export	RAC	FMC FLG (Best)	1ST MODEL F
Export	RAC	FMC DLX (Better)	1ST MODEL D
Export	RAC	FMC STD (Good1)	1ST MODEL S
Export	RAC	FMC ENT (Good2)	1ST MODEL N

Division	Series	Project	Color Name	Division component	Sinkeolreo code (10TH,11TH)	Remark
A3050	F	Best	Twilight	Grille	WK	
	F	Best	TBD	Grille	TBD	
	D	Better	Twilight	Grille	WK	
	D	Better	TBD	Grille	TBD	
	S	Good1	Twilight	Grille	WK	Deco : Transparency
	S	Good1	Midnight Blue	Deco	UR	Grille : Twilight
	N	Good2	Twilight	Grille	WK	
	N	Good2	TBD	Grille	TBD	Grille : Metallic Gray

Item1	Item2	12TH
Export	SET	/
Export	IN	N
Export	OUT	X

Item	The existing code	The sales area	CIS Description	The integrated code (13TH,14TH)
1	KCV	AMERICA	AMERICA(KCV)	CV

● Except the RAC Export Models for China.



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