SPLIT-TYPE AIR CONDITIONER

	INDOOR UNIT	OUTDOOR UNIT
Basic :	AQB09JJWC	
	AQB12JJWC	
Model :	AQV09JA	
	AQV12JA	
Model Code :	AQV09JA	AQV09JAX
	AQV12JA	AQV12JAX

SERVICE Manual

AIR CONDITIONER

AQV09JA, AQV12JA

AQV09JAX, AQV12JAX

THE FEATURE OF PRODUCT

- **High Energy Efficiency BLDC Air Conditioner**
- **Simple Flat Grille Design**
- **good' sleep Mode**
  : good' sleep Mode can help you sleep quickly and soundly and wake up refreshed.
- **Multi Functional Cleaning System**
  : Silver Nano Health System and Deodorizing/ Catechin Filter are adopted.
- **Silence Mode**
  : When you use the "Silence Mode", you can experience extremely quiet operation of your air conditioner.

Refer to the service manual in the GSPN(see the rear cover) for the more information.

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1. Precautions

1-1 Installing the air conditioner

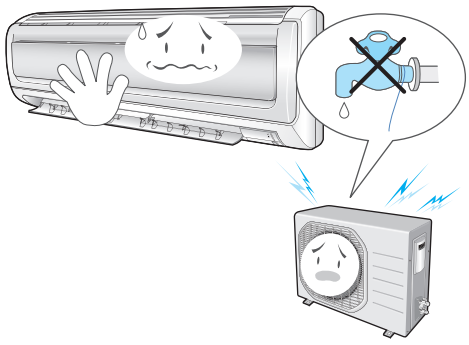
- Users should not install the air conditioner by themselves.
  Ask the dealer or authorized company to install the air conditioner except the window-type air conditioner in U.S.A and Canada.
- If you don't install the air conditioner properly, it may cause a fire, a water leakage or an electric shock.
- You must install the air conditioner according to the national wiring regulations and safety regulations.
- Install the indoor unit higher than 8.2ft(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 from the power supply must be incorporated in the fixed wiring with a contact opening of >0.12inch(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 23ft(7m) from the indoor unit. (If applicable)

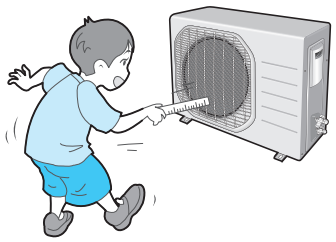


1-4 Disposing of the unit

- Before 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

■ **High Energy Efficiency BLDC Air Conditioner**
BLDC Technique arises the efficiency of air conditioner and makes a room cool and warm with high energy saving.

■ **Simple Flat Grille Design**
With a Smart and fashionable style, the high impressive interior design allow this product to set place in anywhere.

■ **good' sleep Mode**
good' sleep Mode can help you sleep quickly and soundly and wake up refreshed.

■ **Multi functional cleaning system**
With Silver Nano Health System and Deodorizing/Catechin Filters makes your room more refreshed.

■ **Silence Mode**
When you use the "Silence Mode", you can experience extremely quiet operation of your air conditioner.

2-2 Product Specifications

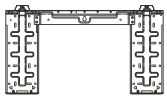
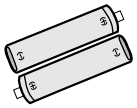
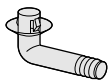
Item			Model	AQV09JA		AQV12JA	
				Indoor Unit	Outdoor Unit	Indoor Unit	Outdoor Unit
Type				Wall-mounted		Wall-mounted	
Performance	Capacity	Cooling	Btu/hr (Low / Std / Max)	3,100 / 9,000 / 11,900		3,100 / 12,000 / 14,300	
		Heating		3,100 / 12,000 / 16,500		3,100 / 13,600 / 17,500	
	Running Frequency	Cooling	Hz (Low / Std / Max)	20 / 49 / 70		20 / 72 / 90	
		Heating		20 / 70 / 95		20 / 78 / 102	
	Dehumidifying		Pints/hr	5.6		7.6	
	Air Volume	Cooling	m^3/min (H/M/L)	9.5/8.5/7.3	28	9.7/8.5/7.5	29
		Heating		9.9/8.5/7.3	27	10.1/8.9/7.5	28
	Noise	Cooling	dB (H/L)	41/25	51	43/25	53
		Heating		41/25	51	43/25	53
	SEER	Cooling	(Std)	20.0		19.0	
	HSPF	Heating		10.0		9.0	
	Power		ph-V-Hz	1-208/230-60		1-208/230-60	
Power	Power Consumtion	Cooling	W (Low / Std / Max)	230 / 650 / 1,030		230 / 1,050 / 1,450	
		Heating		220 / 950 / 1,450		220 / 1,130 / 1,550	
	Operating Current	Cooling	A (Low / Std / Max)	1.6 / 3.0 / 5.0		1.6 / 4.9 / 6.9	
		Heating		1.35 / 4.4 / 6.2		1.35 / 5.3 / 6.9	
	Power Factor	Cooling	% (Low / Std / Max)	70 / 85 / 90		75 / 90 /95	
		Heating		70 / 85 / 90		75 / 90 /95	
	Breaker Size		A	10		10	
	MCA			9.02		9.02	
	MOP			15		15	
Size	Outer Dimension	Width x Height x Depth	inch	32.5 X 11.2 X 7.4	28.3 X 21.6 X 10.4	32.5 X 11.2 X 7.4	28.3 X 21.6 X 10.4
			mm	825 X 285 X 189	720 X 548 X 265	825 X 285 X 189	720 X 548 X 265
	Weight (Net)		lb	20.0	74.0	20.0	74.0
			kg	9.0	33.5	9.0	33.5
	Drain Hose		D(inch) x L(ft)	Φ0.7 x 1.8		Φ0.7 x 1.8	
			D(mm) x L(mm)	Φ18 x 550		Φ18 x 550	
Compressor	Type			Rotary, G4C090LUBER		Rotary, G4C090LUBER	
	Motor	Type		Hermetic		Hermetic	
		Rated Output	W	853W		853W	
	Oil Type			FREOLα68ES-T		FREOLα68ES-T	
	RLA		A	7.0		7.0	
Blower	Type			Cross-flow	Propeller	Cross-flow	Propeller
	Motor	Type		Resin / Steel, AC	Resin / Steel, DC	Resin / Steel, AC	Resin / Steel, DC
		Rated Output	W	27	25	27	25
		FLA		0.17A 35W	0.10A 31W	0.17A 35W	0.10A 31W
Piping	Maximum Spec.	Length	ft (m)	49.2 (15)		49.2 (15)	
		Height	ft (m)	26.2 (8)		26.2 (8)	
	Refrigerant Pipe	Liquid	OD(inch) x L(ft)	Φ1/4 x 24.6		Φ1/4 x 24.6	
			OD(mm) x L(m)	Φ6.35 x 7.5		Φ6.35 x 7.5	
		Gas	OD(inch) x L(ft)	Φ3/8 x 24.6		Φ3/8 x 24.6	
			OD(mm) x L(m)	Φ9.52 x 7.5		Φ9.52 x 7.5	
Heat Exchanger				2 Row 14 Step	2 Row 24 Step	2 Row 14 Step	2 Row 24 Step
Refrigerant Control Unit				EEV		EEV	
Freezer Oil Capacity			gal	0.08		0.08	
			cc	320		320	
Refrigerant to be Charged (R410A)			oz	31.7		31.7	
			g	900		900	
Refrigerant to be Added (R410A)			oz/ft	Chargeless		Chargeless	
			g/m	Chargeless		Chargeless	
Protection Device (OLP)				None		None	
Cooling Test Condition				Indoor Unit : DB80°F WB67°F Indoor Unit : DB26.7°C WB19.4°C		Outdoor Unit : DB95°F WB75°F Outdoor Unit : DB35°C WB23.9°C	
Heating Test Condition				Indoor Unit : DB70°F WB60°F Indoor Unit : DB21.1°C WB15.6°C		Outdoor Unit : DB47°F WB43°F Outdoor Unit : DB8.3°C WB6.1°C	
Operation conditon range		cooling	indoor	61°F to 90°F approx. 16°C to 32°C approx.		61°F to 90°F approx. 16°C to 32°C approx.	
			Outdoor	14°F to 115°F approx. -10°C to 46°C approx.		14°F to 115°F approx. -10°C to 46°C approx.	
		heating	indoor	80°F or less 27°C or less		80°F or less 27°C or less	
			Outdoor	5°F to 75°F approx. -15°C to 24°C approx.		5°F to 75°F approx. -15°C to 24°C approx.	

2-3 The Comparative Specifications of Product

Item		Development Model	Comparative Model
		AQV09JA AQV12JA	AQB09JJWC AQB12JJWC
Design	Indoor Unit		
	Outdoor Unit		
Net Weight	Indoor Unit	20.0lb (9.0kg)	20.0lb (9.0kg)
	Outdoor Unit	74.0lb (33.5kg)	78lb (35.5kg)
Outer Dimension	Indoor Unit	32.5 X 11.2 X 7.4 (inch) 825 X 285 X 189 (mm)	32.5 X 11.2 X 7.4 (inch) 825 X 285 X 189 (mm)
	Outdoor Unit	28.3 X 21.6 X 10.4 (inch) 720 X 548 X 265 (mm)	31.1 X 21.6 X 11.2 (inch) 790 X 548 X 285 (mm)
Noise	Indoor Unit	AQV09J* : 41dB↓ (Silence : 25dB↓) AQV12J* : 43dB↓ (Silence : 25dB↓)	AQB09J* : 41dB↓ (Silence : 28dB↓) AQB12J* : 43dB↓ (Silence : 28dB↓)
	Outdoor Unit	AQV09J* : 51dB↓ AQV12J* : 53dB↓	AQB09J* : 51dB↓ AQB12J* : 53dB↓
Air Purifying System	Filter	Silver Nano Coated Evaporator Bio Filter Deodorizing Fiter	Silver Nano Coated Evaporator Bio Filter Deodorizing Fiter
Indoor Display		3 LED Display	3 LED Display

2-4 Accessory and Option Specifications

2-4-1 Accessories

Item	Descriptions	Code-No.	Q'TY	Remark
	Ass'y Plate Hanger	DB97-02851B	1	Indoor Unit
	Remote Control	DB93-03012N	1	
	Batteries for Remote Control	DB47-90024A	2	
	User's Manual	DB98-27555A	1	
	Installation Manual	DB98-27556A	1	
	Service Manual	DB98-27557A	1	
	Drain Plug	DB67-20011A	1	Outdoor Unit
	Rubber Leg	DB73-20134A	4	

3. Alignment and Adjustments

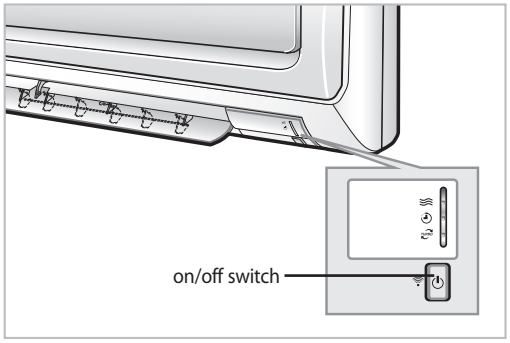
3-1 Test Mode

1. How to Operate Test Mode

Press the Power button of indoor unit for 5 seconds (Cooling test operation).

Or press the K1 switch of the display board once (Cooling test operation) or twice (Heating test operation) after removing the Cover Control of outdoor unit.

The Unit operates Test Mode for sixty minutes.



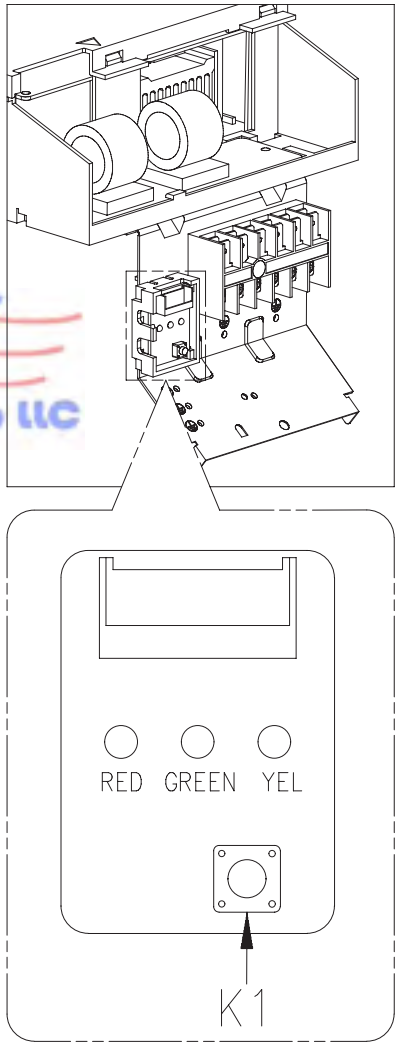
2. How to Check the Unit on Test Mode

Please check the three LED and Error Mode Display.
Please check the low pressure as connecting a manifold gauge with the service valve.

3. How to Quit Test Mode

Press the power button of indoor unit once again
Or press the K1 switch of display board three times again.

* After the test operation is finished, you cannot retry the test operation without power reset.
* The blade places to set position and then the indoor fan operates.
* The Compressor is operated by rated frequency before sixty minutes or enforced stop.



3-2 Indoor Display Error and Check Method

Description	LAMP			Main Checking Point
	OPERATION	TIMER	TURBO	
	≋	🕘	TURBO	
Indoor unit room temperature sensor error (open or short)	○	◑	○	3-2P
Indoor unit heat exchanger temperature sensor error (open or short)	◑	◑	○	3-3P
Indoor fan motor malfunction	○	○	◑	3-4P
EEPROM error	◑	◑	◑	Option Setting
Option error (option wasn't set up or option data error)	◑	◑	◑	Option Setting
Outdoor unit error	◑	○	◑	Remote Control on/off Outdoor Unit Power Reset

● : Lamp on, ○ : Lamp off, ◑ : Lamp blink

3-3 Outdoor LED Error Display and Check Method

No.	LED Display			Explanation
	Yellow	Green	Red	
1	○	○	○	Power off/ VDD NG
2	○	○	◎	IPM Over Current(O.C)
3	○	○	●	Abnormal Serial communication
	○	●	●	
4	○	◎	○	Compressor Starting error
5	○	◎	●	Normal Operation
6	○	●	○	Compressor Lock error
7	○	●	◎	DC-Link voltage under/over error
8	◎	○	◎	Outdoor temperature sensor error
9	◎	○	●	Discharge over temperature
10	◎	◎	○	Discharge temperature sensor error
11	◎	◎	●	Current sensor error
12	◎	●	○	Compressor limit error
13	◎	●	◎	Coil temperature sensor error
14	◎	●	●	1min. Time out Communication
15	●	○	○	Fan error
16	●	○	◎	OTP error
17	●	○	●	Compressor rotation error
18	●	◎	○	Operation condition secession(Dual only)
19	●	◎	◎	DC-Link voltage sensor error
20	●	◎	●	I_Trip error / PFC Over current
21	●	●	○	GAS Leak error
22	●	●	◎	AC Line Zero Cross Signal out
23	●	●	●	Power ON reset(1sec)
24	◎	○	○	Capacity miss match
25	○	◎	◎	Test Operation at Cooling Mode
26	◎	◎	◎	Test Operation at Heating Mode

● : LED ON, ○ : LED OFF, ◎ : LED BLINK

3-4 Setting Option Setup Method

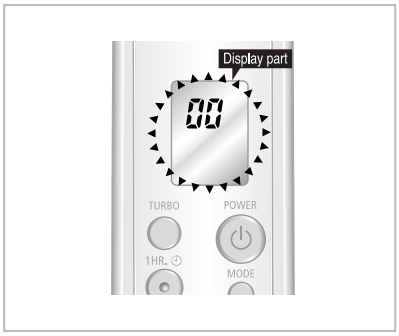
ex) Option No. : 66 01 57 02 2E

Step 1 : Enter the Option Setup mode.

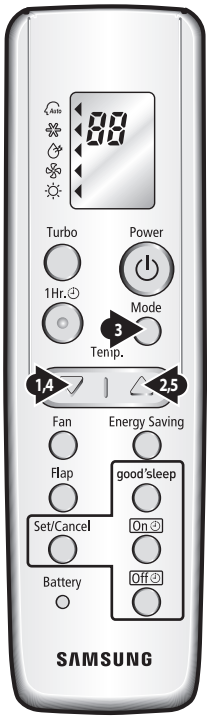
1st Take out the batteries of remote control.

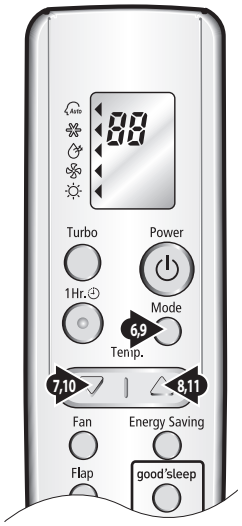
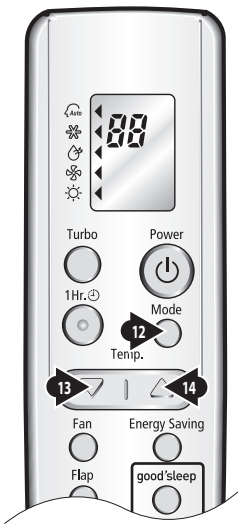
2nd Press the temperature ▽ | △ button simultaneously and insert the battery again.

3rd Make sure the remocon display shown as 00 .



Step 2 : Enter the Option Setup mode and select your option according to the following procedure.

	Feature	Display
	1 Setting Option SEG1. Push the ▽ button to set the display panel to 6 . Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	
	2 Setting Option SEG2. Push the △ button to set the display panel to 6 . Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	
	3 Change it into the set display of Option SEG3 and SEG4 with the MODE button.	
	4 Setting Option SEG3. Push the ▽ button to set the display panel to 0 . Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	
	5 Setting Option SEG4. Push the △ button to set the display panel to 1 . Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	

	Feature	Display
	6 Change it into the set display of Option SEG5 and SEG6 with the MODE button.	00
	**7** Setting Option SEG5. Push the ▽ button to set the display panel to 5. Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	50
	8 Setting Option SEG6. Push the △ button to set the display panel to 7. Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	57
	9 Change it into the set display of Option SEG7 and SEG8 with the MODE button.	00
	10 Setting Option SEG7. Push the ▽ button to set the display panel to 0. Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	00
	**11** Setting Option SEG8. Push the △ button to set the display panel to 2. Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	02
	12 Change it into the set display of Option SEG9 and SEG10 with the MODE button.	00
	13 Setting Option SEG9. Push the ▽ button to set the display panel to 2. Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	20
	14 Setting Option SEG10. Push the △ button to set the display panel to E. Every time you push the button, the display panel reads 0 ➡ 1 ➡ 2 ➡ 3 ➡ … 9 ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly.	2E

Step 3 : Upon completion of the selection, check you made right selections.

Whenever you press the Mode button, the set Option will be displayed.

Step 4 : Pressing the ON/OFF button ( )

When pressing the operation ON/OFF key with the direction of remote control for unit, the sound "Ding" is heard and the OPERATION LED lamp is flickering at the same time, then the input of option is completed. (If the "ding" sound isn't heard, try again pressing the ON/OFF button.)

Step 5 : Unit operation test-run

First, Remove the battery from the remote control.

Second, Re-insert the battery into the remote control.

Third, Press ON/OFF ( ) key with the direction of remote control for set.

• Error Mode

1st If all lamps of indoor unit are flickering, Plug out, plug in power plug again and press ON/OFF key to retry.

2nd If the unit is not working properly or all lamps are continuously flickering after setting the option code, see if the correct option code is set up for its model.

■ OPTION ITEMS

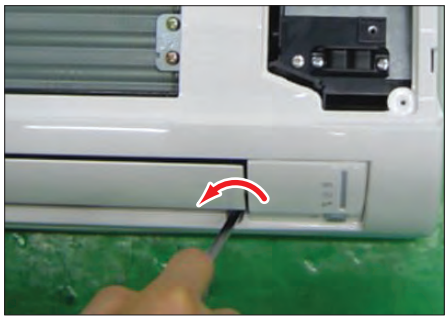
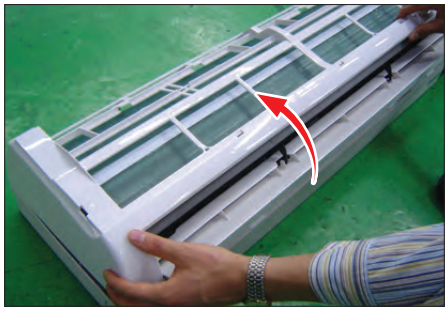
REMOCON / MODEL	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
AQV09JA	0	8	C	7	7	7	1	7	F	2	4	C
AQV12JA	0	9	C	7	7	7	1	7	F	2	5	D

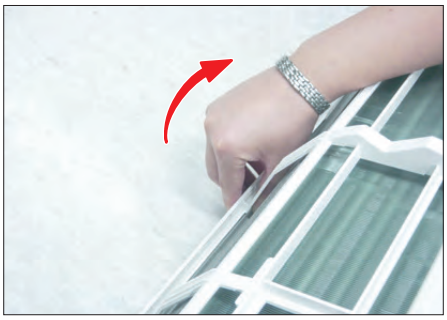
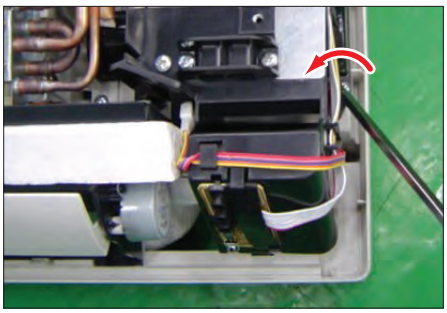
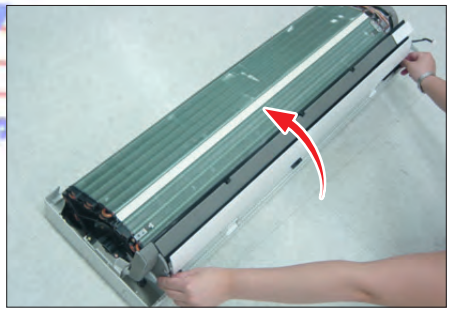
4. Disassembly and Reassembly

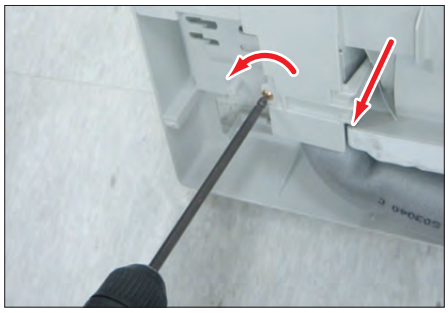
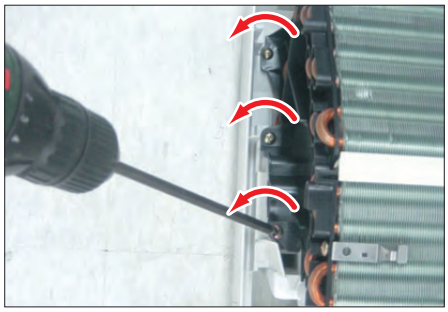
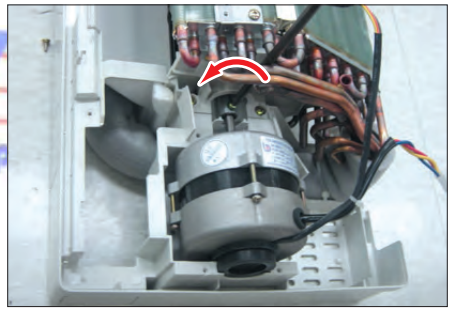
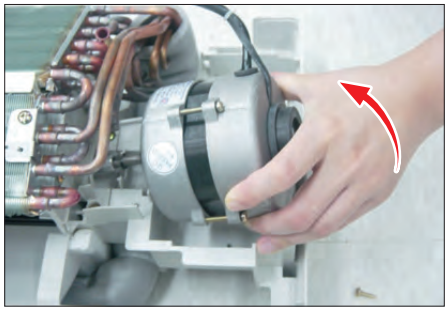
■ Necessary Tools

Item	Remark
+SCREW DRIVER	
MONKEY SPANNER	

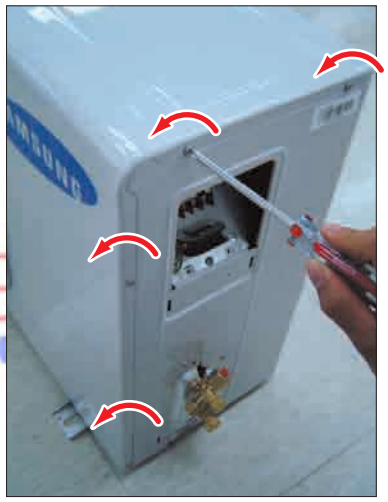
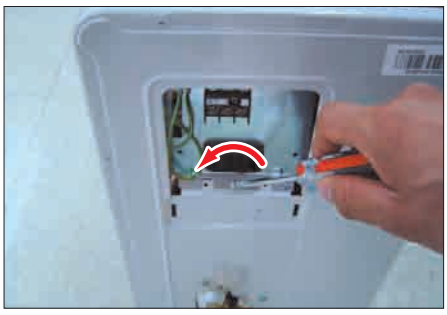
4-1 Indoor Unit

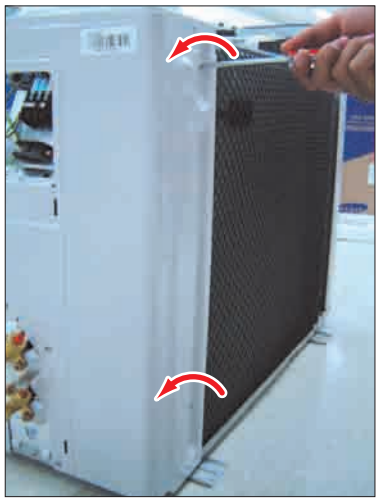
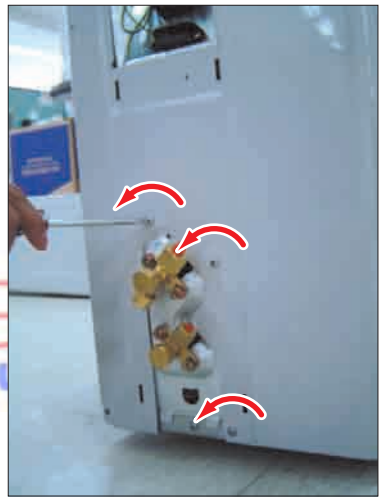
No	Parts	Procedure	Remark
1	Front Grille	1) Stop the air conditioner operation and shut off the main power.	
		2) Open the Front Grille by pulling right and left sides of the hook.	
		3) Loosen 1 of the right screw(CCW) and detach the Terminal Cover. (Use +Screw Driver.) 4) Detach the thermistor from the Front Grille.	
		5) Loosen 2 fixing screws(CCW) of Front Grille.	
		6) Unlock 3 hooks to fix Panel Front and Tray Drain. (Use +Screw Driver.)	

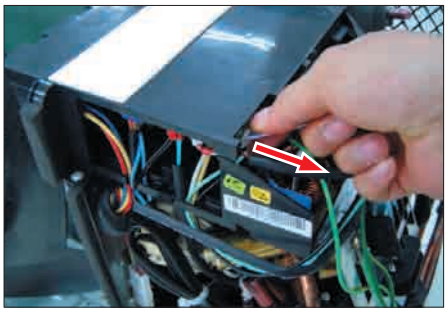
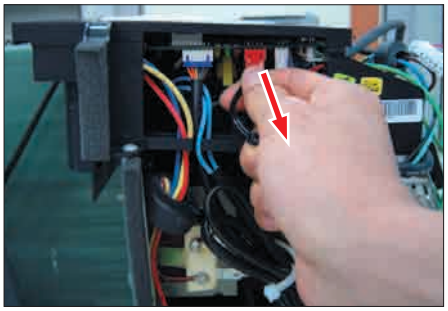
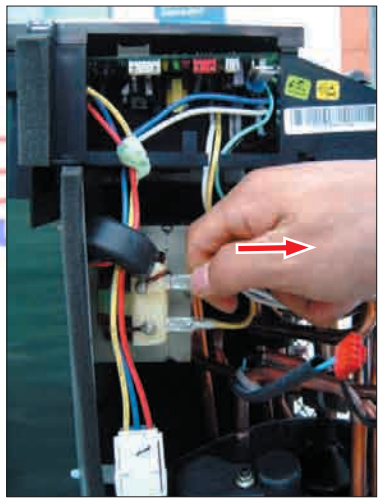
No	Parts	Procedure	Remark
		7) Unlock 3 hooks to fix Panel Front and Back-Body.	
2	Control-In (Main PCB)	1) Take all the connector of PCB upper side out. (Inclusion Power Cord) 2) Detach the outdoor unit connection wire from the Terminal Block. 3) Loosen 4 fixing screws(CCW) of Ass'y Control-In. (Use +Screw Driver.) ⚠ You can disassembly Ass'y Control In without evaporator disassembled.	
3	Tray Drain	1) Pull Tray Drain out from the Back Body.	

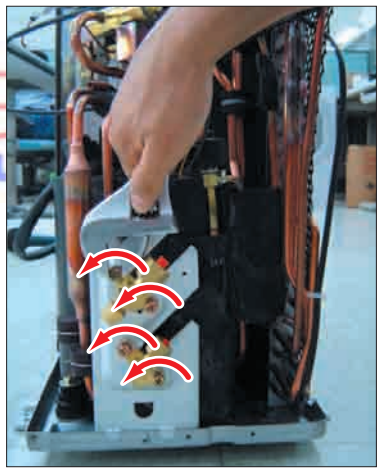
No	Parts	Procedure	Remark
4	Heat Exchanger	1) Loosen 2 fixing earth screws(CCW) of right side. (Use +Screw Driver.) 2) Detach the Connection Pipe. 3) Detach the Holder Pipe at the rear side.	
		4) Loosen the 4 fixing screws(CCW) of right and left side. (Use +Screw Driver.) 5) Lifting the Heat Exchanger up a little to push the up side for separation from the indoor unit. ⚠ First, check Comp. Down and then disconnect the connection pipes before you disassemble the Evaporator from indoor unit.	
5	Fan Motor & Cross Fan	1) Loosen the fixing screw(CCW). (Use +Screw Driver.) 2) Detach the Fan Motor from the Fan. 3) Detach the Fan From the left Holder Bearing.	 

4-2 Outdoor Unit

No	Parts	Procedure	Remark
1	Common Work	1) Loosen 1 fixing screw(CCW) of the Cover-Side. (Use +Screw Driver.)	
		2) Loosen each 4 screws(CCW) on both right and left Cabinet Side edges and a fixing screw on the Cabinet Front lower to detach the Cabinet Front. (Use +Screw Driver.)	
		3) Detach the Cabinet Front like the picture on the right side.	
		4) Loosen 1 screw(CCW) fixed to assemble Plate Control Out with Cabinet-Side RH. (Use +Screw Driver.)	

No	Parts	Procedure	Remark
		5) Loosen 2 fixing screws(CCW) on the rear side of Cabinet-Side RH. (Use +Screw Driver.)	
		6) Loosen 3 screws(CCW) fixed to assemble Bracket Valve with Cabinet-Side RH. (Use +Screw Driver.)	
		7) Loosen 2 fixing screws(CCW) of Cabinet Side LF. (Use +Screw Driver.)	

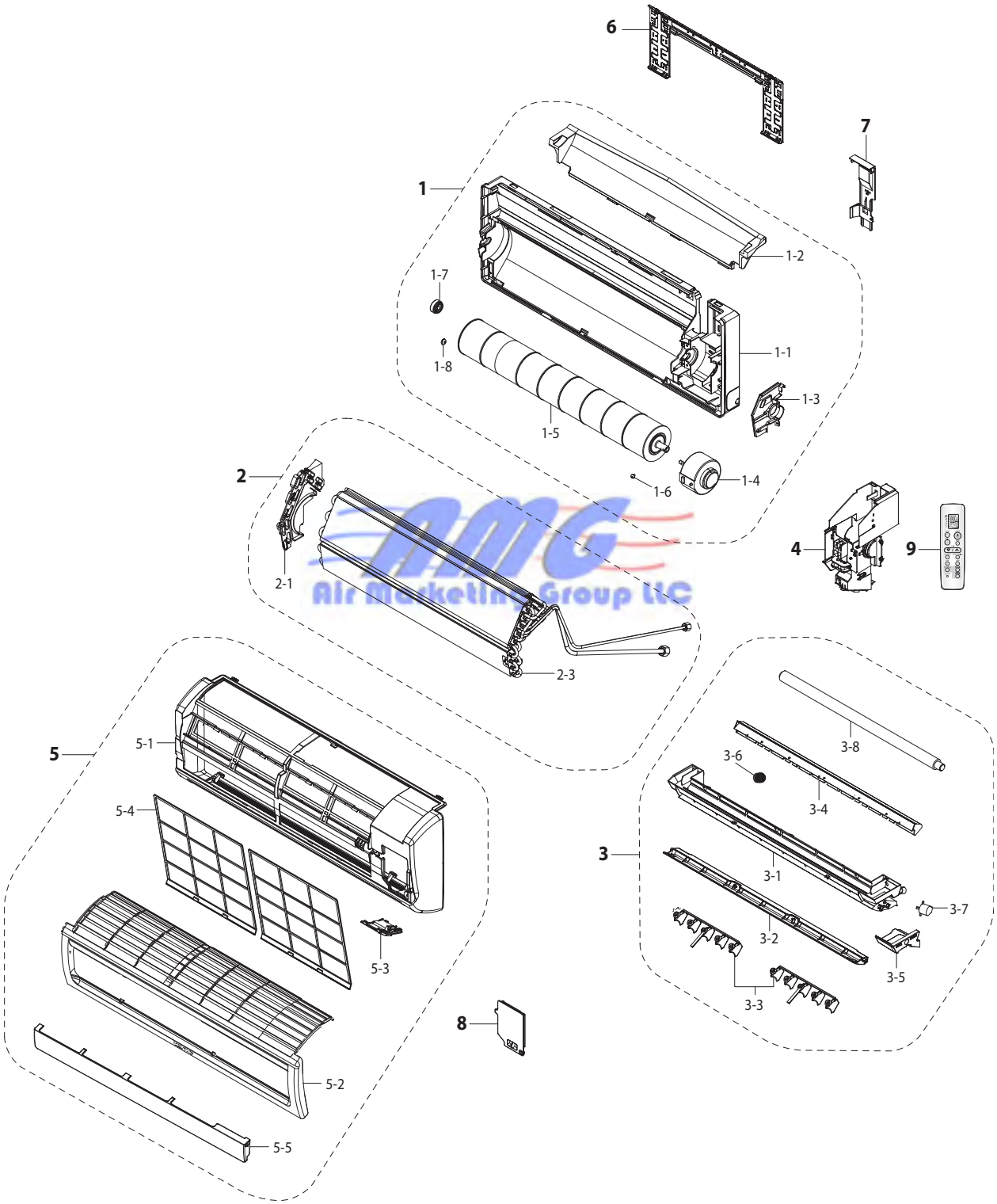
No	Parts	Procedure	Remark
2	Ass'y Control Out	1) Detach the Motor Wire from the PCB of Ass'y Control Out.	
		2) Detach several connectors from the PCB of Ass'y Control Out.	
		3) Detach 2 Connect Wires from Reactor.	
		4) Loosen 1 screw(CCW) fixed to assemble Ass'y Control Out with Partition. (Use +Screw Driver.)	

No	Parts	Procedure	Remark
3	Fan & Motor	1) Release the refrigerant at first. 2) Loosen fixing screw(CW). (Use Monkey Spanner.) 3) Disassemble the pipes in both inlet and outlet with welding torch. 4) Detach the Heat Exchanger.	
4	Heat Exchanger	1) Loosen 2 fixing screws(CCW) on both sides. (Use +Screw Driver.) 2) Disassemble the pipes in both inlet and outlet with welding torch. 3) Detach the Heat Exchanger. ⚠ Before you disassemble the pipes and Condenser, be sure that there should be no refrigerant remained in the unit.	
5	Ass'y Valve 4-Way & Ass'y Valve EEV	1) Loosen 4 bolts(CCW) fixed to assemble Valve Service with Bracket Valve like the picture on the right side. (Use Monkey Spanner.) 2) Disassemble the pipes assembled the suction and discharge sides of the Compressor with welding torch.	
6	Compressor	1) Loosen the Nut(CCW) of Terminal Cover. (Use Monkey Spanner.) 2) Detach the Terminal Cover and detach the Connect Comp Wire from Compressor. 3) Disassemble the Felt Comp Sound. 4) Loosen the 3 bolts(CCW) at the bottom of Compressor like the picture on the right side. (Use Monkey Spanner.)	

MEMO

5. Exploded Views and Parts List

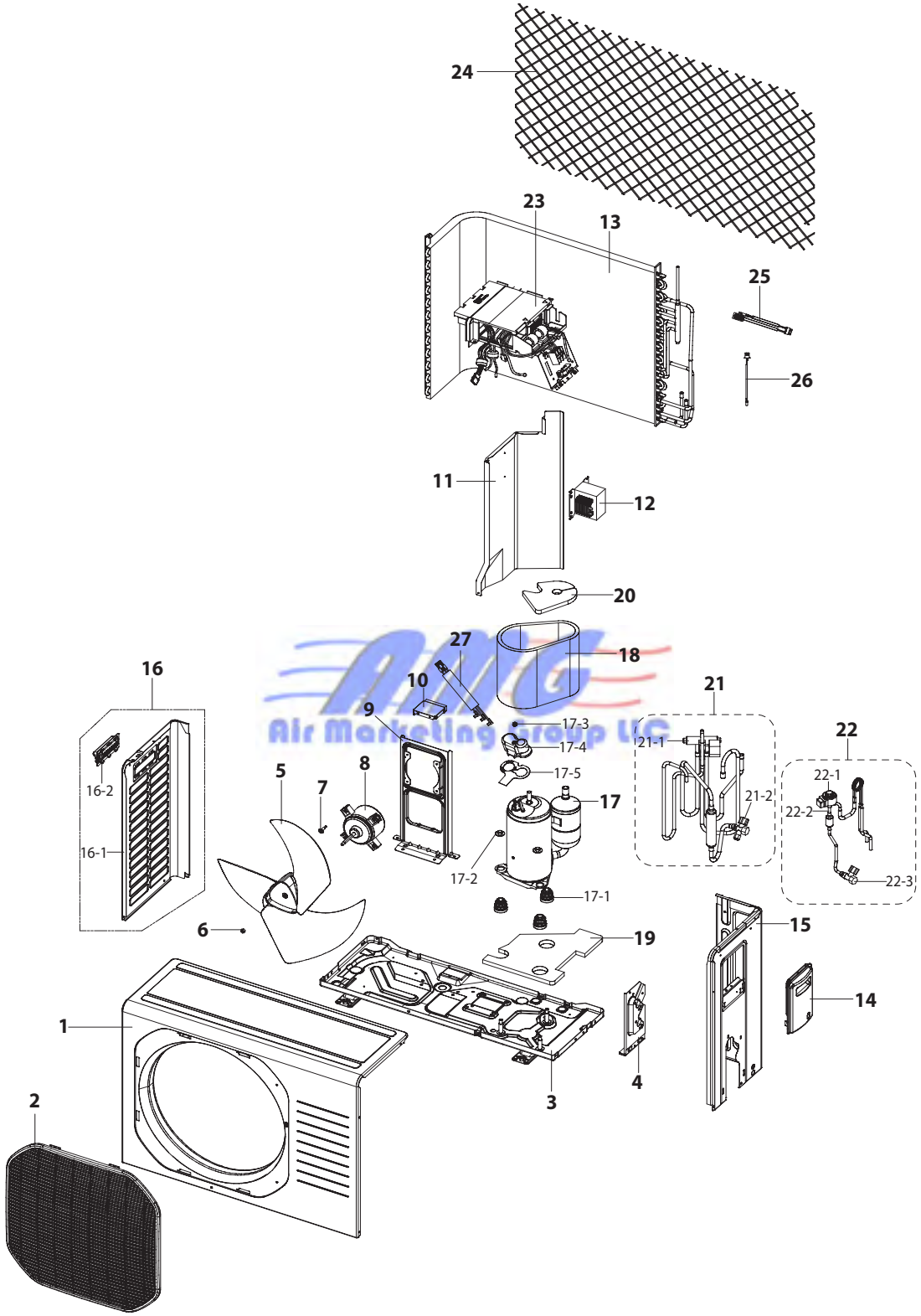
5-1 Indoor Unit



■ Parts List

No.	Code No.	Description	Specification	Q'TY		SA/SNA
				AQV09JA	AQV12JA	
1	DB94-00454H	ASS'Y-BACK BODY	ASS'Y	1	1	**SA**
1-1	DB61-01632D	BACK-BODY	HIPS	1	1	SNA
1-2	DB69-00834A	CUSHION-BACK BODY	EPS	1	1	**SA**
1-3	DB96-03149A	ASSY EVAP SUPPORT RH	ASS'Y	1	1	SNA
1-4	DB31-00219A	MOTOR-IN	220-240V~, 50/60Hz, Class E	1	1	**SA**
1-5	DB94-00456A	ASS'Y-CROSS FAN	OD92x635	1	1	**SA**
1-6	DB97-02075A	ASS'Y-BOLT SPECIAL	ASS'Y	1	1	SNA
1-7	DB73-00181A	RUBBER-BEARING	RUBBER	1	1	SNA
1-8	DB94-40007A	MOLD-BEARING	BEARING	1	1	**SA**
2	DB96-07488A	ASS'Y EVAP TOTAL	ASS'Y	1	1	SNA
2-1	DB63-00850A	COVER-BEARING	ABS	1	1	SNA
2-3	DB96-03060F	ASS'Y-EVAP	1.3S,2x14	1	1	**SA**
3	DB94-00457D	ASS'Y-TRAY DRAIN	ASS'Y	1	1	**SA**
3-1	DB63-00848A	TRAY-DRAIN	ABS	1	1	SNA
3-2	DB61-01635C	BLADE-H	HIPS	1	1	**SA**
3-3	DB61-01636A	BLADE-V	PP	2	2	**SA**
3-4	DB63-00849A	TRAY-STABILIZER	ABS	1	1	SNA
3-5	DB69-00839A	CUSHION EPS-TRAY-RH	EPS30	1	1	**SA**
3-6	DB73-00180A	RUBBER-CAP DRAIN	GUM-EPM	1	1	SNA
3-7	DB31-00371A	ASS'Y-MOTOR STEPPING	220-240V~, 50/60Hz, Class E	1	1	**SA**
3-8	DB94-00458B	ASS'Y DRAIN-HOSE	ASS'Y	1	1	**SA**
4	DB93-05132A	ASS'Y CONTROL-IN	ASS'Y	1	1	**SA**
5	DB92-00686R	ASS'Y PANEL FRONT	ASS'Y	1	1	**SA**
5-1	DB64-00989E	PANEL FRONT	HIPS	1	1	**SA**
5-2	DB64-01295B	GRILLE PANEL D	HIPS	1	1	**SA**
5-3	DB90-03094A	ASS'Y COVER-DISPLAY	ASS'Y	1	1	**SA**
5-4	DB63-00846B	GUARD-AIR FILTER	PP	2	2	**SA**
5-5	DB64-01294C	GRILLE INLET	HIPS	1	1	**SA**
6	DB97-02851B	ASSY PLATE HANGER	SGCC-M	1	1	SNA
7	DB61-01638B	HOLDER-PIPE	PS	1	1	SNA
8	DB63-00844E	COVER TERMINAL	ABS 5V	1	1	**SA**
9	DB93-03012N	ASS'Y REMOCON	ARH-1409	1	1	**SA**

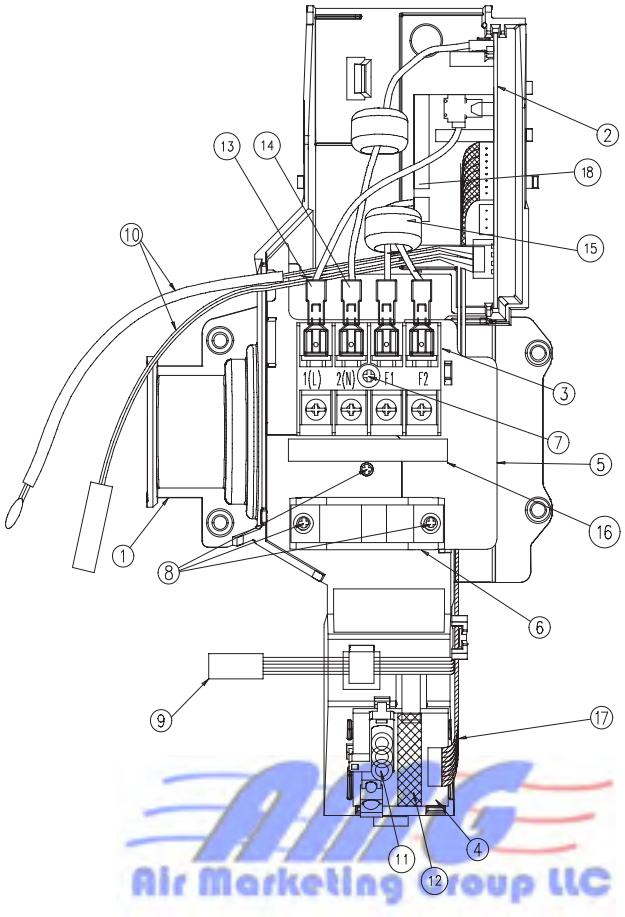
5-2 Outdoor Unit



■ Parts List

No.	Code No.	Description	Specification	Q'TY		SA/SNA
				AQV09JA	AQV12JA	
1	DB90-01581G	ASS'Y CABI FRONT	ASS'Y, SC-94445T	1	1	SA
2	DB63-00847C	GUARD FAN	PP, UL746C	1	1	SA
3	DB90-01330L	ASS'Y BASE OUT	ASS'Y, SC-94445T	1	1	SA
4	DB99-00401A	ASS'Y BRACKET VALVE	ASS'Y, SC-94445T	1	1	SA
5	DB67-00397A	FAN-PROPELLER	AS+G/F20%, Φ400	1	1	SA
6	DB60-30004A	SCREW MACHINE	M6	1	1	SA
7	DB60-00150A	SCREW SPECIAL	M4	4	4	SNA
8	DB31-00431A	MOTOR FAN OUT	DC Motor, SIC-52FV-F726-2	1	1	SA
9	DB61-01644A	BRACKET MOTOR	SGCC-M	1	1	SA
10	DB97-02225A	ASS'Y SUPPORT PLATE B/M	SGCC-M	1	1	SA
11	DB94-01339A	ASS'Y PARTITION	ASS'Y, SGCC-M	1	1	SA
12	DB27-00041A	REACTOR	PPS,5mH, 10A	1	1	SA
13	DB96-03602B	ASS'Y COND UNIT	ASS'Y	1	1	SA
14	DB90-03306A	ASS'Y COVER CONTROL	ASS'Y	1	1	SA
15	DB90-03307A	ASS'Y CABINET SIDE RH	ASS'Y, SC-94445T	1	1	SA
16	DB90-01332A	ASS'Y CABINET SIDE LF	ASS'Y, SC-94445T	1	1	SA
16-1	DB64-01094A	CABINET SIDE LF	SECC-P, SC-94445T	1	1	SA
16-2	DB64-00992A	HANDLE LF	PP	1	1	SA
17	G4C090LUBER	COMPRESSOR	ROTARY, BLDC	1	1	SNA
17-1	DB63-00763A	GROMMET ISOLATOR	NR	3	3	SNA
17-2	DB60-30028A	SCREW HEX	M8	3	3	SNA
17-3	DB60-30018A	SCREW MACHINE	M5	1	1	SNA
17-4	DB63-00489A	COVER TERMINAL	PBT (G/F 15%)	1	1	SNA
17-5	DB63-00817A	GASKET	EPDM	1	1	SNA
18	DB63-01647A	FELT COMP SIDE	FELT+PVC Sheet	1	1	SA
19	DB63-01044A	FELT COMP BASE	FELT+PVC Sheet	1	1	SA
20	DB63-01710A	FELT COMP UPPER	FELT+PVC Sheet	1	1	SA
21	DB96-06703A	ASS'Y VALVE 4WAY	ASS'Y	1	1	SA
21-1	DB62-02286A	4WAY VALVE	R410A, SANHUA	1	1	SNA
21-2	DB62-02284A	VALVE SERVICE	R410A, SANHUA, 3/8"	1	1	SNA
22	DB96-06739A	ASS'Y VALVE EEV	ASS'Y	1	1	SA
22-1	DB62-03964A	VALVE EXPANSION COIL	FUJIKOKI, Φ1.4	1	1	SNA
22-2	DB62-03916A	VALVE EXPANSION BODY	FUJIKOKI, Φ1.4	1	1	SNA
22-3	DB62-02283A	VALVE SERVICE	R410A, SANHUA, 1/4"	1	1	SNA
23	DB93-04345A	ASS'Y CONTROL OUT	ASS'Y	-	1	SA
	DB93-04345B	ASS'Y CONTROL OUT	ASS'Y	1	-	SA
24	DB61-02891C	GUIDE SCREEN	P.E.H 100%	1	1	SA
25	DB32-00176D	THERMISTOR OUT/DIS	ASS'Y	1	1	SA
26	DB32-00121B	THERMISTOR COND	ASS'Y	1	1	SA
27	DB93-04489A	CONNECT WIRE COMP	ASS'Y	1	1	SA

5-3 Ass'y Control In : DB93-05132A

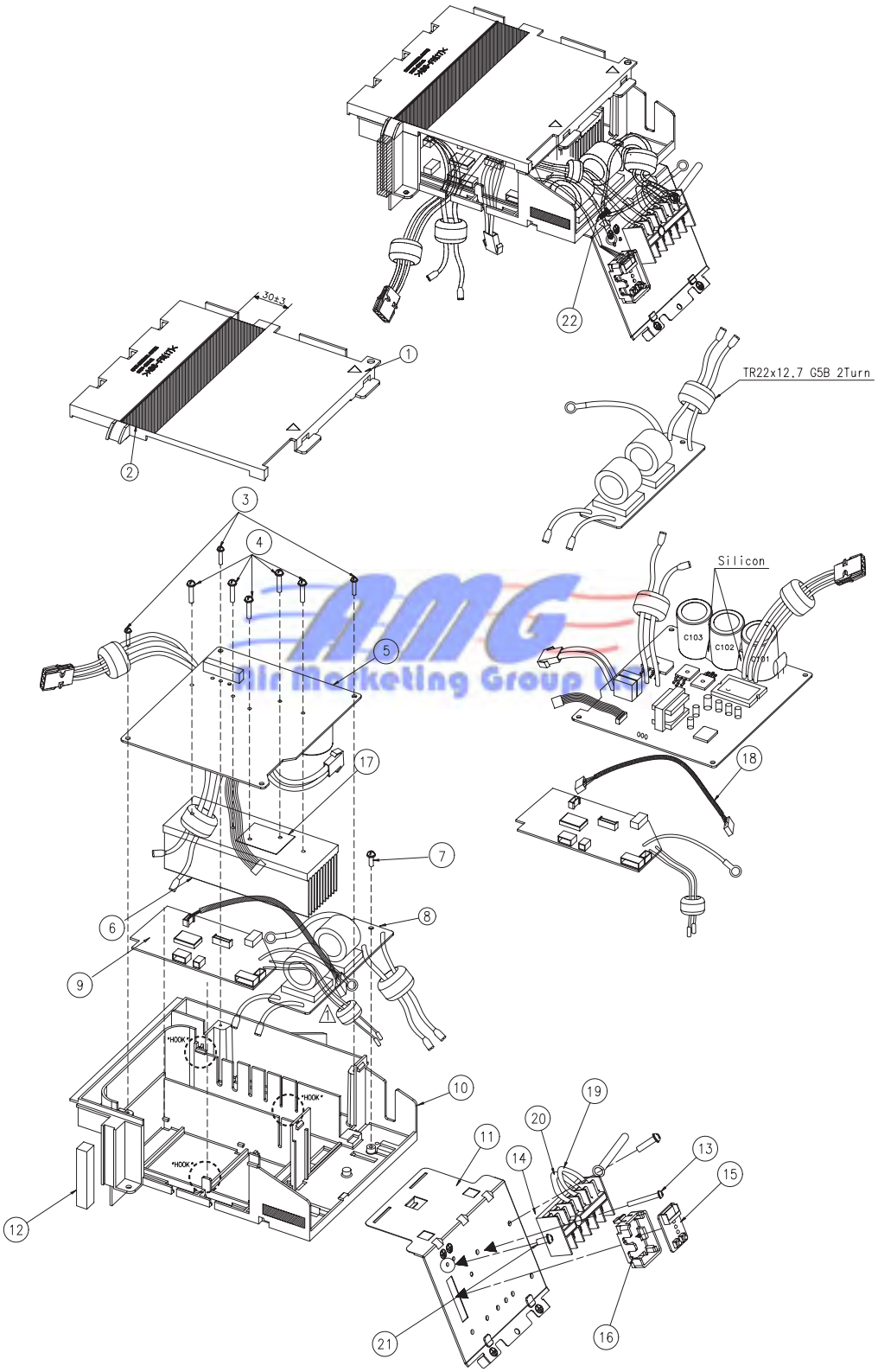


■ **Parts List**

No.	Code No.	Description	Specification	Q'TY	SA/SNA
1	DB61-01637C	CASE-CONTROL IN	ABS 5V	1	SNA
2	DB93-04255D	ASS'Y-MAIN PCB	PCB	1	**SA**
3	DB65-00004U	TERMINAL BLOCK	DAF-4P	1	SNA
4	DB93-03117A	ASS'Y-S/W & DISPLAY PCB	ASS'Y	1	SNA
5	DB61-01639A	PLATE CONTROL IN	SGCC-M,T1.2	1	SNA
6	DB61-01097A	HOLDER-WIRE CLAMP	ABS	1	**SA**
7	6001-000929	SCREW-MACHINE	PH M3xL22	1	SNA
8	6001-001054	SCREW-MACHINE	TH M4xL10	3	SNA
9	DB93-04832A	CONNECT WIRE MOTOR	ASS'Y	1	SNA
10	DB32-00020A	ASS'Y-THERMISTOR	4P(103AT)	1	**SA**
11	DB63-00851A	COVER LAMP	ABS(V0)	1	SNA
12	DB73-00242B	RUBBER-BAND	RUBBER	1	SNA
13	DB39-00765T	CONNECT WIRE-L	BRN	1	SNA
14	DB39-01193A	CONNECT WIRE-N	SKYBLU,3P	1	SNA
15	DB39-01210B	CONNECT WIRE-COMM	RED/BLU	1	SNA
16	DB98-27584A	LABEL CAUTION	TETRON25	1	SNA
17	DB93-04685A	C/W DISPLAY PCB	DISPLAY	1	SNA
18	DB93-04257A	ASSY PCB SUB-485	PCB	1	SA

5-4 Ass'y Control Out

■ **AQV09JAX : DB93-04345B**
AQV12JAX : DB93-04345A

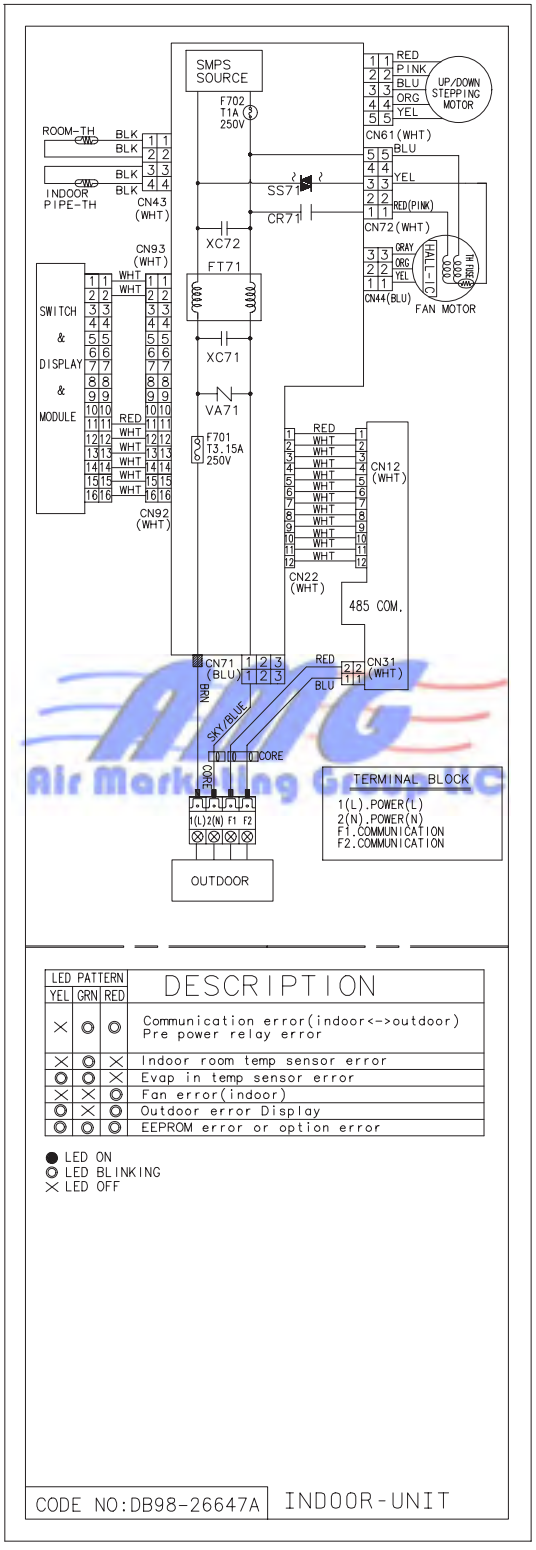


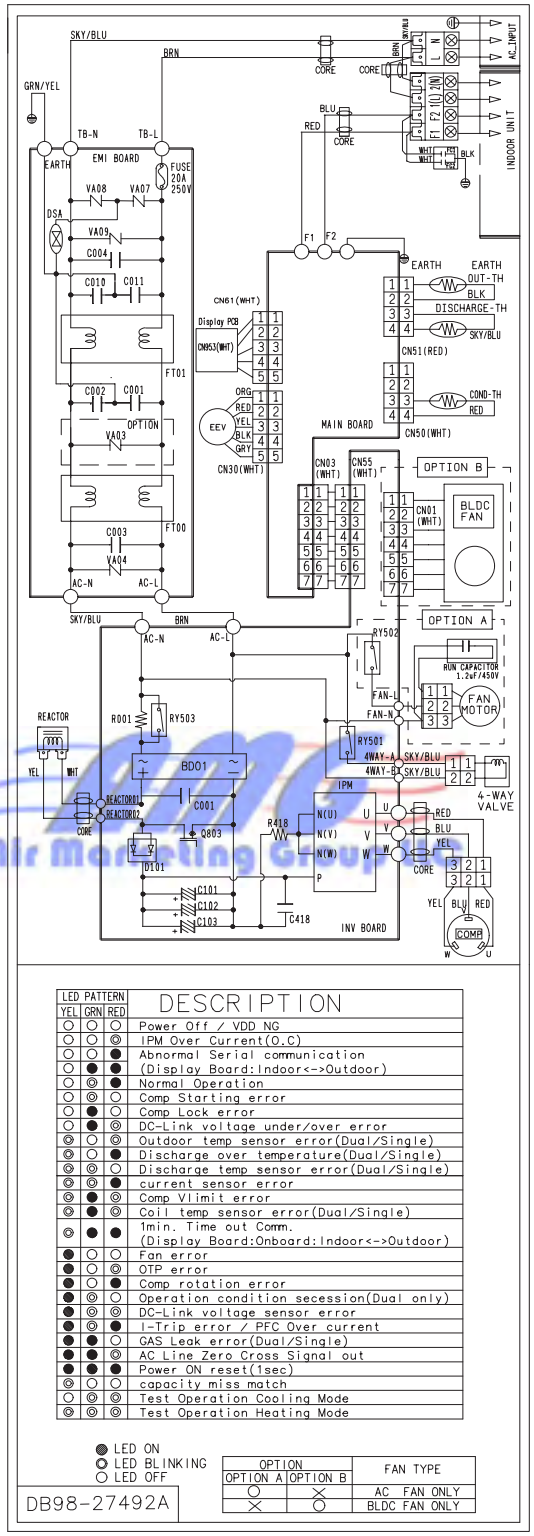
■ Parts List

No.	Code No.	Description	Specification	Q'TY		SA/SNA	Remark
				AQV09JAX	AQV12JAX		
1	DB61-02250B	CASE CONTROL COVER	ABS 5V, GRAY	1	1	**SA**	
2	DB62-04566A	SEAL CASE CONTROL COVER	FOAM LEX T2(WHITE)	1	1	**SNA**	
3	6002-000630	SCREW TAPPING	M3xL8 PH+ ZPC(YEL)	3	3	SNA	
4	DB91-00306A	ASS'Y SCREW-MACHINE	M3x16 WSP PH+	5	5	SNA	
5	DB93-04347B	ASS'Y PCB INV	FR4 160x140	1	-	**SA**	
	DB93-04347A	ASS'Y PCB INV	FR4 160x140	-	1	**SA**	
6	DB62-03155A	HEAT SINK	140x50x45mm, 11FIN	1	1	**SA**	
7	6002-000560	SCREW TAPPING	PH,+,2S,M4,L10	1	1	SNA	
8	DB93-04264A	ASS'Y PCB EMI	FR-1 139x40	1	1	**SA**	
9	DB93-04330A	ASS' PCB MAIN	FR4 125x67	1	1	**SA**	
10	DB61-02249B	CASE CONTROL BASE	ABS 5V, T2.0	1	1	**SA**	
11	DB70-00547A	PLATE CONTROL OUT	SGCC-M T0.6	1	1	**SA**	
12	DB62-02332P	SEAL CASE CONTROL BASE	FOAM PU(BLACK)	1	1	SNA	
13	6002-000555	SCREW TAPPING	M4xL25 PH+ ZPC(YEL)	1	1	SNA	
14	DB65-00181C	TERMINAL BLOCK	DAF-6P	1	1	**SA**	
15	DB93-04329A	ASS'Y PCB DISPLAY	FR-1 35x25	1	1	**SA**	
16	DB61-02975A	CASE DISPLAY PCB	ABS V0,T2.0	1	1	**SA**	
17	DB81-00547B	INSULATOR	MICA	1	1	SNA	
18	DB93-04337B	CONNECT WIRE DISPLAY	FOR DISPLAY, 5P	1	1	**SA**	
19	DB39-04439A	LEAD CONNECTOR-N	SKYBLU	1	1	SNA	
20	DB39-04439B	LEAD CONNECTOR-L	BRN	1	1	SNA	
21	6009-001001	SCREW SPECIAL	SCREW EARTH	1	1	SNA	
22	DB65-10088D	CABLE TIE	NYLON66	1	1	SNA	

6. Wiring Diagram

6-1 Indoor Unit





LED PATTERN YEL	LED PATTERN GRN	LED PATTERN RED	DESCRIPTION
○	○	○	Power Off / VDD NG
○	○	◎	IPM Over Current(O.C)
○	○	●	Abnormal Serial communication
○	●	●	(Display Board:Indoor<->Outdoor)
○	◎	●	Normal Operation
○	◎	○	Comp Starting error
○	●	○	Comp Lock error
○	●	◎	DC-Link voltage under/over error
◎	○	◎	Outdoor temp sensor error(Dual/Single)
◎	○	●	Discharge over temperature(Dual/Single)
◎	◎	○	Discharge temp sensor error(Dual/Single)
◎	◎	●	current sensor error
◎	●	◎	Comp Vlimit error
◎	●	◎	Coil temp sensor error(Dual/Single)
◎	●	●	1min. Time out Comm. (Display Board:Onboard:Indoor<->Outdoor)
●	○	○	Fan error
●	○	◎	OTP error
●	○	●	Comp rotation error
●	◎	○	Operation condition secession(Dual only)
●	◎	◎	DC-Link voltage sensor error
●	◎	●	I-Trip error / PFC Over current
●	●	○	GAS Leak error(Dual/Single)
●	●	◎	AC Line Zero Cross Signal out
●	●	●	Power ON reset(1sec)
◎	○	○	capacity miss match
○	◎	◎	Test Operation Cooling Mode
◎	◎	◎	Test Operation Heating Mode

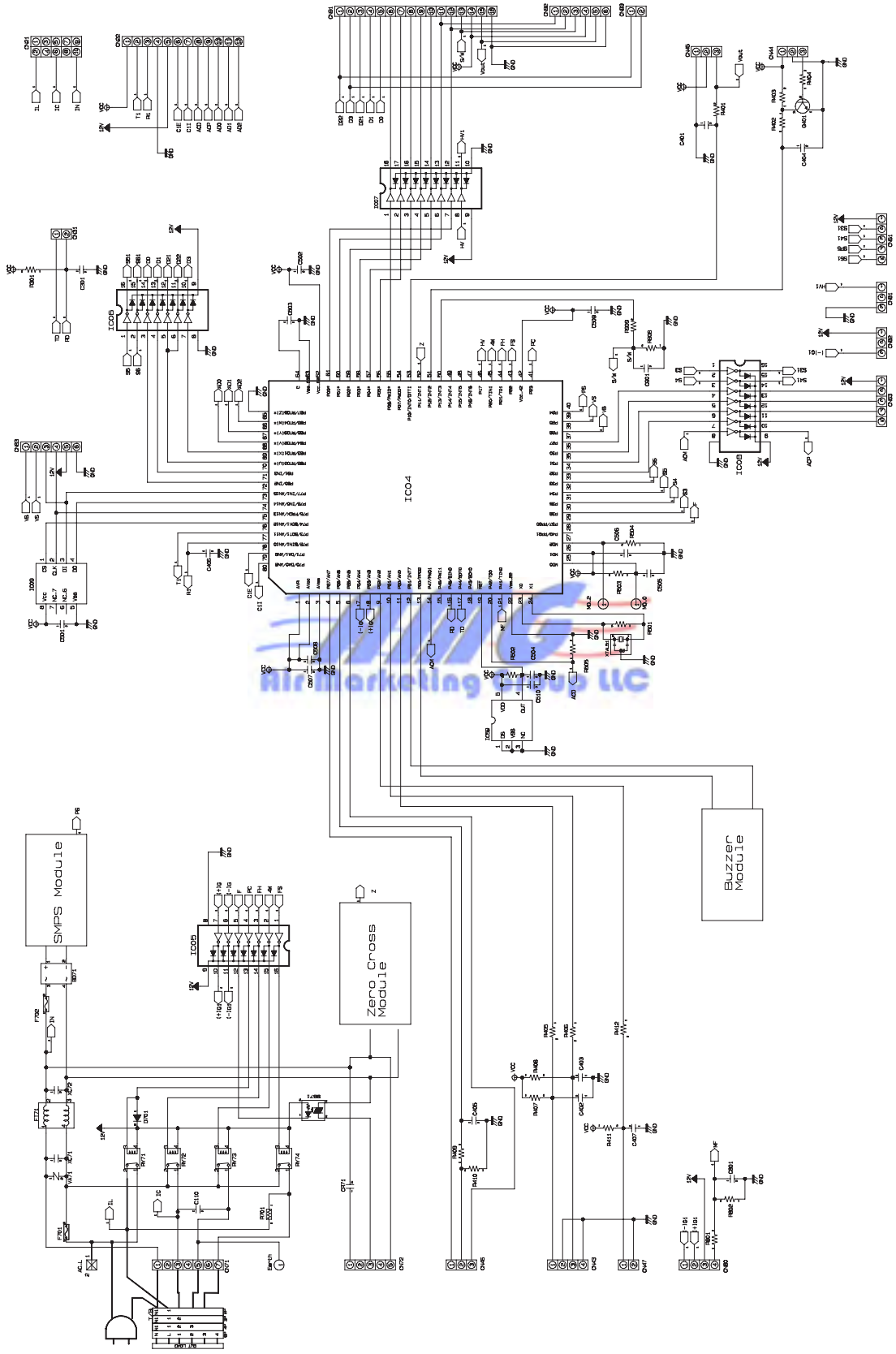
◉ LED ON
◎ LED BLINKING
○ LED OFF

OPTION A	OPTION B	FAN TYPE
○	×	AC FAN ONLY
×	○	BLDC FAN ONLY

DB98-27492A

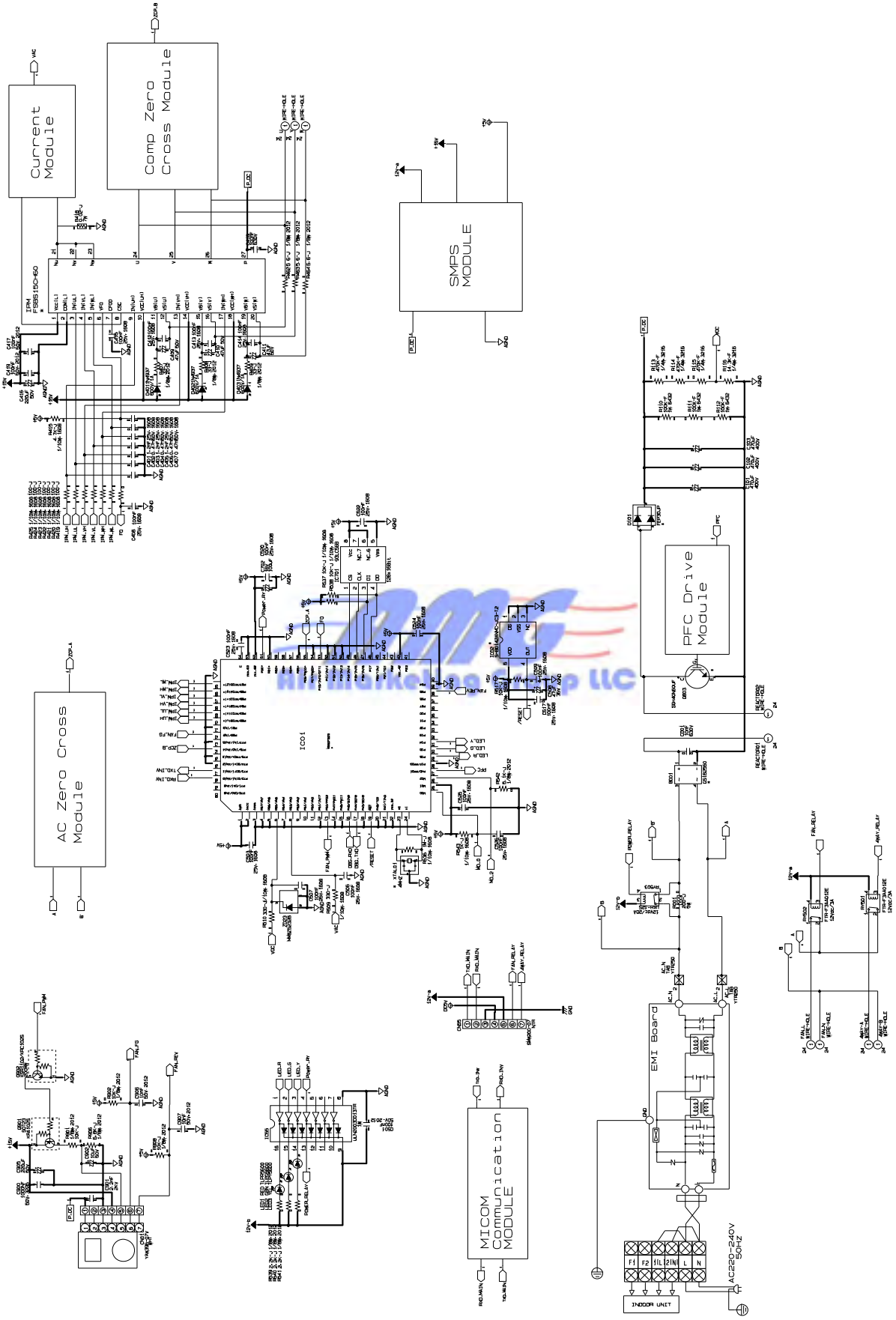
7. Schematic Diagram

7-1 Indoor Unit

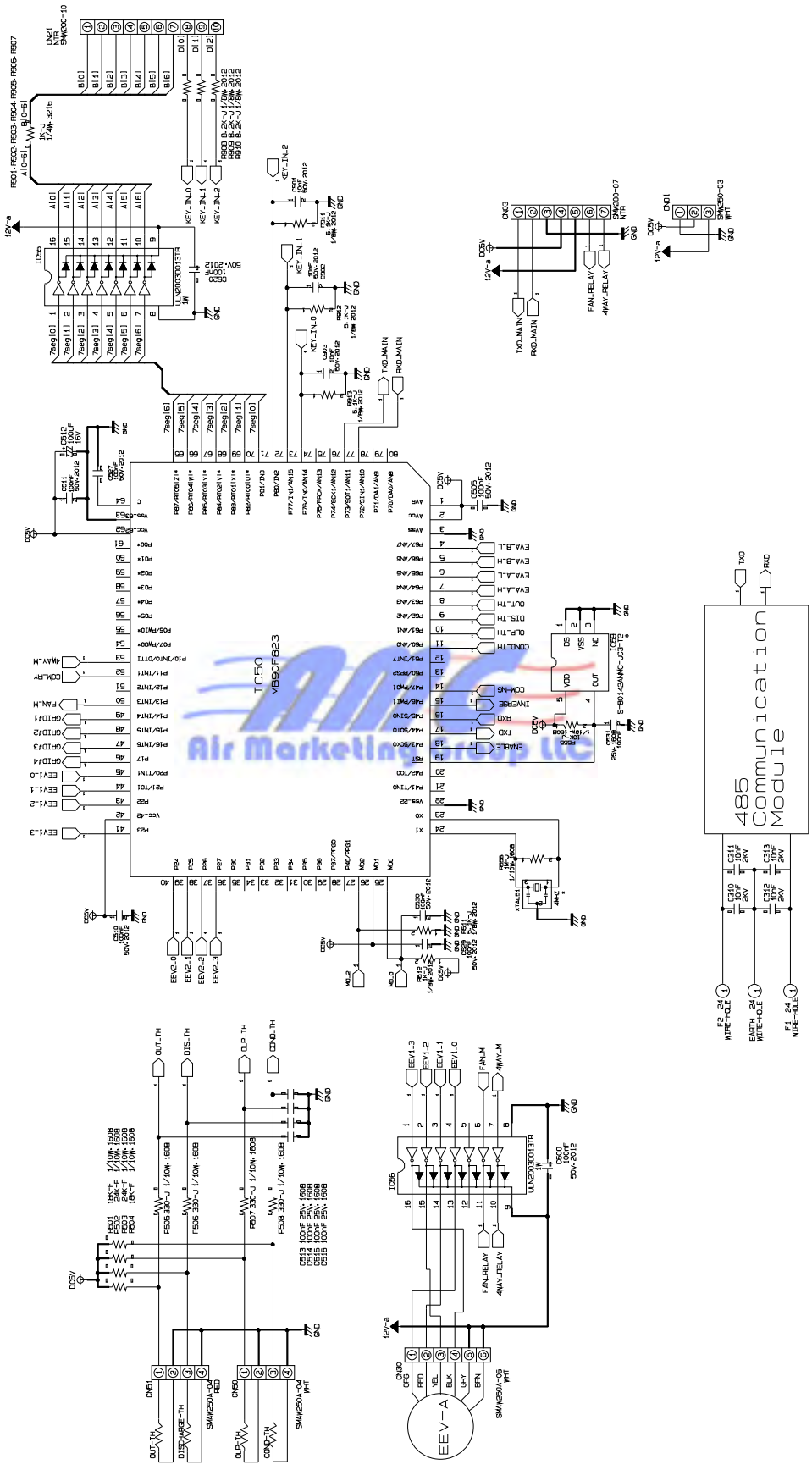


7-2 Outdoor Unit

■ Inverter



■ Main

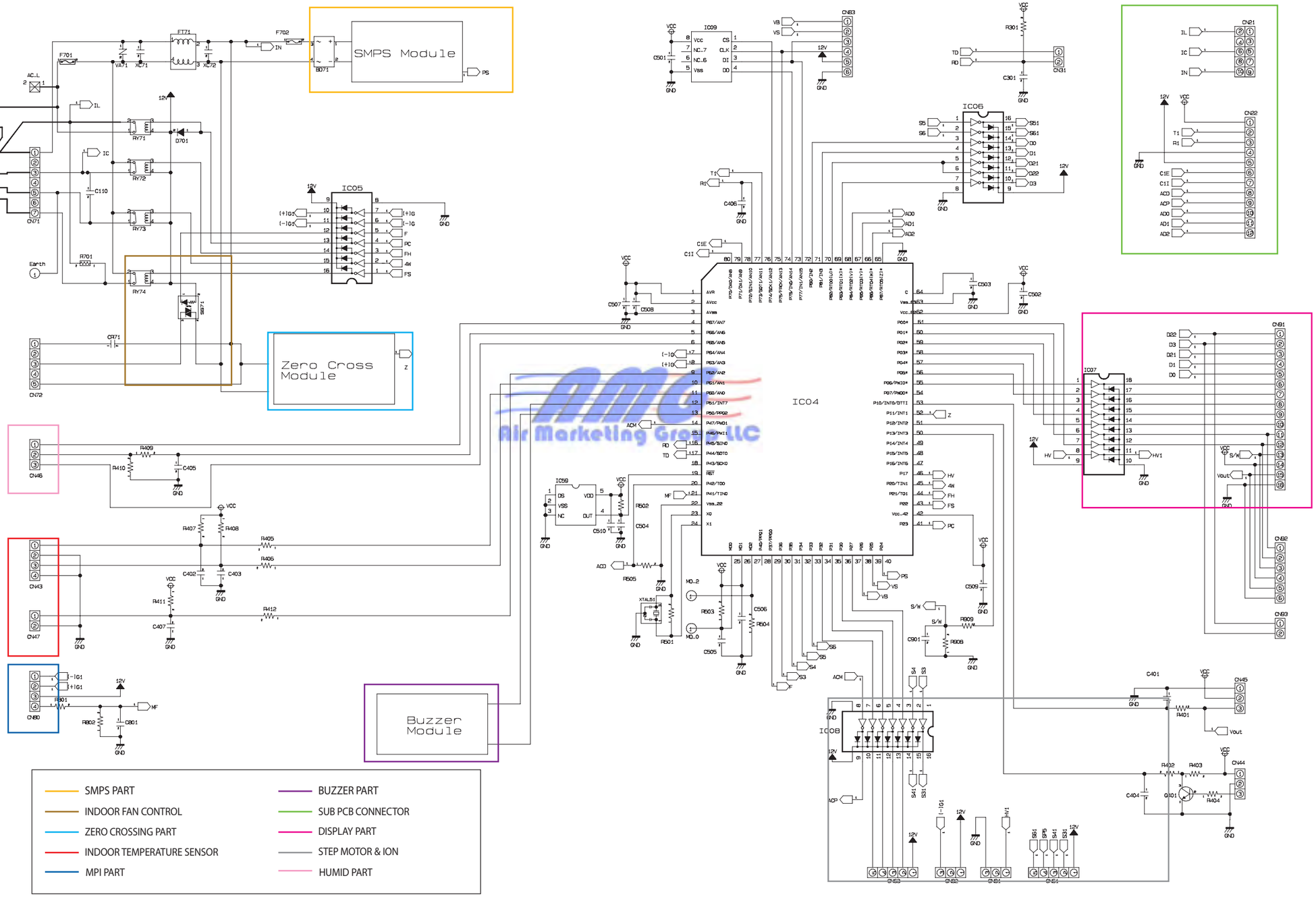


MEMO

8. Circuit Descriptions

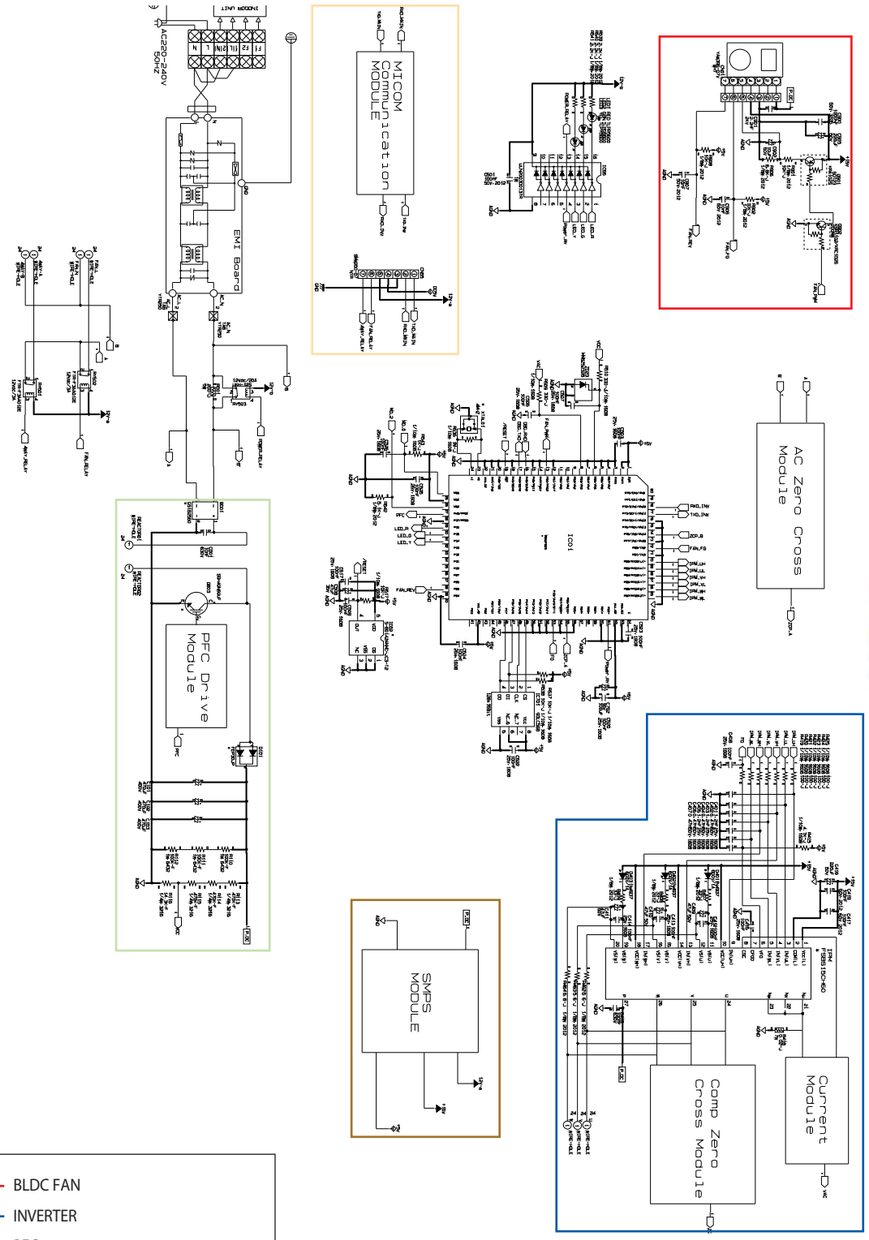
8-1 PCB Circuit Descriptions

8-1-1 Indoor Unit

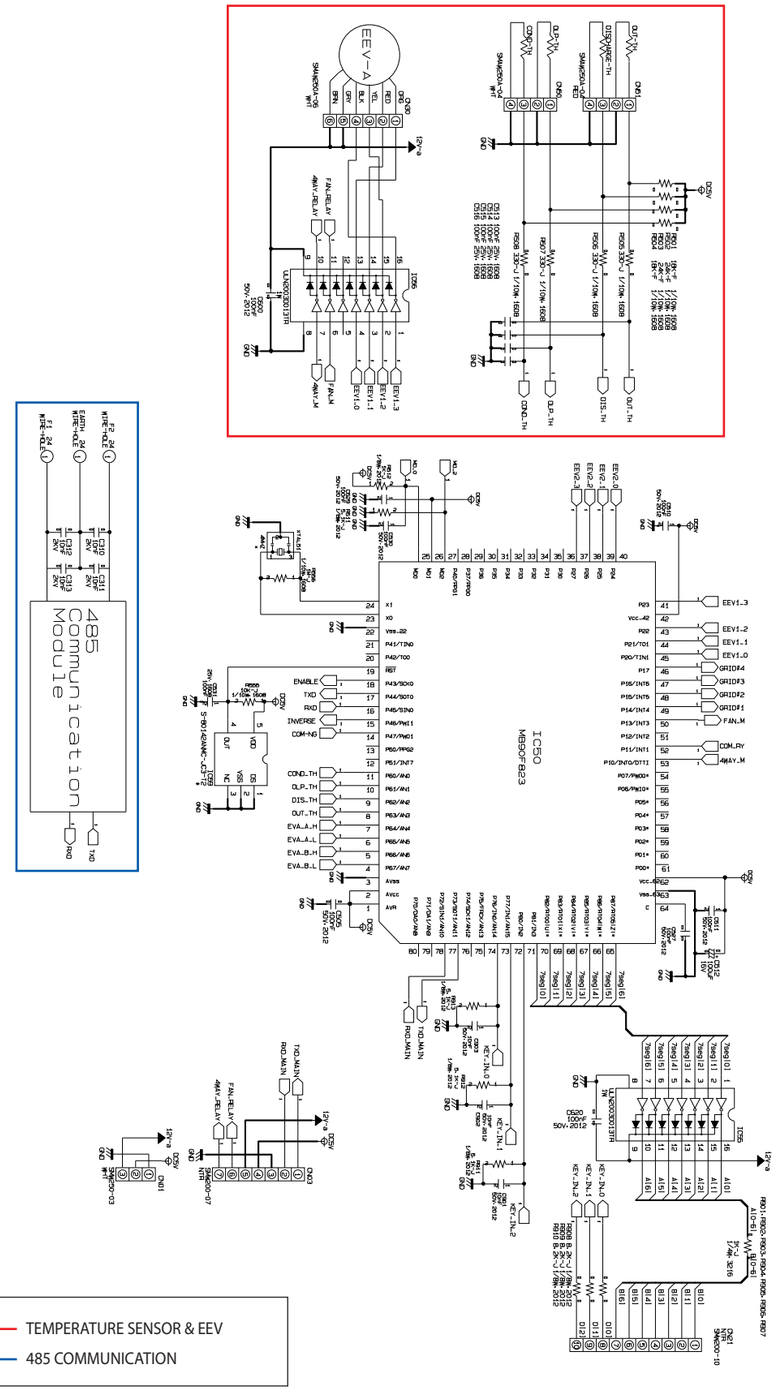


8-1-2 Outdoor Unit

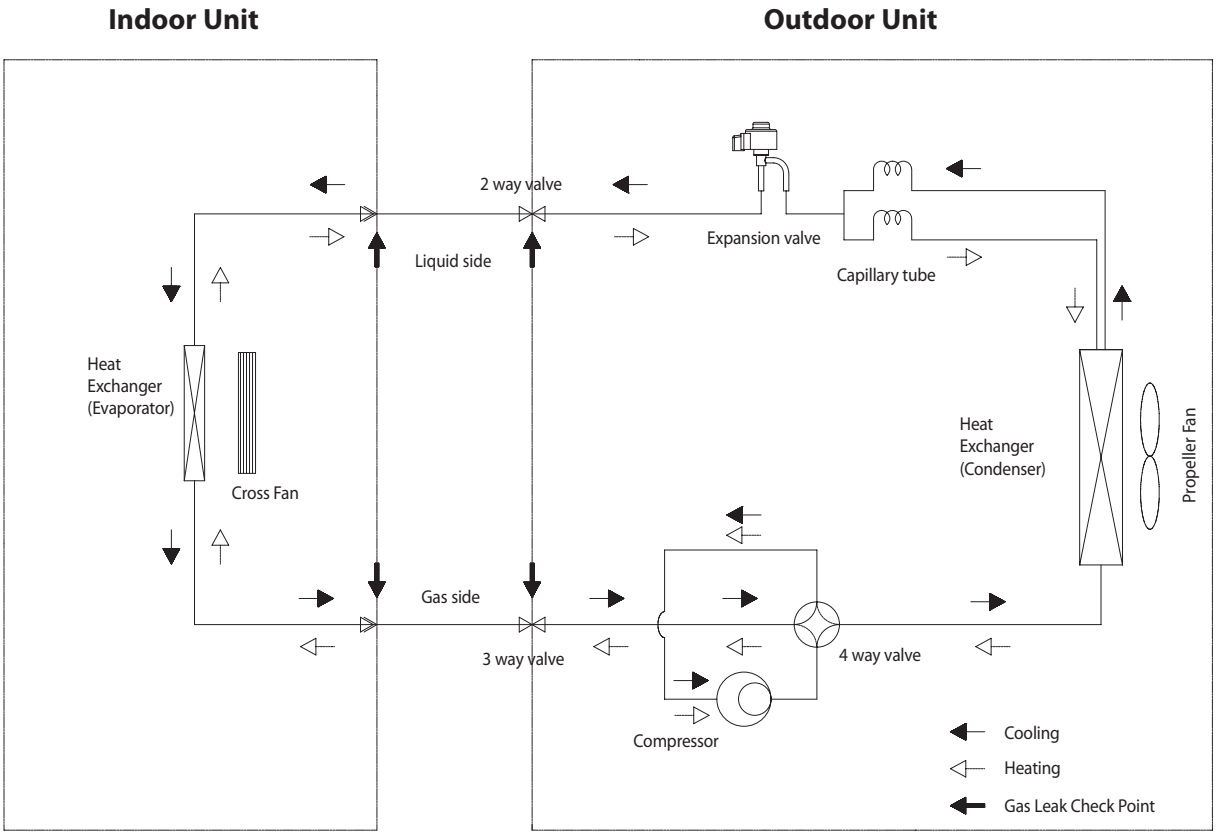
■ Inverter



■ Main



8-2 Refrigerating Cycle Diagram



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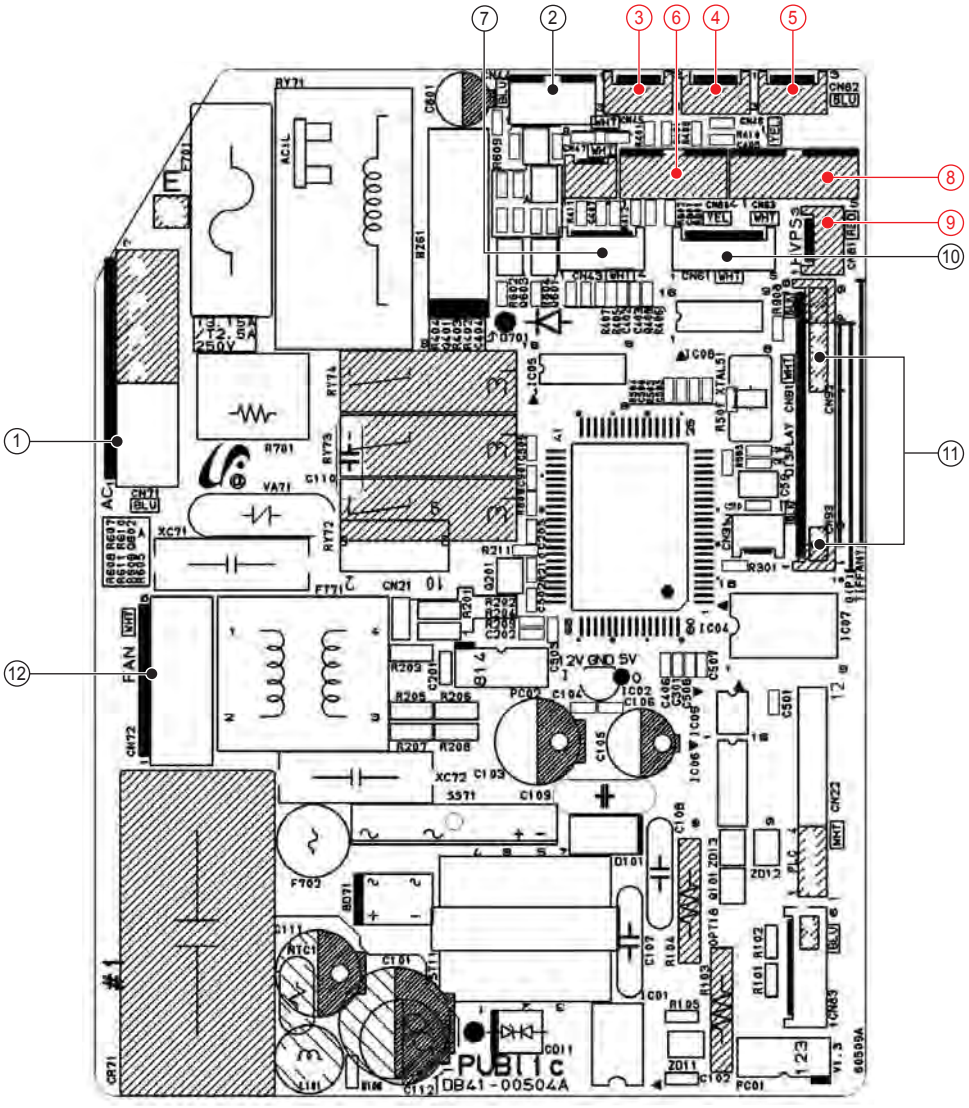
9. PCB Diagram

9-1 Indoor PCB

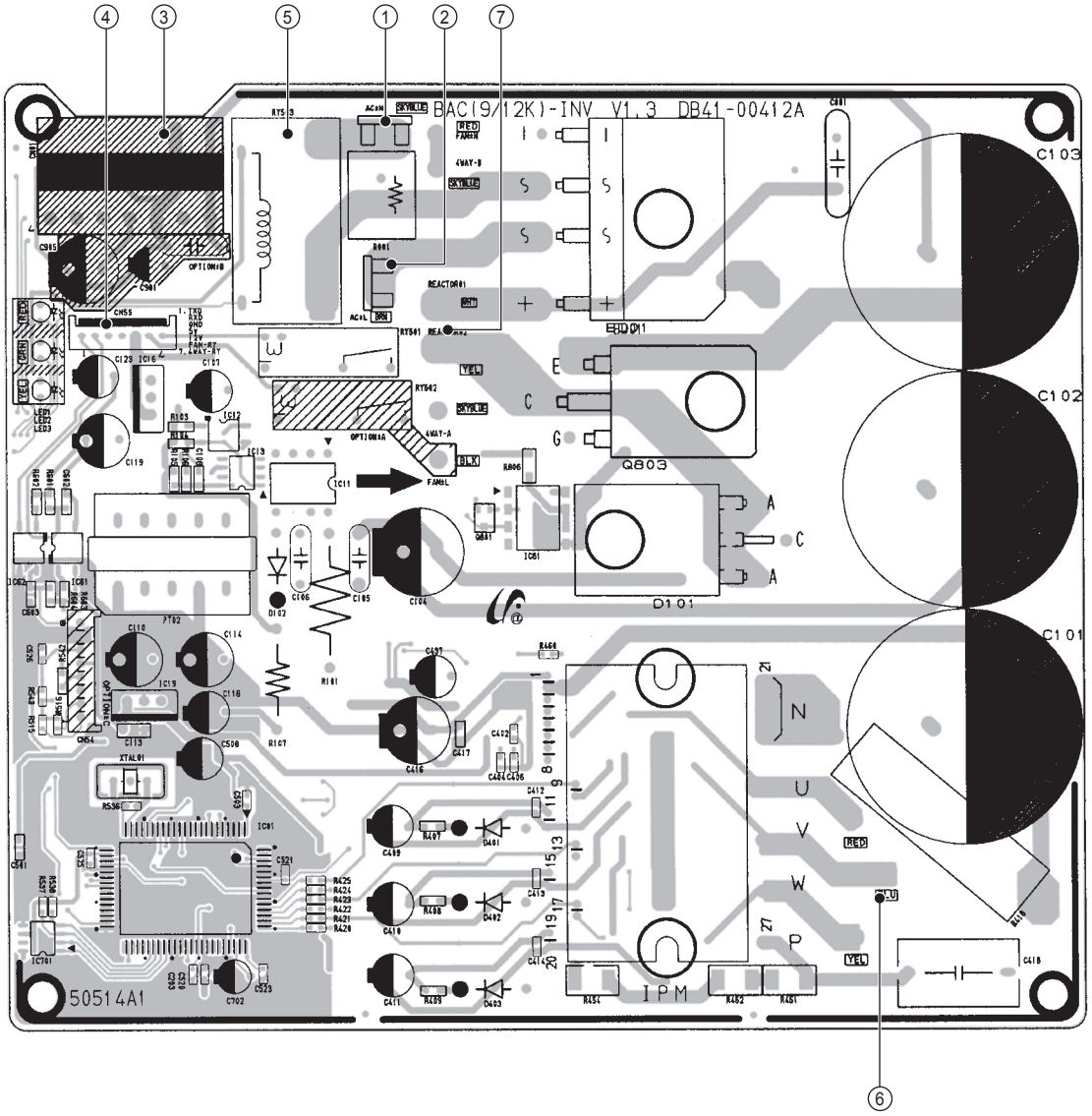
⚠ The red number connecter is not used.



①	Power	⑦	Temperature Sensor
②	Motor RPM Feedback	⑧	Auto Grill
③	Remocon Module	⑨	HVPS(High voltage Generator)
④	Humidity Sensor	⑩	BLADE-H Step Motor
⑤	Anions	⑪	Display
⑥	MPI	⑫	Indoor Fan Motor

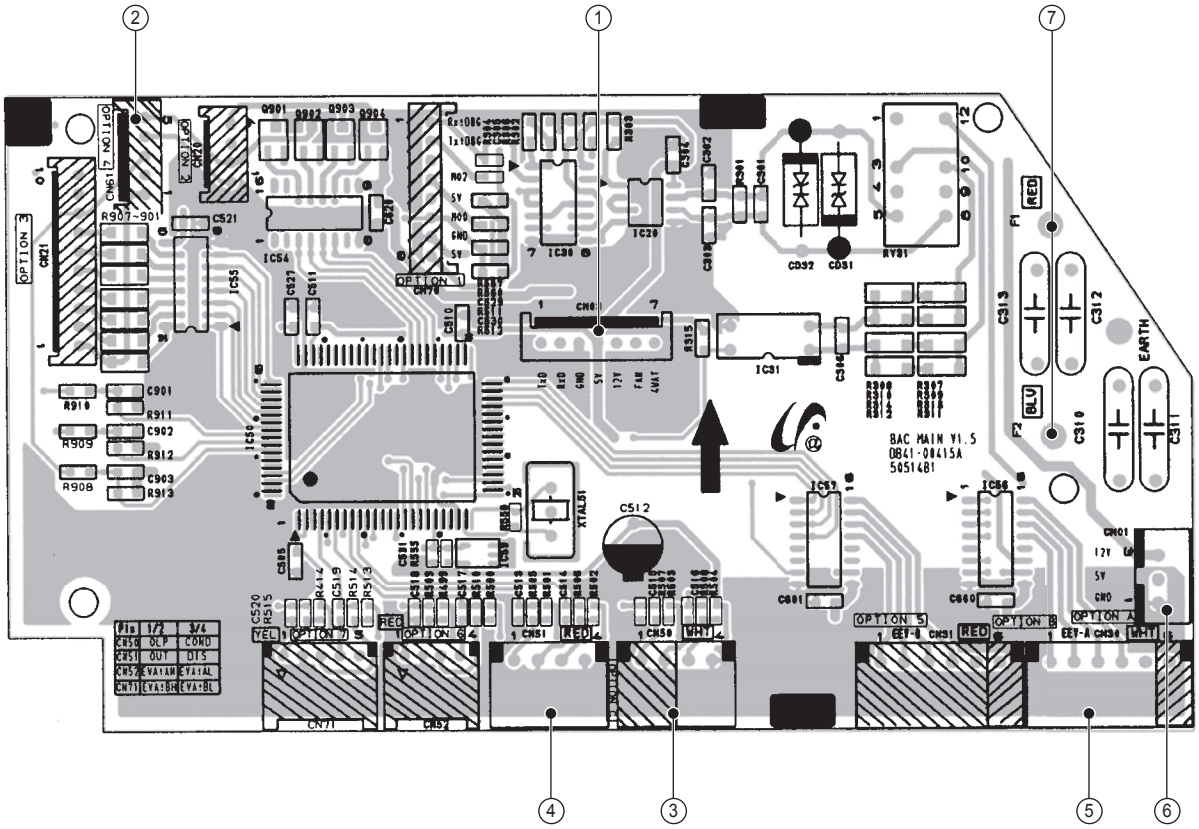
9-2 Outdoor Inverter PCB

⚠ The red number connecter is not used.



①	Power N	⑤	Power Relay
②	Power L	⑥	Comp. Connector Wire
③	BLDC Fan : YAW396-07V (WHT)	⑦	Reactor Connector Wire
④	Main PCB Connector : SMW200-07(WHT)		

9-3 Outdoor Main PCB

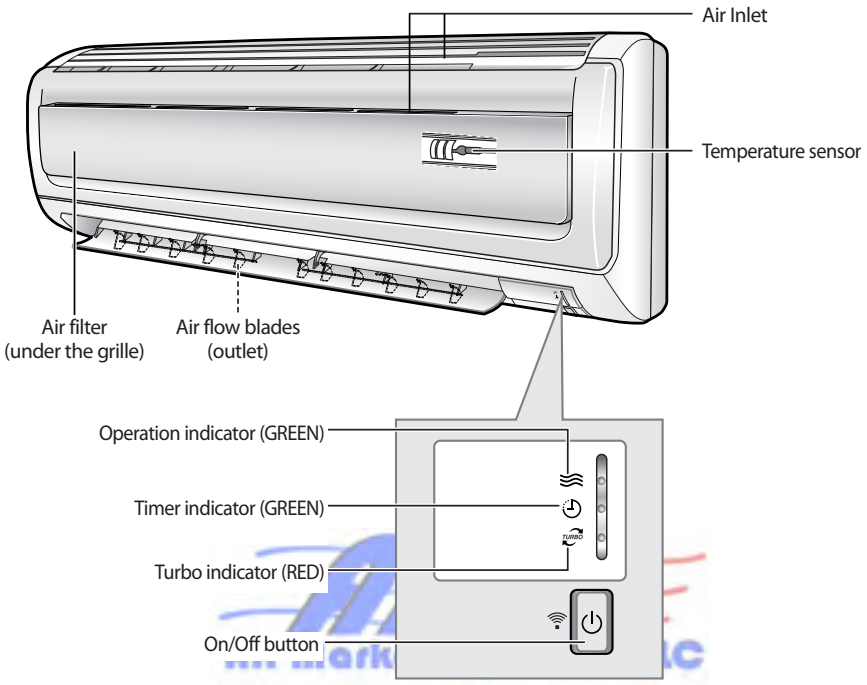


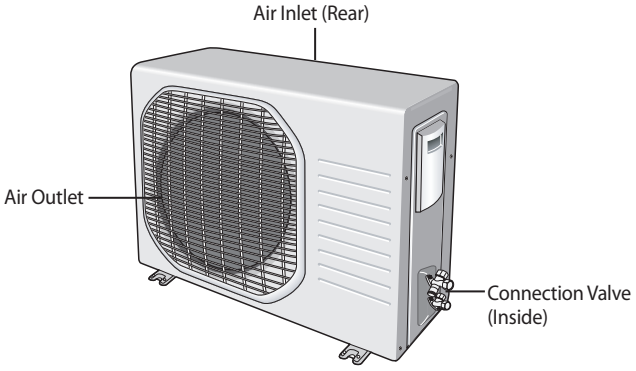
①	Inverter PCB Connector : SMW200-07(WHT)
②	Display PCB Connector : SMW200-05(WHT)
③	OLP/Cond. Temperature Sensor : SMAW250A-04(WHT)
④	Outdoor/Discharge Temperature Sensor : SMAW250A-04(RED)
⑤	EEV Connector : SMAW250A-06(WHT)
⑥	DC5V Connector : SMW250-03(WHT)
⑦	Communication

10. Operating Instructions

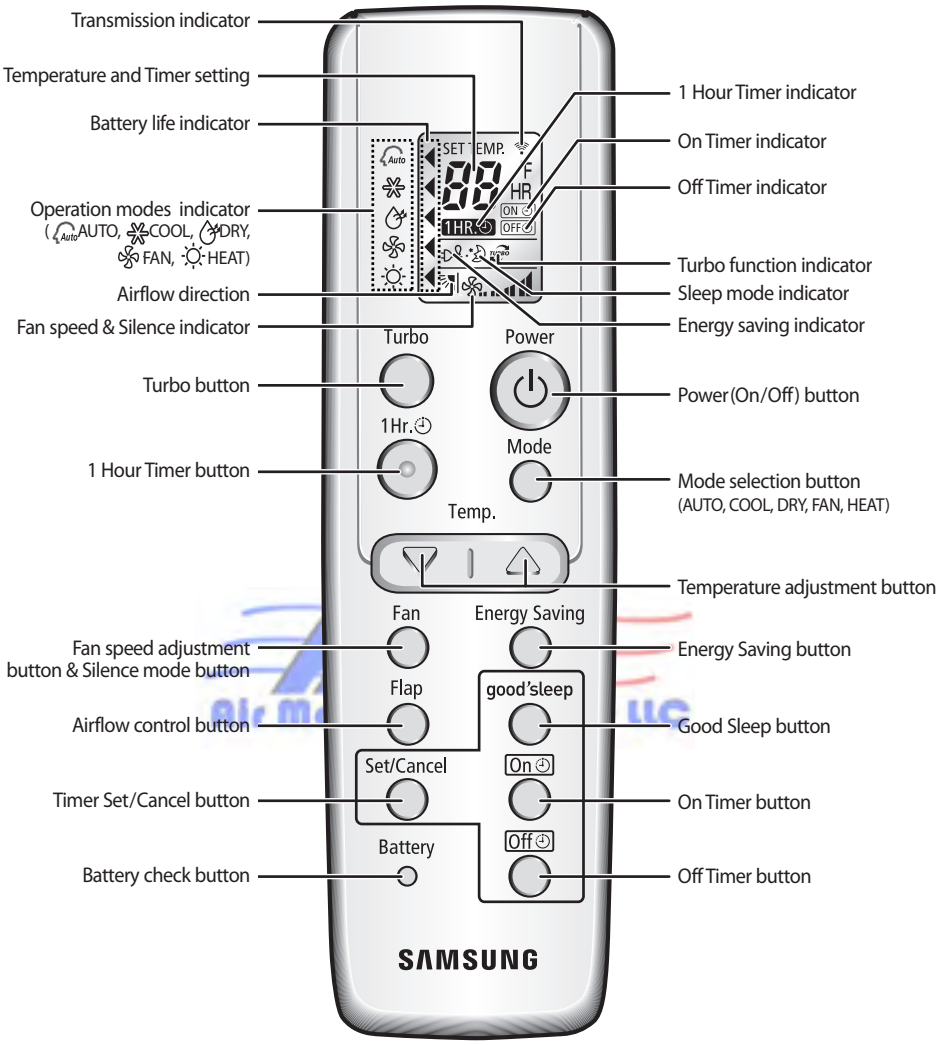
10-1 Name of Each Part

10-1-1 Indoor Unit





10-2 Wireless Remote Control-Buttons and Display

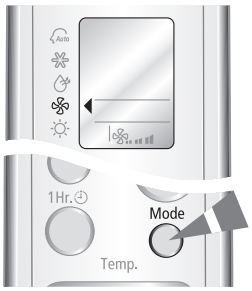


10-3 Main Function

10-3-1 Basic Function

Mode	Explanation	Remark
Auto Mode	Press the Mode button on the remote control until Auto is displayed.	
Cool Mode	Press the Mode button on the remote control until ❄ is displayed.	
	Press the Fan button to select the fan speed until the required setting is displayed. Automatic (rotated : → →) Silence mode Low Medium High Maximum	
Heat Mode	Press the Mode button on the remote control until ☼ is displayed.	
	Press the Fan button to select the fan speed until the required setting is displayed. Automatic (rotated : → →) Silence mode Low Medium High Maximum	

Basic Function(cont.)

Mode	Explanation	Remark
Dry Mode	Press the Mode button on the remote control until is displayed.	
Fan Mode	Press the Mode button on the remote control until is displayed.	

10-3-2 Applied Function

Mode	Explanation	Remark
Turbo Function	Press the Turbo button. • After 30 minutes, the air conditioner is reset automatically to the previous mode, temperature and fan settings. • You can select the Turbo function in the Auto, Cool and Heat mode. If you select this function in the Dry or Fan mode, it will return to the Auto mode.	
good' sleep Mode	Press the good'sleep button until the indicator appears on the remote control.	

11. Troubleshooting

11-1 Items to be checked first

1. The input voltage should be rating voltage ±10% range.
   The air conditioner may not operate properly if the voltage is out of this range.

2. Is the link 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.

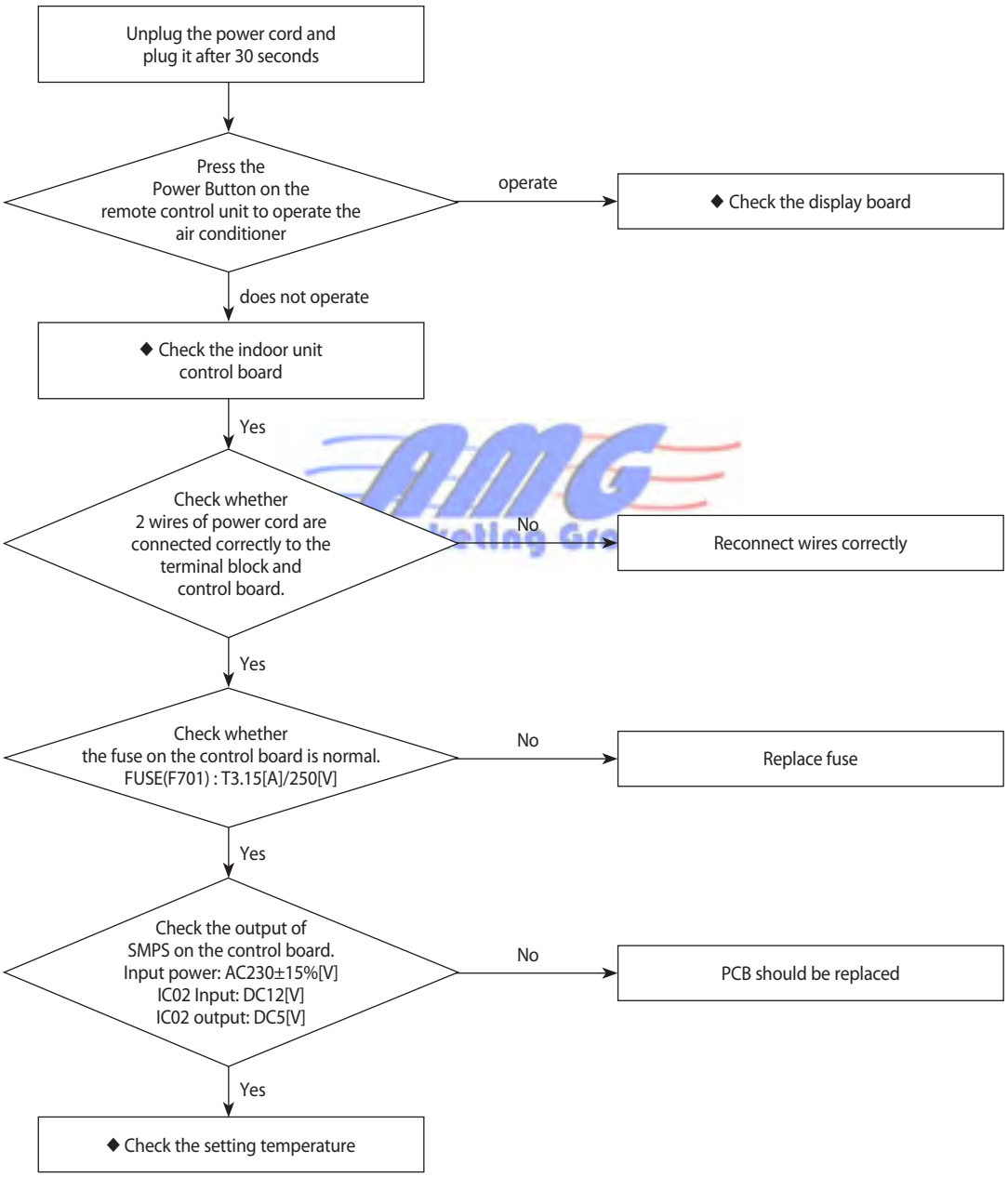
No	Operation of air conditioner	Explanation
1	The OPERATION indication LED(BLUE) blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, 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

11-2 Fault Diagnosis by Symptom

11-2-1 No Power (completely dead)-Initial diagnosis

1. Checklist :
   1) Is input voltage normal?
   2) Is AC power linked correctly?
   3) Is input voltage of DC regulator IC KA7805 (IC02) normal? (11VDC-12.5VDC)
   4) Is output voltage of DC regulator IC KA7805 (IC02) normal? (4.5VDC-5.5VDC)

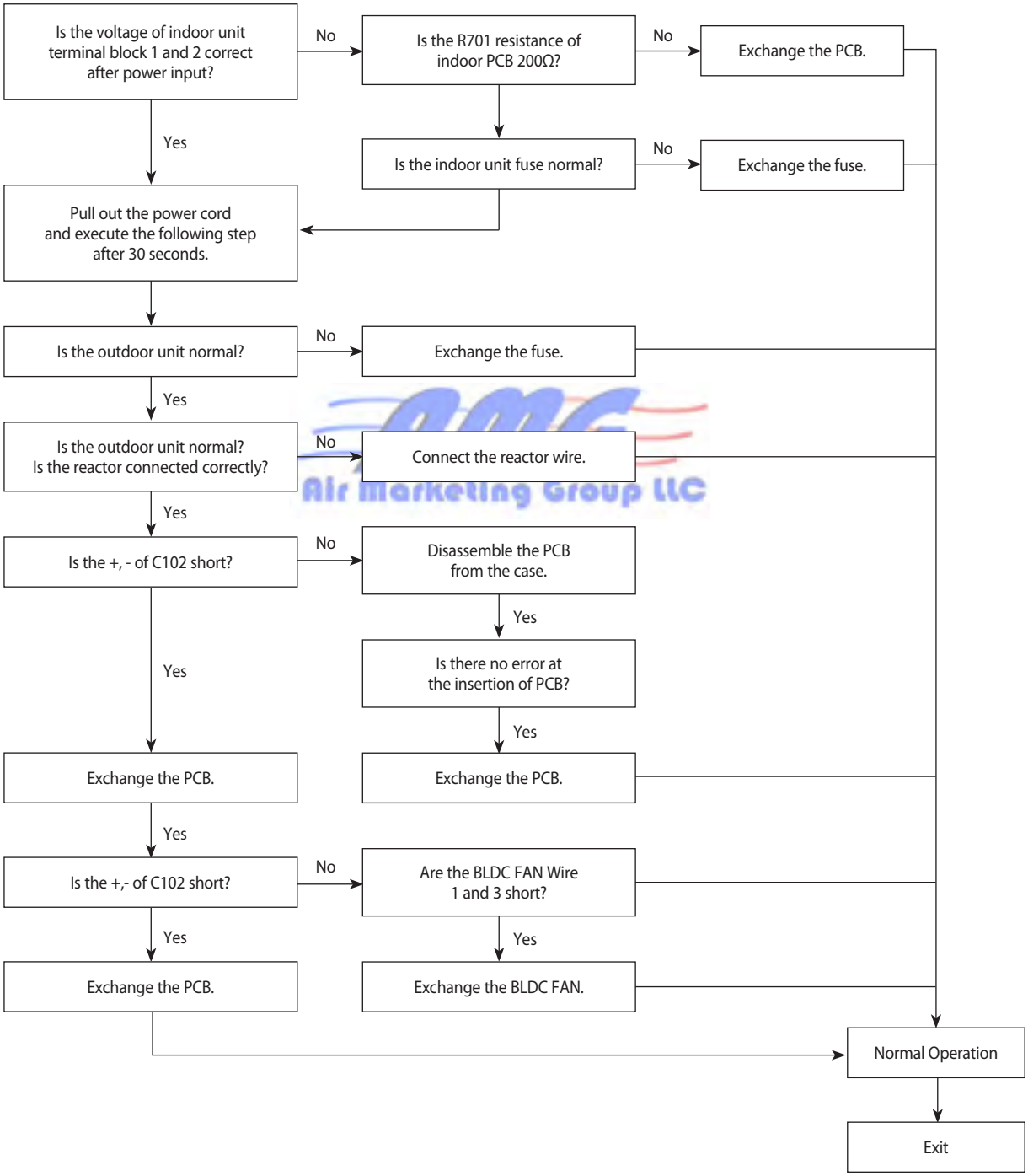
2. Troubleshooting procedure



11-2-2 The Outdoor unit power supply error

1. Checklist :
   1) Are the input power voltage and the power connection correct?
   2) Is there no Fuse short in the indoor unit and outdoor unit?
   3) Is the cable connected correctly between the indoor unit and outdoor unit in order.
   4) Is the wire connected correctly to the terminal block of the indoor unit and outdoor unit?

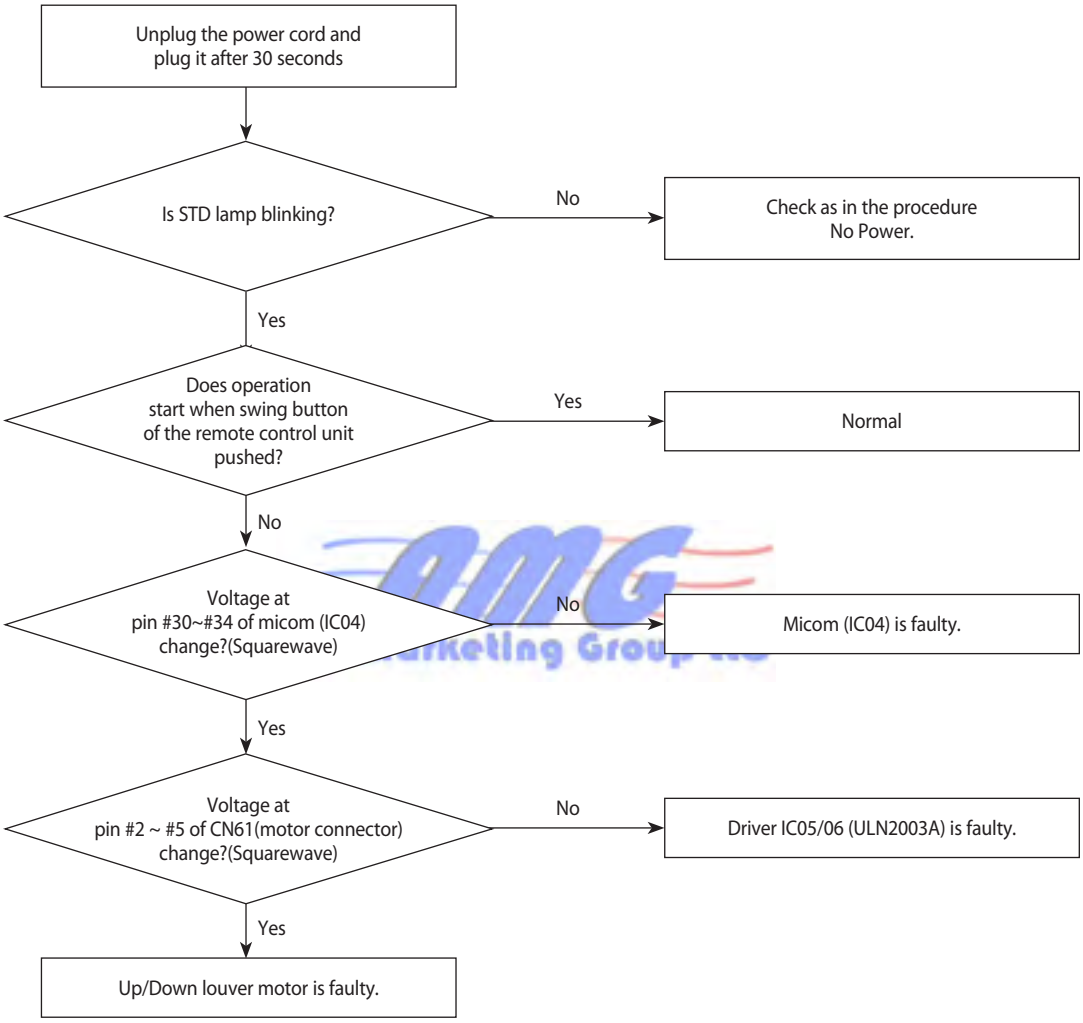
2. Troubleshooting procedure



11-2-3 When the Up/Down Louver Motor Does Not Operate. (Initial Diagnosis)

1. Checklist :
   1) Is input voltage normal?
   2) Is the Up/Down louver motor properly connected with the connector (CN61)?

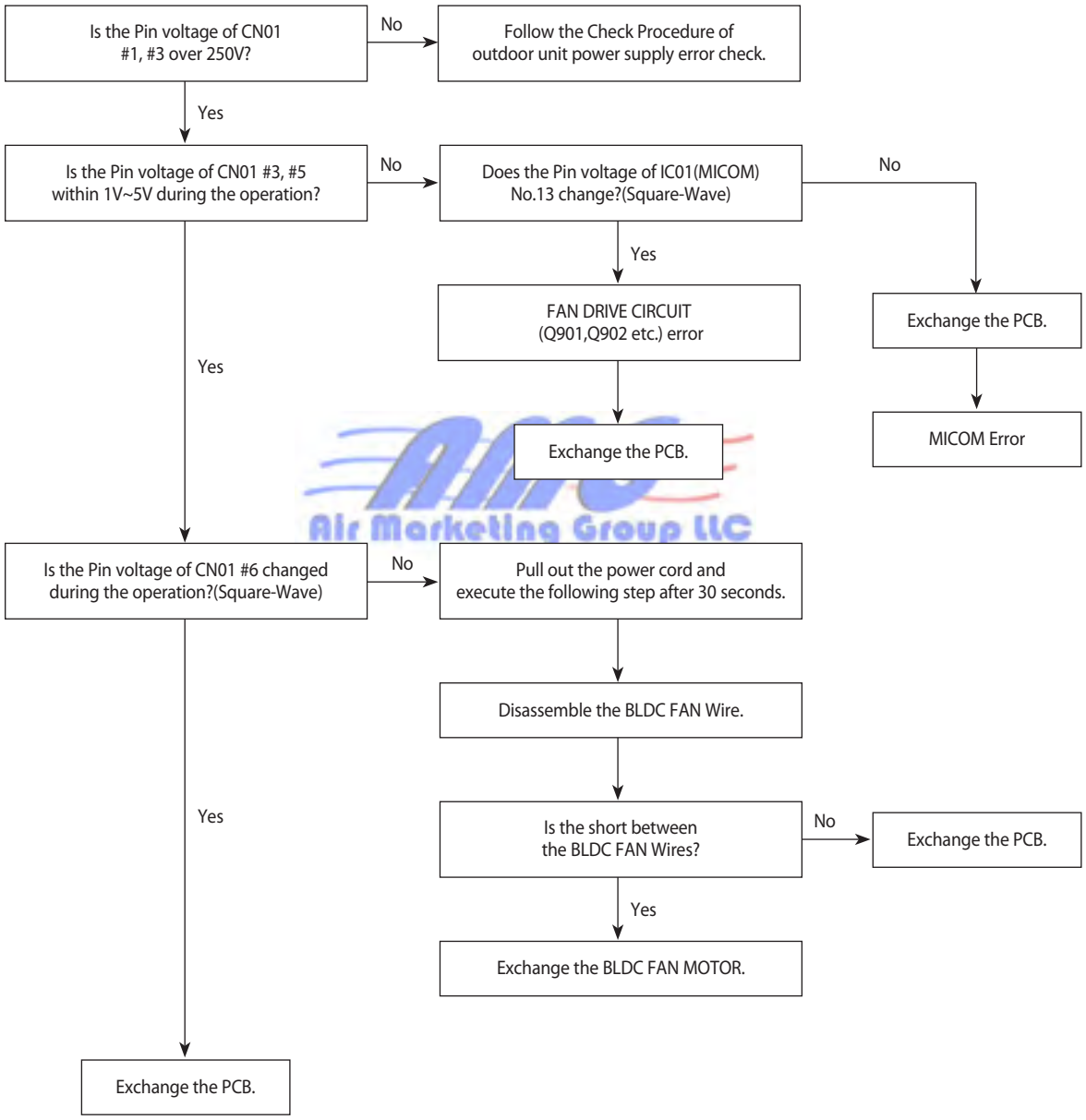
2. Troubleshooting procedure



11-2-4 The Outdoor unit Fan error

1. Checklist :
   1) Are the input power voltage and the power connection correct?
   2) Is the motor wire connected to the outdoor PCB correctly?
   3) Is there no assembly error or none-assembly in the terminal of motor wire connector?
   4) Is there no obstacle at the surrounding of motor and propeller?

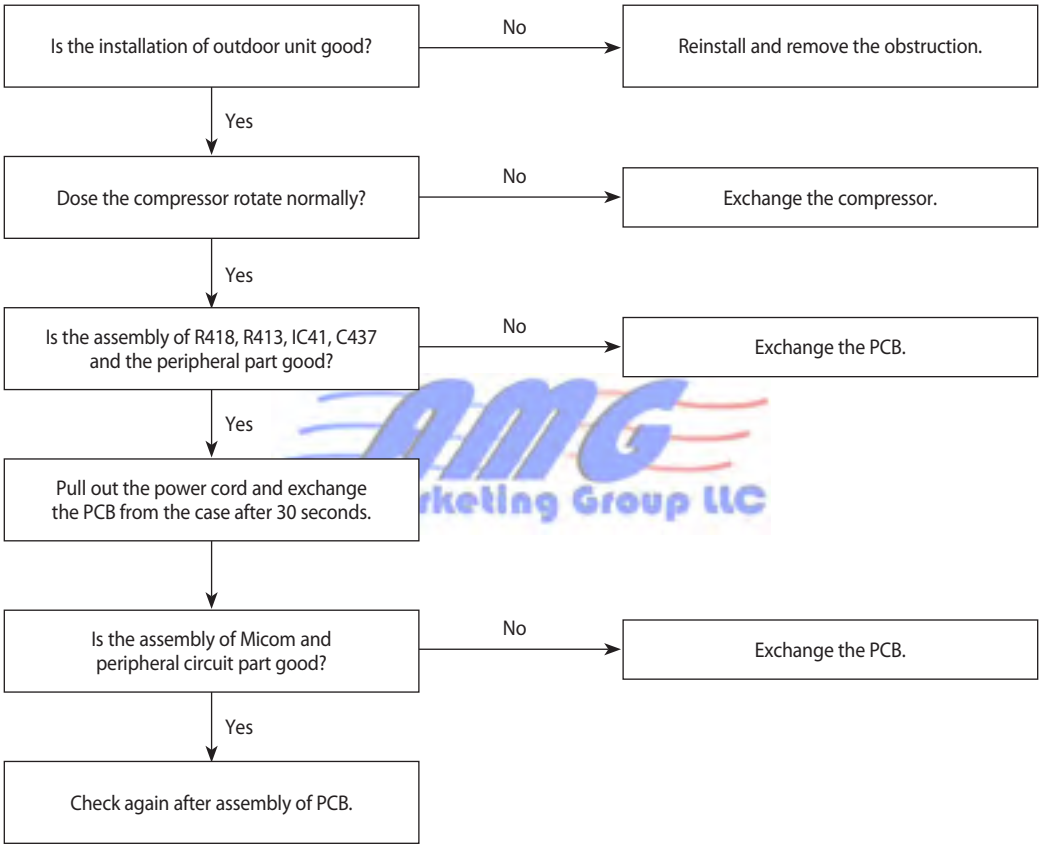
2. Troubleshooting procedure



11-2-5 Total current Trip error

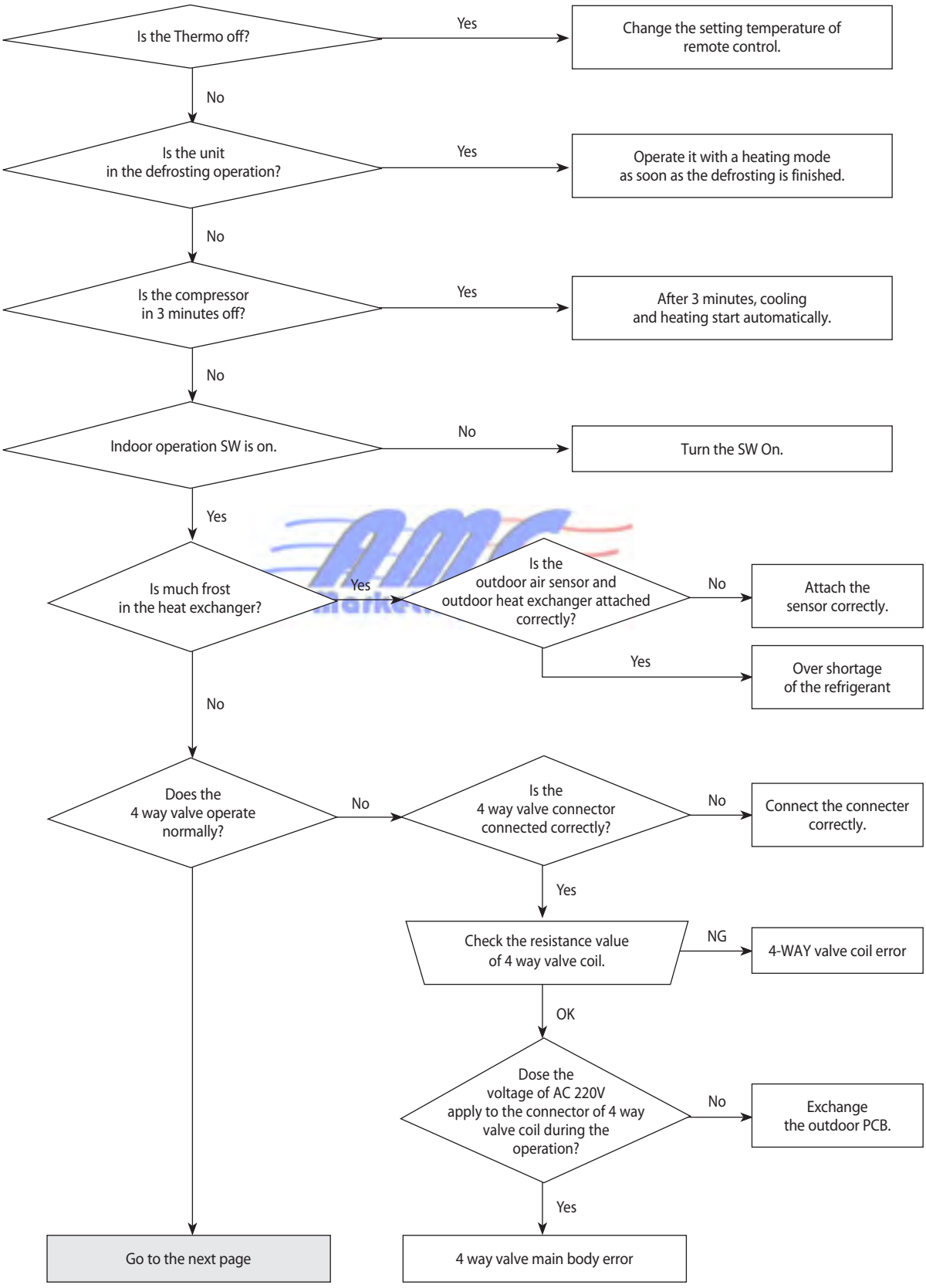
1. Checklist :
   1) Is the input power voltage proper?
   2) Is the refrigerant charged properly?
   3) Does the compressor rotate normally? (Reverse rotation, Locking etc.)
   4) Dose the outdoor fan operate normally? (Fan propeller loss, Motor error etc.)
   5) Is the installation condition of outdoor unit good? (Piping, Space etc.)
   6) Is there no ventilation obstruction at the surrounding of outdoor? (Outdoor unit cover, Fan front obstruction etc.)

2. Troubleshooting procedure

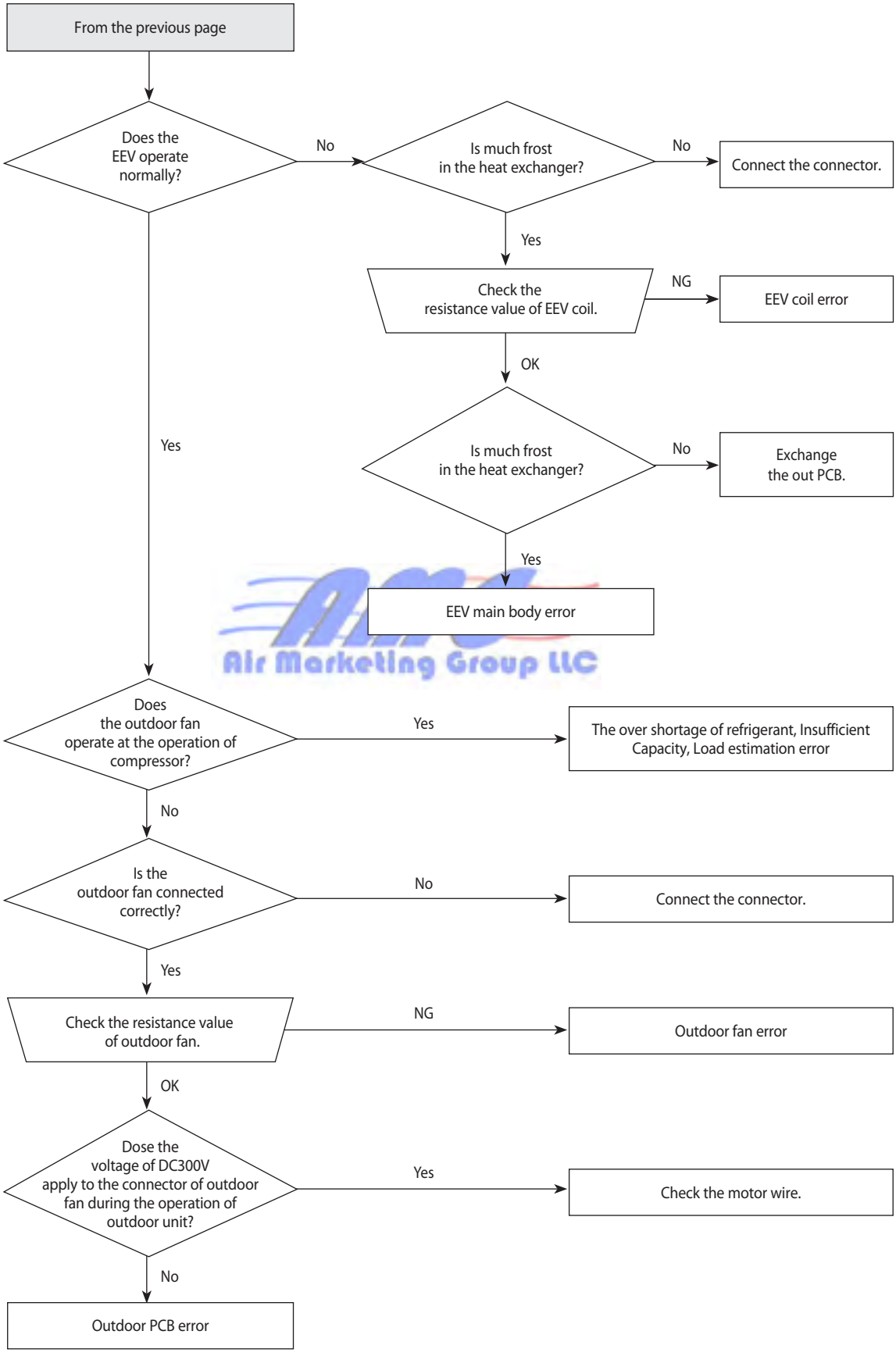


11-2-6 In case of heating at the cooling mode or cooling at the heating mode

1. Troubleshooting procedure



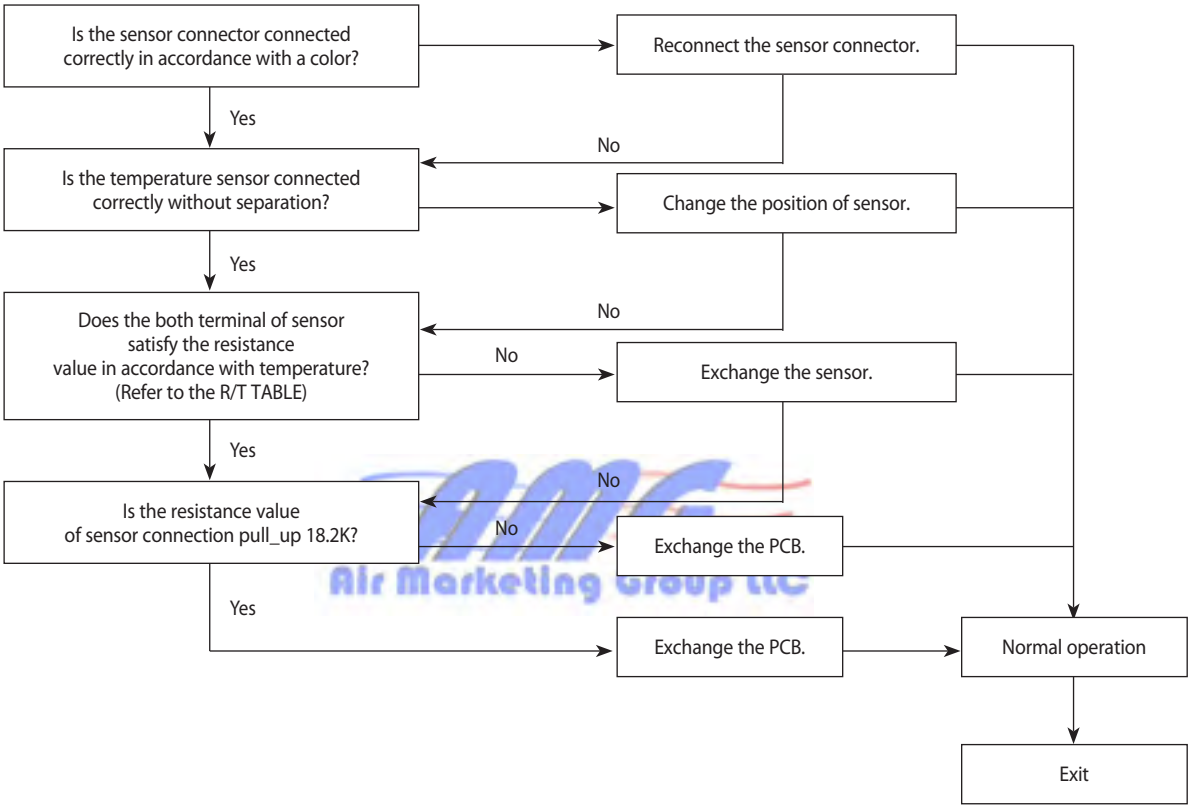
In case of heating at the cooling mode or cooling at the heating mode(cont.)

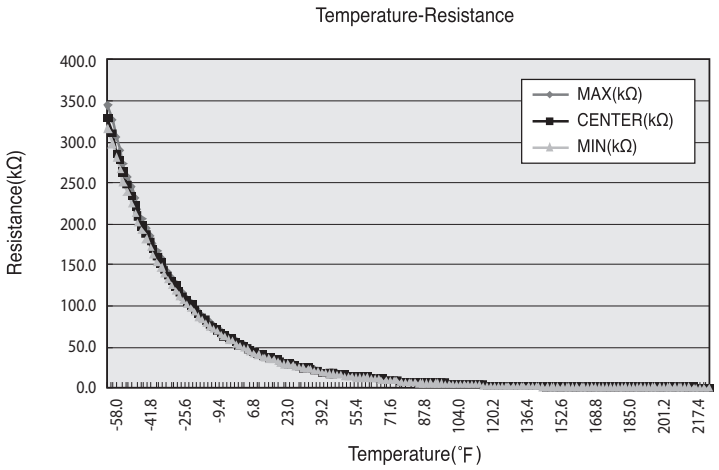


11-2-7 Outdoor temperature sensor error

1. Checklist :
   1) Is the sensor connector connected correctly?
   2) Is the sensor placed correctly?
   3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
   4) Is the resistance value of sensor connection pull_up correct?

2. Troubleshooting procedure

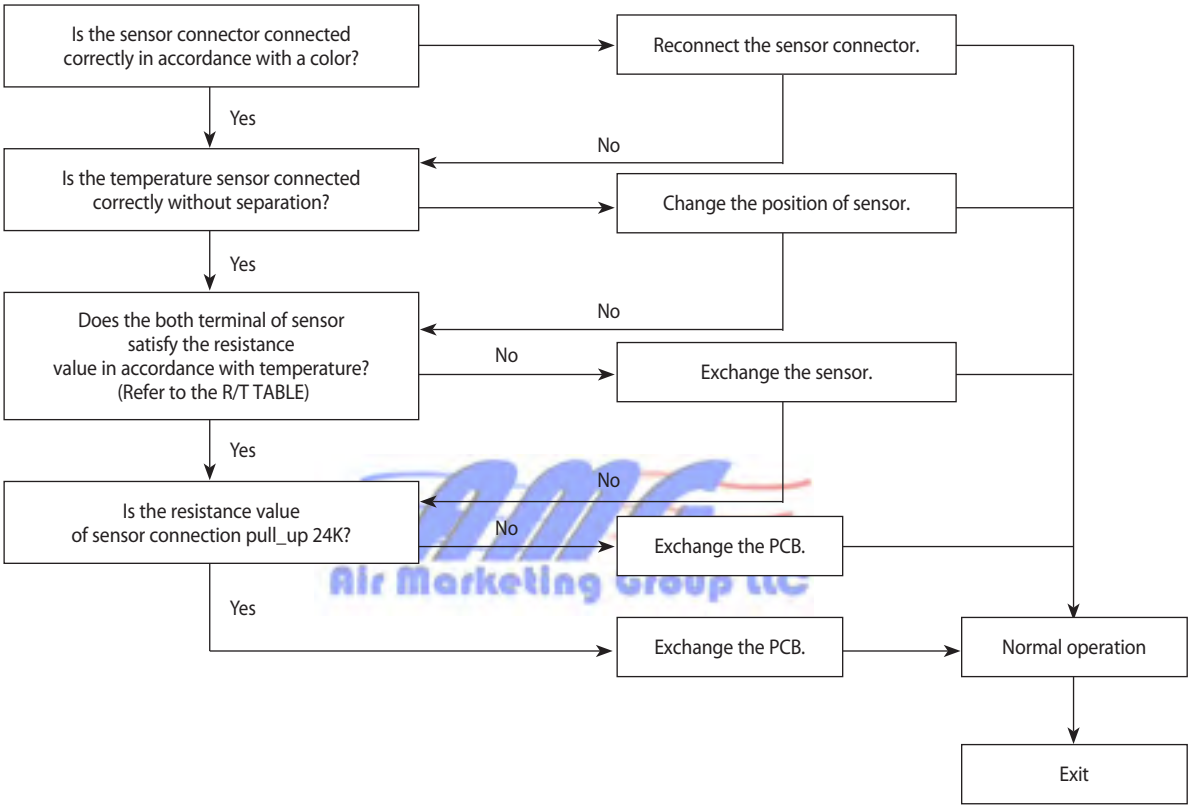


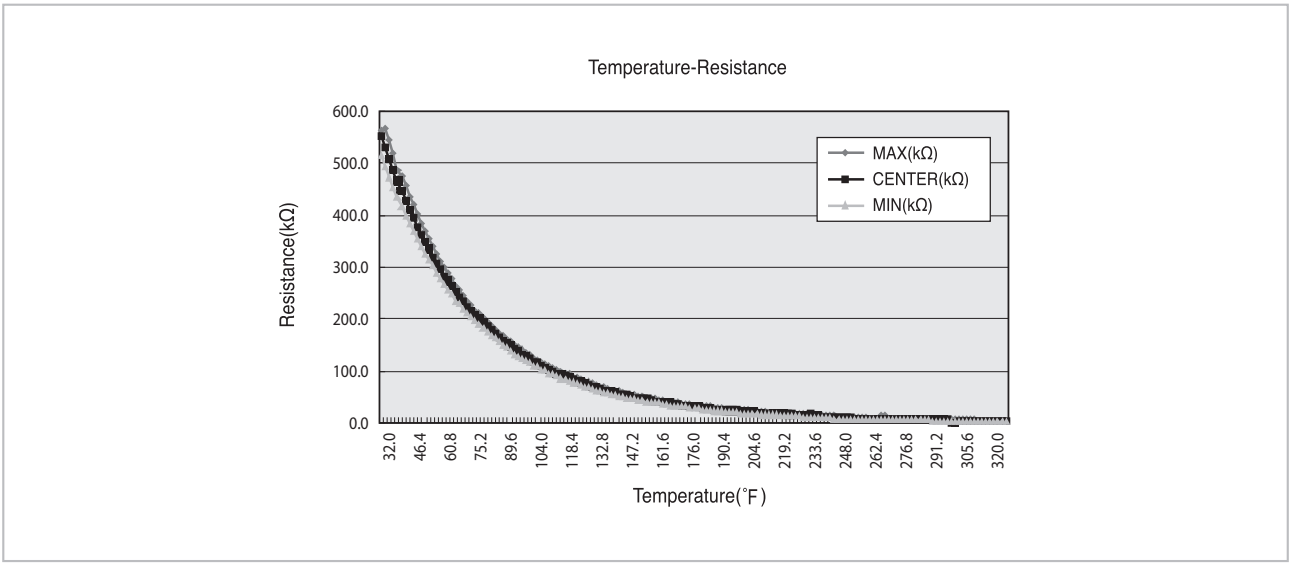


11-2-8 Discharge temperature sensor error

1. Checklist :
   1) Is the sensor connector connected correctly?
   2) Is the sensor placed correctly?
   3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
   4) Is the resistance value of sensor connection pull_up correct?

2. Troubleshooting procedure

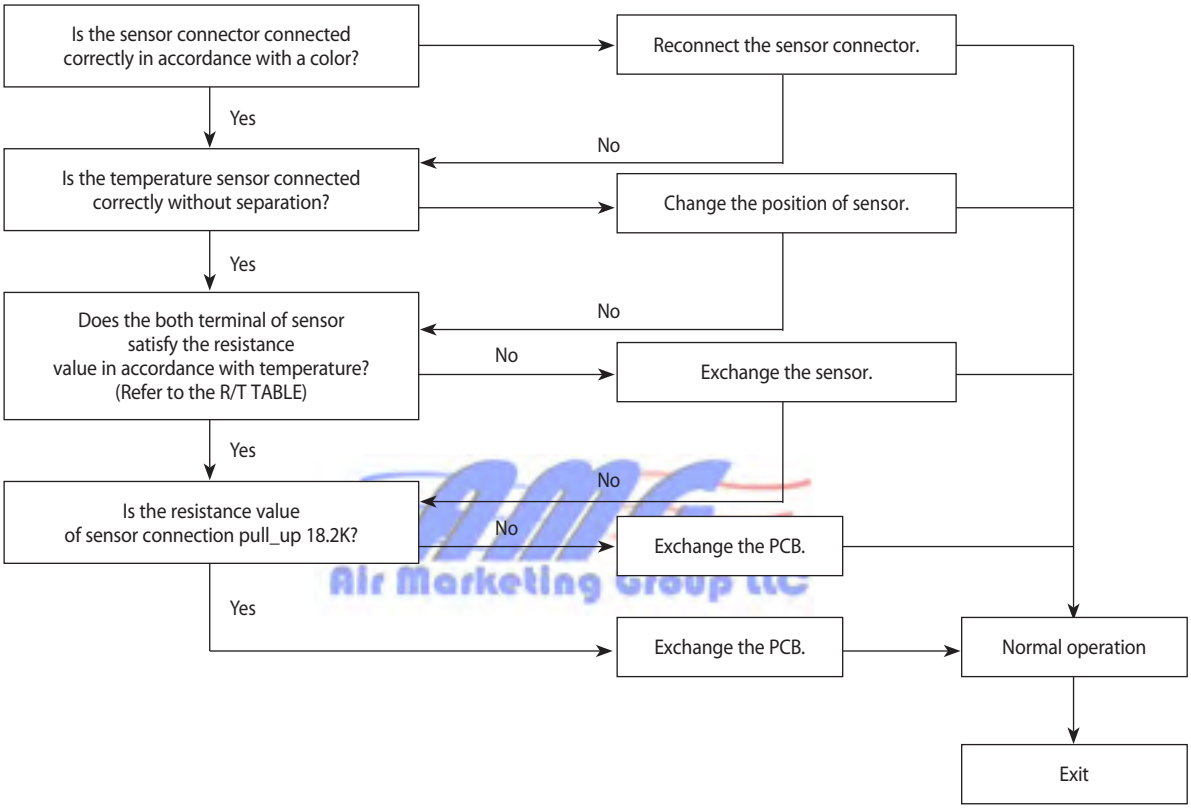


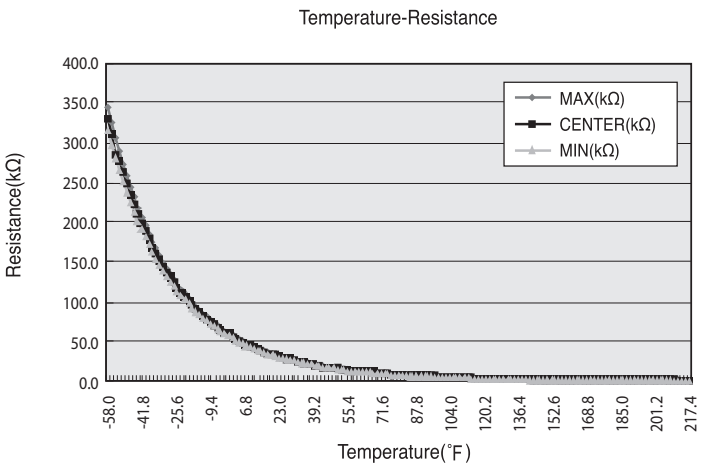


11-2-9 Coil temperature sensor error

1. Checklist :
   1) Is the sensor connector connected correctly?
   2) Is the sensor placed correctly?
   3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
   4) Is the resistance value of sensor connection pull_up correct?

2. Troubleshooting procedure





■ Sensor R-T Table (Resistance-Temperature)

1. Discharge Temp. Sensor

RESISTANCE : 200.0kΩ at 25°C (77°F)
RESISTANCE TOLERANCE : ±5%

TEMP.(°C)	TEMP.(°F)	MAX (kΩ)	CENTER (kΩ)	MIN (kΩ)
0	32	563.1	553.5	515.2
5	41	476.1	446.2	417.1
10	50	385.1	362.4	340.2
15	59	312.6	295.4	278.5
20	68	256.6	242.5	229.5
25	77	210.0	200.0	190.0
30	86	174.6	165.7	156.8
35	95	145.8	137.8	130.0
40	104	122.5	115.4	108.4
45	113	103.3	96.95	90.78
50	122	87.87	81.92	76.45
55	131	74.47	69.44	64.59
60	140	63.65	59.16	54.85
65	149	54.55	50.54	46.71
70	158	46.96	43.37	39.96
75	167	40.55	37.34	34.31
80	176	35.16	32.29	29.58
85	185	30.56	27.99	25.56
90	194	26.66	24.34	22.17
95	203	23.31	21.23	19.28
100	212	20.46	18.58	16.89
105	221	18.01	16.31	14.74
110	230	15.90	17.37	12.95
115	239	14.08	12.69	11.41
120	248	12.51	11.25	10.09
125	257	11.14	9.993	8.941
130	266	9.950	8.904	7.948
135	275	8.900	7.947	7.078
140	284	7.983	7.112	6.320
145	293	7.175	6.378	5.656
150	302	6.465	5.735	5.075
155	311	5.838	5.168	4.564
160	320	5.285	4.669	4.114

■ Sensor R-T Table (Resistance-Temperature)

2. Outdoor Coil Temp. Sensor, Outdoor Air Temp. Sensor
   Indoor Coil Temp. Sensor, Indoor Air Temp. Sensor

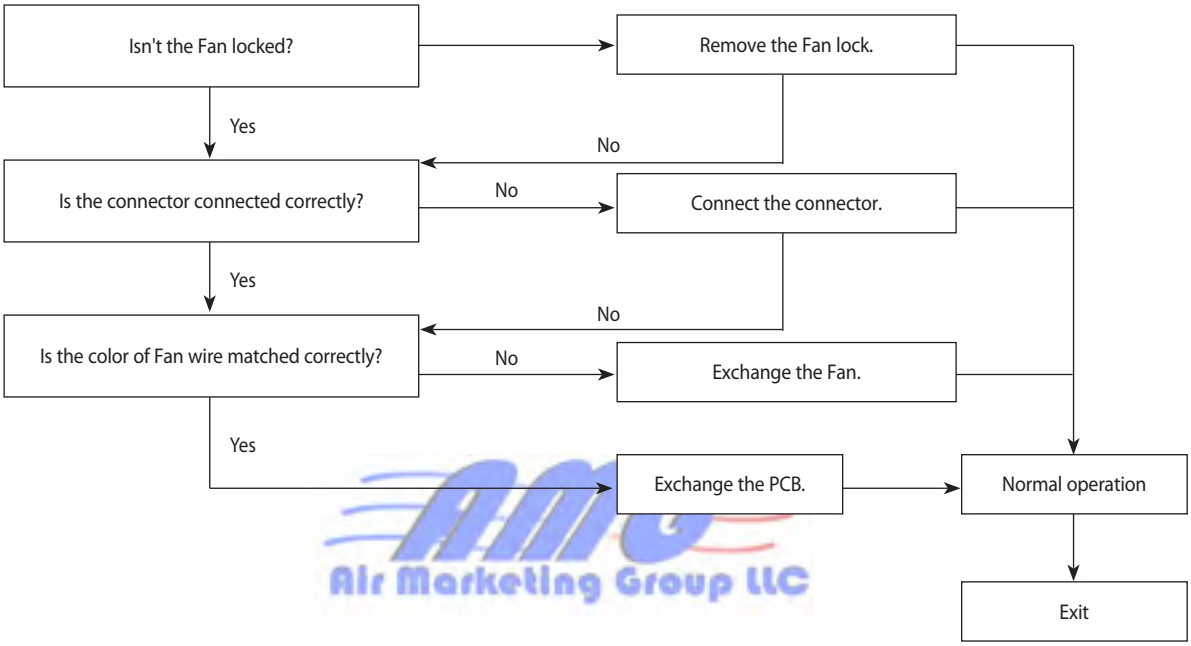
RESISTANCE : 10.0kΩ at 25°C (77°F)
RESISTANCE TOLERANCE : ±1%

TEMP.(°C)	TEMP.(°F)	MAX (kΩ)	CENTER (kΩ)	MIN (kΩ)	TEMP. TOLERANCE. (°F)	
-50.0	-58.0	351.4	329.5	308.8	-1.4	1.4
-45.0	-49.0	263.4	247.7	232.6	-1.4	1.4
-40.0	-40.0	199.9	188.5	177.5	-1.4	1.4
-35.0	-31.0	152.4	144.1	136.0	-1.3	1.3
-30.0	-22.0	117.5	111.3	105.4	-1.3	1.3
-25.0	-13.0	86.5	86.4	82.0	-1.3	1.3
-20.0	-4.0	71.2	67.8	64.5	-1.3	1.3
-15.0	5.0	55.9	53.4	50.9	-1.1	1.1
-10.0	14.0	44.4	42.5	40.8	-1.1	1.1
-5.0	23.0	35.3	33.9	32.5	-1.1	1.1
0.0	32.0	28.4	27.3	26.2	-0.9	0.9
5.0	41.0	22.9	22.1	21.2	-0.9	0.9
10.0	50.0	18.6	18.0	17.3	-0.7	0.7
15.0	59.0	15.2	14.7	14.2	-0.7	0.7
20.0	68.0	12.5	12.1	11.7	-0.7	0.7
25.0	77.0	10.3	10.0	9.7	-0.5	0.5
30.0	86.0	7.6	8.3	8.0	-0.7	0.7
35.0	95.0	7.2	6.9	6.7	-0.7	0.7
40.0	104.0	6.0	5.8	5.6	-0.9	0.9
45.0	113.0	5.1	4.9	4.7	-1.1	1.1
50.0	122.0	4.3	4.2	4.0	-1.1	1.1
55.0	131.0	3.7	3.5	3.4	-1.3	1.3
60.0	140.0	3.1	3.0	2.9	-1.4	1.4
65.0	149.0	2.7	2.6	2.5	-1.4	1.4
70.0	158.0	2.3	2.2	2.1	-1.6	1.6
75.0	167.0	2.0	1.9	1.8	-1.8	1.8
80.0	176.0	1.8	1.7	1.6	-1.8	1.8
85.0	185.0	1.5	1.5	1.7	-2.0	2.0
90.0	194.0	1.3	1.3	1.2	-2.2	2.2
95.0	203.0	1.2	1.1	1.1	-2.3	2.3
100.0	212.0	1.0	1.0	0.9	-2.3	2.5
105.0	221.0	0.9	0.9	0.8	-2.5	2.5
110.0	230.0	0.8	0.8	0.7	-2.7	2.7

11-2-10 Fan error

1. Checklist :
   1) Isn't the fan locked?
   2) Is the sensor placed correctly?
   3) Does the both terminal of sensor satisfy the resistance value in accordance with temperature?
   4) Is the resistance value of sensor connection pull_up correct?

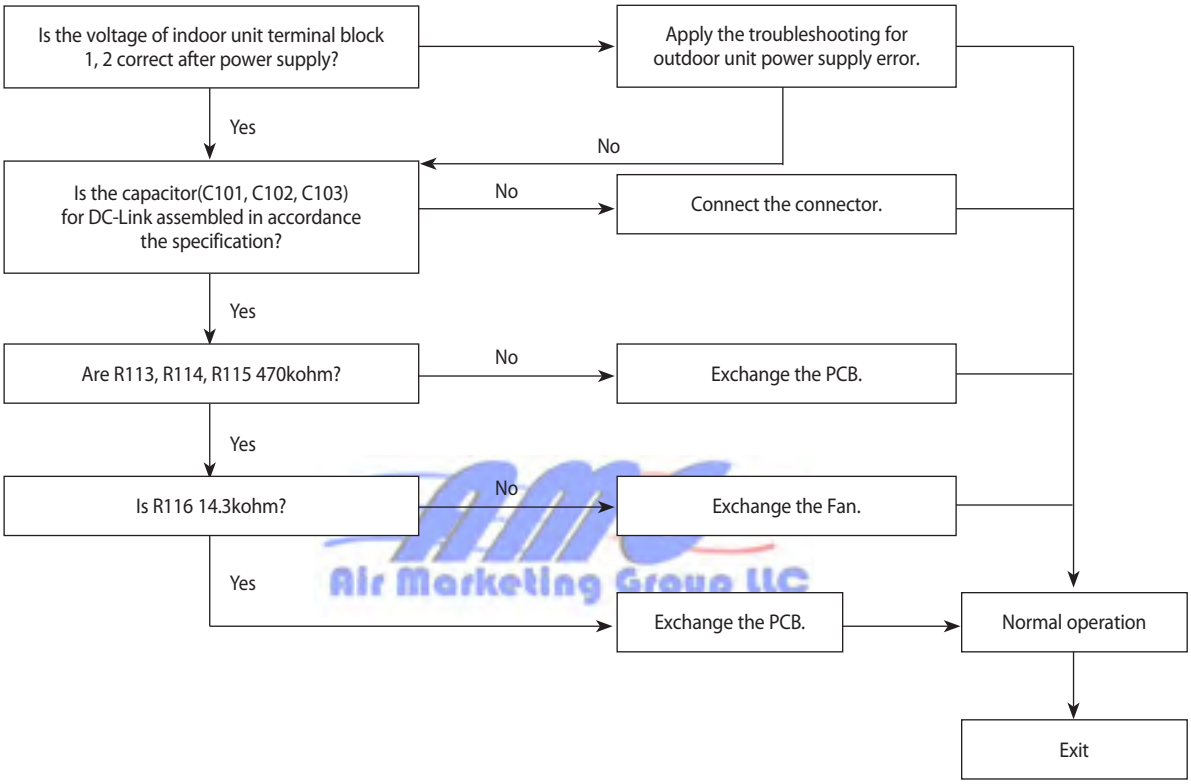
2. Troubleshooting procedure



11-2-11 DC-Link voltage sensor error

1. Checklist :
   1) Is the voltage of indoor unit terminal block 1, 2 correct after power supply?
   2) Is the capacitor(C101, C102, C103) for DC-Link assembled in accordance the specification?
   3) Are R112, R113, R114 470 Kohm?
   4) Is R115 14.3Kohm?

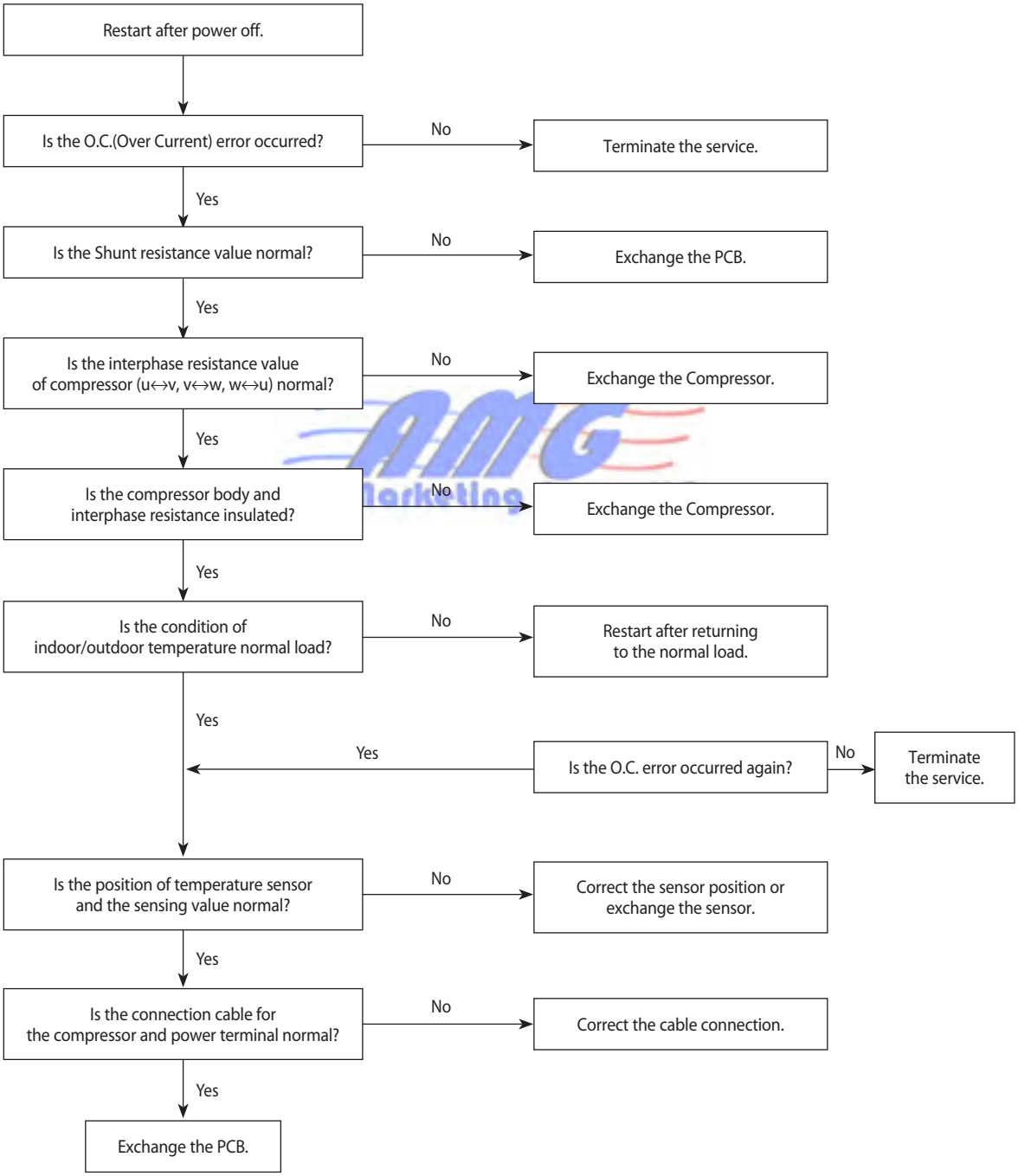
2. Troubleshooting procedure



11-2-12 O.C.(Over Current) error

1. Checklist :
   1) Is the Shunt resistance value correct?
   2) Is the condition of surrounding temperature abnormal overload?
   3) Is there any problem as like the temperature sensor separation or measurement value error?
   4) Is the interphase resistance of compressor normal?

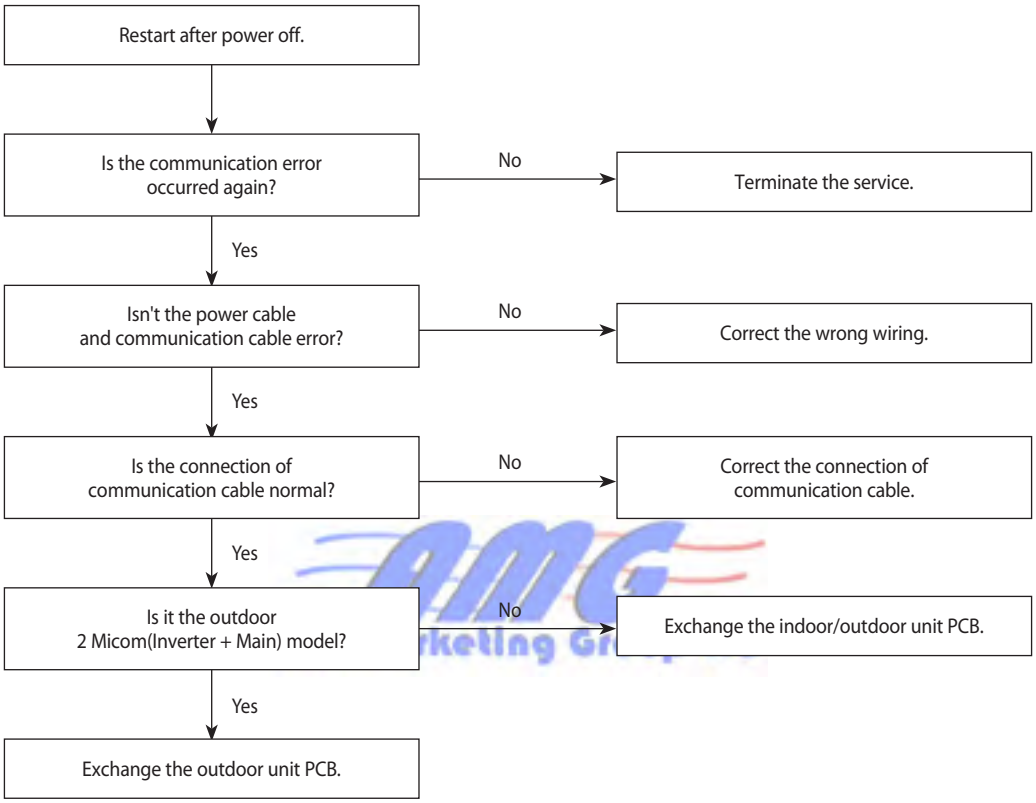
2. Troubleshooting procedure



11-2-13 Communication error

1. Checklist :
   1) Is the communication cable between the indoor unit and outdoor unit connected correctly?
   2) Isn't the power cable and communication cable error?

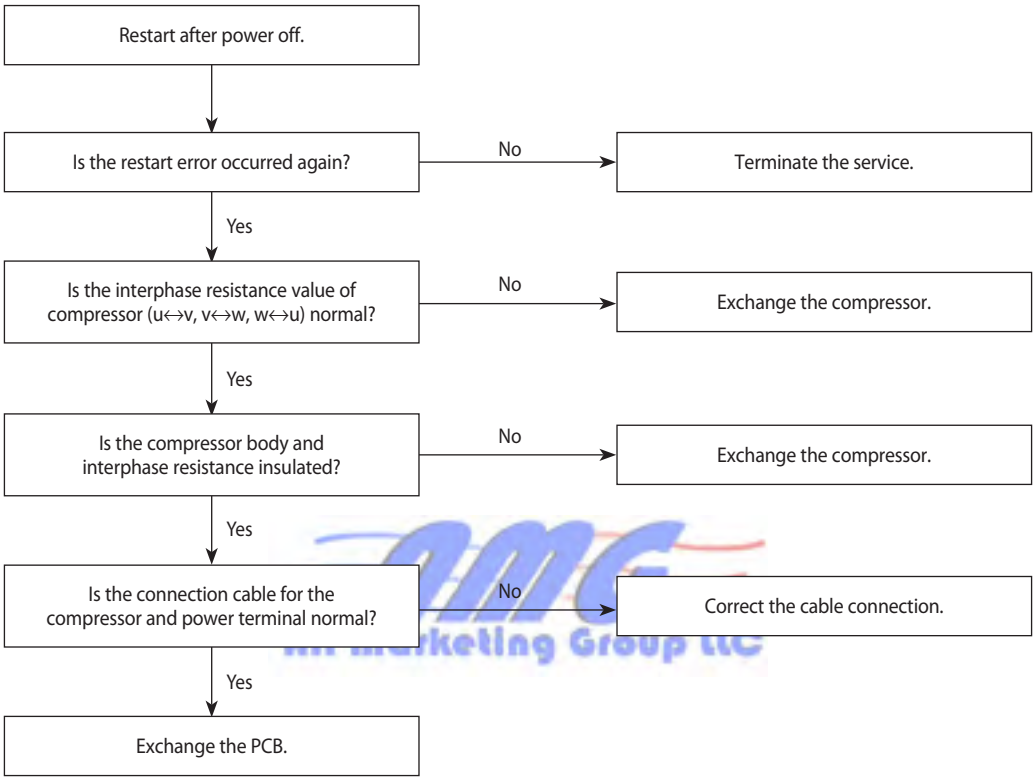
2. Troubleshooting procedure



11-2-14 Compressor start error

1. Checklist :
   1) Is the connection of cable for the compressor and power?
   2) Is the interphase resistance of compressor normal?

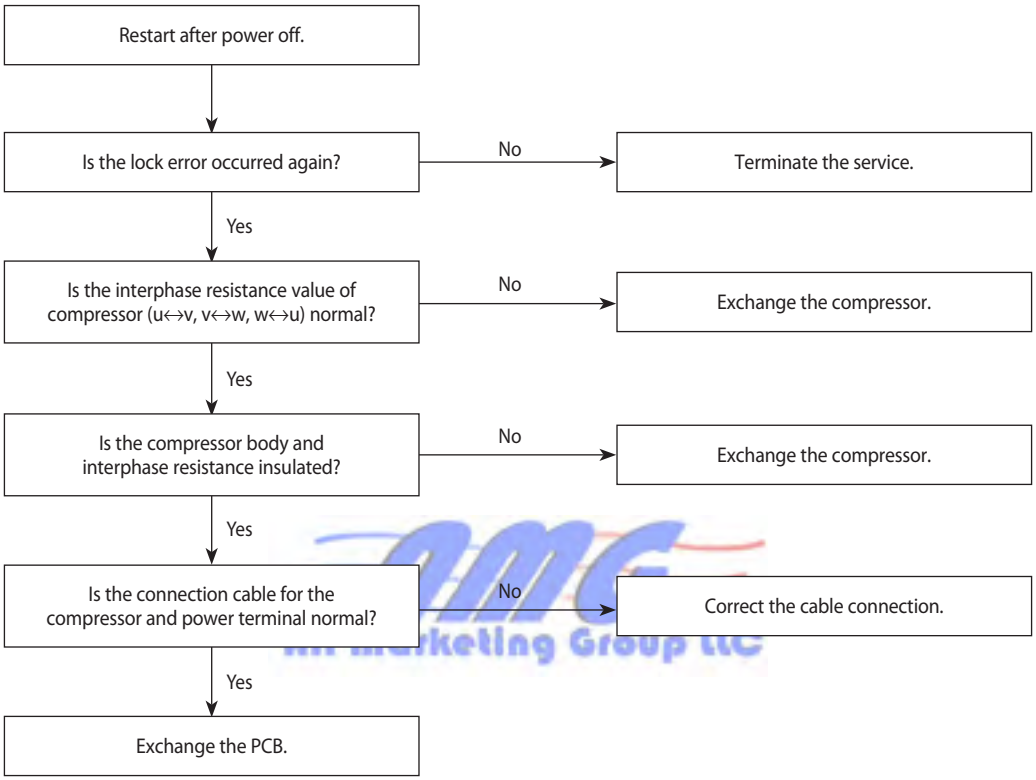
2. Troubleshooting procedure



11-2-15 Compressor lock error

1. Checklist :
   1) Is the connection of cable for the compressor and power?
   2) Is the interphase resistance of compressor normal?

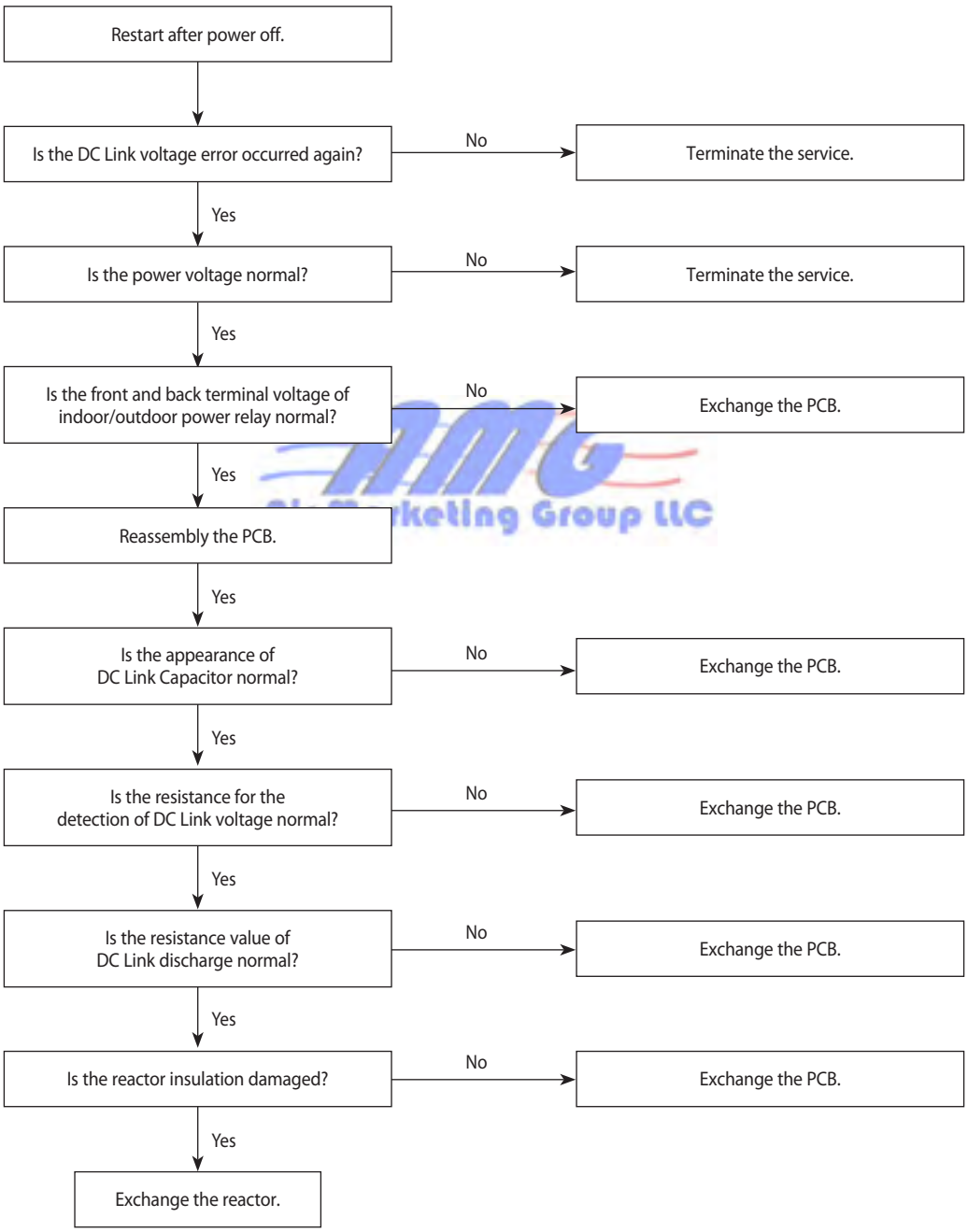
2. Troubleshooting procedure



11-2-16 DC Link Over voltage/ Low voltage error

1. Checklist :
   1) Is the power voltage normal?
   2) Is the voltage of front and back terminal of indoor(outdoor) power relay normal?
   3) Is the resistance value for DC Link voltage detection NORMAL?
   4) Is the resistance value of DC Link discharge normal?
   5) Is the appearance of DC Link Capacitor normal?

2. Troubleshooting procedure



11-2-17 When the remote control is not receiving

1. Check if the connector was normally assembled.

2. Put the set in operation and check the voltage of No. 15(+) and No. 16(-) of the main PCB CN91 while operating the remote control. When the voltage descends below 3V, the assembly module PCB is normal and the main PCB is poor. Then replace the main PCB.

3. Replace the assembly display PCB because the module PCB is poor if the voltage between No. 15~16 of CN91 maintains 5V after the remote control starts operation.

11-2-18 The others

1. AC Line Zero Cross Signal OUT
   – Check the assembly condition of peripheral part of IC21, ZD21, ZD20 and D200 on the PCB.

2. Capacity miss match
   – Check again the indoor unit option code.

11-3 PCB Inspection Method

11-3-1 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 (C103) after 30 seconds power off.

11-3-2 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 the 3 parts.
   - Indoor Main PCB Part : MICOM and surrounding circuit, relay, room fan motor driving circuit and control circuit, sensor driving circuit, power circuit of DC12V and DC5V, and buzzer driving circuit.
   - Display part : LED lamp, Switch, Remocon module
   - Outdoor Main PCB part : MICOM and surrounding circuit. IPM and PFC circuit and control circuit.
   - EMI PCB Part : Line filter and Noise Capacitor, Varistor

11-3-3 Indoor Detailed Inspection Procedure

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	• Over current • Indoor Fan Motor Short • AC Part Pattern Short of the MAIN PCB
2	Supply power. If the operating lamp twinkles at this time, the above 1)~3) have no relation.	Checking the power voltage.	
		1) Is the DB71 input voltage AC200V~AC240V?	• Power Cord is fault, Fuse open. Wrong Power Cable Wiring, AC Part is faulty.
		2) Is the voltage between both terminals of the C104 on the 2nd side of the transformer DC12V ±0.5V?	• Switching Trans or Power Circuit is faulty
		3) Is the voltage between both terminals of OUT and GND of IC19(KA78L05) DC5V ±0.5V?	• Power Circuit is faulty, Load Short
3	Press the ON/OFF button.	Checking the power voltage.	
		1) Is the voltage over AC180V being imposed on terminal #3 and #5 of the fan motor connector(CN72)?	• Relay(RY71) Coil Disconnection, IC05 is faulty
		2) Check the voltage of both terminals of terminal block 1 and N(1) after 3 minute operation.: AC220V	• Relay(RY71) Contact is faulty
4	Press the ON/OFF button. 1. FAN Speed [High] 2. Continuous Operation	1) Is the voltage over AC180V being imposed on terminal #3 and #5 of the fan motor connector(CN72)?	• Fan Motor of the indoor is faulty
		2) The fan motor of the indoor unit doesn't run.	• Fan Motor Connector(CN72) is faulty
		3) The power voltage between terminal #3 and #5 of the connector(CN72) is 0V.	• ASS'Y Main PCB is faulty • Connection is faulty

11-3-4 Outdoor Detailed Inspection Procedure

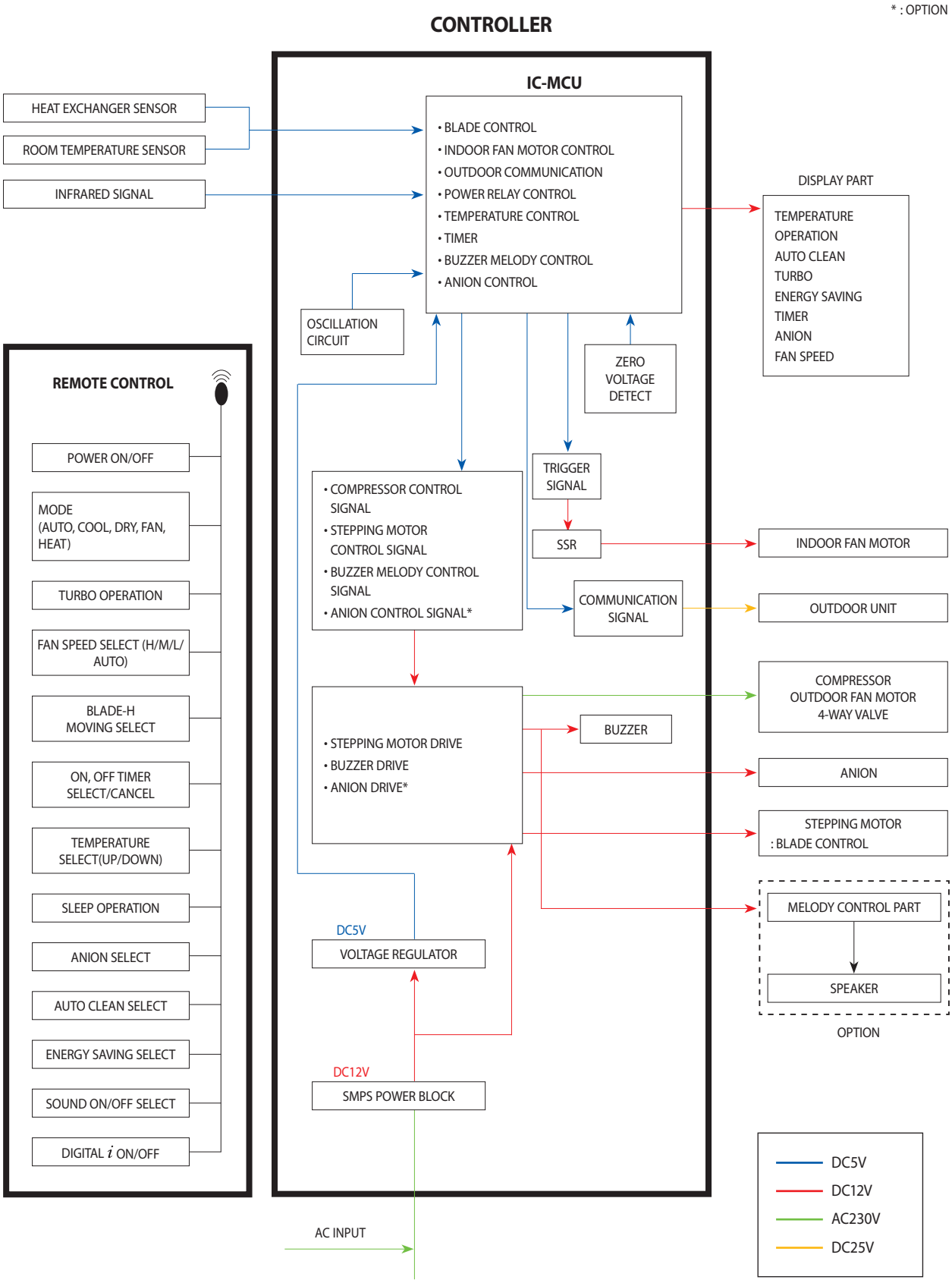
No	Procedure	Inspection Method	Cause
1	Wait 30 seconds over after disconnecting the power cable Check the outdoor PCB.	1) Is C101 discharged? 2) Is the resistance of both terminals of C101 opened? 3) Is the fuse of EMI PCB normal? 4) Is the reactor wire connected?	• Over Current • Inner short of PCB • BLDC FAN Motor Error
2	Check the Outdoor unit PCB.	1) Is R701 200ohm? 2) Does ry74 operate normally? (IC05 & 16:0V, 1:5V) 3) Is the fuse(F701) normal? 4) Is the Sub PCB assembled normally?	• Outdoor PCB Error • SUB Relay(RY74) Error • IC05 Error • Indoor PCB Error
3	Check the LED lighting after power supply.	1) Normal: Red: Light On, Green: Flickering, Yellow: Light Off? 2) Is the voltage of C101 250V over? 3) Is the input of IC19 8V, and the output 5V? 4) Recheck after disassembling BLDC FAN Wire.	• Inner short of outdoor PCB • Wrong assembly of outdoor PCB • BLDC FAN Error
4	Check the condition of indoor & outdoor connection cable.	1) Is the green LED light on once per second? 2) Is the indoor & outdoor connection able connected in order? 3) Is the grounding wire connected to the both of indoor & outdoor unit? 4) Is the voltage of terminal block N(1), 225V?	• Wrong connection of Indoor/Outdoor wiring • Wrong assembly of outdoor communication circuit
5	Check the Comp Wire.	1) Is it connected red, blue, and yellow in order in counterclockwise. 2) Are the valve and its installation condition good? 3) Is the installation condition of outdoor unit?	• Wrong assembly • Installation condition is bad.
6	Check the BLDC Fan.	1) Is CN01 1, 3 over 250V? 2) Is CN01 3, 5 within 1V~5V? 3) Is the voltage of CN01 6 changed? 4) Is the resistance of BLDC Motor 1, 3 opened after power off?	• Outdoor PCB Error • BLDC Motor Error

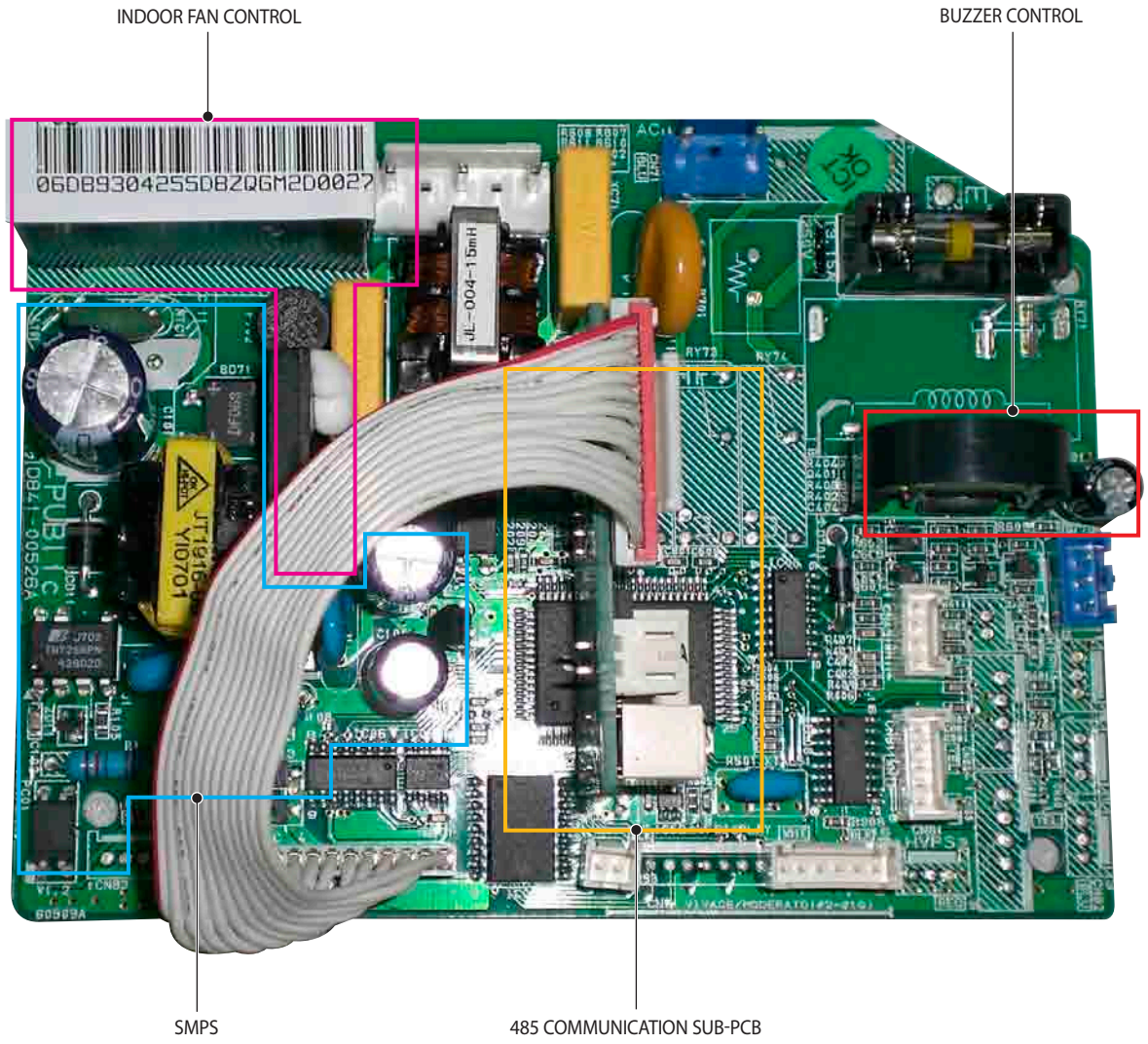
11-4 Main Part Inspection Method

<table>
<tr><th>Part</th><th colspan="2">Breakdown Inspection Method</th></tr>
<tr><td rowspan="3">Room Temperature Sensor</td><td colspan="2">Measure resistance with a tester</td></tr>
<tr><td>Normal</td><td>At the normal temperature 37kΩ~ 8.3kΩ(-7˚C~+30˚C) *Refer to Table 11-3-4.</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω . . . Open or Short</td></tr>
<tr><td rowspan="3">Room Fan Motor</td><td colspan="2">Measure the resistance between terminals of the connector (CN72) with a tester.</td></tr>
<tr><td>Normal</td><td>At the normal temperature (10˚C ~ 30˚C)
<table>
<tr><th>Compare terminal</th><th>Resistance</th><th>Remark</th></tr>
<tr><td>Yellow, Blue</td><td>404.4Ω ± 10%</td><td>Main</td></tr>
<tr><td>Yellow, Red</td><td>340Ω ± 10%</td><td>Sub</td></tr>
</table></td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω . . . Open or Short</td></tr>
<tr><td rowspan="3">Stepping Motor</td><td colspan="2">Measure the resistance between the red wire and each terminal wire with a tester.</td></tr>
<tr><td>Normal</td><td>About 300Ω at the normal temperature (20˚C ~ 30˚C)</td></tr>
<tr><td>Abnormal</td><td>∞, 0Ω . . . Open or Short</td></tr>
</table>

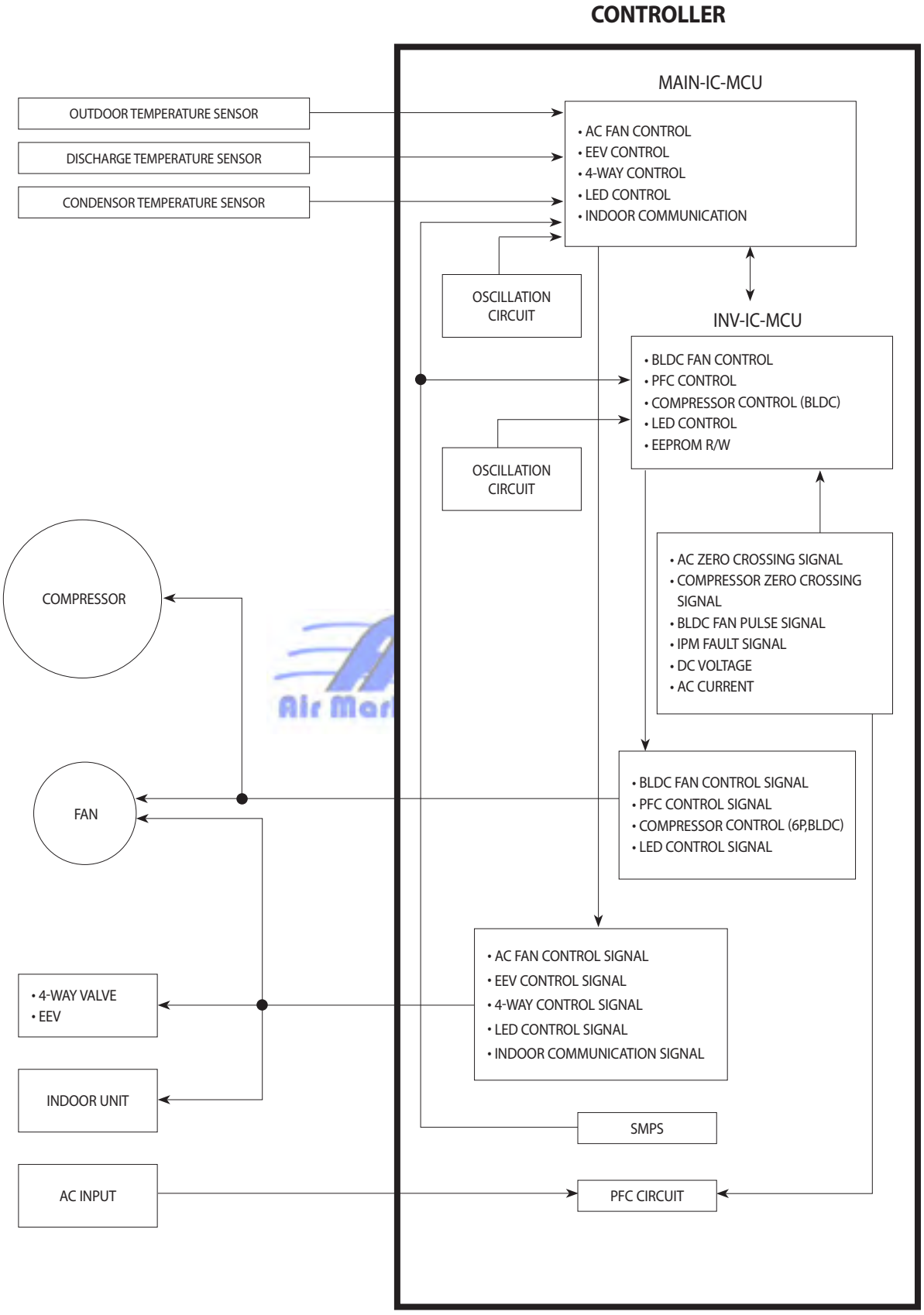
12. Block Diagram

12-1 Indoor Unit

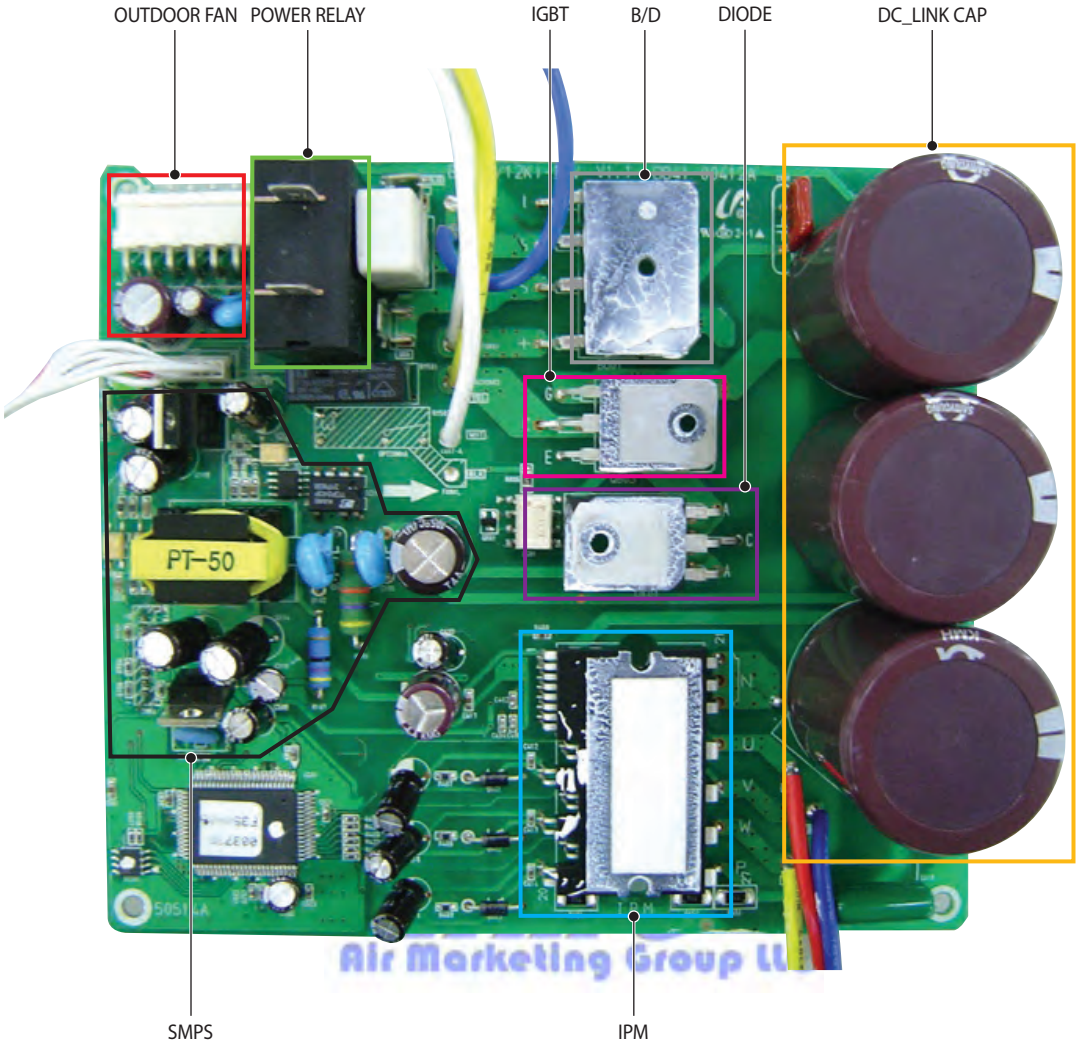




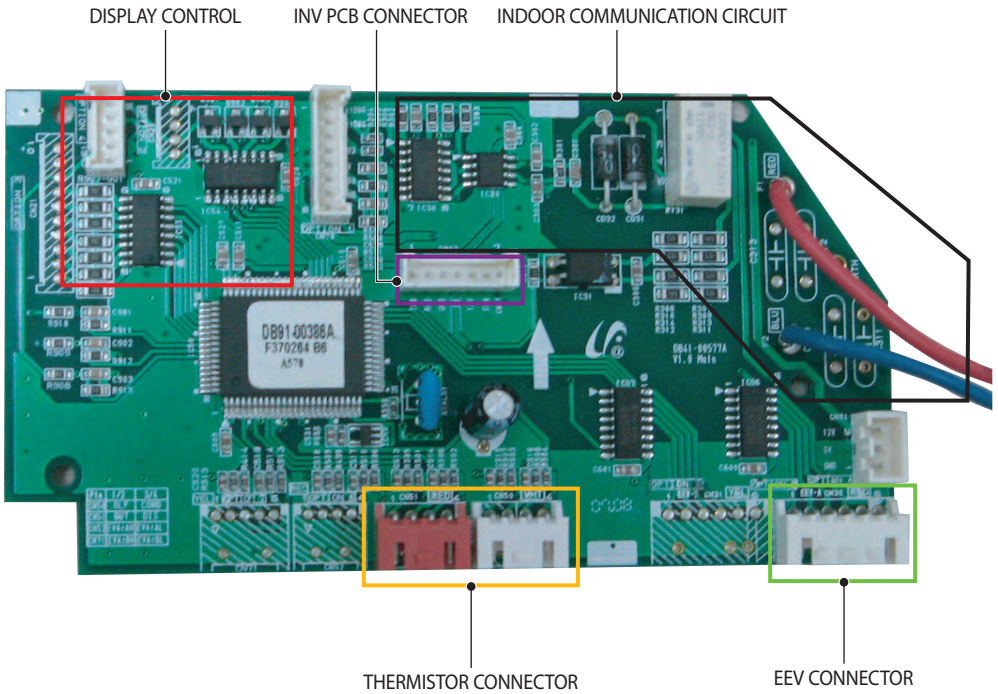
12-2 Outdoor Unit



■ Inverter PCB



■ Main PCB

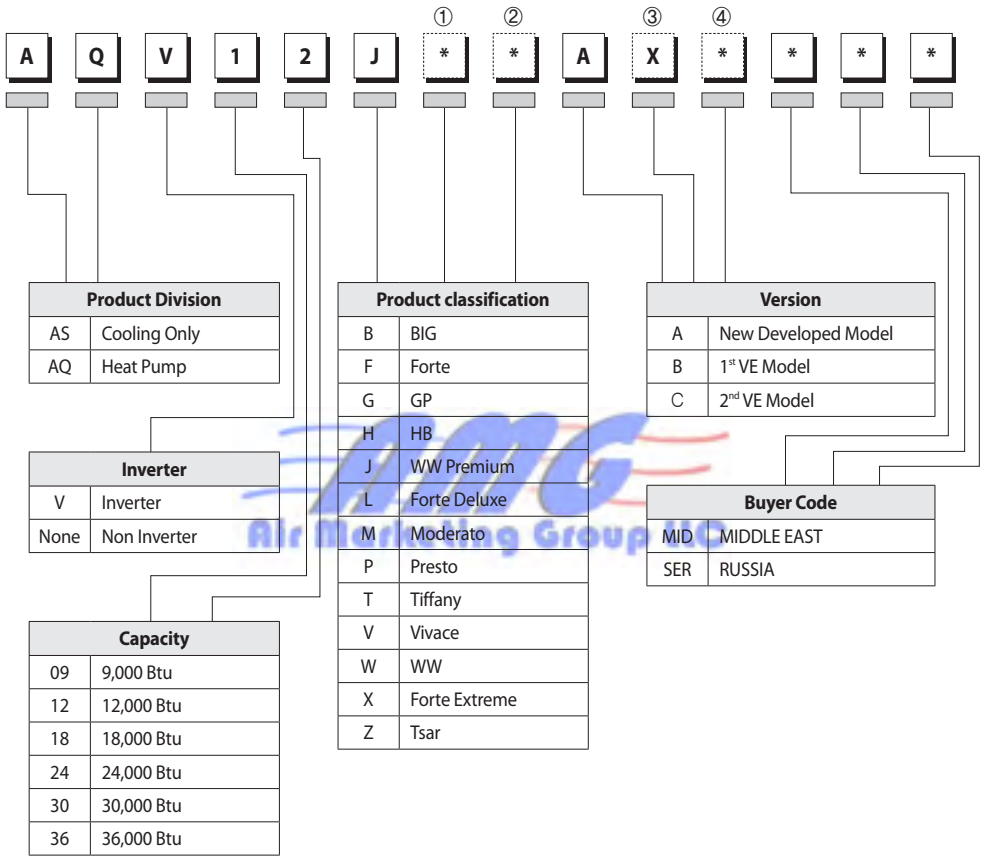


13. Reference Sheet

13-1 Index for Model Name

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

Model Code



Product Division	
AS	Cooling Only
AQ	Heat Pump

Inverter	
V	Inverter
None	Non Inverter

Capacity	
09	9,000 Btu
12	12,000 Btu
18	18,000 Btu
24	24,000 Btu
30	30,000 Btu
36	36,000 Btu

Product classification	
B	BIG
F	Forte
G	GP
H	HB
J	WW Premium
L	Forte Deluxe
M	Moderato
P	Presto
T	Tiffany
V	Vivace
W	WW
X	Forte Extreme
Z	Tsar

Version	
A	New Developed Model
B	1st VE Model
C	2nd VE Model

Buyer Code	
MID	MIDDLE EAST
SER	RUSSIA

①: Use the " ① " digit for Grille Color deviation.
: Don't use the digit for Basic White model.
ex) Silver : S, Black : B, White : W, etc.

②: Use the " ② " digit for Electric Source deviation.
: Only for "XAP", "XAX", "GEM" Buyer.

③: Use the " ③ " digit for classification between indoor and outdoor.
Indoor ➡ "N" & Outdoor ➡ "X".

④: Use the " ④ " digit for KD models.
"CKD" ➡ "1" & "SKD" ➡ "2".

● Except the RAC Export Models for China.

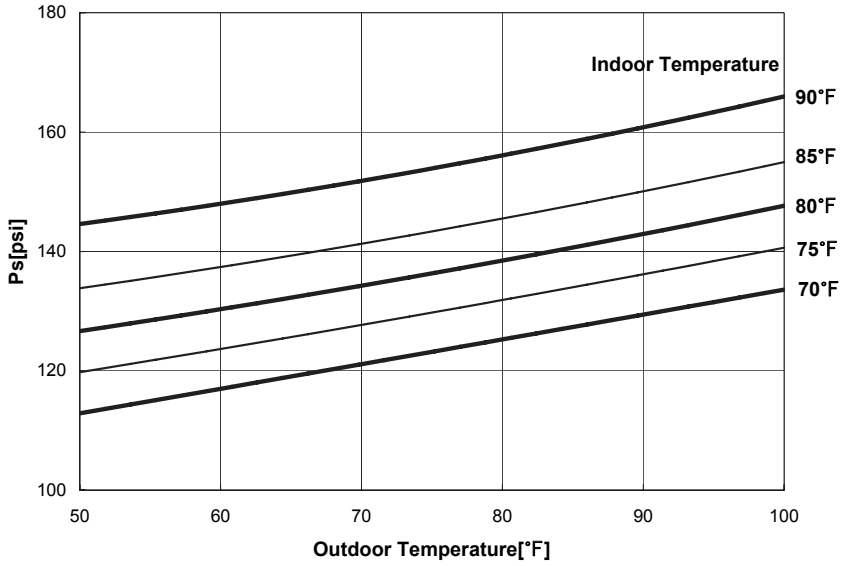
13-2 Low Refrigerant Pressure Distribution

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

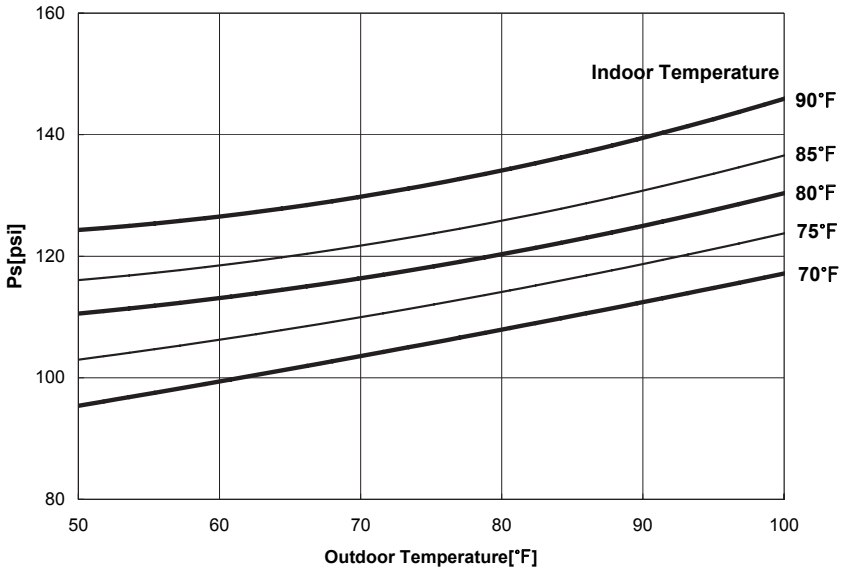
■ Indoor Temp. Variation : 68°F(20°C)~90°F(32°C)
■ Outdoor Temp. Variation : 23°F(-5°C)~113°F(45°C)

Low Refrigerant Pressure Distribution

AQV09JA



AQV12JA



13-3 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	1.1658	4.6262	0.0018182	0.13826	1

13-4 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. So, find and root out the problem or refresh the room frequently.

Classification	Class	Description
Smells	**Q**	**Whenever the air conditioner is turned on, it stinks.**
	A	There 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 the 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.

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 1st 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 31st 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.

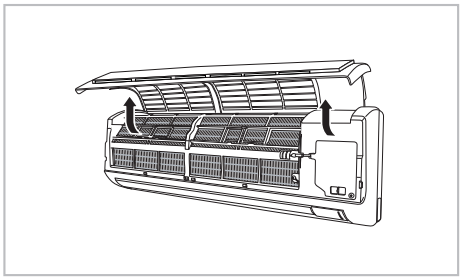
13-5 Cleaning/Filter Change

13-5-1 Cleaning your Air Conditioner

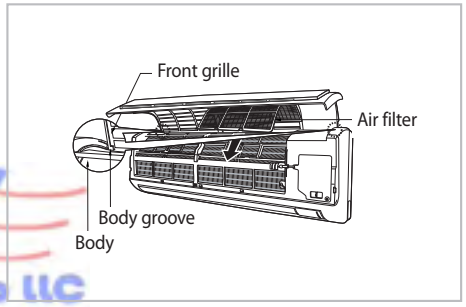
To get the best possible use out of your air conditioner, you must clean it regularly to remove the dust that accumulates on the air filter.

> ⚠ • Before cleaning your air conditioner, ensure that you have switched off the breaker used for the unit.

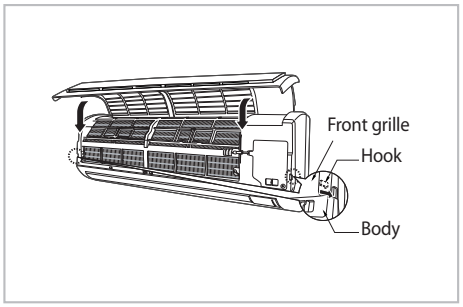
1. Open the upper front grille by pulling the lower right and left tabs of the grille.



2. Pull air filters out of each tab of the grille.
3. Remove all dust on the air filters with a vacuum cleaner or brush.
4. When you finished, insert air filters by fixing it to each tab of the grille.
5. To close the front grille, fix it to hooks and push down the lower right and left tabs of the grille.



6. Clean the front grille with a damp cloth and mild detergent (do NOT use benzene, solvents or other chemicals).

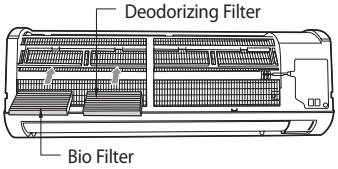


Note : • If you have not used the air conditioner for a long period of time, set the fan going for three to four hours to dry the inside of the air conditioner thoroughly.

13-5-2 Cleaning Deodorizing and Bio filter (Option)

To remove minute dust particles and odors, deodorizing and Bio filter are installed in the air conditioner.
You should clean the filters every 3 months.

1. Open the upper front grille by pulling the lower right and left tabs of the grille.
2. Pull out the deodorizing and Bio filter.
3. Wash the filters with clean water, then dry them in the shade.
4. Insert the filters into the original position.
   Note : • You can change the position of filters with each other.
5. Close the front grille.



13-6 Installation

13-6-1 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.

13-6-2 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 2.36inch(60mm) to 2.56inch(65mm).

■ Fixing Indoor Unit & Outdoor Unit

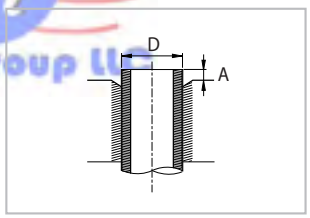
Fix the air conditioner indoor unit securely to the wall. Secure the outdoor unit in a suitable position.

■ Pipe Spooling & Connecting

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	Depth(A)
6.35mm(1/4")	10.1~12.3ft·lb (140~170 kgf·cm)	0.05 inch (1.3mm)
9.52mm(3/8")	18.1~20.3ft·lb (250~280 kgf·cm)	0.07 inch (1.8mm)
12.70mm(1/2")	27.5~30.4ft·lb (380~420 kgf·cm)	0.08 inch (2.0mm)
15.88mm(5/8")	31.8~34.7ft·lb (440~480 kgf·cm)	0.09 inch (2.2mm)



■ Leak Test

Put an inert 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.

13-7 Installation Diagram of Indoor Unit and Outdoor Unit

13-7-1 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 as shown at the figure.

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

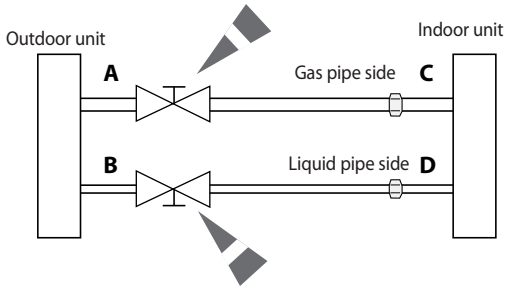
4) Purge the air from the system using vacuum pump for about 20 minutes.
   - Make sure that pressure gauge show -14.5psi(-0.1MPa, -76cmHg) after about 20 minutes.
   - This procedure is very important in order to avoid gas leak.
   - Turn off the vacuum pump.
   - Close the valve of the low pressure side of manifold gauge clockwise.
   - Remove the hose of the low pressure side of manifold gauge.

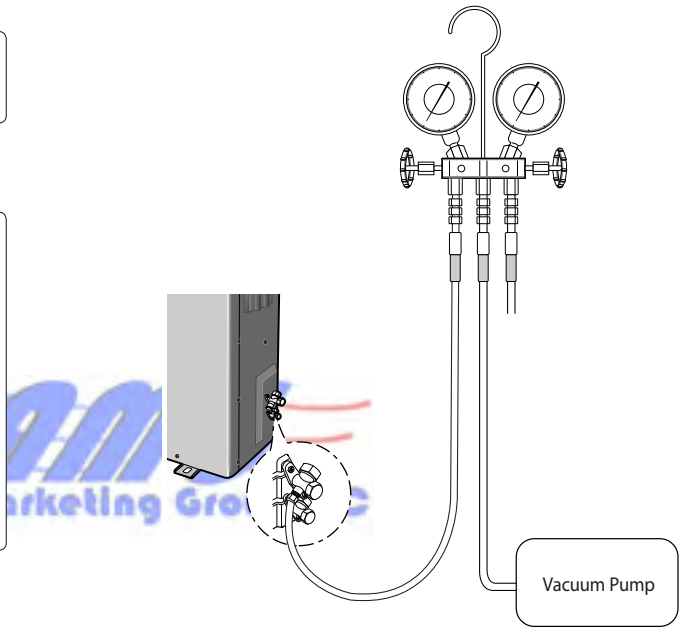
5) Set valve cork of both liquid side and gas side of packed valve to the open position.

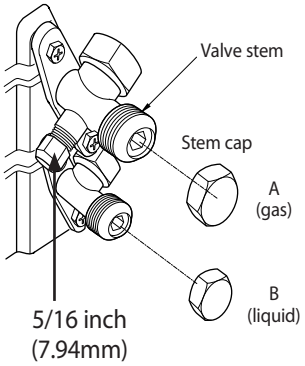
6) Mount the valve stem nuts and the service port cap to the valve, and tighten them at the torque of 183kgf•cm with a torque wrench.

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.

8) For further detailed information how to check the low pressure after installation,
   Please refer to Page 3-1.







13-7-2 “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.

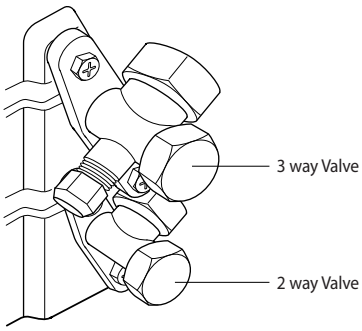
3) Set the unit to cool operation mode. (Check if the compressor is operating.)

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.

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