SAMSUNG

FLOOR STAND TYPE AIR CONDITIONER

Basic: **AF55JV1MAEE**

Model: AC048KNPPCC / AC048KXQPCC

> AC036KNPPCC / AC036KXQPCC AC140KNPDEH / AC140KXADGH AC100KNPDEH / AC100KXADEH AC048KNPDEC / AC048KXADGC AC036KNPDEC / AC036KXADEC

Model Code: AC048KNPPCC/MG AC048KXQPCC/MG

AC036KNPPCC/MG AC036KXQPCC/MG AC140KNPDEH/EU AC140KXADGH/EU AC100KNPDEH/EU AC100KXADEH/EU AC048KNPDEC/TL AC048KXADGC/TL AC036KNPDEC/TL AC036KXADEC/TL AC036KNPDEC/SV AC036KXADEC/SV

SERVICE Manual

AIR CONDITIONER



CONTENTS

- 1. Precautions
- 2. Product Specifications
- 3. Disassembly and Reassembly
- 4. Troubleshooting
- 5. PCB Diagram
- 6. Wiring Diagram
- 7. Reference Sheet

Contents

1.	Precautions	1-1
	1-1 Precautions for the Service ·····	1-1
	1-2 Precautions for the Static Electricity and PL	1-1
	1-3 Precautions for the Safety ·····	1-1
	1-4 Others ·····	1-1
2.	Product Specifications	2-1
	2-1 The Feature of Product ·····	2-1
	2-1-1 Features ·····	2-1
	2-1-2 Changes in comparison to basic model ·····	2-2
	2-2 The Comparative Specifications of Product ·····	2-3
	2-3 Accessory and Option Specifications	2-5
	2-3-1 Filter	2-5
	2-3-2 Accessory·····	2-5
3.	Disassembly and Reassembly	
	3-1 Indoor Unit ·····	
	3-2 Outdoor Unit	3-10
4.	Troubleshooting	4-1
	4-1 Indoor Display Error and Check Method ·····	4-1
	4-1-1 Indoor unit LED display at error detecting	4-1
	4-2 Outdoor Trouble shooting	4-2
	4-3 Troubleshooting by symptoms	4-5
	4-3-1 Communication error after finishing tracking (E202)	4-5
	4-3-2 Outdoor's service valve(Clog)	4-6
	4-3-3 No Power(completely dead) - Initial diagnosis	4-7
	4-3-4 E102 : Communication error between indoor and outdoor unit E201 : Unit quantity miss matching beween Indoor and Outdoor E202 : Abnormal state, no communication between Indoor and Outdoor Main PCB	
	E203 : 1min Time out of communication error(Main↔Inverter) ····································	4-11
	4-3-5 External Sensor Error (Error Code: E221, E231, E251, E320)	
	4-3-6 E403 : Freezing control causes comp. down	4-13
	4-3-7 E416: Dischage temperature sensor error	4-14
	4-3-8 E440, E441 : Abnormal outside temperature halts operation of the compressor	4-15
	4.2.0 Outdoor unit DLDC Fan1 or Fan2 orror (E4E9 , Fan1 orror E47E , Fan2 orror)	110

Contents

	E467: Compressor wire missing error	4-17
	4-3-11 E462 : Current protection control causes comp. down	
	E484 : PFC overload error	4-18
	4-3-12 E463: OLP protection control caused comp. down	4-19
	4-3-13 E464 : O.C. (Over Current) error	4-20
	4-3-14 E466: DC Link Over voltage/ Low voltage error	4-21
	4-3-15 Pipe Blocking Error (Error Code: E422)	4-22
	4-3-16 The others	
	4-3-17 Setting an indoor unit installation option	4-24
5	. PCB Diagram	5-1
٥.	5-1 Indoor unit	
	5-1-1 Main PCB	5-1
	5-1-2 Power PCB	
	5-1-3 Panel PCB	5-4
	5-2 Outdoor unit	5-5
	5-2-1 Main PCB Diagram ·····	5-5
	5-2-2 Inverter PCB	5-6
	5-2-3 EMI PCB	
	3-2-3 EWI FCD	3-10
6.	Wiring Diagram	6- 1
	6-1 Indoor unit	6-1
	6-2 Outdoor unit	6-2
7.	Reference Sheet	7 -1
	7-1 Index for Model Name ·····	7-1
	7-2 Refrigerating Cycle Diagram	7_7

1. Precautions

1-1 Precautions for the Service

- Use the standard parts when replacing the electric parts.
 - Confirm the model name, rated voltage, rated current of the electric parts.
- Repair the disconnection of HARNESS securely when repairing the break down.
 - If there is any connection error, it causes an abnormal noise and incorrect operation.
- In case that you assemble or disassemble the products with laying it on the side, do work on the work cloth.
 - If not, the exterior of products can be scratched.
- Remove dust and foreign materials from harness, connection part, and inspection part thoroughly when repairing the break down.
 - It protects the danger of fire such as tracking and short.
- Tighten tightly the service valve of outdoor unit and the cap of charging valve with a monkey spanner.
- Check the assembly status of parts after repairing the break down.
 - It should be same as the status before repairing.

1-2 Precautions for the Static Electricity and PL

- As the PCB power terminal has a weakness for the static electricity, pay attention to it during the repair and measurement.
 - Work with insulation gloves during the repair and measurement of PCB.
- Check the distance between the product and the other electronic appliances such as TV, video, and audio. It should be over 2m.
 - If not, it causes a bad picture quality or a noise.
- Repairing the products by consumer should be strictly prohibited.
 - There is a danger of electric shock or fire due to incorrect disassembly.

1-3 Precautions for the Safety

- Do not pull any electric wires and do not touch an auxiliary power switch with a wet hand.
 - There is a danger of electric shock or fire.
- In case any wire or power plug has been damaged, replace it to eliminate any possible danger.
- Do not bend the power cord by force and do not put any heavy object on the power cord.
 - There is a danger of electric shock or fire.
- Do not use multi socket.
 - There is a danger of electric shock or fire.
- Ground the product if necessary.
 - Be sure to ground the product if there is any danger of electric leakage due to water or moisture.
- Be sure to turn off the auxiliary power switch or pull out the power plug during replacement or repair of electric parts.
 - There is a danger of electric shock.
- In case the product will not be in use for a long time, the battery of remote control should be kept separately.
 - Leakage of inside fluid can cause break down of remote control.

1-4 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.
- 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.
- Pump Down Procedure (When removing the product)
 - Turn on the air conditioner and select Cool mode to run the compressor for 3 minutes.
 - Release the valve caps on High and Low pressure side.
 - Use L wrench to close the valve on the high pressure side.
 - Approximately 2 minutes after, close the valve on the low pressure side.
 - Stop operation of the air conditioner.
 - Disconnect the pipes.

Samsung Electronics 1-1

2. Product Specifications

2-1 The Feature of Product

2-1-1 Features

Strong Turbo/convenient long-distance operation

Quicker and more consistent air cooling/warming is guaranteed by turbo operation that provides strong cooling/warming for 30 minutes or by long-distance operation that ensures cooling/warming even in places a long way from the air conditioner.

Stylish, high quality design

Neat and luxurious style boasts high-quality interior design that fits naturally into any place.

Compact Remote Controller

A small hand-size remote control makes it even easier to use.

Long Piping(Length & Height)

It can give the benefit to the installers and aries the reliability of the air conditioner.

Long Ambient Operation(In Low Temperature)

It can arise the reliability and the capacity of the air conditioner, especially operated in low temperature.

Eco-friendly Product (Lead-Free, RoHS, WEEE)

High Performance & Energy Saving

With the advanced BLDC inverter technology, it makes a room cool with highly energy saving and arises the efficiency of air conditioner.

Samsung Electronics 2-1

2-1-2 Changes in comparison to basic model

Changed part	Changed item and feature	Basic	After changed
Indoor Unit	Wi-Fi Function added.		
Outdoor Unit (AC048KXQPCC AC036KXQPCC AC140KXADGH AC048KXADGC)	Inverter controller changed.		
Outdoor Unit (AC100KXADEH AC036KXADEC)	-	-	Control of the contro

2-2 Samsung Electronics

2-2 The Comparative Specifications of Product

				Developm	ent Model			Basic Model	
	ltem		AC048KNPPCC AC048KXQPCC	AC036KNPPCC AC036KXQPCC	AC140KNPDEH AC140KXAPGH	AC100KNPDEH AC100KXAPEH	AC048KNPDEC AC048KXAPGC	AC036KNPDEC AC036KXADEC	AF55JV1MAEEN AF55JV1MAEEX
	Indoo	r Unit							
Design	Outdoo	or Unit							
	Wireless Remote Controller		DB93-1		DB93-	15883B	DB93-1	15883B	DB93-14643X
	Cooling (T1)	[Btu/h or W]	15 000/48 000/60 000	12 300 / 36 000 / 45 700	4 200 / 13 400 / 16 700	3 500 / 10 000 / 12 300	3 600 / 14 000 / 16 700	3 400 / 10 000 / 13 000	15000/48000/60000
Performance	Cooling (T		42 000	32 000	-	-	-	-	42000
	Heatin		-	-	4 000 / 15 500 / 20 000	4 200 / 11 200 / 14 000	-	-	-
Power Consump-	Cooling		890 / 4,050 / 6,600	1,100 / 3,030 / 4,000	900 / 4,320 / 5,900	1,100 / 3,700 / 4,900	820 / 5,040 / 5,600	880 / 3,270 / 4,900	890/3930/6600
tion	Cooling		4,920	3,700	-	-	-	-	4950
	Heatin		-	-	700 / 4,500 / 6,600	900 / 3,390 / 4,500	-	-	-
		tu/h·W or W/W]	11.85	11.88	3.10	11.88	2.78	3.06	12.21
FFD/COD	Cooling (T3		8.54	8.65	-	8.65	-	-	8.48
EER/COP	Heating SEER [-	-	3.44	- A+ (5.8)	-	-	-
	SCOP[-	-	<u>-</u>	A+ (3.6) A+ (4.1)	<u>-</u>	-	-
	Voltage / Frequency		230V, 60Hz		3Ф 380-415V, 50Hz	220-240V, 50Hz	3Ф 380-415V, 50Hz	220-240V, 50Hz	230V, 60Hz
	Cooling		4.7 / 18.2 / 28.5	5.7 / 13.5 / 18.3	1.9 / 6.8 / 9.5	4.3 / 16.4 / 23.2	1.6/7.8/9.0	4.4 / 14.4 / 22.5	4.7/17.2/28.5
Operating Current			21.3	16.7	-	-	-	-	21.1
	Heatir		-	-	1.4 / 6.7 / 10.7	4.1 / 14.9 / 20.5	-	-	-
Noise	Indoor U	nit [dBA]	51 / -	47 / -	51 / 51	47 / 47	51 / -	45 / -	-
INOISE	Outdoor l		55 / -	51 / -	53 / 54	53 / 55	53 / -	51 / -	-
	Net Dimension	Indoor Unit [mm]	610*1850*400	610*1850*400	610*1850*400	610*1850*400	610*1850*400	610*1850*400	610*1850*400
Size	(WxHxD)	Outdoor Unit [mm]	940*1420*330	940*1210*330	940*1210*330	940*998*330	940*1210*330	940*998*330	940*1420*330
	Shipping Dimension (WxHxD)	Indoor Unit [mm]	705*1963*493	705*1963*493	705*1963*493	705*1963*493	705*1963*493	705*1963*493	705*1963*493
		Outdoor Unit [mm] Indoor Unit [kg]	995*1597*426 46	995*1388*426 46	995*1388*426 46	995*1096*426 42	995*1388*426 46	995*1096*426 42	995*1597*426 46
	Net Dimension	Outdoor Unit [kg]	92	81	91	72	81	69	90
Weight	a. :	Indoor Unit [kg]	52	52	52	49	52	49	51
	Shipping Dimension	Outdoor Unit [kg]	102	90	101	77	90	74	100
Hamaz	Indoor Fa		FMAF031SSA	FMAF031SSA	FMAF031SSA	FMC9731SSC	FMAF031SSA	FMC9731SSC	FMAF031SSA
Harness Specifications	Comp		UG5T450FXAJX	UG5TK1450FJX	UG5TK1450FJX	UG8T300FUBJU	UG5TK1450FJX	UG8T300FUBJU	UG5T450FXAJX
Specifications	Outdoor F		DAO335130ZRD		ATB125FGA	DAO335130ZRD	DAO335		DAO335130ZRD
Piping	High Pr		3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"
	Low Pr		3/4"	5/8" LED	5/8"	5/8" LED	5/8" LED	5/8" LED	3/4" LED
Exterior	Disp Refrigerant Type	Jiay	LED R410A	R410A	LED R410A	R410A	R410A	R410A	R410A
	Factory Charging [g	1	2600	2400	3500	3000	2900	2400	2600
Addit	tional Refrigerant (for eve		30	30	50	50	30	30	30
Addit	Basic Piping Length [r		5	5	5	5	5	5	5
	Max. Piping Length [r		75	75	75	50	75	50	50
	Max. Level Difference		30	30	30	30	30	30	30
Option Code		01146A-1900D7-278C00-370000	01146A-190096-276900-370000	01146A-1950C7-278C9B-370000	01146A-195085-276470-370000	01146A-1900C7-278C00-370000	01146A-190085-276400-370000	01144A-1900C7-279100-370010	

2-3 Samsung Electronics Samsung Electronics 2-4

2-3 Accessory and Option Specifications

2-3-1 Filter

Item	Descriptions	Code-No.	Remark
	Air Filter	DB63-02928B	Basic/ Water Washing

2-3-2 Accessory

Item	Descriptions	Code-No.	Q'ty	Remark
	Manual (AC048/036KNPPCC)	DB68-04872A	1	
	Manual (AC140/100KNPDEH)	DB68-06271A DB68-06272A	1	
	Manual (AC048/036KNPDEC)	DB68-06270A	1	
	Wireless Remocon	DB93-15883B	1	
	Battery	DB47-90024A	2	Indoor Unit
	Holder Remocon	DB61-06087A	1	
	Rubber Cabi Hole	DB73-00195A	1	
	Insulation Tube	DB62-10944A	1	
	Insulation (AC048/036KN*)	DB72-50300A	1	

2-5 Samsung Electronics

Item	Descriptions	Code-No.	Q'ty	Remark
	Insulation (AC140/100KN*)	DB72-50300C	1	
EMPHOLINIA MARINE 3	Holder Top	DB61-40042B	1	Indoor Unit
nonnon	Screw (L14)	6002-000538	4	
	Screw (L12)	6002-000231	4	
	Rubber leg	DB73-20134A	4	
	Drain Plug	DB67-00806A	1	Outdoor Unit
0	CAP Drain	DB63-10355C	3	

Samsung Electronics 2-6

3. Disassembly and Reassembly

■ Necessary Tools

ltem	Remark
+Screw driver	
Monkey spanner	CO DECRETATION APP : 10

Samsung Electronics 3-1

3-1 Indoor Unit

No	Parts	Procedure	Remark
1	Indoor unit	Stop the operation of the air conditioner and disconnect the main power supply.	
2	Ass'y Inlet Part	Open the Ass'y Inlet and remove the safety clips.	
3	Ass'y Cover Control	 Loosen one fixing screw of Ass'y Cover Control. (Use +Screw driver) and detach the cover. Lift up the Ass'y Cover Control and detach it by pulling the bottom outward. 	

3-2 Samsung Electronics

No	Parts	Procedure	Remark
		3) Detach the connectors connected to Panel-Outlet and the Motor Connector.	Horizontal blade Vertical blade Vertical blade
4	Ass'y Panel-outlet	1) Loosen the 7 fixing screws of Ass'y Panel-Outlet and detach the panel outlet by pushing upwards. (Use +Screw driver)	
			Detaching Detaching direction

Samsung Electronics 3-3

No	Parts	Procedure	Remark
5	Ass'y Eva	Loosen the 2 fixing screws of Cover EVA Top and detach the Top.	
		 Loosen the 4 fixing screws of EVA. Loosen the grounding screw. Pull out the sensor cable. Pull out the Bracket Pipe upward. Pull the upper part of the Heat Exchanger toward you and lift up the Heat Exchanger to detach. 	
6	Ass'y Control In	 Loosen the 1 fixing screw of Ass'y Control. Loosen the EVA grounding fixing screw. Detach the Ass'y Control In by pushing it to the right. 	Detaching direction 2

3-4 Samsung Electronics

No	Parts	Procedure	Remark
7	Ass'y Blower	 Loosen the 1 fixing screw of Guard Fan. (Use +Screw driver) Push the Guard Fan in the arrow direction and detach the guard. 	Detaching direction
		3) Loosen the Blower nut clockwise and pull the Blower toward you and detach it. (Use a monkey spanner.)	

Samsung Electronics 3-5

No	Parts	Procedure	Remark
8	Ass'y Motor Blower	1) Loosen the 5 fixing screws of Ass'y Duct Case and detach the case. (Use +Screw driver) 2) Loosen the 3 fixing screws of Motor and ground fixing screw. (Use a monkey spanner.) (Remove the connectors before detaching the Motor.)	Detaching direction 1
9	CoverTop	1) Loosen the 3 fixing screws of Cover-Top and detach the cover. (Use +Screw driver), (Screw: TH type2 M4, L10, BLK) 2) Lift up the rear of Cover Top and detach it.	

3-6 Samsung Electronics

No	Parts	Procedure	Remark
10	Ass'y Panel-Outlet	1) Panel-Outlet	Front side Rear side
		As you push the 2 hooks on each side of Panel outward, detach the bottom part of Partition by lifting it toward you.	
		3) Detach the wire positioned with Holder Wire.	
		4) Detach the wire positioned with Holder Wire.	

Samsung Electronics 3-7

No	Parts	Procedure	Remark
11	Ass'y Panel-outlet - Seperate Display PBA	Loosen the 2 fixing screws of Case Display PBA and detach the case. (Use +Screw driver)	
		2) Unlink the fixing hook placed in the middle of Case Display PBA.	
		3) Loosen the 2 fixing screws of PBA and detach the PBA. (Use +Screw driver)	

3-8 Samsung Electronics

No	Parts	Procedure	Remark
12	Ass'y Panel-outlet - Motor Step	Loosen the 8 fixing screws of Holder Blade and detach the holder. (Use +Screw driver)	
		Loosen the 2 fixing screws of Step Motor and detach the motor. (Use +Screw driver)	
		3) The detached Step Motor.	

Samsung Electronics 3-9

3-2 Outdoor Unit

No	Parts	Procedure	Remark
1	Cabi Front RH	You must turn off the Power before disassembly. 1) Unscrew and remove two mounting screw in the Cabinet Front RH. (Use +Screw Driver)	SAMSUND DIGITAL INVERTER
2	Cabi Top	1) Unscrew and remove 9 screws on each side of the Cabinet-Top. (Use +Screw Driver)	
3	Cabi Install Front	1) Unscrew and remove 1 screw in the Cabinet-Install Front. (Use +Screw Driver)	
4	Guard Cond	1) Pull the sensor from Guard Cond. 2) Unscrew and remove 4 screws in the Guard Cond. (Use +Screw Driver)	

3-10 Samsung Electronics

No	Parts	Procedure	Remark
5	Cabi Back RH	1) Pull the sensor from Cabi Back RH. 2) Unscrew and remove 4 screws on each side of the Cabinet Back RH. (Use +Screw Driver)	
6	Cabi Install Back	1) Unscrew and remove 1 screw in the Cabinet-Install Back. (Use +Screw Driver)	
7	Cabi Front LF	1) Unscrew and remove 10 screws in the Cabinet-Front LF. (Use +Screw Driver) Output Description:	
8	Fan	1) Turn 2 mounting nuts as shown in the picture and remove it. (Use Adjustable Wrench)	

Samsung Electronics 3-11

No	Parts	Procedure	Remark
9	Motor	1) Separate the Fan Propeller. 2) Unscrew and remove the 8 Motor mounting screws. (Use +Screw Driver) 3) Disconnect the Motor wire From Ass'y Control Out.	
10	Bracket Motor	1) Unscrew and remove 2 mounting screws in Bracket Motor. (Use +Screw Driver)	
11	Control Out	1) Disconnect 4 Connecters From Ass'y Control Out. 2) Unscrew and remove 1 mounting screw in Control Out. (Use +Screw Driver) 3) Separate Ass'y Control Out.	

3-12 Samsung Electronics

No	Parts	Procedure	Remark
12	Assy 4way Valve	 Purge the Coolant first. Unscrew and remove 2 mounting screws in Service Valve. (Use +Screw Driver) Separate the pipe from the Entrance/Exit using a welder. When removing the compressor, Heat Exchanger, and Pipe, purge the Coolant inside the Compressor completely and remove the pipe with a welding flame. 	
13	Assy EEV Valve	1) Unscrew and remove 2 mounting screws in Service Valve. (Use +Screw Driver) 2) Separate the pipe from the Entrance/Exit using a welder.	

Samsung Electronics 3-13

4. Troubleshooting

4-1 Indoor Display Error and Check Method

4-1-1 Indoor unit LED display at error detecting

- Thins to check before diagnosis

			Pro	duct opera	tion	Diagnosis
Display	Explanation	Check list	Indoor FAN	Outdoor FAN	СОМР	Method
E:0:	Indoor and Outdoor unit communication Error	Check the connection wire.Change the Main PCB.	Operation OFF	Operation OFF	Operation OFF	
E:2:	Indoor unit room temperature sensor SHORT/OPEN	• Change the temperature sensor. (Wire type)	Operation OFF	Operation OFF	Operation OFF	
8:55	Indoor unit Eva_in sensor SHORT/OPEN	 Change the temperature sensor. (Wire type) 	Operation OFF	Operation OFF	Operation OFF	
E : 54	Indoor unit Fan motor Error	 Check the connection wire. Change the Fan motor. Change the Main PCB. ** BLDC Motor is used as Fan Motor, therefore if you connect or disconnect the connector while the power is still on, it may get damaged. Make sure to turn off the power before performing any operation. 	Operation OFF	Operation OFF	Operation OFF	
E : 62	EEPROM ERROR	● Change PCB.	Operation OFF	Operation OFF	Operation OFF	
E : 63	EEPROM Option Setting Error	● Input option Cannot input KEY	Operation OFF	Operation OFF	Operation OFF	
E : 98	Thermal Fuse Error (TERMINAL BLOCK)	• Check the connection wire.	Operation OFF	Operation OFF	Operation OFF	
E : 08	Duplicated address setting error	• Check address setting of Indoor units.	Operation OFF	Operation OFF	Operation OFF	
E : 09	No response error of address from indoor unit	 Check indoor unit's quantity setting in outdoor unit. Check electrical connection and set- ting. 	Operation OFF	Operation OFF	Operation OFF	

Samsung Electronics 4-1

4-2 Outdoor Trouble shooting

The table below give indication about self diagnostic routine. Some of error code requires activities exclusively for Authorized Service Center.

Outdoor unit

If an error occurs during the operation, it is displayed on the outdoor unit PCB LED, both MAIN PCB and INVERTER PCB.

No.	Error Code	Meaning	Remarks
1	E108	Error due to repeated address setting(when 2 or more devices has same address within the network)	Check on repeated indoor unit main address
2	E121	Error on indoor temperature sensor of indoor unit(Short or Open)	Indoor unit Room Thermistor Open/Short
3	E122	Error on EVA IN sensor of indoor unit(Short or Open)	Indoor unit EVA_IN Thermistor Open/Short
4	E123	Error on EVA OUT sensor of indoor unit(Short or Open)	Indoor unit EVA_OUT Thermistor Open/Short
5	E153	Error on float switch (2nd detection)	"Indoor unit Float Switch Open/Short Drain Pump operation Check"
6	E154	RPM feedback error of indoor unit	Check on indoor unit indoor Fan operation
7	E162	Outdoor unit EEPROM Read/Write error (H/W)	Check Outdoor EEPROM PBA
8	E163	Outdoor unit EEPROM Read/Write error (Option)	Check Outdoor EEPROM Data
9	E198	Error on thermal fuse of indoor unit (Open)	Thermal Fuse Open Check of indoor unit Terminal Block
10	E201	"Communication error between indoor and outdoor unit(Installation number setting error repeated indoor unit address,indoor unit communication cable error)"	Check indoor quantity setting in outdoor
11	E202	"Communication error between indoor and outdoor unit(Communication error on all indoor unit, outdoor unit communication cable error)"	Check electrical connection and setting between indoor unit and outdoor unit
12	E205	Communication error on all PBA within the outdoor unit C-Box,communication cable error	-
13	E206	E206-C002 : Fan PBA communication error, E206-C003 : INV PBA communication error	-
14	E221	Error on outdoor temperature sensor (Short or Open)	Check Outdoor sensor Open / Short
15	E231	Error on outdoor COND OUT sensor (Short or Open)	Check Cond-Out sensor Open / Short
16	E251	Error on discharge temperature sensor of compressor 1 (Short or Open)	Check Discharge sensor Open / Short
17	E320	Error on OLP sensor (Short or Open)	Check OLP sensor Open / Short
18	E346	Error due to operation failure of Fan2	FAN2 error
19	E347	Motor wire of Fan2 is not connected	FAN2 error
20	E348	Lock error on Fan2 of outdoor unit	FAN2 error
21	E353	Error due to overheated motor of outdoor unit's Fan2	FAN2 error
22	E355	Error due to overheated IPM of Fan2	FAN2 error
23	E378	Error due to overcurrent of Fan2	FAN2 error
24	E386	Over-voltage/low-voltage error of Fan2	FAN2 error
25	E387	Hall IC connection error of Fan2	FAN2 error
26	E389	V-limit error on Fan2 of compressor	FAN2 error
27	E391	Error due to DataFlash of Fan2	FAN2 error
28	E393	Output current sensor error of Fan2	FAN2 error

4-2 Samsung Electronics

No.	Error Code	Meaning	Remarks	
29	E396	DC voltage sensor error of Fan2	FAN2 error	
30	E399	Heat sink temperature sensor error of Fan2	FAN2 error	
31	E403	Compressor down due to freeze protection control	Check Outdoor Cond.	
32	E404	System stop due to overload protection control	Check Comp. when it start	
33	E416	System stop due to discharge temperature	-	
			1. Check if the service valve is open	
34	E422	Blockage detected on high pressure pipe	Check for refrigerant leakage(pipe connections, heat exchanger) and charge refrigerant if necessary Check if there's any blockage on refrigerant cycle(indoor unit/outdoor unit)	
35	E425	Reverse phase or open phase	after pipe extension	
			Check whether 3 phase is reversed or opened.	
36	E440	Heating mode restriction due to high air temperature	HEATING	
37	E441	Cooling mode restriction due to low air temperature	COOLING	
38	E446	Error due to operation failure of Fan1	FAN1 error	
39	E447	Motor wire of Fan1 is not connected	FAN1 error	
40	E448	Lock error on Fan1 of outdoor unit	FAN1 error	
41	E452	Error due to ZCP detection circuit problem or power failure	-	
42	E453	Error due to overheated motor of outdoor unit's Fan1	FAN1 error	
43	E455	Error due to overheated IPM of Fan1	FAN1 error	
44	E458	Fan speed error	FAN1 ERROR	
45	E461	Error due to operation failure of inverter compressor	-	
46	E462	System stop due to full current control	-	
47	E463	Over current trip / PFC over current error	Check OLP sensor	
48	E464	IPM Over Current(O.C)	IPM	
49	E465	Comp. Over load error	-	
50	E466	DC-Link voltage under/over error	Check AC Power and DC Link Voltage	
51	E467	Error due to abnormal rotation of the compressor or unconnected wire of compressor	Check Comp wire	
52	E468	Error on current sensor (Short or Open)	Check Outdoor Inverter PBA.	
53	E469	Error on DC-Link voltage sensor (Short or Open)	-	
54	E471	Outdoor EEPROM checksum error between MAIN and INVERTER (AC**KXAPNH)	Check Outdoor EEPROM PBA	
55	E472	AC Line Zero Cross Signal out	-	
56	E473	Comp Lock error	-	
57	E474	Error on IPM Heat Sink sensor of inverter 1 (Short or Open)	heck Outdoor Inverter PBA	
58	E475	Error on inverter fan 2	FAN2 ERROR	
59	E478	Error due to overcurrent of Fan1	FAN1 error	
60	E484	PFC Overload (Over current) Error	Check Outdoor Inverter PBA.	
61	E485	Error on input current sensor of inverter 1 (Short or Open)	Check Outdoor EEPROM PBA	
62	E486	Over-voltage/low-voltage error of Fan1	FAN1 error	

Samsung Electronics 4-3

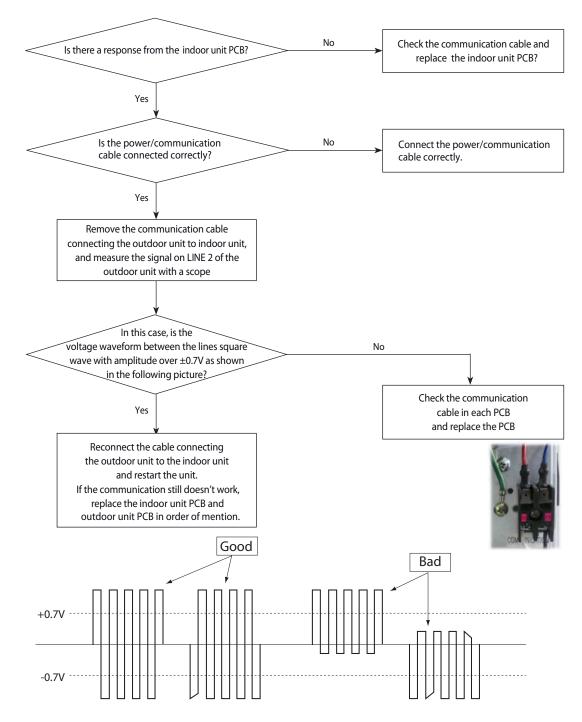
No.	Error Code	Meaning	Remarks
63	E487	Hall IC connection error of Fan1	FAN1 error
64	E489	V-limit error on Fan1 of compressor	FAN1 error
65	E491	Error due to DataFlash of Fan1	FAN1 error
66	E493	Output current sensor error of Fan1	FAN1 error
67	E496	DC voltage sensor error of Fan1	FAN1 error
68	E499	Heat sink temperature sensor error of Fan1	FAN1 error
69	E500	IPM over heat error on inverter 1	Check Outdoor Inverter PBA.
70	E508	Smart install is not installed	-
71	E554	Gas leak detected	Check the refrigerant
72	E556	Error due to mismatching capacity of indoor and outdoor unit	Check the indoor and Outdoor unit Capacity
73	E557	Option code miss matching among the indoor units (only for DPM)	Check the indoor option code
74	E590	Outdoor EEPROM checksum error between MAIN and INVERTER (AC***JXAFKH, AC***JXAFNH, AC***JXAPNH)	-
75	E660	Inverter Boot Code error	-

4-4 Samsung Electronics

4-3 Troubleshooting by symptoms

4-3-1 Communication error after finishing tracking (E202)

- 1. Check items
 - 1) Is the communication cable short/open?
 - 2) Is there a response from the indoor unit PCB?
- 2. Check procedure



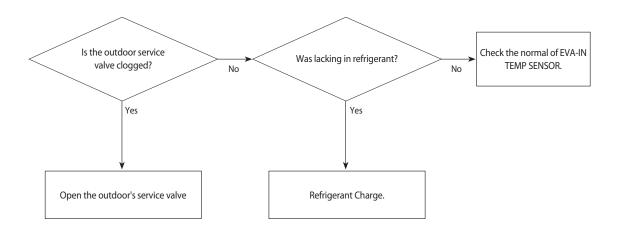
cf.) If there is no oscillo scope, it can be replaced multimeter instead of osillo scope.

If measured voltage is floating value from 0.1V to 4.5V, then it means that the PCB is normal.

Samsung Electronics 4-5

4-3-2 Outdoor's service valve(Clog)

Wire remote controller display	E422
Symptom	Clogging of outdoor's service valve
Failure	Valve clog



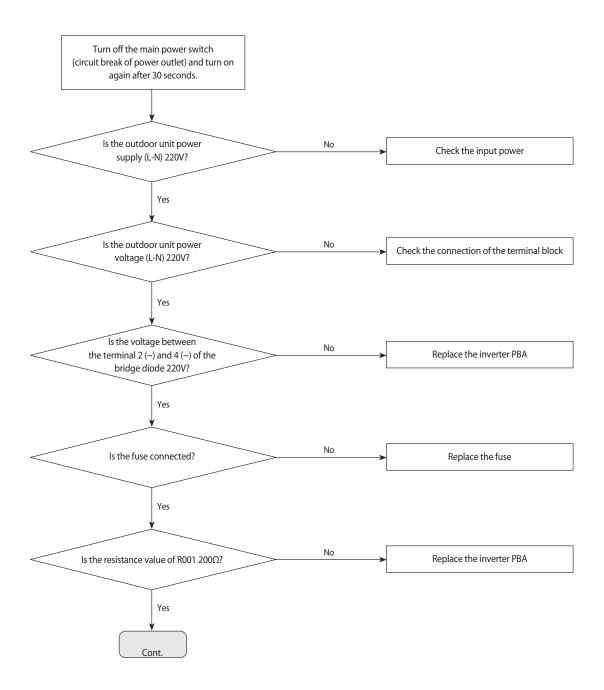
4-6 Samsung Electronics

4-3-3 No Power(completely dead) - Initial diagnosis

Outdoor unit is not powered on - Initial diagnosis (1phase)

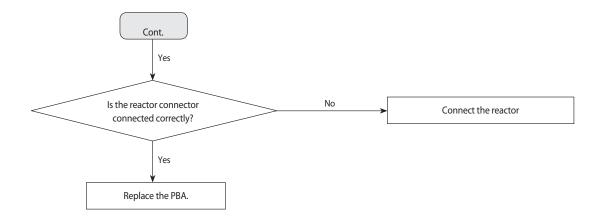
- 1. Check items
 - 1) Is the power supply voltage 220V?
 - 2) Is the AC power connected correctly?
 - 3) Are the LEDs in the main PCB and inverter PCB of the outdoor unit ON?
 - 4) Is the input power voltage of the indoor unit 220V?
 - 5) Is the wired remote controller connected correctly?

2. Check procedure



Samsung Electronics 4-7

Outdoor unit is not powered on – Initial diagnosis (1phase) (cont.)



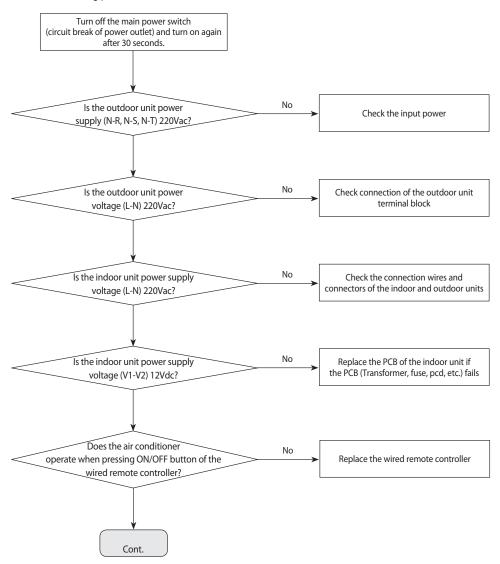
4-8 Samsung Electronics

Outdoor unit is not powered on - Initial diagnosis (3phase)

1. Check items:

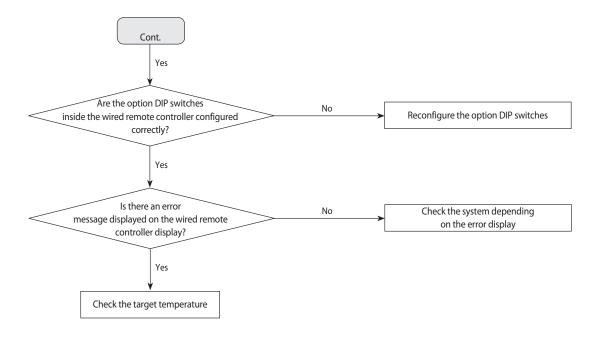
- 1) Is the power supply voltage 380V?
- 2) Is the AC power connected correctly?
- 3) Are the LEDs in the main PCB and inverter PCB of the outdoor unit ON?
- 4) Is the input power voltage of the indoor unit 220V?
- 5) Is the wired remote controller connected correctly?

2. Troubleshooting procedure



Samsung Electronics 4-9

Outdoor unit is not powered on – Initial diagnosis (3phase) (cont.)



4-10 Samsung Electronics

4-3-4 E102: Communication error between indoor and outdoor unit

E201: Unit quantity miss matching beween Indoor and Outdoor

E202: Abnormal state, no communication between Indoor and Outdoor Main PCB

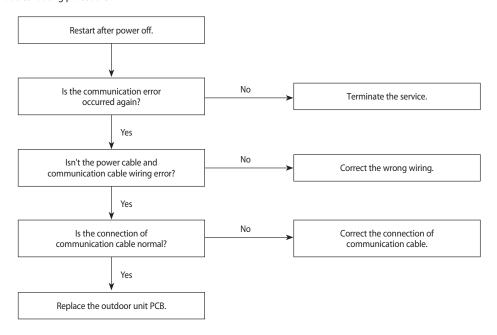
E203: 1min Time out of communication error(Main↔Inverter)

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 wiring error?

2. Troubleshooting procedure



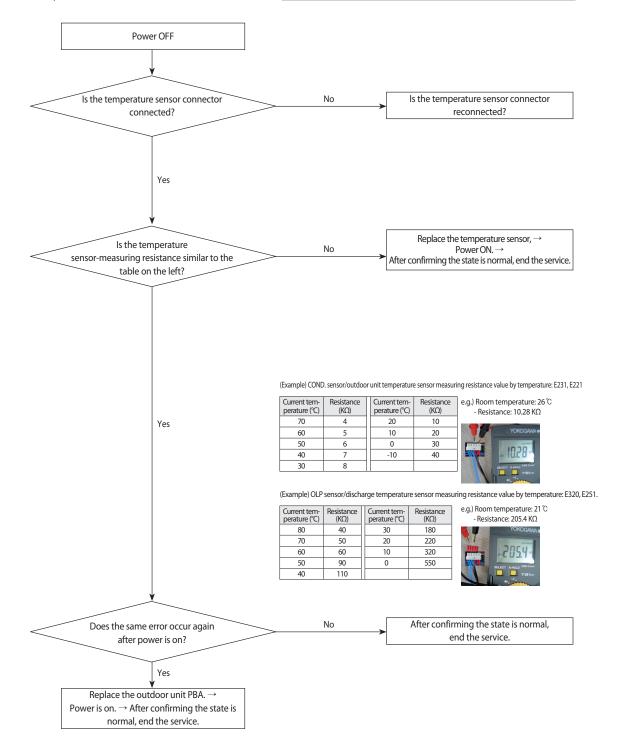
Samsung Electronics 4-11

4-3-5 External Sensor Error (Error Code: E221, E231, E251, E320)

- 1. Test Item
 - 1) Check the connection of the temperature sensor connector.
 - 2) Check the resistance value of the temperature sensor.

2. Check procedure

Error Code	Description
E221	Error of the temperature sensor of the outdoor unit
E231	Error of the COND. sensor of the outdoor unit
E251	Error of the discharge sensor of the outdoor unit
E320	Error of the OLP sensor of the outdoor unit

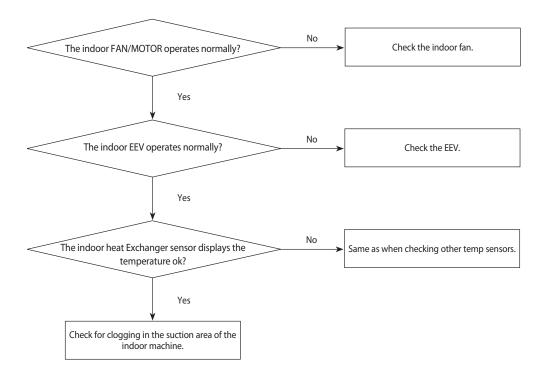


4-12 Samsung Electronics

4-3-6 E403: Freezing control causes comp. down

Outdoor unit display	E403
Criteria	•All the operating indoor machines do not reach -4°C for more than five minutes
Cause of problem	 Check if the indoor FAN/MOTOR operates normally. Check if the indoor EEV operates normally. Check the indoor heat Exchanger's IN/OUT sensor. Check for clogging in the suction area of the indoor machine.

1. How to check

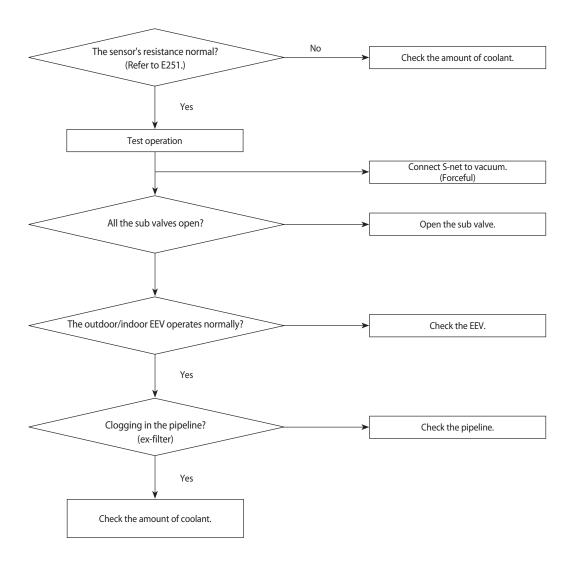


Samsung Electronics 4-13

4-3-7 E416: Dischage temperature sensor error

Outdoor unit display	E416
Criteria	•The compressor temperature above 110°C.
Cause of problem	 Insufficient coolant. Clogging in the outdoor machine's solenoid valve. Clogging in the sub valve. Malfunctioning exhaust gas temp sensor. Clogging in the pipeline and the filter. Liquid EEV damaged.

1. How to check



4-14 Samsung Electronics

4-3-8 E440, E441: Abnormal outside temperature halts operation of the compressor

Outdoor unit display	E440 (No heater operation with the outside temperature above 30°C.)
Outdoor unit display	E441 No AC operation with the outside temperature below -10°C.)
Criteria	•The compressor temperature above 110°C.
Cause of problem	E440: If the outside temperature is above 30°C, operation of the indoor heater with a remocon causes this error.
Cause of problem	E441:The indoor machine remocon ON signal. If the outside temperature is below -10°C before the AC runs, this error occurs.
Cause of problem	•OLP SENSOR temp above Trip_Dis.

1. How to check

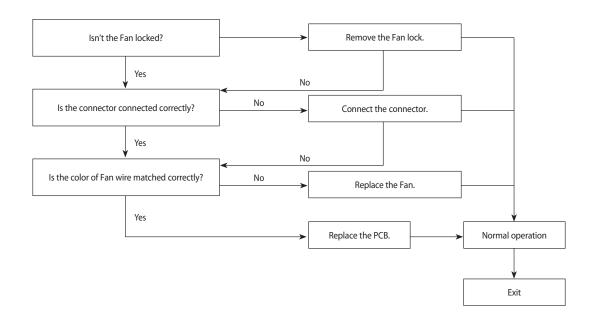
The above malfunction codes do not indicate a malfunction of the product. All you have to do is change the temperature suitably for the limits shown in the manual. When the product malfunctions, if the actual situation does not match the above diagnosis, measure the temperature of incoming air with S-net to see if the measurement is the same as the actual outdoor temperature. If not, replace the temperature sensor.

4-3-9 Outdoor unit BLDC Fan1 or Fan2 error (E458: Fan1 error, E475: Fan2 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



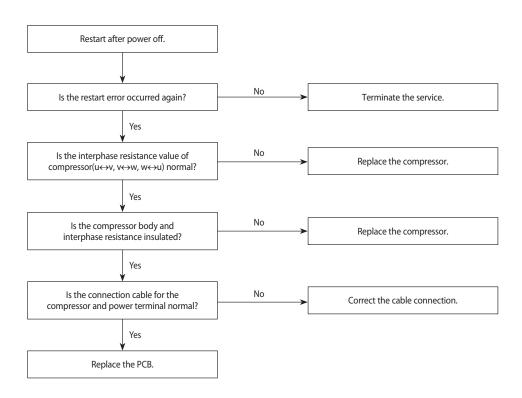
4-16 Samsung Electronics

4-3-10 E461: Compressor start error E467: Compressor wire missing error

1. Checklist:

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

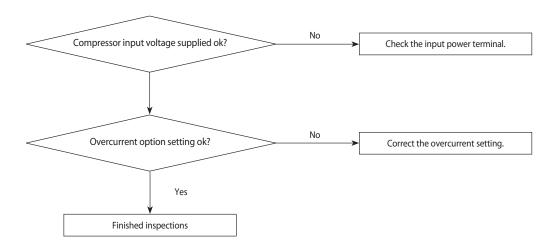
2. Troubleshooting procedure



4-3-11 E462 : Current protection control causes comp. down E484 : PFC overload error

Outdoor unit display	E462,E484	
Criteria	• The outdoor machine input current above I_Trip.	
Cause of problem	•Check the compressor input voltage. (error for low voltage.) •Check the overcurrent option setting.	

1. How to check

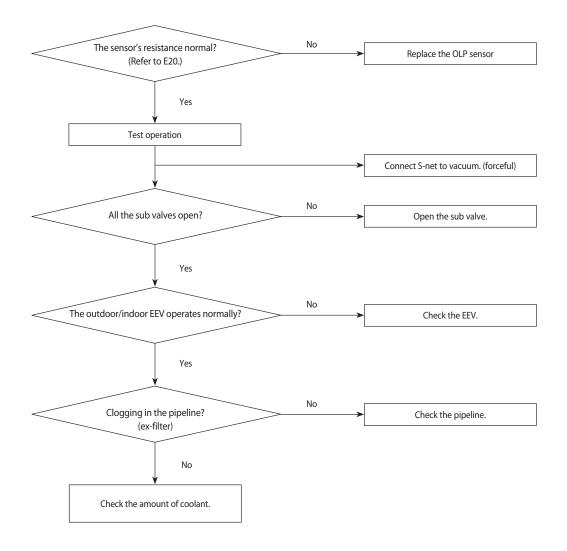


4-18 Samsung Electronics

4-3-12 E463: OLP protection control caused comp. down

Outdoor unit display	E463
Criteria	• OLP SENSOR temp above Trip_Dis.
Cause of problem	•See if the sub valve is open. •Check the amount of coolant. • Check the OLP sensor.

1. How to check

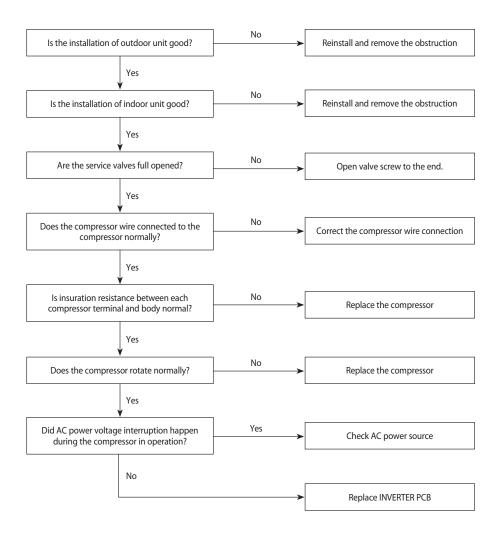


4-3-13 E464 : O.C. (Over Current) error

1. Checklist:

- 1) Is the refrigerant charged properly?
- 2) Does the compressor rotate normally?(Reverse rotation, Locking etc.)
- 3) Is connection of compressor wire normal?
- 4) Is compressor motor normal?(Insulation, Coil resistance etc.)
- 5) Does a temporary cycle overload condition happened?

2. Troubleshooting procedure



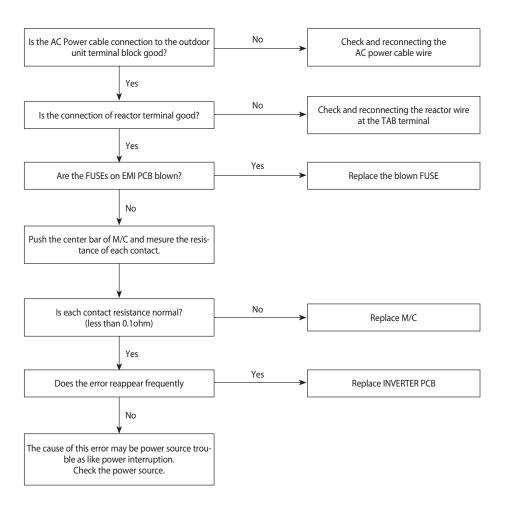
4-20 Samsung Electronics

4-3-14 E466: DC Link Over voltage/ Low voltage error

1. Checklist:

- 1) Is the power voltage normal?(Lightning, Power interruption etc.)
- 2) Is AC Power cable connection normal?(Detaching the wire)

2. Troubleshooting procedure

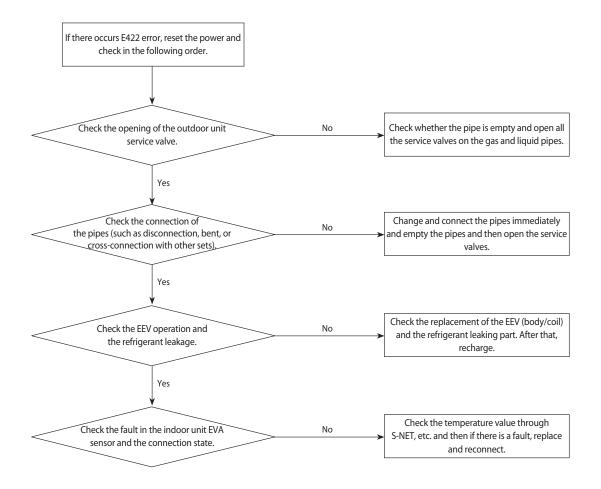


4-3-15 Pipe Blocking Error (Error Code: E422)

1. Test Item

- 1) Check the open state of the outdoor unit service valve.
- 2) Check the connection of the pipe.
- 3) Check the operation of the EEV.
- 4) Check the refrigerant leakage.
- 5) Check the connection of the indoor unit PBA EVA sensor.
- 6) Check the fault in the indoor unit EVA sensor.

2. Check procedure



4-22 Samsung Electronics

4-3-16 The others

- 1. E465: Compressor over load error
- If a compressor works improperly, change the compressor and check if it works properly.
- → If a compressor is normal, check the assembly between Heatsink-Inverter PBA. If it is fine, change Inverter PBA.
- 2. E468: Current sensor error
- Check EEPROM data.
- Check PCB operates properly.
- 3. E471: Oudoor EEPROM error
- Upload EEPROM on Outdoor unit Main PBA.
- ${\it 4.\,E474:IPM(IGBT\,Module)}\ or\ PFCM\ Temperature\ sensor\ Error$
- E500: IPM is over heated
- Check IPM is well assembled to heatsink
- Check whether inlet port is clogged.
- Change IPM if it is defective one
- 5. E554: Gas leak error
 - Check refrigerant charge
- Check Indoor EVA sensor
- Check Service valve is open.
- Check the pipes and wires correctly connected.
- 6. E556: Capacity miss match between indoor and outdoor
 - Check the model name of indoor and outdoor unit and set option code on indoor unit again.
- 7. Outdoor overload protection control (at the stop of the compressor.): E404
 - Check whether the fan and the motor operate normally.
 - Check the operation of EEV.
 - Check the temperature sensor of the indoor unit heat Exchanger.
 - · Check the indoor unit inlet blocking.

4-3-17 Setting an indoor unit installation option

Setting an indoor unit installation option(suitable for the condition of each installation location)

- 1. Check whether power is supplied or not.
 - When the indoor unit is not plugged in, there should be additional power supply in the indoor unit.
- 2. The panel(display) should be connected to an indoor unit to receive option.
- 3. Set the installation option according to the installation condition of an air conditioner.
 - The default setting of an indoor unit installation option is 02000-100000-200000-300000.
- 4. Set the indoor unit option by wireless remote controller.

SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
0	2	RESERVED	RESERVED	RESERVED	RESERVED
SEG7	SEG8	SEG9	SEG10	SEG11	SEG12
1	RESERVED	RESERVED	RESERVED	RESERVED	RESERVED
SEG13	SEG14	SEG15	SEG16	SEG17	SEG18
2	External control	External control output	RESERVED	RESERVED	RESERVED
SEG19	SEG20	SEG21			
3	RESERVED	Heating setting compensation			

▶ Heating setting compensation (SEG21) is applied to Heat pump model only.

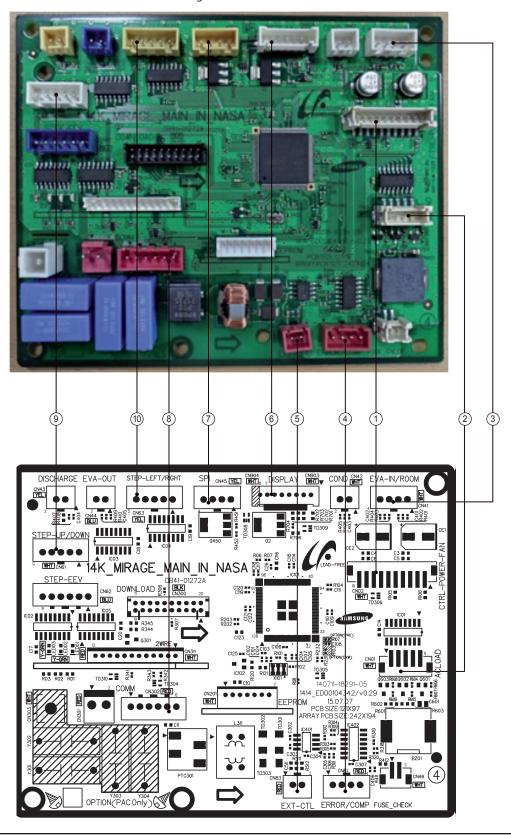
4-24 Samsung Electronics

5. PCB Diagram

5-1 Indoor unit

5-1-1 Main PCB

▶ This Document can not be used without Samsung's authorization.

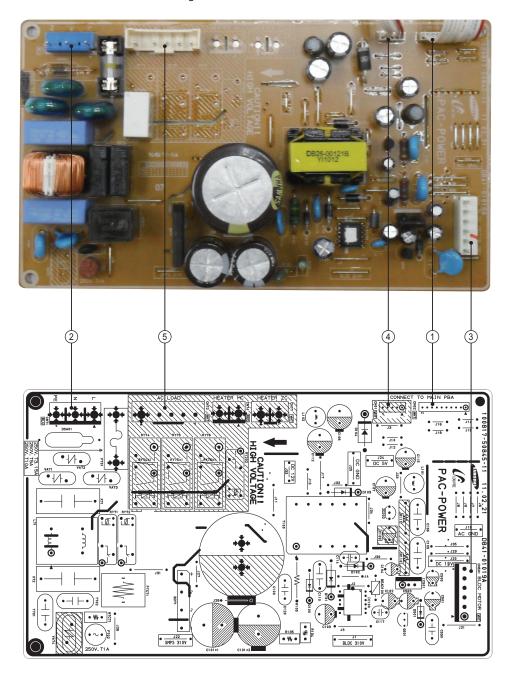


#1: DETECT_OV_UV #2: INRUSH_RY #3: PWR_RY #4: Zerocrossing #5: RPM_Feedback #6: FAN_PWM #7: BLDC_PS #8: DC 5V #9: GND #10: DC 12V © CN83-EXT_CTRL #1: GND #2: External control	© CN903-DISPLAY #1:- #2:- #3:FAN LOW_COMP #4:FAN HIGH_FAN #5:FAN TURBO_4WA	③ CN41-EVA IN/ROOM #1:ROOM-TH #2:GND #3:EVA IN-TH #4:GND CN45-SPI #1:GND #2:GND #3:SPI Control	(A) CN81-ERROR/COMP #1: DC 12V #2: ERROR_Check #3: DC 12V #4: Comp_Chec (B) CN302-COMM #1: F1 #2: F2 #3: DC 12V #4: GND
(9) CN61-STEP UP/DOWN #1: DC 12V #2: UB_12B' #3: UB_12A' #4: UB_12B #5: UB_12A	#4: PANEL_RXD #5: REMOCON_RXD #6: DC 5V #7: KEY_INT (D) CN63-STEP LEFT/RIGH #1: DC 12V #2: UB_12B' #3: UB_12A' #4: UB_12B #5: UB_12A	#4:-	#5:F3 #6:F4

5-2 Samsung Electronics

5-1-2 Power PCB

▶ This Document can not be used without Samsung's authorization.

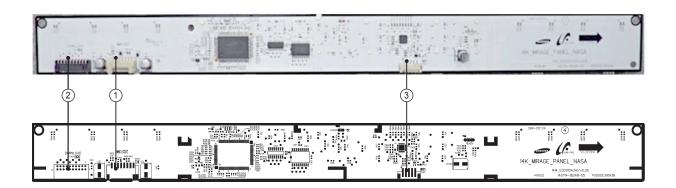


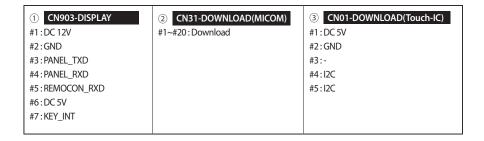
① CN02-MAIN PBA	② CN71-POWER	③ CN501-BLDC MOTOR	④ CN02-MAIN PBA	⑤ CN72-AC LOAD
#1:DC12V	#1:L	#1:DC310V	#1:FAN_TURBO_4WAWY_12	#1:N
#2:GND	#2:NC	#2:NC	#2:FAN_HIGH_FAN_12	#2:NC
#3:DC5V	#3:N	#3:AGND	#3:FAN_LOW_COMP_12	#3:COMPRESSOR
#4:BLDC_PS	#4:NC	#4:DC15V	#4:HEATER_CTRL_12A	#4: OUTDOOR FAN MOTOR
#5 : FAN_PWM	#5:EARTH	#5 : Vsp	#5:HEATER_ZC	#5:OUTDOOR 4WAY V/V
#6:RPM_FEEDBACK		#6:RPM_FEEDBACK		
#7 : ZEROCROSS				
#8:PWR_RY_12				
#9:INRUSH_RY_12				
#10:DETECT_OV/LV				

5-1-3 Panel PCB

▶ This Document can not be used without Samsung's authorization.

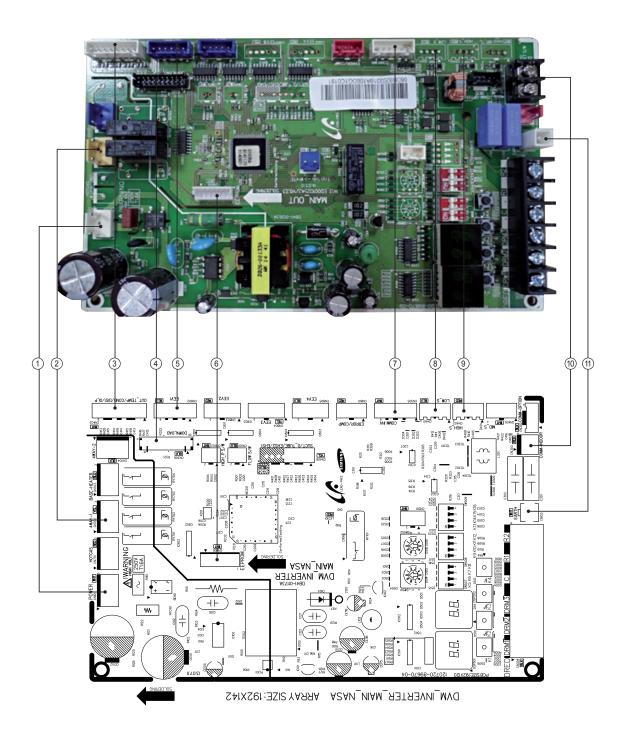






5-4 Samsung Electronics

5-2-1 MAIN PCB Diagram

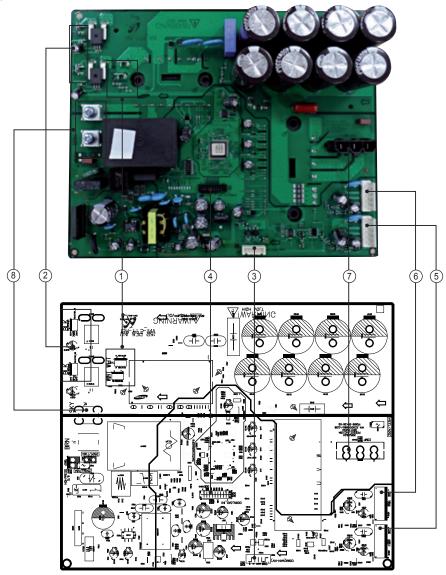


CN101 - POWER #1 : L #2 : N.C #3 : N	CN702 - 4WAY #1 : N #2 : N.C #3 : 4WAY V/V SIGNAL	CN403 - SENSOR #1 : OUT TEMP #2 : GND #3 : COND TEMP #4 : GND #5 : DISCHARGE TEMP #6 : GND #7 : OLP TEMP #8 : GND	CN306 - DOWNLOAD #1 ~ #20 : DOWNLOAD
CN802 - EEV #1 ~ #4: EEV SIGNAL #5,#6: DC 12V	CN806 - EEPROM #1 ~ #7 : EEPROM	#1: COMM SIGNAL #2: COMM SIGNAL #3: GND #4: DC 5V #5: DC 12V #6: COMM SIGNAL	CN401 - LOW PRESSURE #1: N.C #2: SENSOR SIGNAL #3: GND #4: DC 5V
CN402 - HIGH PREWSSURE #1 : SENSOR SIGNAL #2 : N.C #3 : GND #4 : DC 5V	CN303 - COMM INDOOR #1 ~ # 2: COMM SIGNAL	CN103 - EARTH #1 : EARTH	

5-6 Samsung Electronics

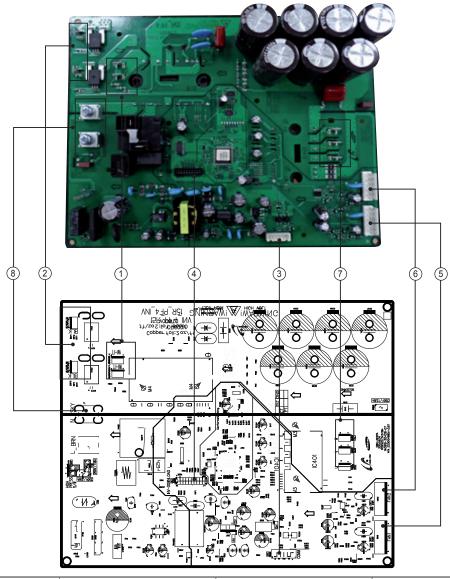
5-2-2 INVERTER PCB

■ AC048KXQPCC



Reactor - A1/B1 # Reactor - A1 : WHT # Reactor - B1 : WHT	Reactor - A2/B2 # Reactor - A2 : BLK # Reactor - B2 : BLK	3 CN351 - Communication #1: RXD #2: TXD #3: GND #4: DV5V #5: DV12V #6: INV, SMPS Signal	(4) CN551 - Downloader #1: RXD_INV #2: TXD_INV #3: BOOT_INV #4: TDO_INV #5: TCK_INV #6: TDI_INV #7: TMS_INV #8: nTRST #9: GND #10~#11: 5V #14 #18 #19: ENC #17: GND #20: SUB
© CN901-FAN1 #1: DC310V #2: N.C #3: GND #4: DV15V #5: FAN RPM #6: FAN RPM Feedback	6 CN911-FAN2 #1: DC310V #2: N.C #3: GND #4: DV15V #5: FAN RPM #6: FAN RPM Feedback	© CN401-COMP. # 1 : COMP. U-phase(RED) # 2 : COMP. V-phase(BLU) # 3 : COMP. W-phase(YEL)	B L, N - 220V Power # 1 : L-phase(BRN) # 2 : N-phase(SKY)

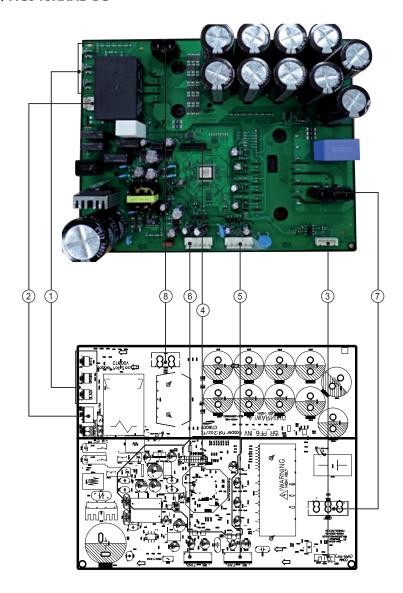
■ AC036KXQPCC / AC100KXADEH / AC036KXADEC



Reactor - A1/B1 #Reactor - A1: WHT #Reactor - B1: WHT	@ Reactor - A2/B2 #Reactor -A2: BLK #Reactor -B2: BLK	3 CN351 - Communication #1:RXD #2:TXD #3:GND #4:DV5V #5:DV12V #6:INV, SMPS Signal	#1:RXD_INV #2:TXD_INV #3:BOOT_INV #4:TDO_INV #5:TCK_INV #6:TDI_INV
			#7:TMS_INV #8:nTRST #9:GND #10~#11:5V #14#18#19:ENC #17:GND #20:SUB
© CN901-FAN1 #1:DC310V #2:N.C #3:GND #4:DV15V #5:FAN RPM #6:FAN RPM Feedback	© CN911-FAN2 #1: DC310V #2: N.C #3: GND #4: DV15V #5: FAN RPM #6: FAN RPM Feedback	© CN401,402,403-COMP. CN401: COMP. U-phase(RED) CN402: COMP. V-phase(BLU) CN403: COMP. W-phase(YEL)	8 L, N - 220V Power# 1 : L-phase(BRN)# 2 : N-phase(SKY)

5-8 Samsung Electronics

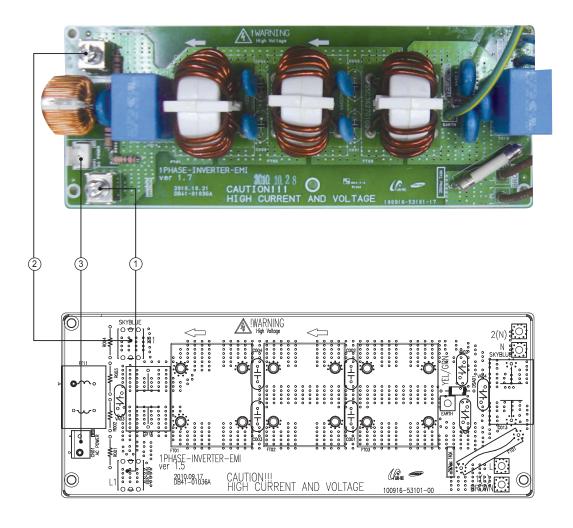
■ AC140KXADGH / AC048KXADGC

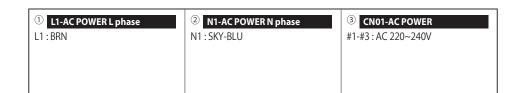


RST - AC Power 3 Phase #R : AC 380~400V : WHT #S : AC 380~400V : BRN #T : AC 380~400V : BLK	② CN152 - AC Power #1-#3 : AC 220~240V	3 CN351 - Communication #1: RXD, #2: TXD #3: GND, #4: DC 5V #5: DC 12V, #6: INV. SMPS Signal	(4) CN551 - Downloader #1: RXD_INV #2: TXD_INV #3: BOOT_INV #4: TDO_INV #5: TCK_INV #6: TDI_INV #7: TMS_INV #8: nTRST #9: GND #10~#11: 5V #14 #18 #19: ENC #17: GND #20: SUB
© CN901-FAN1 #1: DC310V #2: N.C #3: GND #4: DV15V #5: FAN RPM #6: FAN RPM Feedback	(6) CN911-FAN2 #1: DC310V #2: N.C #3: GND #4: DV15V #5: FAN RPM #6: FAN RPM Feedback	#1: COMP. U-phase(RED) #2: COMP. V-phase(BLU) #3: COMP. W-phase(YEL)	® CN101- Reactor #1~#2: Reactor

5-2-3 EMI PCB

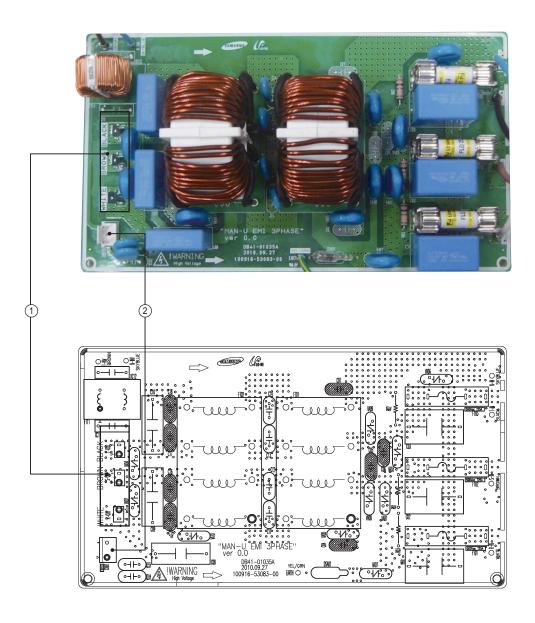
■ AC048KXQPCC / AC036KXQPCC / AC100KXADEH / AC036KXADEC

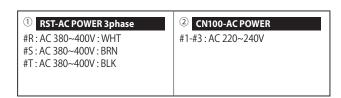




5-10 Samsung Electronics

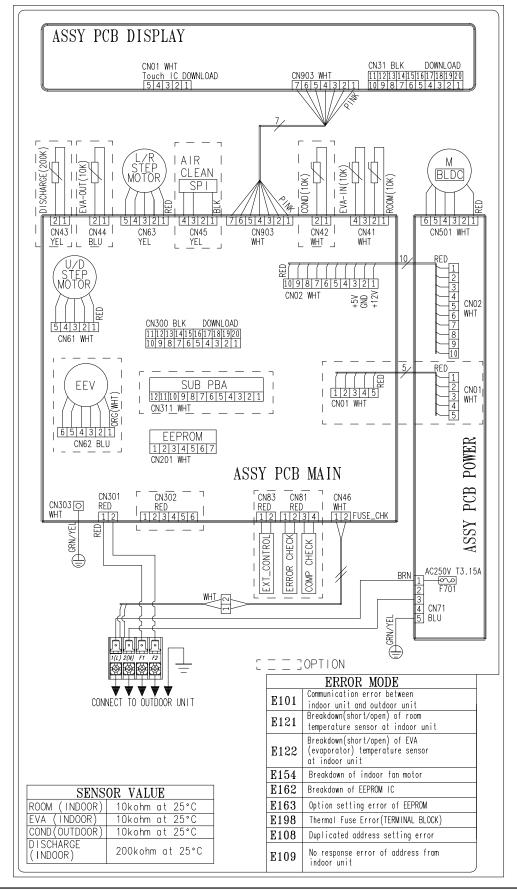
■ AC140KXADGH / AC048KXADGC





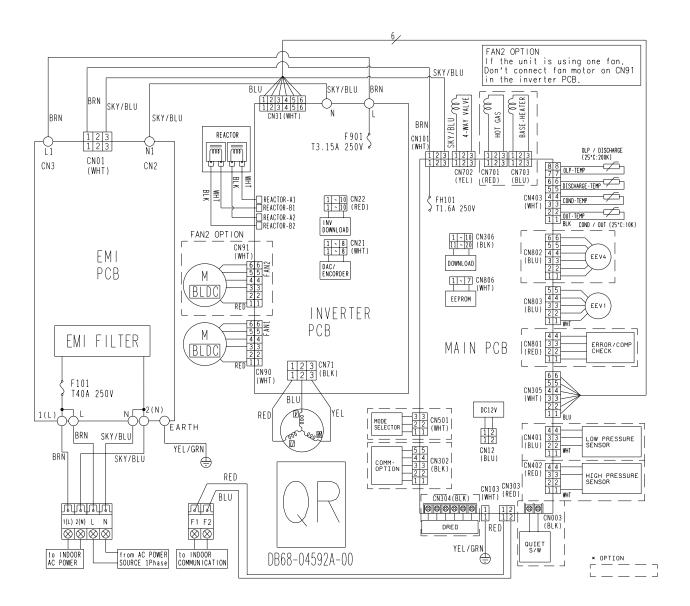
6. Wiring Diagram

6-1 Indoor Unit



6-2 Outdoor unit

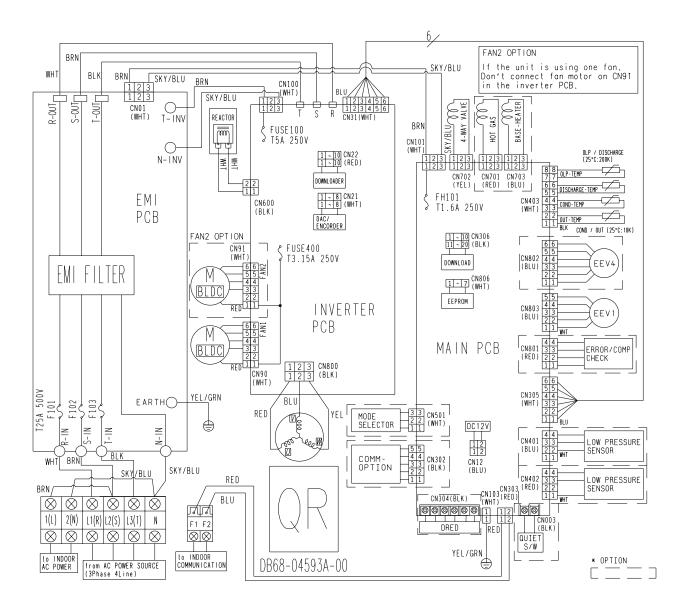
■ AC048KXQPCC / AC036KXQPCC / AC100KXADEH / AC036KXADEC



This Document can not be used without Samsung's authorization.

6-2 Samsung Electronics

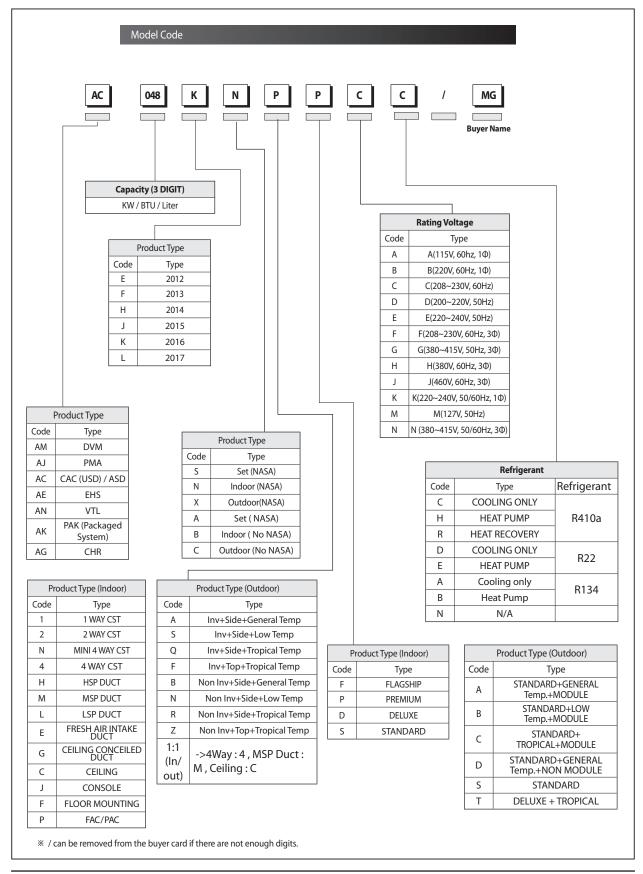
■ AC140KXADGH / AC048KXADGC



This Document can not be used without Samsung's authorization.

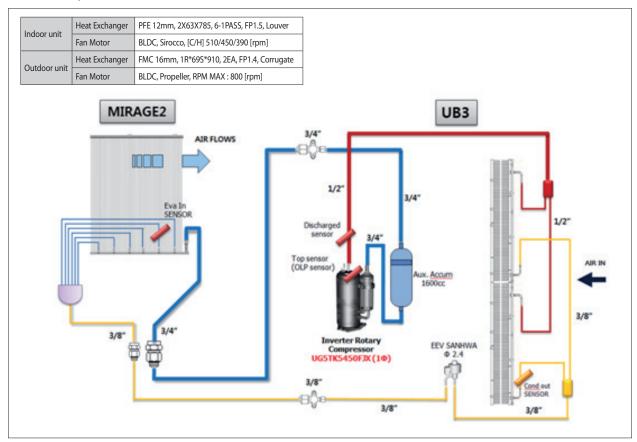
7. Reference Sheet

7-1 Index for Model Name

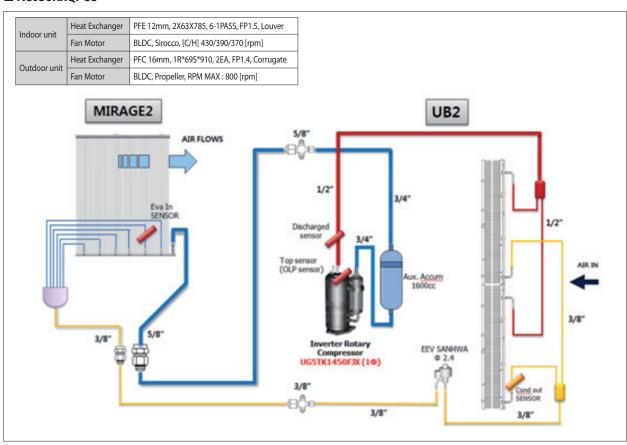


7-2 Refrigerating Cycle Diagram

■ AC048KXQPCC

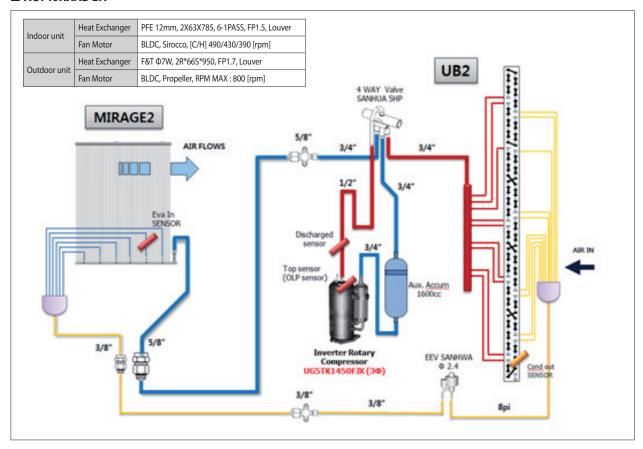


■ AC036KXQPCC

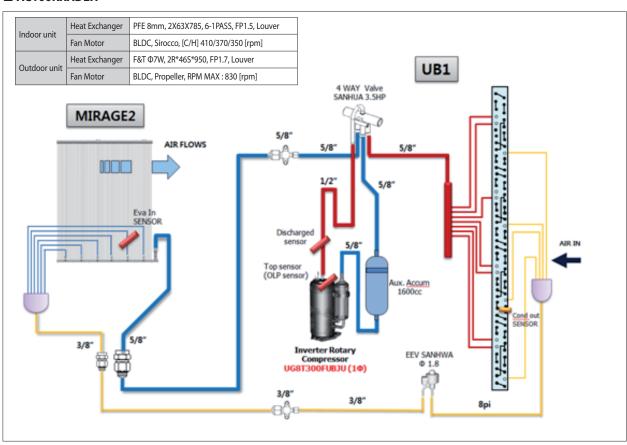


7-2 Samsung Electronics

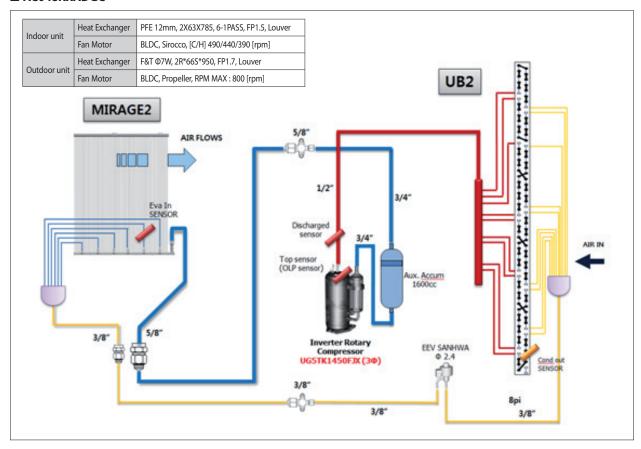
■ AC140KXADGH



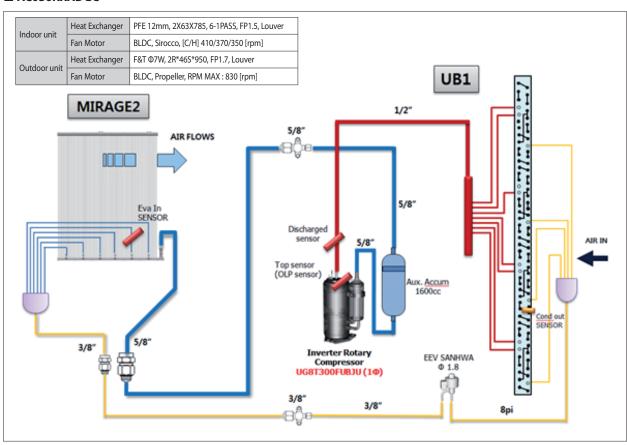
■ AC100KXADEH



■ AC048KXADGC



■ AC036KXADGC



7-4 Samsung Electronics

SAMSUNG

GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, CIS, Mideast & Africa	gspn1.samsungcsportal.com
Asia	gspn2.samsungcsportal.com
North & Latin America	gspn3.samsungcsportal.com
China	china.samsungportal.com