



SYSTEM AIR CONDITIONER

OUTDOOR UNIT

AM080/100/120/140/160/180/200/220FXV***

AM080/100/120/200FXWA***

AM080/090FXMDGH***

SERVICE *Manual*

AIR CONDITIONER



CONTENTS

1. Precautions
2. Product Specifications
3. Disassembly and Reassembly
4. Troubleshooting
5. PCB Diagram and Parts List
6. Wiring Diagram
7. Cycle Diagram
8. Key Options
9. Test Operation

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

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 Precautions for Handling Refrigerant for Air Conditioner	1-2
1-5 Precautions for Welding the Air Conditioner Pipe	1-2
1-6 Precautions for Additional Supplement of Air Conditioner Refrigerant.....	1-2
1-7 Other Precautions.....	1-2
2. Product Specifications	2-1
2-1 The Feature of Product	2-1
2-1-1 Feature	2-1
2-1-2 Changes in comparison to basic mode.....	2-3
2-1-3 Structure of product(Heat Pump).....	2-8
2-1-4 Structure of product(Heat Recovery)	2-9
2-1-5 Structure of product (DVM S WATER)	2-10
2-1-6 Structure of product (DVM S ECO)	2-11
2-2 Product Specifications	2-12
2-2-1 Outdoor Unit	2-12
2-3 Accessory and Option Specifications	2-21
2-3-1 Accessories	2-21
3. Disassembly and Reassembly	3-1
3-1 Necessary Tools	3-1
3-2 Disassembly and Reassembly.....	3-2
3-2-1 AM080/100/120FXV***	3-2
3-2-2 AM140FXV***	3-12
3-2-3 AM160/180/200/220FXV***	3-22
3-2-4 AM080/100/120FXWA**	3-33
3-2-5 AM200FXWA**	3-41
3-2-6 AM080/090FXMDGH**	3-48
3-3 Caution at compressor exchange	3-59
3-4 MCU	3-61
3-5 EEV KIT	3-62
4. Troubleshooting	4-1
4-1 Check-up Window Description	4-1
4-2 Service Operation	4-3
4-2-1 Special Operation	4-3
4-2-2 DVM S Models EEPROM Code Table	4-15
4-2-3 Number Display Method	4-15
4-3 Appropriate Measures for Different Symptom.....	4-20
4-3-1 Outdoor Unit Operation Flow	4-20
4-3-2 Main PCB has no power phenomenon	4-23
4-3-3 Communication Error between Indoor and Outdoor Units during Tracking.....	4-24
4-3-4 Communication Error between Indoor and Outdoor Units after Tracking.....	4-26
4-3-5 Communication error between main and sub Unit of outdoor unit or between outdoor units	4-27
4-3-6 Internal Communication error of the Outdoor Unit C-Box	4-28
4-3-7 Internal PCB Communication error of the Outdoor Unit C-Box.....	4-29

Contents

4-3-8 MCU branch part setup error-inconsecutive connection with the use of 2 branch Parts	4-31
4-3-9 MCU branch part setup error-Repeated setup for the same address over 3 times.....	4-32
4-3-10 MCU branch part setup error-non-installed address setup	4-33
4-3-11 Setup Error for MCU Branch part-Setup Error for MCU Quantity Used.....	4-34
4-3-12 MCU branch part setup error-Overlapping Indoor unit Address setup	4-35
4-3-13 MCU branch part setup error_Set as being used without connection to an Indoor unit.....	4-36
4-3-14 MCU branch part setup error-Connect an Indoor unit to a branch part not being used.....	4-37
4-3-15 MCU branch part setup error-Connect more Indoor units than what is actually set up in MCU.....	4-38
4-3-16 MCU subcooler entrance/exit sensor error (Open/Short).....	4-39
4-3-17 Outdoor Temperature Sensor Error.....	4-40
4-3-18 Cond Out Temperature Sensor Error (Open/Short)	4-41
4-3-19 Outdoor Cond Out sensor breakway error	4-42
4-3-20 Compressor Discharge or TOP 1/2 Temperature sensor error.....	4-44
4-3-21 Compressor Discharge or TOP temperature sensor breakway error.....	4-45
4-3-22 E269 : Suction Temperature sensor breakway error	4-46
4-3-23 High Pressure sensor error (Open/Short).....	4-47
4-3-24 Low Pressure sensor error (Open/Short)	4-48
4-3-25 Suction Temperature sensor error (Open/Short)	4-49
4-3-26 Liquid Pipe Temperature sensor error (Open/Short).....	4-50
4-3-27 EVI In Temperature sensor error (Open/Short)	4-51
4-3-28 EVI Out Temperature sensor error (Open/Short)	4-52
4-3-29 Suction-2 Temperature Sensor Error (Open/Short)	4-53
4-3-30 Measures of other outdoor unit error	4-54
4-3-31 E407 : Comp. Down due to High Pressure Protection Control	4-54
4-3-32 E410 : Comp. Down due to Low Pressure Protection Control.....	4-57
4-3-33 E416 : Suspension of starting due to Compressure discharge temperature sensor/Top temperature sensor	4-59
4-3-34 3-phase Input Wiring error.....	4-60
4-3-35 E428 : Suspension of starting by abnormal compression ratio.....	4-61
4-3-36 EVI EEV Open error	4-62
4-3-37 Refrigerant leakage error	4-63
4-3-38 Prevention of heating/cooling operation due to outdoor temperature	4-64
4-3-39 Prevention of heating refrigerant charge due to outdoor temperature	4-65
4-3-40 CH wire breaking error.....	4-66
4-3-41 Fan starting error.....	4-68
4-3-42 Fan lock error	4-70
4-3-43 Momentary Blackout error	4-71
4-3-44 Outdoor Fan Motor overheating	4-72
4-3-45 Fan IPM Overheat error.....	4-73
4-3-46 Compressor starting error	4-74
4-3-47 Inverter Overcurrent error.....	4-76
4-3-48 Overvoltage/Low voltage error.....	4-79
4-3-49 DC Link voltage sensor error.....	4-80
4-3-50 Fan Motor Overcurrent error	4-81
4-3-51 Input/Output Current sensor error.....	4-82
4-3-52 Outdoor Fan PCB Overvoltage/Low voltage error	4-83
4-3-53 Hall IC(Fan) error	4-84
4-3-54 Inverter Overheat error.....	4-85
4-3-55 Option setting error of outdoor unit	4-86
4-3-56 Model mismatching of Indoor unit	4-87
4-3-57 Error due to using single type outdoor unit in a module installation	4-88
4-3-58 Indoor unit and MCU address duplication error.....	4-89

Contents

5. PCB Diagram and Parts List	5-1
5-1 ASS'Y PCB MAIN	5-1
5-2 ASS'Y PCB MAIN-HUB	5-6
5-3 ASS'Y PCB INVERTER	5-10
5-4 ASS'Y PCB FAN	5-12
5-5 ASS'Y PCB EMI	5-14
5-6 SUB-COMM	5-15
5-7 ASSY PCB WATER-HUB	5-16
6. Wiring Diagram	6-1
6-1 AM080/100/120/140/160/180/200/220FXV***	6-1
6-2 AM080/100/120/200FXWA**	6-2
6-3 AM080/090FXMDGH**	6-3
7. Cycle Diagram	7-1
7-1 AM080/100/120FXVAGH/EU	7-1
7-2 AM140FXVAGH/EU	7-1
7-3 AM160/180/200/220FXVAGH/EU	7-2
7-4 AM080/100/120FXVAGR/EU	7-2
7-5 AM140FXVAGR/EU	7-3
7-6 AM160/180/200/220FXVAGR/EU	7-3
7-7 AM080/100/120FXWA**	7-4
7-8 AM200FXWA**	7-4
7-9 Cooling operation (H/R)	7-5
7-10 Main cooling operation (H/R)	7-6
7-11 Heating operation (H/R)	7-7
7-12 Main heating operation (H/R)	7-8
7-13 Cooling operation (H/P)	7-9
7-14 Heating operation (H/P)	7-10
7-15 Cooling operation(H/R) - AM080/100/120/200FXWA**	7-11
7-16 Main cooling operation(H/R) - AM080/100/120/200FXWA**	7-12
7-17 Heating operation(H/R) - AM080/100/120/200FXWA**	7-13
7-18 Main heating operation(H/R) - AM080/100/120/200FXWA**	7-14
7-19 Main heating operation(H/P) - AM080/090FXMDGH**	7-15
7-20 Cycle Component Function Explanation	7-16
8. Key Options	8-1
8-1 Outdoor unit option switch settings	8-1
8-2 How to set the key function of the outdoor unit	8-4
8-3 How to check the view mode using a tact switch	8-11
9. Test Operation	9-1
9-1 Auto Trial Operation	9-1
9-1-1 Auto Trial Operation Synopsis	9-1
9-1-2 Auto Trial Operation functions	9-3
9-1-3 How to troubleshoot of the "Undetermined"	9-4
9-1-4 Auto Trial Operation Error Code	9-13
9-2 Amount of refrigerant automatically checking	9-14

1. Precautions

1-1 Precautions for the Service

- **Use the correct parts when changing the electric parts.**
 - Please check the labels and notices for the model name, proper voltage, and proper current for the electric parts.
- **Fully repair the connection for the types of harness when repairing the product after breakdown.**
 - A faulty connection can cause irregular noise and problems.
- **When disassembling or assembling, make sure that the product is laid down on a work cloth.**
 - Doing so will prevent scratching to the exterior of the rear side of the product.
- **Completely remove dust or foreign substances on the housing, connection, and inspection parts when performing repairs.**
 - This can prevent fire hazards for tracking, short, etc.
- **Please tighten the service valve of the outdoor unit and the valve cap of the charging valve as securely as possible by using a monkey spanner.**
- **Check whether the parts are properly and securely assembled after performing repairs.**
 - These parts should be in the same condition as before the repair.

1-2 Precautions for the Static Electricity and PL

- **Please carefully handle the PCB power terminal during repair and measurement when it is turned on since it is vulnerable to static electricity.**
 - Please wear insulation gloves before performing PCB repair and measurement.
- **Check if the place of installation is at least 2m away from electronic appliances such as TV, video players, and stereos.**
 - This can cause irregular noise or degrade the picture quality.
- **Please make sure the customer does not directly repair the product.**
 - Arbitrary dismantling may result in electric shock or fire.

1-3 Precautions for the Safety

- **Do not pull or touch the power plug or the subsidiary power switch with wet hands.**
 - This may result in electric shock or fire.
- **If the power line or the power plug is damaged, then it must be changed since this is a hazard.**
- **Do not bend the wire too much or position it so that it can be damaged by a heavy object on top.**
 - This may result in electric shock or fire.
- **The use of multiple electric outlets should be prohibited.**
 - This may result in electric shock or fire.
- **Ground the connection if it is necessary.**
 - The connection must be grounded if there is any risk of electrical short due to water or moisture.
- **Unplug the power or turn off the subsidiary power switch when changing or repairing electrical parts.**
 - Doing so will prevent electric shock.
- **Explain to workers that the battery for the remote control needs to be separated for storage purposes when the product will not be used for a long time.**
 - This can cause a problem for the remote control since battery fluid may trickle out.

1-4 Precautions for Handling Refrigerant for Air Conditioner

Environmental Cautions: Air pollution due to gas release

- **Safety Cautions**

If liquid gas is released, then body parts that come into contact with it may experience frostbite/blister/numbness.

If a large amount of gas is released, then suffocation may occur due to lack of oxygen. If the released gas is heated, then noxious gas may be produced by combustion.

- **Container Handling Cautions**

Do not subject container to physical shock or overheating. (Flowage is possible while moving within the regulated pressure.)

1-5 Precautions for Welding the Air Conditioner Pipe

- **Dangerous or flammable objects around the pipe must be removed before the welding.**

- **If the refrigerant is kept inside the product or the pipe, then remove the refrigerant prior to welding.**

If the welding is carried out while the refrigerant is kept inside, the welding cannot be properly performed. This will also produce noxious gas that is a health hazard. This leakage will also explode with the refrigerant and oil due to an increase in the refrigerant pressure, posing a danger to workers.

- **Please remove the oxide produced inside the pipe during the welding with nitrogen gas.**

Using another gas may cause harm to the product or others.

1-6 Precautions for Additional Supplement of Air Conditioner Refrigerant

- **Precisely calculate the refrigerant by using a scale and S-net, and proceed with the test operation.**

Excessive supplement can cause harm to the product since it can cause an inflow of the liquid refrigerant into the compressor.

- **Do not heat the refrigerant container for a forced injection.**

This may cause harm to the product or others since the refrigerant container may burst.

- **Do not operate the product after removing the product safety pressure switch and sensor.**

If the product is blocked inside, then this may cause harm to the product or others due to the excess pressure increase of the refrigerant gas.

1-7 Other Precautions

- **There should be no leakage of the pipes after installation. When withdrawing the refrigerant, the compressor should be stopped before removing the connecting pipe.**

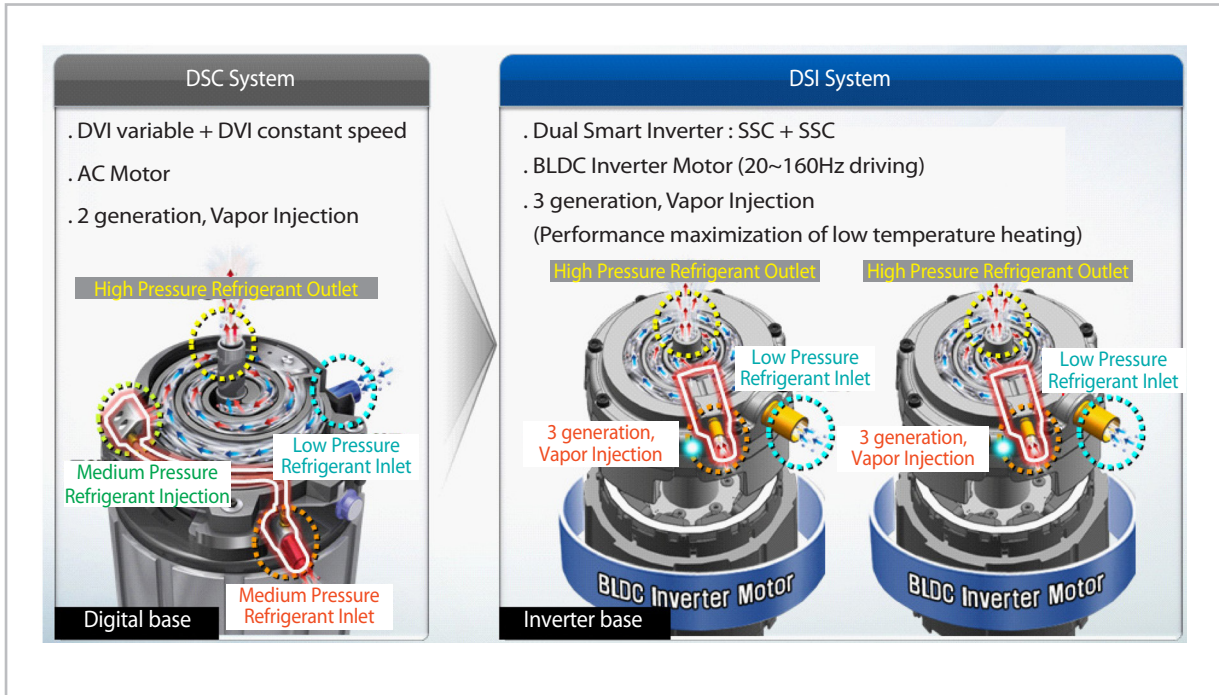
If the compressor is operating while the refrigerant pipe is not correctly connected and the service valve is opened, then air and other substances can enter the pipe. The interior of the refrigerant cycle may then build up excessive high pressure resulting in explosion and damage.

2. Product Specifications

2-1 The Feature of Product

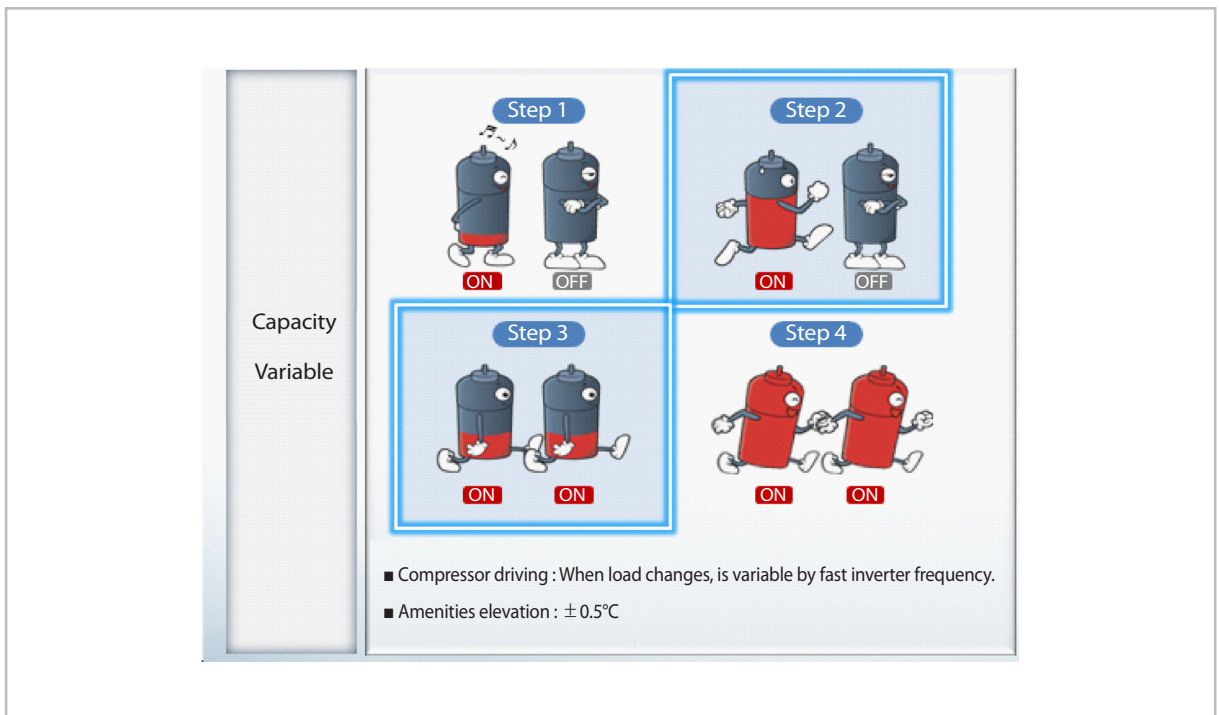
2-1-1 Feature

■ Dual Smart Inverter System



■ Dual SSC System Technology

When load changes, capacity amendment that is soft by continuous operation of Dual Inverter is available.

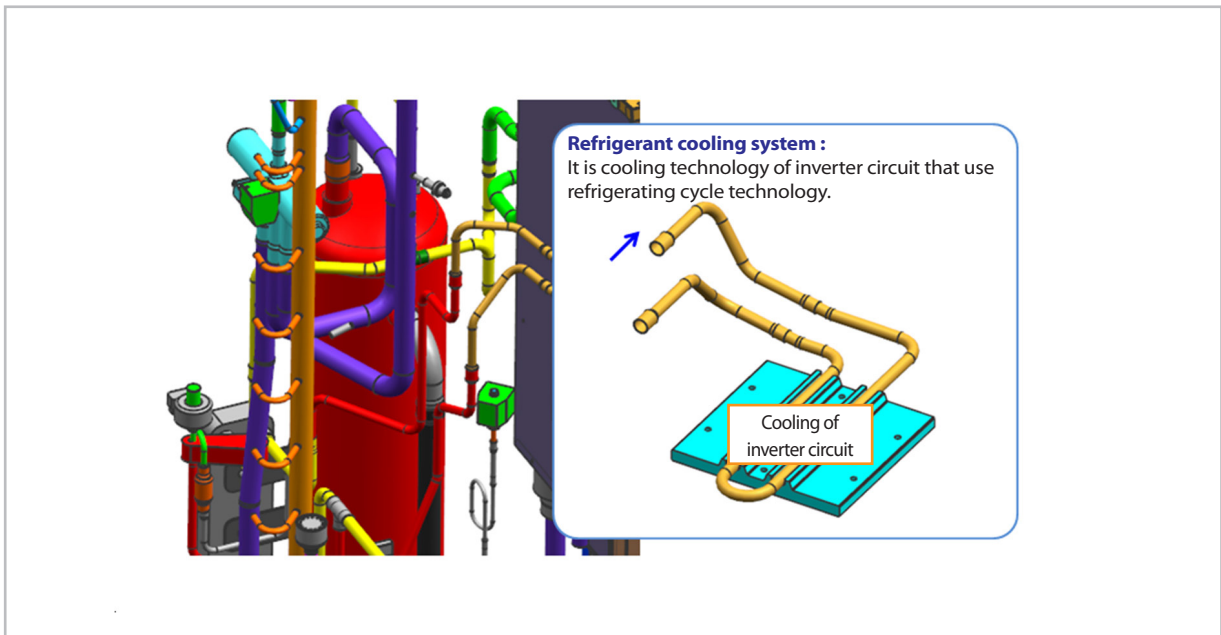


Feature (cont.)



■ Inverter circuit refrigerant cooling technology

Applied high efficiency refrigerant cooling circuit. Secured stable Inverter PCB cooling performance.




- Air cooling method : When natural convection / electric heat performance is low and is high load, efficiency is fallen.
- Refrigerant cooling system : Forced circulation / electric heat performance is high and control of (thermal conductivity is 10 times higher than air) load is available.



2-1-2 Changes in comparison to basic mode


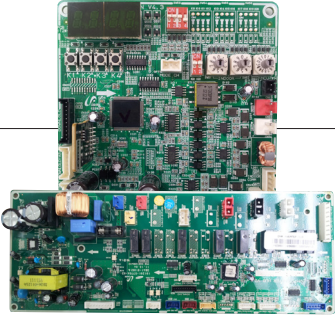
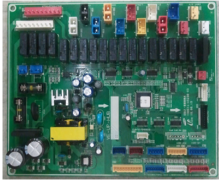


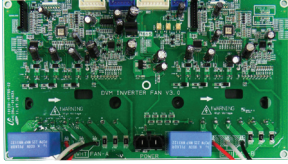
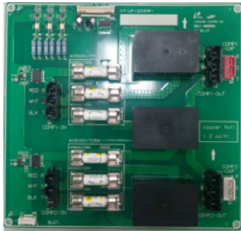

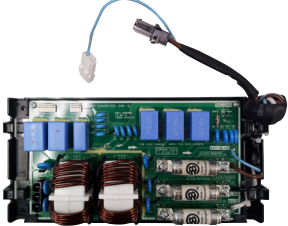
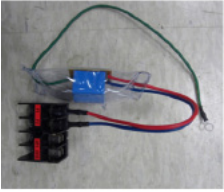
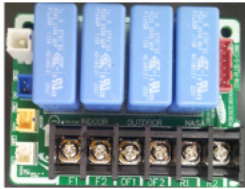
Changed part	Changed item and feature	Basic	After changed
CABINET	<p>Change the color : TOUCH GRAY → EARTH BROWN</p> <p>Wire Harness installation part change</p> <p>LOGO change</p>		

■ Control Box & PCB

Changed part	Changed item and feature	Basic	After changed
Control Box structure	<p>Monolayer structure → Double Layer Structure</p> <ul style="list-style-type: none"> - Inverter technology integration (Inverter control circuit composition) - C/Box volume maximum use <p>Built-in type Controller embodiment</p> <ul style="list-style-type: none"> - Integrated power supply + control unit - Piping service easiness 	 	

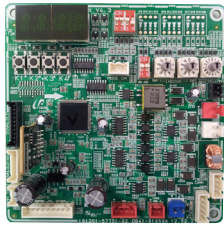
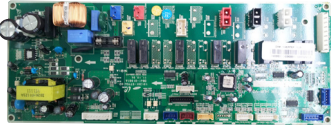
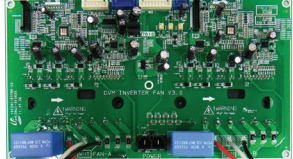


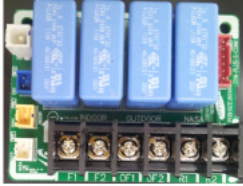

Changes in comparison to basic mode (cont.)

■ AM080/100/120/140/160/180/200/220FXV***

Changed part	Changed item and feature	Basic	After changed
Main PCB	<p>Change Main PCB</p> <ul style="list-style-type: none"> - Separation for load / control. - Option resistance delete by model. (standardization) - When do PCB replace, need option download. 		
Hub PCB	<p>Hub PCB newly application</p> <ul style="list-style-type: none"> - Separation for load / control. - Enhanced fixing of load / sensor wire. 		
FAN PCB	<p>Use controller of 3 phase power</p> <ul style="list-style-type: none"> - Prevented phase unbalance. - Temperature protection of IPM. 		
Inverter PCB (Compressor Control PCB)	<p>Applied inverter Compressor</p> <ul style="list-style-type: none"> - Refrigerant cooling method - Magnet S/W → Did Power Relay mount to PCB. 		
EMI PCB	<p>3 phase power EMI PCB</p> <ul style="list-style-type: none"> - Fuse mount 		
Communication Terminal block	<p>Did Communication Terminal block mount to PCB.</p>		

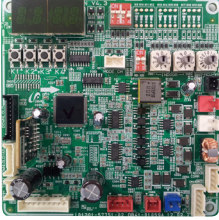
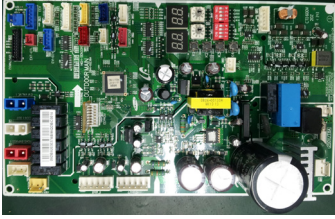


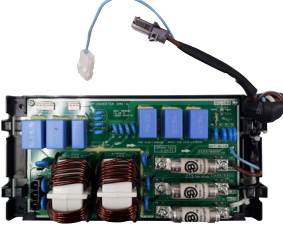

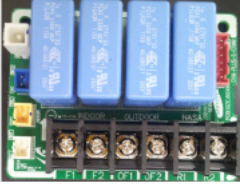

Changes in comparison to basic mode (cont.)

■ AM080/100/120/200FXWA**

Changed part	Changed item and feature	Basic	After changed
Main PCB	Change Main PCB - Separation for load / control. - Option resistance delete by model. (standardization) - When do PCB replace, need option download.		←
Hub PCB	Hub PCB newly application - Separation for load / control. - Enhanced fixing of load / sensor wire.		←
FAN PCB	Use controller of 3 phase power - Prevented phase unbalance. - Temperature protection of IPM.		-
Inverter PCB (Compressor Control PCB)	Applied inverter Compressor - Refrigerant cooling method - Magnet S/W → Did Power Relay mount to PCB.		←
EMI PCB	3 phase power EMI PCB - Fuse mount		←
Communication Terminal block	Did Communication Terminal block mount to PCB.		←
Water Hub PCB	Water Hub PCB - External contact for DVM S WATER	-	

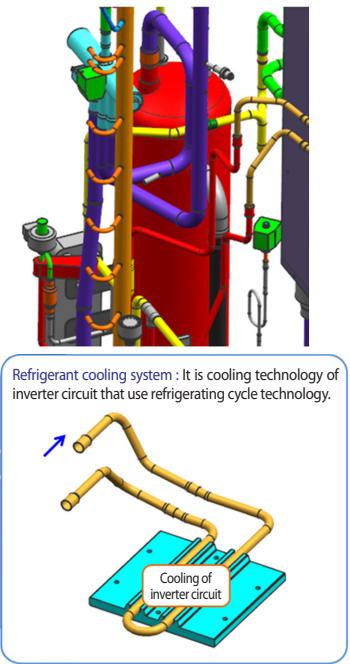
Changes in comparison to basic mode (cont.)

■ AM080/090FXMDGH**




Changed part	Changed item and feature	Basic	After changed
Main PCB	Change Main PCB - Separation for load / control. - Option resistance delete by model. (standardization) - When do PCB replace, need option download.		
Inverter PCB (Compressor Control PCB)	Applied inverter Compressor - Refrigerant cooling method - Magnet S/W → Did Power Relay mount to PCB.		
EMI PCB	3 phase power EMI PCB - Fuse mount		
Communication Terminal block	Did Communication Terminal block mount to PCB.		

Changes in comparison to basic mode (cont.)

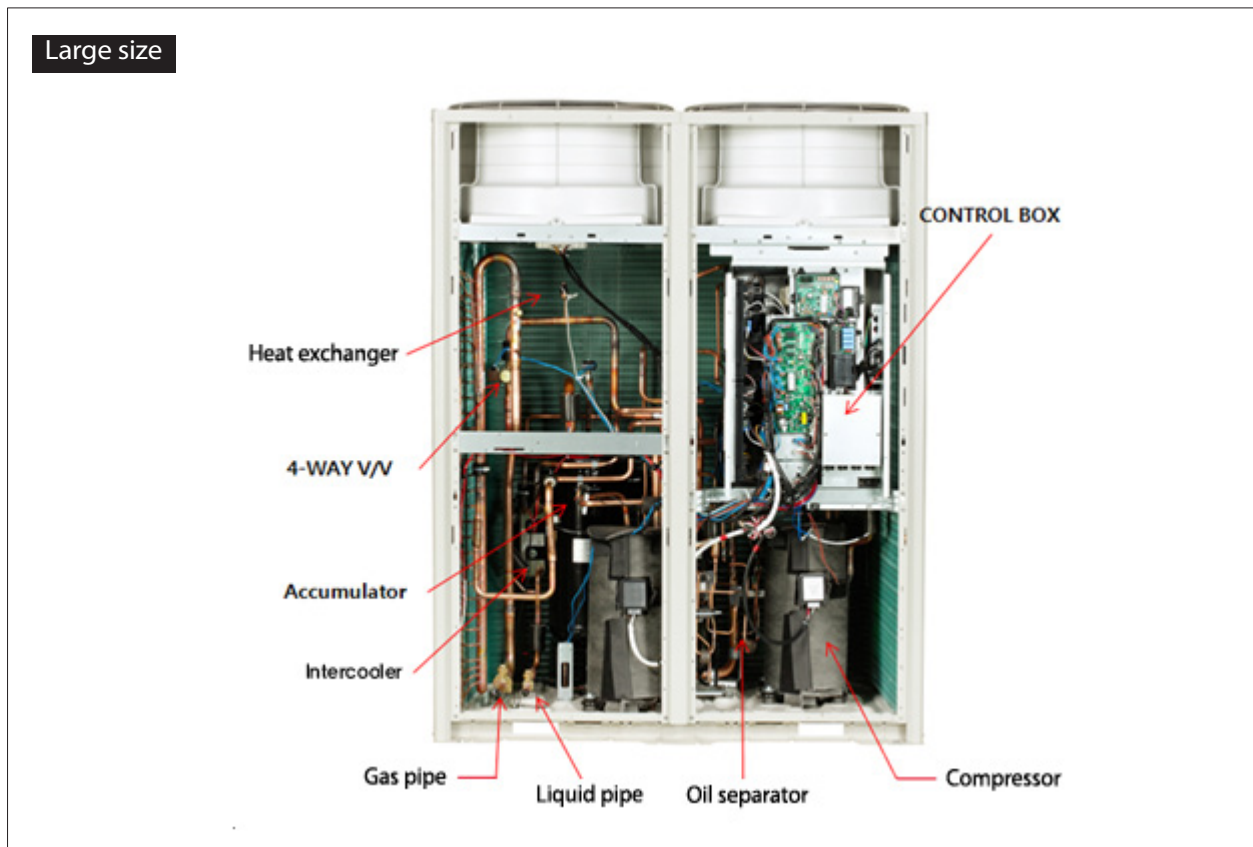
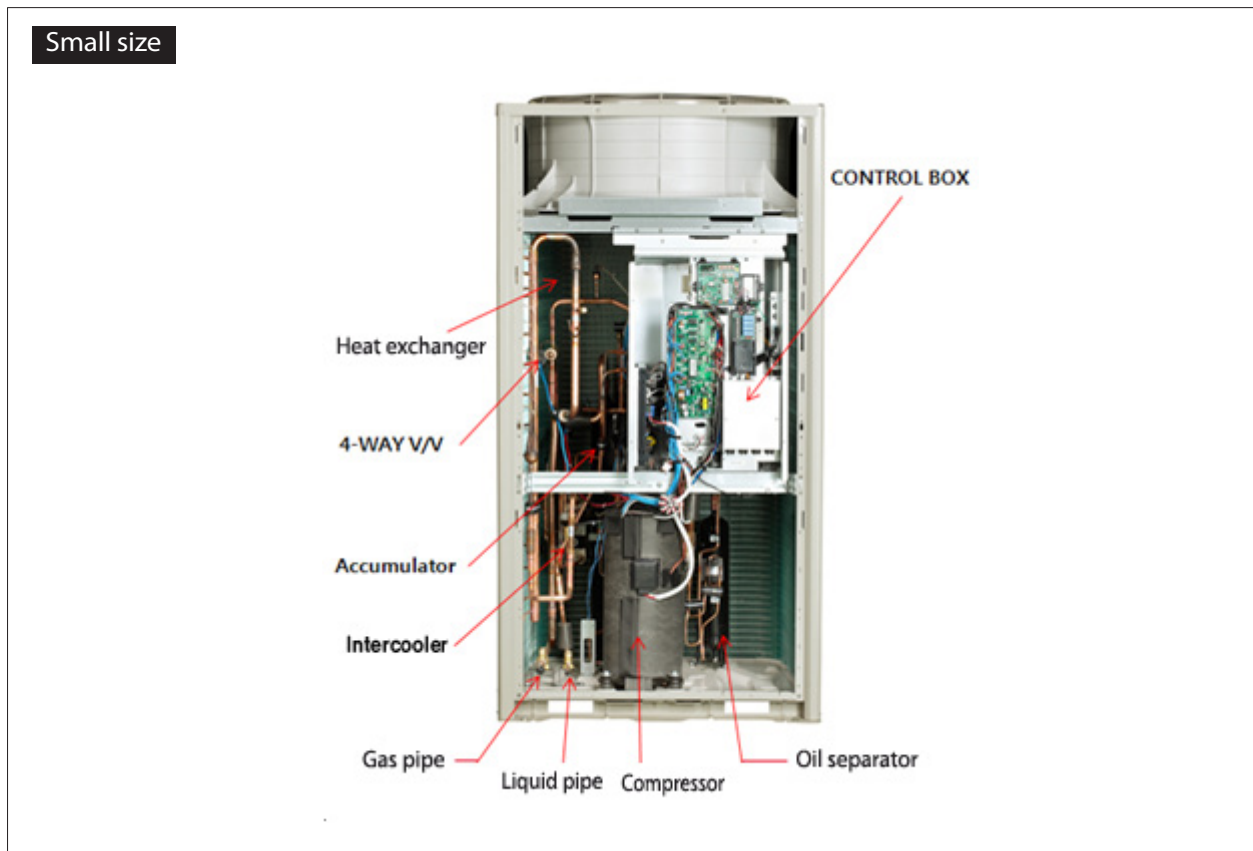
■ PIPE COOLING

Changed part	Changed item and feature	Basic	After changed
Pipe Cooling	New Pipe Cooling for cooling of inverter PCB.	Unapplied	 <p>Refrigerant cooling system : It is cooling technology of inverter circuit that use refrigerating cycle technology.</p> <p>Cooling of inverter circuit</p>

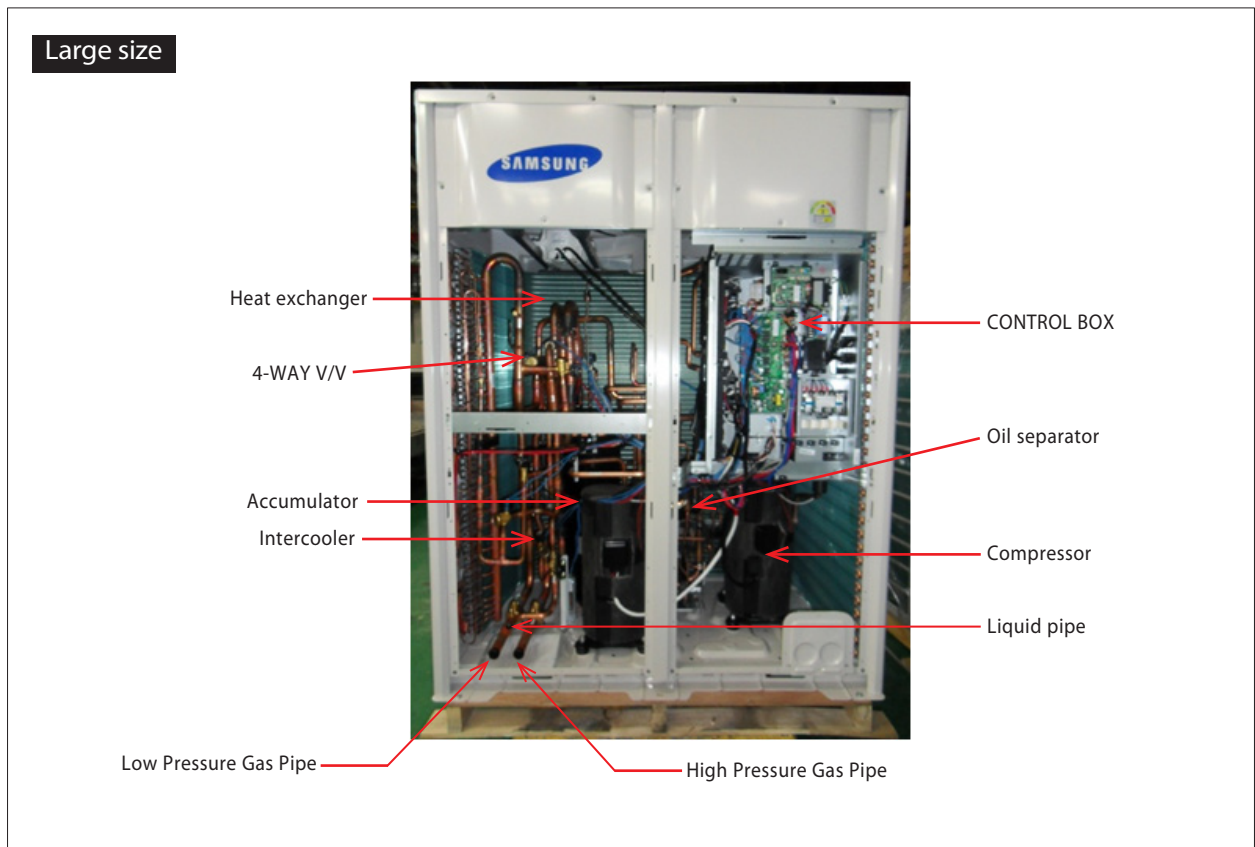
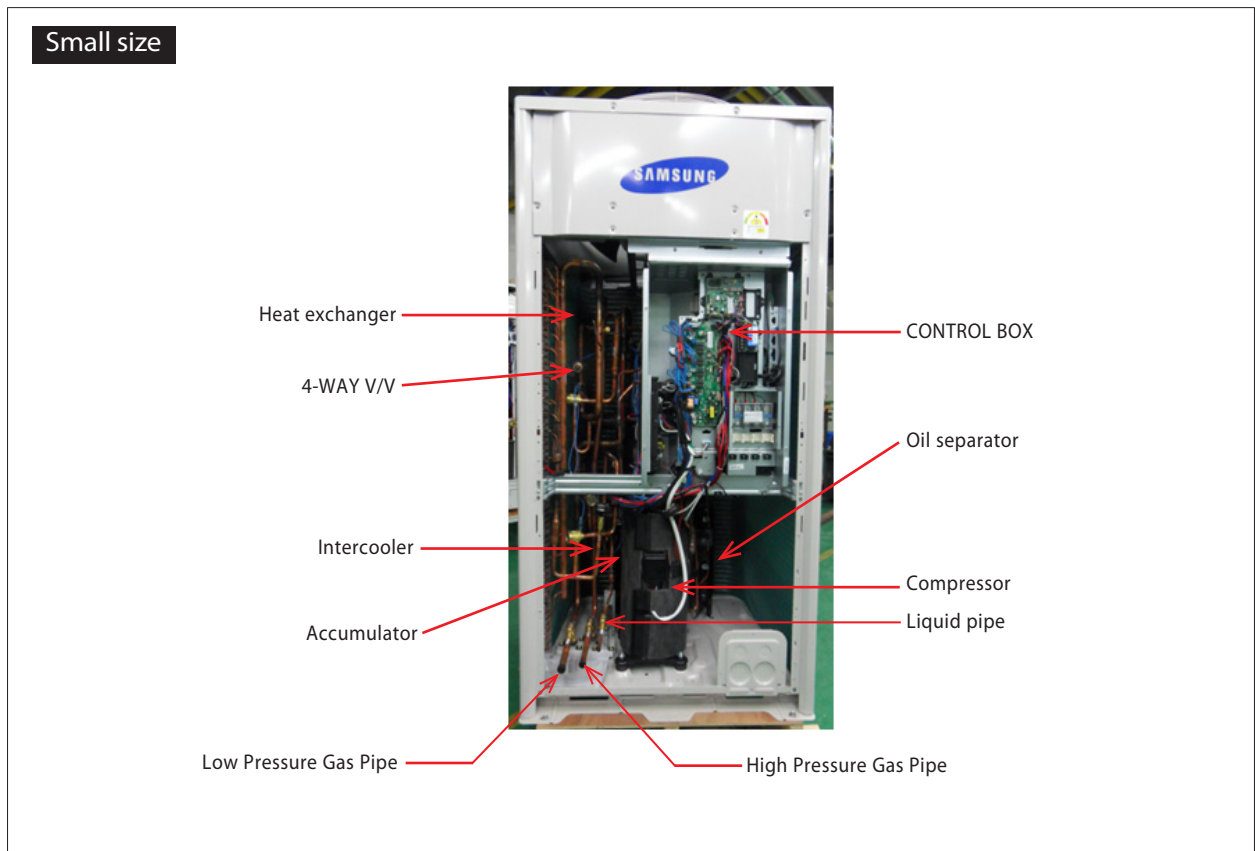
■ TUBE

Changed part	Changed item and feature	Basic	After changed [HP]	After changed [HR]
Tube structure	New inverter cycle technology application New piping			

2-1-3 Structure of product (Heat Pump)

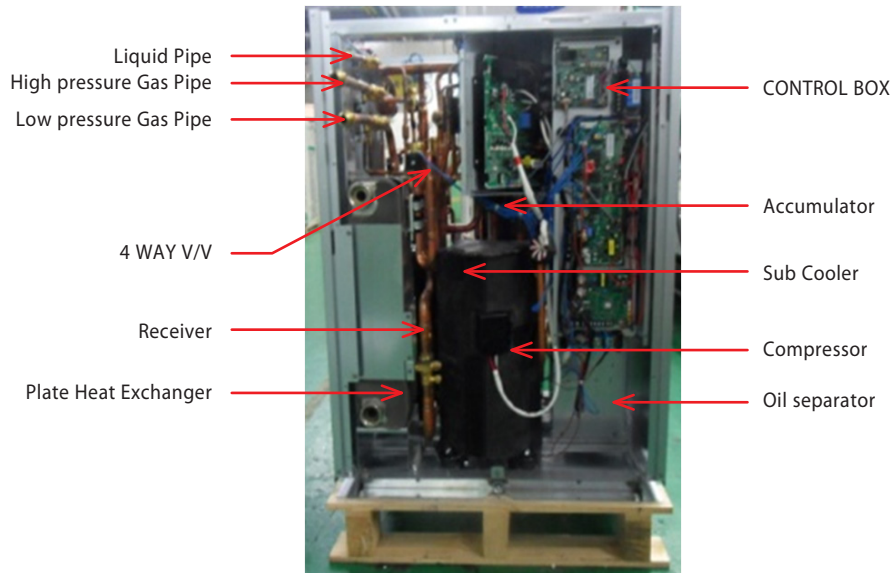


2-1-4 Structure of product (Heat Recovery)

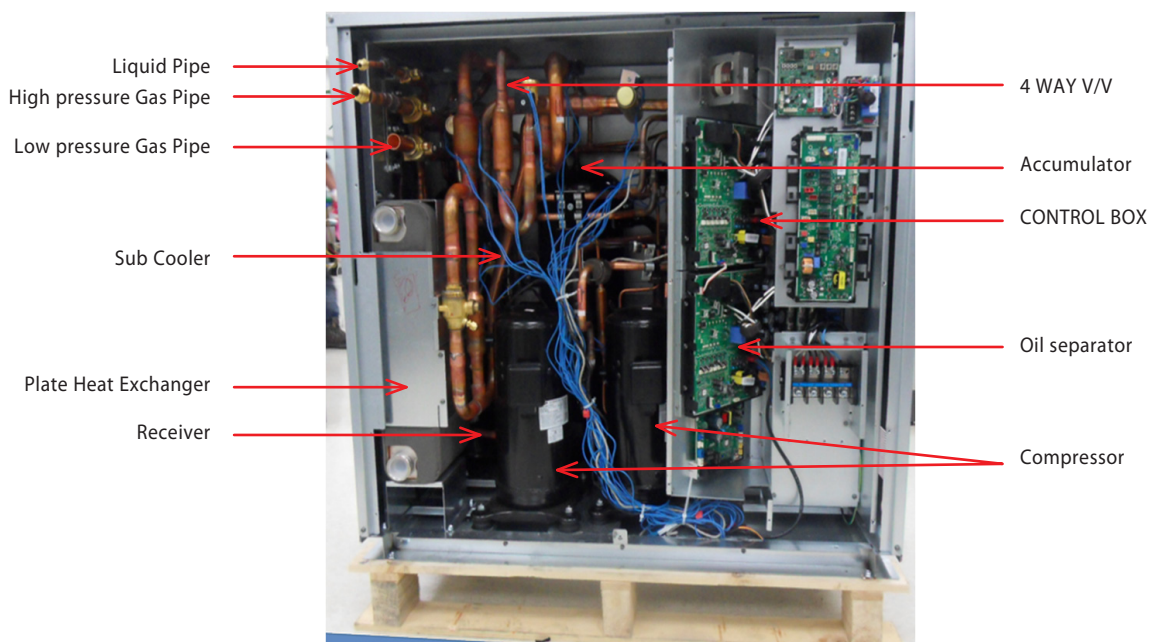


2-1-5 Structure of product (DVM S WATER)

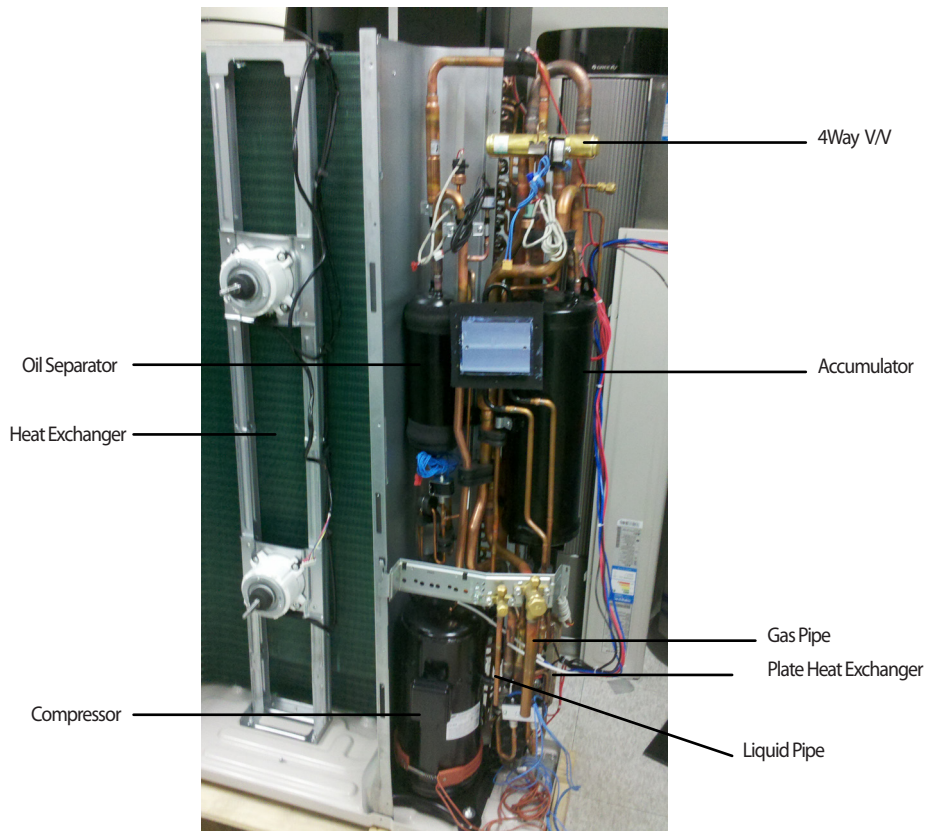
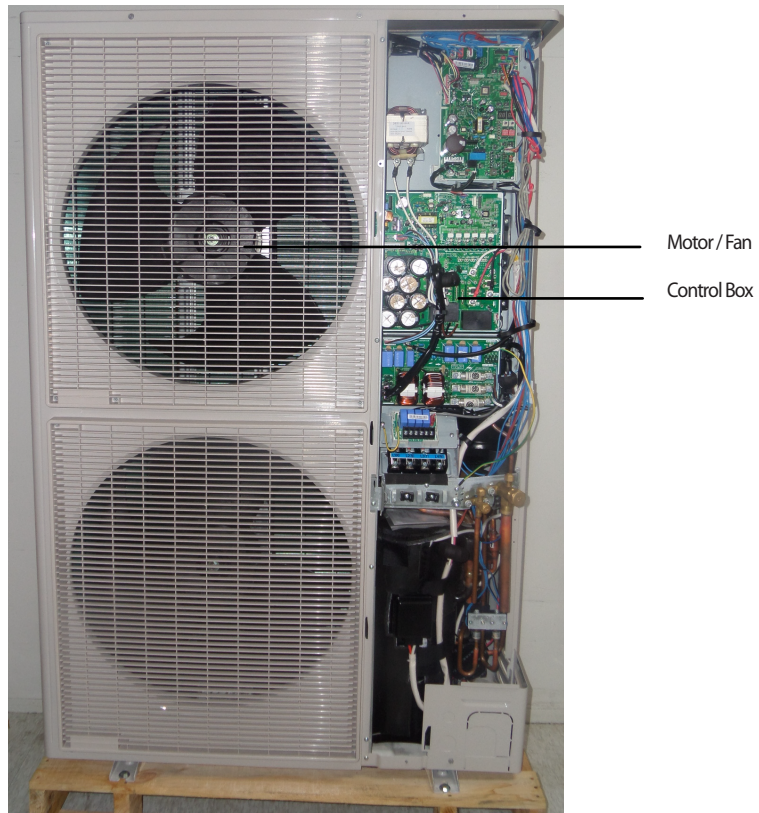
Small size



Large size





2-1-6 Structure of product (DVM S ECO)



2-2 Product Specifications

2-2-1 Outdoor Unit

TYPE			New Model			Comparative Model			
									
Model			AM080FXVAGH	AM100FXVAGH	AM120FXVAGH	RD080HHXG*	RD100HHXG*	RD120HHXG*	
Mode			HP	HP	HP	HP	HP	HP	
Power			Ø,V,Hz	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	
Capacity	Horse Power	HP	8	10	12	8	10	12	
	Cooling	kW	22.4	28.0	33.6	22.4	28.0	33.6	
		btu/h	76,400	95,500	114,600	76,400	95,500	114,600	
	Heating	kW	25.2	31.5	37.8	25.2	31.5	37.8	
btu/h		86,000	107,500	129,000	86,000	107,500	129,000		
Power	Power Input (Nominal)	Cooling 1)	kW	5.00	6.80	8.40	-	-	-
		Heating 2)	kW	5.10	6.70	8.70	-	-	-
	Current Input (Nominal)	Cooling 1)	A	8.00	10.90	13.50	-	-	-
		Heating 2)	A	8.20	10.70	14.00	-	-	-
	Running Current	Cooling	A	8.00	10.90	13.50	8.80	13.00	20.00
		Heating	A	8.20	10.70	14.00	11.40	12.70	18.40
		Max.	A	18.00	21.10	25.00	18.40	21.50	28.40
	Power Consumption	Cooling	kW	5.00	6.80	8.40	5.20	7.04	9.20
		Heating	kW	5.10	6.70	8.70	5.46	6.89	8.50
	MCA / MFA		A	22.5 / 30	29.9 / 40	31.3 / 40	-	-	-
COP	Nominal Cooling		-	4.48	4.12	4.00	-	-	-
	Nominal Heating		-	4.94	4.70	4.34	-	-	-
	ESEER (HP)		-	7.85	7.25	7.03	-	-	-
Compressor	Model		-	DS-GB052FA****	DS-GB066FA****	DS-GB066FA****	ZPJ61KCE-TFD ZPI61KCE-TFD	ZPJ61KCE-TFD ZPI61KCE-TFD	ZPJ83KCE-TFD ZPI83KCE-TFD
	Type		-	INV x1	INV x1	INV x1	DVI x1 + FVI x1	DVI x1 + FVI x1	DVI x1 + FVI x1
	Output		kW	4.70	5.80	5.80	4.36 + 4.36	4.36 + 4.36	5.87 + 5.87
	Lubricant	Type	-	FVC68D	FVC68D	FVC68D	3MAF POE	3MAF POE	3MAF POE
Charging		cc	3,900	3,900	3,900	4,370	4,370	4,370	
Refrigerant	Type		-	R410A	R410A	R410A	R410A	R410A	
	Factory Charging		kg	5.5	5.2	5.5	5.0	5.0	5.0
FAN	Type		-	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	
	Motor Output		W	400	400	400	630	630	630
	Airflow rate		m ³ /min	173	173	210	173	173	210
Pipe	Piping Connections	Liquid	Ø,mm	9.52	9.52	12.70	9.52	9.52	12.70
			Ø,inch	3/8"	3/8"	1/2"			
		Gas	Ø,mm	19.05	22.22	28.58	19.05	22.22	25.40
			Ø,inch	3/4"	7/8"	1 1/8"			
	Dis. Gas	Ø,mm	15.88	19.05	19.05	-	-	-	
		Ø,inch	5/8"	3/4"	3/4"				
Installation Limitation	Max.Length	m	200(220)	200(220)	200(220)	200	200	200	
	Max.Height	m	110(40)	110(40)	110(40)	50(40)	50(40)	50(40)	
Cable	Main Power(Below/about20m)	mm2	4.0	4.0	4.0	1.5	2.5	4.0	
	Communication	mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	
Set Dimension	Net Weight	DVM S HP	kg	190.0	190.0	190.0	237	237	240
		DVM S HR	kg	195.0	195.0	195.0			
	Shipping Weight	DVM S HP	kg	206.0	206.0	206.0	253	253	256
		DVM S HR	kg	211.0	211.0	211.0			
	Net Dimension(WxHxD)		mm	880x1,695x765	880x1,695x765	880x1,695x765	880x1695x765	880x1695x765	880x1695x765
Gross Dimension(WxHxD)		mm	948x1,657x832	948x1,657x832	948x1,657x832	948x1912x832	948x1912x832	948x1912x832	
Operating Temp Range	Cooling	DVM S HP	°C	-5.0~48.0	-5.0~48.0	-5.0~48.0	-5.0 ~ 48	-5.0 ~ 48.0	-5.0 ~ 48.0
		DVM S HR	°C	-15.0~48.0	-15.0~48.0	-15.0~48.0			
	Heating		°C	-20.0~24.0	-20.0~24.0	-20.0~24.0	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0

1. Proper form capacity standard of air conditioning

- Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.

- Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.



2. If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.

3. Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.

4. Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).



5. If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.

Outdoor Unit(Continue)

TYPE			New Model		Comparative Model		
							
Model			AM140FXVAGH	AM160FXVAGH	RD140HHXG*	RD160HHXG*	
Mode			HP	HP	HP	HP	
Power		Ø,V/Hz	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	
Capacity	Horse Power	HP	14	16	14	16	
	Capacity	kW	40.0	45.0	39.2	44.8	
		btu/h	136,000	153,000	133,800	152,900	
	Heating	kW	45.0	50.0	44.1	50.0	
btu/h		153,000	170,000	150,500	172,000		
Power	Power Input (Nominal)	Cooling 1)	kW	8.90	11.00	-	-
		Heating 2)	kW	9.50	11.50	-	-
	Current Input (Nominal)	Cooling 1)	A	14.30	17.60	-	-
		Heating 2)	A	15.20	18.40	-	-
	Running Current	Cooling	A	14.30	17.60	20.90	22.00
		Heating	A	15.20	18.40	19.40	27.20
		Max.	A	25.00	32.00	29.40	38.30
	Power Consumption	Cooling	kW	8.90	11.00	10.10	12.00
		Heating	kW	9.50	11.50	9.65	11.30
	MCA / MFA		A	31.3 / 40	40 / 40	-	-
COP	Nominal Cooling		-	4.49	4.09	-	-
	Nominal Heating		-	4.74	4.35	-	-
	ESEER (HP)		-	7.02	6.78	-	-
Compressor	Model		-	DS-GB066FA****	DS-GB052FA****	ZPI83KCE-TFD ZPI83KCE-TFD	ZPI72KCE-TFD ZPI72KCE-TFD
	Type		-	INV x1	INV x2	DVI x1 + FVI x1	DVI x1 + FVI x2
	Output		kW	5.80	4.7 x2	5.87 + 5.87	5.16 + 5.16 x2
	Lubricant	Type	-	FVC68D	FVC68D	3MAF POE	3MAF POE
Charging		cc	3,900	6,200	4,370	6,540	
Refrigerant	Type		-	R410A	R410A	R410A	R410A
	Factory Charging		kg	7.7	7.4	7.0	7.0
FAN	Type		-	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC
	Motor Output		W	630 x 2	630 x 2	630 x 2	630 x 2
	Airflow rate		m ³ / min	226	250	226	250
Pipe	Piping Connections	Liquid	Ø,mm	12.70	12.70	12.70	12.70
			Ø,inch	1/2"	1/2"	12.70	12.70
		Gas	Ø,mm	28.58	28.58	25.40	28.58
			Ø,inch	1 1/8"	1 1/8"	-	-
		Dis. Gas	Ø,mm	19.05	22.22	-	-
			Ø,inch	3/4"	7/8"	-	-
Installation Limitation	Max.Length	m	200(220)	200(220)	200	200	
	Max.Height	m	110(40)	110(40)	50(40)	50(40)	
Cable	Main Power(Below/about20m)	mm2	4.0	6.0	4.0	6.0	
	Communication	mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	
Set Dimension	Net Weight	DVM S HP	kg	235.0	278.0	280	329
		DVM S HR	kg	214.0	184.0	-	-
	Shipping Weight	DVM S HP	kg	254.0	297.0	301	350
		DVM S HR	kg	260.0	303.0	-	-
	Net Dimension(WxHxD)		mm	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765
Gross Dimension(WxHxD)		mm	1363x1857x832	1363x1857x832	1363x1912x832	1363x1912x832	
Operating Temp Range	Cooling	DVM S HP	°C	-5.0~48.0	-5.0~48.0	-5.0~48.0	-5.0~48.0
		DVM S HR	°C	-15.0~48.0	-15.0~48.0	-	-
	Heating		°C	-20.0~24.0	-20.0~24.0	-20.0~24.0	-20.0~24.0



- Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
- If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
- Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
- Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
- If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.

Outdoor Unit(Continue)

TYPE			New Model			Comparative Model		
								
Model			AM180FXVAGH	AM200FXVAGH	AM220FXVAGH	RD180HHXG*	RD200HHXG*	
Mode			HP	HP	HP	HP	HP	
Power		Ø,V/Hz	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	
Capacity	Horse Power	HP	18	20	22	18	20	
	Cooling	kW	50.4	56.0	61.6	50.4	56.0	
		btu/h	171,900	191,000	210,000	171,900	191,000	
	Heating	kW	56.7	63.0	69.3	56.7	63.0	
btu/h		193,500	215,000	236,000	193,500	215,000		
Power	Power Input (Nominal)	Cooling 1)	12.80	15.19	17.35	-	-	
		Heating 2)	11.90	13.90	16.70	-	-	
	Current Input (Nominal)	Cooling 1)	20.70	24.40	27.80	-	-	
		Heating 2)	19.10	22.30	26.80	-	-	
	Running Current	Cooling	A	20.70	24.40	27.80	31.30	32.80
		Heating	A	19.10	22.30	26.80	26.70	29.10
		Max.	A	39.10	42.50	44.50	42.50	44.10
	Power Consumption	Cooling	kW	12.88	15.19	17.35	15.70	17.00
		Heating	kW	11.90	13.90	16.70	12.90	14.50
	MCA / MFA		A	48.9 / 50	52.5 / 75	52.5 / 75	-	-
COP	Nominal Cooling		-	3.91	3.69	3.55	-	-
	Nominal Heating		-	4.76	4.53	4.15	-	-
	ESEER (HP)		-	6.59	6.56	6.25	-	-
Compressor	Model		-	DS-GB066FA****	DS-GB066FA****	DS-GB066FA****	ZPJ83KCE-TFD ZPI83KCE-TFD	ZPJ83KCE-TFD ZPI83KCE-TFD
	Type		-	INV x2	INV x2	INV x2	DVI x1 + FVI x2	DVI x1 + FVI x2
	Output		kW	5.8 x2	5.8 x2	5.8 x2	5.87 + 5.87 x2	5.87 + 5.87 x2
	Lubricant	Type	-	FVC68D	FVC68D	FVC68D	3MAF POE	3MAF POE
Charging		cc	6,200	6,200	6,200	6,540	6,540	
Refrigerant	Type		-	R410A	R410A	R410A	R410A	R410A
	Factory Charging		kg	8.7	8.4	8.4	8.5	8.5
FAN	Type		-	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC
	Motor Output		W	630 x2	630 x2	630 x2	630 x2	630 x2
	Airflow rate		m ³ /min	270	275	280	270	275
Pipe	Piping Connections	Liquid	Ø,mm	15.88	15.88	15.88	15.88	15.88
			Ø,inch	5/8"	5/8"	5/8"	5/8"	5/8"
		Gas	Ø,mm	28.58	28.58	28.58	28.58	28.58
			Ø,inch	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
	Dis. Gas	Ø,mm	22.22	28.58	28.58	-	-	
		Ø,inch	7/8"	1 1/8"	1 1/8"	-	-	
Installation Limitation	Max.Length	m	200(220)	200(220)	200(220)	200	200	
	Max.Height	m	110(40)	110(40)	110(40)	50(40)	50(40)	
Cable	Main Power(Below/about20m)		mm2	10.0	10.0	10.0	6.0	10.0
	Communication		mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)
Set Dimension	Net Weight	DVM S HP	kg	300.0	300.0	300.0	340.0	349.0
		DVM S HR	kg	306.0	306.0	306.0	340.0	349.0
	Shipping Weight	DVM S HP	kg	319.0	319.0	319.0	361.0	370.0
		DVM S HR	kg	325.0	325.0	325.0	361.0	370.0
	Net Dimension(WxHxD)		mm	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765
Gross Dimension(WxHxD)		mm	1363x1857x832	1363x1857x832	1363x1857x832	1363x1912x832	1363x1912x832	
Operating Temp Range	Cooling	DVM S HP	°C	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0
		DVM S HR	°C	-15.0 ~ 48.0	-15.0 ~ 48.0	-15.0 ~ 48.0	-15.0 ~ 48.0	-15.0 ~ 48.0
	Heating		°C	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0



- Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
- If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
- Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
- Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
- If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.

Outdoor Unit(Continue)

TYPE			New Model			Comparative Model			
									
Model			AM080FXVAGR	AM100FXVAGR	AM120FXVAGR	RD080HRXG*	RD100HRXG*	RD120HRXG*	
Mode			HR	HR	HR	HR	HR	HR	
Power		ØV/Hz	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	
Capacity	Horse Power	HP	8	10	12	8	10	12	
		kW	22.4	28.0	33.6	22.4	28.0	33.6	
	Capacity		btu/h	76,400	95,500	114,600	76,400	95,500	114,600
		Heating	kW	25.2	31.5	37.8	25.2	31.5	37.8
btu/h	86,000		107,500	129,000	86,000	107,500	129,000		
Power	Power Input (Nominal)	Cooling 1)	kW	5.00	6.80	8.40	-	-	-
		Heating 2)		5.10	6.70	8.70	-	-	-
	Current Input (Nominal)	Cooling 1)	A	8.00	10.90	13.50	-	-	-
		Heating 2)		8.20	10.70	14.00	-	-	-
	Running Current	Cooling	A	8.00	10.90	13.50	8.80	13.00	20.00
		Heating		8.20	10.70	14.00	11.40	12.70	18.40
		Max.		18.00	21.10	25.00	18.40	21.50	28.40
	Power Consumption	Cooling	kW	5.00	6.80	8.40	5.20	7.04	9.20
		Heating		5.10	6.70	8.70	5.46	6.89	8.50
	MCA / MFA		A	22.5 / 30	29.9 / 40	31.3 / 40	-	-	-
COP	Nominal Cooling		-	4.48	4.12	4.00	-	-	-
	Nominal Heating		-	4.94	4.70	4.34	-	-	-
	ESEER (HP)		-	7.85	7.25	7.03	-	-	-
Compressor	Model		-	DS-GB052FA****	DS-GB066FA****	DS-GB066FA****	ZPJ61KCE-TFD ZPI61KCE-TFD	ZPJ61KCE-TFD ZPI61KCE-TFD	ZPJ83KCE-TFD ZPI83KCE-TFD
	Type		-	INV x1	INV x1	INV x1	DVI x1 + FVI x1	DVI x1 + FVI x1	DVI x1 + FVI x1
	Output		kW	4.70	5.80	5.80	4.36 + 4.36	4.36 + 4.36	5.87 + 5.87
	Lubricant	Type	-	FVC68D	FVC68D	FVC68D	3MAF POE	3MAF POE	3MAF POE
Charging		cc	3,900	3,900	3,900	4,370	4,370	4,370	
Refrigerant	Type		-	R410A	R410A	R410A	R410A	R410A	
	Factory Charging		kg	5.5	5.2	5.5	5.0	5.0	5.0
FAN	Type		-	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	
	Motor Output		W	400	400	400	630	630	630
	Airflow rate		m ³ /min	173	173	210	173	173	210
Pipe	Piping Connections	Liquid	Ø,mm	9.52	9.52	12.70	9.52	9.52	12.70
			Ø,inch	3/8"	3/8"	1/2"	9.52	9.52	12.70
		Gas	Ø,mm	19.05	22.22	28.58	19.05	22.22	25.40
			Ø,inch	3/4"	7/8"	1 1/8"	19.05	22.22	25.40
		Dis. Gas	Ø,mm	15.88	19.05	19.05	15.88	19.05	22.22
			Ø,inch	5/8"	3/4"	3.4"	15.88	19.05	22.22
Installation Limitation	Max.Length	m	200(220)	200(220)	200(220)	200	200	200	
	Max.Height	m	110(40)	110(40)	110(40)	50(40)	50(40)	50(40)	
Cable	Main Power(Below/about20m)		mm2	4.0	4.0	4.0	1.5	2.5	4.0
	Communication		mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)
Set Dimension	Net Weight	DVM S HP	kg	190.0	190.0	190.0	243	243	243
		DVM S HR		195.0	195.0	195.0	243	243	243
	Shipping Weight	DVM S HP	kg	206.0	206.0	206.0	259	259	259
		DVM S HR		211.0	211.0	211.0	259	259	259
	Net Dimension(WxHxD)		mm	880x1,695x765	880x1,695x765	880x1,695x765	880x1695x765	880x1695x765	880x1695x765
Gross Dimension(WxHxD)		mm	948x1,657x832	948x1,657x832	948x1,657x832	948x1912x832	948x1912x832	948x1912x832	
Operating Temp Range	Cooling	DVM S HP	°C	-5.0~48.0	-5.0~48.0	-5.0~48.0	-5.0~48.0	-5.0~48.0	-5.0~48.0
		DVM S HR		-15.0~48.0	-15.0~48.0	-15.0~48.0	-5.0~48.0	-5.0~48.0	-5.0~48.0
	Heating		°C	-20.0~24.0	-20.0~24.0	-20.0~24.0	-20.0~24.0	-20.0~24.0	-20.0~24.0



- Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
- If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
- Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
- Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
- If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.

Outdoor Unit(Continue)

TYPE			New Model		Comparative Model		
							
Model			AM140FXVAGR	AM160FXVAGR	RD140HRXG*	RD160HRXG*	
Mode			HR	HR	HR	HR	
Power		Ø,V/Hz	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	
Capacity	Horse Power	HP	14	16	14	16	
	Capacity	kW	40.0	45.0	39.2	44.8	
		btu/h	136,000	153,000	133,800	152,900	
	Heating	kW	45.0	50.0	44.1	50.0	
btu/h		153,000	170,000	150,500	172,000		
Power	Power Input (Nominal)	Cooling 1)	8.90	11.00	-	-	
		Heating 2)	9.50	11.50	-	-	
	Current Input (Nominal)	Cooling 1)	14.30	17.60	-	-	
		Heating 2)	15.20	18.40	-	-	
	Running Current	Cooling	A	14.30	17.60	20.90	22.00
		Heating	A	15.20	18.40	19.40	27.20
		Max.	A	25.00	32.00	29.40	38.30
	Power Consumption	Cooling	kW	8.90	11.00	10.10	12.00
		Heating	kW	9.50	11.50	9.65	11.30
	MCA / MFA		A	31.3 / 40	40 / 40	-	-
COP	Nominal Cooling	-	4.49	4.09	-	-	
	Nominal Heating	-	4.74	4.35	-	-	
	ESEER (HP)	-	7.02	6.78	-	-	
Compressor	Model	-	DS-GB066FA****	DS-GB052FA****	ZPJ83KCE-TFD ZPI83KCE-TFD	ZPJ72KCE-TFD ZPI72KCE-TFD	
	Type	-	INV x1	INV x2	DVI x1 + FVI x1	DVI x1 + FVI x2	
	Output	kW	5.80	4.7 x2	5.87 + 5.87	5.16 + 5.16 x2	
	Lubricant	Type	-	FVC68D	FVC68D	3MAF POE	3MAF POE
Charging		cc	3,900	6,200	4,370	6,540	
Refrigerant	Type	-	R410A	R410A	R410A	R410A	
	Factory Charging	kg	7.7	7.4	7.0	7.0	
FAN	Type	-	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	
	Motor Output	W	630 x2	630 x2	630 x2	630 x2	
	Airflow rate	m ³ /min	226	250	226	250	
Pipe	Piping Connections	Liquid	Ø,mm	12.70	12.70	12.70	12.70
			Ø,inch	1/2"	1/2"		
		Gas	Ø,mm	28.58	28.58	25.40	28.58
			Ø,inch	1 1/8"	1 1/8"		
	Dis. Gas	Ø,mm	19.05	22.22	22.22	25.40	
		Ø,inch	3/4"	7/8"			
Installation Limitation	Max.Length	m	200(220)	200(220)	200	200	
	Max.Height	m	110(40)	110(40)	50(40)	50(40)	
Cable	Main Power(Below/about20m)	mm2	4.0	6.0	4.0	6.0	
	Communication	mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	
Set Dimension	Net Weight	DVM S HP	kg	235.0	278.0	293	338
		DVM S HR	kg	214.0	184.0		
	Shipping Weight	DVM S HP	kg	254.0	297.0	314	359
		DVM S HR	kg	260.0	303.0		
	Net Dimension(WxHxD)	mm	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	
Gross Dimension(WxHxD)	mm	1363x1857x832	1363x1857x832	1363x1912x832	1363x1912x832		
Operating Temp Range	Cooling	DVM S HP	°C	-5.0~48.0	-5.0~48.0	-5.0~ 48.0	-5.0~ 48.0
		DVM S HR	°C	-15.0~48.0	-15.0~48.0		
	Heating	°C	-20.0~24.0	-20.0~24.0	-20.0~ 24.0	-20.0~ 24.0	



1. Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
 2. If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
 3. Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
 4. Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
 5. If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.

Outdoor Unit(Continue)

TYPE			New Model			Comparative Model		
								
Model			AM180FXVAGR	AM200FXVAGR	AM220FXVAGR	RD180HRXG*	RD200HRXG*	
Mode			HR	HR	HR	HR	HR	
Power		ØV/Hz	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	3/AC380~415/50	
Capacity	Horse Power	HP	18	20	22	18	20	
	Capacity	kW	50.4	56.0	61.6	50.4	56.0	
		btu/h	171,900	191,000	210,000	171,900	191,000	
	Heating	kW	56.7	63.0	69.3	56.7	63.0	
btu/h		193,500	215,000	236,000	193,500	215,000		
Power	Power Input (Nominal)	Cooling 1)	kW	12.80	15.19	17.35	-	-
		Heating 2)	kW	11.90	13.90	16.70	-	-
	Current Input (Nominal)	Cooling 1)	A	20.70	24.40	27.80	-	-
		Heating 2)	A	19.10	22.30	26.80	-	-
	Running Current	Cooling	A	20.70	24.40	27.80	31.30	32.80
		Heating	A	19.10	22.30	26.80	26.70	29.10
		Max.	A	39.10	42.50	44.50	42.50	44.10
	Power Consumption	Cooling	kW	12.88	15.19	17.35	15.70	17.00
		Heating	kW	11.90	13.90	16.70	12.90	14.50
	MCA / MFA		A	48.9 / 50	52.5 / 75	52.5 / 75	-	-
COP	Nominal Cooling		-	3.91	3.69	3.55	-	-
	Nominal Heating		-	4.76	4.53	4.15	-	-
	ESEER (HP)		-	6.59	6.56	6.25	-	-
Compressor	Model		-	DS-GB066FA****	DS-GB066FA****	DS-GB066FA****	ZPJ83KCE-TFD ZPI83KCE-TFD	ZPJ83KCE-TFD ZPI83KCE-TFD
	Type		-	INV x2	INV x2	INV x2	DVI x1 + FVI x2	DVI x1 + FVI x2
	Output		kW	5.8 x2	5.8 x2	5.8 x2	5.87 + 5.87 x2	5.87 + 5.87 x2
	Lubricant	Type	-	FVC68D	-	FVC68D	3MAF POE	3MAF POE
Charging		cc	6,200	6,200	6,200	6,540	6,540	
Refrigerant	Type		-	R410A	R410A	R410A	R410A	
	Factory Charging		kg	8.7	8.4	8.4	8.5	8.5
FAN	Type		-	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC	Propeller + BLDC
	Motor Output		W	630x2	630x2	630x2	630x2	630x2
	Airflow rate		m ³ /min	270	275	280	270	275
Pipe	Piping Connections	Liquid	Ø,mm	15.88	15.88	15.88	15.88	15.88
			Ø,inch	5/8"	5/8"	5/8"	5/8"	5/8"
		Gas	Ø,mm	28.58	28.58	28.58	28.58	28.58
			Ø,inch	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
		Dis. Gas	Ø,mm	22.22	28.58	28.58	28.58	28.58
			Ø,inch	7/8"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
	Installation Limitation	Max.Length	m	200(220)	200(220)	200(220)	200	200
	Max.Height	m	110(40)	110(40)	110(40)	50(40)	50(40)	
Cable	Main Power(Below/about20m)		mm2	10.0	10.0	10.0	6.0	10.0
	Communication		mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)
Set Dimension	Net Weight	DVM S HP	kg	300.0	300.0	300.0	349	355
		DVM S HR	kg	306.0	306.0	306.0	349	355
	Shipping Weight	DVM S HP	kg	319.0	319.0	319.0	369	376
		DVM S HR	kg	325.0	325.0	325.0	369	376
	Net Dimension(WxHxD)		mm	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765
Gross Dimension(WxHxD)		mm	1363x1857x832	1363x1857x832	1363x1857x832	1363x1912x832	1363x1912x832	
Operating Temp Range	Cooling	DVM S HP	°C	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0
		DVM S HR	°C	-15.0 ~ 48.0	-15.0 ~ 48.0	-15.0 ~ 48.0	-5.0 ~ 48.0	-5.0 ~ 48.0
	Heating		°C	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0	-20.0 ~ 24.0


- Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
- If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
- Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
- Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
- If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.

Outdoor Unit(Continue)

TYPE			New Model				Comparative Model			
										
Model Name			AM080FXWANR/EU	AM100FXWANR/EU	AM120FXWANR/EU	AM200FXWANR/EU	RD100DRXH1	RD200DRXH1	RD300DRXH1	
Power Supply			3/AC380~415/50							
Performance	HP	HP	8	10	12	20	10	20	30	
		kW	23	29	34.8	58	29	58	87	
	Capacity (Nominal)	Cooling	kcal/h	19780	24940	29928	49880	24940	49880	74820
		Heating	kW	26	32.6	39.2	65.2	32.6	65.2	97.9
Power	Power Input (Nominal)	Cooling	kW	4.18	5.58	6.69	11.15	5.8	11.6	17.4
		Heating	kW	4.33	5.62	6.76	11.24	5.69	11.8	17.8
	Current Input (Nominal)	Cooling	A	7.0	9.4	11.3	18.8	10.5	21.4	31.9
		Heating	A	7.3	9.5	11.4	19.0	9.5	20.9	31.1
COP	MFA	-	20	20	30	40	20	40	60	
	Nominal Cooling 1)	-	5.50	5.20	5.20	5.20	-	-	-	
Compressor	Nominal Heating 2)	-	6.00	5.80	5.80	5.80	-	-	-	
	Type	-	SSC Scroll x 1	SSC Scroll x 1	SSC Scroll x 1	SSC Scroll x 2	DVI Scrollx1	DVI Scrollx1 + FVI Scrollx1	DVI Scroll + FVI Scrollx2	
Condenser	Output	kW	4.96	4.96	6.13	4.96 x 2	7.04	7.48 + 7.43	7.48 + (7.43 x 2)	
	Oil	Type	-	PVE	PVE	PVE	PVE	3MAF POE	3MAF POE	3MAF POE
		Initial Charge	Liter	3.9	3.9	3.9	6.2	2.185	4.37	6.555
Piping Connections	Type	-	Stainless steel plate	Stainless steel plate	Stainless steel plate	Stainless steel plate	Stainless steel plate	Stainless steel plate	Stainless steel plate	
	Pipe Size	Φ, inch(A)	PT1-1/4 (32)	PT1-1/4 (32)	PT1-1/4 (32)	PT1-1/4 (32)	1 1/4" (32A)	1 1/4" (32A)	2 (50A)	
	Lost Head	kPa	22	30	43	54	30	54	54	
	Water Flow Rate	LPM	80	96	114	190	96	190	285	
Field Wiring	Max. Pressure	MPa	1.96	1.96	1.96	1.96	1.96	1.96	1.96	
	Liquid Pipe	Φ, mm	9.52	9.52	12.7	15.88	9.52	15.88	19.05	
	Gas Pipe	Φ, mm	19.05	22.23	25.4	28.58	22.23	28.58	31.75	
	Discharge Gas Pipe	Φ, mm	15.88	19.05	22.23	25.4	19.05	25.4	28.58	
	Oil Equalizing Pipe	Φ, mm	-	-	-	-	-	6.35	6.35	
	Installation Limitation	-	-	-	-	-	-	-	-	
Refrigerant	Max. Length	m	170	170	170	170	150	150	150	
	Max. Height	m	50	50	50	50	50(40)	50(40)	50(40)	
External Dimension	Power Source Wire	mm2	2.50	2.50	4.00	6.00	1.5	4.0	10.0	
	Transmission Cable	mm2	0.75~1.25	0.75~1.25	0.75~1.25	0.75~1.25	0.75~1.5	0.75~1.5	0.75~1.5	
Operating Temp. Range(Water)	Type	-	R410A	R410A	R410A	R410A	R410A	R410A	R410A	
	Factory Charging	kg	5.5	5.8	6.0	9.8	5.8	9.4	12.0	
	Net Weight	kg	160	160	160	240	160	235	320	
	Shipping Weight	kg	167	167	167	250	167	242	330	
Operating Temp. Range(Water)	Net Dimensions (WxHxD)	kg	770x1000x545	770x1000x545	770x1000x545	1100x1000x545	770 x 1,117 x 545	770 x 1,117 x 545	1,100 x 1,117 x 550	
	Shipping Dimensions (WxHxD)	kg	840x1200x620	840x1200x620	840x1200x620	1170x1200x620	840 x 1,287 x 620	840 x 1,287 x 620	1,170 x 1,170 x 620	
Operating Temp. Range(Water)	Cooling	℃	10~45	10~45	10~45	10~45	10~45	10~45	10~45	
	Heating	℃	10~45	10~45	10~45	10~45	10~45	10~45	10~45	

1. Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
 2. If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
 3. Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
 4. Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
 5. If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.





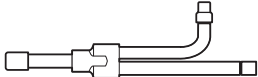



Outdoor Unit(Continue)

Model				New Model		
				AM080FXMDGH*	AM090FXMDGH*	
TYPE						
Model				HP	HP	
Power		Ø,V/Hz	3/AC380~415/50			
Capacity	Cooling		kW	22.4	24.1	
	Heating		kW	25.0	26.0	
Power	Running Current	Cooling 1)	A	9.66	11.65	
		Heating 2)	A	8.24	9.01	
		Max.	A	18.00	18.50	
		MCA	A	18.00	18.50	
	Power Input (normal)	Cooling 1)	kW	5.72	6.90	
		Heating 2)	kW	4.88	5.34	
Max.		kW	11.25	11.81		
Compressor	Model		-	DS-GB052FAVADO*1	DS-GB052FAVADO*1	
	Output		kW	4.7	4.7	
	Lubricant	Type	-	FVC68D	FVC68D	
Charging		L	1.7	1.7		
Refrigerant	Type		-	R-410A	R-410A	
	Factory Charging		kg	3.7	3.7	
Fan	Type		-	Propeller + BLDC	Propeller + BLDC	
	Motor Output		W	630	630	
	Airflow rate		m ³ /min	135	145	
Safety Devices	Mechanical		-	High Pressure Switch	High Pressure Switch	
			-	Crankcase Heater	Crankcase Heater	
			-	PCB Fuse	PCB Fuse	
	Electronic		-	Overvoltage protection	Overvoltage protection	
-			Current transformers	Current transformers		
-			Motor overheating / Current transformers	Motor overheating / Current transformers		
Pipe	Piping connections	Liquid	Ø,mm	9.52	9.52	
		Gas	Ø,mm	19.05	19.05	
	Installation Limitation	Max.length	m	200	200	
Cable	Limitation		Max Height	m	30	30
	Main power(Below/about 20m)		mm2	4(H07RN)	4(H07RN)	
	Communication		mm2	VCTF 0.75~1.5(2P)	VCTF 0.75~1.5(2P)	
Set Dimension	Net Weight		kg	135	135	
	Shipping Weight		kg	140	140	
	Net Dimension (WxHxD)		mm	940x1420x330	940x1420x330	
Gross Dimension (WxHxD)		mm	995x1578x426	995x1578x426		
Operating Temp Range	Cooling		°C	-5 ~ 48	-5 ~ 48	
	Heating		°C	-20 ~ 24	-20 ~ 24	

- Proper form capacity standard of air conditioning
 - Cooling capacity : It is figures that appear in indoor 27°C DB/19°C WB, outdoor 35°C DB, length 7.5m of piping, fall 0m standard.
 - Heating capacity : It is figures that appear in indoor 20°C DB, outdoor 7°C DB, length 7.5m of piping, fall 0m standard.
- If proper form heating capacity is outdoor temperature 7°C standard and outdoor temperature goes down by below zero, heating capacity can drop according to temperature condition.
- Need special load calculation in case of use by main heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.
- Maximum length between outdoor and indoor units allows up to 200m (Equivalent length 220m).
- If the indoor unit is below, height length allows up to 110m (If over 50m, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 40m.







2-3 Accessory and Option Specifications

2-3-1 Accessories

Picture	Classification	Model Name	Remark
	Y-Joint	MXJ-YA1509M	15.0 kW and below
		MXJ-YA2512M	Over 15.0 kW~40.6 kW and below
		MXJ-YA2812M	Over 40.6 kW~46.4 kW and below
		MXJ-YA2815M	Over 46.4 kW~69.6 kW and below
		MXJ-YA3419M	Over 69.6 kW~98.6 kW and below
		MXJ-YA4119M	Over 98.6 kW~139.2 kW and below
		MXJ-YA4422M	Over 139.2 kW
	Y-Joint (Only H/R)	MXJ-YA1500M	23.2 kW and below
		MXJ-YA2500M	Over 23.2 kW~69.6 kW and below
		MXJ-YA3100M	Over 69.6 kW~139.2 kW and below
		MXJ-YA3800M	139.2 kW and below
	Distribution header	MXJ-HA2512M	46.4 kW and below (for 4 rooms)
		MXJ-HA3115M	69.6 kW and below (for 8 rooms)
		MXJ-HA3819M	Over 69.6 kW (for 8 rooms)
	Y-Joint -Outdoor Unit	MXJ-TA3819M	139.2 kW and below
		MXJ-TA4422M	145 kW and below
	Y-Joint (Only H/R)-Outdoor Unit	MXJ-TA3100M	139.2 kW and below
		MXJ-TA3800M	145 kW and Over
	MCU (Mode Control Unit)	MCU-S6NEE1N	6 ROOM
		MCU-S4NEE1N	4 ROOM
		MCU-S4NEE2N	4 ROOM
	EEV KIT (1 Room)	MEV-E24SA	Apply to products without EEV (Wall mount & Ceiling)
		MEV-E32SA	
	EEV KIT (2 Room)	MXD-E24K132A	
		MXD-E24K200A	
		MXD-E32K200A	
		MXD-E24K232A	
	EEV KIT (3 Room)	MXD-E24K132A	
		MXD-E24K300A	
		MXD-E32K224A	
		MXD-E32K300A	

3. Disassembly and Reassembly




3-1 Necessary Tools

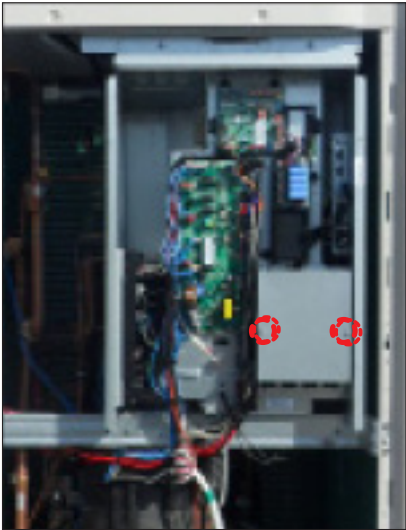
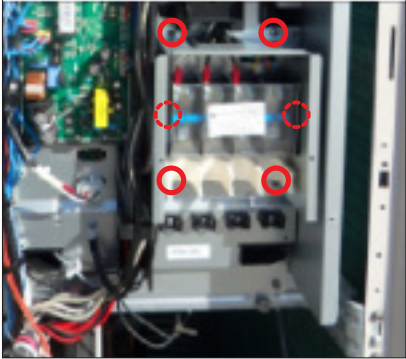

Item	Remark
+SCREW DRIVER	
MONKEY SPANNER	
-SCREW DRIVER	
NIPPER	
ELECTRIC MOTION DRIVER	
L-WRENCH	

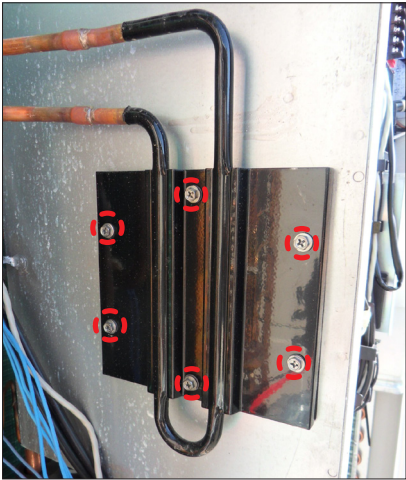
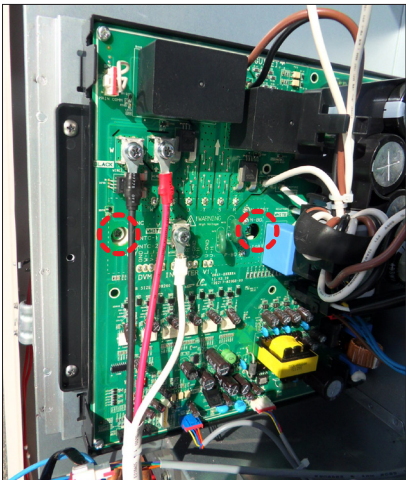
- For “disassembly and assembly” DVM PLUS **IV** indoor unit, please refer to the products with the same structures. Only those products that are not specified elsewhere are described here.

3-2 Disassembly and Reassembly

3-2-1 AM080/100/120FXV***

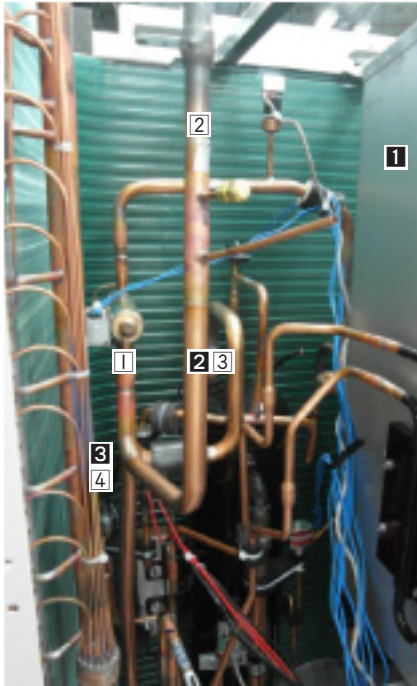
No.	Parts	Procedure	Remark
1	Electrical equipment Part	<p>1) 14 screws that is fixing CABINET remove.(Use + Screw driver)</p> <p>2) Remove 4 screws that is fixing and separate Cover Control Box. (Use + Screw driver)</p> <p>3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.</p>	  

No.	Parts	Procedure	Remark
		<p>4) 2 screws had fixed in terminal block cover when change power terminal block, communication terminal block remove.</p>	
		<p>5) 2 screws had fixed in terminal block after remove 4 screws had fixed to Cabinet for terminal block protection remove.</p>	
		<p>6) 5 screws had fixed to Front part remove.</p>	

No.	Parts	Procedure	Remark
		<p>7) 6 screws had fixed on side refrigerant cooling part outside remove .</p> <p>⚠ Do not separate Heat Sink pulling Assy Piping Cooling piping compulsorily. (Is responsible for parts damage.)</p> <p>8) 2 screws had fixed on side refrigerant cooling part inside remove.</p>	 

Binding Wire 1

■ AM080/100/120FXVAGH

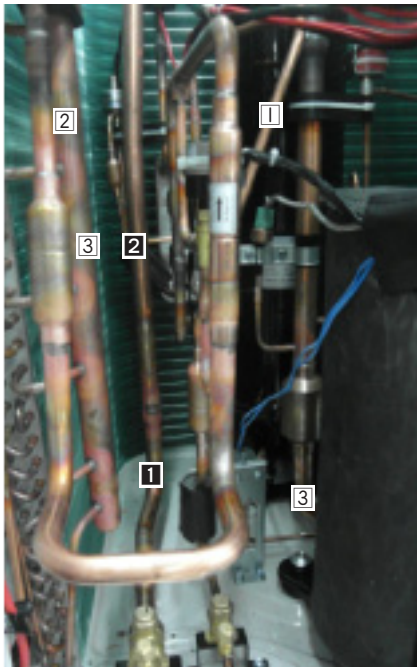


VALVE & SENSOR

No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	Suction Sensor
4	EVI Out Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXVAGH	DB62-04154C	
2	AM080/100/120FXVAGH	DB62-03808B	
3	AM080/100/120FXVAGH	DB62-03808C	



VALVE & SENSOR

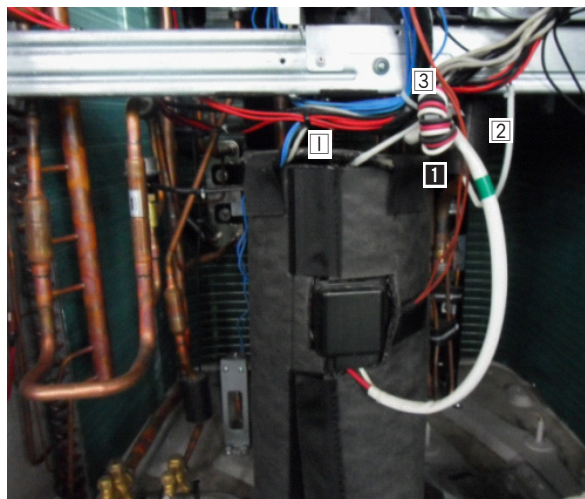
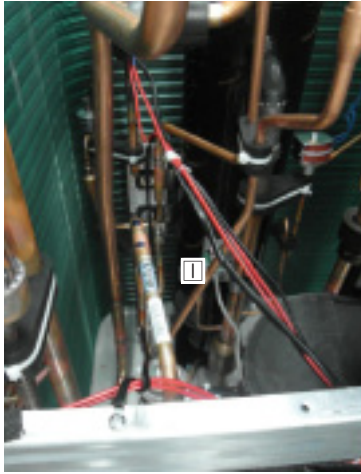
No	Valve & Sensor
1	Expansion Valve
2	EVI EEV Valve
3	Accum Oil Return Valve
4	EVI In Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXVAGH	DB62-03808C	
2	AM080/100/120FXVAGH	DB62-03808E	

Binding Wire 2

■ AM080/100/120FXVAGH



VALVE & SENSOR

No	Valve & Sensor
1	Low Pressure Sensor

VALVE & SENSOR

No	Valve & Sensor
1	Cond Out Sensor
2	Outdoor Temperature Sensor

VALVE & SENSOR

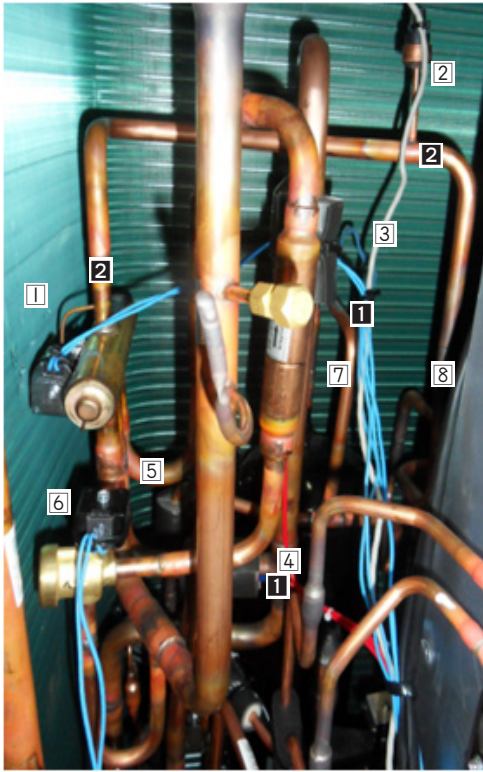
No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor
3	High Pressure Switch

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXVAGH	DB62-03808D	

Binding Wire 1

■ AM080/100/120FXVAGR

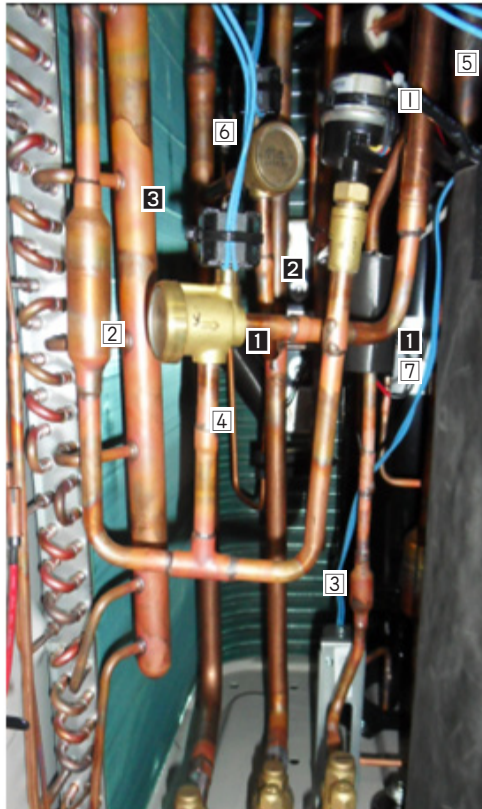


VALVE & SENSOR

No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	Suciton 1 Sensor
4	Suciton 2 Sensor
5	EVI Out Sensor
6	Main Cooling Valve
7	EVI Bypass Valve
8	EVI SOL Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXVAGR	DB62-03808B	
	AM120FXVAGR	DB62-03808G	
2	AM080/100/120FXVAGR	DB62-04154B	



VALVE & SENSOR

No	Valve & Sensor
1	Main EEV Valve
2	ODE EEV Valve
3	Accum Return Valve
4	EVI In Sensor
5	Hot Gas 1 Valve
6	Hot Gas 2 Valve
7	Liquid Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXVAGR	DB62-03808E	
2	AM080/100/120FXVAGR	DB62-04154B	
3	AM080/100/120FXVAGR	DB62-03808C	

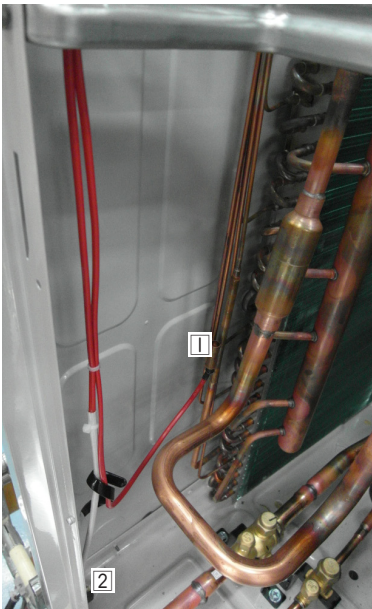
Binding Wire 2

■ AM080/100/120FXVAGR



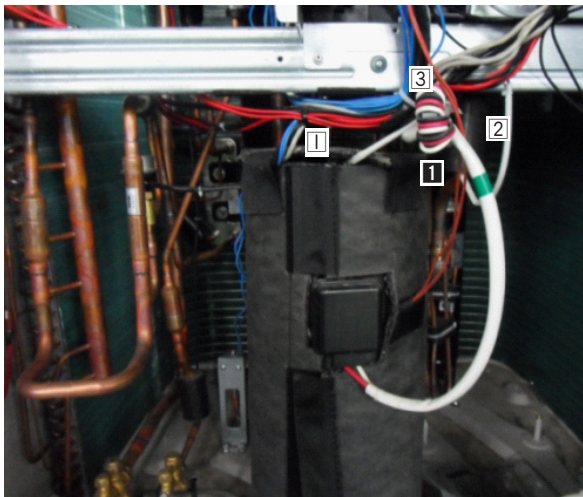
VALVE & SENSOR

No	Valve & Sensor
1	Low Pressure Sensor
2	EVI EEV Valve



VALVE & SENSOR

No	Valve & Sensor
1	Cond Out Sensor
2	Outdoor Temperature Sensor



VALVE & SENSOR

No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor
3	High Pressure Switch

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXVAGH	DB62-03808D	

Binding Wire 3

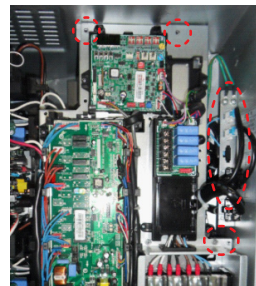
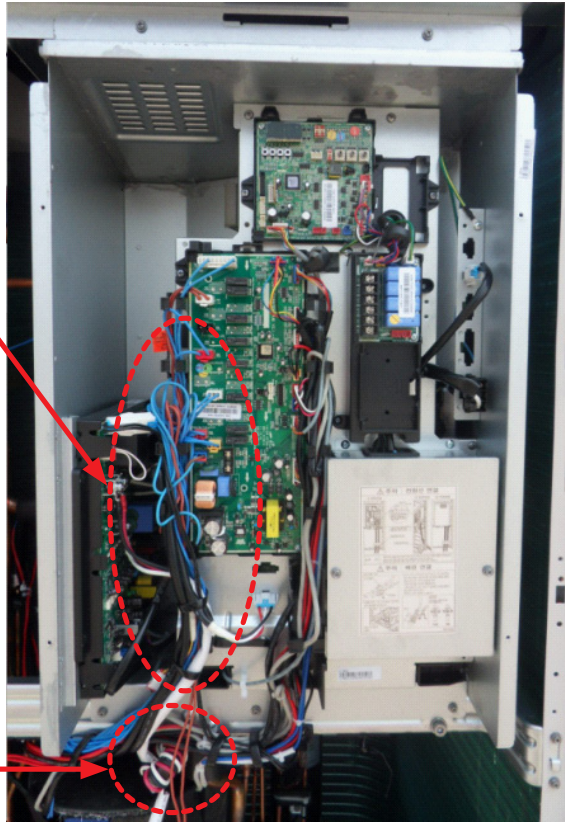
■ AM080/100/120FXV***



► Comp Wire fix by Holder Wire.



► Fix Comp Wire-Core to Bracket Beam Control Box using large size Cable Tie(350mm).



► Separate double layer structure of C/Box after remove 3 screws and connector.



[Reference Sheet]

Pipe Welding Position

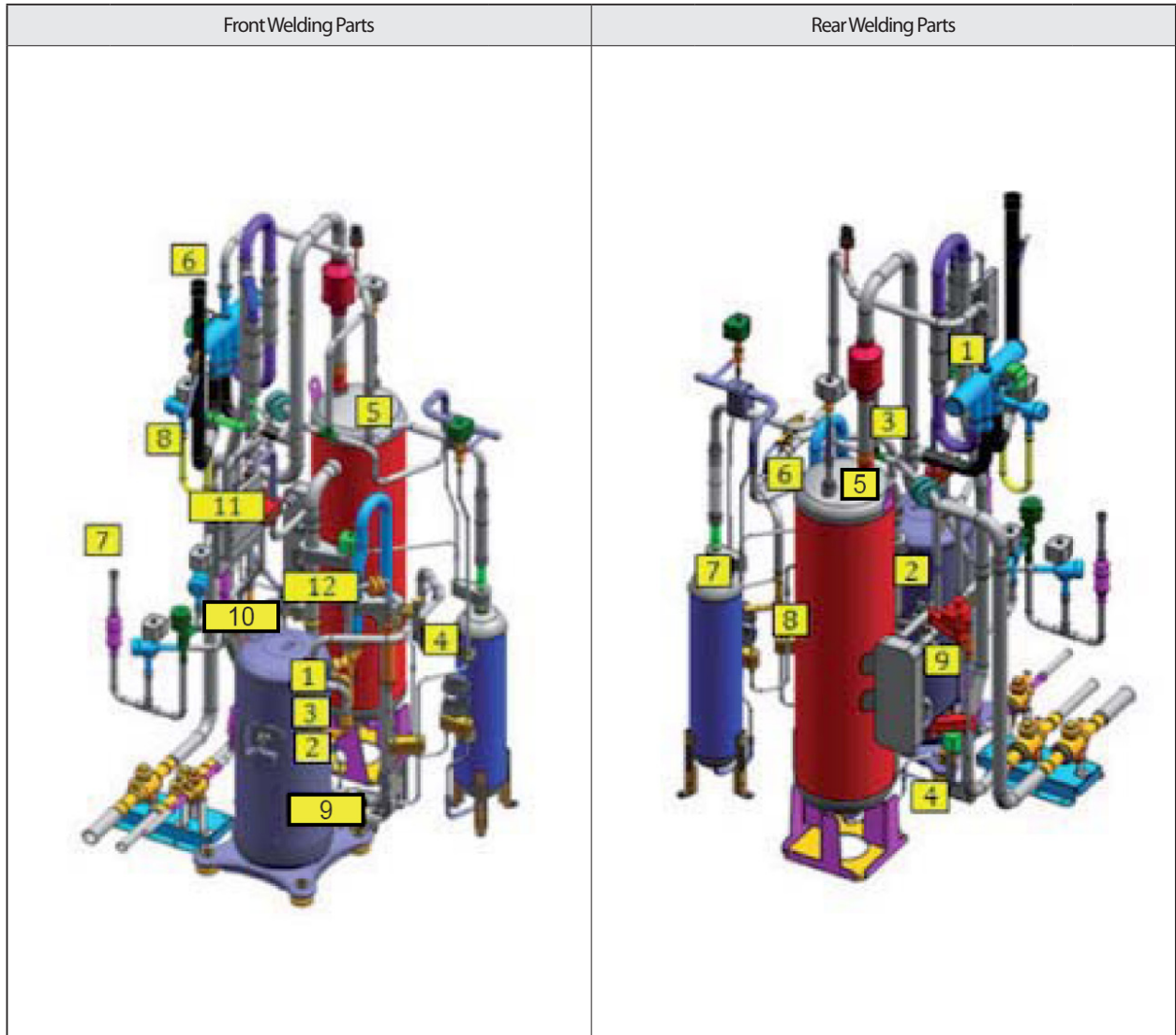
■ AM080/100/120FXVAGH/EU

Front Welding Parts			Rear Welding Parts		
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	1	1	Cooling+Subcooler	1
2	Comp+Discharge	1	2	Subcooler+EVI Bypass	1
3	Comp+Vapor Injection	1	3	Accum+4Way	1
4	Discharge+Oil Sepa	1	4	Accum+Accum Oil Vavle	1
5	4Way+Oil Sepa Out	1	5	Accum+EVI Bypass	1
6	Oil Return+Suction	1	6	Vapor Injection+EVI Bypass	1
7	Hot Gas Vavle +Suction	1	7	Hot Gas Vavle +Oil Sepa Out	1
8	Expansion+Subcooler	1	8	4Way+Cond In	
9	Pinch Pipe	1	9	Expansion+Cond Out	
10	Accum Oil Return Valve + Suction	1			
11	Liquid Ball Vavle +Colling	1			
12	Accum+Suction	1			

[Reference Sheet]


Pipe Welding Position

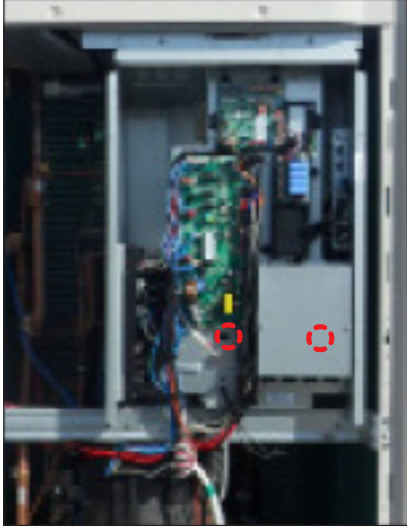
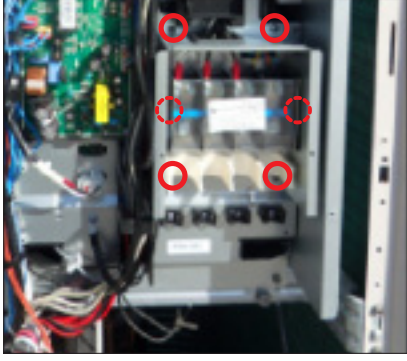

■ AM080/100/120FXVAGR/EU

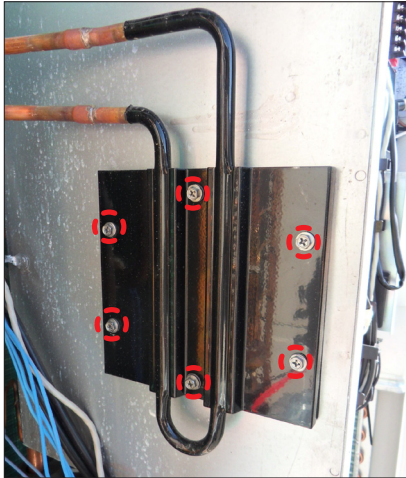
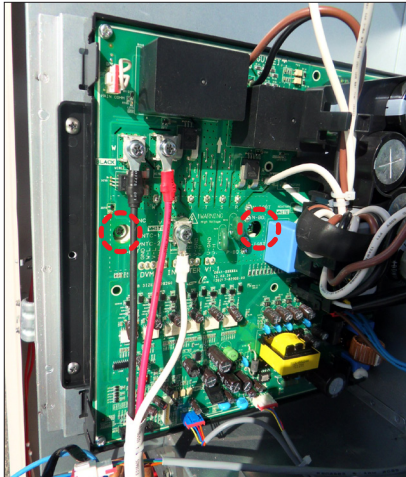


No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	1	1	Cooling+Subcooler	1
2	Comp+Discharge	1	2	Subcooler+EVI Bypass	1
3	Comp+Vapor Injection	1	3	Accum+4Way	1
4	Discharge+Oil Sepa	1	4	Accum+Accum Oil Vavle	1
5	4Way+Oil Sepa Out	1	5	Accum+EVI Bypass	1
6	4Way+Cond In	1	6	Vapor Injection+EVI Bypass	1
7	Expansion+Cond Out	1	7	Hot Gas Vavle +Oil Sepa Out	1
8	Pinch Pipe	1	8	Oil Return+Suction	
9	Accum Oil Return Valve+Suction	1	9	LQD Ball Valve+Subcooler	
10	Subcooler+Expansion	1			
11	LQD Ball Valve+Cooling	1			
12	Accum+Suction	1			

3-2-2 AM140FXV***

No.	Parts	Procedure	Remark
1	Electrical equipment Part	<p>1) 11 screws that is fixing CABINET remove.(Use + Screw driver)</p> <p>2) Remove 4 screws that is fixing and separate Cover Control Box. (Use + Screw driver)</p> <p>3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.</p>	

No.	Parts	Procedure	Remark
		<p>4) 2 screws had fixed in terminal block cover when change power terminal block, communication terminal block remove.</p>	
		<p>5) 2 screws had fixed in terminal block after remove 4 screws had fixed to Cabinet for terminal block protection remove.</p>	
		<p>6) 5 screws had fixed to Front part remove.</p>	

No.	Parts	Procedure	Remark
		<p>7) 6 screws had fixed on side refrigerant cooling part outside remove .</p> <p>⚠ Do not separate Heat Sink pulling Assy Piping Cooling piping compulsorily. (Is responsible for parts damage.)</p>	
		<p>8) 2 screws had fixed on side refrigerant cooling part inside remove.</p>	

Binding Wire 1

■ AM140FXVAGH

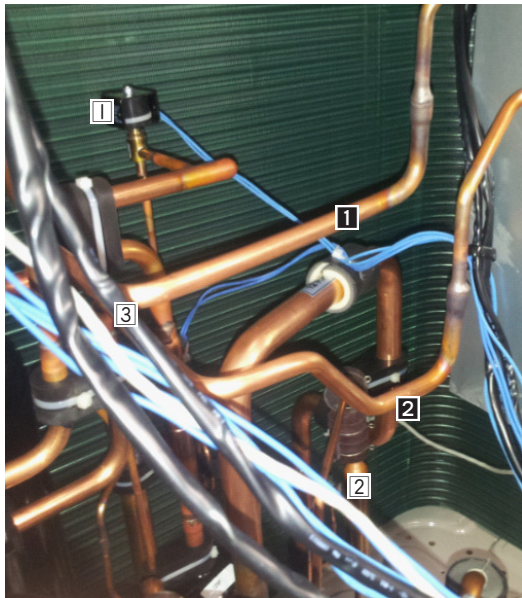


VALVE & SENSOR

No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	EVI Bypass Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGH	DB62-03808G	



VALVE & SENSOR

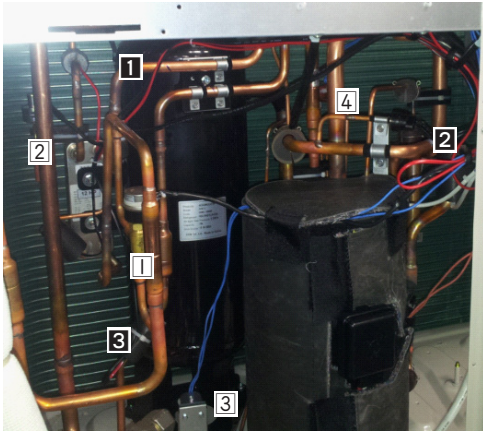
No	Valve & Sensor
1	EVI SOL Valve
2	Low Pressure Sensor
3	Hot Gas Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGH	DB62-04154D	
2	AM140FXVAGH	DB62-04154D	

Binding Wire 2

■ AM140FXVAGH

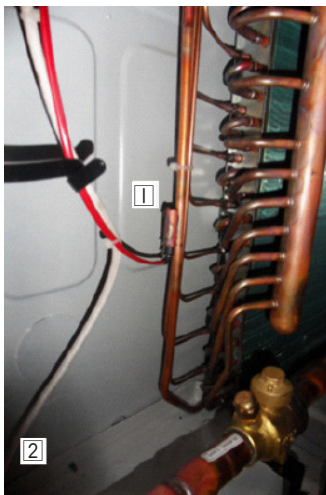


VALVE & SENSOR

No	Valve & Sensor
1	Expansion Valve
2	EVI EEV Valve
3	Accum Oil Return Valve
4	High Pressure Switch

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGH	DB62-03808C	
2	AM140FXVAGH	DB62-03808D	
3	AM140FXVAGH	DB62-03808E	



VALVE & SENSOR

No	Valve & Sensor
1	Cond Out Sensor
2	Outdoor Temperature Sensor



VALVE & SENSOR

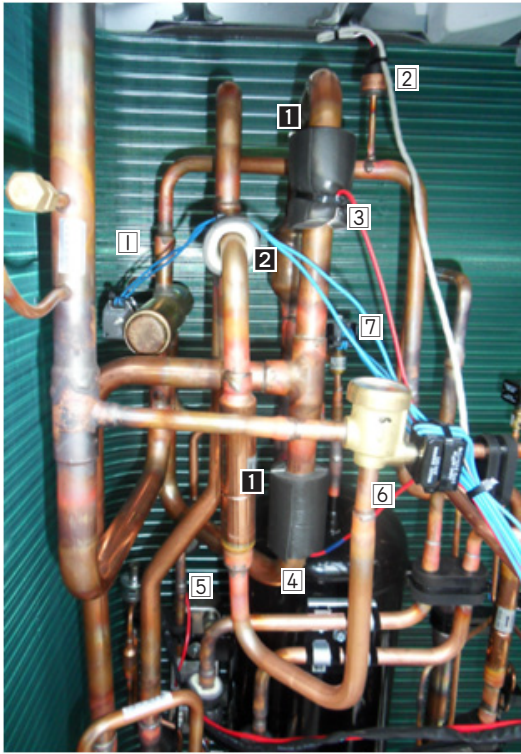
No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGH	DB62-03808C	

Binding Wire 1

■ AM140FXVAGR

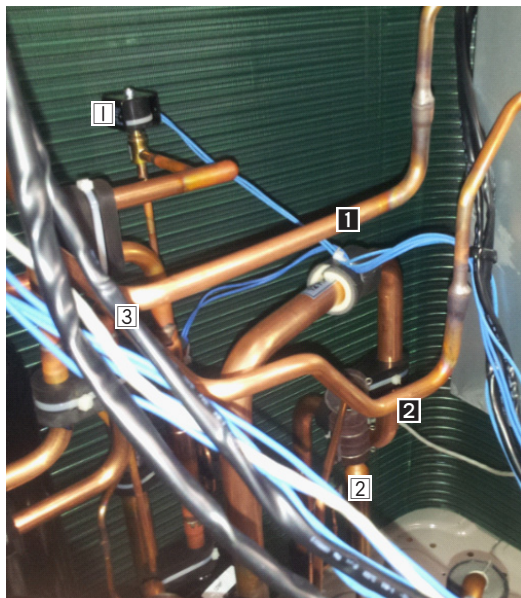


VALVE & SENSOR

No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	Suciton 1 Sensor
4	Suciton 2 Sensor
5	EVI Out Sensor
6	Main Cooling Valve
7	EVI Bypass Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGR	DB62-03808G	
2	AM140FXVAGR	DB62-04154C	



VALVE & SENSOR

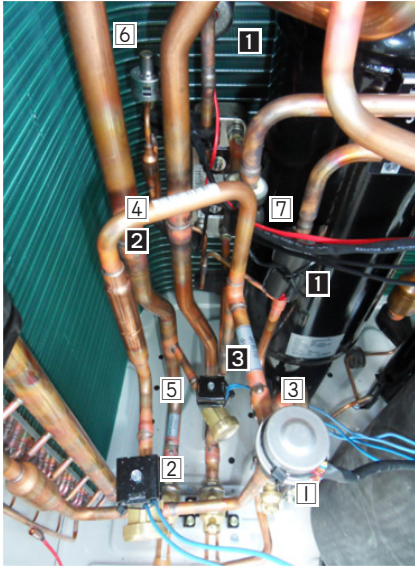
No	Valve & Sensor
1	EVI SOL Valve
2	Low Pressure Sensor
3	Hot Gas Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGR	DB62-04154D	
2	AM140FXVAGR	DB62-04154D	

Binding Wire 2

■ AM140FXVAGR



VALVE & SENSOR

No	Valve & Sensor
1	Main EEV Valve
2	OD EEV Valve
3	Accum Return Valve
4	EVI In Sensor
5	Hot Gas 2 Valve
6	EVI EEV Valve
7	Liquid Sensor

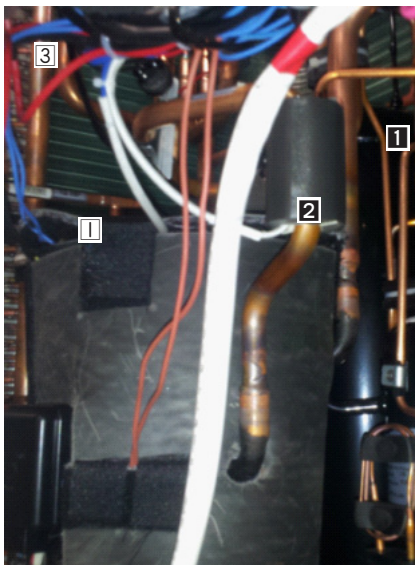
INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGR	DB62-03808C	
2	AM140FXVAGR	DB62-03808E	
3	AM140FXVAGR	DB62-04154B	



VALVE & SENSOR

No	Valve & Sensor
1	Cond Out Sensor
2	Outdoor Temperature Sensor



VALVE & SENSOR

No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor
3	High Pressure Switch

INSULATION

No	Model	Insu Code	Binding Wire
1	AM140FXVAGR	DB62-03808C	
2	AM140FXVAGR	DB62-03808D	

Binding Wire 3

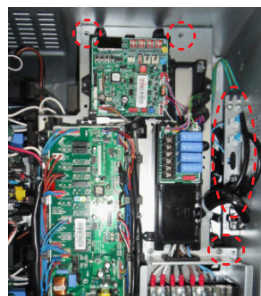
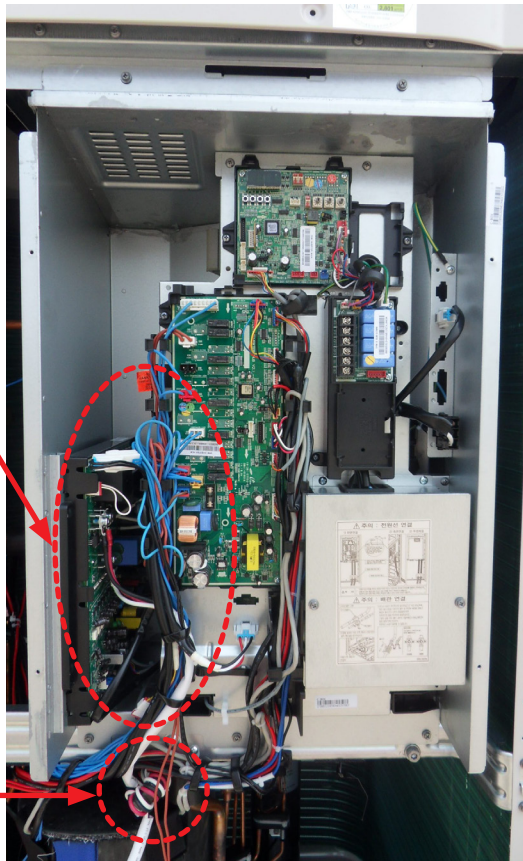
■ AM140FXV***



► Comp Wire fix by Holder Wire.



► Fix Comp Wire-Core to Bracket Beam Control Box using large size Cable Tie(350mm).

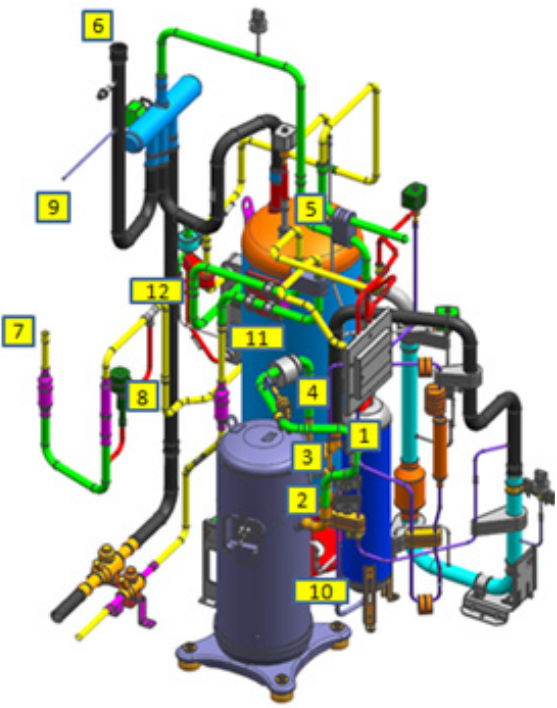
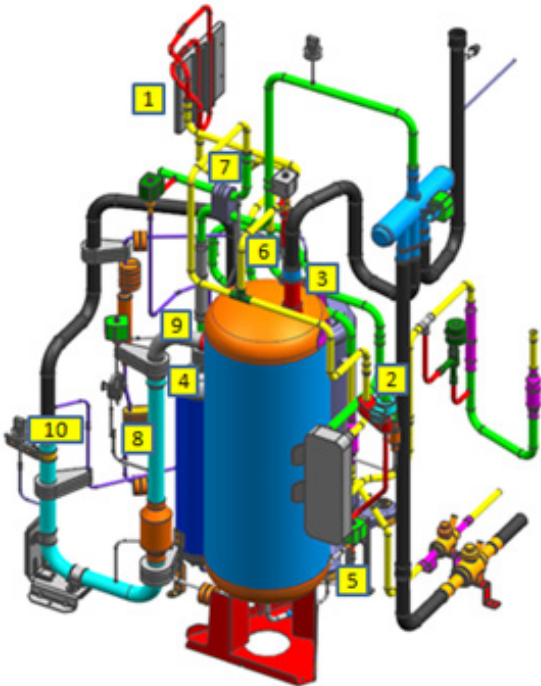


► Separate double layer structure of C/Box after remove 3 screws and connector.

[Reference Sheet]

Pipe Welding Position

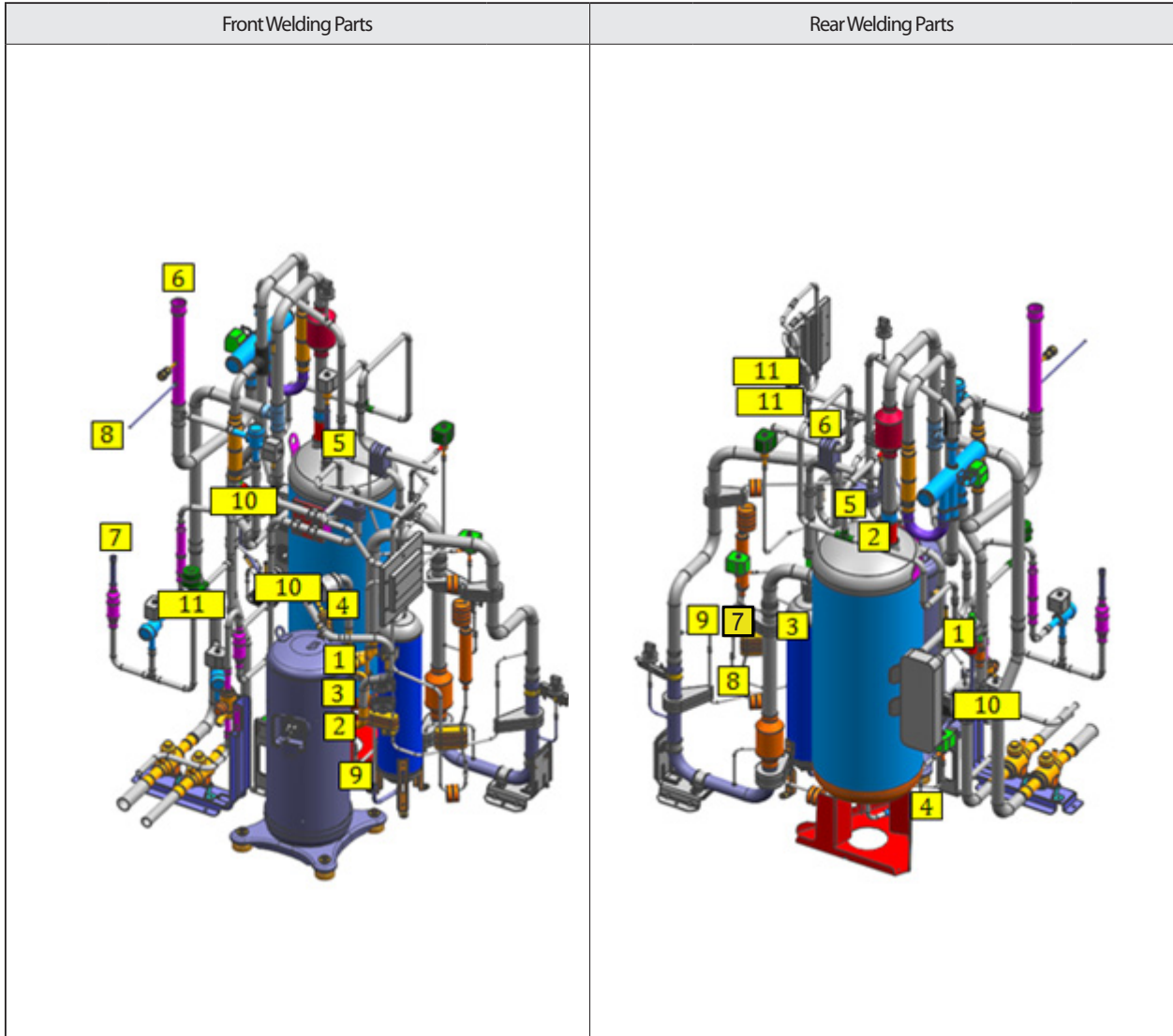
■ AM140FXVAGH/EU

Front Welding Parts			Rear Welding Parts		
					
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	1	1	Cooling+Subcooler In	2
2	Comp+Discharge	1	2	Subcooler+EVI Bypass	1
3	Comp+Vapor Injection	1	3	Accum+4Way	1
4	Discharge+Oil Sepa	1	4	Accum+Suction	1
5	4Way+Oil Sepa Out	1	5	Accum+Accum Oil Valve	1
6	4Way+Cond In	1	6	Accum+EVI Bypass	1
7	Expansion+Cond Out	1	7	Vapor Injection+EVI Bypass	1
8	Expansion+Subcooler	1	8	Hot Gas Valve+Suction	1
9	Pinch Pipe	1	9	Hot Gas Valve+Oil Sepa Out	1
10	Accum Oil Return Valve + Suction	1	10	Oil Return+Suction	1
11	Liquid Ball Valve+Subcooler In	1			
12	Subcooler+Subcooler In	1			

[Reference Sheet]




Pipe Welding Position

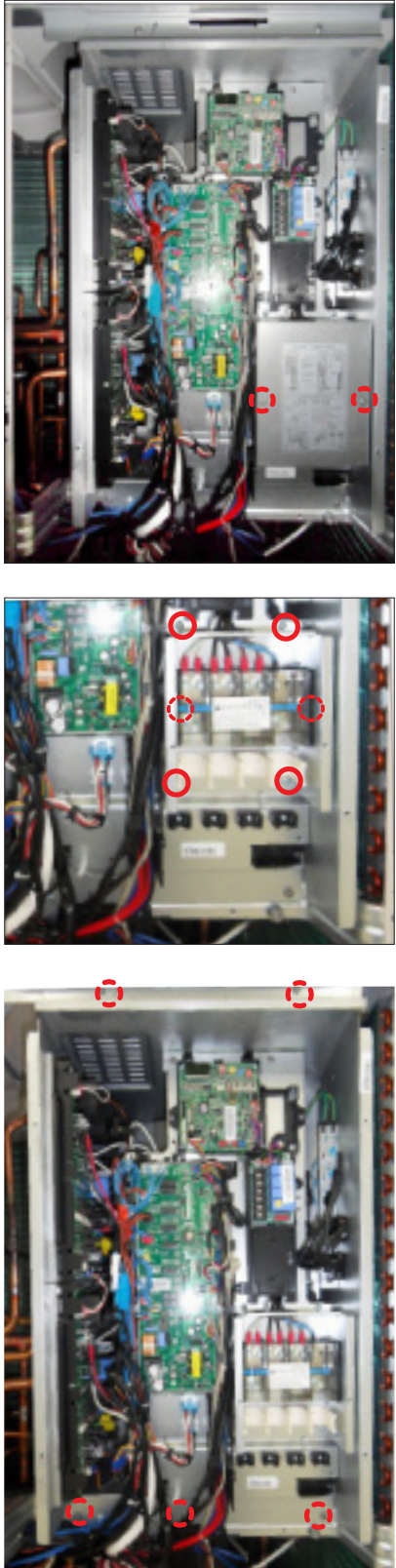
■ AM140FXVAGR/EU

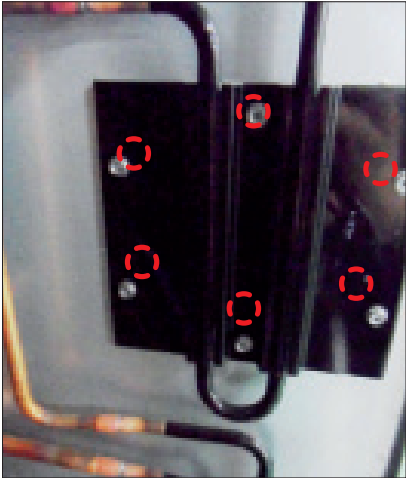
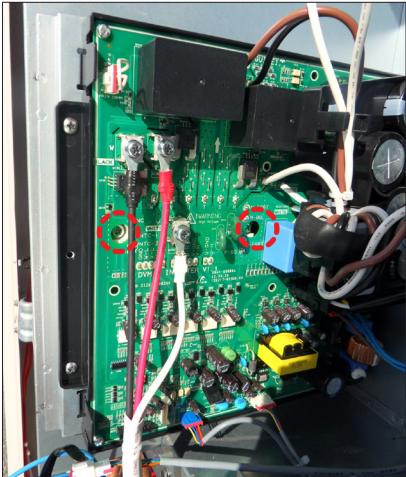


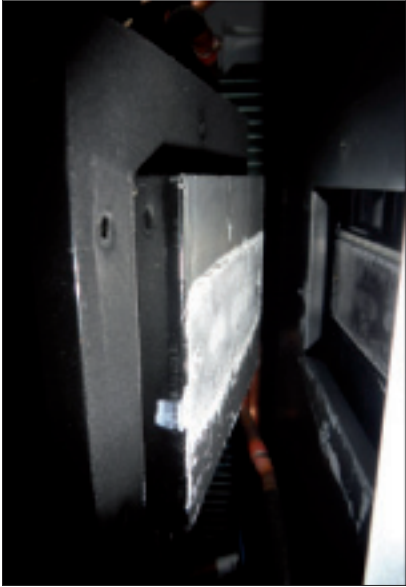
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	1	1	Subcooler+EVI Bypass	1
2	Comp+Discharge	1	2	Accum+4Way	1
3	Comp+Vapor Injection	1	3	Accum+Suction	1
4	Discharge+Oil Sepa	1	4	Accum+Accum Oil Valve	1
5	4Way+Oil Sepa Out	1	5	Accum+EVI Bypass	1
6	4Way+Cond In	1	6	Vapor Injection+EVI Bypass	1
7	Expansion+Cond Out	1	7	Hot Gas Valve+Suction	1
8	Pinch Pipe	1	8	Hot Gas Valve+Oil Sepa Out	1
9	Accum Oil Return Valve+Suction	1	9	Oil Return+Suction	1
10	Subcooler+Subcooler In	1	10	LQD Valve+Subcooler In	1
11	Expansion+Subcooler	1	11	Cooling+Subcooler In	2
12	LQD Ball Valve+Subcooler In	1			

3-2-3 AM160/180/200/220FXV***

No.	Parts	Procedure	Remark
1	Electrical equipment Part	<p>1) 11 screws that is fixing CABINET remove.(Use + Screw driver)</p> <p>2) Remove 4 screws that is fixing and separate Cover Control Box. (Use + Screw driver)</p> <p>3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.</p>	  

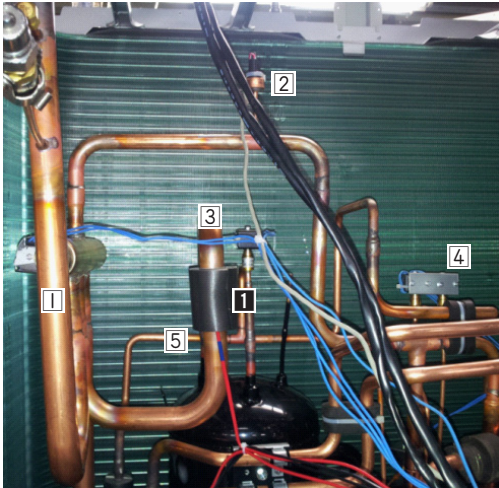
No.	Parts	Procedure	Remark
		<p>4) 2 screws had fixed in terminal block cover when change power terminal block, communication terminal block remove.</p> <p>5) 2 screws had fixed in terminal block after remove 4 screws had fixed to Cabinet for terminal block protection remove.</p> <p>6) 5 screws had fixed to Front part remove.</p>	 <p>The 'Remark' column contains three photographs of the device's interior. The top photo shows a wide view of the internal components, with two red dashed circles on the right side. The middle photo is a close-up of a terminal block area, with four red dashed circles highlighting screw locations. The bottom photo is another wide view, with five red dashed circles highlighting screw locations on the front panel and terminal block area.</p>

No.	Parts	Procedure	Remark
		<p>7) 6 screws had fixed on side refrigerant cooling part outside remove .</p> <p>⚠ Do not separate Heat Sink pulling Assy Piping Cooling piping compulsorily. (Is responsible for parts damage.)</p> <p>8) 2 screws had fixed on side refrigerant cooling part inside remove.</p>	 

No.	Parts	Procedure	Remark
	<p data-bbox="300 277 418 309">< Reference ></p> <p data-bbox="316 315 402 347">Heat Sink</p>	<p data-bbox="485 315 880 376">To Heat Sink Thermal Grease Spread service work</p> <ul data-bbox="485 461 880 707" style="list-style-type: none"><li data-bbox="485 461 880 562">- Spread enough Thermal Grease evenly on Plate Heat Sink back whole using roller or brush.<li data-bbox="485 645 880 707">- Reassemble Plate Heat Sink in reverse order of disassembly.	

Binding Wire 1

■ AM160/180/200/220FXVAGH

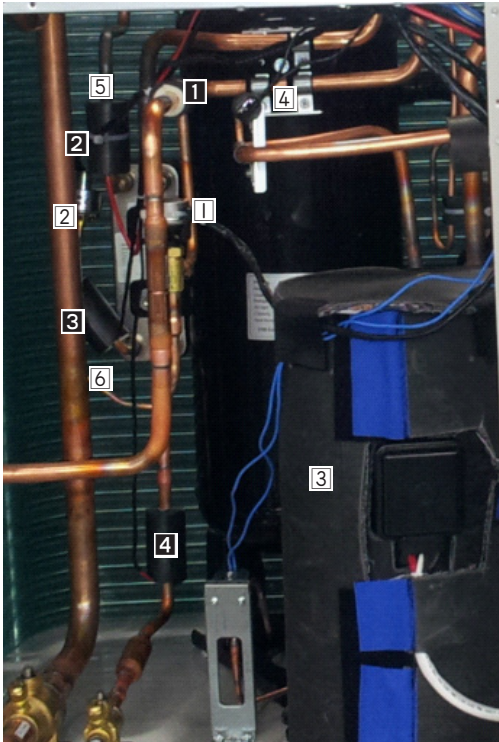


VALVE & SENSOR

No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	EVI Bypass Valve
4	EVI SOL Valve
5	Suction Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGH	DB62-03808A	



VALVE & SENSOR

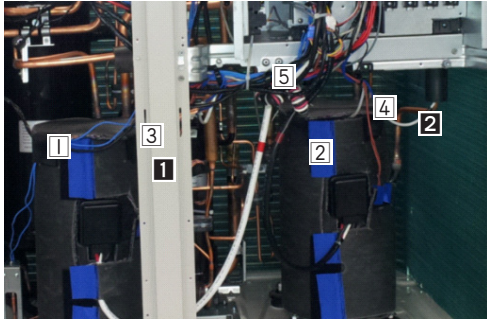
No	Valve & Sensor
1	Expansion Valve
2	EVI EEV Valve
3	Accum Oil Return Valve
4	High Pressure Switch #1
5	EVI Out Sensor
6	EVI In Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGH	DB62-04154B	
2	AM160/180/200/220FXVAGH	DB62-03808D	
3	AM160/180/200/220FXVAGH	DB62-03808E	
4	AM160/180/200/220FXVAGH	DB62-03808C	

Binding Wire 2

■ AM160/180/200/220FXVAGH

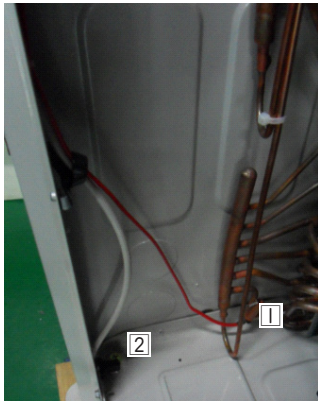


VALVE & SENSOR

No	Valve & Sensor
1	Comp Top #1 Sensor
2	Comp Top #1 Sensor
3	Discharge #1 Sensor
4	Discharge #2 Sensor
5	High Pressure Switch #2

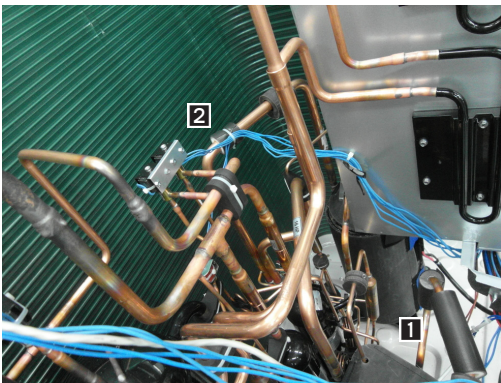
INSULATION

No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGH	DB62-03808A	
	AM160/180/200/220FXVAGH	DB62-03808D	
2	AM160/180/200/220FXVAGH	DB62-03808C	
	AM160/180/200/220FXVAGH	DB62-03808D	



VALVE & SENSOR

No	Valve & Sensor
1	Cond Out Sensor
2	Outdoor Temperature Sensor

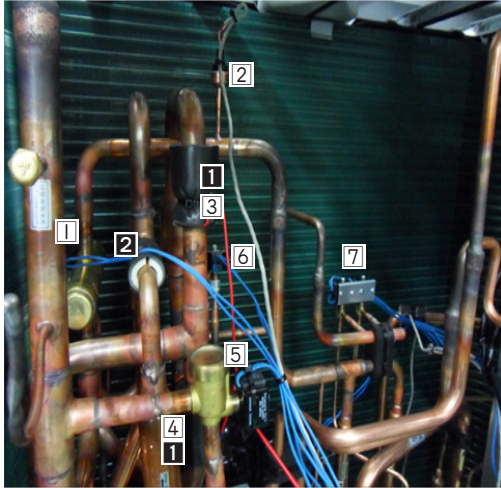


INSULATION

No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGH	DB62-04154J	
2	AAM160/180/200/220FXVAGH	DB62-04154C	

Binding Wire 1

■ AM160/180/200/220FXVAGR

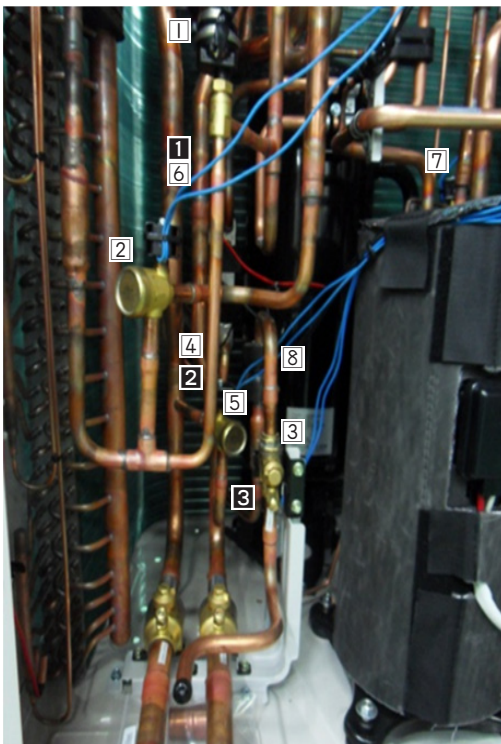


VALVE & SENSOR

No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	Suciton 1 Sensor
4	Suciton 2 Sensor
5	Main Cooling Valve
6	EVI Bypass Valve
7	EVI SOL Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGR	DB62-03808A	
2	AM160/180/200/220FXVAGR	DB62-04154C	



VALVE & SENSOR

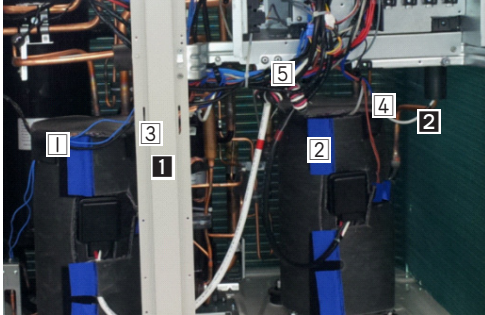
No	Valve & Sensor
1	Main EEV Valve
2	OD EEV Valve
3	ARV Valve
4	EVI In Sensor
5	Hot Gas 2 Valve
6	EVI Out Sensor
7	Hot Gas 1 Valve
8	Liquid Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGR	DB62-03808C	
2	AM160/180/200/220FXVAGR	DB62-03808E	
3	AM180/200/220FXVAGR	DB62-03808D	
	AM160FXVAGR	DB62-03808C	

Binding Wire 2

■ AM160/180/200/220FXVAGR

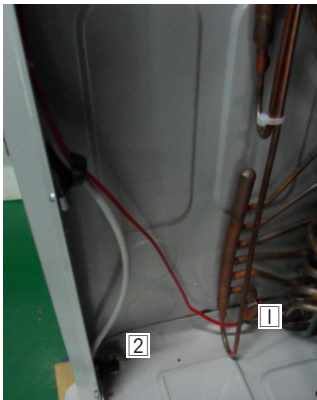


VALVE & SENSOR

No	Valve & Sensor
1	Comp Top #1 Sensor
2	Comp Top #1 Sensor
3	Discharge #1 Sensor
4	Discharge #2 Sensor
5	High Pressure Switch #2

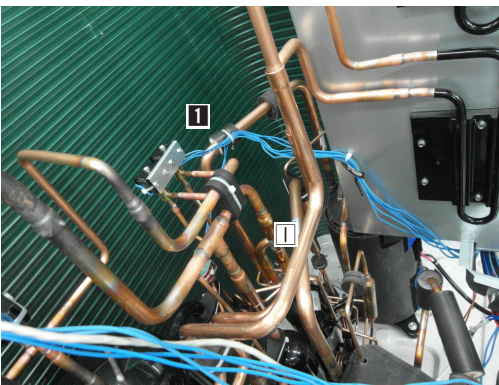
INSULATION

No	Model	Insu Code	Binding Wire
1	AM200/220FXVAGR	DB62-03808D	
	AM160/180FXVAGR	DB62-03808C	
2	AM180/200/220FXVAGR	DB62-03808D	
	AM160FXVAGR	DB62-03808C	



VALVE & SENSOR

No	Valve & Sensor
1	Cond Out Sensor
2	Outdoor Temperature Sensor



VALVE & SENSOR

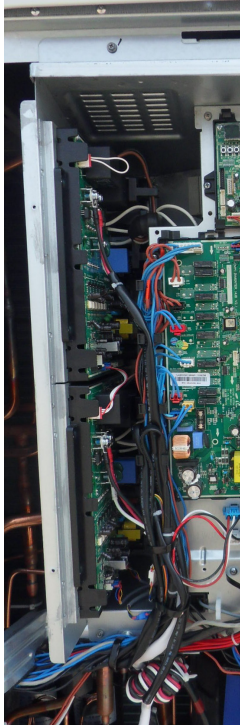
No	Valve & Sensor
1	Low Pressure Sensor

INSULATION

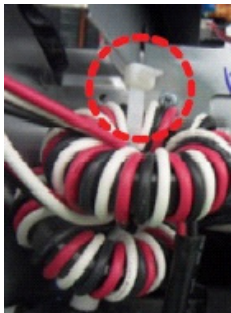
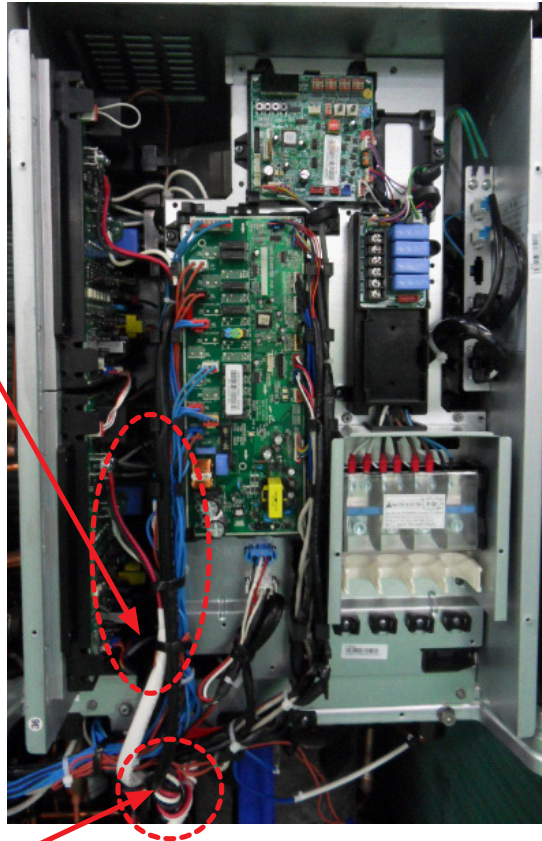
No	Model	Insu Code	Binding Wire
1	AM160/180/200/220FXVAGR	DB62-04154C	

Binding Wire 3

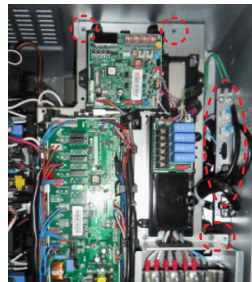
■ AM160/180/200/220FXVAGH



► Comp Wire fix by Holder Wire.



► Fix Comp Wire-Core to Bracket Beam Control Box using large size Cable Tie(350mm).



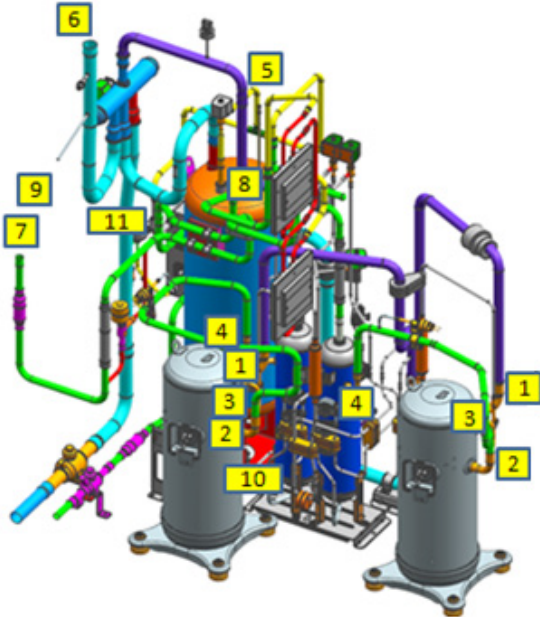
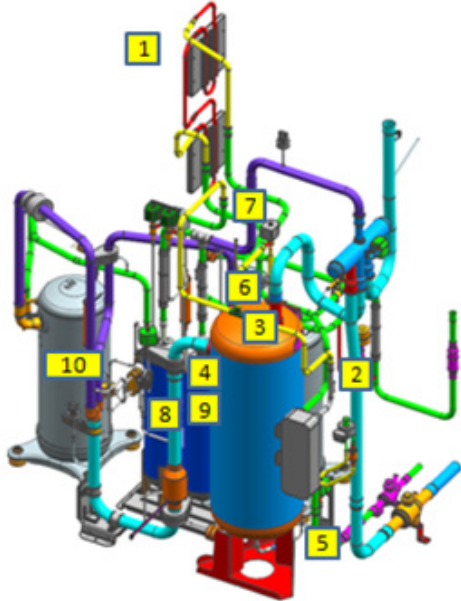
► Separate double layer structure of C/Box after remove 3 screws and connector.



[Reference Sheet]

Pipe Welding Position 4

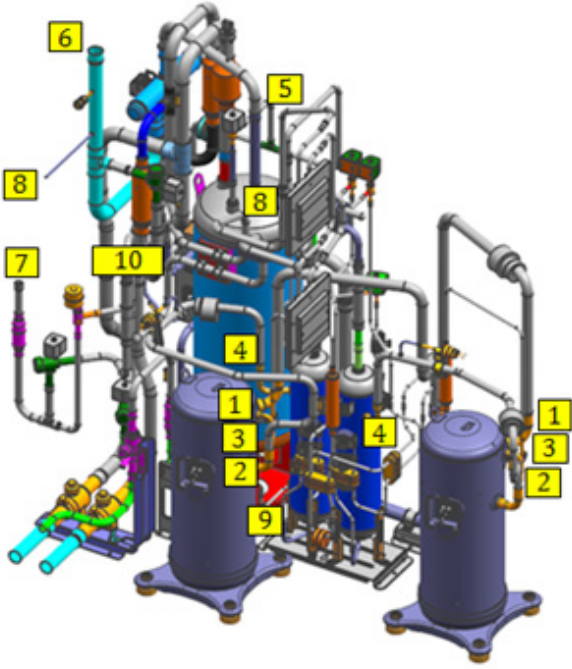
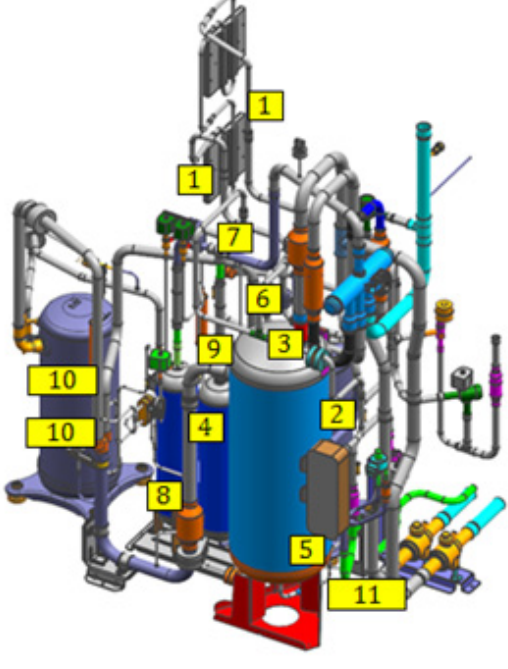
■ AM160/180/200/220FXVAGH/EU

Front Welding Parts			Rear Welding Parts		
					
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	2	1	Cooling+Subcooler In	1
2	Comp+Discharge	2	2	Subcooler+EVI Bypass	1
3	Comp+Vapor Injection	2	3	Accum+4Way	1
4	Discharge+Oil Sepa	2	4	Accum+Suction	1
5	4Way+Oil Sepa Out	1	5	Accum+Accum Oil Vavle	1
6	4Way+Cond In	1	6	Accum+EVI Bypass	1
7	Expansion+Cond Out	1	7	Vapor Injection+EVI Bypass	1
8	Expansion+Cooling	1	8	Hot Gas Vavle +Suction	1
9	Pinch Pipe	1	9	Hot Gas Vavle +Oil Sepa Out	1
10	Accum Oil Return Valve + Suction	1	10	Oil Return+Suction	2
11	Subcooler+Subcooler In	1			


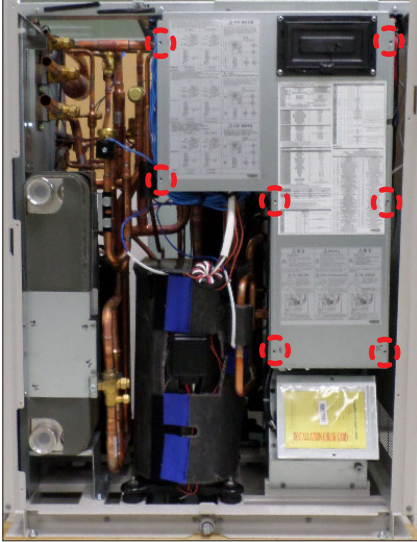
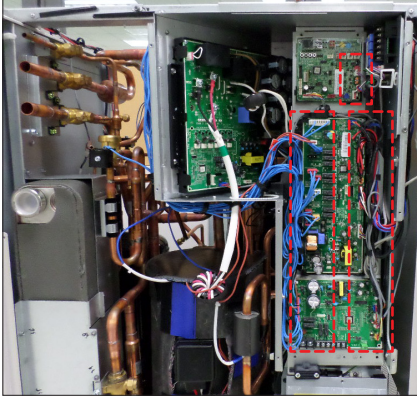
[Reference Sheet]

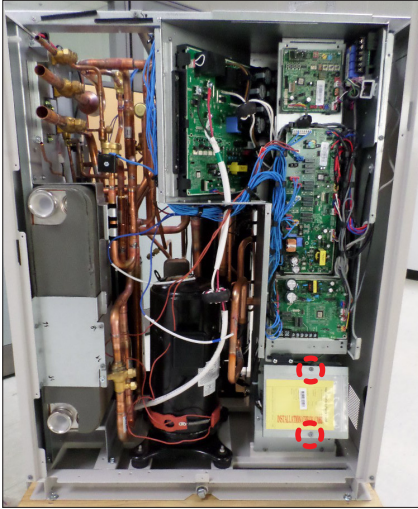
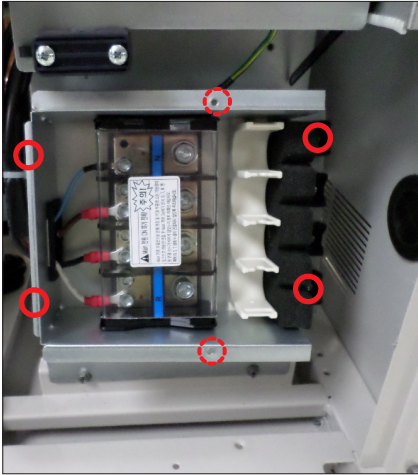
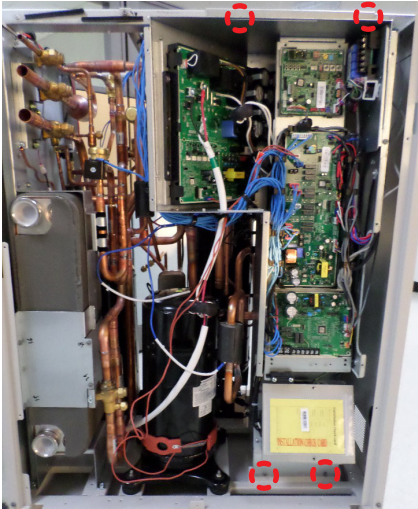
Pipe Welding Position 4

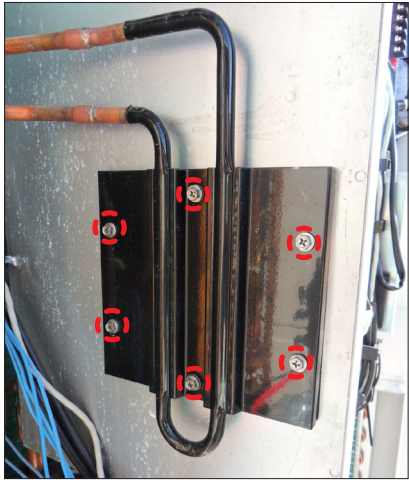
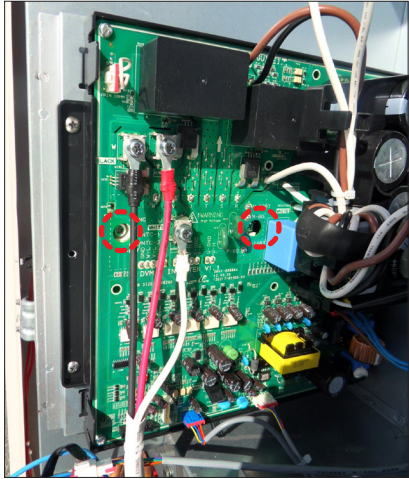
■ AM160/180/200/220FXVAGR/EU

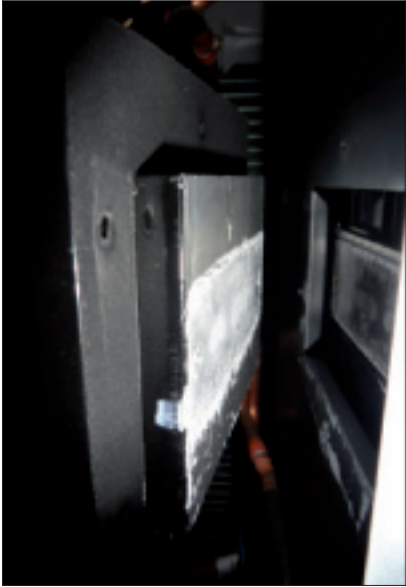
Front Welding Parts			Rear Welding Parts		
					
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	2	1	Cooling+Subcooler In	2
2	Comp+Discharge	2	2	Subcooler+EVI Bypass	1
3	Comp+Vapor Injection	2	3	Accum+4Way	1
4	Discharge+Oil Sepa	2	4	Accum+Suction	1
5	4Way+Oil Sepa Out	1	5	Accum+Accum Oil Vavle	1
6	4Way+Cond In	1	6	Accum+EVI Bypass	1
7	Expansion+Cond Out	1	7	Vapor Injection+EVI Bypass	1
8	Pinch Pipe	1	8	Hot Gas Vavle +Suction	1
9	Accum Oil Return Valve+Suction	1	9	Hot Gas Vavle +Oil Sepa Out	1
10	Subcooler+Expansion	1	10	Oil Return+Suction	2
			11	LQD Ball Valve+Subcooler	1

3-2-4 AM080/100/120FXWA**

No.	Parts	Procedure	Remark
1	Electrical equipment Part	<p>1) 9 screws that is fixing CABINET remove. (Use + Screw driver)</p> <p>2) Remove 7 screws that is fixing and separate Cover Control Box. (Use + Screw driver)</p> <p>3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.</p>	  

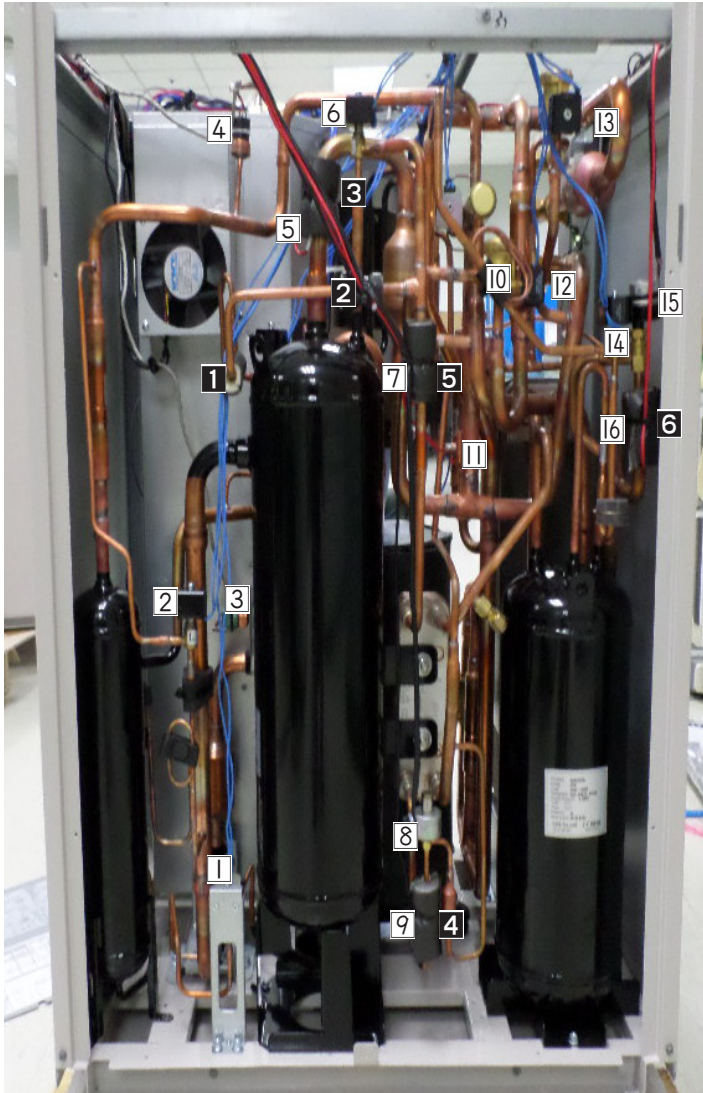
No.	Parts	Procedure	Remark
		<p>4) 2 screws had fixed in terminal block cover when change power terminal block, communication terminal block remove.</p>	
		<p>5) 2 screws had fixed in terminal block after remove 4 screws had fixed to Cabinet for terminal block protection remove.</p>	
		<p>6) 4 screws had fixed to Front part remove.</p>	

No.	Parts	Procedure	Remark
		<p>7) 6 screws had fixed on side refrigerant cooling part outside remove .</p> <p>⚠ Do not separate Heat Sink pulling Assy Piping Cooling piping compulsorily. (Is responsible for parts damage.)</p>	
		<p>8) 2 screws had fixed on side refrigerant cooling part inside remove.</p>	

No.	Parts	Procedure	Remark
	<p>< Reference > Heat Sink</p>	<p>To Heat Sink Thermal Grease Spread service work</p> <ul style="list-style-type: none"> - Spread enough Thermal Grease evenly on Plate Heat Sink back whole using roller or brush. - Reassemble Plate Heat Sink in reverse order of disassembly. 	

Binding Wire 1

■ AM080/100/120FXWA**



VALVE & SENSOR

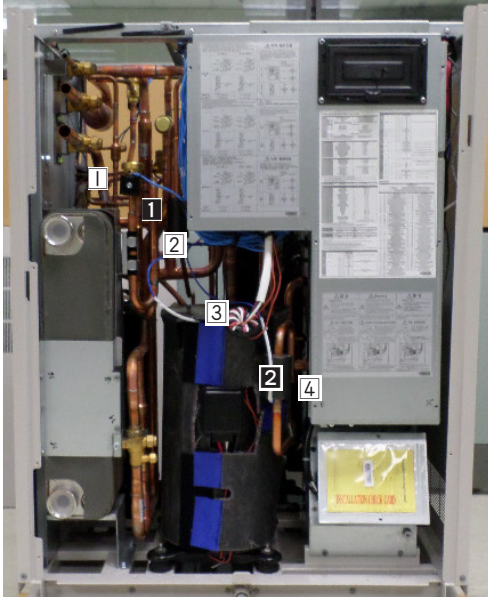
No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	Suciton 1 Sensor
4	Suciton 2 Sensor
5	Main Cooling Valve
6	EVI Bypass Valve
7	EVI SOL Valve
8	4WAY Valve
9	High Pressure Sensor
10	Suciton 1 Sensor
11	Suciton 2 Sensor
12	Main Cooling Valve
13	EVI Bypass Valve
14	EVI SOL Valve
15	Main Cooling Valve
16	EVI Bypass Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXWA**	DB62-03808A	
2	AM080/100/120FXWA**	DB62-04154C	
3	AM080/100/120FXWA**	DB62-03808A	
4	AM080/100/120FXWA**	DB62-04154C	
5	AM080/100/120FXWA**	DB62-03808A	
6	AM080/100/120FXWA**	DB62-04154C	

Binding Wire 2

■ AM080/100/120FXWA**

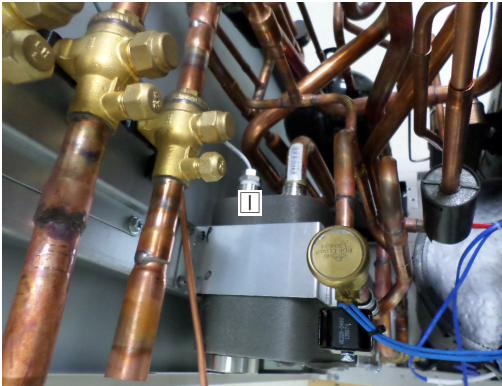


VALVE & SENSOR

No	Valve & Sensor
1	Liquid valve
2	Liquid temp. sensor
3	COMP TOP sensor
4	Discharge temp. sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM080/100/120FXWA**	DB62-04154A	
2	AM080/100/120FXWA**	DB62-03808D	

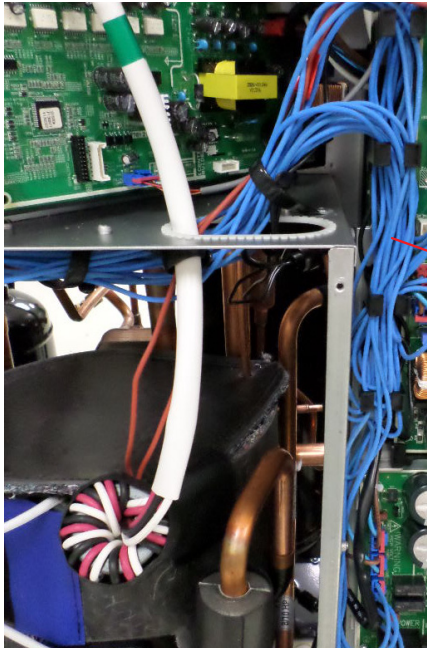


VALVE & SENSOR

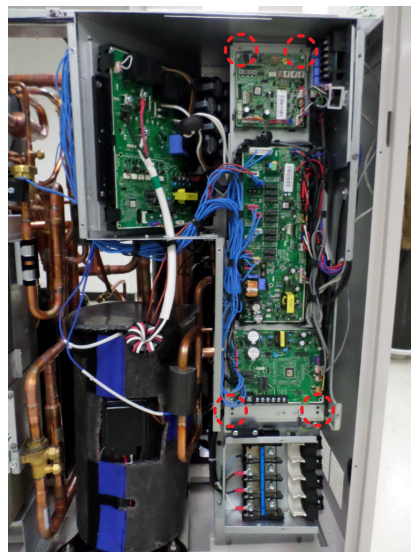
No	Valve & Sensor
1	Water temp. sensor

Binding Wire 3

■ AM080/100/120FXWA**



▶ Comp wire & valve,sensor wires fix by Holder wire with cover bushing hole.



▶ Separate double layer structure of C/Box after remove 3 screws and connector.


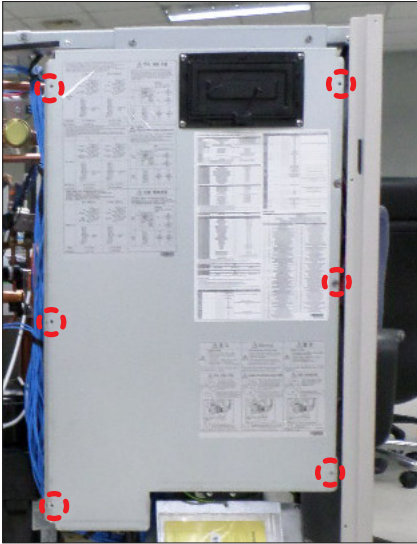
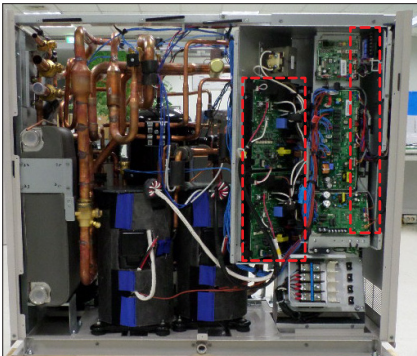
[Reference Sheet]

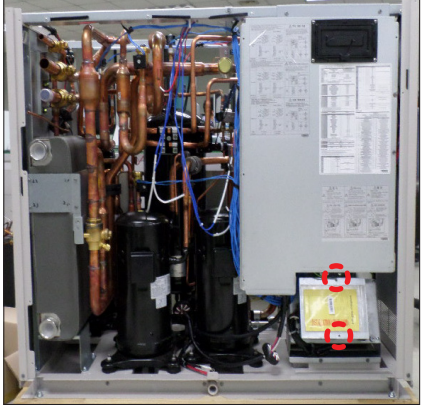
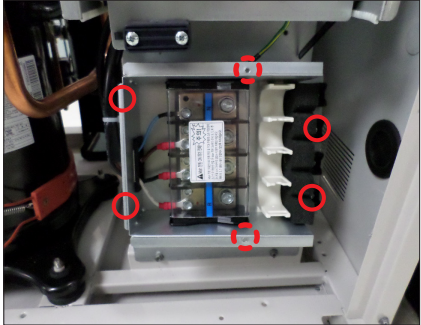
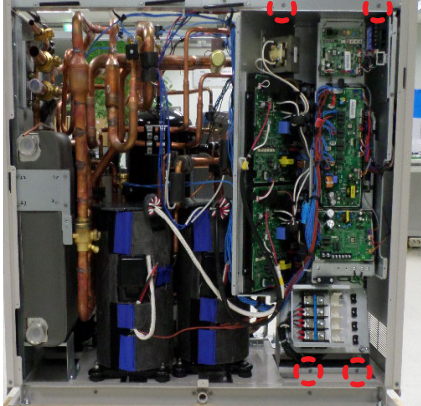
Pipe Welding Position 4

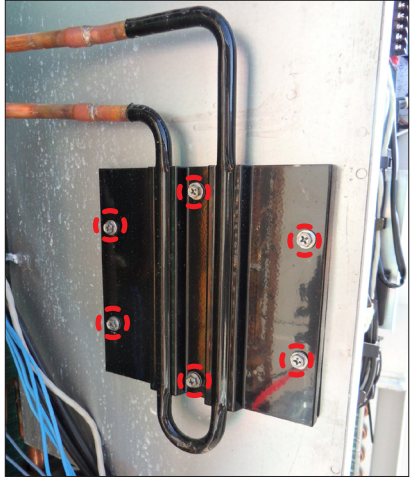
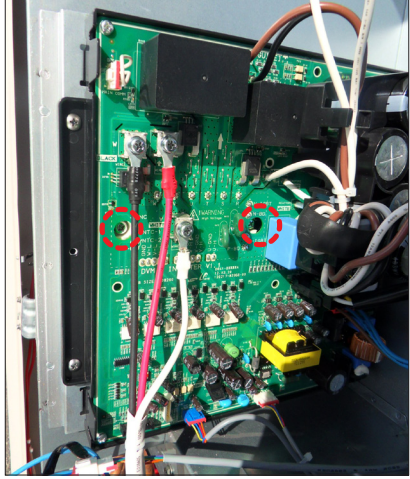
■ AM080/100/120FXWA**

Front Welding Parts			Rear Welding Parts		
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	1	11	Subcooler+EVI Bypass	1
2	Comp+Discharge	1	12	Subcooler+Receiver	1
3	Comp+Vapor Injection	1	13	Hot Gas Vavle+4way	1
4	Discharge+Oil Sepa	1	14	Hot Gas Vavle+Receiver	1
5	4Way+Oil Sepa Out	1	15	Receiver+Expansion	1
6	4Way+Cond In	1	16	Cond+Expansion	1
7	4Way+Accum	1	17	Expansion+Tube Liquid	1
8	Accum+Suction	1	18	Accum+Accum Oil Vavle	1
9	Accum+EVI Bypass	1	19	Accum Oil Vavle+Suction	1
10	Vapor Injection+EVI Bypass	1	20	Subcooler+Tube Liquid	2

3-2-5 AM200FXWA**

No.	Parts	Procedure	Remark
1	Electrical equipment Part	<p>1) 9 screws that is fixing CABINET remove.(Use + Screw driver)</p> <p>2) Remove 6 screws that is fixing and separate Cover Control Box. (Use + Screw driver)</p> <p>3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.</p>	  

No.	Parts	Procedure	Remark
		<p>4) 2 screws had fixed in terminal block cover when change power terminal block, communication terminal block remove.</p>	
		<p>5) 2 screws had fixed in terminal block after remove 4 screws had fixed to Cabinet for terminal block protection remove.</p>	
		<p>6) 4 screws had fixed to Front part remove.</p>	

No.	Parts	Procedure	Remark
		<p>7) 6 screws had fixed on side refrigerant cooling part outside remove .</p> <p>⚠ Do not separate Heat Sink pulling Assy Piping Cooling piping compulsorily. (Is responsible for parts damage.)</p>	
		<p>8) 2 screws had fixed on side refrigerant cooling part inside remove.</p>	

Binding Wire 1

■ AM200FXWA**



VALVE & SENSOR

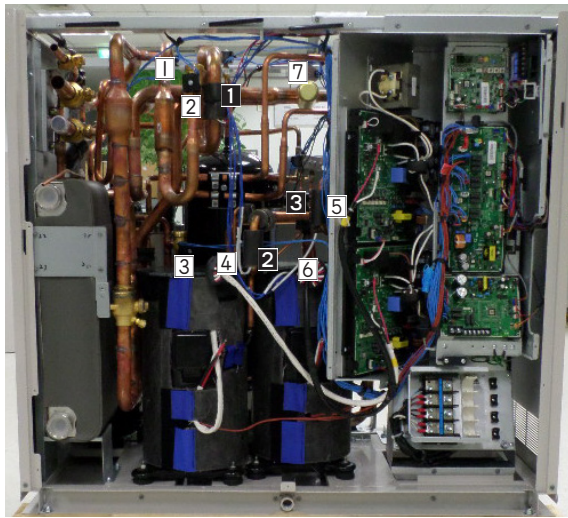
No	Valve & Sensor
1	Low pressure sensor
2	ACCUM. Return valve
3	HOT GAS #1 valve
4	High pressure sensor
5	EVI valve
6	SUCTION #2 temp. sensor
7	Subcooler inlet temp. sensor
8	Liquid temp. sensor
9	HOT GAS #2 valve
10	Main EEV
11	COND OUT temp. sensor
12	Bypass valve
13	High pressure sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM200FXWA**	DB62-04154A	
2	AM200FXWA**	DB62-03808C	
3	AM200FXWA**	DB62-03808E	
4	AM200FXWA**	DB62-03808D	
2	AM200FXWA**	DB62-03808D	

Binding Wire 2

■ AM200FXWA**

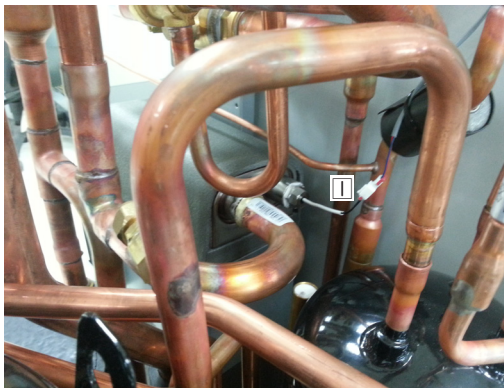


VALVE & SENSOR

No	Valve & Sensor
1	HOT GAS #2 valve
2	Main cooling valve
3	COMP TOP sensor
4	Discharge temp. sensor
5	Discharge temp. sensor
6	COMP TOP sensor
7	4WAY VALVE

INSULATION

No	Model	Insu Code	Binding Wire
1	AM200FXWA**	DB62-03808A	
2	AM200FXWA**	DB62-03808D	
3	AM200FXWA**	DB62-03808D	



VALVE & SENSOR

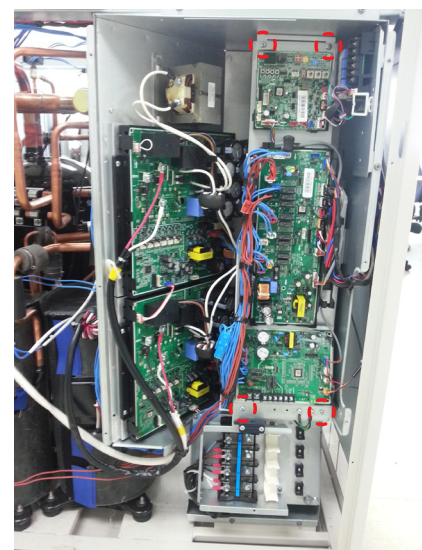
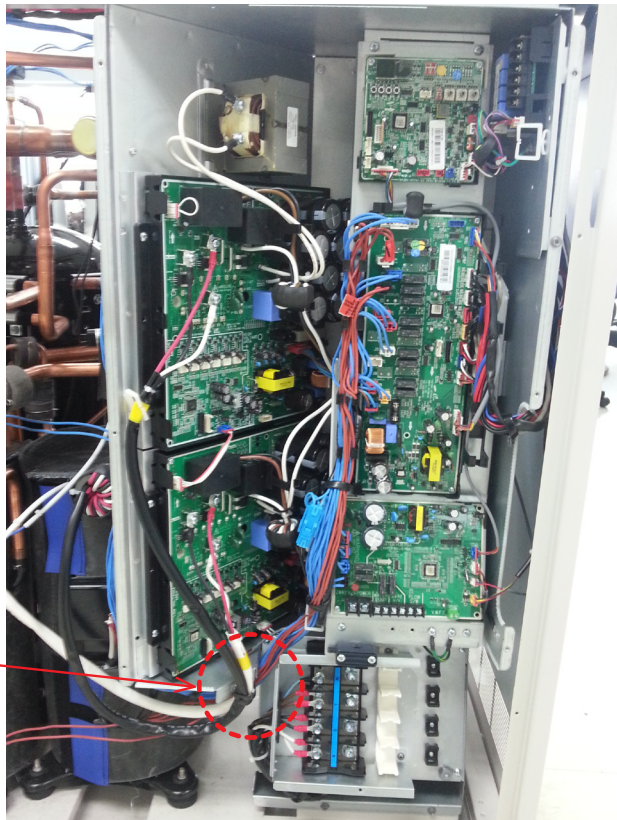
No	Valve & Sensor
1	Water temp. sensor

Binding Wire 3

■ AM200FXWA**



► Comp wire & valve,sensor wires fix by Holder wire.

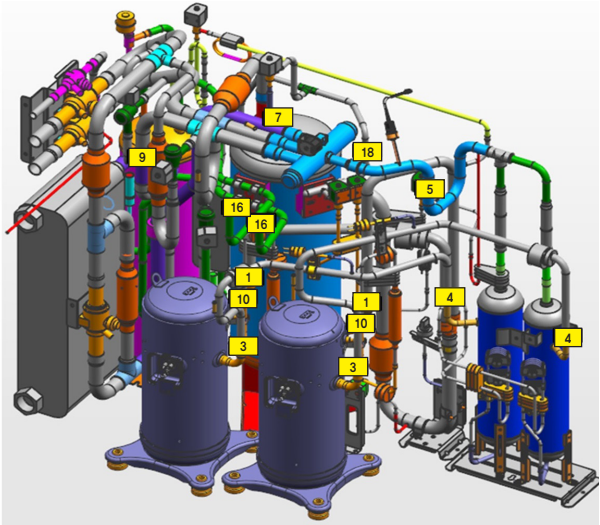
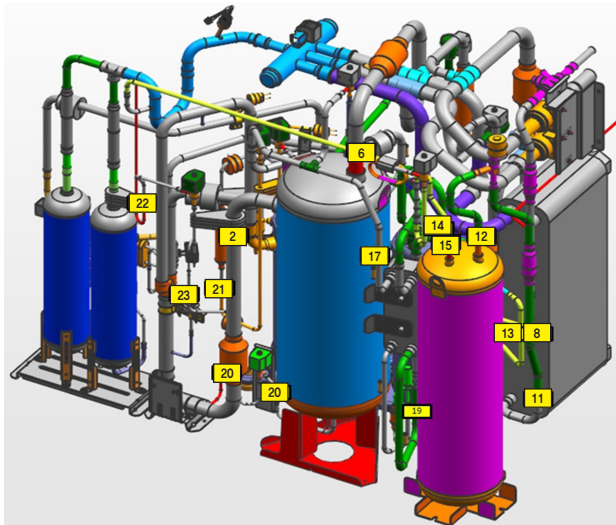


► Separate double layer structure of C/Box after remove 3 screws and connector.

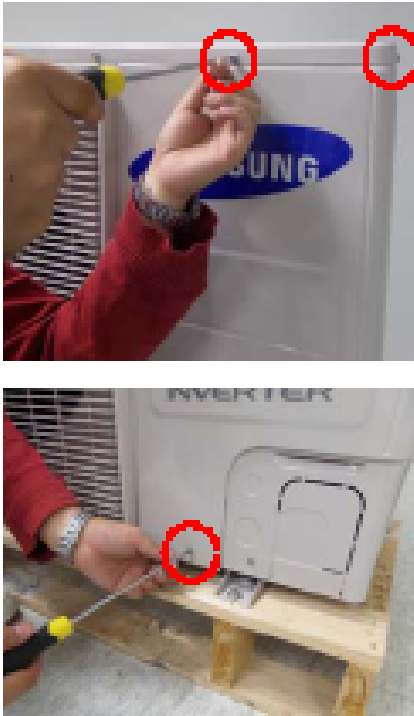
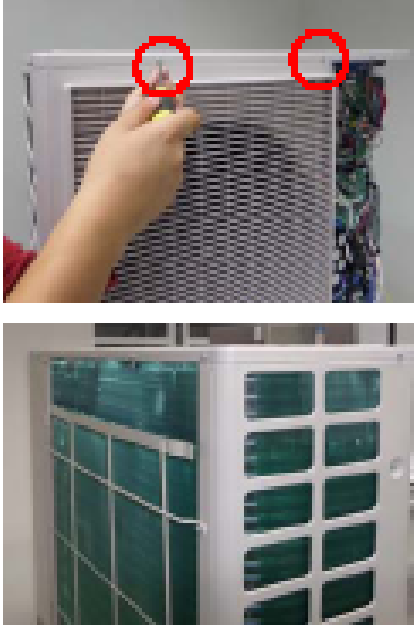

[Reference Sheet]

Pipe Welding Position

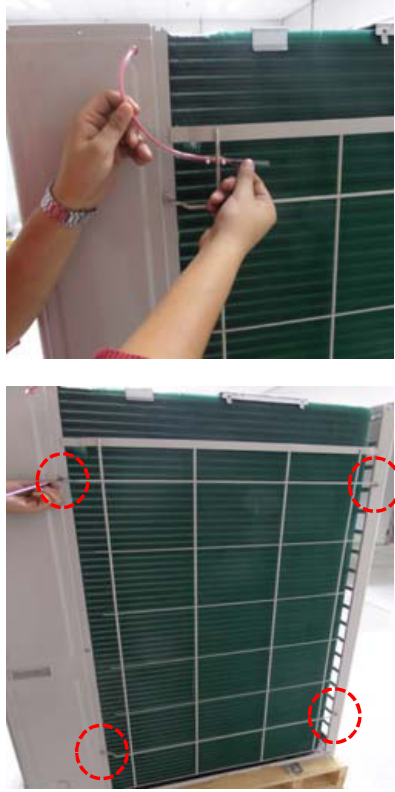

■ AM200FXWA**

Front Welding Parts			Rear Welding Parts		
					
No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	2	13	Expansion+Tube Liquid	1
2	Accum+Suction	1	14	Receiver+Subcooler	1
3	Comp+Discharge	2	15	Receiver+Bypass hot gas	1
4	Discharge+Oil Sepa	2	16	Subcooler+Tube Liquid	2
5	4Way+Oil Sepa	1	17	Subcooler+EVI Bypass	1
6	4Way+Accum	1	18	EVI Bypass+Vapor Injection	1
7	Accum+EVI Bypass	1	19	Subcooler+Tube Liquid	1
8	4WAY+Tube Liquid	1	20	Accum+Accum oil	1
9	4WAY+Cond	1	21	Vapor Injection+Vapor Injection	1
10	Comp+Vapor Injection	2	22	Bypass hot gas+Oil Sepa	1
11	Expansion+Cond	1	23	Bypass hot gas+Suction	1
12	Receiver+Expansion	1			

3-2-6 AM080/090FXMDGH**

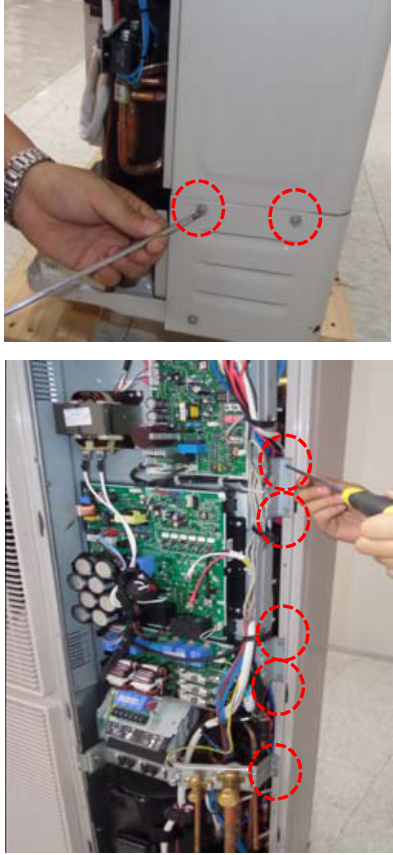

No.	Parts	Procedure	Remark
1	Cabi Front Right	<p>⚠ Make sure the power is disconnected before work</p> <p>1) Remove 3 screws (use "+" screw driver)</p>	
2	Top Cover	<p>1) Remove 8 screws around cover (use "+" screw driver)</p>	
3	Cabi Front Install	<p>1) Remove 1 screws (use "+" screw driver) and lift up to take off</p>	

*Exterior

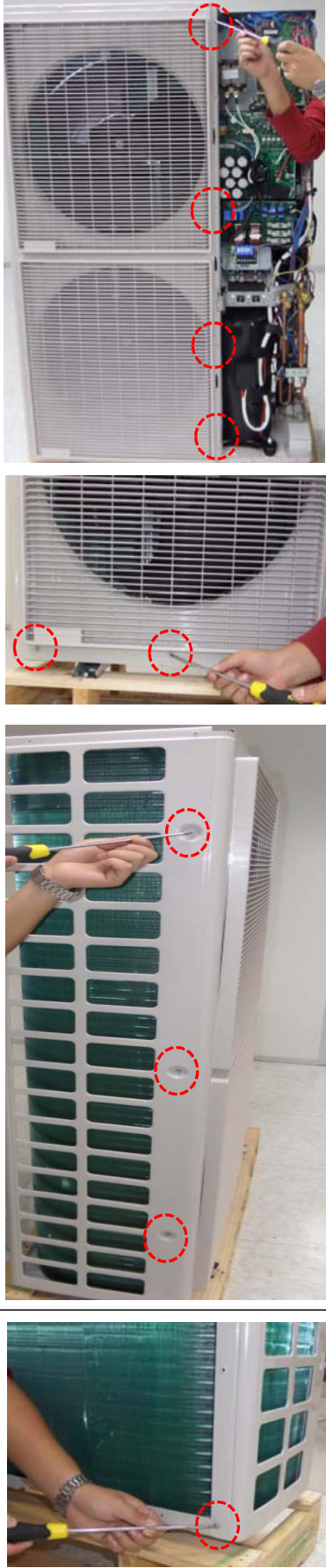
No.	Parts	Procedure	Remark
4	Guard Cond	1) Take off the sensor 2) Remove 4 screws (use "+" screw driver)	
5	CABI BACK RIGHT	1) Take out the sensor wire through the hole on cabinet 2) Remove 10 screws (use "+" screw driver)	

Disassembly and Reassembly


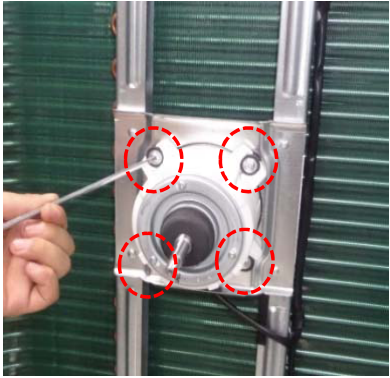
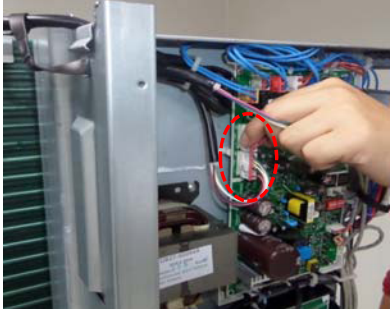


* Exterior

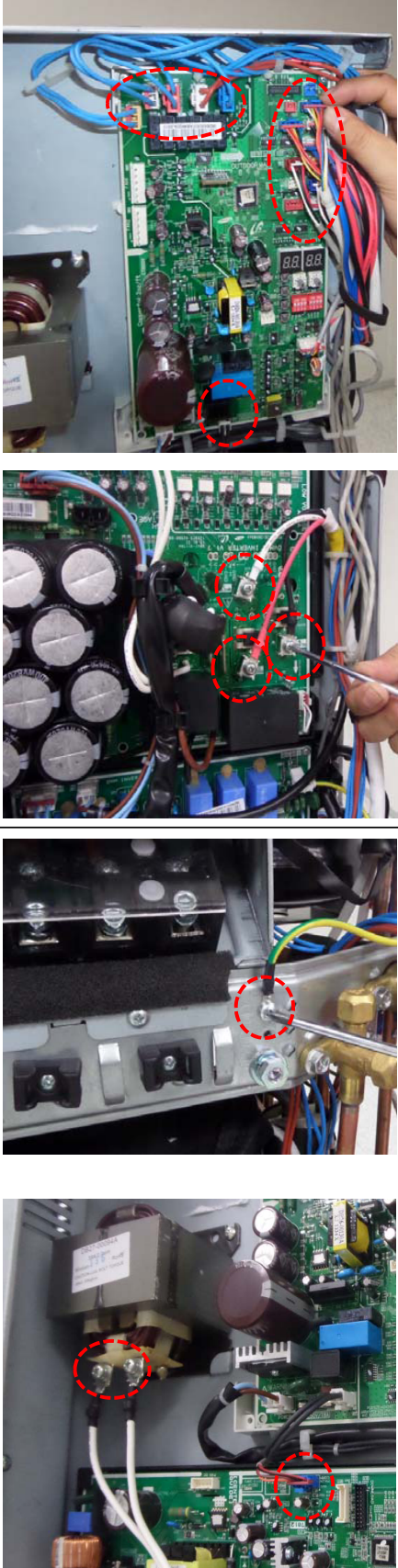
No.	Parts	Procedure	Remark
			
6	Cabi Back Install	1) Remove 1 scrwe (using "+" screw driver)	

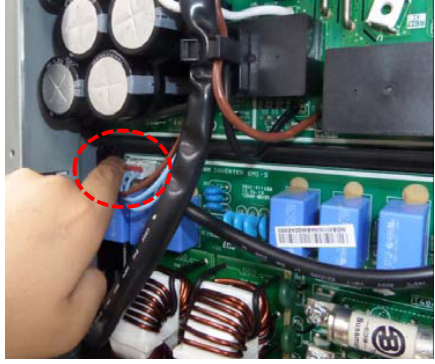
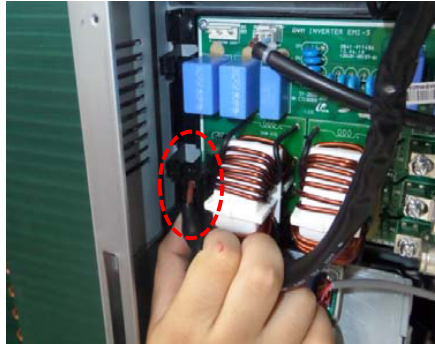
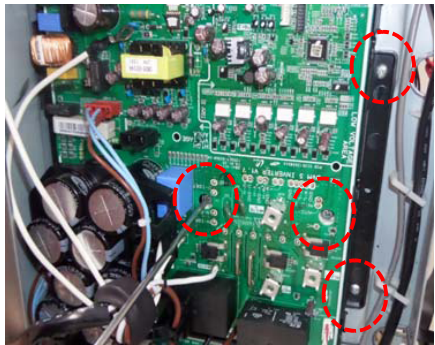
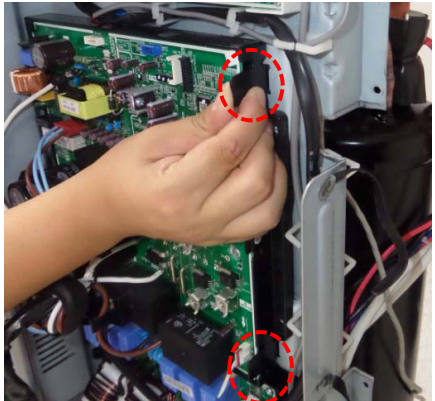
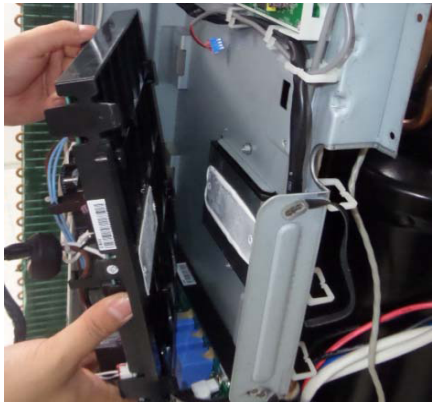
*Exterior

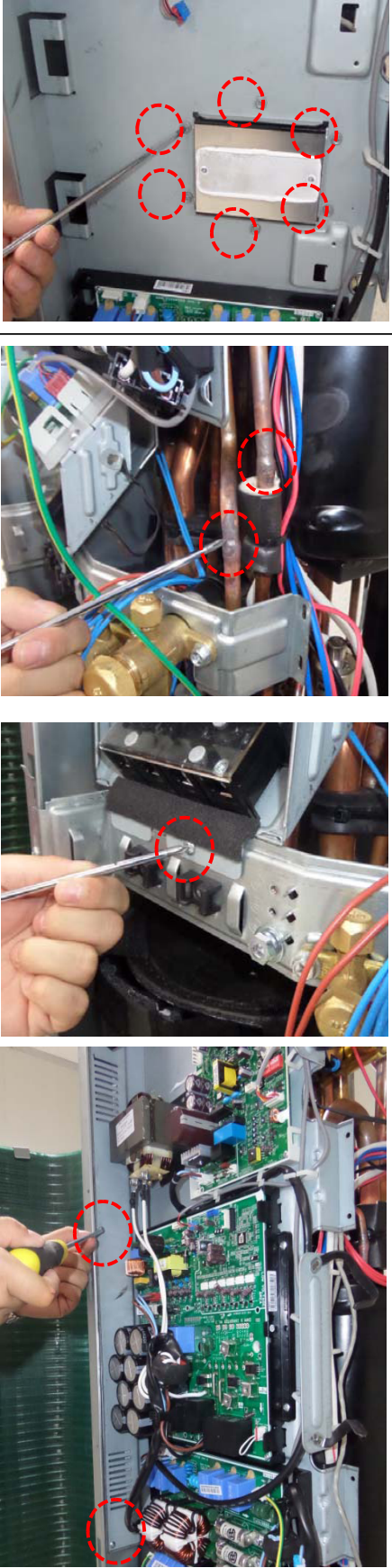
No.	Parts	Procedure	Remark
7	Cabi Front LF	1)Remove 10 screws (using "+" screw driver	

* Fan & Motor

No.	Parts	Procedure	Remark
8	Fan Propeller	1) Remove nut, take out the fan (using wrench turn clockwise)	
9	Motor	1) Remove 4 screws, take off the motor (using "+" screw driver) 2) Pull out the connector on main pcb board	 
10	Bracket motor	1) Remove 2 screws to take off bracket cond (using "+" screw driver) 2) Remove 2 screws on the base (using "+" screw driver)	 

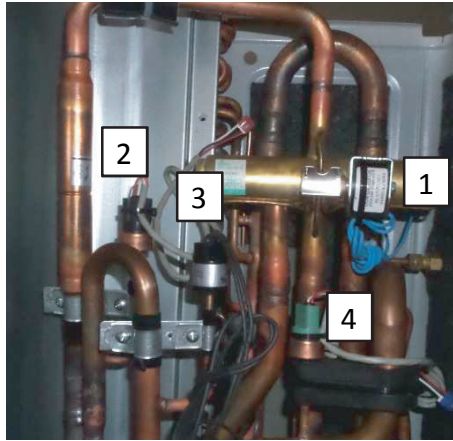
No.	Parts	Procedure	Remark
11	Control Box	<p>1) Pull out all the connector on the pcb board ⚠ Quantity of the connector is different with different model</p> <p>2) Remove the screw that fix comp power wire;(using "+" screw driver)</p> <p>3) Remove the screw that fix comp power wire;(using "+" screw driver)</p> <p>⚠ The follow step can be divided into 2 case</p> <p>4) Case 1:Take off the control box directly without welding</p> <p>a) Remove 2 screws that fix ing reactor wire;(using "+" screw driver)</p> <p>b) Pull out the connector as right pic</p>	

No.	Parts	Procedure	Remark
11	Control Box	<p>c) Pull out the connector of the wire that supply single-phase power to inverter pcb;(Refer right pic)</p> <p>d) Pull out the connector of the wire that supply three-phase power to power pcb;(Refer right pic)</p> <p>e) Remove 2 screws that fixing IGBT with heatsink, and 2 screws that fixing pcb case;</p> <p>f) Band the handel of the case and take off the assy inverter pcb;(Refer right pic) ⚠ Be careful when take off inverter pcb ;when reassemble should ensure the silicon grease thin and even</p>	    

No.	Parts	Procedure	Remark
11	Control Box	<p>g) Remove 6 screws that fixing heat sink with control case;</p> <p>Case 2:</p> <p>4) Take off the control box with heat sink assembly; ▲ Discharge the refrigerant first; h) Weling two points as right picture;(using welding tool)</p> <p>5) Remove 3 screws that fixing control box with partition and bracket valve; 6) Then you can take off the whole control box</p>	

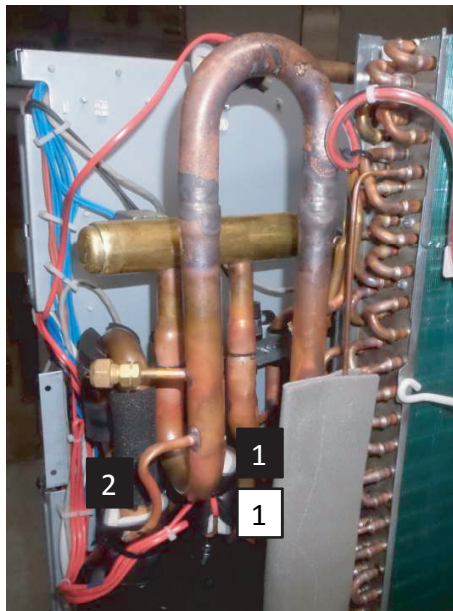
Binding Wire 1

■ AM080/090FXMDGH**



VALVE & SENSOR

No.	VALVE & SENSOR
1	4WAY VALVE
2	HIGH PRESSURE SENSOR
3	HIGH PRESSURE SWITCH
4	LOW PRESSURE SENSOR

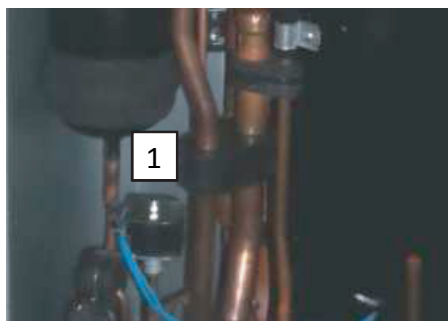


VALVE & SENSOR

No.	VALVE & SENSOR
1	ACCUM IN SENSOR

INSULATION

No.	INSU CODE
1	DB62-08752F
2	DB62-08752F

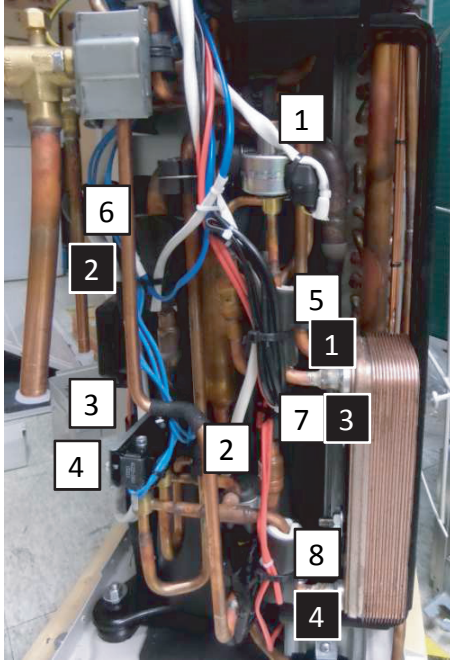


VALVE & SENSOR

No.	VALVE & SENSOR
1	HOT GAS VALVE

Binding Wire 2

■ AM080/090FXMDGH**

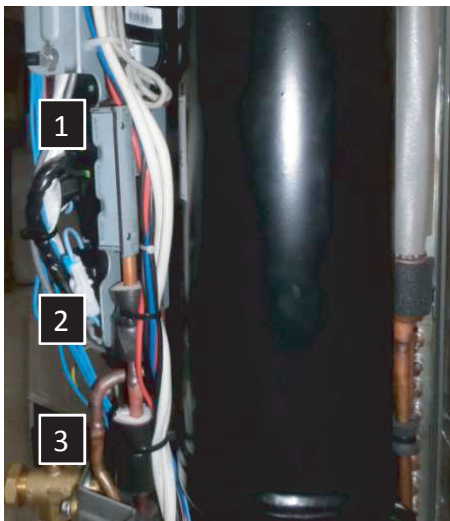


VALVE & SENSOR

No.	VALVE & SENSOR
1	EVI VALVE
2	MAIN EEV
3	EVI SOL VALVE
4	EVI BYPASS VALVE
5	SUBCOOLER IN SENSOR
6	DISCHARGE SENSOR
7	EVI OUT SENSOR
8	SUBCOOLER OUT SENSOR

INSULATION

No.	INSU CODE
1	DB62-08752C
2	DB62-08752D
3	DB62-08752C
4	DB62-08752C



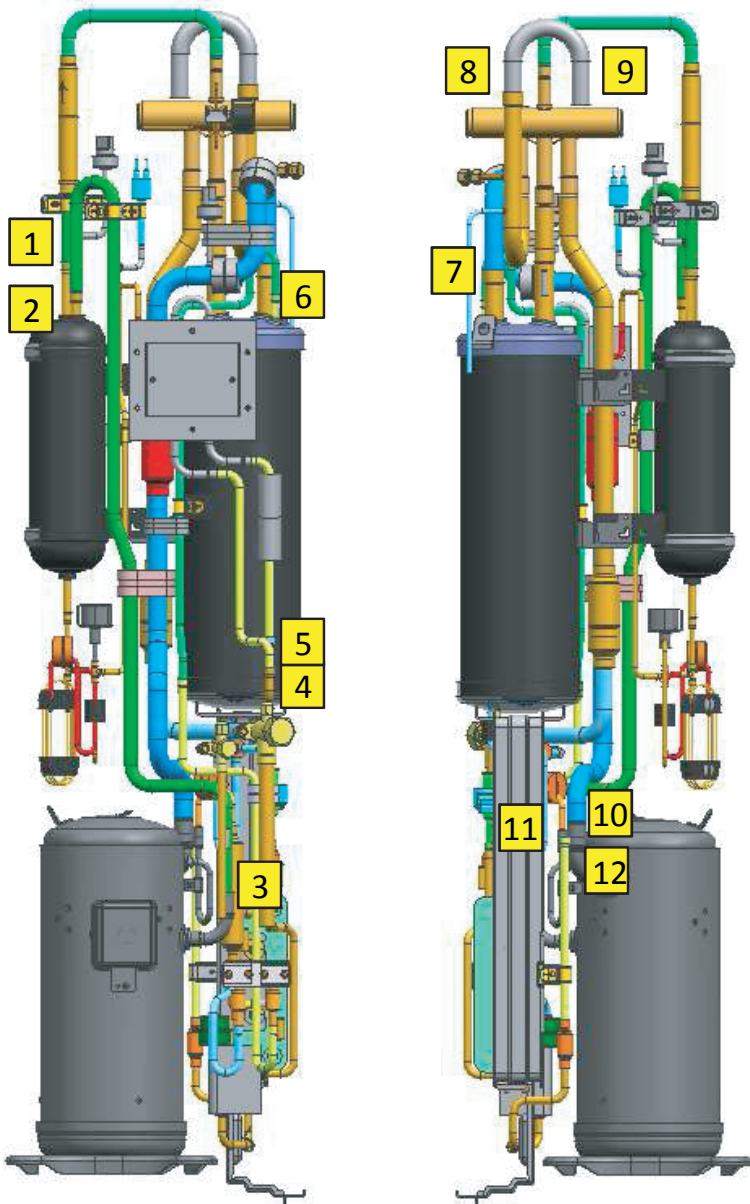
INSULATION

No.	INSU CODE
1	DB62-08752A
2	DB62-08752A
3	DB62-08752A

[Reference Sheet]

Pipe Welding Position

■ AM080/090FXMDGH**



No.	WELDING POSITION	Q'ty
1	4WAY+OIL SEPA	1
2	DISCHARGE+OIL SEPA	1
3	DISCHARGE+COMP	1
4	EEV OUT+TUBE COOLING	1
5	TUBE COOLING+TUBE PHE IN	1
6	TUBE EVI+ACCUM	1
7	SUCTION+ACCUM	1
8	4WAY+TUBE COONECTOR	1
9	TUBE CONNECTOR+COND IN	1
10	SUCTION+COMP	1
11	VAPOR INJECTION+COMP	1
12	COND OUT+EEV IN	1

3-3 Caution at compressor exchange

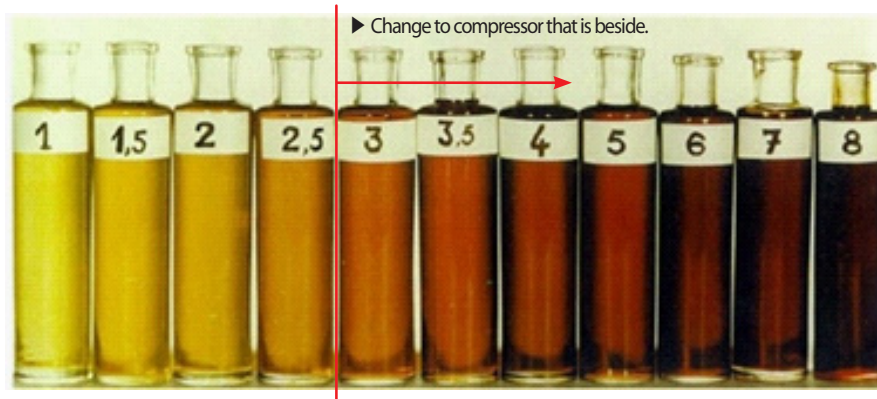
■ Compressor exchange order

STEP	Occasion that compressor is 1 inside outdoor unit	Occasion that compressor is 2 inside outdoor unit
1	-	Establish compressor to exchange by cutting.
2	-	Refrigerant release driving of applied outdoor unit ※ Refrigerant release driving enforces 1th necessarily. Release driving that enforce contiguously can be responsible for compressor breakdown.
3	Lock all SVC valve of liquid pipe and gas pipe.	
4	Enter in vacuum mode and establish as all EEV and Valve open.	
5	Reclaim refrigerant of outdoor unit using Recovery Unit. ※ When there is no Recovery Unit, refer to below contents. 1. If refrigerant release driving is enforced, refrigerant remaining amount of outdoor unit inside is about 1.5kg ordinarily. Temperature can remain more refrigerant because refrigerant fills to Accumulator in the winter day. 2. Refer to factory charging refrigerant had registered to Label of outdoor unit. 3. Can get help that decide an addition refrigerant quantity if use refrigerant quantity decision function that use S-Checker.	
6	Turn off the power linked by outdoor unit.	
7	Separate compressor that broke down from outdoor unit. ※ Confirm through manifold gauge whether refrigerant of outdoor unit was reclaimed all necessarily before use welding machine for replace of compressor.	
8	Measure quantity of broke down oil of compressor.	
9	Confirm state and color of compressor oil that broke down.	
10	-	When is judged that oil was polluted, compressor beside (ASTM : more than 3) measures quantity of replace and oil.
11	Decide quantity of oil to pour in addition according to sheep of changing oil of compressors.	
12	Change by new compressor. Add oil according to sheep of oil that pour decided addition before.	
13	Establish again by vacuum mode after connect power.	
14	Execute leakage examination using nitrogen → vacuum work	
15	Add a refrigerant quantity deciding from step 5.	
16	Execute Auto Trial Operation after open SVC Valve.	

■ Point to consider at compressor exchange

1) Oil color decision (availability of that change compressor that is beside at the same time) of compressor that broke down.

- Decide that exchange all 2 that exchange side that broke down after judge state of oil by below photograph color extracting oil in compressor that broke down in case of exchange compressor.
- ASTM = exchange all 2 more than 3.



- Normalcy Clamping force of bolt that fix compressor is 3 ± 0.5 N-m.

2) Weight of compressor and quantity of oil

- When compressor is shipped at factory, oil of (compressor unit standard) 1100cc was filled up.
- GB052FAVA of weight of compressor including oil is 31.6kg, and GB066FAVA is 35.4kg.
- Add oil to outdoor unit as much as relevant weight if is heavy than weight of compressor that weight of compressor that is changed to locality is changed newly.
- Quantity(kg) of added oil = Weight(kg) of compressor that broke down - Weight(kg) of newly change compressor
- If quantity of calculated addition oil passes over 1kg, quantity of add oil does by 1kg.
- Problem of that is blocked in oil circulation of (remaining oil of compressor that broke down below 0.3kg) compressor if is light more than 0.8kg than weight of compressor that weight of compressor that is changed to locality is changed newly inspects oil circulating system because possibility occurred is high.

3) Checking of oil circulating system

① Oil separator capillary tube or filter of block

- If filter or capillary tube of oil separator lower column is blocked by alien substance etc., can become cause of compressor breakdown because oil is not collected.
- Can doubt that is blocked if oil separator capillary tube temperature is low after refrigerant outlet temperature of compressor, in driving, rises.

(※ Compressor 2 individual occasion oil separator capillary tubes each other cross.)

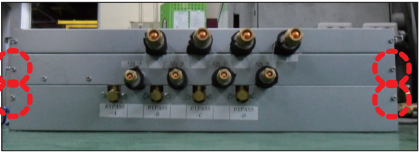
- Confirm that is blocked in stationary state through nitrogen pressurization availability.

② Breakdown of Accum Oil Return Valve (ARV)

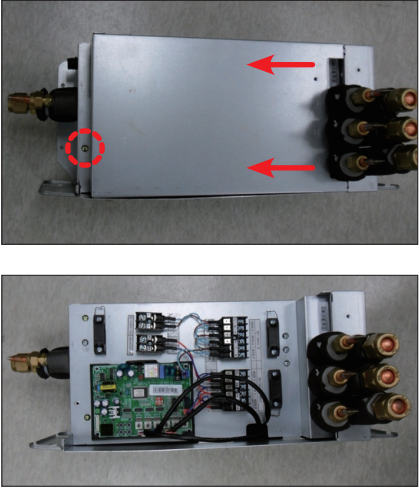
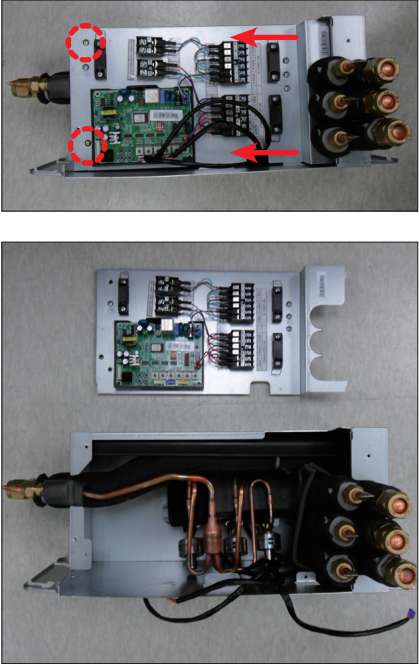
- Damage can become cause of compressor breakdown because oil is not collected if filter of valve front/piping etc.. is blocked with ARV is closed.
- Power connector of ARV confirms that was linked right.
- Extract connector in vacuum mode or confirm whether when insert, action sound of valve happens.

③ When CCH is badness, can become cause of compressor breakdown by oil foaming.

3-4 MCU

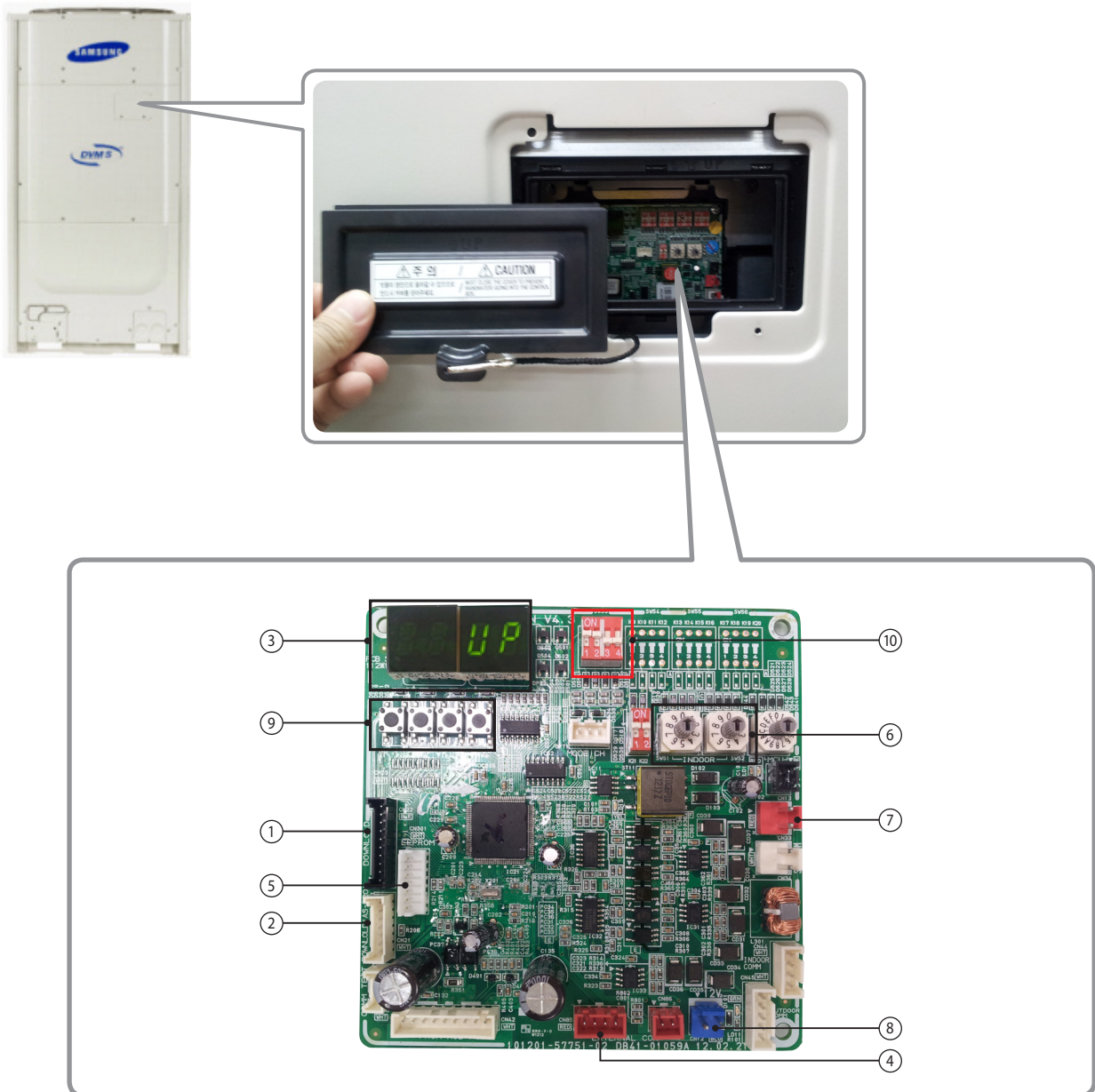
No	Parts	Procedure	Remark
1	Cabinet upper	1) Separate 2 fixing screws from the cabinet. (Use + Serew Driver) 2) Separate cabinet from MCU.	
2	Cabinet front	1) Separate 4 fixing screws from the cabinet. (Use + Serew Driver) 2) Separate 4 fixing screws from the brackets. (Use + Serew Driver)	 
3	Cabinet front	1) Separate front cabinet from MCU.	
4	Control box cover	1) Separate 2 fixing screws from the control box cover. (Use + Serew Driver) 2) Separate control box cover from MCU.	 

3-5 EEV KIT

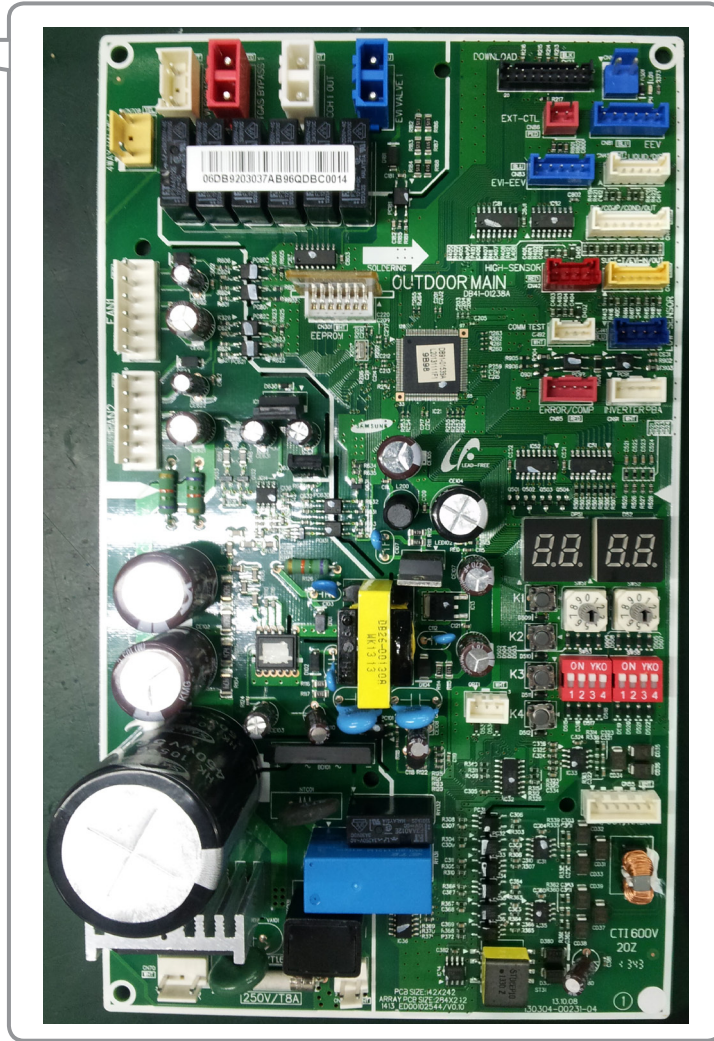
No	Parts	Procedure	Remark
1	Cabinet front	1) Separate 1 fixing screw from EEV kit. (Use + Serew Driver) 2) Separate cabinet from EEV kit.	
2	Control parts	1) Separate 2 fixing screws from EEV kit. (Use + Serew Driver) 2) Separate control part from EEV kit.	

4. Troubleshooting

4-1 Check-up Window Description



No.	Function	No.	Function
1	CN22 download (PC) (SMW200-10 black)	6	Set up the number of connected outdoor units
2	MICOM. download (AS-PRO) (SMW200-07P white)	7	For checking indoor unit communication (YW396-02P red)
3	ERROR DISPLAY	8	Transmitter 12V (YW396-02P blue)
4	State Check (SMW250-04P red)	9	Outdoor Unit Tact Switch
5	EEPROM SOCKET	10	Outdoor Unit Dip Switch



4-2. Service Operation

4-2-1 Special Operation

■ AM080/100/120/140/160/180/200/220FXV***

- ▶ Key input of the outdoor unit when the service enters the operation mode.

K1 (Number of press)	Key operation	Display on segment
1 time	Refrigerant charging in Heating mode	K, 1, BLANK, BLANK
2 times	Trial operation in Heating mode	K, 2, BLANK, BLANK
3 times	Pump out in Heating mode (Outdoor unit address 1)	K, 3, BLANK, 1
4 times	Pump out in Heating mode (Outdoor unit address 2)	K, 3, BLANK, 2
5 times	Pump out in Heating mode (Outdoor unit address 3)	K, 3, BLANK, 3
6 times	Pump out in Heating mode (Outdoor unit address 4)	K, 3, BLANK, 4
7 times	Vacuümig (Outdoor unit address 1)	K, 4, BLANK, 1
8 times	Vacuümig (Outdoor unit address 2)	K, 4, BLANK, 2
9 times	Vacuümig (Outdoor unit address 3)	K, 4, BLANK, 3
10 times	Vacuümig (Outdoor unit address 4)	K, 4, BLANK, 4
11 times	Vacuüming (All outdoor units)	K, 4, BLANK, A
12 times	End Key operation	-
Press and hold 1 time	Auto Trial Operation	K, K, BLANK, BLANK

K2 (Number of press)	Key operation	Display on segment
1 time	Refrigerant charging in Cooling mode	K, 5, BLANK, BLANK
2 times	Trial operation in Cooling mode	K, 6, BLANK, BLANK
3 times	Pump down all units in Cooling mode	K, 7, BLANK, BLANK
4 times	H/R: Checking the pipe connection H/P: Automatic setting of operation mode (Cooling/Heating) for trail operation	K, 8, BLANK, BLANK
5 times	Checking the amount of refrigerant	"K" "9" X X (Display of last two digits may differ depending on the progress)
6 times	Discharge mode of DC link voltage	K, A, BLANK, BLANK
7 times	Forced defrost operation	K, B, BLANK, BLANK
8 times	Forced oil collection	K, C, BLANK, BLANK
9 times	Inverter compressor 1 check	K, D, BLANK, BLANK
10 times	Inverter compressor 2 check	K, E, BLANK, BLANK
11 times	Fan 1 check	K, F, BLANK, BLANK
12 times	Fan 2 check	K, G, BLANK, BLANK
13 times	End Key operation	-

※ Inv1 & Inv2 voltage during discharge mode are displayed alternately.

※ Outdoor Power Off even when the Inverter PCB, Fan PCB is a high DC voltage charging contacts at danger.

※ When you run the repair and replacement of the PCB should work after the power is turned off, the DC voltage discharge.
(Natural discharge until Please wait for at least 15 minutes.)

※ If an error occurs, the discharge mode may not work properly.

In particular, E464 & E364 is power devices can be damaged.

Therefore, the discharge mode, do not use. (Natural discharge until Please wait for at least 15 minutes.)

■ Auto Trial Operation

- ▶ After initial installation, stable operation for a certain period of time limited to operation conditions.

	Cooling	Heating
Method of Entry	K2 Tact Switch twice	K1 Tact Switch twice
Compressor	Normal operation, but the maximum frequency limit (differ by model)	
Indoor Unit	Whole operation (The set temperature=3°C)	Whole operation (The set temperature=40°C)
Outdoor fan and valves	Normally control conduct	
Operation time	Min : 60 minutes, Max : 10 hours	
Etc.	<ul style="list-style-type: none"> · Exceed the maximum operating time at stops and waits. · Protection and control, self-diagnosis is performed. 	

■ Refrigerant filling operation

- ▶ Operation to filling the refrigerant compressor was fixed at a certain frequency.

	Cooling	Heating
Method of Entry	K2 Tact Switch one time	K1 Tact Switch one time
Compressor	Starting frequency (Mild Start frequency) operation	
Indoor Unit	Whole operation (The set temperature=3°C)	Whole operation (The set temperature=40°C)
Outdoor fan and valves	Normally control conduct	
Operation time	60 minutes	
Etc.	During the filling operation does not enter the special operation, such as oil recovery, defrost.	

■ Heating Pump Out

- ▶ Operation for the repair of the Individual outdoor unit, the outdoor unit refrigerant emissions to the indoor part.
- ▶ Liquid pipe service valve and the gas pipe service valve operation, the operator manually need to close.
- ▶ Observe low pressure using View Mode of K4 button if compressor operate.
If low pressure goes down below about 0.2 MPa.g : Immediately lock the gas side service valve, Pump Out operation is shut down.
(Pump out operation shut down : K1 button once more press or K3 button one time press)
- ▶ If operation of low pressure goes down below 0.1 MPa.g : Will be stopped automatically for the protection of the compressor.

How to Initiate	K1 Tact Switch 3 times~6 times
Compressor	60Hz
Indoor Unit	Whole Operation (The set temperature=40°C)
4Way Valve	ON (Heating Mode)
Outdoor Fan	Maximum air flow
Main EEV	Operation side : 700 Step (Stop side : 0 step)
Maximum Operation Time	10 minutes
Protection Control	Conduct the discharge temperature, high pressure control. (Low pressure protection control is not carried out) ※ Low pressure is outside normal limits : Operation is shut down after gas pipe manually closed.
Etc.	Entry after safety start. (Only the corresponding Outdoor Unit operation.) To pump out more than 2 : Except communication between Outdoor Unit of relevant set after working for one, remainder set makes Pump Out add.

■ Cooling Pump Down

- ▶ Recover the refrigerant of Indoor Unit and Piping to outdoor side.
- ▶ Liquid pipe service valve and the gas pipe service valve operation, the operator manually need to close.
- ▶ If the installation of the long pipe : Any refrigerant into the outdoor unit can not be recovered, therefore should use a separate container.
- ▶ Observe low pressure using View Mode of K4 button if compressor operate.
If low pressure goes down below about 0.2 MPa.g : Immediately lock the gas side service valve, Pump Out operation is shut down.
(Pump out operation shut down : K1 button once more press or K3 button one time press)
- ▶ If operation of low pressure goes down below 0.1 MPa.g : Will be stopped automatically for the protection of the compressor.

How to Initiate	K2 Tact Switch 3 times
Compressor	Address No.1 Outdoor Unit - 60Hz (Other Outdoor Unit COMP OFF)
Indoor Unit	Whole Operation (The set temperature=3°C)
4Way Valve	OFF (Cooling Mode)
Outdoor Fan	Maximum air flow
Main EEV	Operation side : 2000 Step , Stop side : 2000 step
Maximum Operation Time	30 minutes
Etc.	Does not conduct the operation of the special operation, and protection control. Pressure and temperature is outside normal limits : Operation is shut down after gas pipe manually closed.

■ Vacuum Operation

- ▶ Operation to facilitate vacuum to open the valve after the Outdoor Unit repair.

How to Initiate	K1 Tact Switch 7 times~11 times
Compressor	OFF
Indoor Unit/Outdoor Fan	OFF
4Way Valve	OFF
Valves	Open all valves maximum
Etc.	If not turn off the vacuum mode, the start of normal operation is prohibited.

■ Piping Inspection Operation

- ▶ Operation mode to check the status of the piping between the MCU and the indoor unit.
- ▶ Heat Pump Model : Outdoor temperature is more than 15°C / Cooling Auto Trial Operation start
Outdoor temperature is less than 15°C / Heating Auto Trial Operation start

■ Discharge Mode Operation

- ▶ Outdoor power is turned off, the Inverter PCB and Fan PCB charging a high DC voltage, so dangerous to touch.
 - To replace the PCB, first turn off the power and the begin if DC voltage is discharged.
 - If not use the discharge mode, the discharge time of about 15 minutes takes.
 - If an error occurs, the discharge mode may not properly run. (Wait until natural discharge.)
 - In particular, E 464, E364, power devices may be damaged, therefore do not use the discharge mode. (Natural discharge until Please wait for at least 15 minutes.)
- ▶ Block the Inverter PCB 3-phase relay after connected the power, and through compressor, DC voltage is discharging.
 - INV1 and INV2 DC voltage during discharge mode are displayed alternately.
 - Discharge mode Display (Rotate the three page display, as shown below.)
'K' 'A' ' ' ' ' → DC Link Volt1 (For example, 120[V] 0 1 2 0 display)
→ DCLinkVolt2 (For example, 120[V] 0 1 2 0 display) → 'K' 'A' ' ' ' ' → DC Link Volt1 ...
- ▶ Discharge is complete, the power of the Inverter PCB and Fan PCB is being blocked, communication function is blocked, E206 will occur.
- ▶ If want operation again after complete discharge mode : Restart after K3 key to Reset or Power Reset.

■ Forced defrost operation

- ▶ Forced defrost operation : Is operation when Frost Formation occurs in the outdoor. (When carried out the service)

Method of Entry	K2 Tact Switch 7 times
Start pattern	Heating Trial Operation pattern
Defrost start	Defrost start : It is after 10 minutes which Safety Start finishes.
Defrost off	General defrost operation conditions are the same as.
Etc.	Defrost shut down and stop the normal pattern of the outdoor unit stop.

■ Forced oil recovery operation

- ▶ Forced oil recovery operation : Oil recovery in the outdoor unit for the purpose of moving, installation if necessary.

Method of Entry	K2 Tact Switch 8 times
Start pattern	Outdoor temperature is more than 10°C : Cooling Auto Trial Operation Outdoor temperature is less than or equal to 10°C : Heating Auto Trial Operation
Oil recovery start	Oil recovery start : It is after 10 minutes which Safety Start finishes.
Etc.	Oil recovery shut down and stop the normal pattern of the outdoor unit stop.

■ **AM080/100/120/200FXWA****

▶ Key input of the outdoor unit when the service enters the operation mode.

K1 (Number of press)	Key operation	Display on segment
Press and hold 1 time	Auto trial operation	K, 1, BLANK, BLANK
1 time	Refrigerant charging in Heating mode	K, 1, BLANK, BLANK
2 times	Trial operation in Heating mode	K, 2, BLANK, BLANK
3 times	Pump out in Heating mode (Outdoor unit address 1)	K, 3, BLANK, 1
4 times	Pump out in Heating mode (Outdoor unit address 2)	K, 3, BLANK, 2
5 times	Pump out in Heating mode (Outdoor unit address 3)	K, 3, BLANK, 3
6 times	Pump out in Heating mode (Outdoor unit address 4)	K, 3, BLANK, 4
7 times	Vacuumig (Outdoor unit address 1)	K, 4, BLANK, 1
8 times	Vacuumig (Outdoor unit address 2)	K, 4, BLANK, 2
9 times	Vacuumig (Outdoor unit address 3)	K, 4, BLANK, 3
10 times	Vacuumig (Outdoor unit address 4)	K, 4, BLANK, 4
11 times	Vacuuming (All outdoor units)	K, 4, BLANK, A
12 times	End Key operation	-

K2 (Number of press)	Key operation	Display on segment
1 time	Refrigerant charging in Cooling mode	K, 5, BLANK, BLANK
2 times	Trial operation in Cooling mode	K, 6, BLANK, BLANK
3 times	Pump down all units in Cooling mode	K, 7, BLANK, BLANK
4 times	HR: Pipe connection inspection H/P: Auto trial operation	K, 8, BLANK, BLANK
5 times	Checking the amount of refrigerant	K, 9, X, X (Display of last two digits may differ depending on the status)
6 times	Discharge mode of DC link voltage	K, A, BLANK, BLANK
7 times	Forced oil collection	K, C, BLANK, BLANK
8 times	Inspect inverter compressor 1	K, D, BLANK, BLANK
9 times	Inspect inverter compressor 2	K, E, BLANK, BLANK
10 times	Water pipe valve/Pump check	K, F, BLANK, BLANK
11 times	Cooling fan/Flow control valve check	K, G, BLANK, BLANK
12 times	End key operation	-

※ During "Discharge mode of DC link voltage", voltage of INV1 and INV2 will be displayed alternately.

※ Even when the outdoor unit power is off, it is dangerous when you come in contact with inverter PCB and fan PCB since they are charged with high DC voltage.

※ When there were error, 'Discharge mode of DC link voltage' may not have been effective. Especially if error E464 and E364 have been occurred, power element might be damaged by fire and therefore, do not use the 'Discharge mode of DC link

K3 (Number of press)	Key operation	Display on segment
1 time	Intialize (Reset) setting	Same as initial state

■ Auto Trial Operation

- ▶ After initial installation, stable operation for a certain period of time limited to operation conditions.

	Cooling	Heating
Method of Entry	K2 Tact Switch twice	K1 Tact Switch twice
Compressor	Normal operation, but the maximum frequency limit (differ by model)	
Indoor Unit	Whole operation (The set temperature=3°C)	Whole operation (The set temperature=40°C)
Other Actuators	Normally control conduct	
Operation time	Min : 60 minutes, Max : 10 hours	
Etc.	<ul style="list-style-type: none"> · Exceed the maximum operating time at stops and waits. · Protection and control, self-diagnosis is performed. 	

■ Refrigerant filling operation

- ▶ Operation to filling the refrigerant compressor was fixed at a certain frequency.

	Cooling	Heating
Method of Entry	K2 Tact Switch one time	K1 Tact Switch one time
Compressor	Starting frequency (Mild Start frequency) operation	
Indoor Unit	Whole operation (The set temperature=3°C)	Whole operation (The set temperature=40°C)
Other Actuators	Normally control conduct	
Operation time	60 minutes	
Etc.	During the filling operation does not enter the special operation, such as oil recovery.	

■ Heating Pump Out

- ▶ Operation for the repair of the Individual outdoor unit, the outdoor unit refrigerant emissions to the indoor part.
- ▶ Liquid pipe service valve and the gas pipe service valve operation, the operator manually need to close.
- ▶ Observe low pressure using View Mode of K4 button if compressor operate.
If low pressure goes down below about 0.2 MPa.g : Immediately lock the gas side service valve, Pump Out operation is shut down.
(Pump out operation shut down : K1 button once more press or K3 button one time press)
- ▶ If operation of low pressure goes down below 0.1 MPa.g : Will be stopped automatically for the protection of the compressor.

How to Initiate	K1 Tact Switch 3 times~6 times
Compressor	60Hz
Indoor Unit	Whole Operation (The set temperature=40°C)
4Way Valve	ON (Heating Mode)
Main EEV	Operation side : 700 Step (Stop side : 0 step)
Maximum Operation Time	10 minutes
Protection Control	Conduct the discharge temperature, high pressure control. (Low pressure protection control is not carried out) ※ Low pressure is outside normal limits : Operation is shut down after gas pipe manually closed.
Etc.	Entry after safety start. (Only the corresponding Outdoor Unit operation.) To pump out more than 2 : Except communication between Outdoor Unit of relevant set after working for one, remainder set makes Pump Out add.

■ Cooling Pump Down

- ▶ Recover the refrigerant of Indoor Unit and Piping to outdoor side.
- ▶ Liquid pipe service valve and the gas pipe service valve operation, the operator manually need to close.
- ▶ If the installation of the long pipe : Any refrigerant into the outdoor unit can not be recovered, therefore should use a separate container.
- ▶ Observe low pressure using View Mode of K4 button if compressor operate.
If low pressure goes down below about 0.2 MPa.g : Immediately lock the gas side service valve, Pump Out operation is shut down.
(Pump out operation shut down : K1 button once more press or K3 button one time press)
- ▶ If operation of low pressure goes down below 0.1 MPa.g : Will be stopped automatically for the protection of the compressor.

How to Initiate	K2 Tact Switch 3 times
Compressor	Address No.1 Outdoor Unit - 60Hz (Other Outdoor Unit COMP OFF)
Indoor Unit	Whole Operation (The set temperature=3°C)
4Way Valve	OFF (Cooling Mode)
Main EEV	Operation side : 2000 Step , Stop side : 2000 step
Maximum Operation Time	30 minutes
Etc.	Does not conduct the operation of the special operation, and protection control. Pressure and temperature is outside normal limits : Operation is shut down after gas pipe manually closed. (However, all current limit control, and protection and control of IPM CompDown control is performed.)

■ Vacuum Operation

- ▶ Operation to facilitate vacuum to open the valve after the Outdoor Unit repair.

How to Initiate	K1 Tact Switch 7 times~11 times
Compressor	OFF
Indoor unit	OFF
4WayValve	OFF
Valves	Open all valves maximum
Etc.	If not turn off the vacuum mode, the start of normal operation is prohibited.

■ Piping Inspection Operation

- ▶ Operation mode to check the status of the piping between the MCU and the indoor unit.
- ▶ Heat Pump Model : Water temperature is more than 25°C / Cooling Auto Trial Operation start
Water temperature is less than 25°C / Heating Auto Trial Operation start

■ Discharge Mode Operation

- ▶ Outdoor power is turned off, the Inverter PCB charging a high DC voltage, so dangerous to touch.
 - To replace the PCB, first turn off the power and the begin if DC voltage is discharged.
 - If not use the discharge mode, the discharge time of about 15 minutes takes.
 - If an error occurs, the discharge mode may not properly run. (Wait until natural discharge.)
 - In particular, E 464, E364, power devices may be damaged, therefore do not use the discharge mode. (Natural discharge until Please wait for at least 15 minutes.)
- ▶ Block the Inverter PCB 3-phase relay after connected the power, and through compressor, DC voltage is discharging.
 - INV1 and INV2 DC voltage during discharge mode are displayed alternately.
 - Discharge mode Display (Rotate the three page display, as shown below.)
'K' 'A' ' ' ' ' → DC Link Volt1 (For example, 120[V] 0 1 2 0 display)
→ DCLinkVolt2 (For example, 120[V] 0 1 2 0 display) → 'K' 'A' ' ' ' ' → DC Link Volt1 ...
- ▶ Discharge is complete, the power of the Inverter PCB is being blocked, communication function is blocked, E206 will occur.
- ▶ If want operation again after complete discharge mode : Restart after K3 key to Reset or Power Reset.

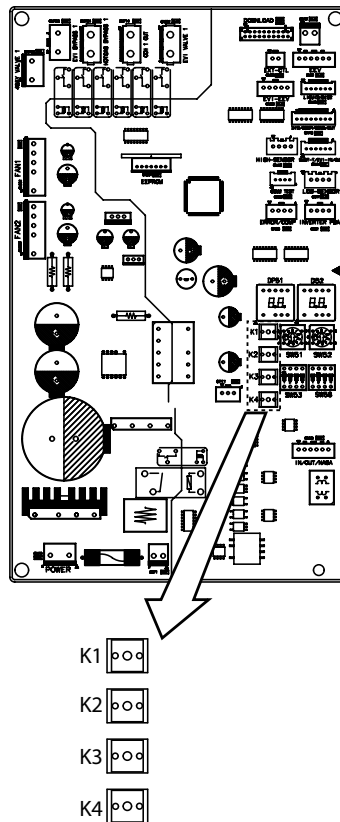
■ Forced oil recovery operation

- ▶ Forced oil recovery operation : Oil recovery in the outdoor unit for the purpose of moving, installation if necessary.

Method of Entry	K2 Tact Switch 7 times
Start pattern	Water temperature is more than 10°C : Cooling Auto Trial Operation Water temperature is less than or equal to 10°C : Heating Auto Trial Operation
Oil recovery start	Oil recovery start : It is after 10 minutes which Safety Start finishes.
Etc.	Oil recovery shut down and stop the normal pattern of the outdoor unit stop.

■ AM080/090FXMDGH**

- ▶ Key input of the outdoor unit when the service enters the operation mode.



K1 Control	KEY operation	Display on segment
Press and hold 1 time	Auto trial operation	"K" "K" "BLANK" "BLANK"
K1 (Number of press)	KEY operation	Display on segment
1 time	Refrigerant charging in Heating mode (Note 1)	"K" "1" "BLANK" "BLANK"
2 times	Trial operation in Heating mode (Note 1)	"K" "2" "BLANK" "BLANK"
3 times	Pump out in Heating mode (Note 1)	"K" "3" "BLANK" "1"
4 times	Vacuimig	"K" "4" "BLANK" "1"
5 times	End Key operation	—
K2 (Number of press)	KEY operation	Display on segment
1 time	Refrigerant charging in Cooling mode	"K" "5" "BLANK" "BLANK"
2 times	Trial operation in Cooling mode	"K" "6" "BLANK" "BLANK"
3 times	Pump down in Cooling mode	"K" "7" "BLANK" "BLANK"
4 times	Automatic setting of operation mode (Cooling/Heating) for trial operation	"K" "8" "BLANK" "BLANK"
5 times	Checking the amount of refrigerant	"K" "9" "X" "X" (Display of last two digits may differ depending on the progress)
6 times	Discharge mode of DC link voltage	"K" "A" "BLANK" "BLANK"
7 times	Forced defrost operation (Note 1)	"K" "B" "BLANK" "BLANK"
8 times	Forced oil collection	"K" "C" "BLANK" "BLANK"
9 times	Inverter compressor check	"K" "D" "BLANK" "BLANK"
10 times	End Key operation	-

(Note 1) Not available on AM***FXM**C Series

Troubleshooting

- * Even when the outdoor unit power is off, it is dangerous when you come in contact with inverter PCB since it is charged with high DC voltage.
- * When replacing/repairing the PCB, cut-off the power and wait until the DC voltage is discharged before replacing/repairing them. (Wait for more than 15 minutes to allow it to discharge naturally.)
- * When there were error, 'Discharge mode of DC link voltage' may not have been effective. Especially if error E464 has been occurred, power element might be damaged by fire and therefore, do not use the 'Discharge mode of DC link voltage'.
- * During "Discharge mode of DC link voltage", voltage of INV will be displayed.

K3(Number of press)	KEY operation	Display on segment
1 time	Intialize (Reset) setting	Same as initial state

K4 (Press and hold to enter the setting) → K4 press (Number of press)	Displayed content	Display on segment		
		Page 1	Page 2	
0 time	Main version	MAIN	Ver. (ex) 1412)	
1 time	Inverter version	INV1	Ver. (ex) 1412)	
2 times	EEP version	EEP	Ver. (ex) 1412)	
3 times	Assigned address of the units	AUTO	SEG 1,2	SEG 3,4
			Indoor unit: "A", "0"	Address (ex) 07)
4 times	Manually assigned address of the units	MANU	SEG 1,2	SEG 3,4
			Indoor unit: "A", "0"	Address (ex) 15)

K4(Number of press)	KEY operation	Display on segment	
		SEG 1	SEG2, 3, 4
1 time	Outdoor unit model	1	AM080FXM* → 0, 0, 8
2 times	Order frequency of compressor	2	120 Hz → 1,2,0
3 times	High pressure	3	1.52 MPa → 1, 5, 2
4 times	Low pressure	4	0.43 MPa → 0, 4, 3
5 times	Discharge temperature of compressor	5	87 °C → 0, 8, 7
6 times	IPM temperature of compressor	6	87 °C → 0, 8, 7
7 times	CT sensor value of compressor	7	2 A → 0, 2, 0
8 times	Suction temperature	8	-42 °C → -, 4, 2
9 times	COND OUT temperature	9	-42 °C → -, 4, 2
10 times	Liquid pipe temperature	A	-42 °C → -, 4, 2
11 times	TOP temperature of compressor	B	87 °C → 0, 8, 7
12 times	Outdoor temperature	C	-42 °C → -, 4, 2
13 times	EVI inlet temperature	D	-42 °C → -, 4, 2
14 times	EVI outlet temperature	E	-42 °C → -, 4, 2
15 times	Main EEV step	F	2000 steps → 2, 0, 0
16 times	EVI EEV step	G	300 steps → 3, 0, 0
17 times	Fan step	H	13 steps → 0, 1, 3
18 times	Current frequency of compressor	I	120 Hz → 1,2,0
19 times	Master indoor unit address	J	Master indoor unit not seleted → BLANK, N, D If indoor unit No.1 is seleted as the master unit →0, 0, 1

4-2-2 DVM S Models EEPROM Code Table

No.	Model Name	EEP Code
1	AM080FXVAGH/EU	DB82-01358A
2	AM100FXVAGH/EU	DB82-01359A
3	AM120FXVAGH/EU	DB82-01360A
4	AM140FXVAGH/EU	DB82-01361A
5	AM160FXVAGH/EU	DB82-01362A
6	AM180FXVAGH/EU	DB82-01363A
7	AM200FXVAGH/EU	DB82-01364A
8	AM220FXVAGH/EU	DB82-01365A
9	AM080FXVAGR/EU	DB82-01330A
10	AM100FXVAGR/EU	DB82-01331A
11	AM120FXVAGR/EU	DB82-01332A
12	AM140FXVAGR/EU	DB82-01333A
13	AM160FXVAGR/EU	DB82-01334A
14	AM180FXVAGR/EU	DB82-01335A
15	AM200FXVAGR/EU	DB82-01336A
16	AM220FXVAGR/EU	DB82-01337A
17	AM080FXWANR/EU	DB82-01678A
18	AM100FXWANR/EU	DB82-01679A
19	AM120FXWANR/EU	DB82-01680A
20	AM200FXWANR/EU	DB82-01681A
21	AM080FXWAGR/SC	DB82-01682A
22	AM100FXWAGR/SC	DB82-01683A
23	AM120FXWAGR/SC	DB82-01684A
24	AM200FXWAGR/SC	DB82-01685A
25	AM080FXMDGH/EU	DB82-01776A
26	AM090FXMDGH/EU	DB82-01774A

4-2-3 Number Display Method (Outdoor Unit, MCU, Cable remote control, wall-mount, etc.)

■ How to Display Integrated Error Code

▶ Meanings of First Alphabetical Character / Number of Error Code

Displayed alphabet	Explanation	
E	When displaying Error 101~700	
P	When displaying Error 701~800	
L	When E206 occurs	Displays address of subordinate within the set C001 : HUB, C002: FAN, C003: INV1, C004: INV2 C001 : MAIN, C003: INV1 (AM080/090FXMDGH)
	When MCU error occurs	Displays address of MCU Ex) C100: MCU address 0, C101: MCU address 1, C102: MCU address 2
U	When displaying outdoor unit address Ex) U200: Outdoor unit 1, U201: Outdoor unit 2, U202: Outdoor unit 3, U203: Indoor unit 4	
A	When displaying indoor unit address Ex) A000: Indoor unit address 0, A001: Indoor unit address 1, A002: Indoor unit address 2	

▶ Order of Error Display

Classification	Error display method	Display Example
Display method for error that occurred in indoor unit	Error Number → Indoor unit address → Error Number, repeat display	E471 → A002 → E471 → A002
Display method for error that occurred in outdoor unit and other methods of error display	Error Number → Outdoor unit address → Error Number, repeat display	E471 → U200 → E471 → U200 E206 → C001 → E206 → C002

■ Diagnosis and Adjustment (Error Code)

▶ Error code related indoor unit

CODE	Explanation
E-101	Indoor unit communication error. Indoor unit can not receive any data from outdoor unit.
E-102	Communication error between indoor unit and outdoor unit. Displayed in indoor unit.
E-108	Address redundant error
E-121	Error on indoor temperature sensor of indoor unit (Short or Open)
E-122	Error on EVA IN sensor of indoor unit (Short or Open)
E-123	Error on EVA OUT sensor of indoor unit (Short or Open)
E-128	EVA IN temperature sensor of indoor unit is detached from EVA IN pipe
E-129	EVA OUT temperature sensor of indoor unit is detached from EVA OUT pipe
E-130	Heat exchanger in/out sensors of indoor unit are detached
E-135	RPM feedback error of indoor unit's cleaning fan
E-149	Error due to AHU master indoor unit sensor setting.
E-151	Error due to opened EEV of indoor unit (2nd detection)
E-152	Error due to closed EEV of indoor unit (2nd detection)
E-153	Error on floating switch of indoor unit (2nd detection)
E-154	RPM feedback error of indoor unit
E-161	Mixed operation mode error of indoor unit; When outdoor unit is getting ready to operate in cooling (or heating) and some of the indoor unit is trying to operate in heating (or cooling) mode
E-162	EEPROM error of MICOM (Physical problem of parts/circuit)
E-163	Indoor unit's remote controller option input is Incorrect or missing. Outdo or unit EEPROM data error
E-180	Simultaneous opening of cooling/heating MCU SOL V/V (1st detection)
E-181	Simultaneous opening of cooling/heating MCU SOL V/V (2nd detection)
E-185	Cross wiring error between communication and power cable of indoor unit
E-186	Connection error or problem on SPi
E-190	No temperature changes in EVA IN during pipe inspection or changes in temperature is seen in indoor unit with wrong address
E-191	No temperature changes in EVA OUT during pipe inspection or changes in temperature is seen in indoor unit with wrong address
E-198	Error due to disconnected thermal fuse of indoor unit

■ Diagnosis and Adjustment (Error Code)

▶ Error code related to the Communications / Settings / HW (cont.)

Error mode	Cause
E-201	Communication error between indoor and outdoor units (installation number setting error, repeated indoor unit address, indoor unit communication cable error)
E-202	Communication error between indoor and outdoor units (Communication error on all indoor unit, outdoor unit communication cable error)
E-203	Communication error between main and sub outdoor units
E-205	Communication error on all PBA within the outdoor unit C-Box, communication cable error
E-206	E206-C001: HUB PBA communication error / E206-C002: FAN PBA communication error E206-C003: INV1 PBA communication error / E206-C004: INV2 PBA communication error E206-C005 : Water Hub PBA communication error
E-211	When single indoor unit uses 2 MCU ports that are not in series.
E-212	If the rotary switch (on the MCU) for address setting of the indoor unit has 3 or more of the same address
E-213	When total number of indoor units assigned to MCU is same as actual number of installed indoor units but there is indoor unit that is not installed even though it is assigned on MCU
E-214	When number of MCU is not set correctly on the outdoor unit or when two or more MCU was installed some of them have the same address
E-215	When two different MCU's have same address value on the rotary switch
E-216	When indoor unit is not installed to a MCU port but the switch on the port is set to On.
E-217	When indoor unit is connected to a MCU port but indoor unit is assigned to a MCU and the switch on the port is set to Off
E-218	When there's at least one or more actual number of indoor unit connection compared to number of indoor units assigned to MCU
E-219	Error on temperature sensor located on MCU intercooler inlet (Short or Open)
E-220	Error on temperature sensor located on MCU intercooler outlet (Short or Open)
E-221	Error on outdoor temperature sensor of outdoor unit (Short or open)
E-224	Error on water temperature sensor of main outdoor unit (Short or Open)
E-225	Error on control box temperature sensor of main outdoor unit (Short or Open)
E-231	Error on COND OUT temperature sensor of main outdoor unit (Short or Open)
E-241	COND OUT sensor is detached
E-251	Error on discharge temperature sensor of compressor 1 (Short or Open)
E-257	Error on discharge temperature sensor of compressor 2 (Short or Open)
E-262	Discharge temperature sensor of compressor 1 is detached from the sensor holder on the pipe
E-263	Discharge temperature sensor of compressor 2 is detached from the sensor holder on the pipe
E-266	Top sensor of compressor 1 is detached
E-267	Top sensor of compressor 2 is detached
E-269	Suction temperature sensor is detached from the sensor holder on the pipe
E-276	Error on top sensor of compressor 1 (Short or Open)
E-277	Error on top sensor of compressor 2 (Short or Open)
E-291	Refrigerant leakage or error on high pressure sensor (Short or Open)
E-296	Refrigerant leakage or error on low pressure sensor (Short or Open)
E-308	Error on suction temperature sensor (Short or Open)
E-311	Error on temperature sensor of double layer pipe/liquid pipe(sub heat exchanger) (Short or Open)
E-321	Error on EVI (ESC) IN temperature sensor (Short or Open)
E-322	Error on EVI (ESC) OUT temperature sensor (Short or Open)
E-323	Error on suction sensor 2 (Short or Open)

■ Diagnosis and Adjustment (Error Code)

▶ Error code related to the Communications / Settings / HW (cont.)

Error mode	Cause
E-346	Error due to operation failure of Fan2
E-347	Motor wire of Fan2 is not connected
E-348	Lock error on Fan2 of outdoor unit
E-353	Error due to overheated motor of outdoor unit's Fan2
E-355	Error due to overheated IPM of Fan2
E-361	Error due to operation failure of inverter compressor 2
E-364	Error due to over-current of inverter compressor 2
E-365	V-limit error of inverter compressor 2
E-366	Error due to over voltage /low voltage of inverter PBA2
E-367	Error due to unconnected wire of compressor 2
E-368	Output current sensor error of inverter PBA2
E-369	DC voltage sensor error of inverter PBA2
E-371	Error due to the INV2 Data Flash
E-374	Heat sink temperature sensor error of inverter PBA2
E-378	Error due to overcurrent of Fan2
E-383	Error due to over current of Fan2
E-385	Error due to input current of inverter 2
E-386	Over-voltage/low-voltage error of Fan2
E-387	Hall IC connection error of Fan2
E-389	V-limit error on Fan2 of compressor
E-391	Error due to the Fan2 DataFlash
E-393	Output current sensor error of Fan2
E-396	DC voltage sensor error of Fan2
E-399	Heat sink temperature sensor error of Fan2
E-400	Error due to overheat caused by contact failure on IPM of Inverter PBA2
E-407	Compressor operation stop due to high pressure protection control
E-410	Compressor operation stop due to low pressure protection control or refrigerant leakage
E-416	Compressor operation stop due to discharge temperature protection control
E-425	Phase reversal or phase failure (3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input
E-428	Compressor operation stop due abnormal compression ratio
E-435	Flow Switch Error
E-436	Error on the Heat exchanger frost protection
E-438	EVI (ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI (ESC) EEV
E-439	Error due to refrigerant leakage
E-440	Heating mode restriction due to high air temperature In case of DVM water, Heating mode restriction due to high water temperature
E-441	Cooling mode restriction due to low air temperature In case of DVM water, Heating mode restriction due to low water temperature
E-442	Refrigerant charging restriction in heating mode when air temperature is over 15 °C
E-443	Operation prohibited due to low pressure
E-445	CCH is deatched

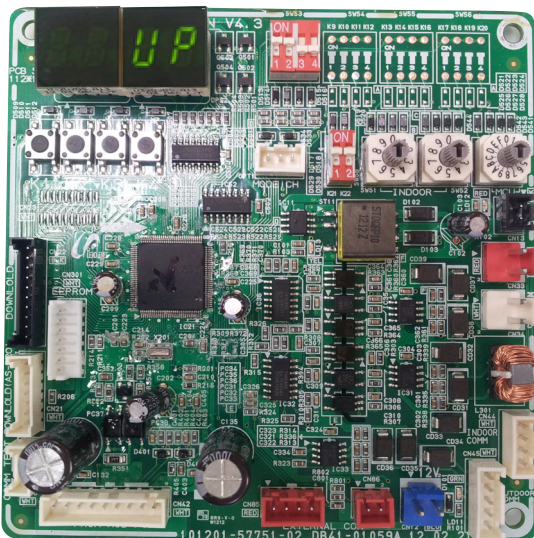
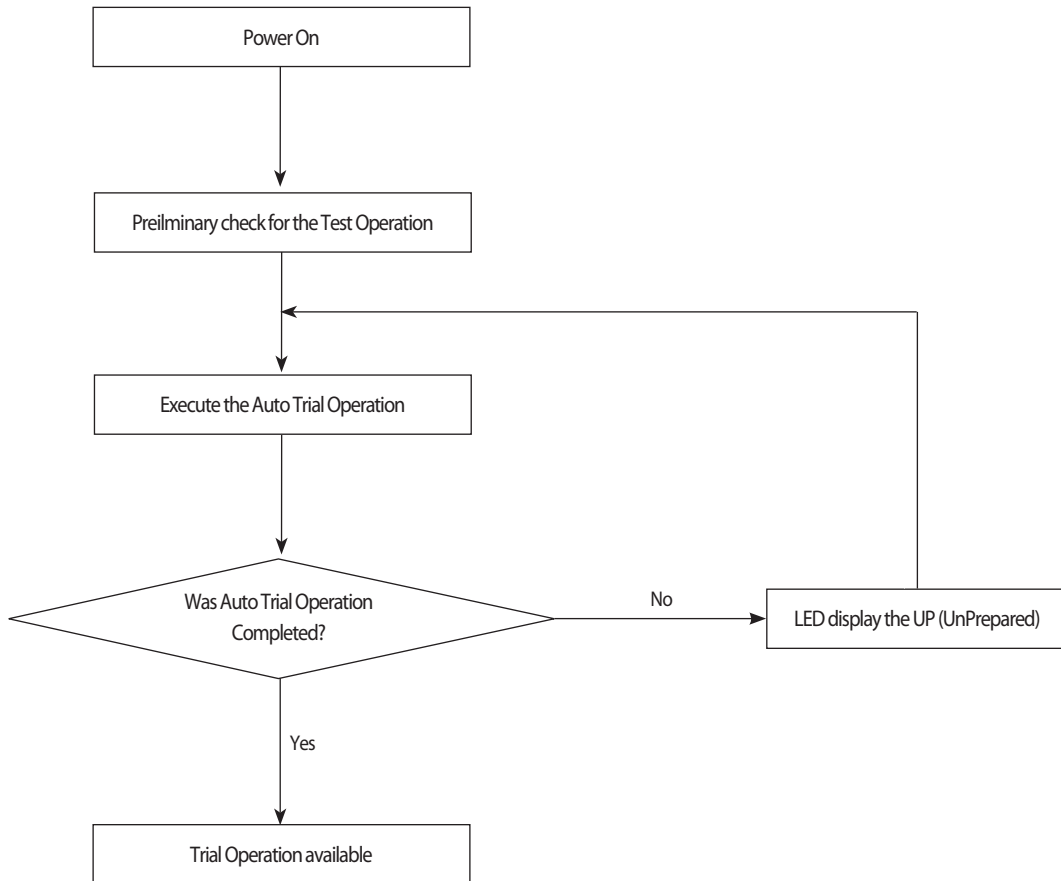
■ Diagnosis and Adjustment (Error Code)

▶ Error code related to the Communications / Settings / HW (cont.)

Error mode	Cause
E-446	Error due to operation failure of Fan1
E-447	Motor wire of Fan1 is not connected
E-448	Lock error on Fan1
E-452	Error due to ZPC detection circuit problem or power failure
E-453	Error due to overheated motor of outdoor unit's Fan1
E-454	Error due to the outdoor unit fan RPM
E-455	Error due to the over heat Fan1 IPM
E-457	Outdoor unit Reversed direction of the wind Error
E-461	Error due to operation failure of inverter compressor 1
E-462	Compressor stop due to full current control or error due to low current on CT2
E-464	Error due to over-current of inverter compressor 1
E-465	V-limit error of inverter compressor 1
E-466	Error due to over voltage /low voltage of inveter PBA1
E-467	Error due to unconnected wire of compressor 1
E-468	Output current sensor error of inverter PBA1
E-469	DC voltage sensor error of inver PBA1
E-471	Error due to the INV1 Data Flash
E-474	Heat sink temperature sensor error of inverter PBA1
E-478	Error due to overcurrent of Fan1
E-483	Error due to over current of Fan1
E-485	Error due to input current of inverter 1
E-486	Error due to over voltage/low voltage of Fan
E-487	Hall IC error of Fan1
E-489	V-limit error on Fan1 of compressor
E-491	Error due to the Fan1 DataFlash
E-493	Output current sensor error of Fan1
E-496	DC voltage sensor error of Fan1
E-499	Heat sink temperature sensor error of Fan1
E-500	Error due to overheat caused by contact failure on IPM of Inverter PBA1
E-503	Error due to alert the user to check if the service valve is closed
E-504	Error due to self diagnosis of compressor operation
E-505	Error due to self diagnosis of high pressure sensor
E-506	Error due to self diagnosis of low pressure sensor
E-515	Error due to the over heat Control Box
E-516	Error due to the no feedback from the Fan of the control Box
E-552	Comp down due to the low discharge pressure
E-560	Outdoor unit's option switch setting error (when inappropriate option switch is on)
E-563	Error due to module installation of indoor unit with old version (Micom version needs to be checked)
E-573	Error due to using single type outdoor unit in a module installation
E-702	Error due to closed EEV of indoor unit (1st detection)
E-703	Error due to opened EEV of indoor unit (1st detection)
UP	Auto Trial Operation incompleted (UnPrepared)

4-3 Appropriate Measures for Different Symptom

4-3-1 Outdoor Unit Test Operation Flow



If the Auto Trial Operation is not completed - UP is displayed(UnPrepared)

Prior to starting the air conditioning operation after the initial installation and Auto Trial Operation is carried out. This process, the stable operation to protect the system and verify the defect of the product.

1. Tracking is complete and after the initial installation, if you do not have a history of Auto Trial Operation is completed, UP will be displayed.
2. Execute the Auto Trial Operation by Tact Switch.
3. UP display disappears after Auto Trial Operation is complete, normal operation is possible.
4. Auto Trial Operation is completed, if there is a history, normal operation execution.

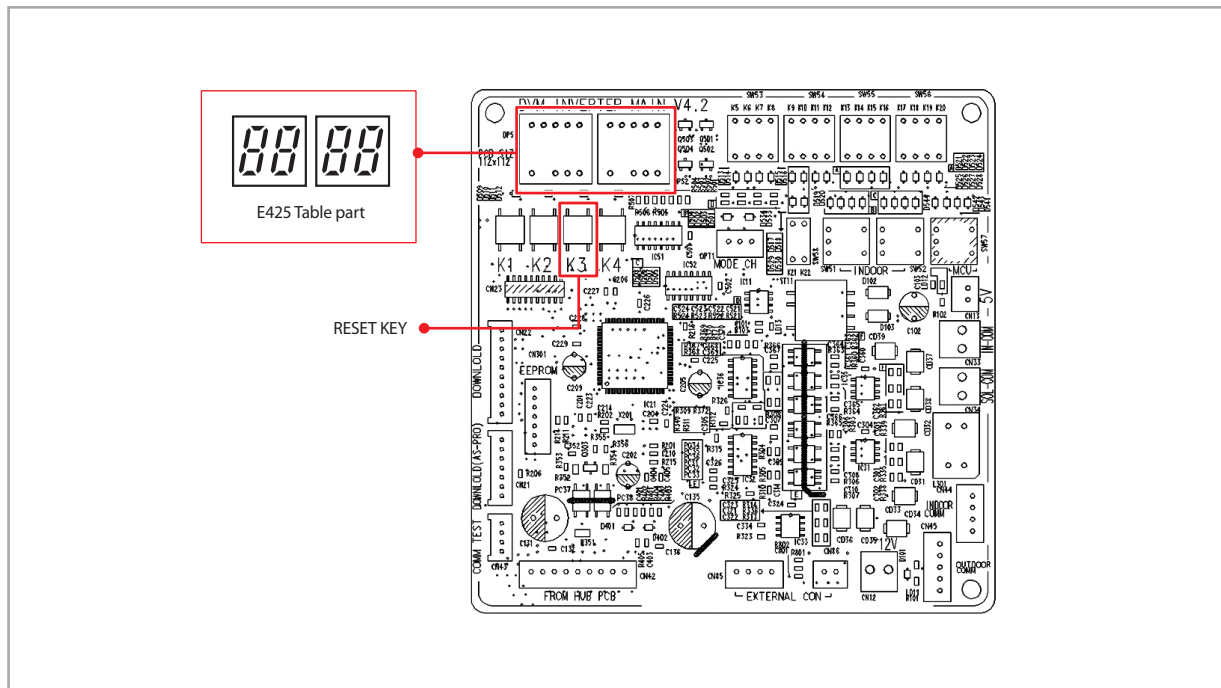
■ Reversed Phase/No Phase Check (Outdoor Unit with 3 Phase power) – Display E425 for Problem

1. When the power is on, check the status of the power from the inverter.

Three-phase L1(R)-L2(S)-L3(T) order, regardless of the power connection on the inverter does not phase power (no phase) can occur.

In this case, E425 or E466 (E366) is displayed, and then air conditioner will then maintain normal conditions.

However) N phase must be connected properly.



- 1) Check the voltage for L1 (R)-L2 (S) phase/L1 (R)-L3 (T) phase/L2 (S)-L3 (T) phase.
- 2) If there is any terminal without normal voltage, then check the power outside the air conditioner and take the appropriate measures.
- 3) If the 3-phase voltage is normal, then use the 3-phase tester to display the phase of the power cable.

Change the power cable connection if reversed phase is displayed.

- 4) Take the above measures, press the reset key (K3), and then check the power once more.
- 5) Check the EMI PCB Fuse connection and wiring.
- 6) If the same problem occurs after another check, check the Inverter PCB.



- In case of wiring error (N-phase is changed with one of R, S and T) with the N-phase, will operate the power protection function, display E425 or stop the power. This is not a PCB power defect in this case, before PCB replacement, please check the power on.

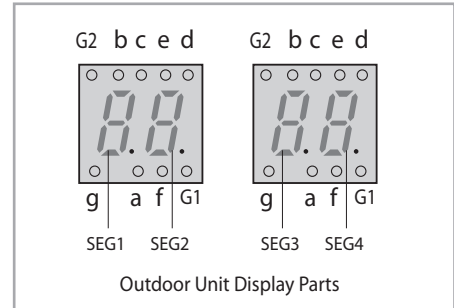
Initial Tracking (Communication Check-up) - Display E201 for Problem

1. For the display module of the outdoor unit, there are differences in the contents displayed depending on whether the relevant outdoor unit is a master unit or a sub unit.

1) Master Unit

- The outdoor unit Micom attempts communication with the indoor unit connected to the communication cable (F1/F2) when the power is turned on.
- Basic segment display

Step	Display content	Display			
At initial power input	Checking segment display	SEG1	SEG2	SEG3	SEG4
		"8"	"8"	"8"	"8"
While setting communication between indoor and outdoor unit (Addressing)	Number of connected indoor units	SEG1	SEG2	SEG3,4	SEG3,4
		"A"	"d"	Number of communicated units ※ Refer to "View Mode" for communication address	
After communication setting (usual occasion)	Transmit/Reception address	SEG1	SEG2	SEG3,4	SEG3,4
		I/U: "A" MCU: "C"	I/U: "0" MCU: "1"	Reception address (in decimal number)	



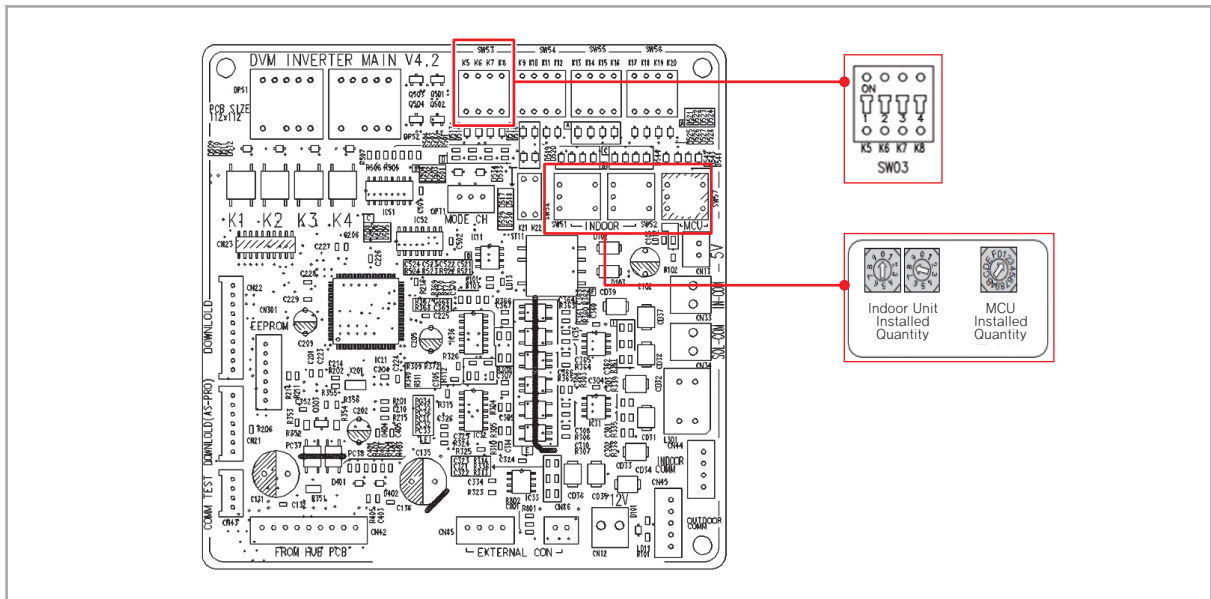
※ I/U: Indoor unit

- If the number of indoor units set by the outdoor unit is not in accordance with the number of indoor units that succeeded with communication, then the four displaying parts will display E201.

2) Sub(Slave) Unit

- The two left hand displays show its own address and the two right hand displays show the outdoor unit's address.
Main address : C8, Sub1 address : C9, Sub2 address : CA, Sub3 address : CB

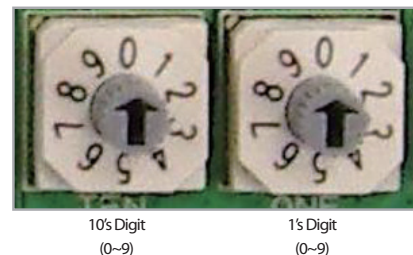
2. The number of the indoor Units Connected to the outdoor unit can be configured by using the indoor unit installation quantity setup switch.



Indoor Unit Installation Quantity Setup Switch

The following is an example of how to use the switch according to the number of indoor unit installations. The maximum number of possible indoor unit connections is 64.

3Units Connected		17Units Connected		31Units Connected		64Units Connected	
10's Digit	1's Digit	10's Digit	1's Digit	10's Digit	1's Digit	10's Digit	1's Digit
0	3	1	7	3	1	6	4

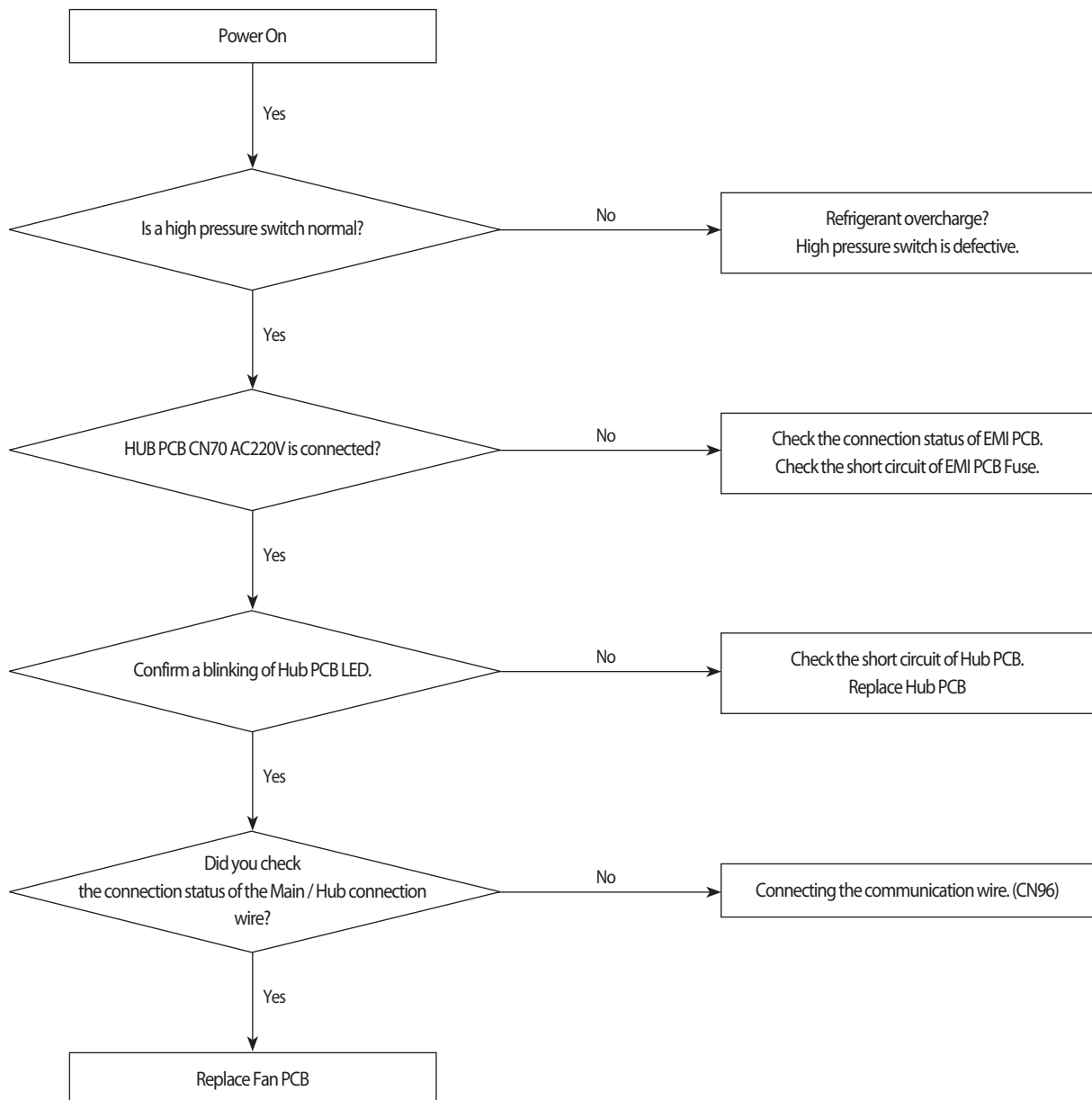


3. If the quantity of the indoor units configured with the indoor unit installation quantity setup switch does not match the quantity of the indoor units found during the tracking process, E201 and U200 will be displayed in order on the display module.
4. When you install more than one MCU, set the quantity of installed MCU.

4-3-2 Main PCB has no power phenomenon

Outdoor unit display	Main PCB has no power phenomenon (7-seg does not blink)
Judgment Method	Hub PCB power and connection wire to detect.
Cause of problem	<ul style="list-style-type: none"> · HUB PCB connector wire defects and the connection is not. · Main PCB defective. · Hub PCB defective. · High pressure switch operation · Water hub PCB defective.

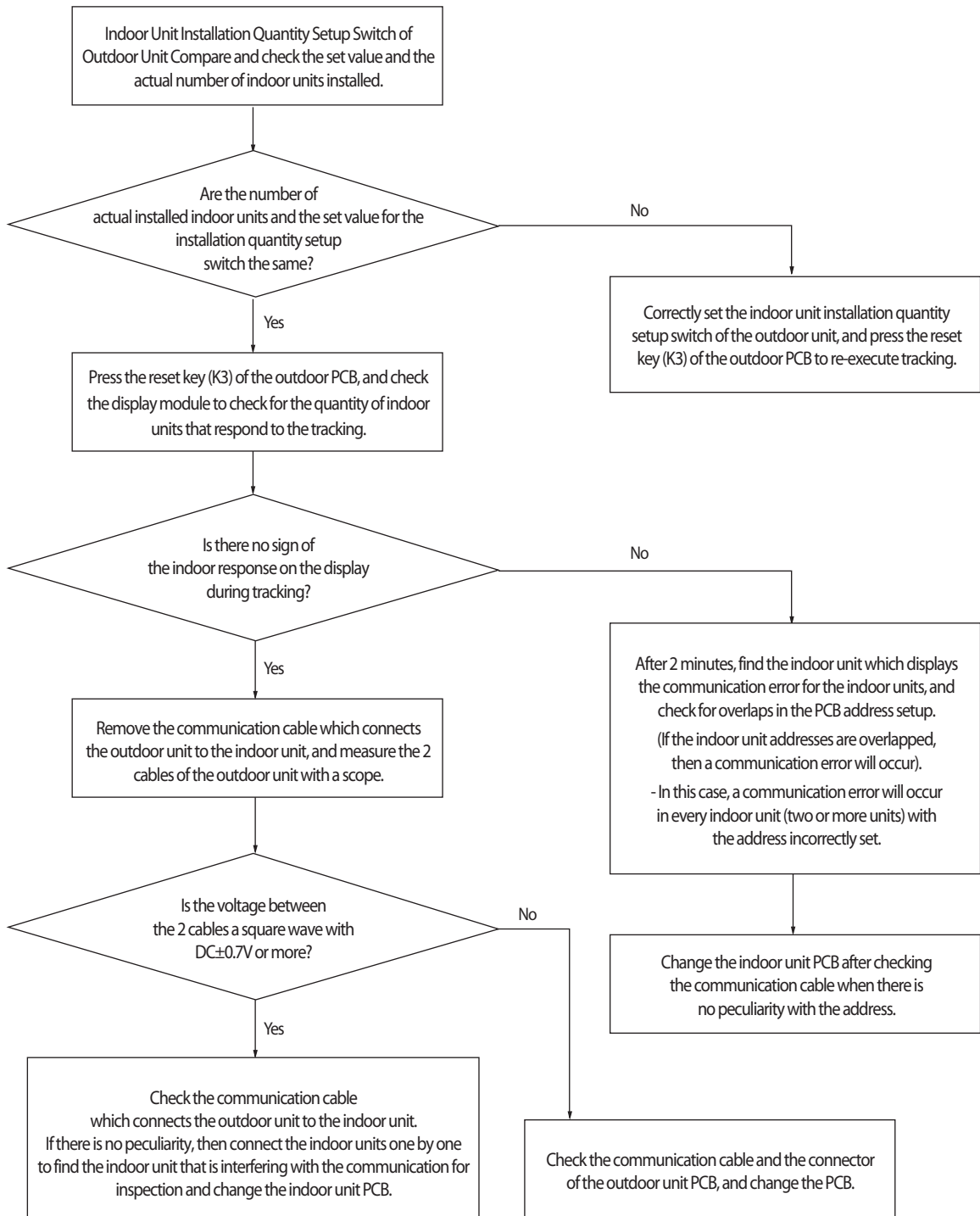
1. Cause of problem



4-3-3 Communication Error between Indoor and Outdoor Units during Tracking

Outdoor unit display	E201													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
※ ● : ON ○ : Flash × : OFF														
Judgment Method	· Communication error between indoor and outdoor units.													
Cause of problem	· Refer to the judgment method below.													

1. Cause of problem



※ Essential Requirements before PCB Changes in Case of Communication Error Occurrence

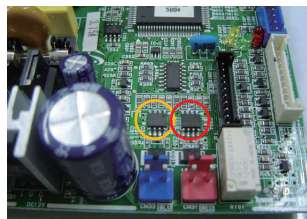
1. Find the communication IC near the communication terminal.

● Indoor Unit

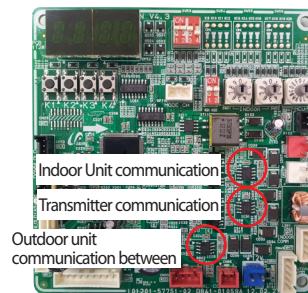
- Above Red Connector : Communication IC between indoor and outdoor units.
- Above Blue Connector : Communication IC for cable remote control.

● Outdoor Unit

- When there is module communication as in PLUS II and PLUS III –
Above Red Connector of Main Unit : Communication IC between indoor and outdoor units.
- When there is no module communication as in PLUS II and PLUS III –
Above Yellow Connector of Each Unit : Communication IC between outdoor units.
- Other Outdoor Unit- Above Communication Connector : Communication IC between indoor and outdoor unit.



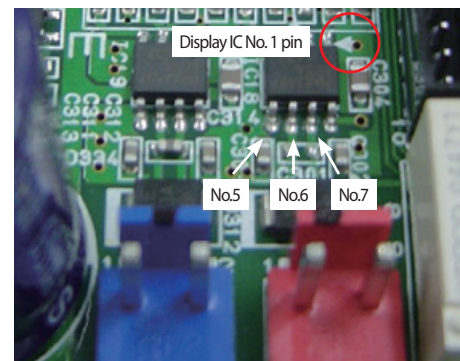
Indoor Unit



Outdoor Unit

2. Measure the resistance of the communication IC.

- Measurement Method : Measure the No.5 - No.6 Pin resistance
Measure the No.5 - No.7 Pin resistance
Measure the No.5 - No.8 Pin resistance



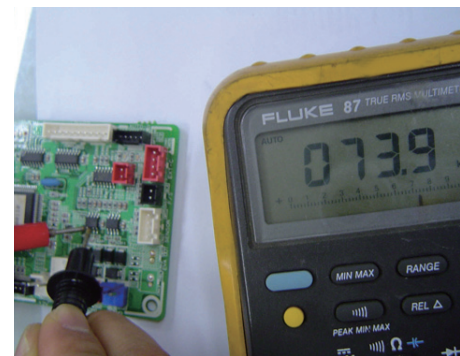
3. Normal and defective judgment is tested for communication IC by using measured resistance.

● Judging as Normal

- Each resistance value should be measured in tens of kΩ~to hundreds of kΩ.
- Difference between the two resistance values should be of some number of kΩ.

● Judging as defective

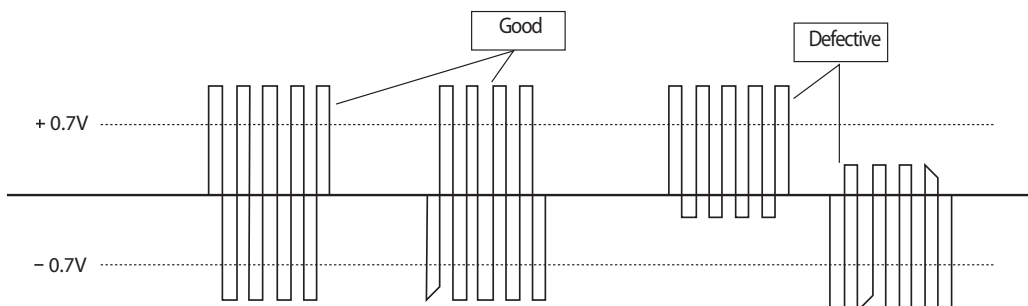
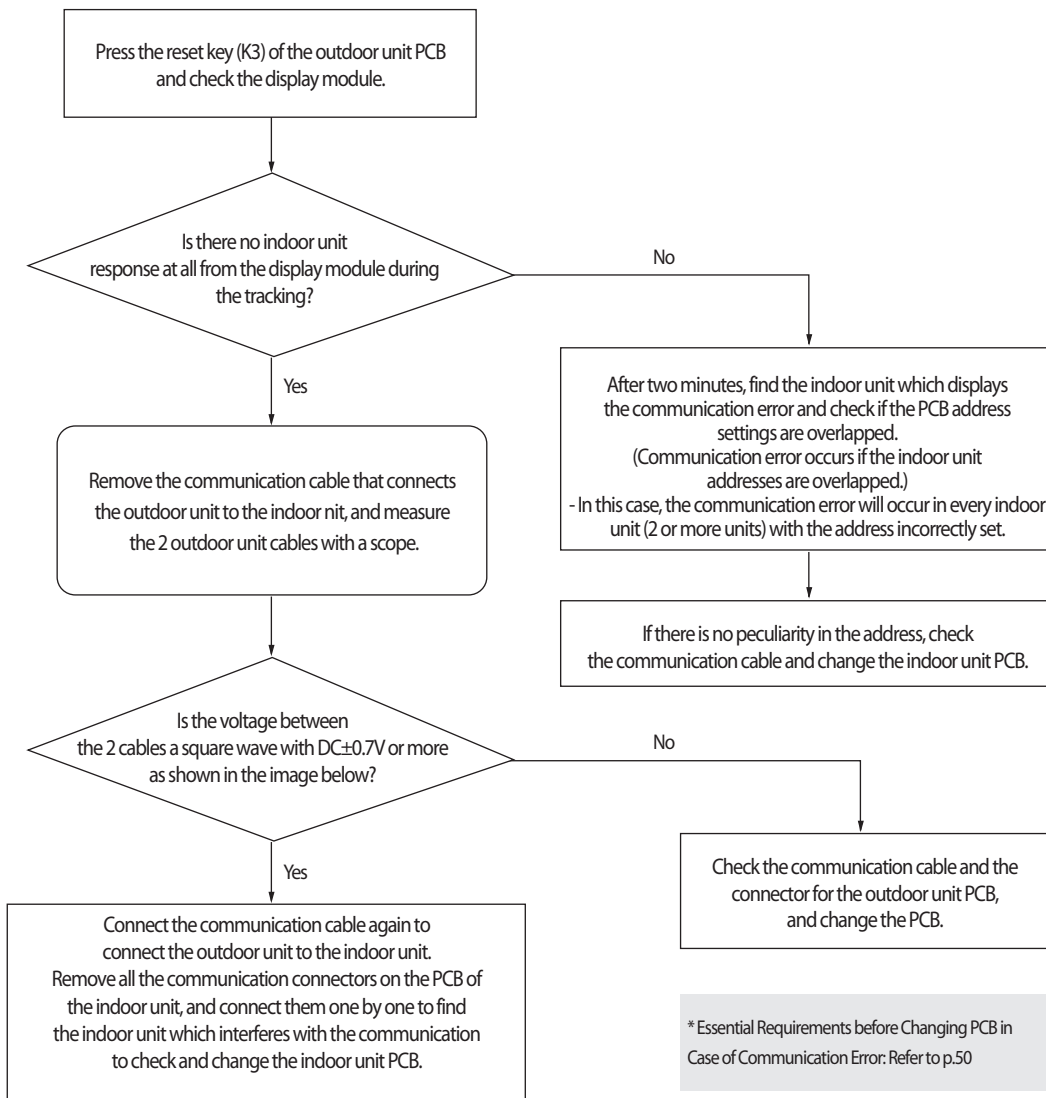
- One or both are low with tens of Ω
- One or both of them is open



4-3-4 Communication Error between Indoor and Outdoor Units after Tracking

Outdoor unit display	E202													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	· Outdoor unit is unable to communicate for two minutes during operation. (no reception of relocation)													
Cause of problem	· Communication error between indoor and outdoor units and setup error of indoor unit installation quantity setup switch.													

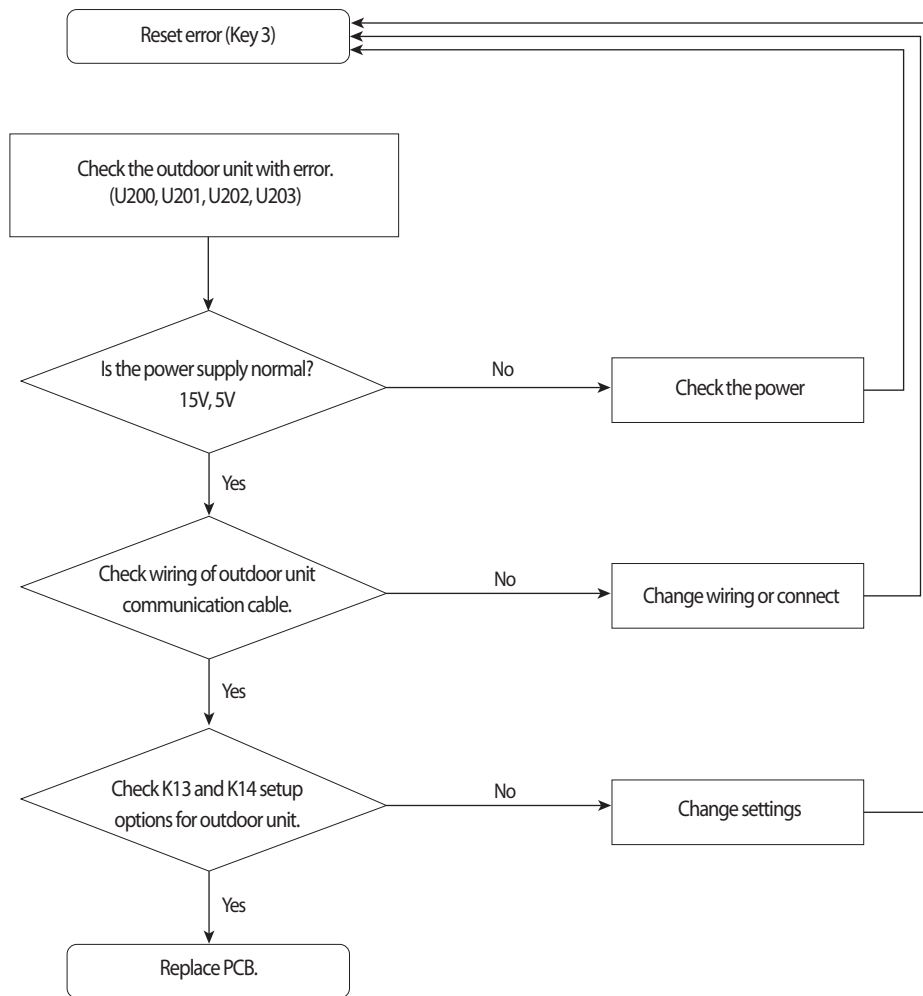
1. Cause of problem



4-3-5 Communication error between main and sub Unit of outdoor unit or between outdoor units

Outdoor unit display	E203													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Communication error between outdoor units.													

1. Cause of problem

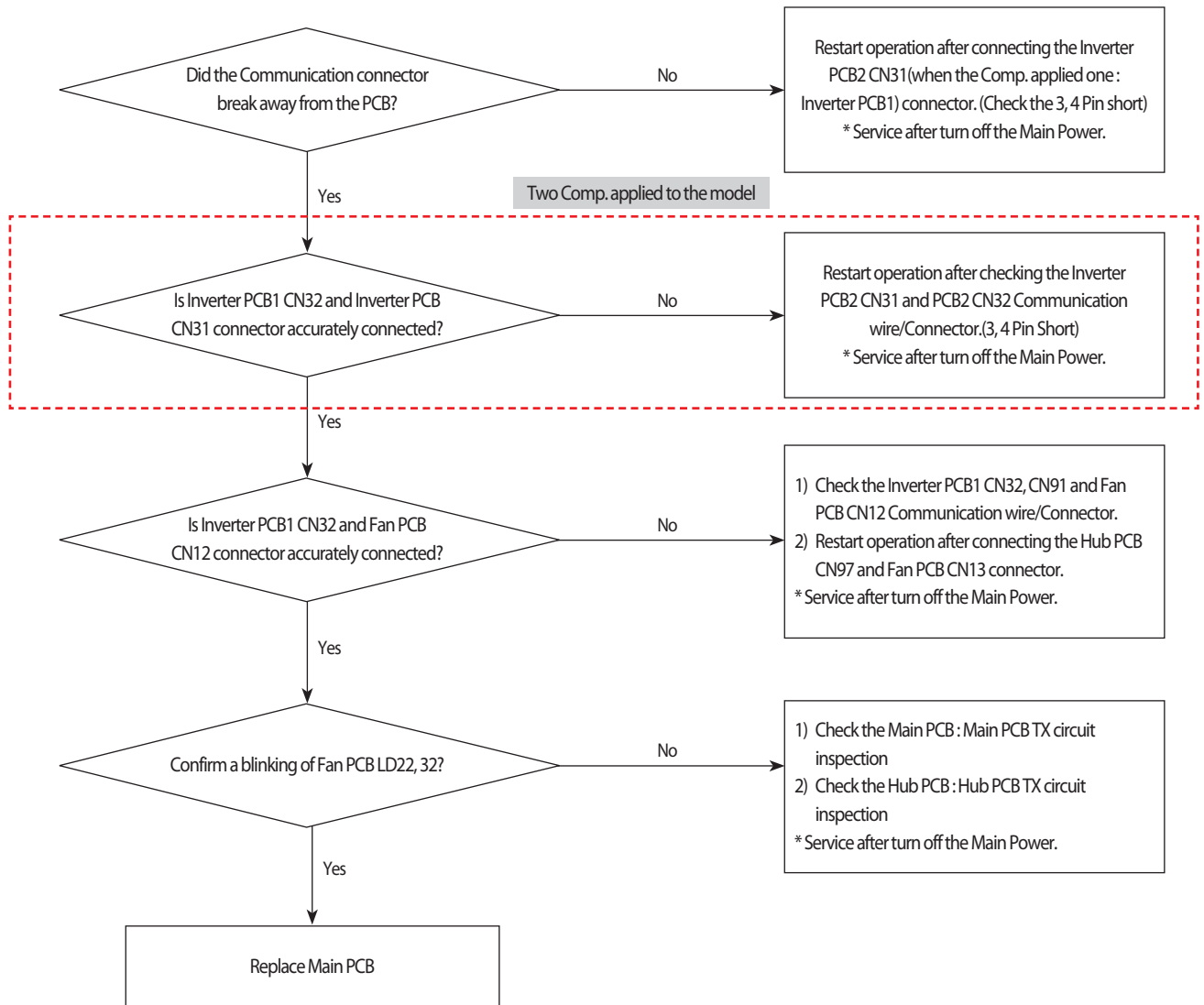


Essential Requirements before Changing PCB in Case of Communication Error: Refer to p.59

4-3-6 Internal Communication error of the Outdoor Unit C-Box

Outdoor unit display	E205													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Judgment Method	· Communication error between the C-Box PCB													
Cause of problem	· Communication wire inside the C-Box is unconnected · Main PCB defective													

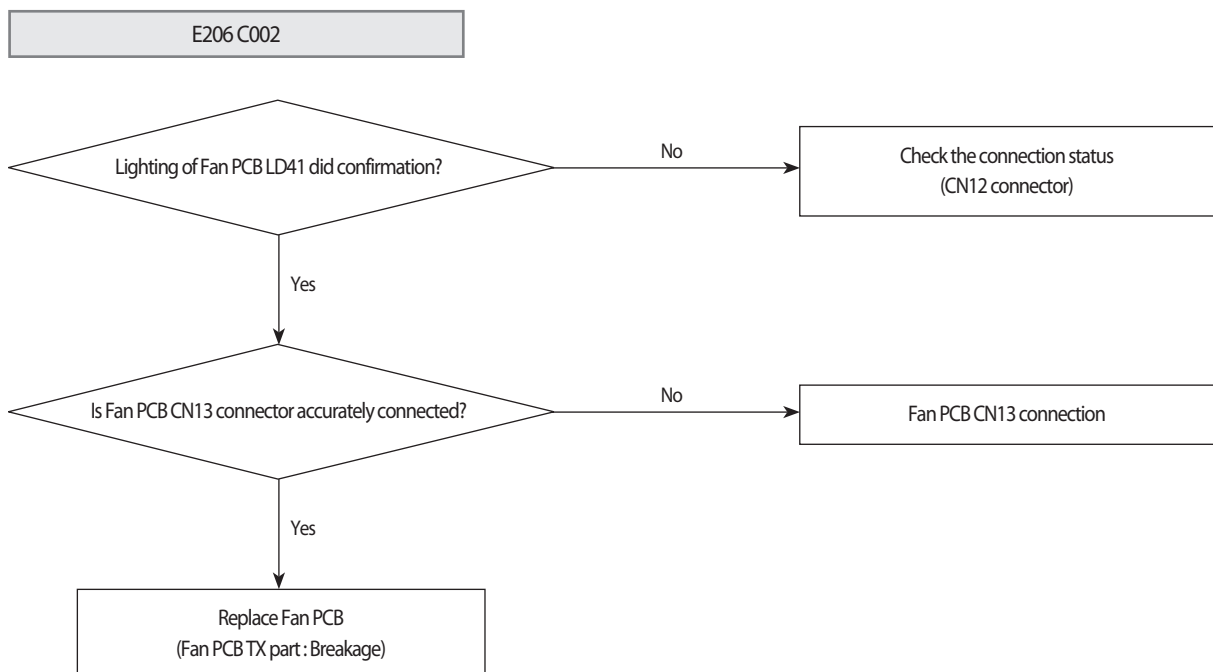
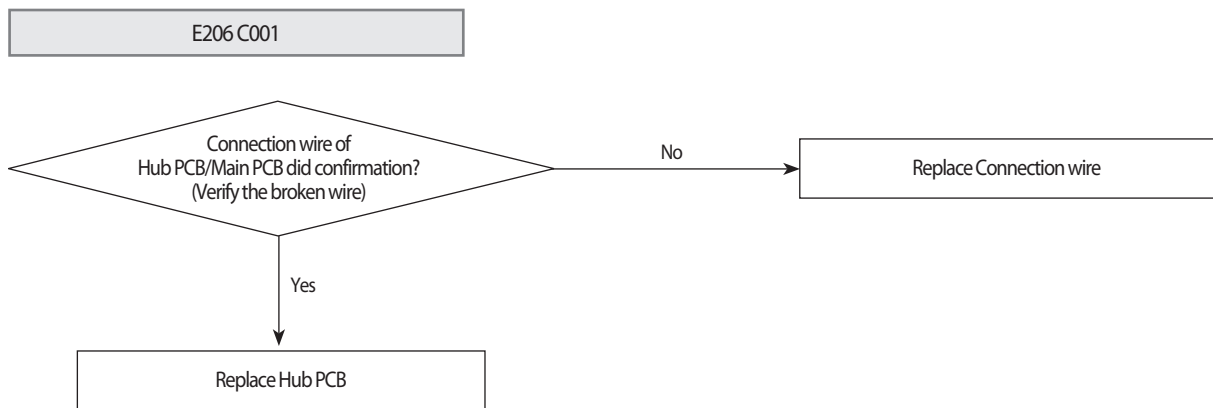
1. Cause of problem



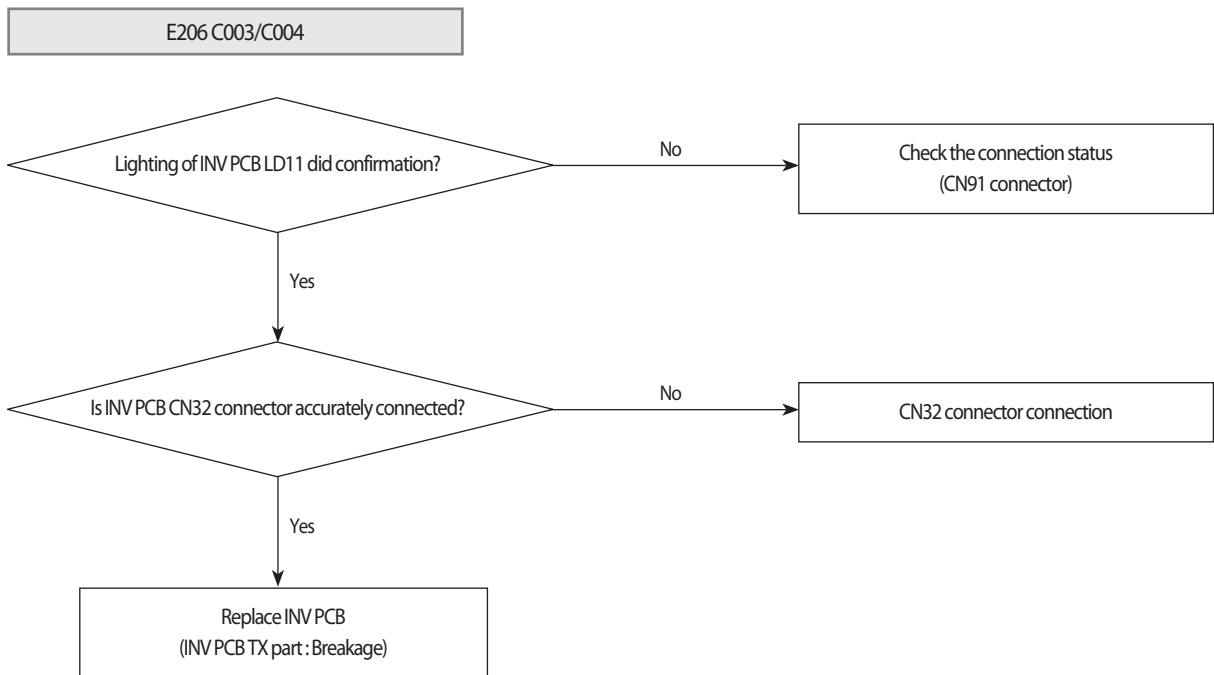
4-3-7 Internal PCB Communication error of the Outdoor Unit C-Box

Outdoor unit display	E206													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Judgment Method	· PCB does not respond to the invoked Main PCB													
Cause of problem	· C-Box internal Inverter PCB, Fan PCB, Hub PCB defective													

1. Cause of problem



Internal PCB Communication error of the Outdoor Unit C-Box (cont.)

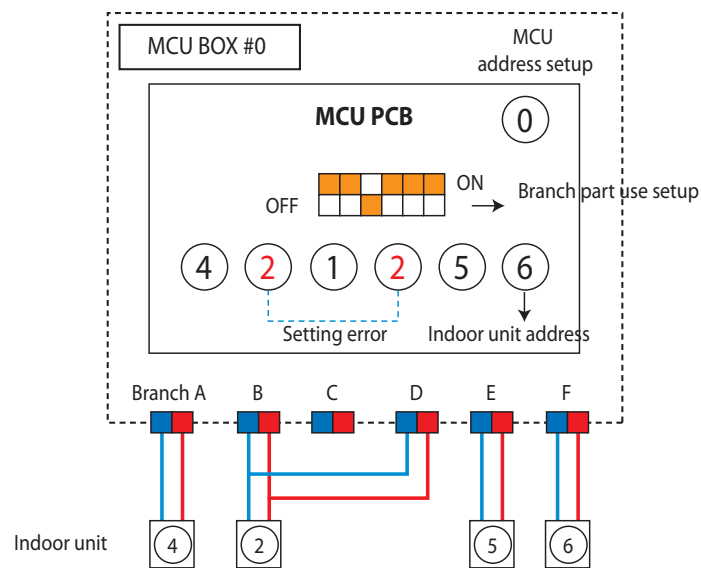


4-3-8 MCU branch part setup error – inconsecutive connection with the use of 2 branch parts

Outdoor unit display	E211													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	x	x	●	●	x	x	●	●	x	x	x	●	●	x
Criteria	• When 2 branch parts are used for one indoor unit without connecting them consecutively.													
Cause of problem	• Branch part assembly error													

1. How to check

Find an MCU that is composed as the following picture to carry out assembly of branch part again. After completing the re-setting, press K3 button on the button to reset or turn it off to restart.

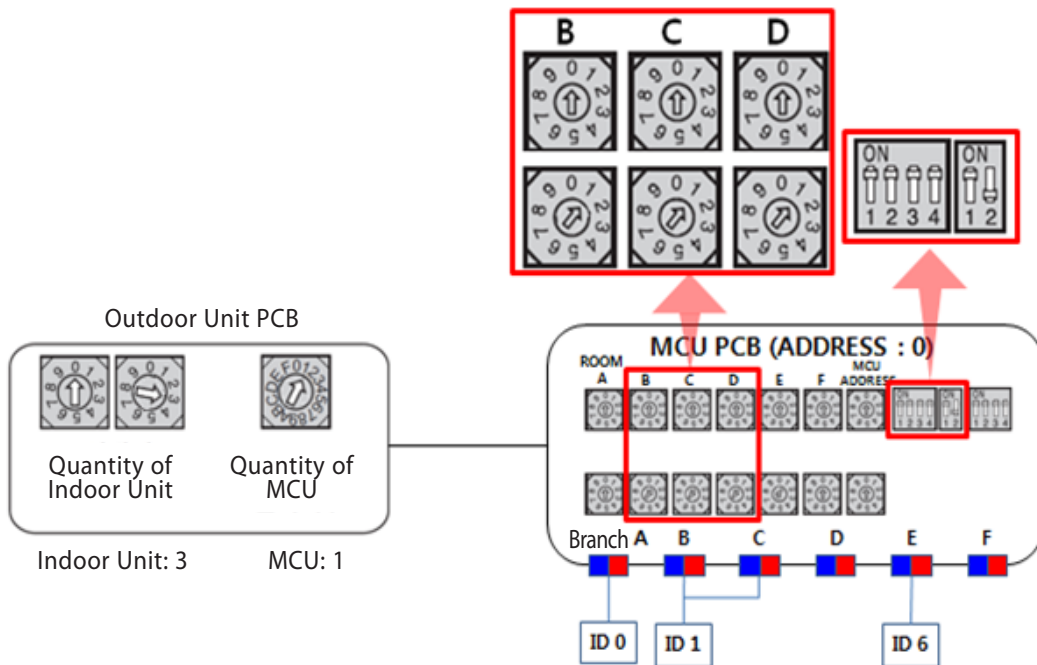


4-3-9 MCU branch part setup error – Repeated setup for the same address over 3 times

Outdoor unit display	E2 12													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Criteria	※ ● : ON ● : Flash × : OFF													
Cause of problem	• The same indoor unit address was setup more than 3 times in MCU													
	• MCU indoor unit address setting error													

1. How to check

Find an MCU that is composed as the following picture to carry out assembly of branch part again. After completing the re-setting, press K3 button on the button to reset or turn it off to restart.

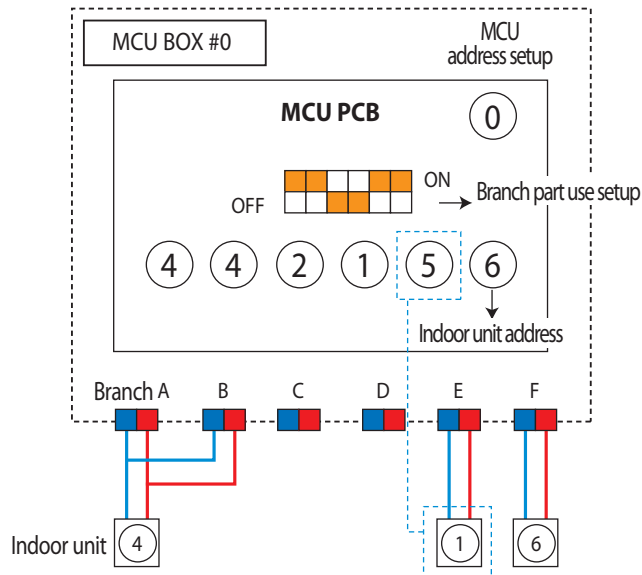


4-3-10 MCU branch part setup error – non-installed address setup

Outdoor unit display	E2 13													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Criteria	※ ● : ON ● : Flash × : OFF • If there is an indoor unit that is not installed among MCU registered indoor units													
Cause of problem	• Indoor unit, with the assigned address on MCU, not installed.													

1. How to check

Find an MCU that is composed as the following picture to carry out assembly of branch part again. After completing the re-setting, press K3 button on the button to reset or turn it off to restart.



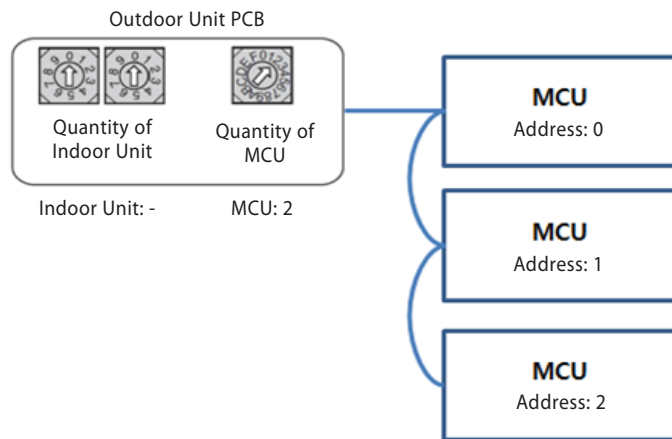
4-3-11 Setup Error for MCU Branch part – Setup Error for MCU Quantity Used

Outdoor Unit Display	E2 14													
Indoor Unit Display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Judgment Method	※ ● : ON ○ : Flash × : OFF • Occurs when the quantity of MCU is incorrectly set by the outdoor unit. • Occurs when same addresses are found when two or more MCU are connected.													
Special Cause	• Outdoor unit MCU setup and same address errors when connecting two or more MCUs .													

- Inspection Method : Check the Main PCB MCU quantity setting switch of the outdoor unit and check the installed MCU quantity matches.
 Check whether each MCU PCB address switch was duplicated.
 To use, reset by pressing the K3 button of the outdoor unit after the reset is completed, or reset after turning off the power and then turn it on again.

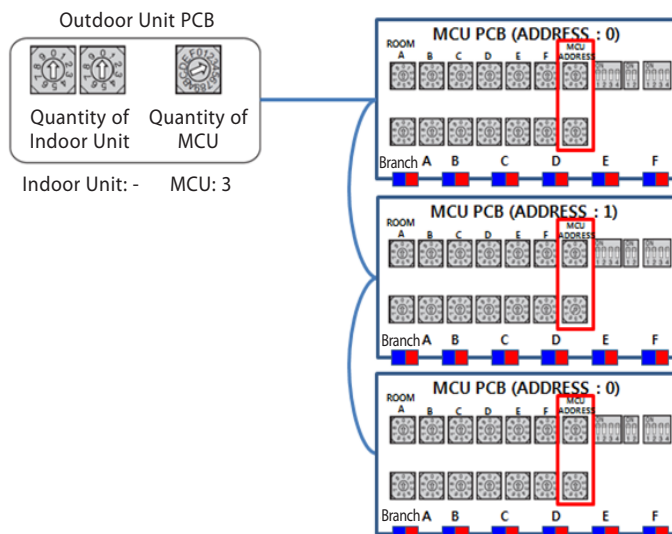
• Example of MCU quantity setting error

ex) PCB MCU setting quantity of outdoor unit = 2 / MCU installed Quantity = 3



• Example of MCU address setting error

ex) Two among three of MCU address was set to 0



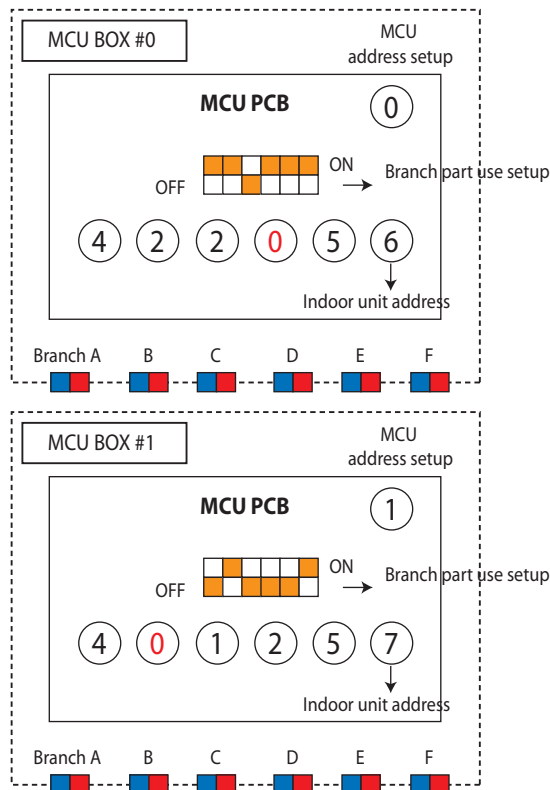
4-3-12 MCU branch part setup error – Overlapping Indoor unit Address setup

Outdoor unit display	E2 15													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
	※ ● : ON ● : Flash × : OFF													
Criteria	• Occurs when an indoor unit address setup switch in MCU has been overlapped													
Cause of problem	• Repeated indoor unit address													

1. How to check

Check the setup switch for the number of indoor units in MCU

After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.

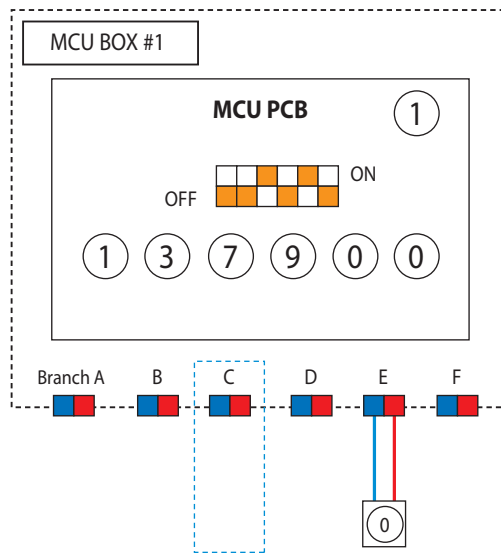


4-3-13 MCU branch part setup error – Set as being used without connection to an Indoor unit

Outdoor unit display	E2 16													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Criteria	• Occurs when MCU PIPE is set as being used, yet not connected to an indoor unit													
Cause of problem	• Pipe is not installed to the indoor unit with assigned address on MCU													

1. How to check

Adjust the Dip switch that sets up the use of MCU branch part to 'Not-Used'. After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.

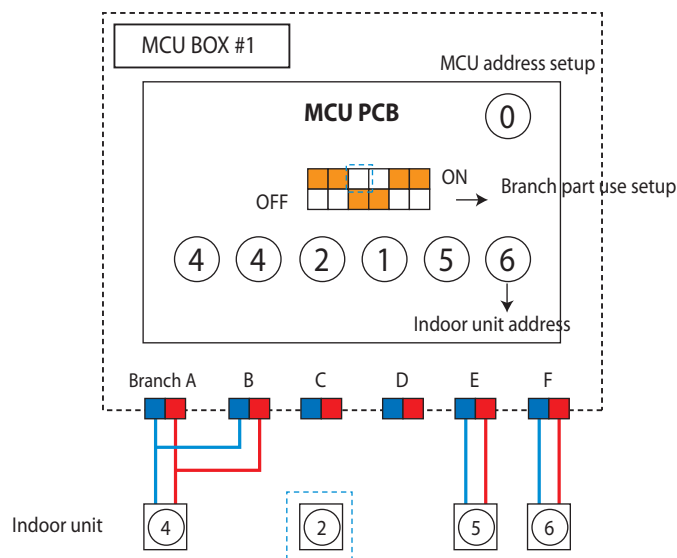


4-3-14 MCU branch part setup error – Connect an Indoor unit to a branch part not being used

Outdoor unit display	E2 17													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
Criteria	• Occurs when MCU PIPE is turned off, yet an indoor unit is registered													
Cause of problem	• Indoor unit connection to the unused branch part													

1. How to check

Check the actual use of the branch part. If it is used, turn on the Dip switch for branch part setup. After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



4-3-15 MCU branch part setup error – Connect more Indoor units than what is actually set up in MCU

Outdoor unit display	E2 18													
Indoor unit display	Duct, Cassette (1/2Way), Console, Ceiling					Cassette (4/Mini4Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	×	×	●	●	×	×	×	●	●	×
	※ ● : ON ● : Flash × : OFF													
Criteria	• Occurs when the number of indoor unit installed exceeds that setting in MCU													
Cause of problem	• Number of indoor units exceeds number of indoor units entered on MCU setting													

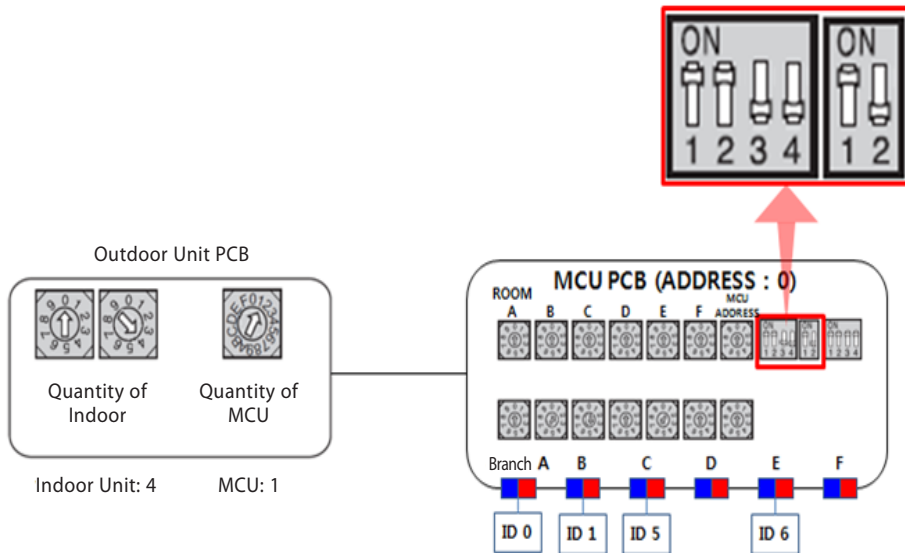
1. How to check

Check the number of indoor units connected to MCU then readjust the switch for the number of units

After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.

• Example of MCU indoor unit setting DIP switch error

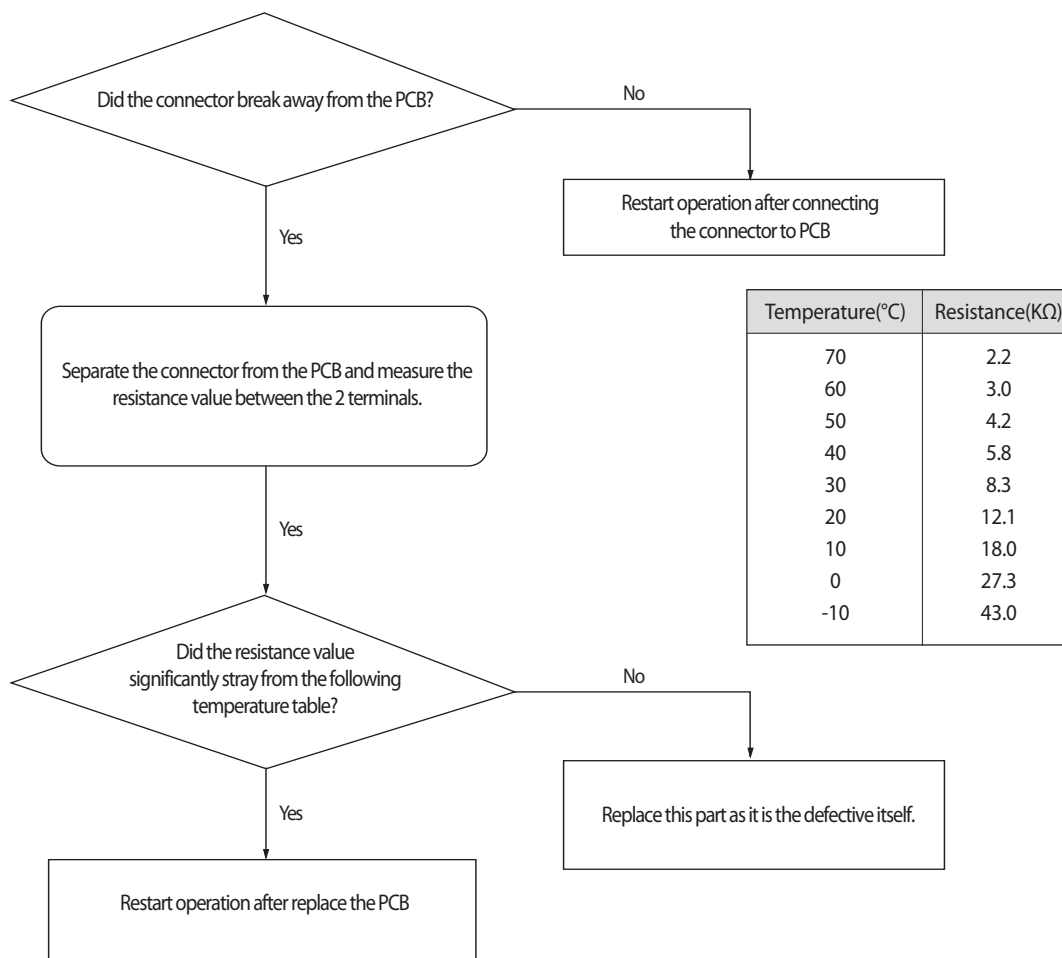
ex) Indoor unit No.5 was connected to branch part C, but DIP switch No.3 (branch part C) is off.



4-3-16 MCU subcooler entrance/exit sensor error (Open/Short)

Outdoor unit display	<i>E219</i> (FAN PCB(FAN1)) <i>E220</i> (FAN PCB(FAN2))													
Indoor Unit Display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	※ ● : ON ● : Flash × : OFF · Fan rotation defective or vibration and noise of the defective operation. · Hall IC there is no signal input.													
Cause of problem	· Connection status error. · Hall IC wire disconnection. · Defective circuit parts and defective manufacturing. · Fan Motor defective.													

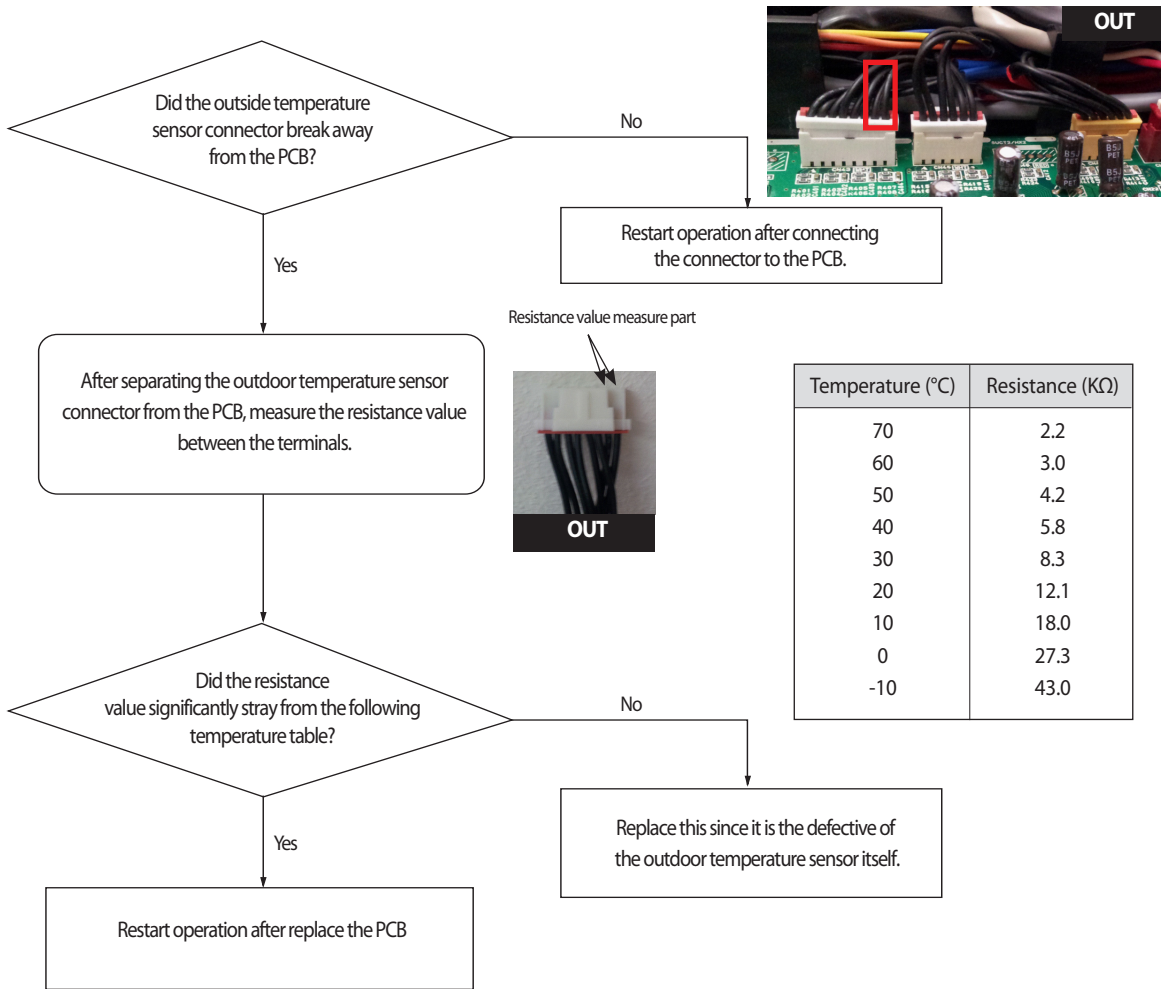
1. Cause of problem



4-3-17 Outdoor Temperature Sensor Error

Outdoor unit display	E221													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Outdoor temperature sensor Open/Short is defective.													

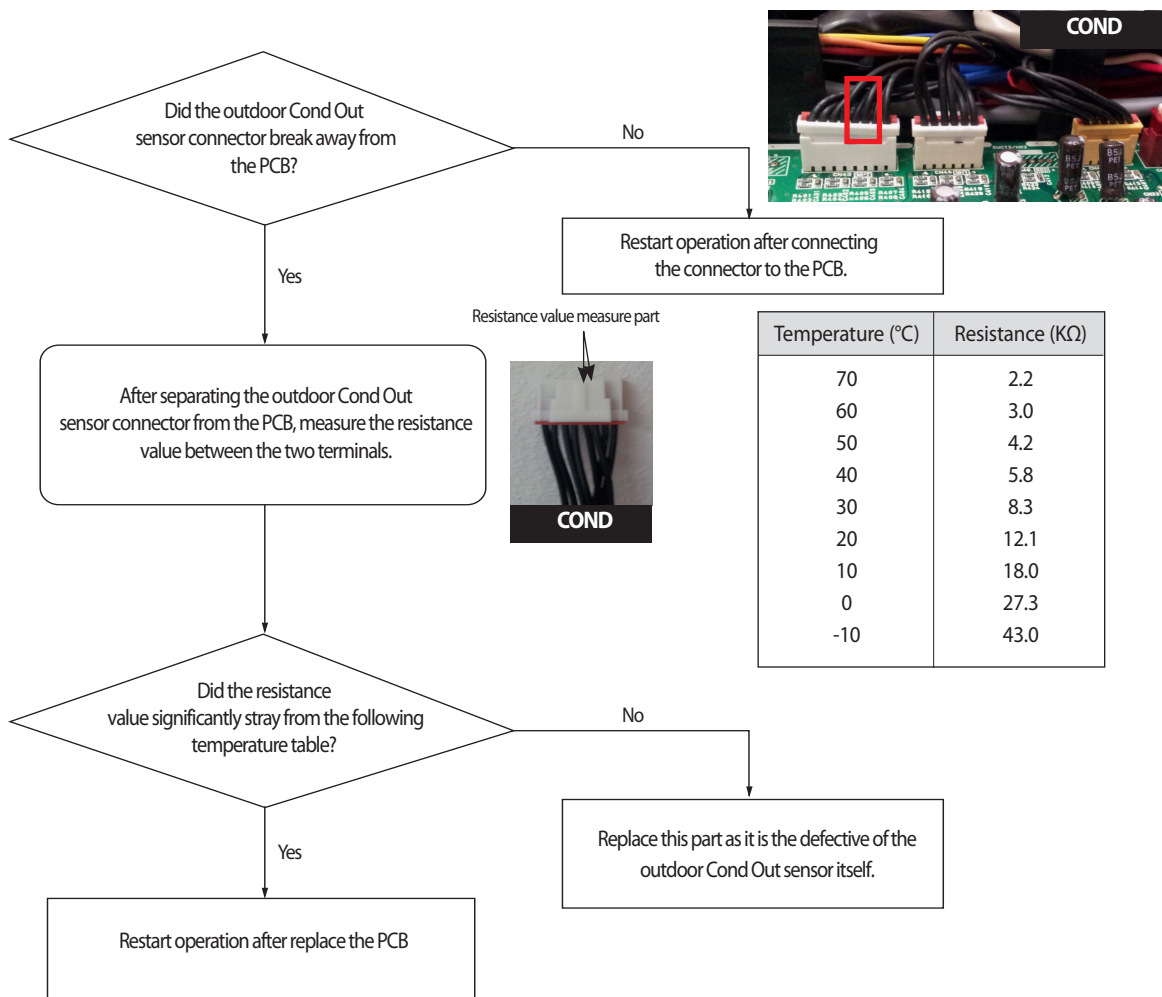
1. Cause of problem



4-3-18 Cond Out Temperature Sensor Error (Open/Short)

Outdoor unit display	E231													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Disconnection or breakdown of relevant sensor.													

1. Cause of problem



4-3-19 Outdoor Cond Out sensor breakaway error

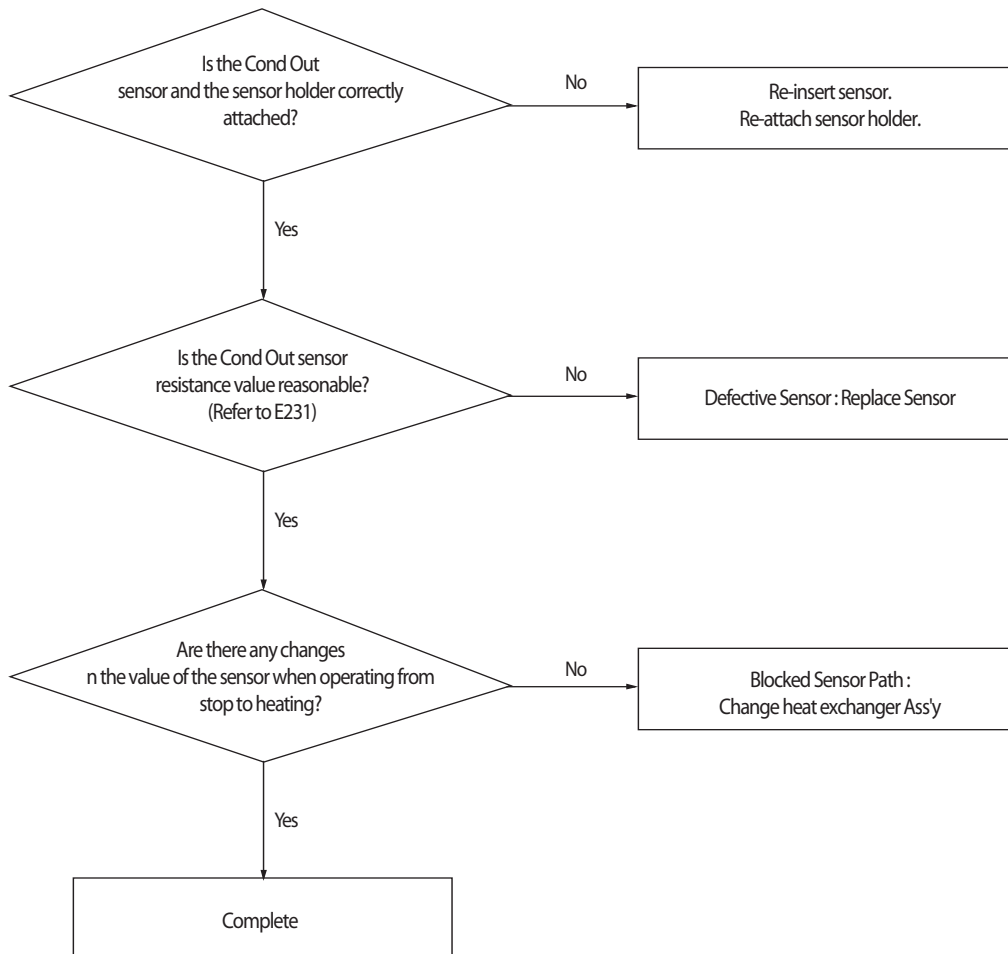
Outdoor unit display	E241 (AM***FXV***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Outdoor Cond Out sensor breakaway/defective/ relevant path blocked.													

1. Judgment Method

- 1) No inspection for Cooling operation.
- 2) For heating operation (Each of the conditions below needs to be satisfied for more than 20 minutes.)

High pressure average > 25kg/cm ²	OK
Low pressure average < 8.5kg/cm ²	OK
Teva, out - Tair, in ≥ 3°C	OK
Teva, in - Tair, in ≥ 2°C	OK
Tcond, out - Tair, out ≤ 0°C	NO
Every compressor is in operation & indoor unit operation and Thermo On	OK
Error Content	Outdoor Cond Out sensor breakaway error

2. Cause of problem



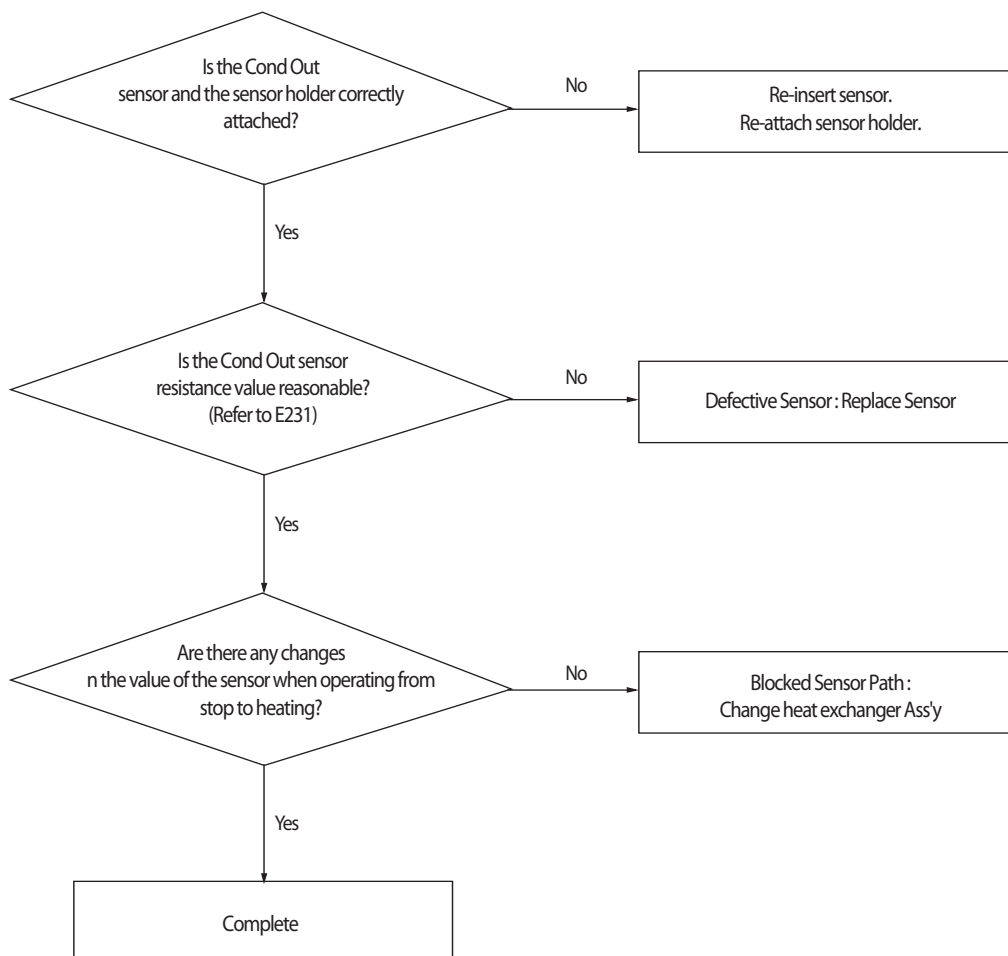
Outdoor unit display	E241 (AM***FXWA***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Outdoor Cond Out sensor breakaway/defective/ relevant path blocked.													

1. Judgment Method

- 1) No inspection for Cooling operation.
- 2) For heating operation (Each of the conditions below needs to be satisfied for more than 20 minutes.)
 - 1. Point of enter.
 - (1) Detected only when heating operation.(Except main heating operation)
 - (2) Compressor operation maintained 40 minutes after start.
 - 2. Point of enter
 - (1) $|T_{condout_real} - T_{condout_ini}| < 2^{\circ}C$ maintain conditions during 40 minutes.

※ $T_{condout_ini}$: Condout out temperature just before the compressor operating starts.
 $T_{condout_real}$: Condout temperature of the current compressor.

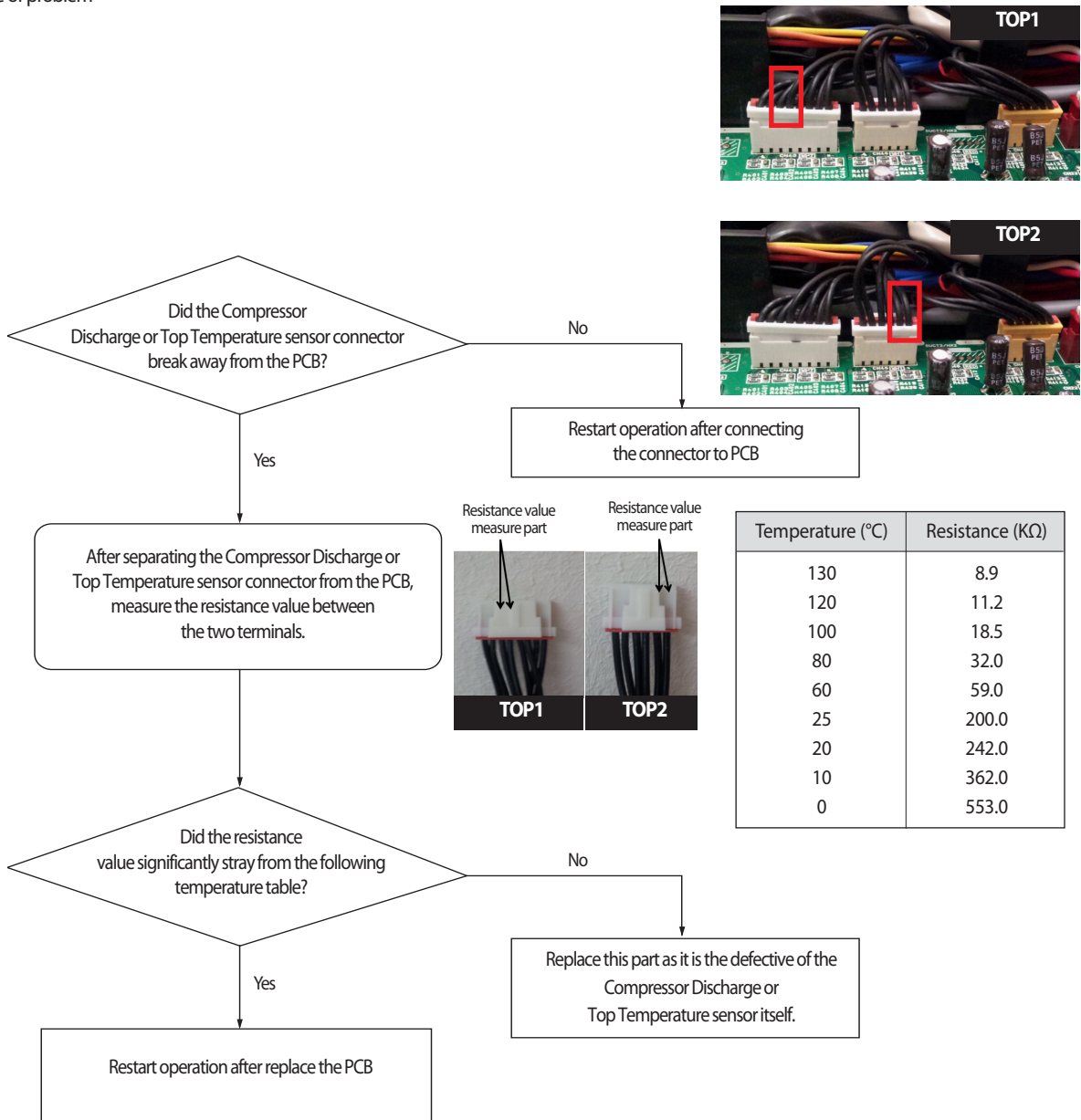
2. Cause of problem



4-3-20 Compressor Discharge or Top 1/2 Temperature sensor error

Outdoor unit display	<i>E251</i> (Compressor 1 Discharge) <i>E257</i> (Compressor 2 Discharge)													
	<i>E276</i> (Compressor 1 Top) <i>E277</i> (Compressor 2 Top)													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
Judgment Method	※ ● : ON ● : Flash × : OFF													
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Compressor Discharge or Top Temperature sensor defective. (Open/Short)													

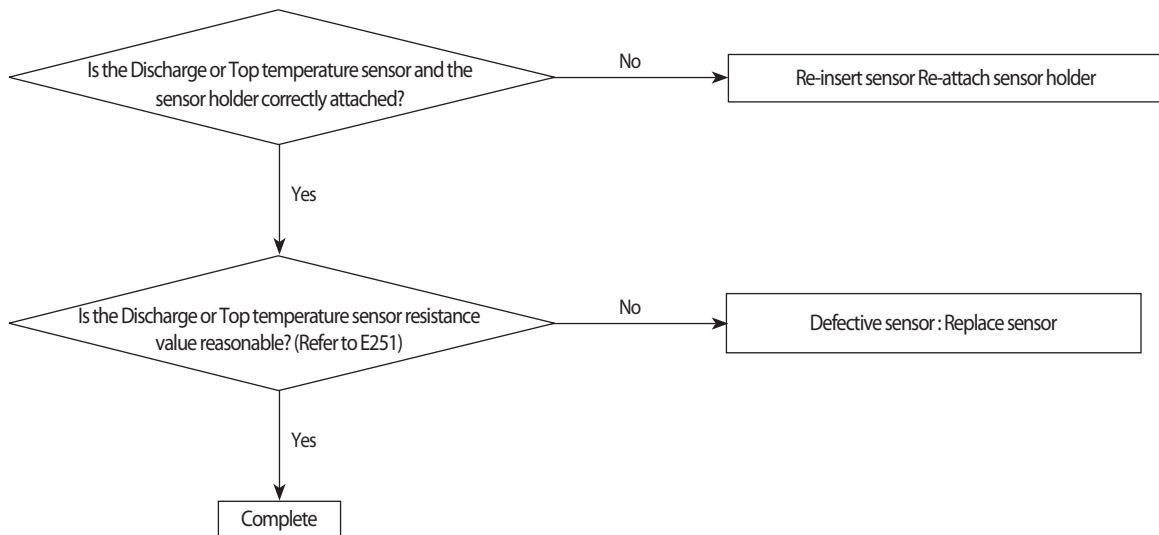
1. Cause of problem



4-3-21 Compressor Discharge or Top temperature sensor breakaway error

Outdoor unit display	<i>E262</i> (Compressor 1 Discharge) <i>E263</i> (Compressor 2 Discharge)													
	<i>E266</i> (Compressor 1 Top) <i>E267</i> (Compressor 2 Top)													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	1) Relevant compressor frequency of 60Hz or higher. 2) Suction temperature > Low pressure saturation temperature +10 °C 3) Relevant discharge or Top temperature < High pressure saturation temperature 4) In case of keep 30 minutes in state that satisfy all above conditions (1, 2, 3).													
Cause of problem	· Compressor discharge or Top temperature sensor breakaway and defective / Starting badness of compressor													

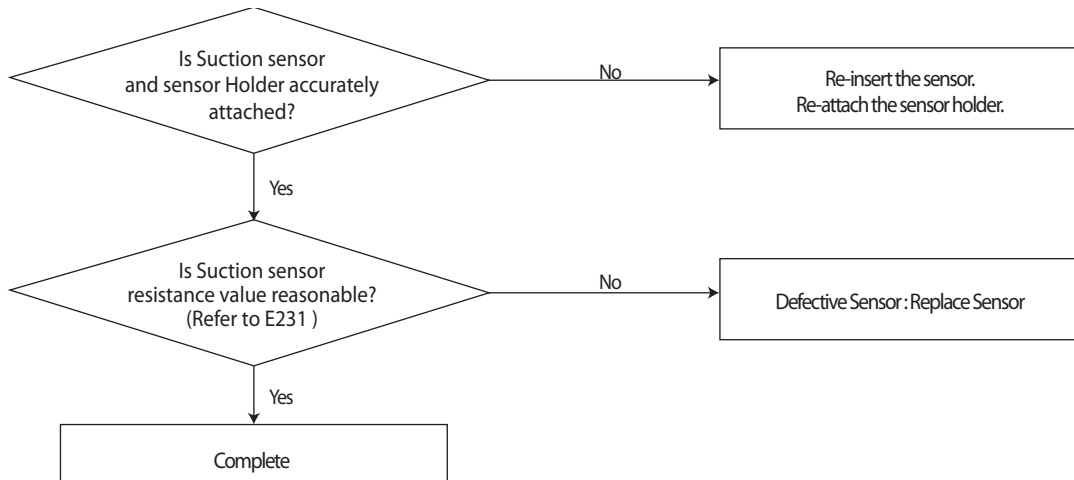
1. Cause of problem



4-3-22 E269 : Suction Temperature sensor breakaway error

Outdoor unit display	E269													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	· Judgment Method : Difference of suction temperature of compressor starting verge and suction temperature that is on present operation : If less than 2 °C for 30 minutes to keep.(Judgment at heating operation only)													
Cause of problem	· Suction temperature sensor breakaway/defective.													

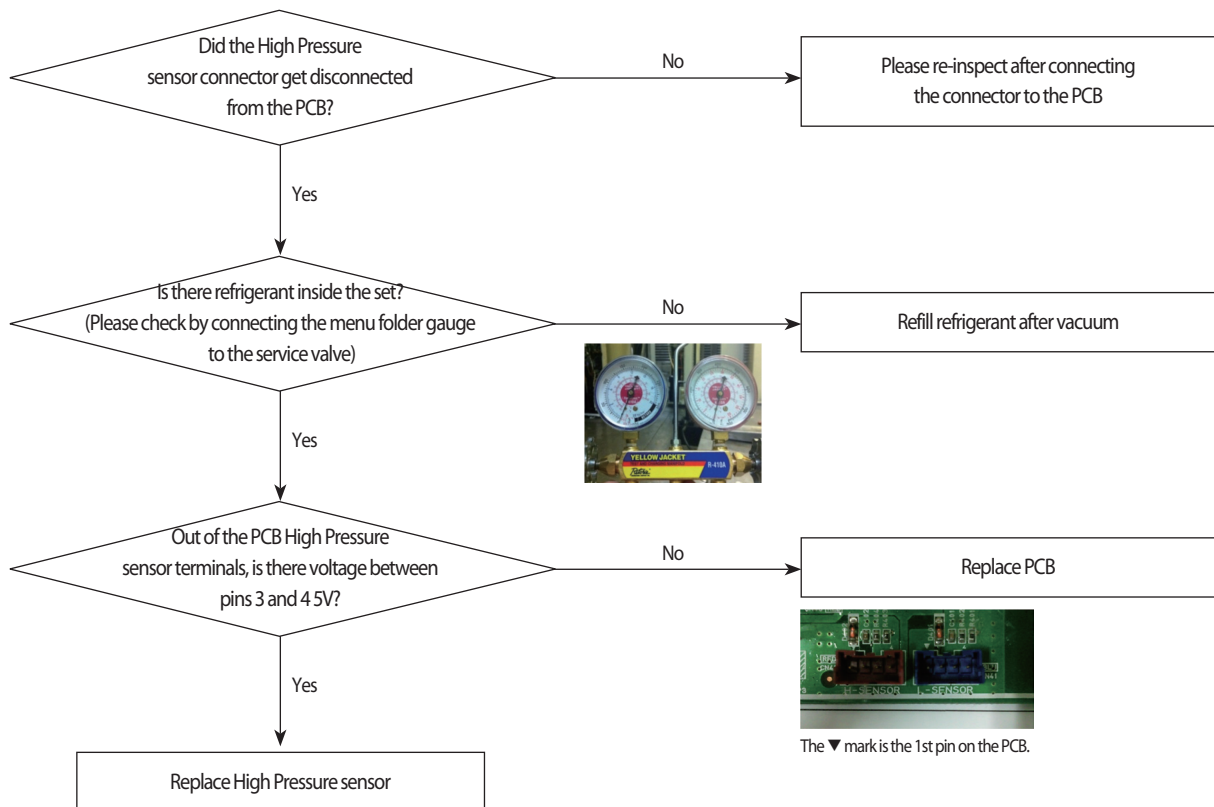
1. Cause of problem



4-3-23 High Pressure sensor error (Open/Short)

Outdoor unit display	E291													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
※ ● : ON ○ : Flash × : OFF														
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Disconnection or breakdown of relevant sensor.													

- High Pressure sensor Open/Short error determination method
 - Identifies from when power is supplied or 2 minutes after RESET, and only when set is stopped.
 - An Open/Short error will occur if the input voltage standard range of 0.5V ~ 4.95V is exceeded.
- Inspection Method

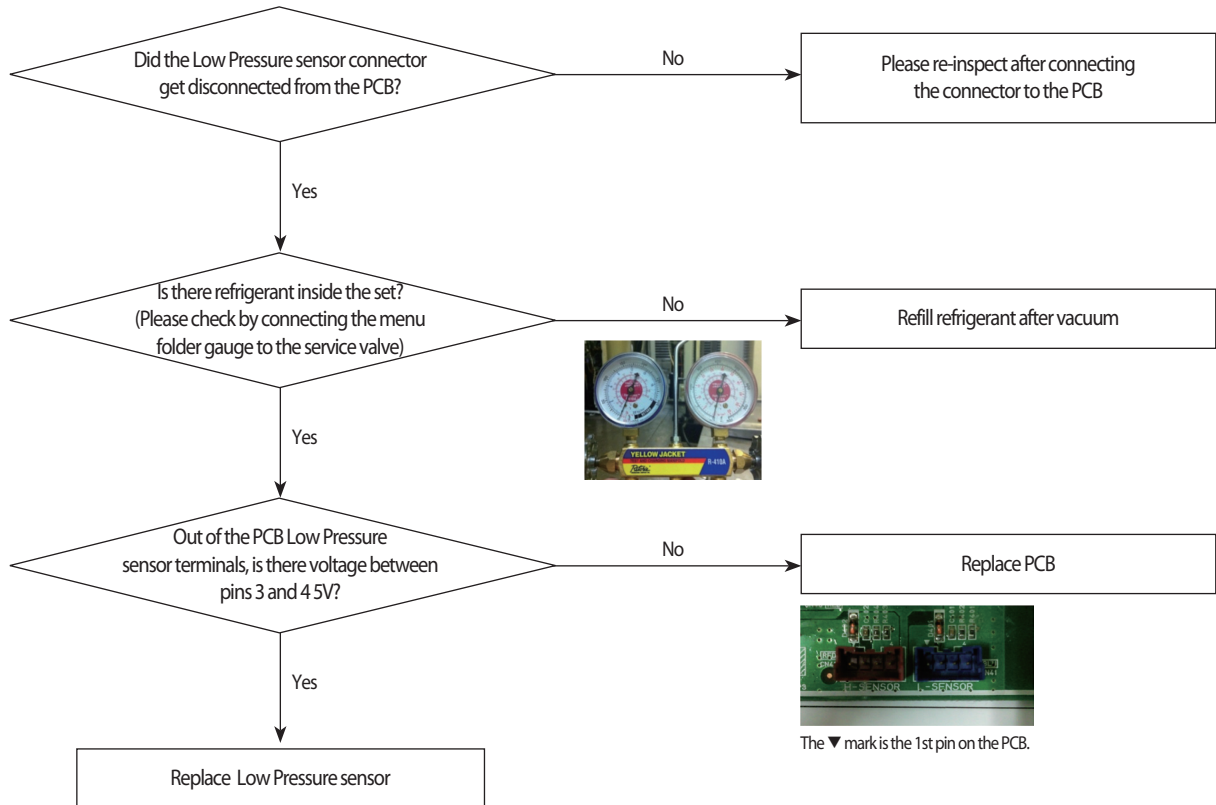


4-3-24 Low Pressure sensor error (Open/Short)

Outdoor unit display	E296														
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)					
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C	
	●	×	×	●	×	●	×	●	×	●	×	×	●	×	
Judgment Method	· Refer to the judgment method below.														
Cause of problem	· Disconnection or breakdown of relevant sensor.														

※ ● : ON ○ : Flash × : OFF

- Low Pressure sensor Open/Short error determination method
 - Identifies from when power is supplied or 2 minutes after RESET, and only when set is stopped.
 - An Open/Short error will occur if the input voltage standard range of 0.5V ~ 4.95V is exceeded.
- Inspection Method

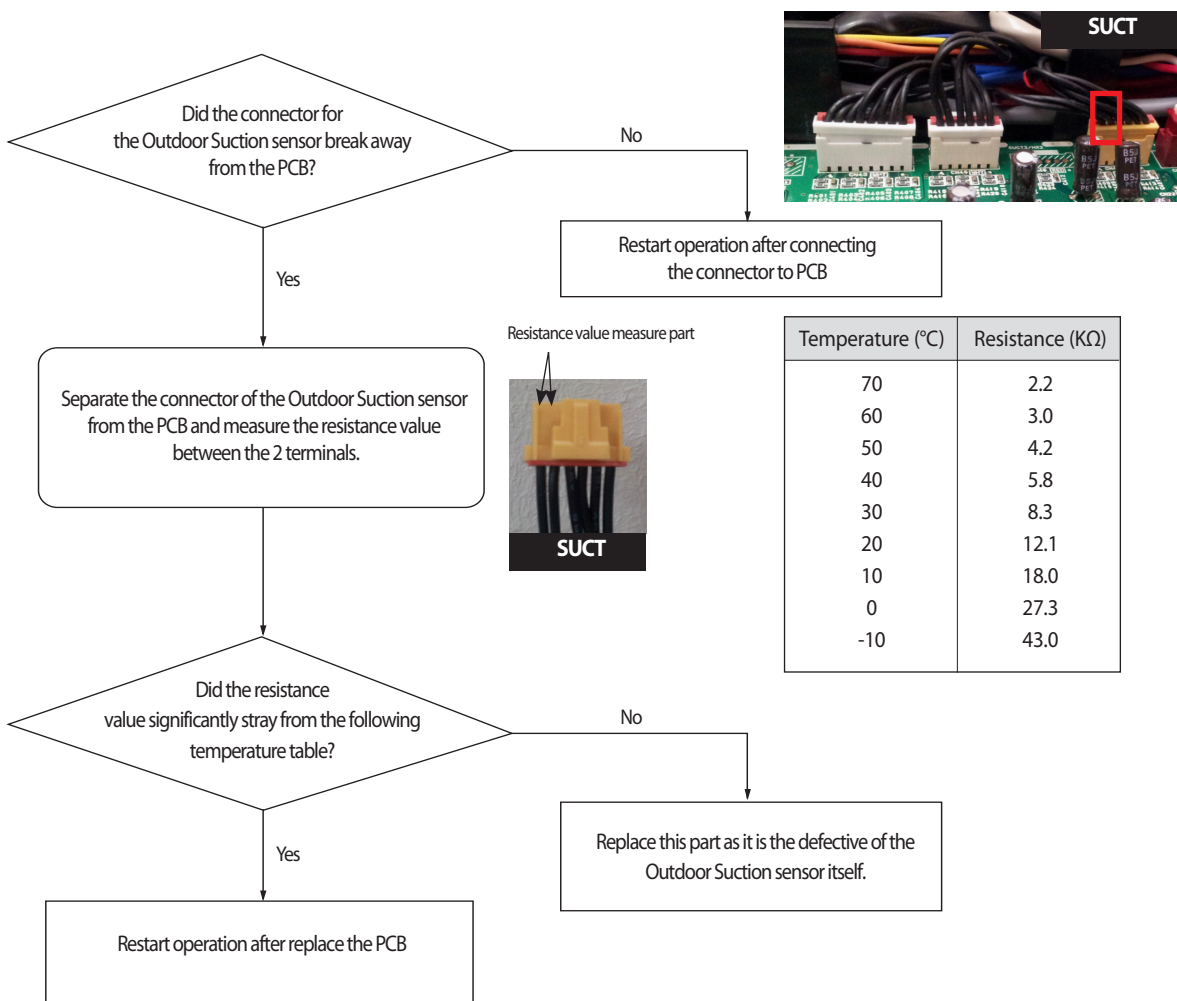


The ▼ mark is the 1st pin on the PCB.

4-3-25 Suction Temperature sensor error (Open/Short)

Outdoor unit display	E308													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Disconnection or breakdown of relevant sensor.													

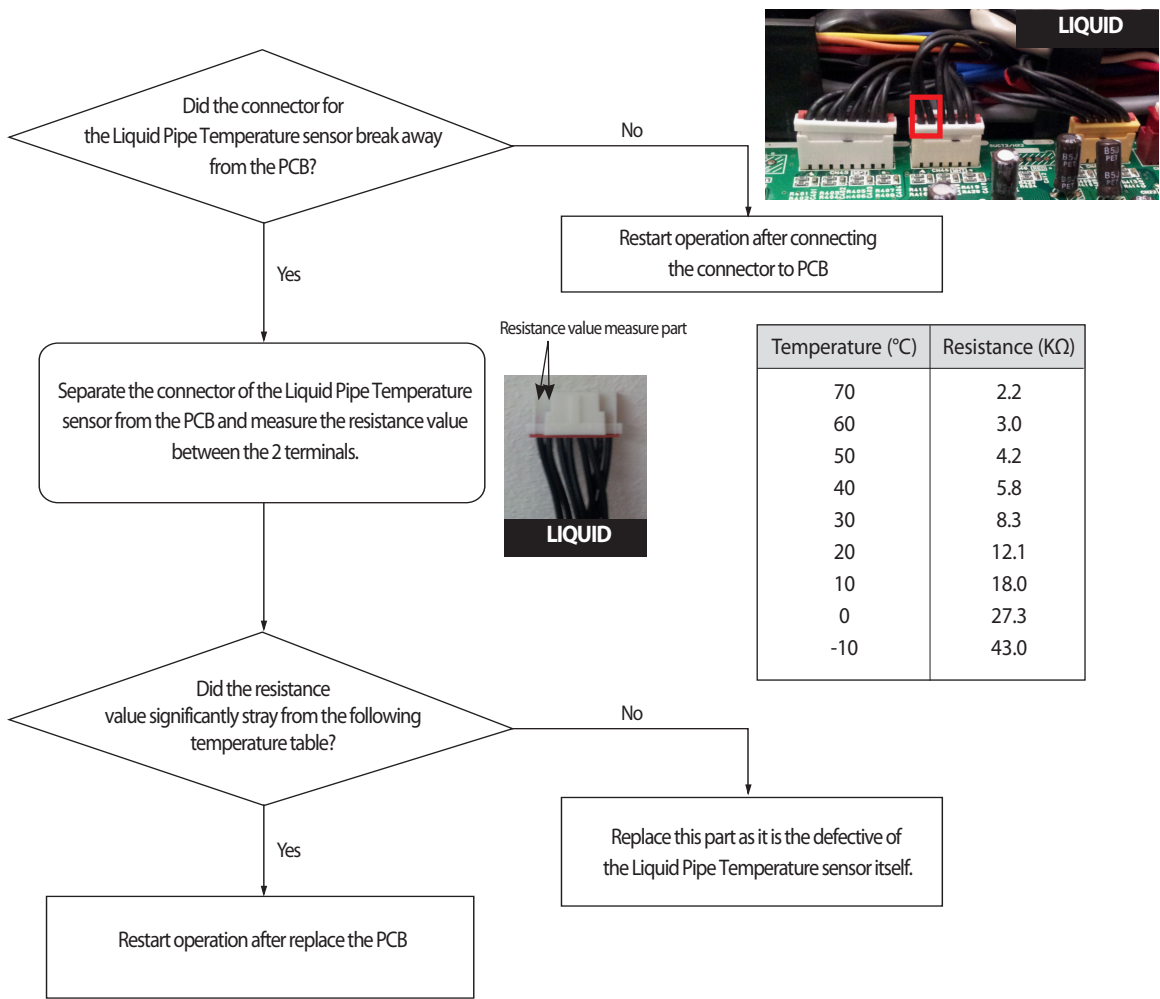
1. Cause of problem



4-3-26 Liquid Pipe Temperature sensor error (Open/Short)

Outdoor unit display	E311													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Disconnection or breakdown of relevant sensor.													

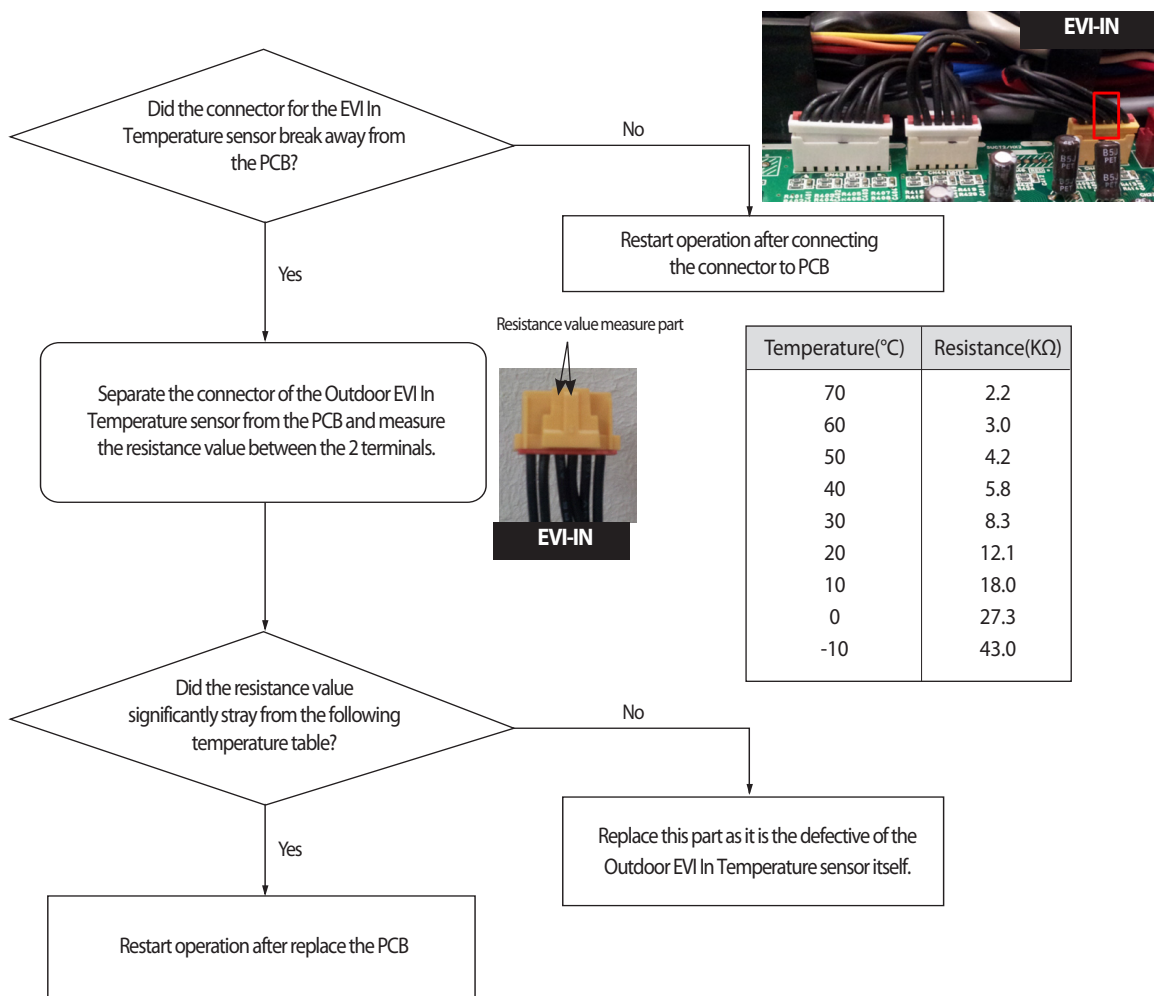
1. Cause of problem



4-3-27 EVI In Temperature sensor error (Open/Short)

Outdoor unit display	E321													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Disconnection or breakdown of relevant sensor.													

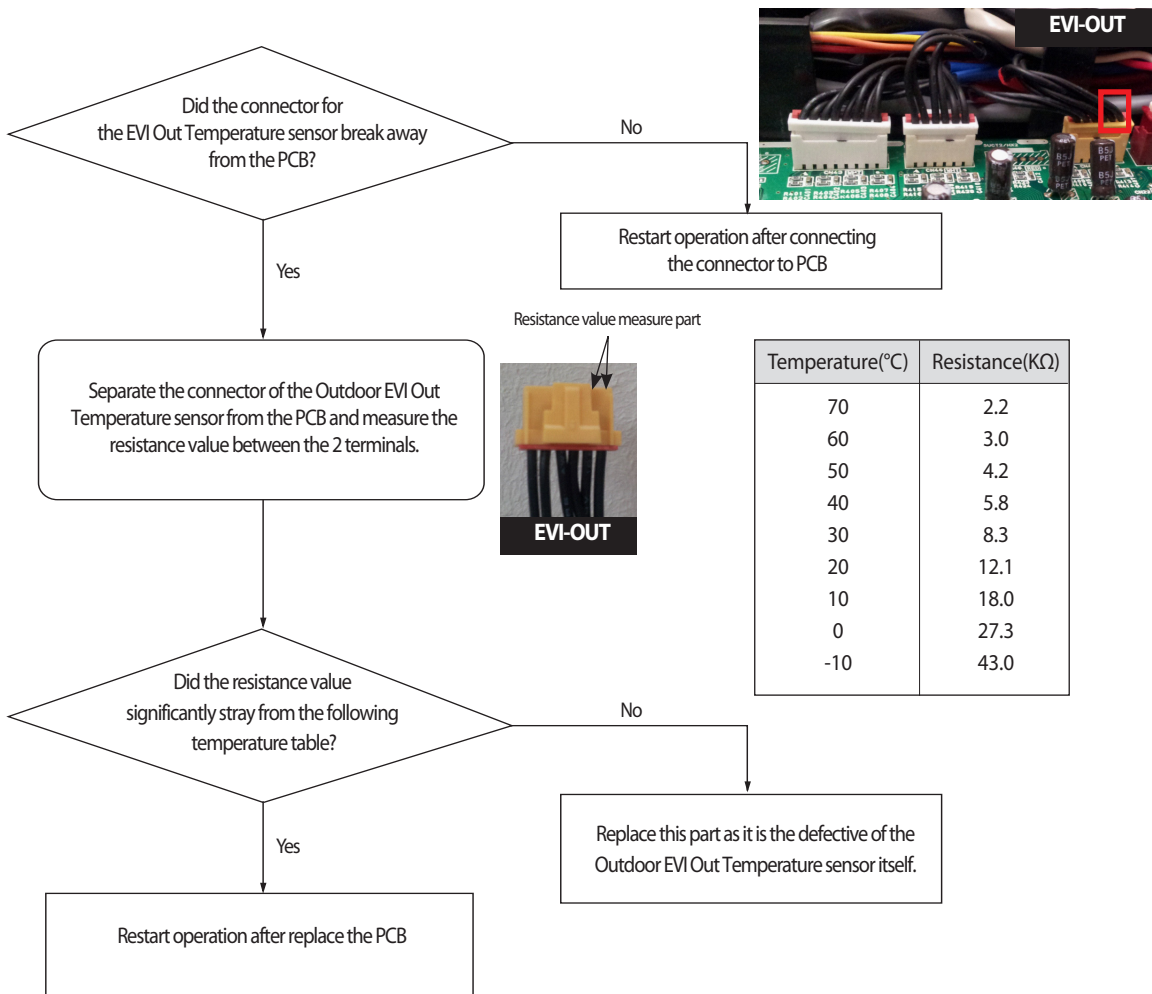
1. Cause of problem



4-3-28 EVI Out Temperature sensor error (Open/Short)

Outdoor unit display	E322													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	· Refer to the judgment method below.													
Cause of problem	· Disconnection or breakdown of relevant sensor.													

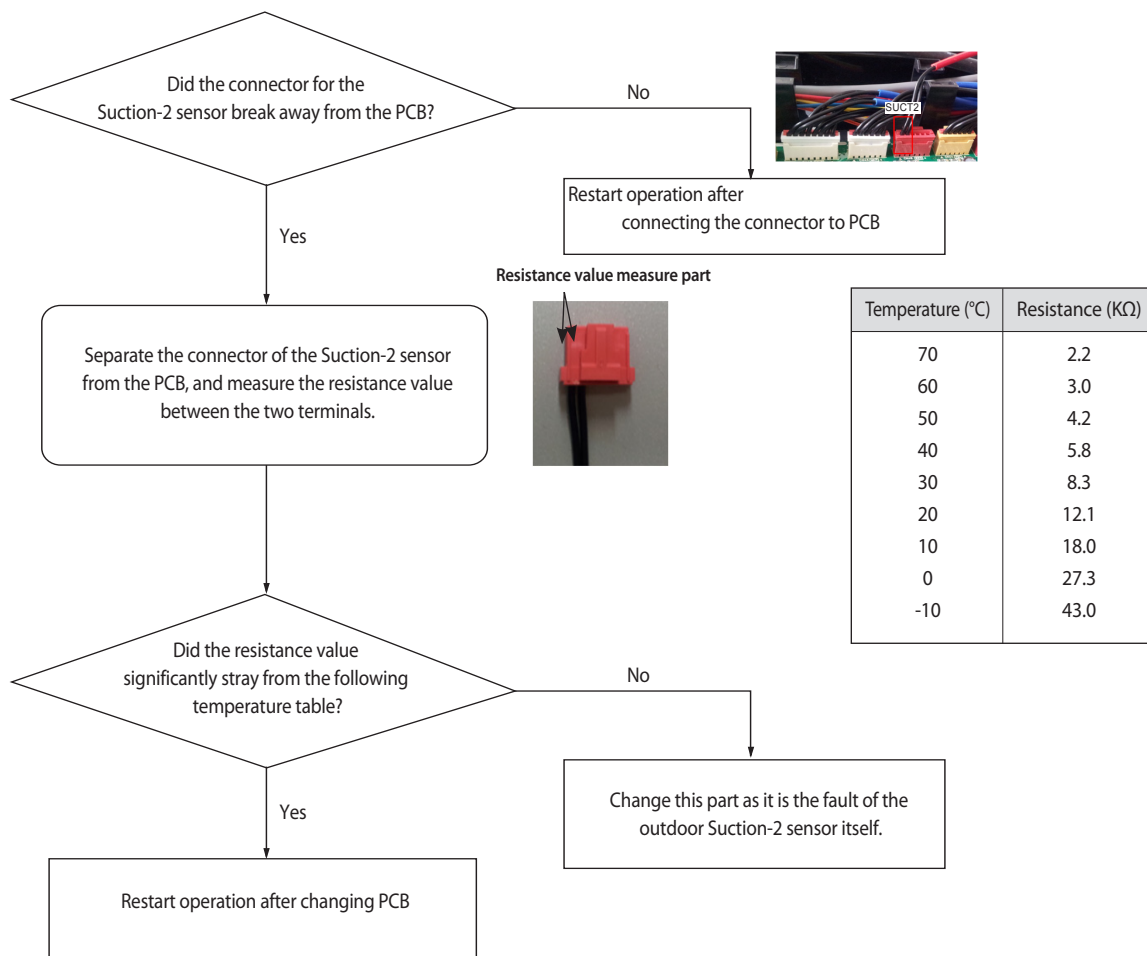
1. Cause of problem



4-3-29 Suction-2 Temperature Sensor Error (OPEN/SHORT)

Outdoor Unit Display	E323													
Indoor Unit Display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	●	×	×	●	×	●	×	●	×	●	×	×	●	×
Judgment Method	• Refer to the judgment method below.													
Special Cause	• Disconnection or breakdown of relevant sensor													

1. Inspection Method



4-3-30 Measures of other outdoor unit error

Outdoor unit display	<i>E347</i>	FAN2 wire unconnected error	<i>E399</i>	FAN2 PBA IPM temperature sensor error																																											
	<i>E447</i>	FAN1 wire unconnected error	<i>E499</i>	FAN1 PBA IPM temperature sensor error																																											
	<i>E367</i>	COMP.2 wire unconnected error	<i>E374</i>	Inverter PBA2 IGBT temperature sensor error																																											
	<i>E467</i>	COMP.1 wire unconnected error	<i>E474</i>	Inverter PBA1 IGBT temperature sensor error																																											
Indoor Unit Display	<table border="1"> <thead> <tr> <th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th> <th colspan="4">Cassette (4/Mini4 Way)</th> <th colspan="5">Wall-mounted (NeoForte)</th> </tr> <tr> <th>Operation</th> <th>Defrost</th> <th>Timer</th> <th>Fan</th> <th>Filter/MPI</th> <th>Operation</th> <th>Defrost</th> <th>Timer</th> <th>Filter</th> <th>Operation</th> <th>Timer</th> <th>Turbo</th> <th>24°C</th> <th>27°C</th> </tr> </thead> <tbody> <tr> <td>×</td> <td>×</td> <td>●</td> <td>●</td> <td>●</td> <td>×</td> <td>●</td> <td>●</td> <td>●</td> <td>×</td> <td>×</td> <td>●</td> <td>●</td> <td>●</td> </tr> </tbody> </table>					Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)					Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)																																					
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C																																	
×	×	●	●	●	×	●	●	●	×	×	●	●	●																																		
※ ● : ON ● : Flash ×: OFF																																															
Judgment Method	· Refer to the measures code below.																																														
Cause of problem	· Refer to the measures code below.																																														

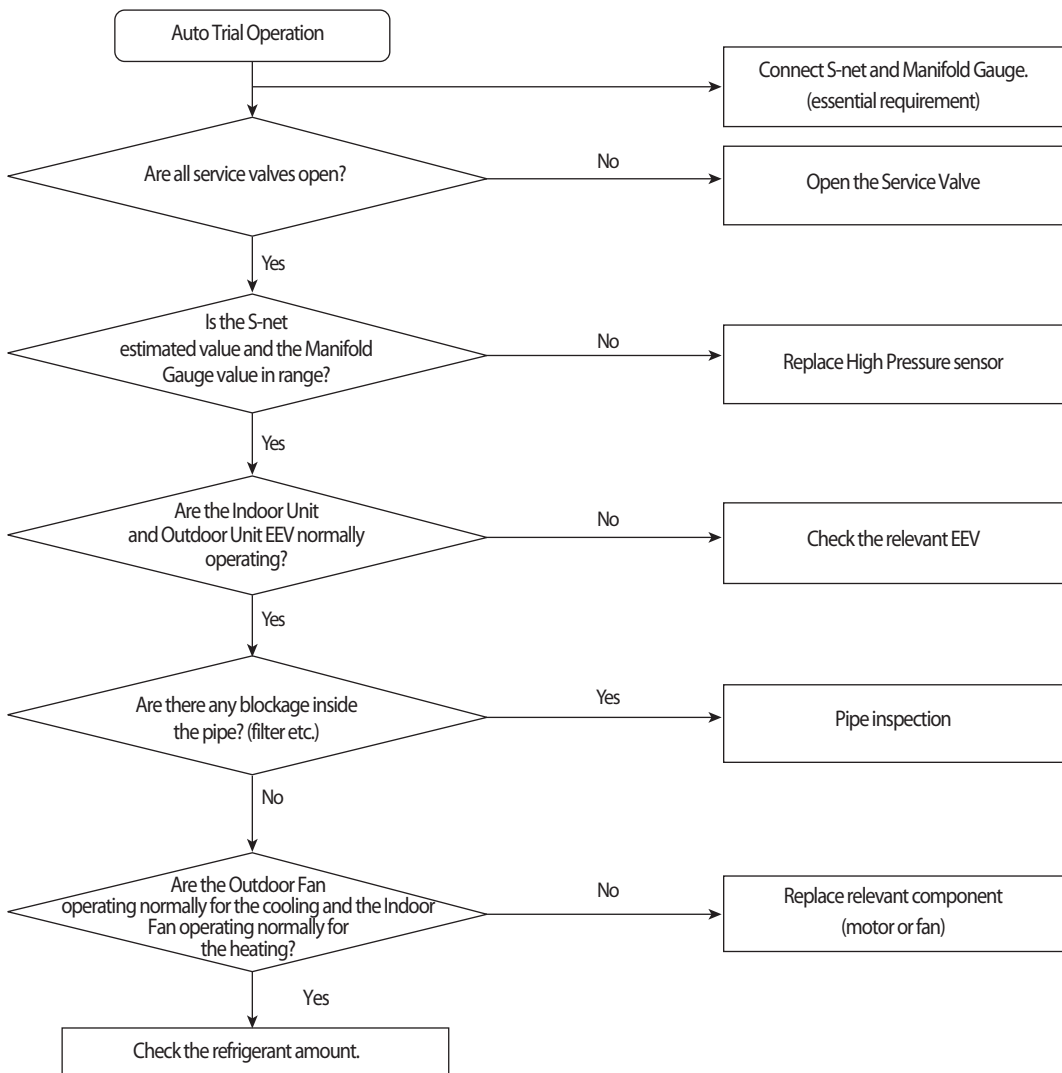
1. Measures by code

Code	Error	Measures
E347	FAN2 wire unconnected error	Check the connection of Fan motor and PBA (Replace PBA if there is no anomaly)
E447	FAN1 wire unconnected error	Check the connection of Fan motor and PBA (Replace PBA if there is no anomaly)
E367	COMP.2 wire unconnected error	Check the connection of COMP and Inverter PBA (Replace PBA if there is no anomaly)
E467	COMP.1 wire unconnected error	Check the connection of COMP and Inverter PBA (Replace PBA if there is no anomaly)
E399	FAN2 PBA IPM temperature sensor error	Replace FAN PBA
E499	FAN1 PBA IPM temperature sensor error	Replace FAN PBA
E374	Inverter PBA2 IGBT temperature sensor error	Replace Inverter PBA
E474	Inverter PBA1 IGBT temperature sensor error	Replace Inverter PBA

4-3-31 E407 : Comp. Down due to High Pressure Protection Control

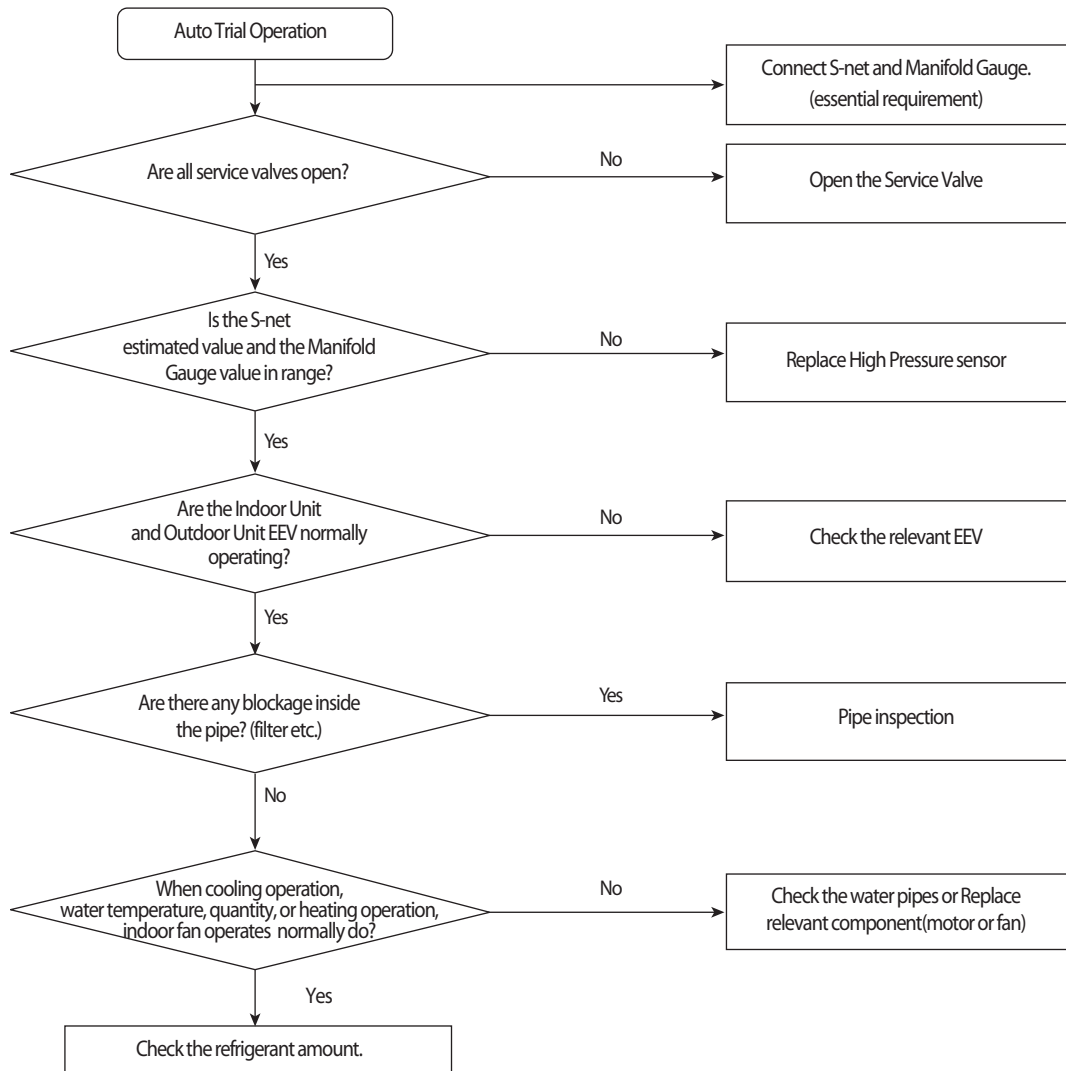
Outdoor unit display	E407 (AM***FXV***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
※ ● : ON ○ : Flash × : OFF														
Judgment Method	Value of the high pressure sensor is detected at 40kg/cm ² or more													
Cause of problem	<p><Cooling Operation></p> <ul style="list-style-type: none"> · Outdoor unit fan motor problem (constrained, defective) · Motor driver defective or wire is cut · Outdoor heat exchanger is contaminated. · Service valve locked/Fill refrigerant <p><Heating Operation></p> <ul style="list-style-type: none"> · Outdoor unit fan motor problem (constrained, defective) · Motor driver defective or wire is cut · Service valve locked/Excessive refrigerant 													

1. Cause of problem



Outdoor unit display	E407 (AM***FXWA***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
Judgment Method	※ ● : ON ● : Flash × : OFF													
Judgment Method	Value of the high pressure sensor is detected at 41kg/cm² or more													
Cause of problem	<p><Cooling operation></p> <ul style="list-style-type: none"> · Overheat of supplying water · Shortage of supplying water · Outdoor heat exchanger is contaminated. · Service valve locked/Fill refrigerant <p><Heating operation></p> <ul style="list-style-type: none"> · Indoor unit fan motor problem(constrained, defective) · Motor driver defective or wire is cut · Service valve locked/Excessive refrigerant 													

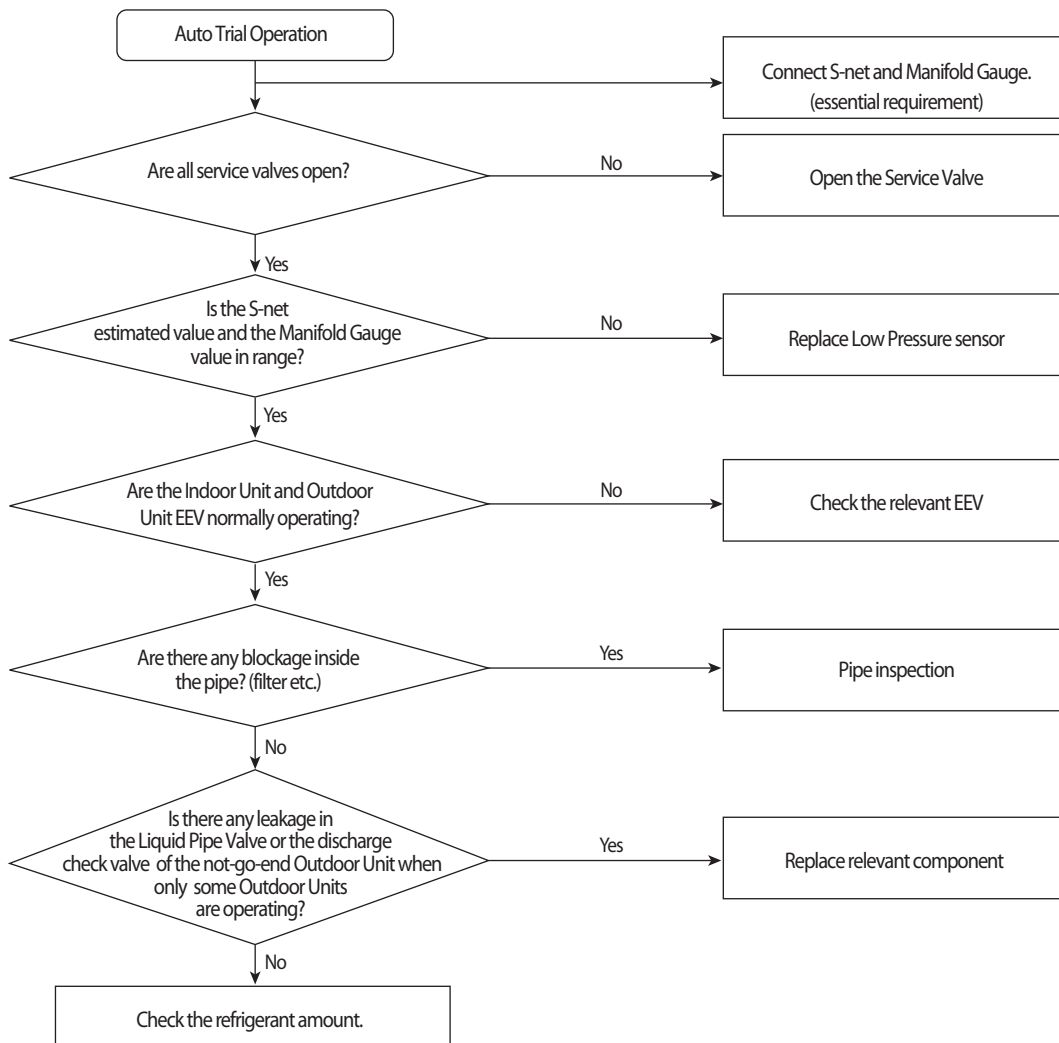
1. Cause of problem



4-3-32 E4 10 : Comp. Down due to Low Pressure Protection Control

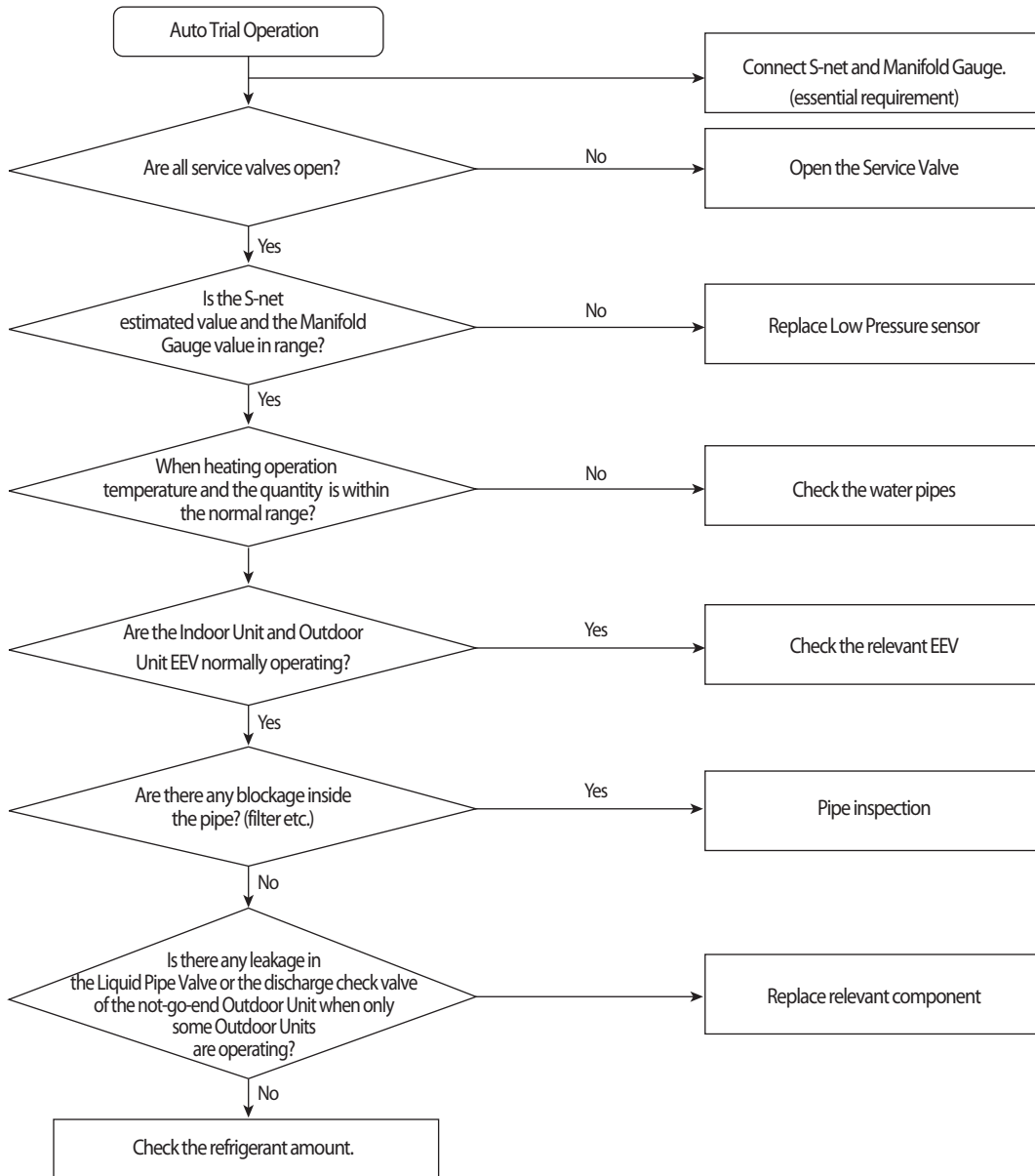
Outdoor unit display	E4 10 (AM***FXV***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	· Judgment Method : Inspection when the value of low pressure sensor is 1.8kg/cm ² , or less for air conditioning and 0.8kg/cm ² for heating													
Cause of problem	<ul style="list-style-type: none"> · Refrigerant shortage · Electronic expansion valve blocked · Service valve blocked · Low pressure sensor defective · Leakage of compressor discharge check valve of not-go-end outdoor unit · Error may be found when used in temperature range outside the conditions of use (Operating outside temperature at -20°C or less for heating and operating outside temperature at -5°C or less for Cooling) 													

1. Cause of problem



Outdoor unit display	E4 10 (AM***FXWA***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ● : Flash × : OFF													
Judgment Method	Inspection when the value of low pressure sensor is 2.6kg/cm ² , or less for air conditioning and 1.4kg/cm ² for heating.													
Cause of problem	<ul style="list-style-type: none"> · Refrigerant shortage · Electronic expansion valve blocked · Service valve blocked · Low pressure sensor defective · Leakage of compressor discharge check valve of not-go-end outdoor unit · Error may be found when used in temperature range outside the conditions of use (Operating outside temperature at -20°C or less for heating and operating outside temperature at -5°C or less for Cooling) · When heating operation, if the water temperature and quantity are below the normal range. 													

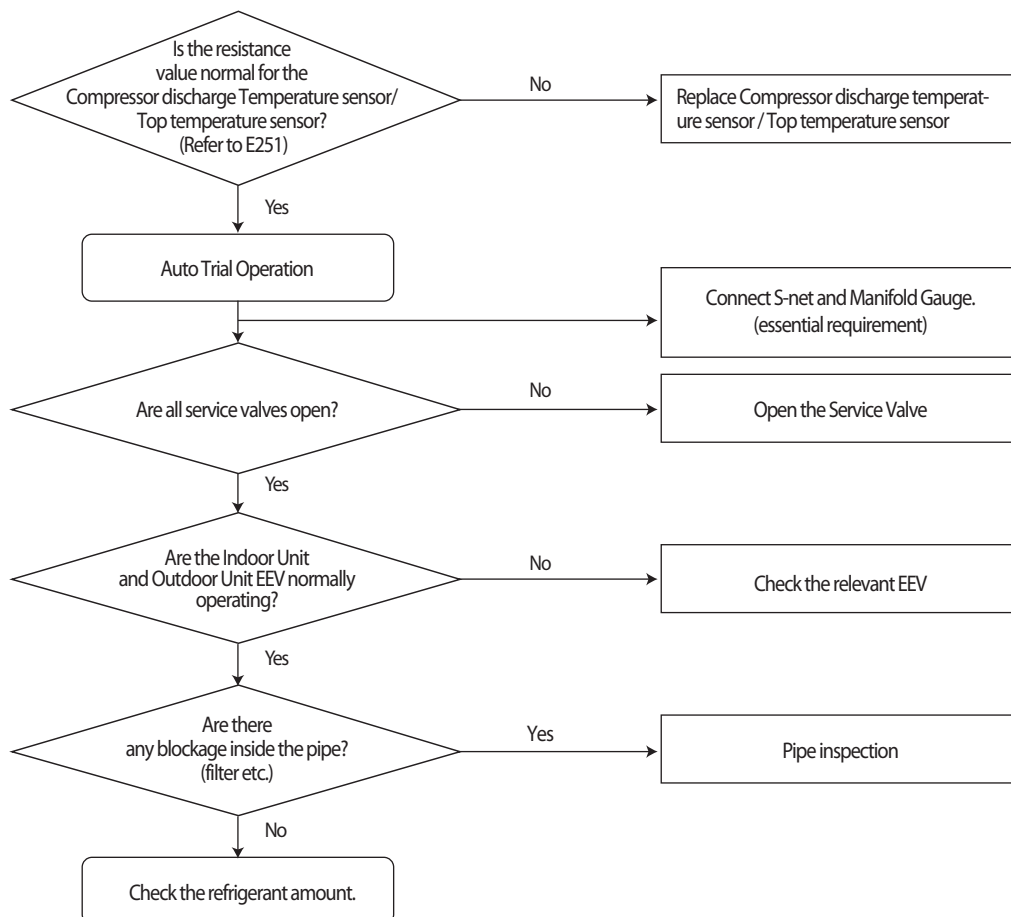
1. Cause of problem



4-3-33 E4 16 : Suspension of starting due to Compressor discharge temperature sensor / Top temperature sensor

Outdoor unit display	E4 16													
Indoor unit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ○ : Flash × : OFF													
Judgment Method	· When value of Compressor discharge temperature sensor / Top temperature sensor is checked at 120 or more													
Cause of problem	<ul style="list-style-type: none"> · Refrigerant shortage · Electronic expansion valve is blocked. · Service valve blocked · Defective discharge temperature sensor · TOP temperature sensor defective · Blocked pipe and defective · Leakage of compressor discharge check valve of not-go-end outdoor unit 													

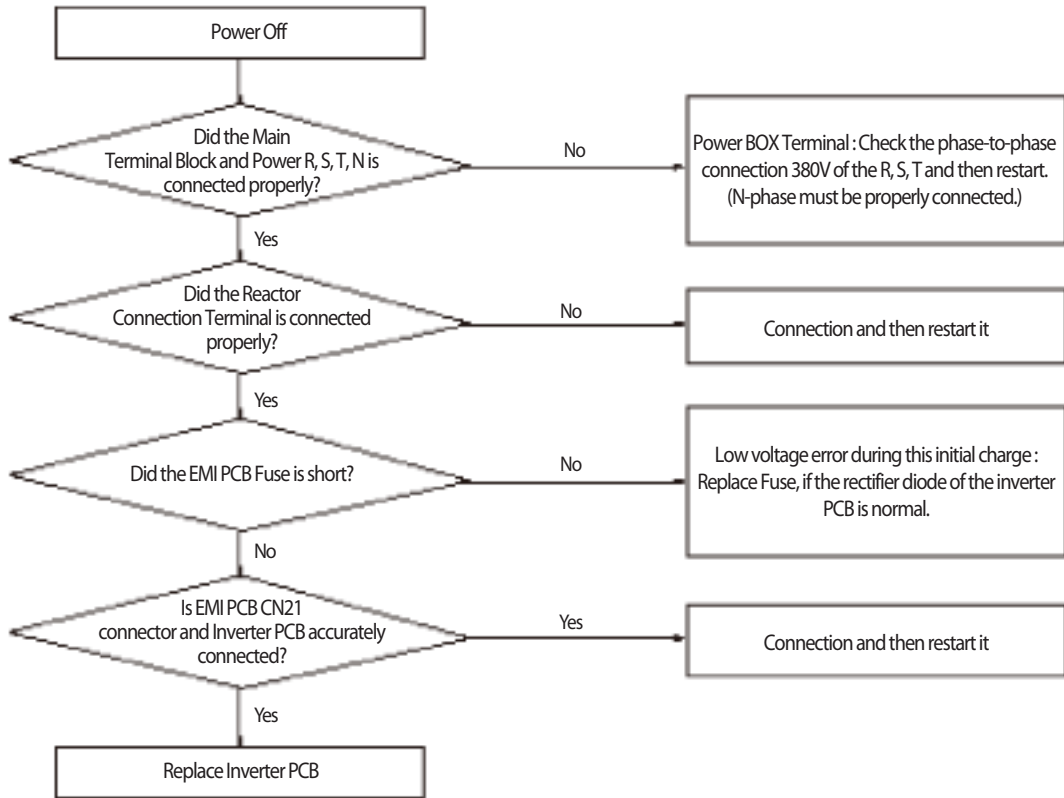
1. Cause of problem



4-3-34 3-phase Input Wiring error

Outdoor unit display	E425													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ● : Flash × : OFF													
Judgment Method	. When turn on the power and check the status of the power from the inverter. If the phase does not connect the power(no phase) : E425 or E466 (E366) is displayed (Air conditioner to maintain the normal state.) However) N-phase must be properly connected.													
Cause of problem	· Check the input wiring · EMI Fuse short													

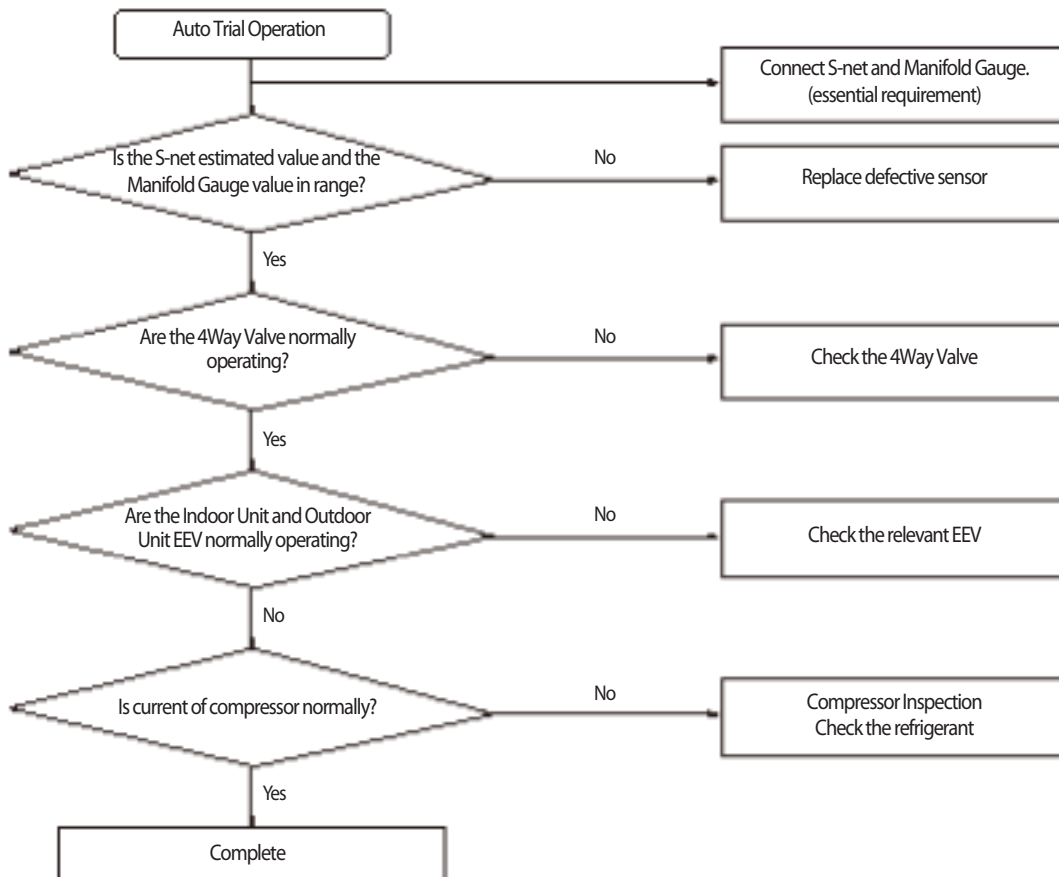
1. Cause of problem



4-3-35 E428 : Suspension of starting by abnormal compression ratio

Outdoor unit display	E428													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ● : Flash × : OFF													
Judgment Method	<ul style="list-style-type: none"> · Compression ratio $[(\text{High pressure} + 1.03) / (\text{Low pressure} + 1.03)]$ less than 1.5 and lasts for 10 minutes or more · Differential pressure (high pressure - low pressure) less than 0.4 MPa.g and lasts for 10 minutes or more 													
Cause of problem	<ul style="list-style-type: none"> · Indoor and Outdoor EEV breakdown · 4Way Valve breakdown · High and Low pressure sensor defective · Refrigerant shortage 													

1. Cause of problem



4-3-36 EVI EEV Open error

Outdoor unit display	E438													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
Judgment Method	. DSH <10 °C, EVI Out-in <= 0°C & frequency> 65Hz 40 minutes maintaining													
Cause of problem	. EVI EEV and Intercooler leakage, excessive refrigerant amount, Outdoor Check Valve inserted opposite. . Indoor Unit EEV leakage, direct connection between Indoor Liquid Pipe and the Gas Pipe.													

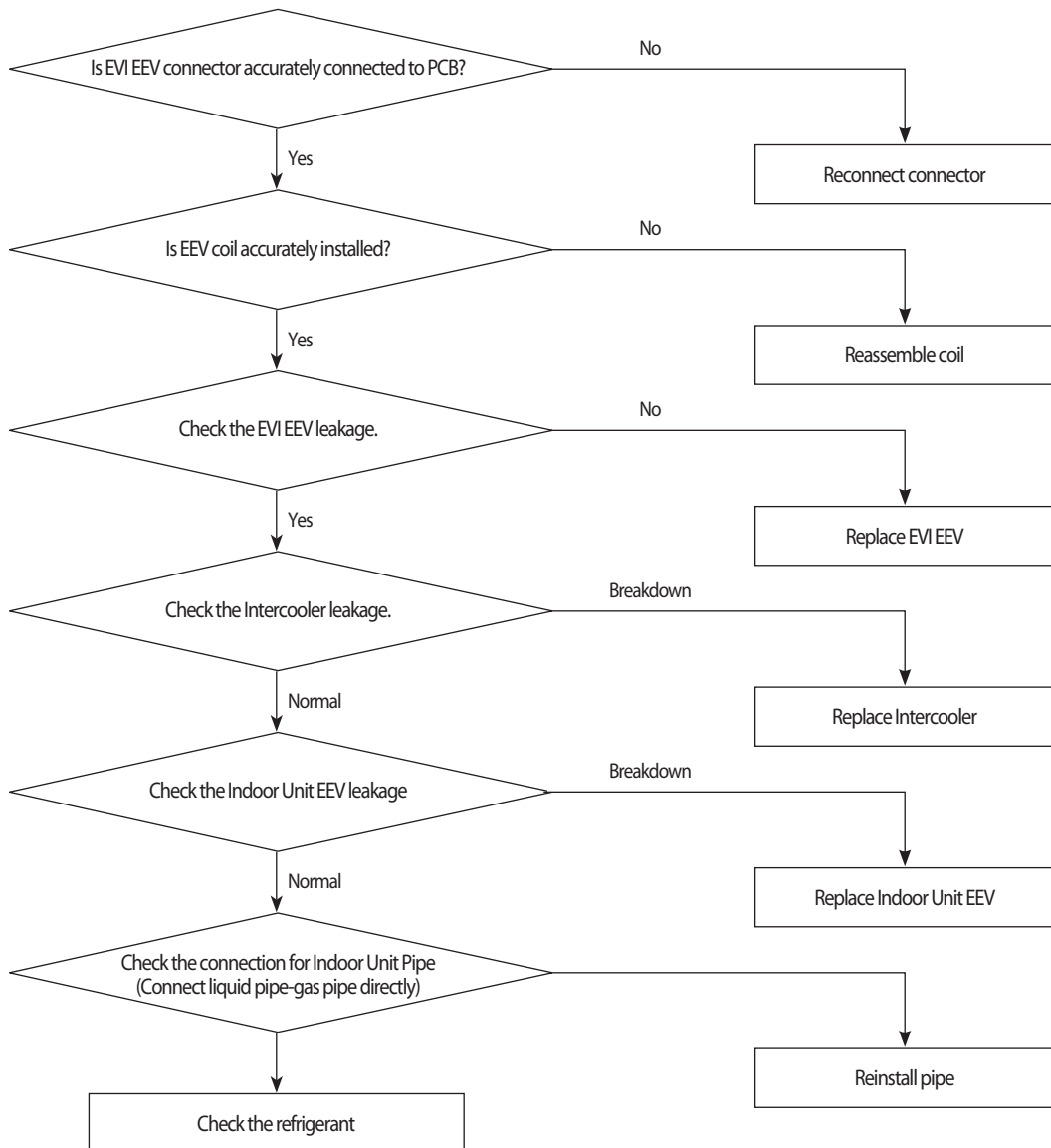
※ Indoor Unit EEV leakage confirmation(In case it is normal, the EVA In and Out temperatures for the blast may rise.)

- Operate cooling in one room any of the selected indoor unit. (Remainder Indoor Unit can confirm simply at the blast operation.)
- In case it is normal, the EVA IN/OUT temperature of indoor unit that is on blast operation within 5 minutes is ascending to value that approaching in indoor temperature.

(※ Setting as opposed to the indoor unit blast operation and cooling operation functions of the indoor unit, and then check again.)

※ If cooling operation is operated for low temperature with excessive refrigerant amount, then the DSH may descend.

1. Cause of problem



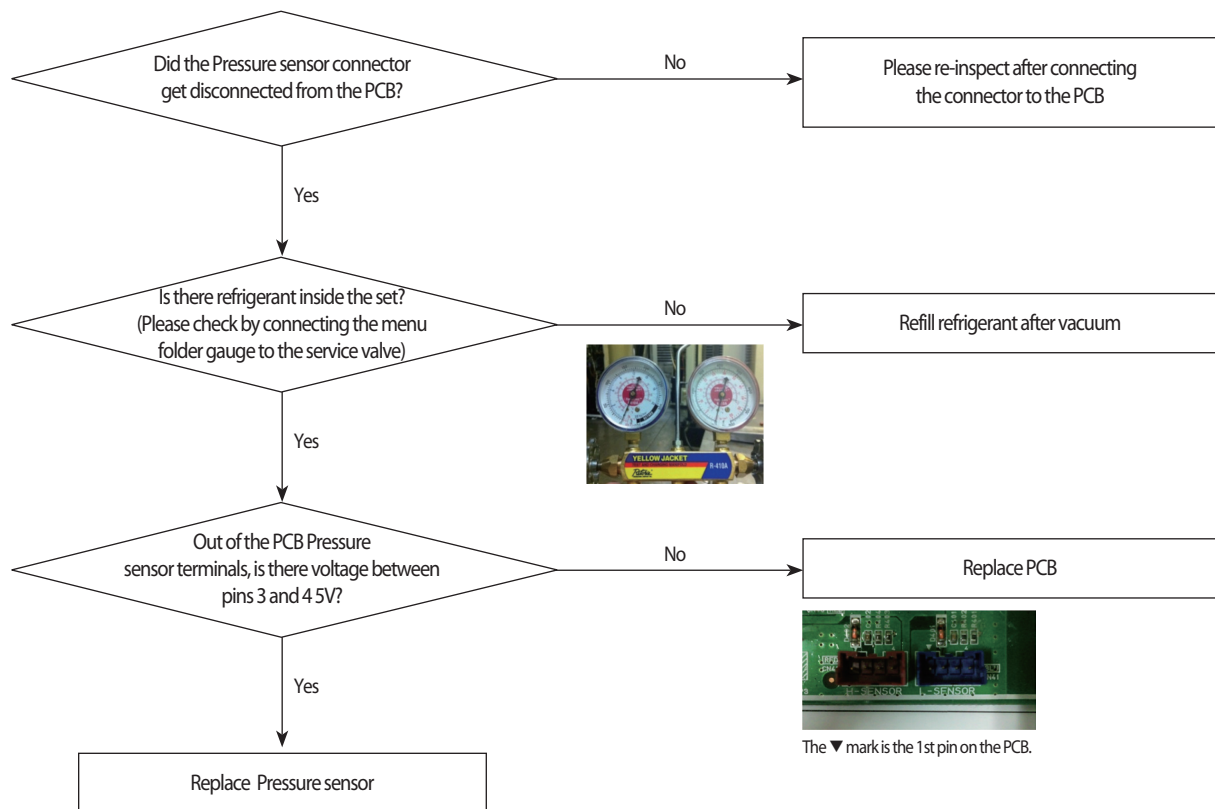
4-3-37 Refrigerant leakage error

Outdoor unit display	E439 (Refrigerant leakage judgment before starting) E443 (When start, refrigerant leakage judgment)
Judgment Method	· Before starting : Before compressor starting after system halt 2 minutes (High & low pressure sensor Open / Short error occurs and 1kg/cm ² or less) · When start : When the high pressure sensor value(cooling 3.1kg/ cm ² , heating 2.2kg/ cm ²) is detection continuously for 3 seconds
Cause of problem	· Refrigerant leakage and shortage · Disconnection or breakdown of high & low pressure sensor

1. Pressure sensor Open/Short error determination method

- 1) Identifies from when power is supplied or 2 minutes after RESET, and only when set is stopped.
- 2) An Open/Short error will occur if the input voltage standard range of 0.5V ~ 4.95V is exceeded.

2. Inspection Method



4-3-38 Prevention of heating / cooling operation due to outdoor temperature

Outdoor unit display	<i>E440</i> (Prevention of heating operation due to high temperature of outdoor) <i>E441</i> (Prevention of cooling operation due to low temperature of outdoor)													
Indoor Unit Display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ● : Flash × : OFF													
Judgment Method	<ul style="list-style-type: none"> · Heating operation : When the outdoor temperature is more than 30°C · Cooling operation : When the outdoor temperature is less than -15°C 													
Cause of problem	<ul style="list-style-type: none"> · System protection operation status (Is not breakdown) 													

4-3-39 Prevention of heating refrigerant charge due to outdoor temperature

Outdoor Unit Display	E442													
Indoor Unit Display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	x	x	●	●	●	x	●	●	●	x	x	●	●	●
	※ ● : ON ○ : Flash x : OFF													
Judgment Method	• When the heating refrigerant charge : If the outdoor temperature is more than 15°C													
Special Cause	• System protection operation status (Is not breakdown)													

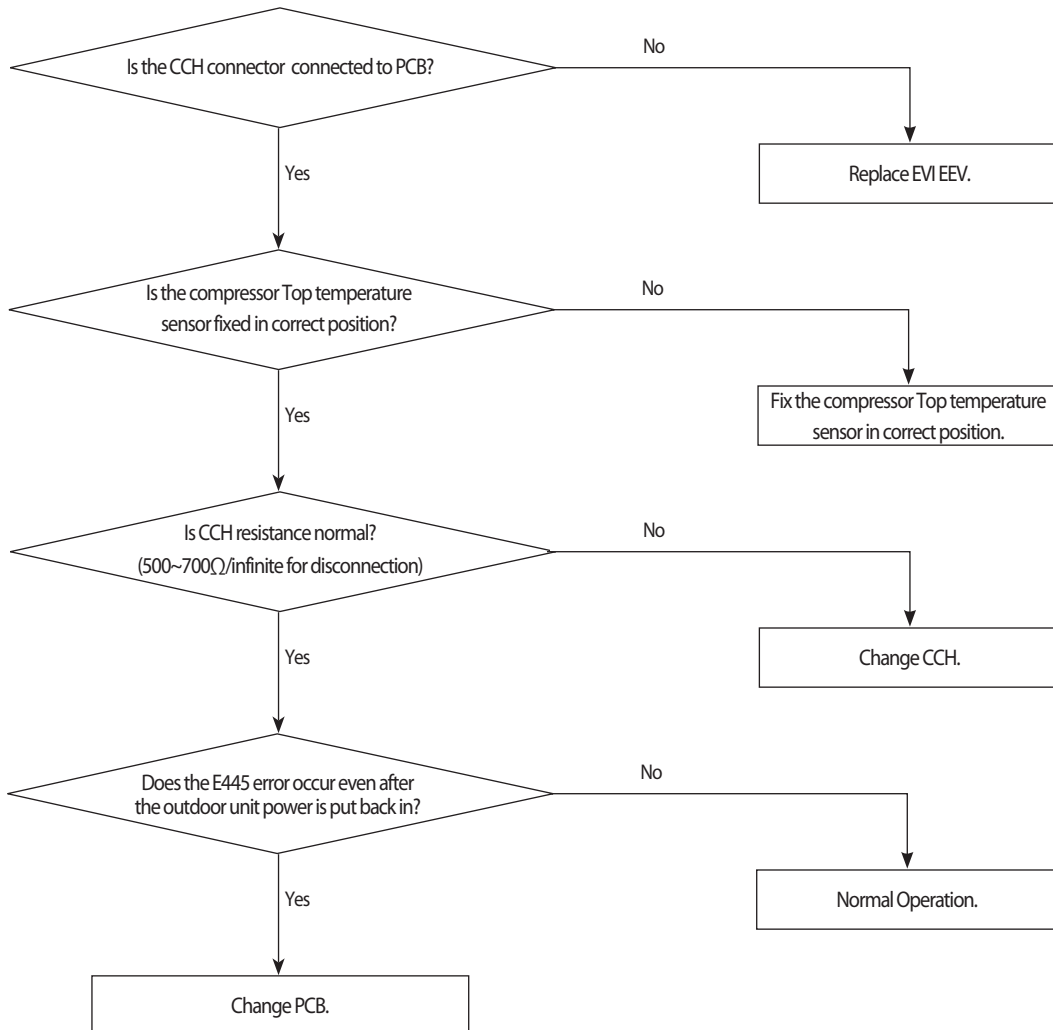
4-3-40 CH wire breaking error

Outdoor unit display	E445 (AM***FXV***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
Judgment Method	. Refer to the judgment method below.													
Cause of problem	. CCH Connector PCB is not connected / Compressor Top sensor breakaway / Own problem of CCH													

1. Judgment Method

- ① Current compressor Top temperature - Tini < 2°C (※Tini : Power on or temperature of initial compressor Top after reset)
- ② Current compressor Top temperature - Outdoor temperature < 2°C
- ③ Outdoor temperature < 30°C
- ④ UP state

※ If the above condition is satisfied at the same time : Mark the CCH wire breaking error (E445)

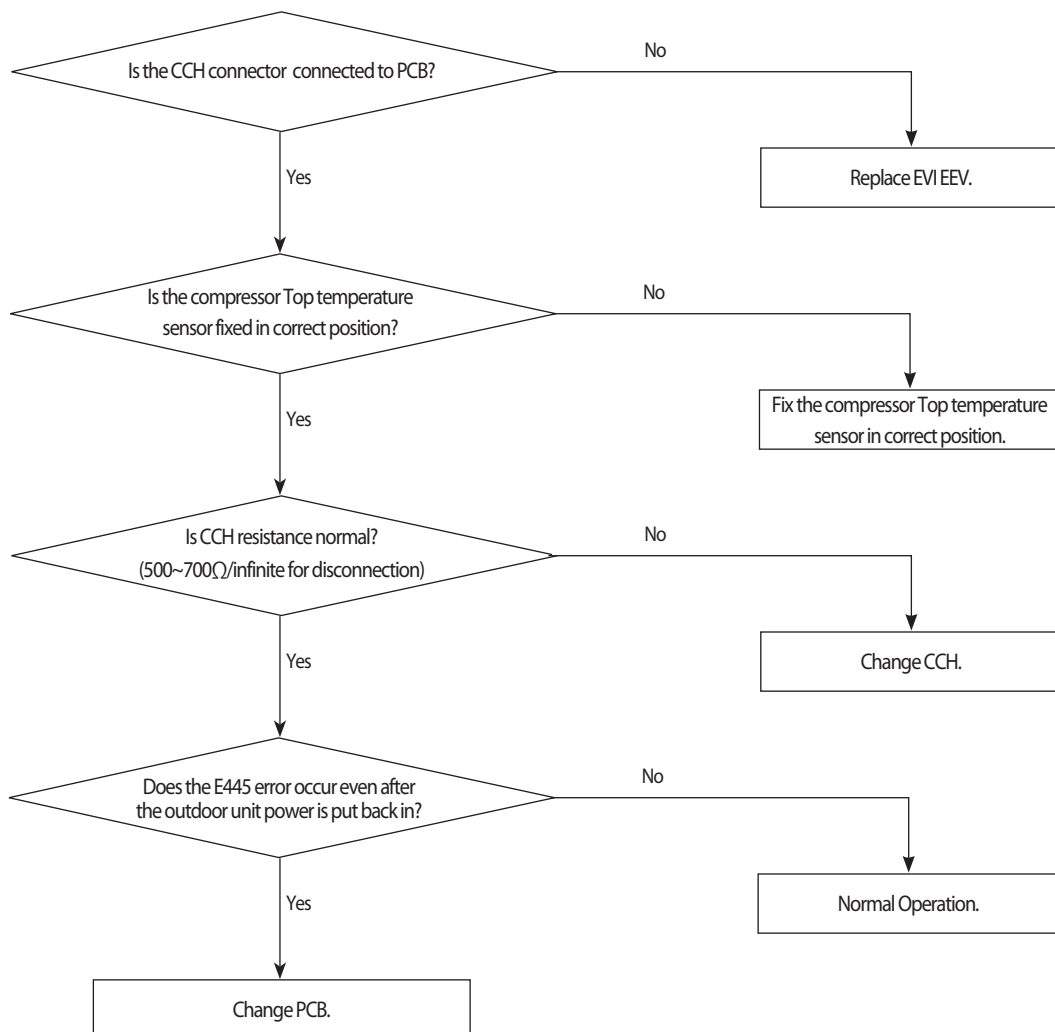


Outdoor unit display	E445 (AM***FXWA***)													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
Judgment Method	. Refer to the judgment method below.													
Cause of problem	. CCH Connector PCB is not connected / Compressor Top sensor breakaway / Own problem of CCH													

1. Judgment Method

- ① Current compressor Top temperature - Tini < 2°C (※Tini : Power on or temperature of initial compressor Top after reset)
- ② Current compressor Top temperature - suction1 temp. sensor < 30°C
- ③ Outdoor temperature < 30°C
- ④ UP state

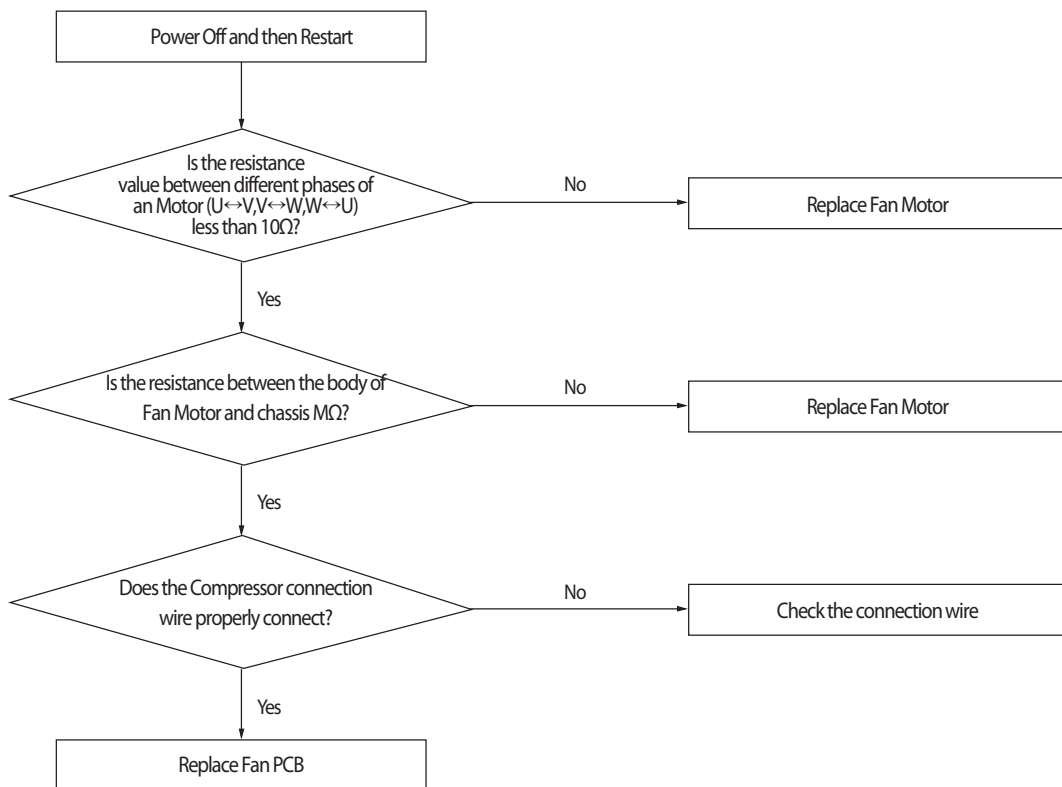
※ If the above condition is satisfied at the same time : Mark the CCH wire breaking error (E445)



4-3-41 Fan starting error

Outdoor unit display	E446 (FAN PCB(FAN1)) E346 (FAN PCB(FAN2))
Judgment Method	<ul style="list-style-type: none"> · Startup, and then if the speed increase is not normally. · Detected by H/W or S/W
Cause of problem	<ul style="list-style-type: none"> · Compressor connection error · Defective Compressor · Defective PCB

1. Cause of problem



IPM breakdown diagnostics (FAN PCB)

1. Preparations before checking

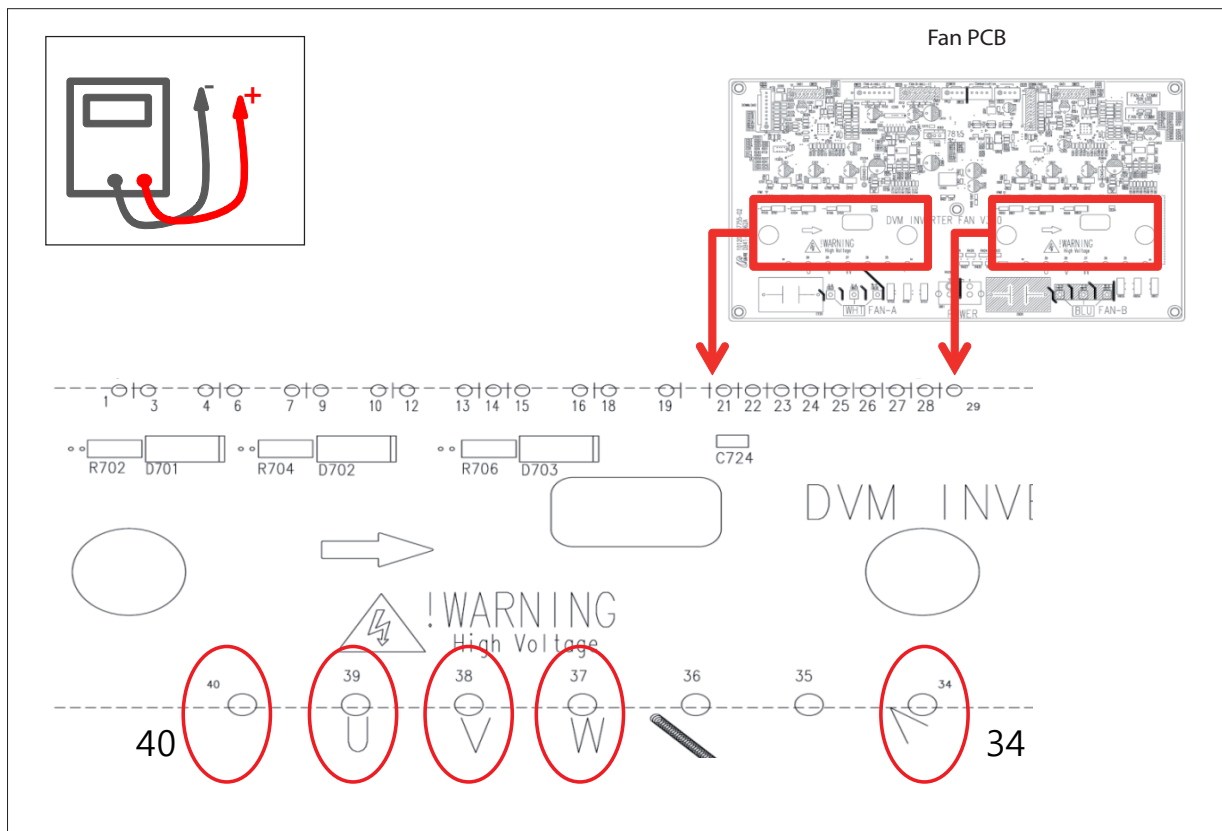
- 1) Power Off
- 2) IPM failure, discharge mode may not work properly. Therefore, wait more than 15 minutes after the Power Off.
- 3) Remove all of the Fan PCB connectors. (Comp connector included)
- 4) Prepare the digital multi tester.

2. Inspection Method

- 1) Refer to Figure1 and Table1, respectively the resistance value and diode voltage value measure.
- 2) According to the criterion in Table 1 to determine whether the failure of IPM.

Division	Measured Point		Criterion	Remark
	+	-		
Measure the resistance values	40	U	More than 3 MΩ	Measurement error can occur for reasons such as the initial measurement condenser discharge. Measured over at least three times.
	40	V		
	40	W		
	U	34		
	V	34		
W	34			
Measure the diode voltage values	U	40	0.3~0.7V	
	V	40		
	W	40		
	34	U		
	34	V		
	34	W		

< Table 1 >

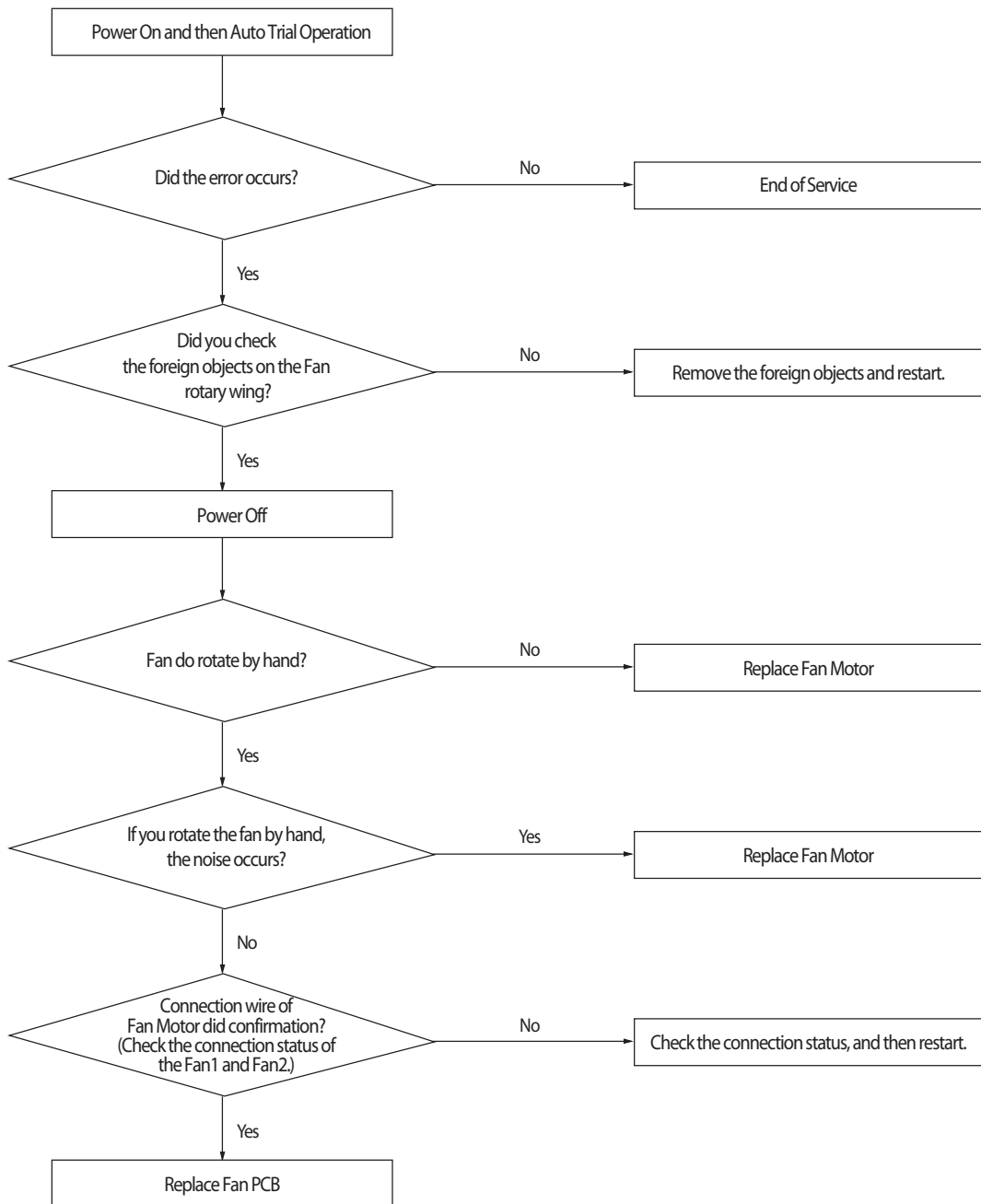


< Figure 1 >

4-3-42 Fan lock error

Outdoor unit display	E448 (FAN PCB(FAN1)) E348 (FAN PCB(FAN2))
Judgment Method	· Is checked symptoms by phase current of Fan Motor.
Cause of problem	· Fan Motor connection error. · Defective Fan · Defective PCB

1. Cause of problem



4-3-43 Momentary Blackout error

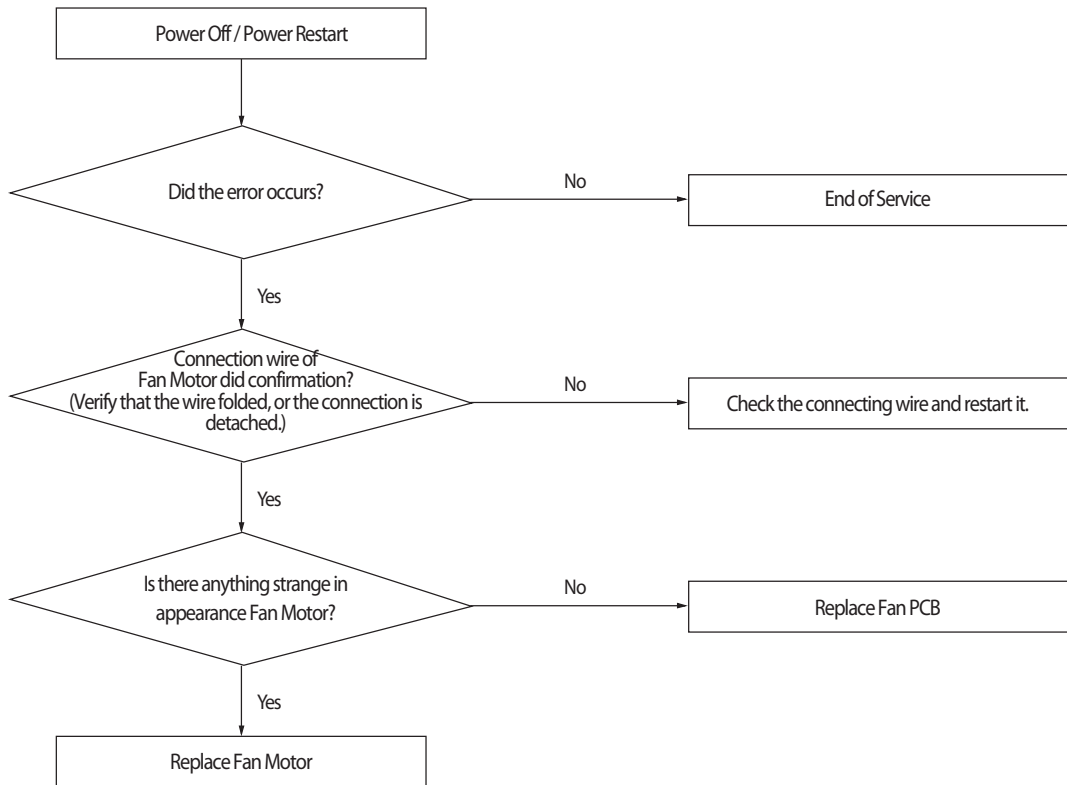
Outdoor unit display	E452													
Indoorunit display	Duct, Cassette (1/2 Way), Console, Ceiling					Cassette (4/Mini4 Way)				Wall-mounted (NeoForte)				
	Operation	Defrost	Timer	Fan	Filter/MPI	Operation	Defrost	Timer	Filter	Operation	Timer	Turbo	24°C	27°C
	×	×	●	●	●	×	●	●	●	×	×	●	●	●
	※ ● : ON ● : Flash × : OFF													
Judgment Method	· Momentary stop of compressor due to momentary blackout.													
Cause of problem	· Momentary stop of compressor due to momentary blackout.													

1. Precautions : Replace Hub PCB or Main Hub Connection wire.

4-3-44 Outdoor Fan Motor overheating

Outdoor unit display	<i>E453</i> (FAN PCB(FAN1)) <i>E353</i> (FAN PCB(FAN2))
Judgment Method	· Overheating due to the internal sensor of the Fan Motor.
Cause of problem	· Defective connection wire · Defective Fan Motor · Defective PCB · Defective installation conditions

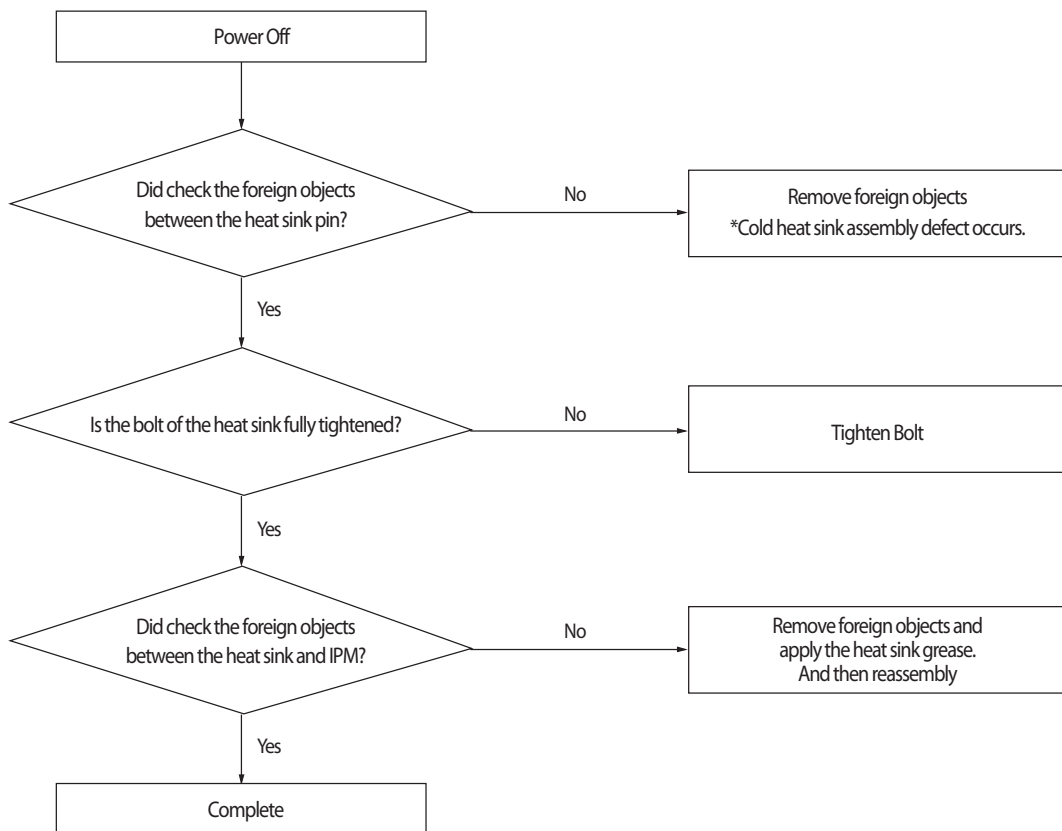
1. Cause of problem



4-3-45 Fan IPM Overheat error

Outdoor unit display	<i>E455</i> (FAN1 PCB) <i>E355</i> (FAN2 PCB)
Judgment Method	· IPM internal temperature more than 85°C (E455, E355)
Cause of problem	· Heat sink and IPM assembly defective. · Defective heat sink cooling

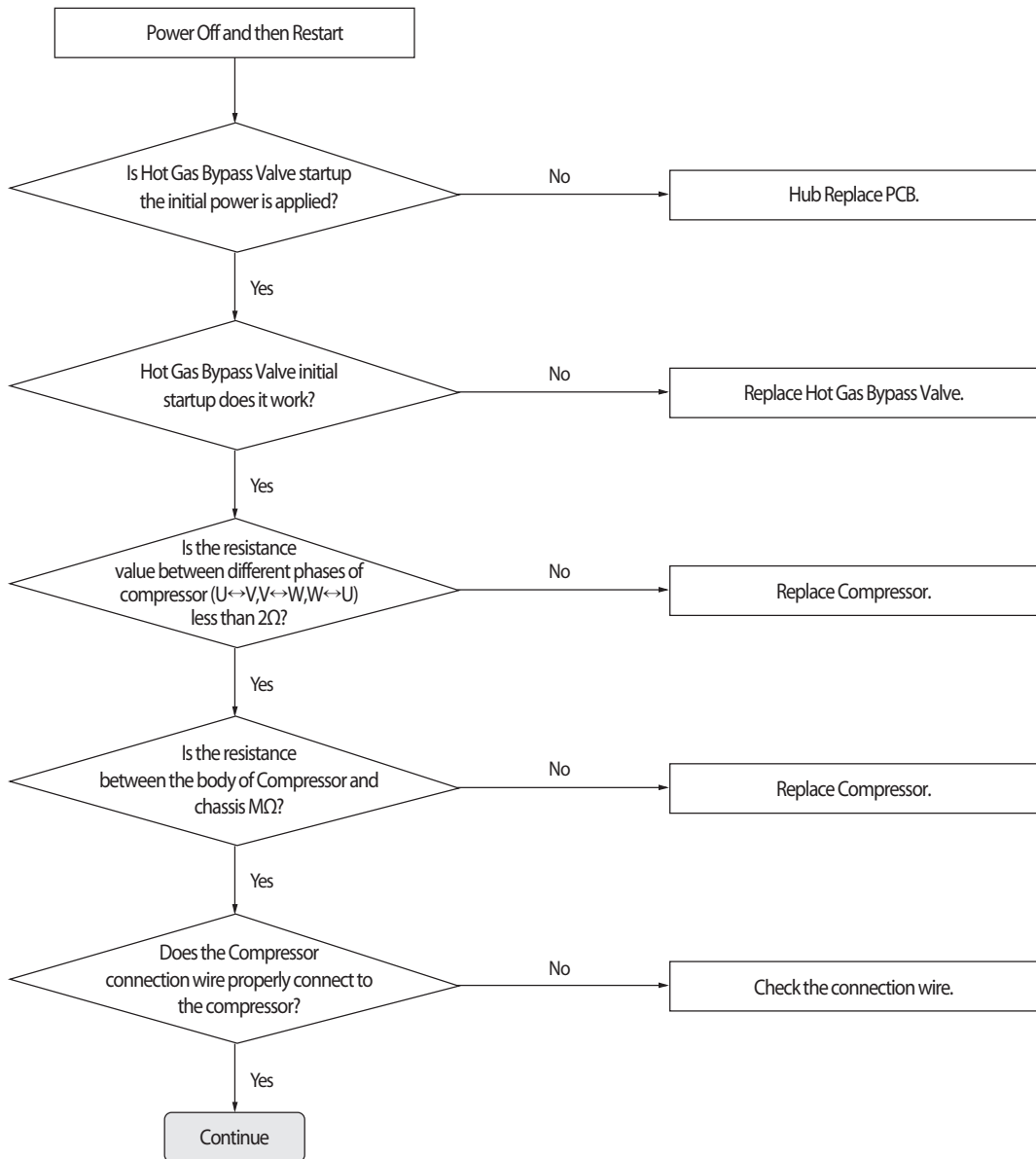
1. Cause of problem



4-3-46 Compressor starting error

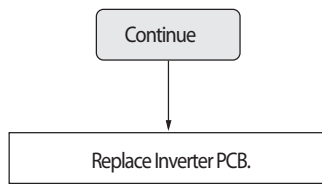
Outdoor unit display	E461 (INVERTER1 PCB) E361 (INVERTER2 PCB)
Judgment Method	<ul style="list-style-type: none"> · Startup, and then if the speed increase is not normally. · Detected by H/W or S/W.
Cause of problem	<ul style="list-style-type: none"> · Compressor connection error · Defective Compressor · Defective PCB

1. Cause of problem

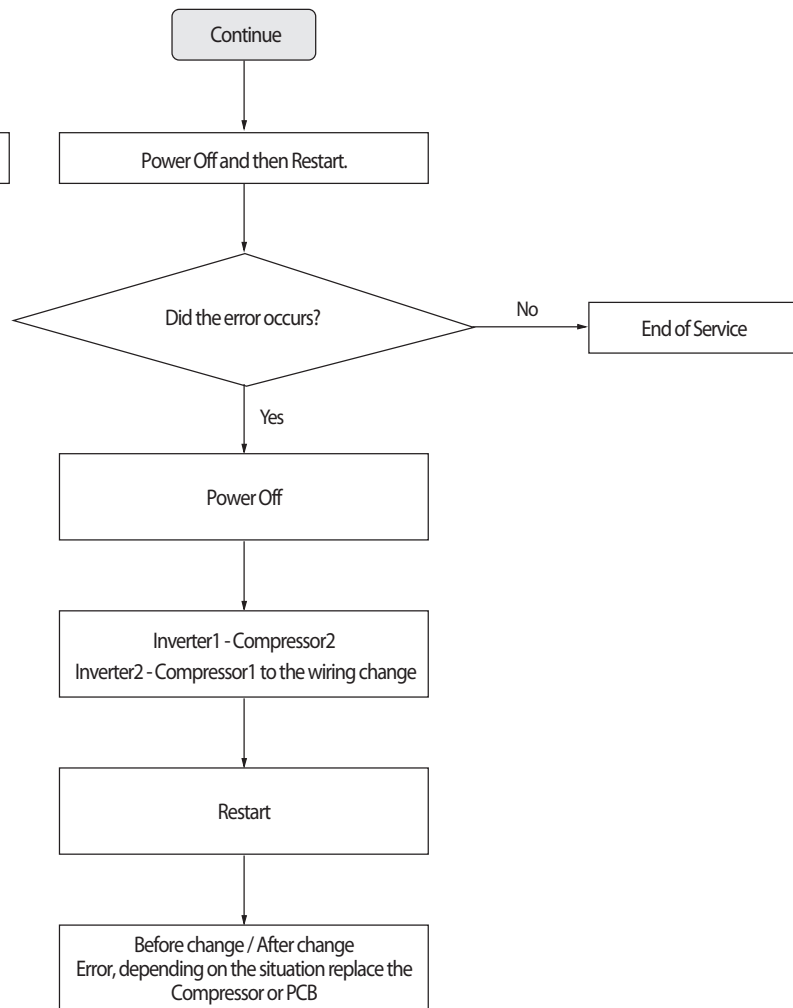


Starting error (cont.)

■ Compressor applied one



■ Compressor applied two

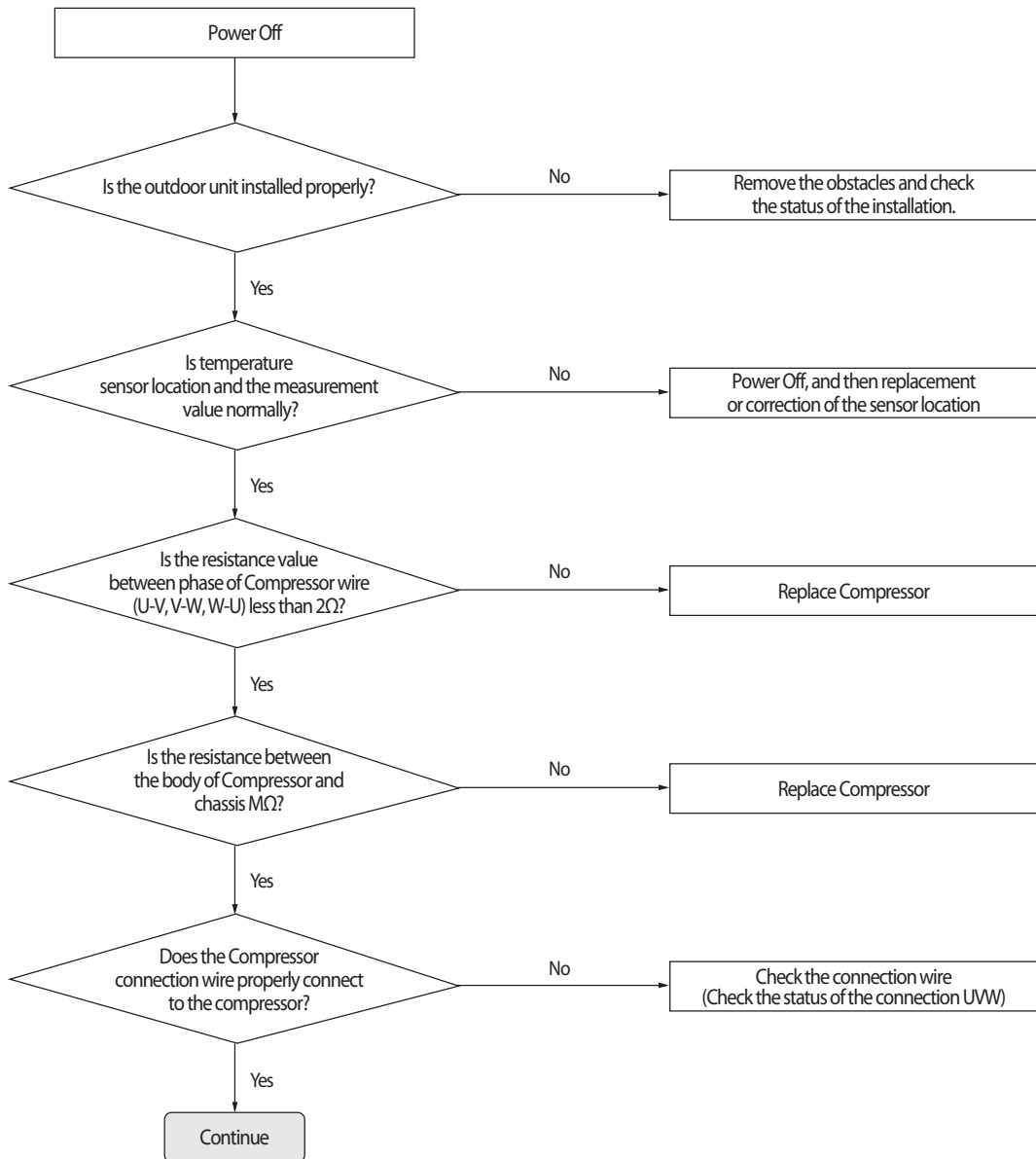


Before change	After change	Measure
Error of No.1 Compressor	Error of No.1 Compressor	Replace No.1 Compressor
Error of No.1 Compressor	Error of No.2 Compressor	Replace No.1 Inverter PCB
Error of No.2 Compressor	Error of No.2 Compressor	Replace No.2 Compressor
Error of No.2 Compressor	Error of No.1 Compressor	Replace No.2 Inverter PCB
Error of No.1 Compressor	Error of No.1 Compressor	Replace No.1 Inverter PCB
Error of No.1 Compressor	Error of No.2 Compressor	Replace No.2 Compressor
Error of No.2 Compressor	Error of No.2 Compressor	Replace No.1 Inverter PCB
Error of No.2 Compressor	Error of No.1 Compressor	Replace No.2 Compressor

4-3-47 Inverter Overcurrent error

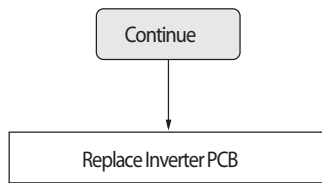
Outdoor unit display	<i>E464/E465</i> (INVERTER1 PCB) <i>E364/E365</i> (INVERTER2 PCB)	
Judgment Method	<ul style="list-style-type: none"> · Will occur if the overcurrent flowing in the IPM. · Detected by H/W or S/W 	
Cause of problem	<ul style="list-style-type: none"> · Installation defective · Comp. defective · PCB defective 	<ul style="list-style-type: none"> · Connection wire error · Motor defective

1. Cause of problem

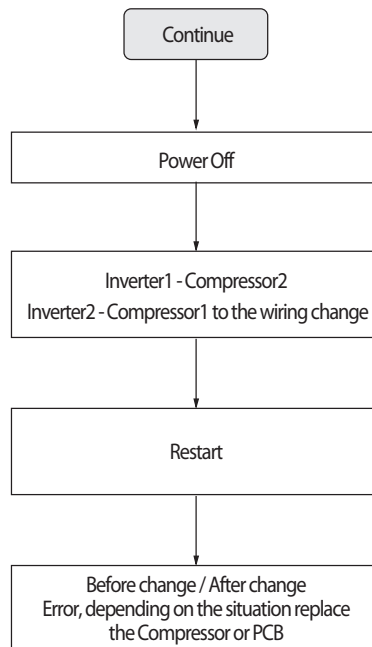


Inverter Overcurrent error (cont.)

■ Compressor applied one



■ Compressor applied two



Before change	After change	Measure
Error of No.1 Compressor	Error of No.1 Compressor	Replace No.1 Compressor
Error of No.1 Compressor	Error of No.2 Compressor	Replace No.1 Inverter PCB
Error of No.2 Compressor	Error of No.2 Compressor	Replace No.2 Compressor
Error of No.2 Compressor	Error of No.1 Compressor	Replace No.2 Inverter PCB
Error of No.1 Compressor	Error of No.1 Compressor	Replace No.1 Inverter PCB
Error of No.1 Compressor	Error of No.2 Compressor	Replace No.2 Compressor
Error of No.2 Compressor	Error of No.2 Compressor	Replace No.1 Inverter PCB
Error of No.2 Compressor	Error of No.1 Compressor	Replace No.2 Compressor

IPM [IGBT] breakdown diagnostics (Inverter PCB)

1. Preparations before checking

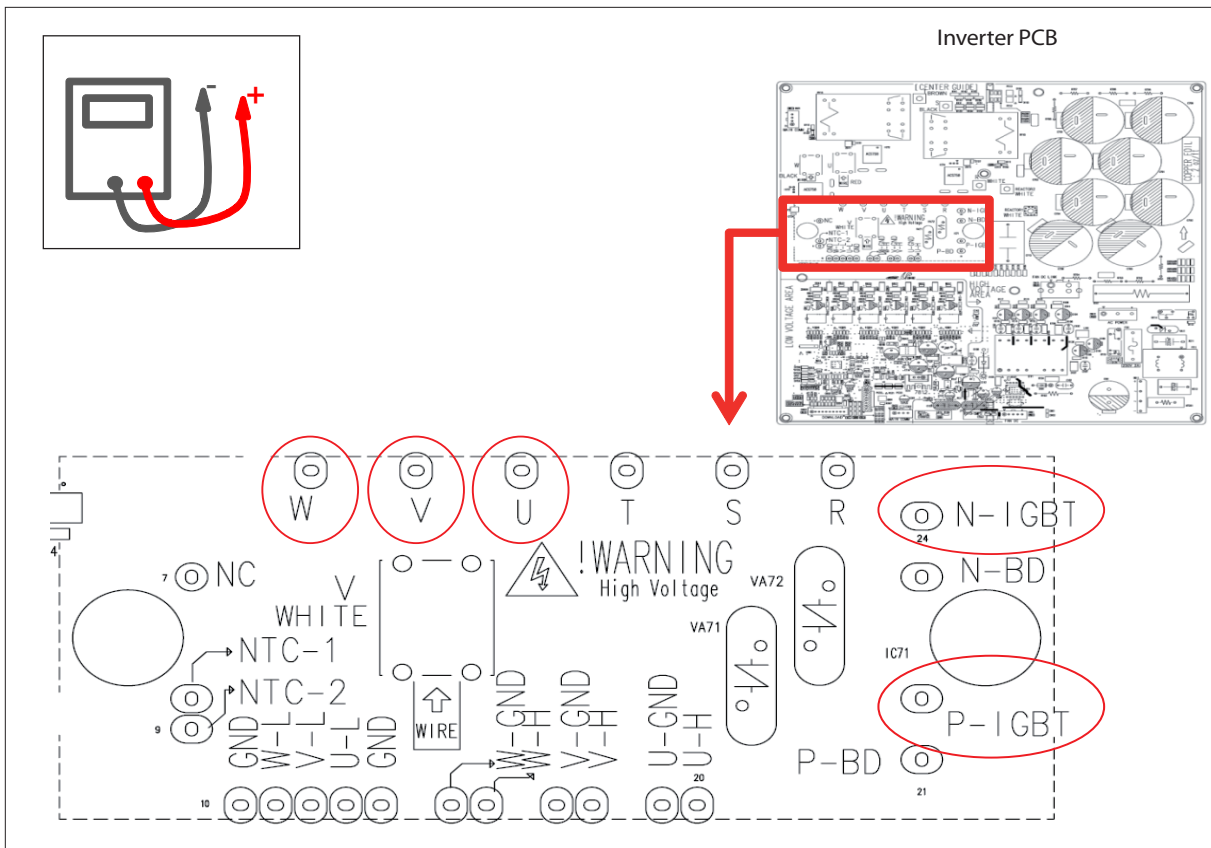
- 1) Power Off.
- 2) IPM failure, discharge mode may not work properly. Therefore, wait more than 15 minutes after the Power Off.
- 3) Remove all of the Inverter PCB connectors and wire that is fixed as screw.
(Include wire that is fixed to compressor and DC Reactor.)
- 4) Prepare the digital multi tester.

2. Inspection Method

- 1) Refer to Figure1 and Table1, respectively the resistance value and diode voltage value measure.
- 2) According to the criterion in Table 1 to determine whether the failure of IPM.

Division	Measured Point		Criterion	Remark
	+	-		
Measure the resistance values	P-IGBT	U	More than 3 MΩ	Measurement error can occur for reasons such as the initial measurement condenser discharge. Measured over at least three times.
	P-IGBT	V		
	P-IGBT	W		
	U	N-IGBT		
	V	N-IGBT		
	W	N-IGBT		
Measure the diode voltage values	U	P-IGBT	0.3~0.7V	
	V	P-IGBT		
	W	P-IGBT		
	N-IGBT	U		
	N-IGBT	V		
	N-IGBT	W		

< Table 1 >

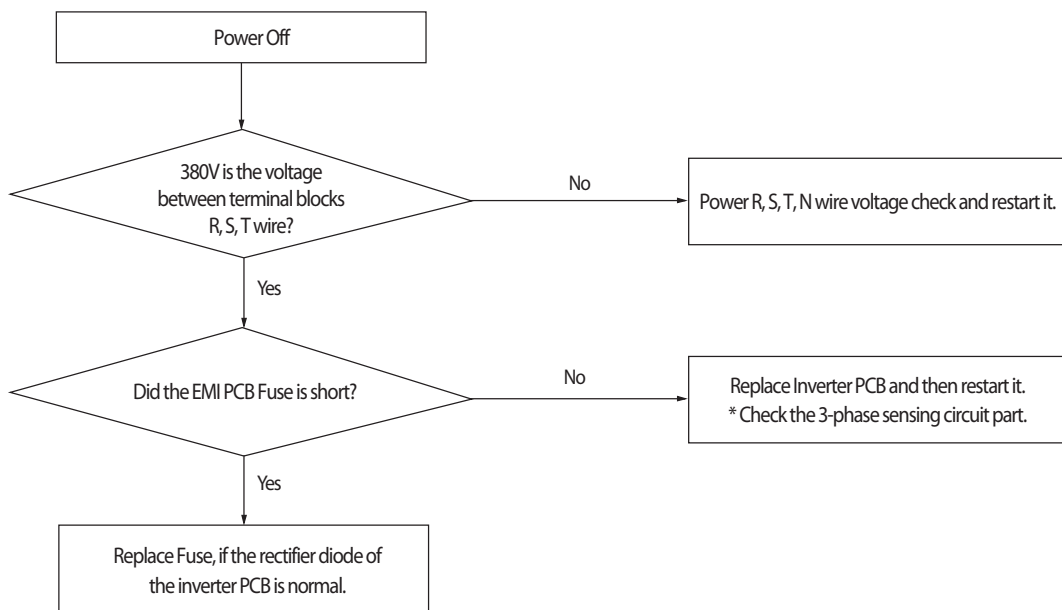


< Figure 1 >

4-3-48 Overvoltage / Low voltage error

Outdoor unit display	E466 (INVERTER1 PCB) E366 (INVERTER2 PCB)
Judgment Method	<ul style="list-style-type: none"> · N-phase wiring error and EMI Fuse short. · DC-Link Overvoltage / Low voltage occurs.
Cause of problem	<ul style="list-style-type: none"> · Check the input wiring · EMI Fuse short

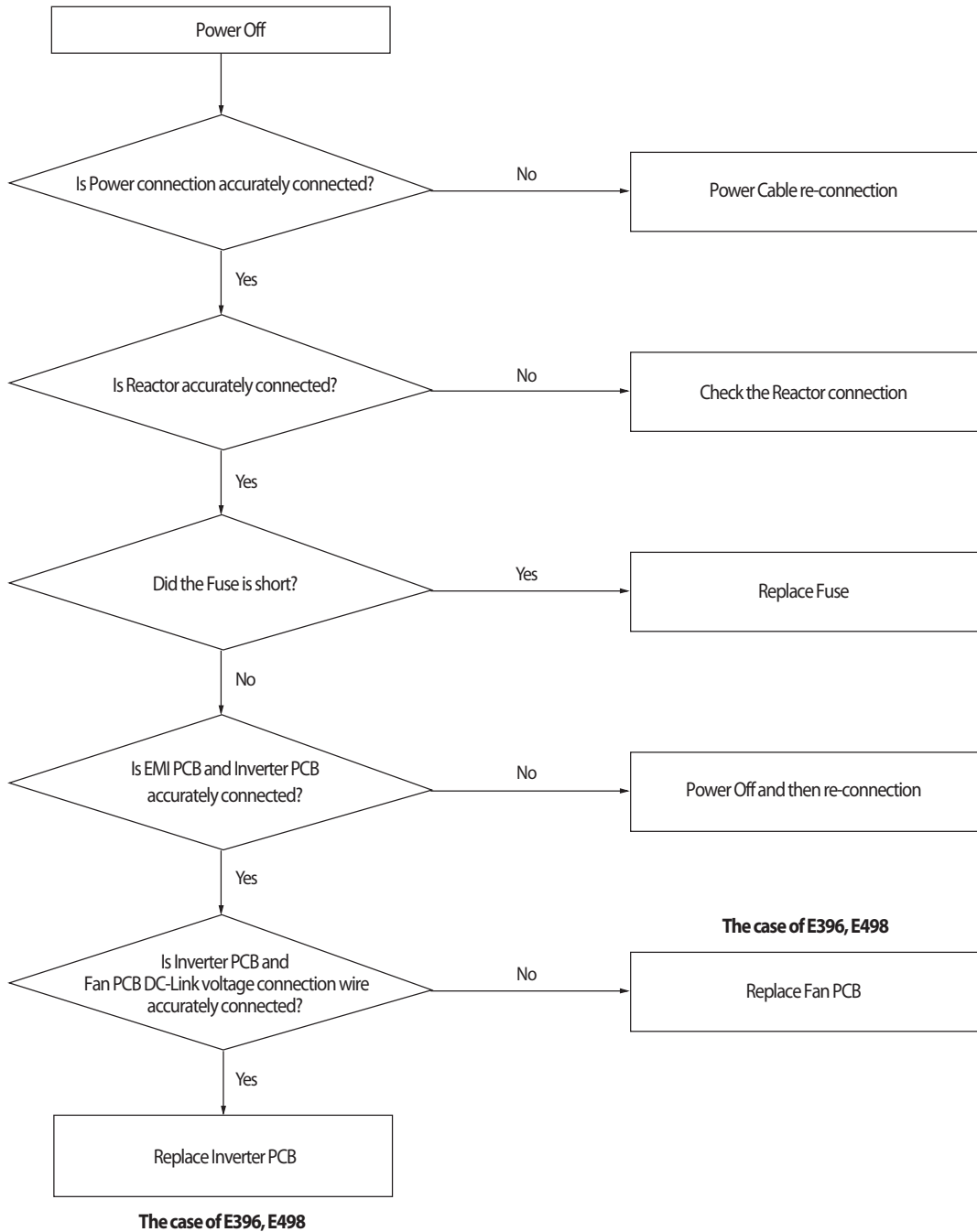
1. Cause of problem



4-3-49 DC Link voltage sensor error

Outdoor unit display	<i>E469</i> (INVERTER1 PCB) <i>E369</i> (INVERTER2 PCB) <i>E496</i> (OUTDOOR FAN 1 PCB) <i>E396</i> (OUTDOOR FAN 2 PCB)
Judgment Method	· DC voltage detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than
Cause of problem	· Input voltage defective · AC Power wiring error · Momentary Overvoltage / Low voltage occurs · PCB voltage sensing circuit defective

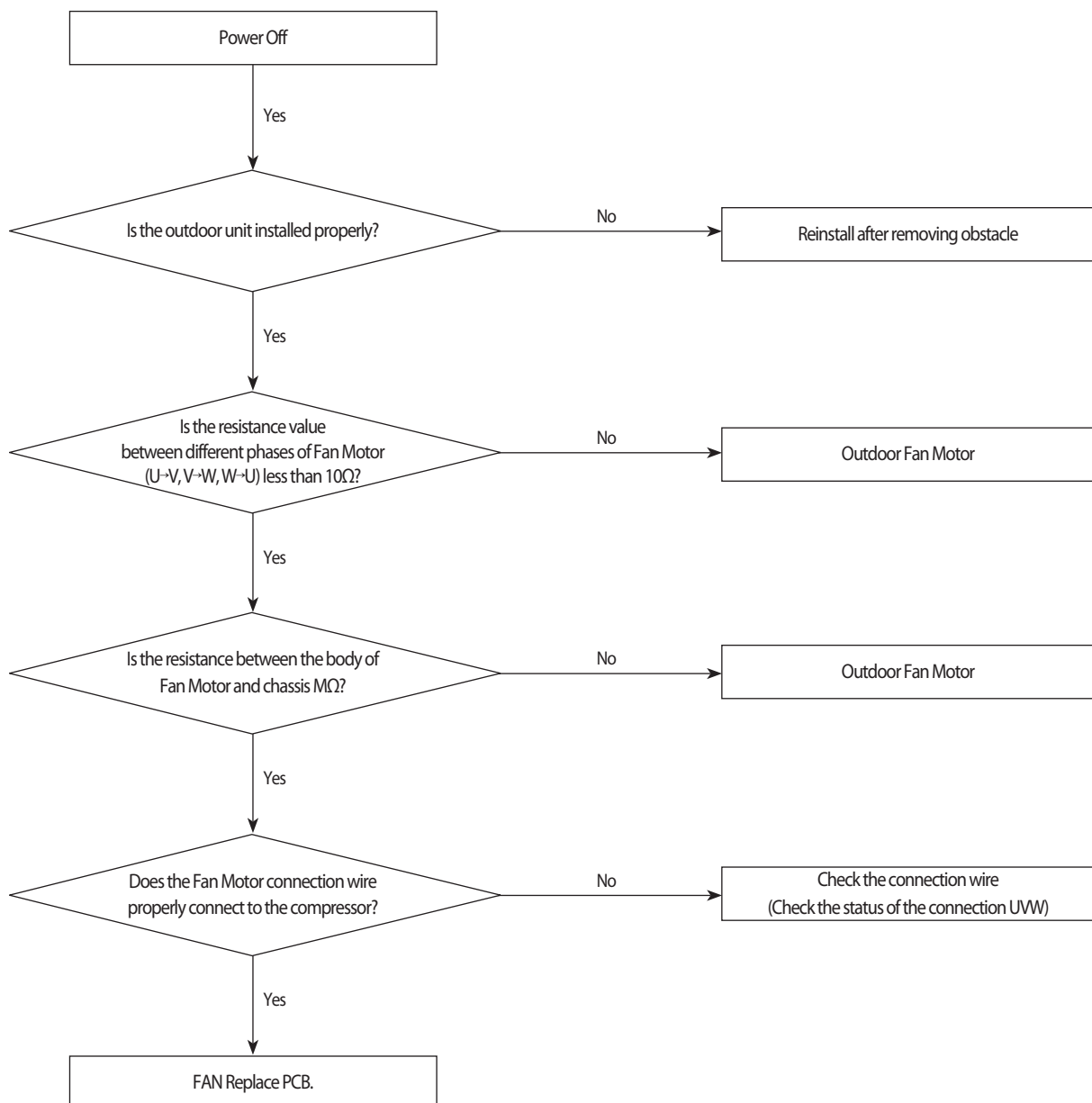
1. Cause of problem



4-3-50 Fan Motor Overcurrent error

Outdoor unit display	<i>E478/E489</i> (FAN PCB(FAN1)) <i>E378/E389</i> (FAN PCB(FAN2))
Judgment Method	<ul style="list-style-type: none"> · Occurs when overcurrent flows in the IPM. · Detected by H/W or S/W
Cause of problem	<ul style="list-style-type: none"> · Installation error · Defective Comp · Defective PCB · Connector error · Defective Motor

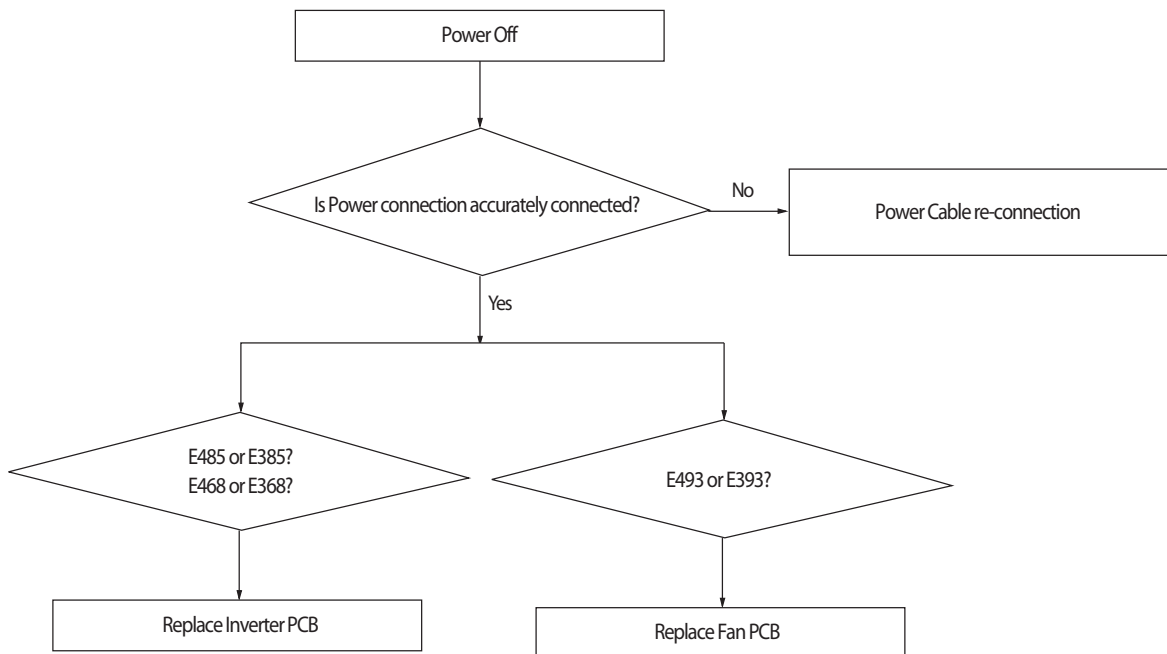
1. Cause of problem



4-3-51 Input / Output Current sensor error

Outdoor unit display	<p><i>E485</i> INVERTER1 PCB(Input Current sensor)</p> <p><i>E385</i> INVERTER2 PCB(Input Current sensor)</p> <p><i>E468</i> INVERTER1 PCB(Output Current sensor)</p> <p><i>E368</i> INVERTER 2 PCB(Output Current sensor)</p> <p><i>E493</i> OUTDOOR FAN PCB (FAN1 Output Current sensor)</p> <p><i>E393</i> OUTDOOR FAN PCB (FAN2 Output Current sensor)</p>
Judgment Method	<ul style="list-style-type: none"> · Sensor Output detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than
Cause of problem	<ul style="list-style-type: none"> · Input voltage defective · PCB voltage sensing circuit defective

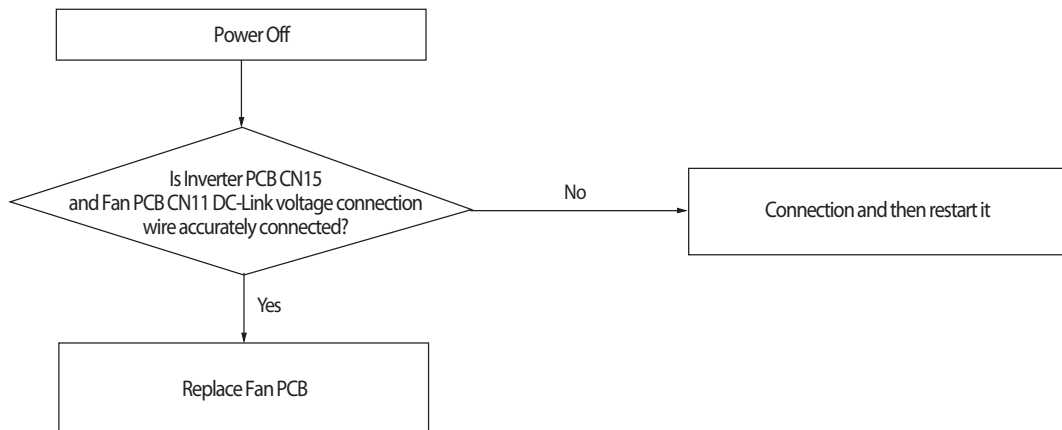
1. Cause of problem



4-3-52 Outdoor Fan PCB Overvoltage / Low voltage error

Outdoor unit display	E486
Judgment Method	<ul style="list-style-type: none"> · N-phase wiring error and EMI Fuse short. · DC-Link Overvoltage / Low voltage occurs.
Cause of problem	<ul style="list-style-type: none"> · Check the input wiring · EMI Fuse short

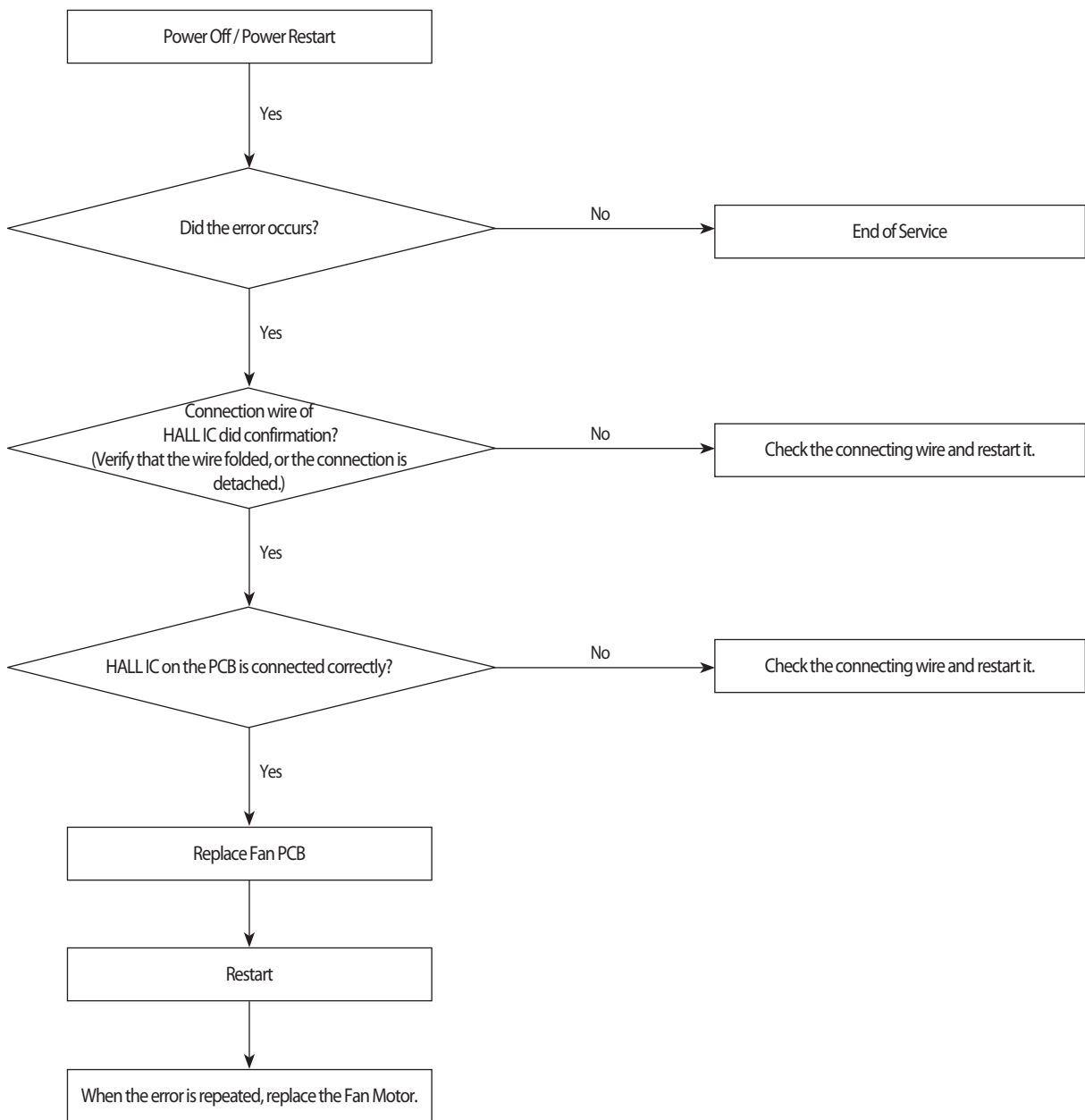
1. Cause of problem



4-3-53 Hall IC(Fan) error

Outdoor unit display	<i>E487</i> (FAN PCB(FAN1)) <i>E387</i> (FAN PCB(FAN2))
Judgment Method	<ul style="list-style-type: none"> · Fan rotation defective or vibration and noise of the defective operation. · Hall IC there is no signal input.
Cause of problem	<ul style="list-style-type: none"> · Connection status error. · Hall IC wire disconnection. · Defective circuit parts and defective manufacturing. · Fan Motor defective.

1. Cause of problem



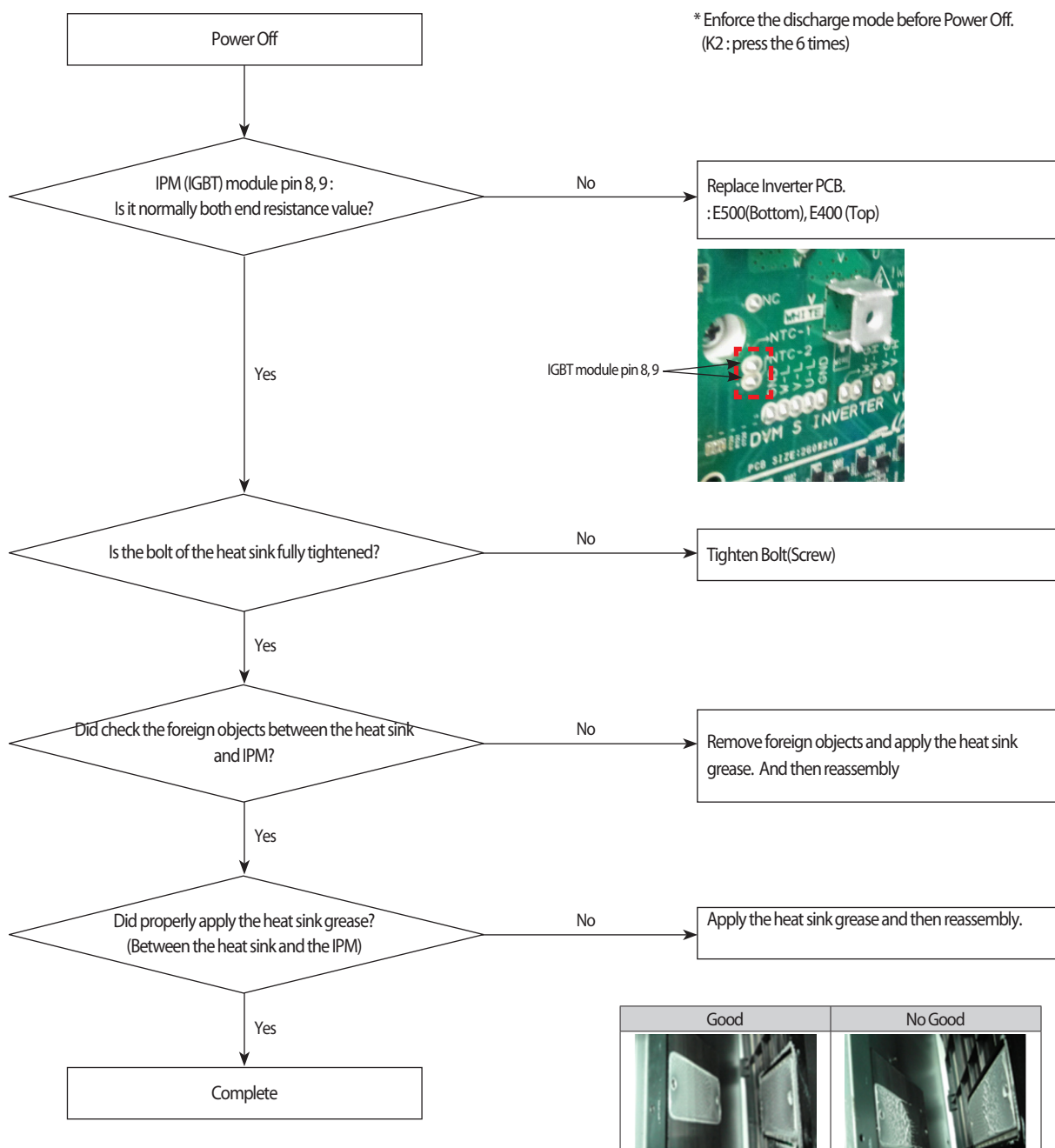
4-3-54 Inverter Overheat error

Outdoor unit display	E500 (INVERTER1 PCB) E400 (INVERTER2 PCB)
Judgment Method	· IGBT module internal temperature : 105°C more than (E500, E400)
Cause of problem	· Cooling Pin and the IGBT junction part assembly defective. · Refrigerant cooling heat sink and refrigerant piping assembly defective. · Assembled bolt defective.

Both end resistance values of IGBT module pin(8, 9 pin)

Temperature [°C]	NTC [ohm]	AD [V]	Temperature [°C]	NTC [ohm]	AD [V]
10	9000	2.58	100	500	0.55
20	6000	2.33	105	450	0.51
30	4000	2.03	110	380	0.44
40	3000	1.80	120	300	0.35
50	2000	1.47	130	250	0.30
60	1600	1.29	140	200	0.25
70	1200	1.07			
80	750	0.76			
90	650	0.68			

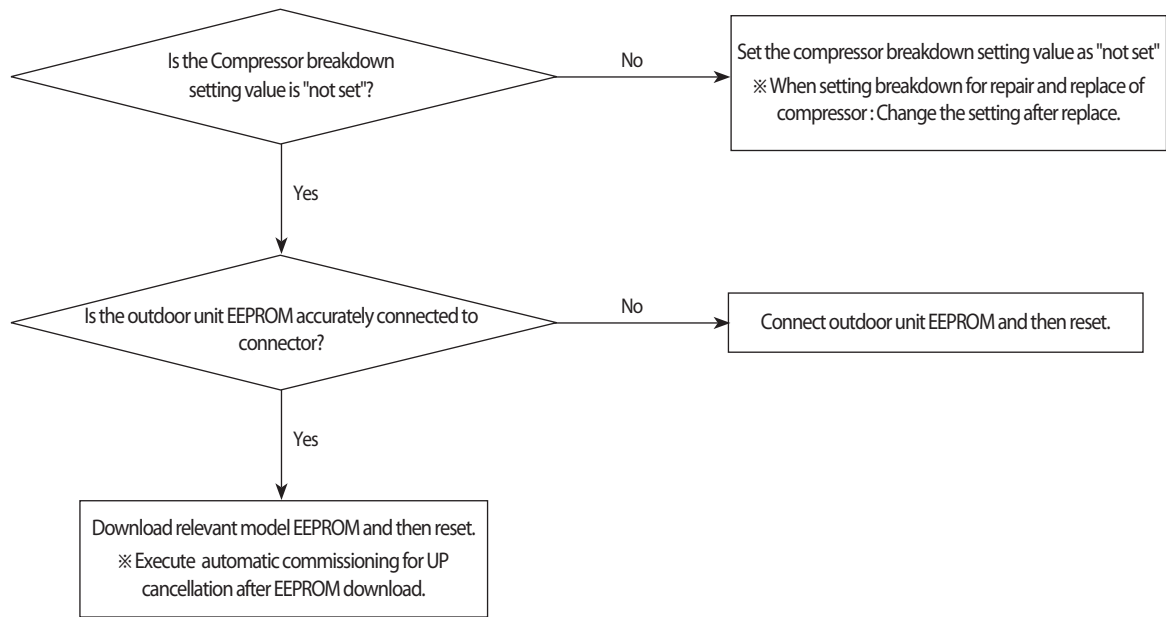
1. Cause of problem



4-3-55 Option setting error of outdoor unit

Outdoor Unit Display	E560
Indoor Unit Display	●(Operation) ×(Reservation) ●(Blast) ×(Filter) ×(Defrost)
Judgment Method	• Refer to the judgment method below.
Special Cause	• Option setting error of outdoor unit (E2P option use of other model or set of the relevant outdoor unit, compressor breakdown)

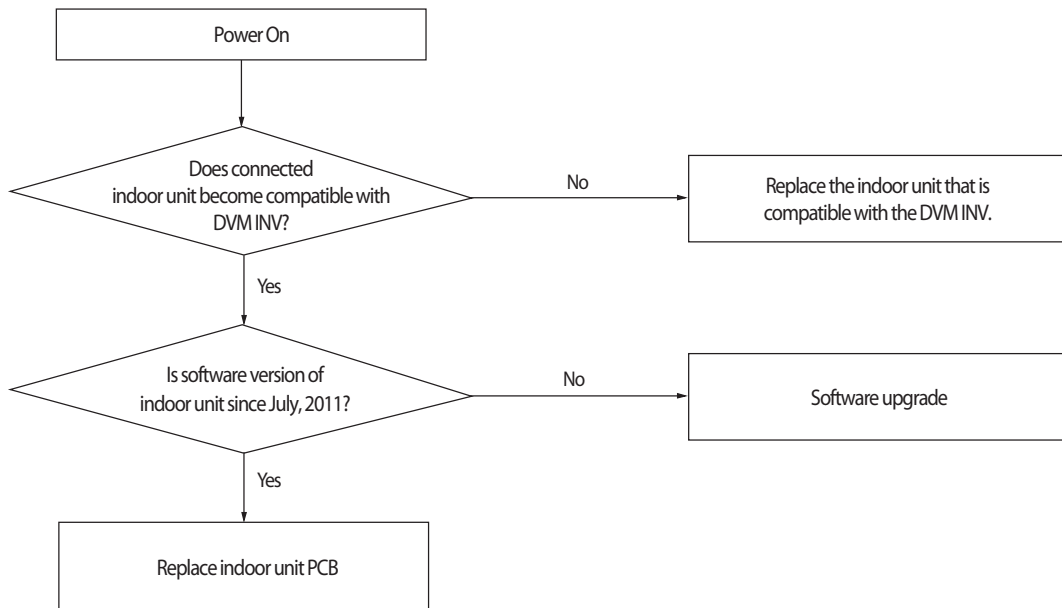
1. Cause of problem



4-3-56 Model mismatching of Indoor unit.

Outdoor unit display	<i>E563</i>
Judgment Method	<ul style="list-style-type: none"> · Prior to July 2011, if the software version of the indoor unit. · Prior to July 2011, if the software version of the indoor unit.
Cause of problem	<ul style="list-style-type: none"> · Check the software version of the indoor unit. · Check whether the support of the indoor unit.

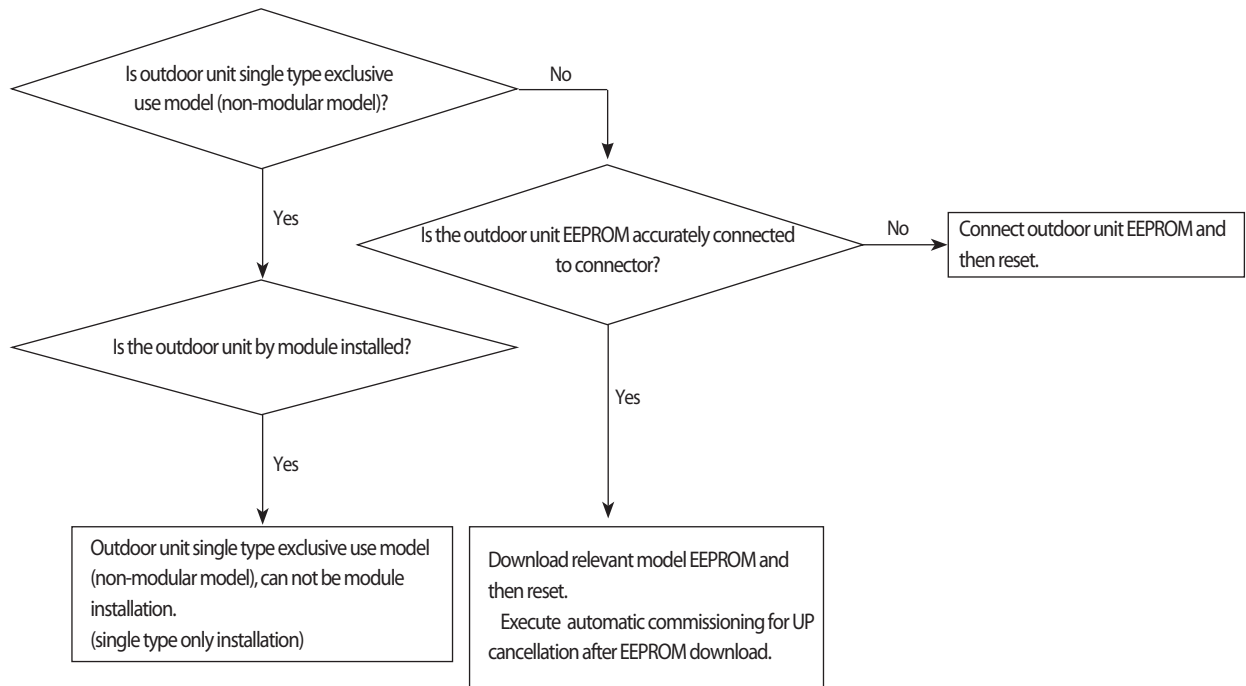
1. Cause of problem



4-3-57 Error due to using single type outdoor unit in a module installation

Outdoor Unit Display	<i>E573</i>
Indoor Unit Display	-
Judgment Method	• Refer to the judgment method below.
Special Cause	• Using single type outdoor unit (non-modular model) in a module installation.

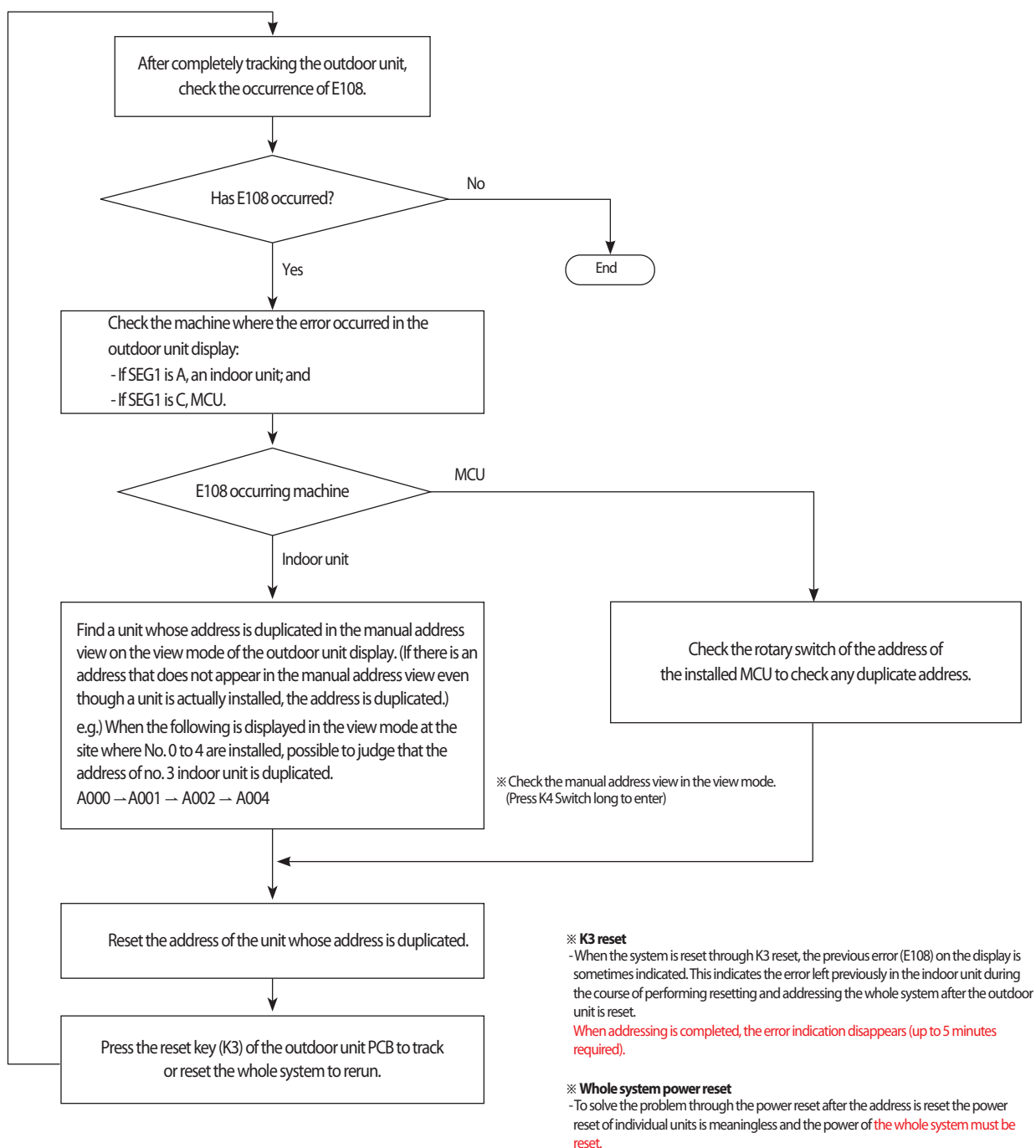
1. Cause of problem



4-3-58 Indoor unit and MCU address duplication error

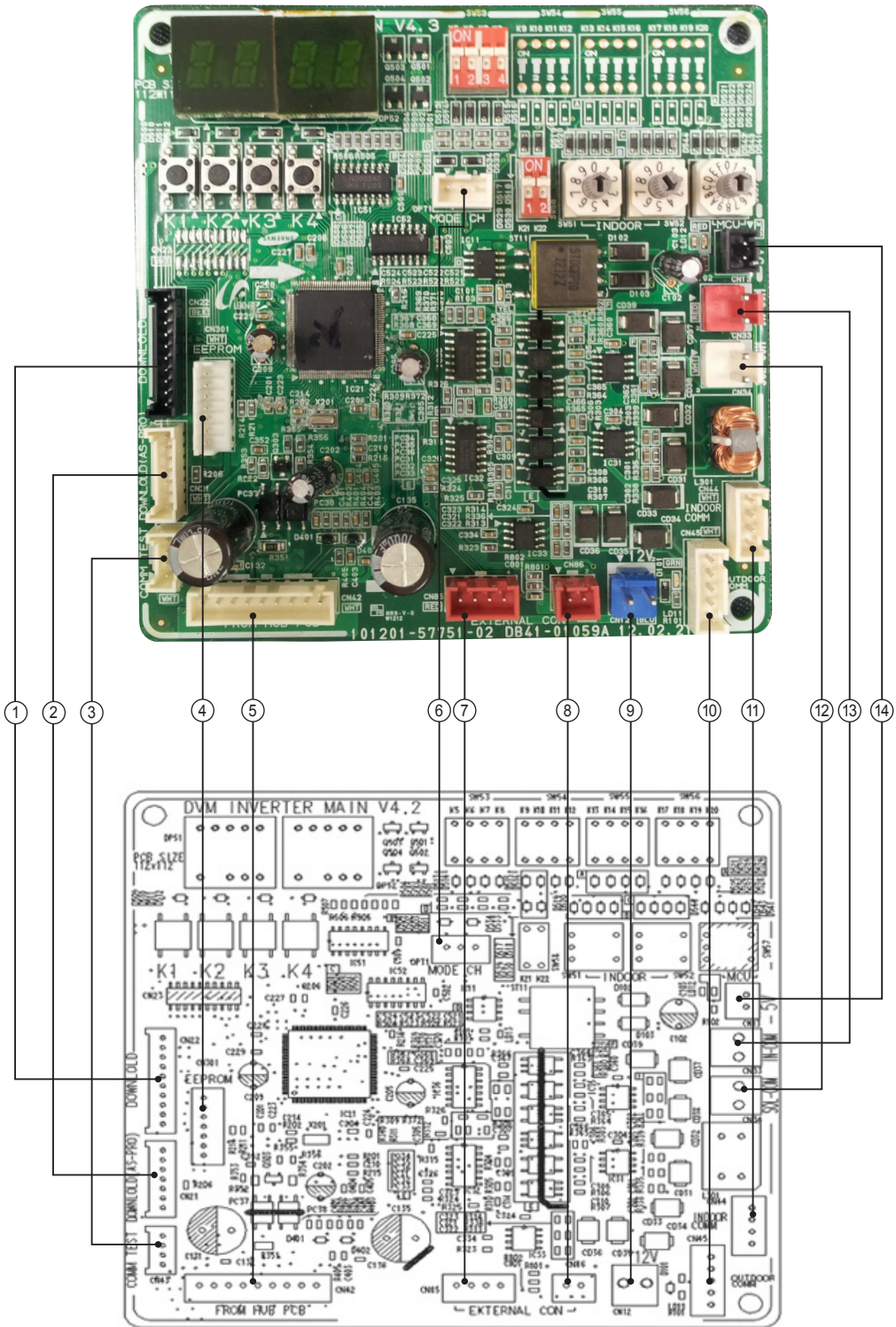
Outdoor unit display	E 108 - A00X (X : Address of duplicate indoor unit)				
Indoor unit display	Operation	Defrost	Timer	Fan	Filter/EMI
	×	×	●	●	×
Judgment Method	Refer to the judgment method below.				
Cause of problem	· Indoor unit and MCU address duplication.				

1. Cause of problem



5. PCB Diagram and Parts List

5-1 ASS'Y PCB MAIN

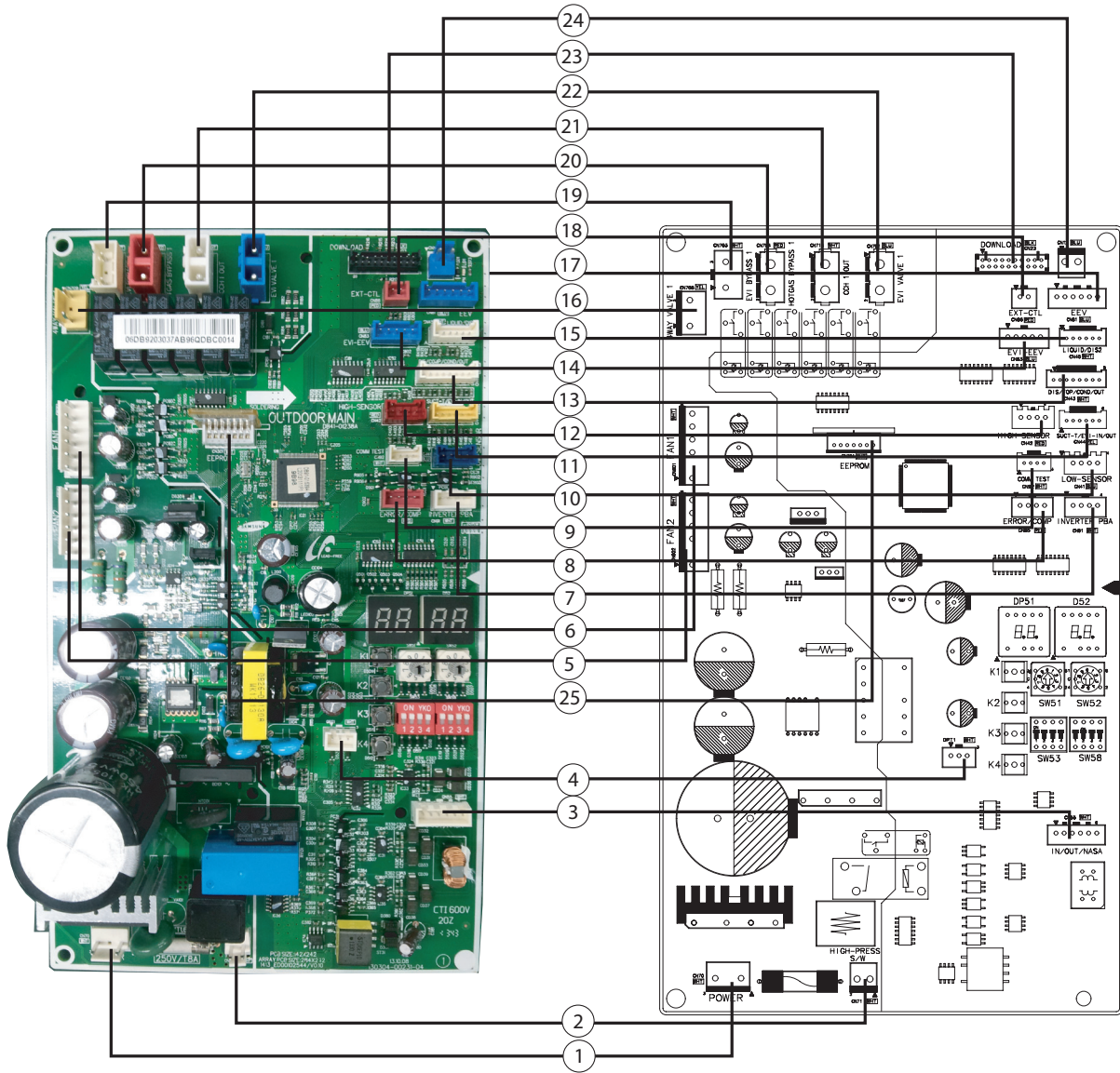


ASS'Y PCB MAIN (cont.)

<p>① CN22-PC DOWN LOADER PART</p> <p>#1:RX-DOWN #2:TX-DOWN #3:N-TRST #4:TDO #5:TCK #6:TDI #7:TMS #8: #9:GND #10:VCC</p>	<p>② CN21-ASPRO DOWN LOADER PART</p> <p>#1:VCC #2:MODE0 #3:RESET_MAIN #4: #5:F_SCLK #6:F_SDAT #7:GND</p>	<p>③ CN43-COMM TEST</p> <p>#1:12V #2:INVERTER-INRUSH-OUT #3:INVERTER-COMM #4:GND</p>	<p>④ CN301-EEPROM</p> <p>#1:GND #2: #3:VCC #4:EEPROM-SELECT #5:EEPROM-SO #6:EEPROM-SI #7:EEPROM-CLOCK</p>
<p>⑤ CN42 - HUB COMMUNICATION</p> <p>#1:12V #2:INVERTER-INRUSH-OUT #3:INVERTER-COMM #4:GND #5:HIGH-PRESSURE-SENSOR #6:LOW-PRESSURE-SENSOR #7:ZERO-CROSSING #8:GND #9:VCC</p>	<p>⑥ OPTI-MODE SELECTOR</p> <p>#1:KEY3 #2:GRID #3:KEY4</p>	<p>⑦ CN85-STATE CHECK</p> <p>#1:12V #2:ERROR-CHECK-OUT #3:12V #4:COMP-CHECK-OUT</p>	<p>⑧ CN86-OUTSIDE CONTROLLER</p> <p>#1:CONTROL #2:GND</p>
<p>⑨ CN12-TRANSMITTER DC POWER 12V</p> <p>#1:12V #2:GND</p>	<p>⑩ CN45-OUTDOOR UNIT COMM.</p> <p>#1:COM-C #2:COM-D #3: #4:12V #5:GND</p>	<p>⑪ CN44 - INDOOR UNIT COMM.</p> <p>#1:COM-A #2:COM-B #3:5V #4:AGND</p>	<p>⑫ CN34-NONUSE COMM.</p> <p>#1:COM-E #2:COM-F</p>
<p>⑬ CN33-INDOOR UNIT COMM. (REDUNDANCY)</p> <p>#1:COM-A #2:COM-B</p>	<p>⑭ CN13-POWER 5V</p> <p>#1:COM-A #2:COM-B</p>		

■ AM080/090FXMDGH***

ASS'Y PCB MAIN (cont.)



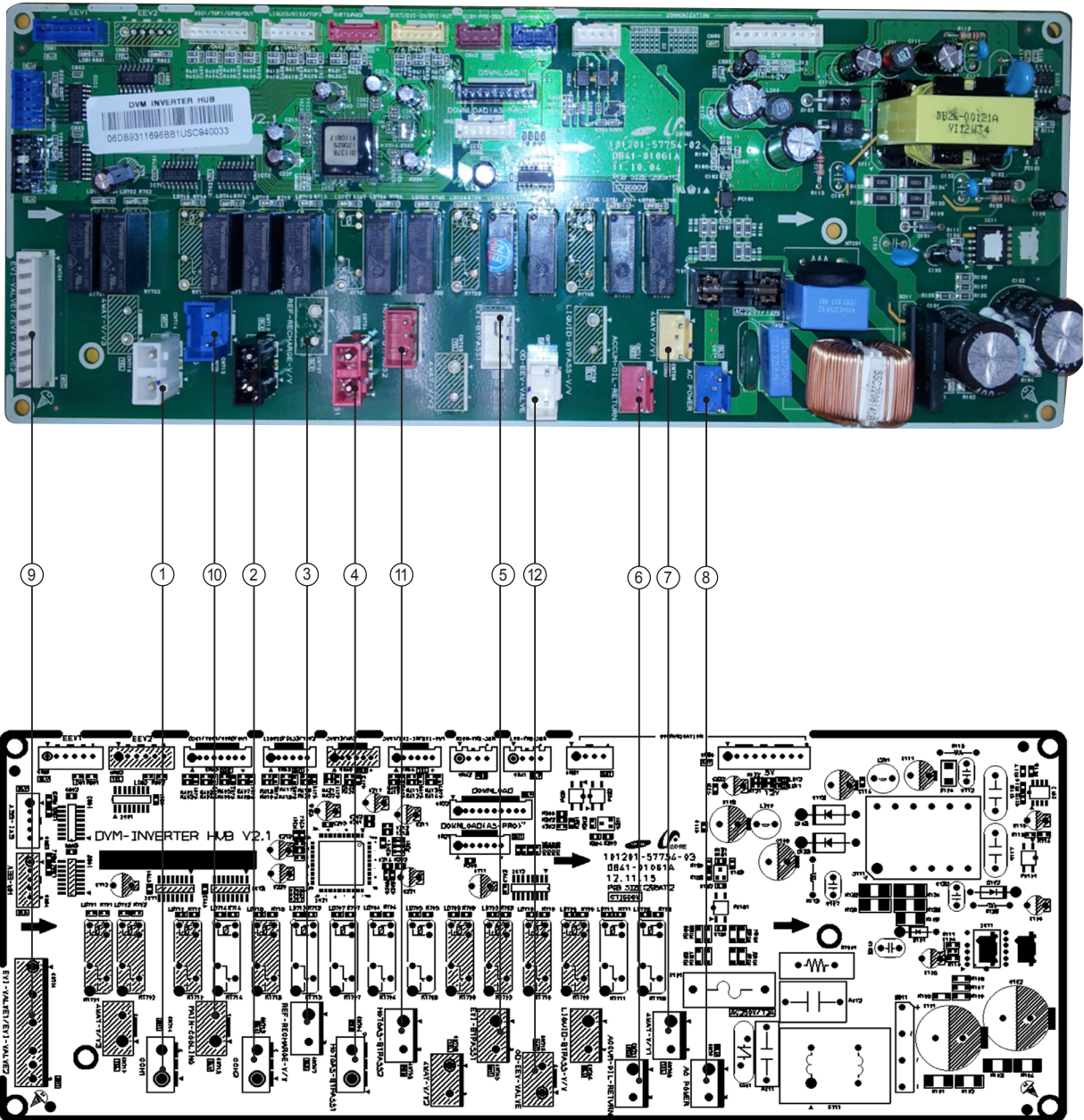
ASS'Y PCB MAIN (cont.)

① CN70-AC电源 #1:L #2:N	② CN71-高压开关 #1:L #2:L	③ CN55-通信接口 #1:COM_A #2:COM_B #3:COM_C #4:COM_D #5:COM_E #6:COM_F	④ OPT1-模式选择 #1:KEY3 #2:GRID #3:KEY4
⑤ CN602 - 2号风机 #1:BLDC_DC_LINK #2: #3:AGND #4:15V #5:OVP_FAN2_VSP #6:FAN2_FG	⑥ CN601 - 1号风机 #1:BLDC_DC_LINK #2: #3:AGND #4:15V #5:OVP_FAN1_VSP #6:FAN1_FG	⑦ CN91-MAIN-INV通信 #1:12V #2:INV_INRUSH_OUT #3:INV_COMM #4:GND	⑧ CN85-状态检查 #1:12V #2:ERROR_CHECK_OUT #3:12V #4:COMP_CHECK_OUT
⑨ CN92-COMM TEST #1:VCC #2:RXD_INVERTER #3:INV_COMM #4:GND	⑩ CN41-低压传感器 #1: #2:低压传感器 #3:GND #4:VCC	⑪ CN44 - 温度传感器 #1:SUCTION_TOP #2:GND #3:EVI_INLET #4:GND #5:EVI_OUTLET #6:GND	⑫ CN42-高压传感器 #1:高压传感器 #2: #3:GND #4:VCC
⑬ CN43-温度传感器 #1:DISCHARGE #2:GND #3:COMP_TOP #4:GND #5:COND_OUT #6:GND #7:OUTDOOR_TEMP #8:GND	⑭ CN83-EVI电子膨胀阀 #1:EEV_EVI_A_OUT #2:EEV_EVI_B_OUT #3:EEV_EVI_A_OUT #4:EEV_EVI_B_OUT #5:12V	○ CN45-温度传感器 #1:LIQUID_TUBE #2:GND #3:DISCHARGE2 #4:GND #5: #6:	1 CN708-四通阀 #1:4WAY VALVE #2: #3:N
2 CN81-电子膨胀阀 #1:EEV1_B_OUT #2:EEV1_A_OUT #3:EEV1_B_OUT #4:EEV1_A_OUT #5:12V #6:12V	3 CN86-外部控制器 #1:外部控制 #2:GND	4 CN703-EVI旁通阀 #1:EVI BYPASS #2: #3:N	5 CN704-热气旁通阀 #1:HOTGAS BYPASS #2:N

<p>6 CN714-电加热带</p> <p>#1:CCHOUT #2:N</p>	<p>7 CN701-EVI阀</p> <p>#1:EVIVALVE #2:N</p>	<p>8 CN23-软件烧录</p> <p>#1:RXD_IN #2:TXD_IN #3:NTRST #4:TDO #5:TCK #6:TDI #7:TMS #8:TRACE_CLK #9:GND #10:VCC #11:VCC #12:MODE_0 #13:RESET #14:TRACE_3 #15:F_SCLK #16:F_SDAT #17:GND #18:TRACE_2 #19:TRACE_1 #20:TRACE_0</p>	<p>9 CN12-12V电源</p> <p>#1:12V #2:GND</p>
<p>: CN301-EEPROM PBA</p> <p>#1:GND #2: #3:VCC #4:EEPROM_SELECT #5:EEPROM_SO #6:EEPROM_SI #7:EEPROM_CLOCK</p>			

5-2 ASSY PCB MAIN-HUB

■ AC



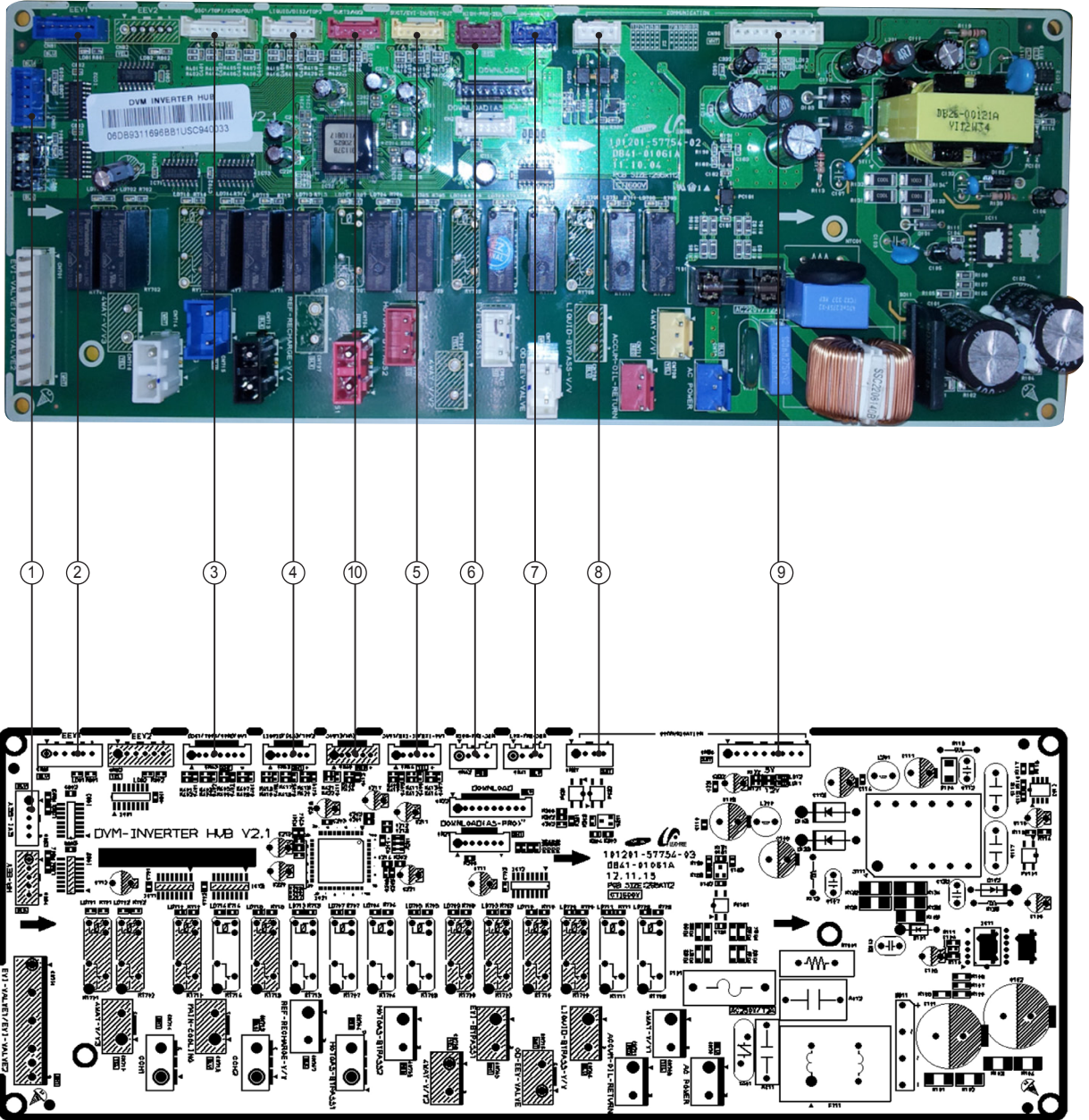
ASS'Y PCB MAIN-HUB (cont.)

■ AC (cont.)

<p>① CN714-CCH1</p> <p>#1:N #2:CCH1</p>	<p>② CN713-CCH2</p> <p>#1:N #2:CCH2</p>	<p>③ CN707-REF-RECHARGE</p> <p>#1:REF-RECHARGEV/V #2:N</p>	<p>④ CN704-HOTGASVALVE1</p> <p>#1:N #2:HOTGAS BYPASS1</p>
<p>⑤ CN705-HOTGASVALVE2</p> <p>#1:HOTGAS BYPASS2 #2:N</p>	<p>⑥ CN711-OIL RETURN VALVE</p> <p>#1:ACCUM OIL RETURN VALVE #2:N</p>	<p>⑦ CN708-4-WAYVALVE</p> <p>#1:4-WAYVALVE #2:N</p>	<p>⑧ CN70-AC</p> <p>#1:AC #2:AC</p>
<p>⑨ CN701</p> <p>#1:EV/V 1 #3:EV/V 2</p>	<p>⑩ CN715-MAIN-COOLING</p> <p>#1:AC #2:AC</p>	<p>⑪ CN705-HOTGAS-BYPASS2</p> <p>#1:AC #2:AC</p>	<p>⑫ CN716-OD-EEV-VALVE</p> <p>#1:AC #2:AC</p>

ASS'Y PCB MAIN-HUB (cont.)

■ DC

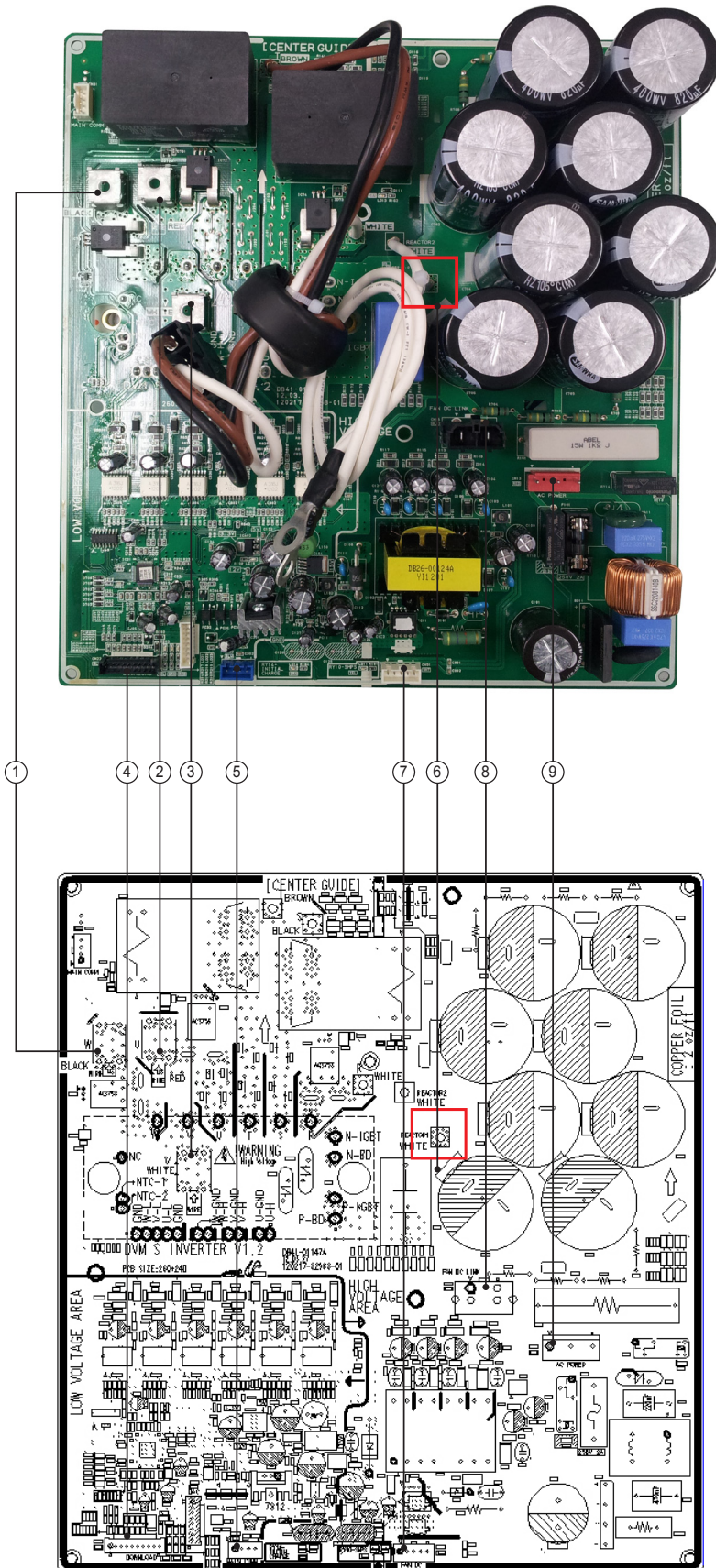


ASS'Y PCB MAIN-HUB (cont.)

■ DC (cont.)

<p>① CN83-EVI EEV</p> <p>#1:RX-DOWN #2:TX-DOWN #3:N-TRST #4:TDO #5:TCK #6:TDI #7:TMS #8: #9:GND #10:VCC</p>	<p>② CN81-EEV1</p> <p>#1:VCC #2:MODE0 #3:RESET_MAIN #4: #5:F_SCLK #6:F_SDAT #7:GND</p>	<p>③ CN43-TEMP.SENSOR</p> <p>#1:COMP1 DISACHRGE #2:COMP1 DISCHARGE #3:COMP1 TOP #4:COMP1 TOP #5:COND OUT #6:COND OUT #7:OUTDOOR TEMP. #8:OUTDOOR TEMP.</p>	<p>④ CN45-TEMP.SENSOR</p> <p>#1:LIQUID #2:LIQUID #3:COMP2 DISCHARGE #4:COMP2 DISCHARGE #5:COMP2 TOP #6:COMP2 TOP</p>
<p>⑤ CN44 – TEMP. SENSOR</p> <p>#1:SUCTION #2:SUCTION #3:EVI INLET #4:ENI INLET #5:ENI OUT #6:EVI OUT</p>	<p>⑥ CN42I –HIGH PRESSURE SENSOR</p> <p>#1:HIGH PRESSURE SENSOR #3:GND #4:VCC</p>	<p>⑦ CN41- LOW PRESSURE SENSOR</p> <p>#2:LOW PRESSURE SENSOR #3:GND #4:VCC</p>	<p>⑧ CN97-TO FAN COMM.</p> <p>#1:12V #2:INV-SMPS #3:COMM-OUT #4:GND</p>
<p>⑨ CN96 – MAIN –HUB COMM.</p> <p>#1:CN12 #2:INV_SMPS_RELAY #3:GOMM-IN #4:GND #5:HIGH-PRESSURE-SENSOR #6:LOW-PRESSURE-SENSOR #7:ZERO-CROSSING #8:GND #9:VCC</p>	<p>⑩ CN46-SUCT</p> <p>#1:SUCT2 #2:SUCT2</p>		

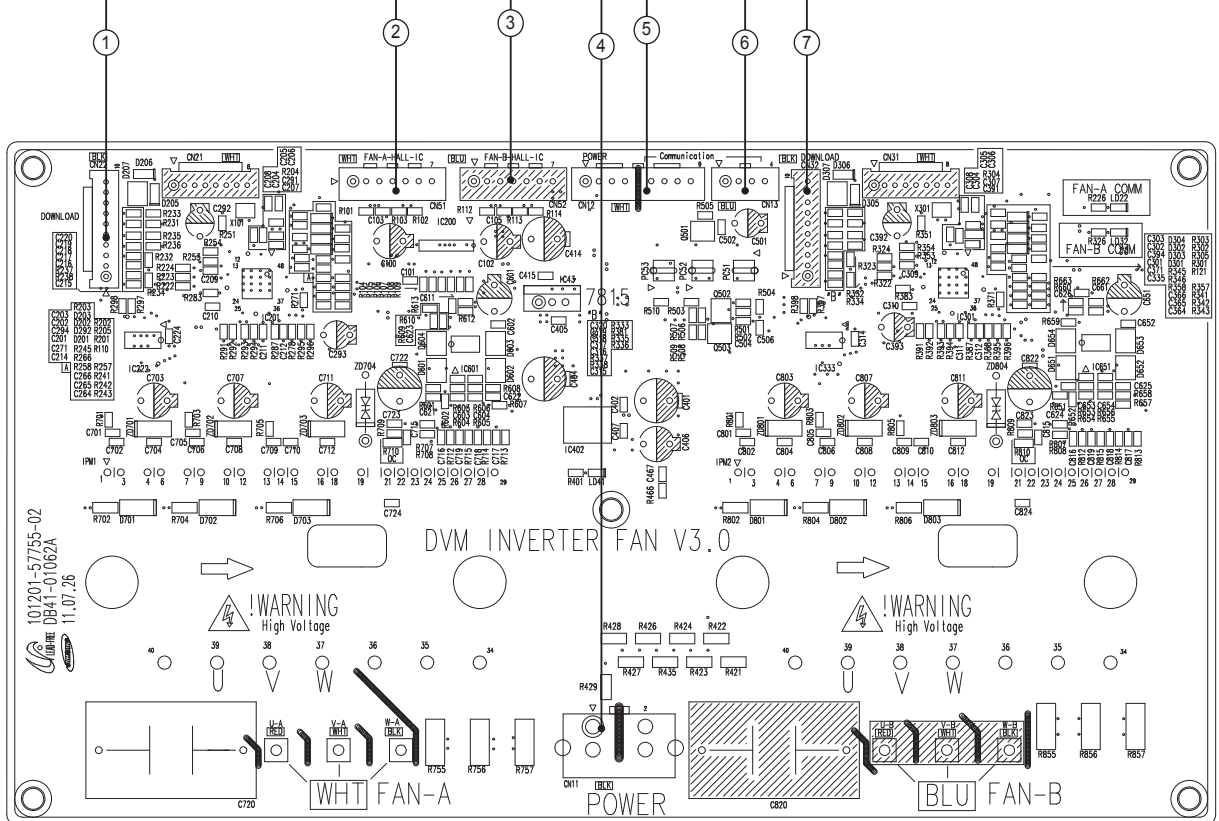
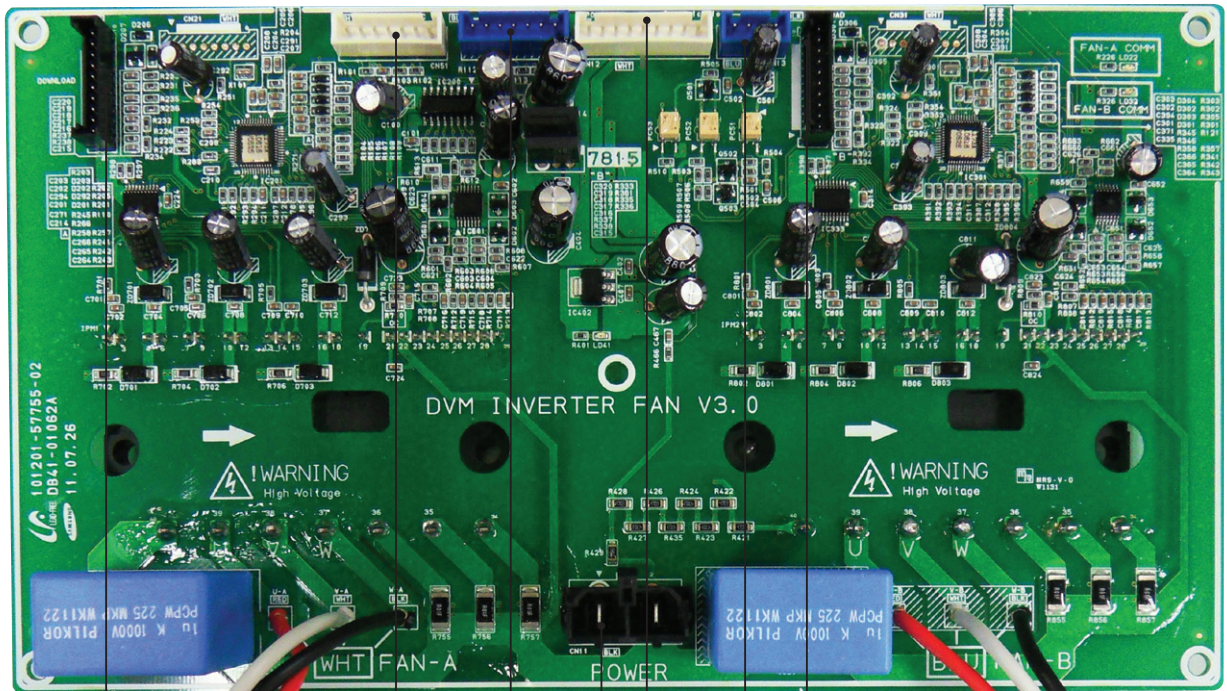
5-3 ASS'Y PCB INVERTER



ASS'Y PCB SUB-DRIVER (cont.)

<p>① W-COMP W</p> <p>#1:COMP W</p>	<p>② U-COMP U</p> <p>#1:COMP U</p>	<p>③ V-COMP V</p> <p>#1:COMP V</p>	<p>④ CN22-DOWNLOAD</p> <p>#1:RX-DOWN #2:TX-DOWN #3:N-TRST #4:TDO #5:TCK #6:TDI #7:TMS #8: #9:GND #10:VCC</p>
<p>⑤ CN32 - MAIN COMM</p> <p>#1:12V-MAIN #2:IN-SMPS-RELAY #3:COMM-IN #4:GND-MAIN</p>	<p>⑥ REACTOR (WIRE CONNECTION)</p> <p>#1:REACTOR #2:REACTOR</p>	<p>⑦ CN91-FAN DC</p> <p>#1:18V #2:GND #3:5V-FAN #4:AD-SELECT</p>	<p>⑧ CN15-FAN DC LINK</p> <p>#1:500V #2:GND(500V)</p>
<p>⑨ CN13-ACPOWER</p> <p>#1:AC #2: #3:AC</p>			

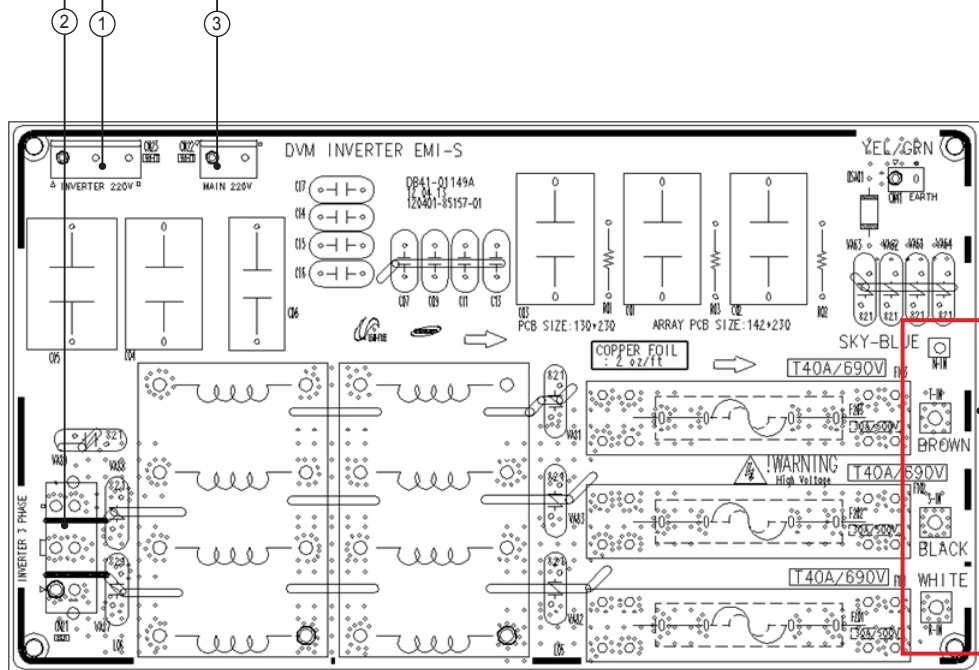
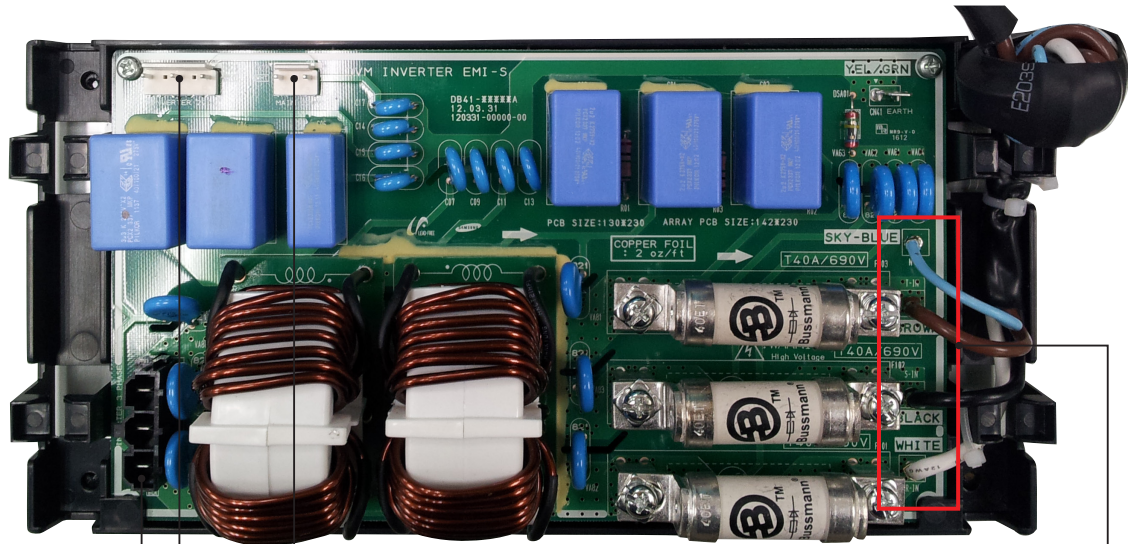
5-4 ASS'Y PCBFAN



ASS'Y PCB FAN (cont.)

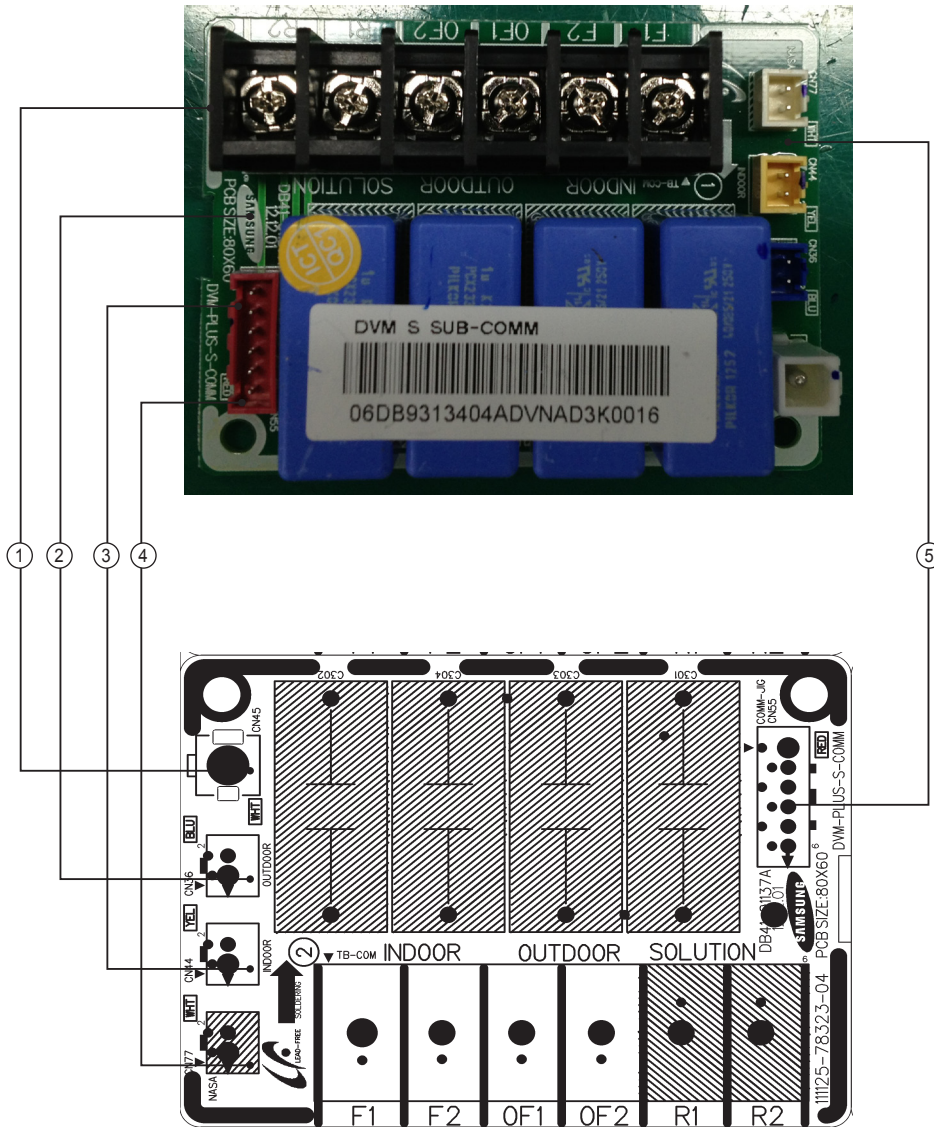
<p>① CN22-DOWNLOAD1</p> <p>#1:RX-DOWN #2:TX-DOWN #3:N-TRST #4:TDO #5:TCK #6:TDI #7:TMS #8: #9:GND #10:VCC</p>	<p>② CN51-FANA-HALL</p> <p>#1:HALL-U #2:5V #3:HALL-V #4:GND #5:HALL-W #6:MT-TEMP #7:GND</p>	<p>③ CN52-FANB_HALL</p> <p>#1:HALL-U #2:5V #3:HALL-V #4:GND #5:HALL-W #6:MT-TEMP #7:GND</p>	<p>④ CN11-POWER</p> <p>#1:500V #2:GND(500V)</p>
<p>⑤ CN12-CONRTOL POWER</p> <p>#1:18V #2:GND #3:COMM-IN #4:GND-MAIN #5: #6:12-MAIN #7:IN-SMPS-RELAY #8:COMM-OUT #9:GND-MAIN</p>	<p>⑥ CN13-COMM</p> <p>#1:12-MAIN #2:IN-SMPS-RELAY #3:COMM-OUT #4:GND-MAIN</p>	<p>⑦ CN32-DOWNLOAD2</p> <p>#1:RX-DOWN #2:TX-DOWN #3:N-TRST #4:TDO #5:TCK #6:TDI #7:TMS #8: #9:GND #10:VCC</p>	

5-5 ASS'Y PCB EMI



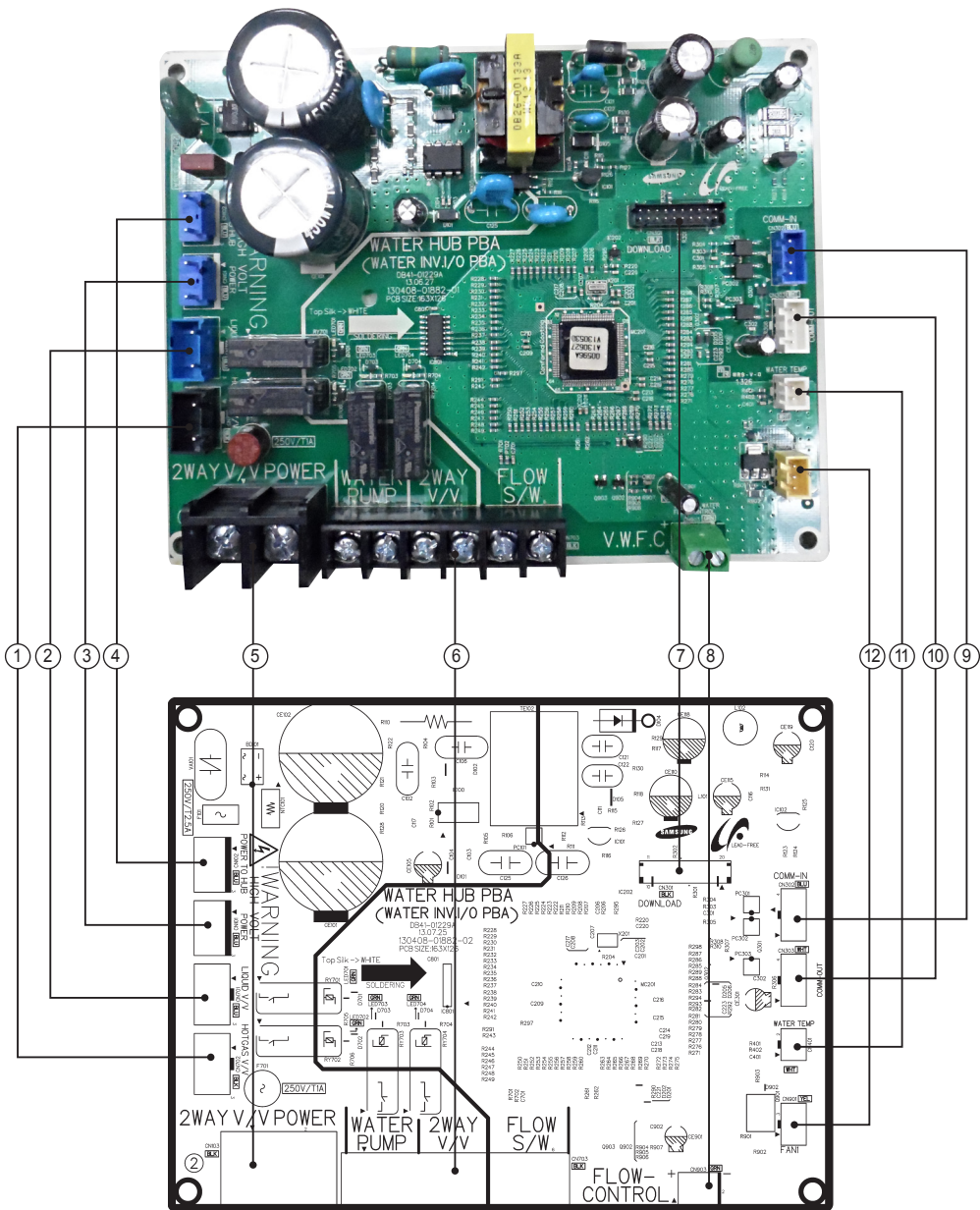
<p>① CN23-INVERTER 220V</p> <p>#1:AC #2: #3:AC</p>	<p>② CN21-FAN A</p> <p>#1:R #2:S #3:T</p>	<p>③ CN22-MAIN 220</p> <p>#1:AC #2:AC</p>	<p>④ RST-RST INPUT</p> <p>T-IN S-IN R-IN</p>
--	---	---	--

5-6 SUB-COMM



<p>① CN44</p> <p>#1:F1 #2:F2</p>	<p>② CN36</p> <p>#1:OF1 #2:OF2</p>	<p>③ CN#44</p> <p>#1:R1 #2:R2</p>	<p>④ CN45</p> <p>GND</p>	<p>⑤ CN55</p> <p>#1:F1 #2:F2 #3:OF1 #4:OF2 #5:R1 #6:R2</p>
--------------------------------------	--	---------------------------------------	--------------------------	--

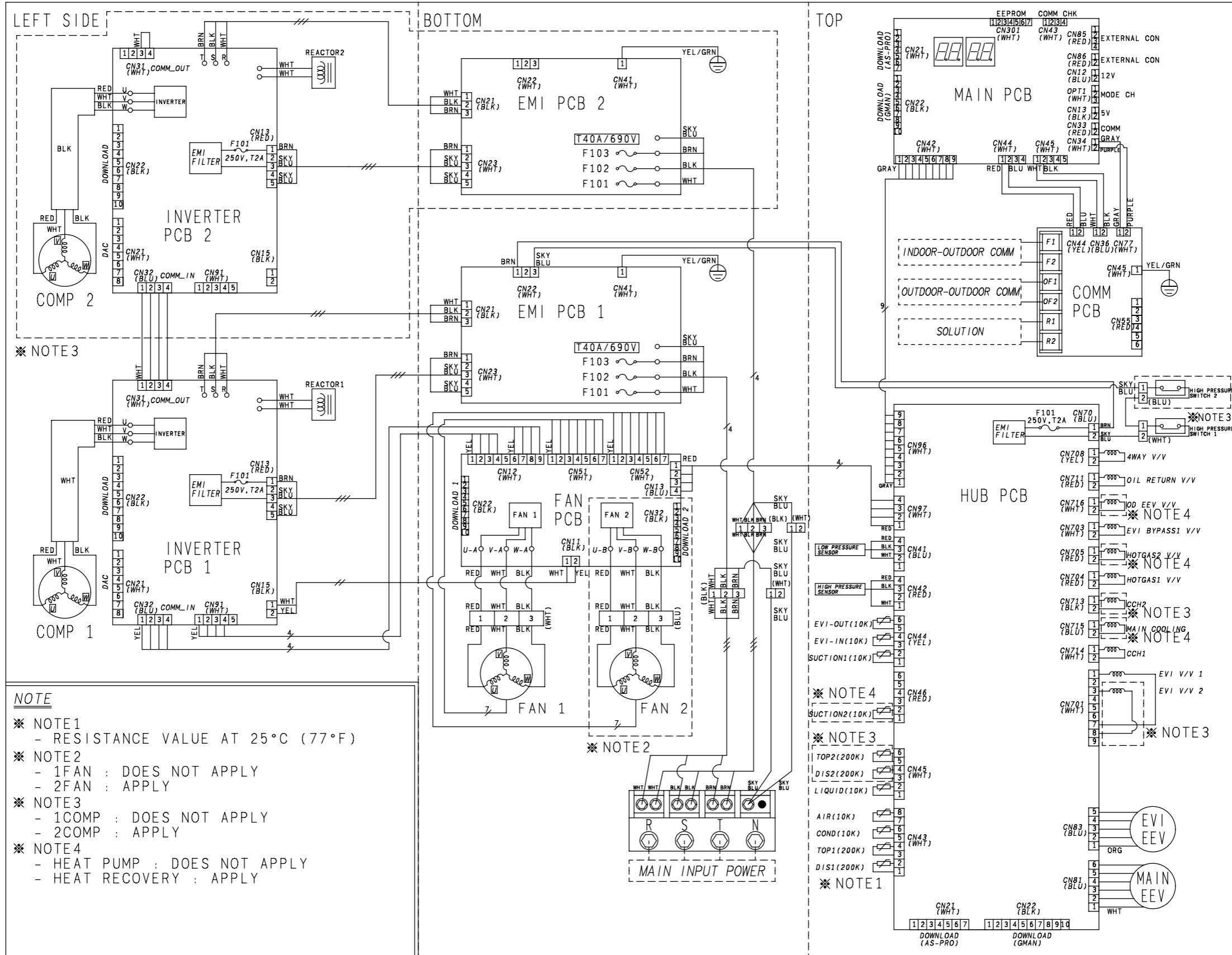
5-7 ASSY PCB WATER-HUB



<p>① CN702-HOT GAS V/V</p> <p>#1:N #3:T</p>	<p>② CN701-LIQUID V/V</p> <p>#1:N #3:T</p>	<p>③ CN101-AC INPUT</p> <p>#1:N #3:T</p>	<p>④ CN102-AC OUTPUT</p> <p>#1:N #3:T</p>
<p>⑤ CN103-2WAY VALVE POWER OUTPUT</p> <p>#1: 12V-MAIN #2: INV-SMPS-RELAY #3: COMM-IN #4: GND-MAIN</p>	<p>⑥ CN703- WATER PUMP/2WAY VALVE/ FLOW SW</p> <p>#1: WATER PUMP #2: WATER PUMP #3: 2WAY VALVE #4: 2WAY VALVE #5: FLOW SWITCH #6: GND</p>	<p>⑦ CN304 - MICOM DOWNLOAD</p>	<p>⑧ CN903-WATER FLOW</p> <p>#1: DC OUTPUT #2: GND</p>
<p>⑨ CN302-COMM IN</p> <p>#1: 12V #2: INV SMPS RELAY #3: COMM SIGNAL #4: GND</p>	<p>⑩ CN303-COMM OUT</p> <p>#1: 12V #2: INV SMPS RELAY #3: COMM SIGNAL #4: GND</p>	<p>⑪ CN401 - WATER TEMP.</p> <p>#1: TEMP. INPUT #2: GND</p>	<p>⑫ CN901-DC FAN</p> <p>#1: DC 12V OUTPUT #2: FEEDBACK #3: GND</p>

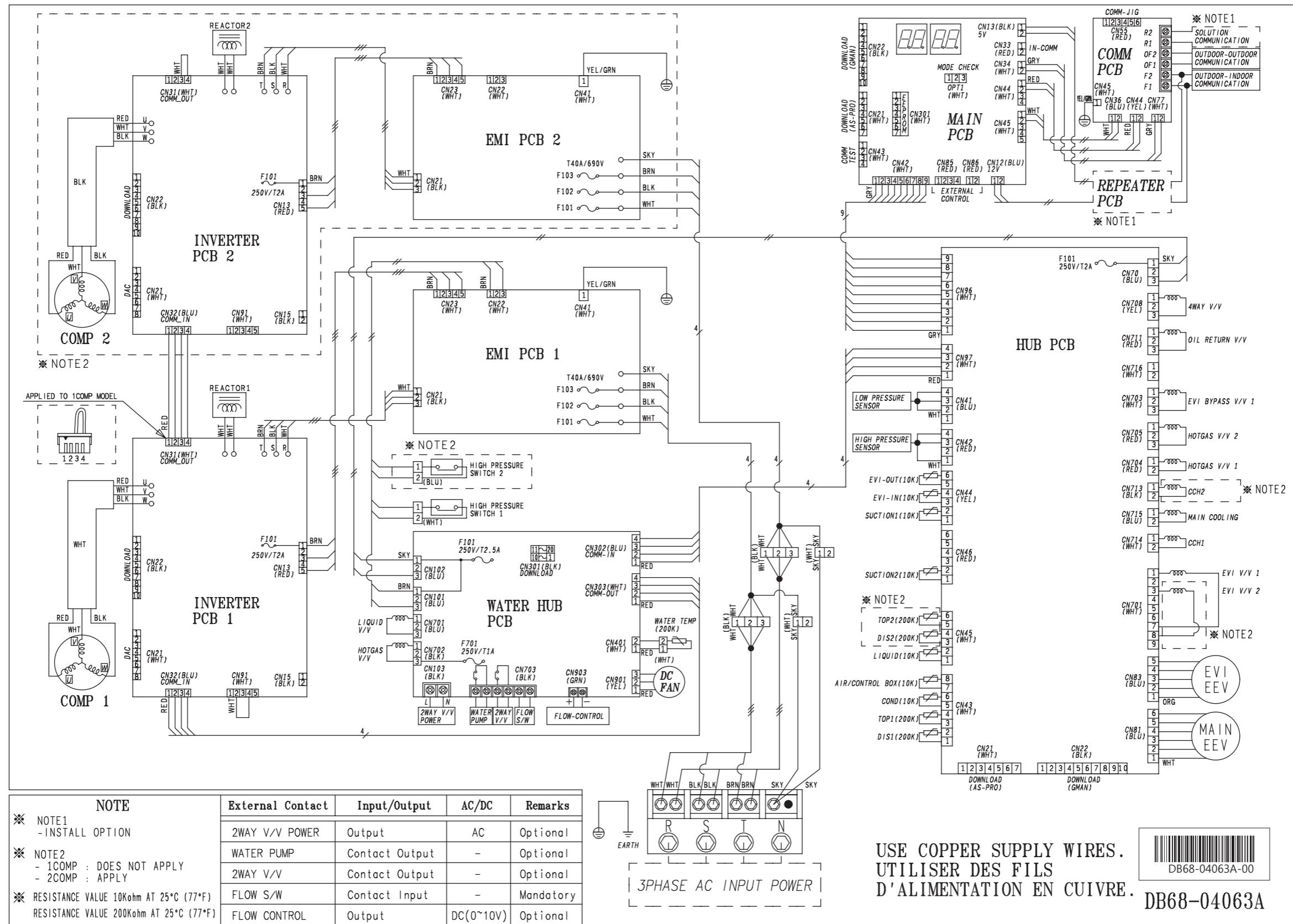
6. Wiring Diagram

6-1 AM080/100/120/140/160/180/200/220FXV***



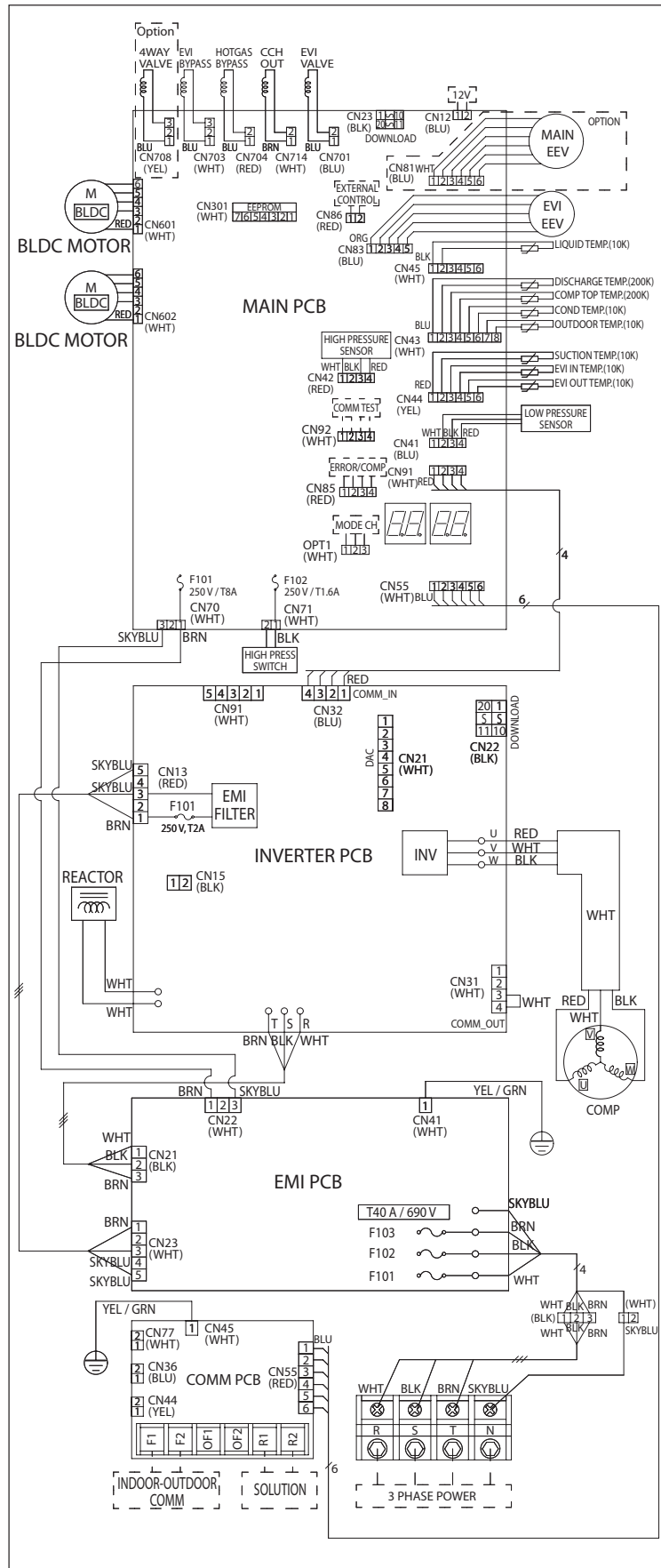
This Document can not be used without Samsung's authorization.

6-2 AM080/100/120/200FXWA**



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

6-3 AM080/090FXMDGH**

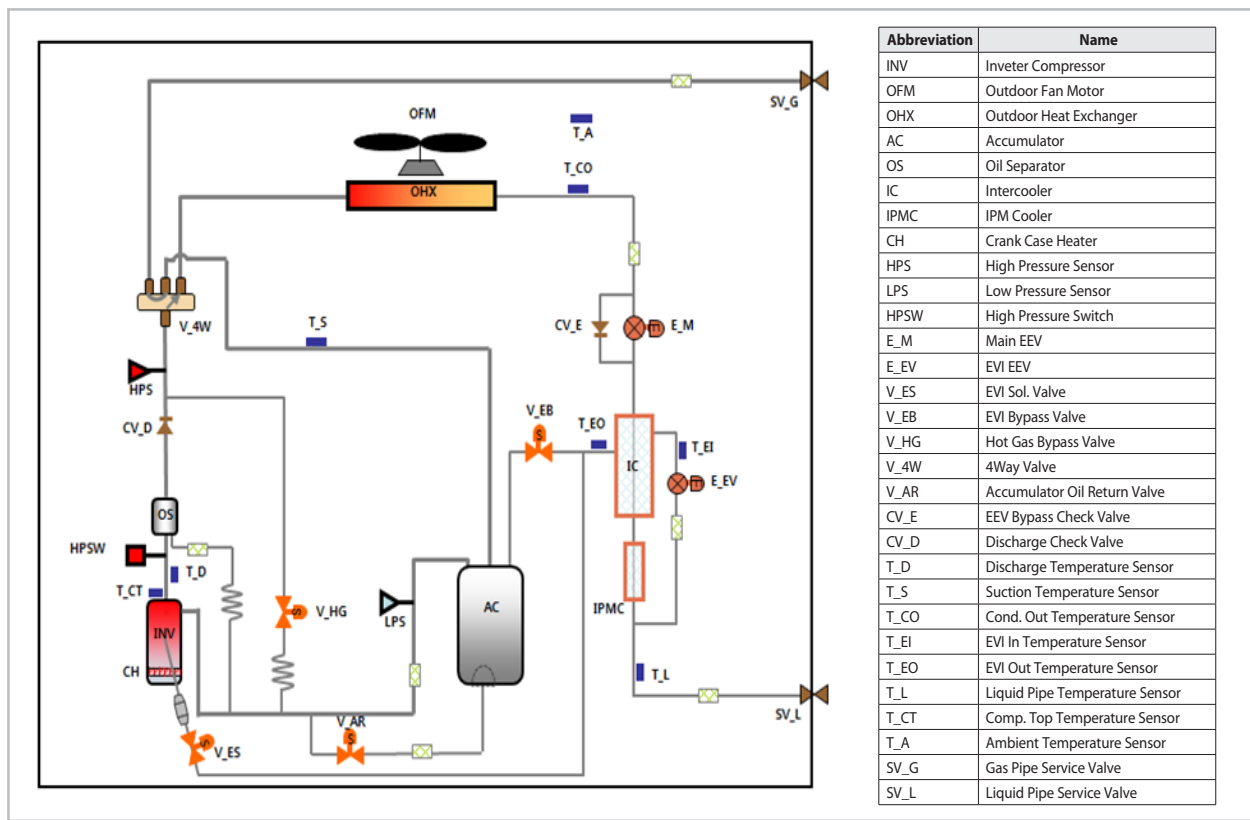


This Document can not be used without Samsung's authorization.

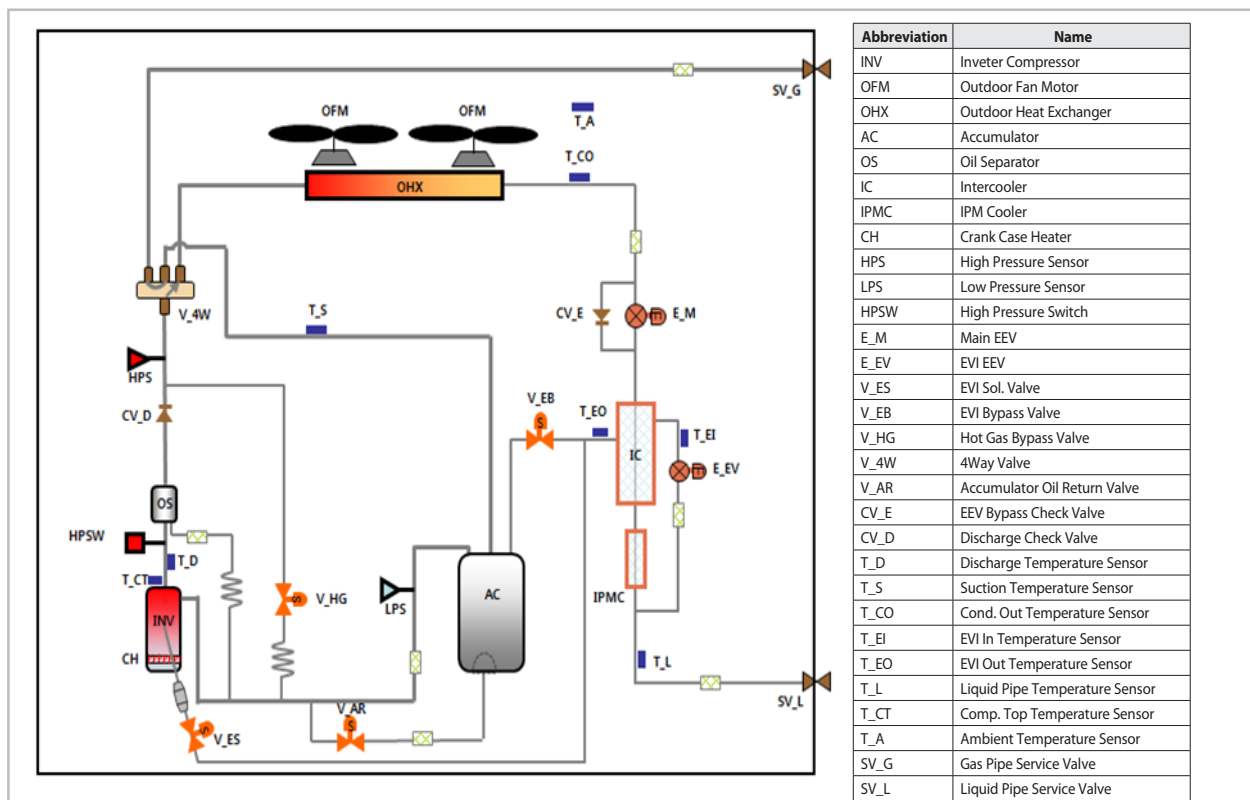
MEMO

7. Cycle Diagram

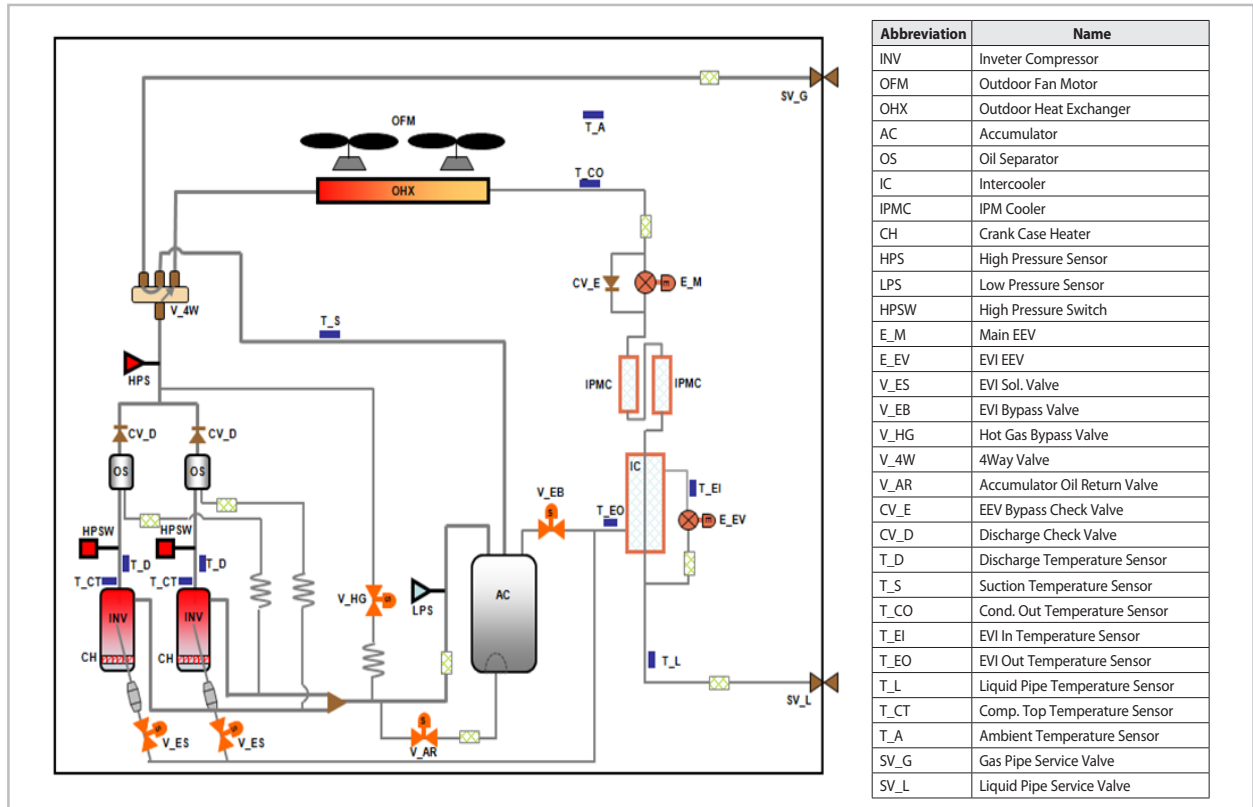
7-1 AM080/100/120FXVAGH/EU



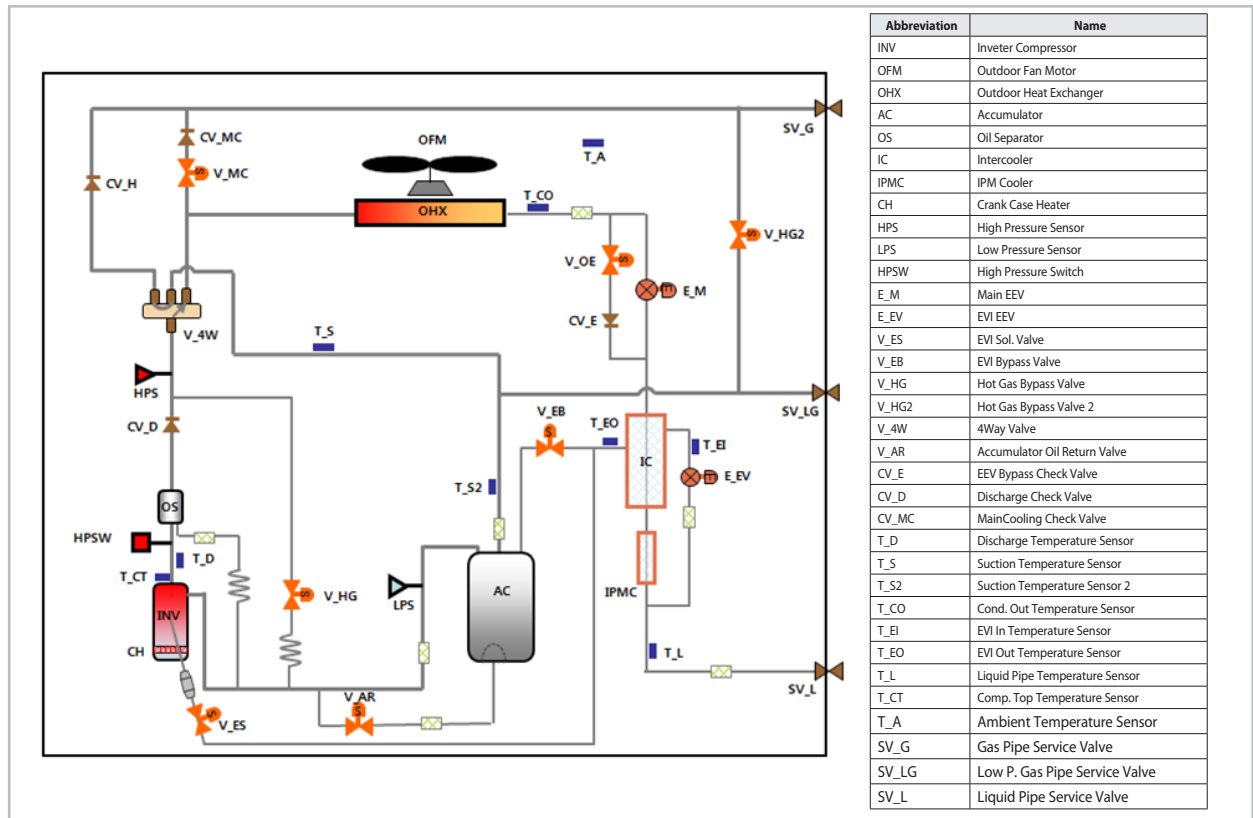
7-2 AM140FXVAGH/EU



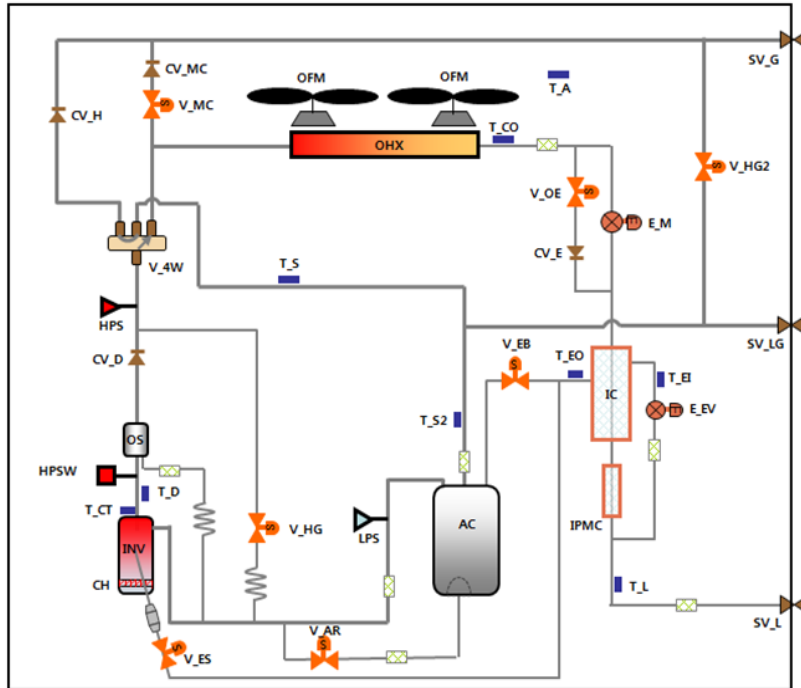
7-3 AM160/180/200/220FXVAGH/EU



7-4 AM080/100/120FXVAGR/EU

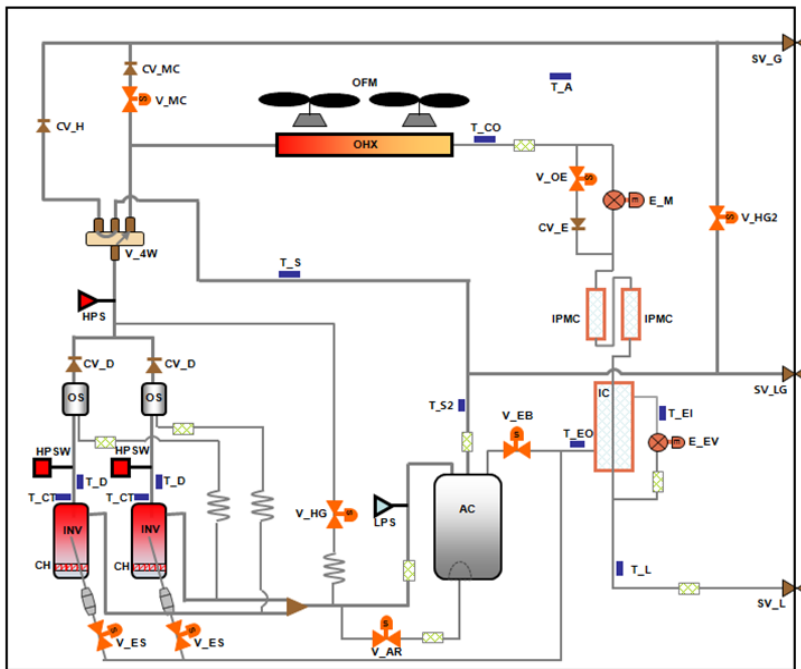


7-5 AM140FXVAGR/EU



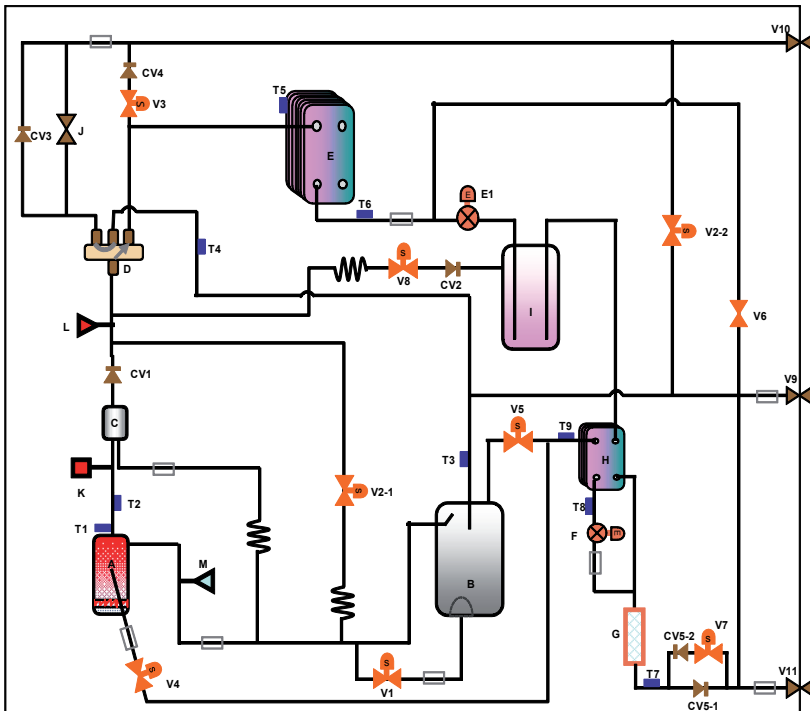
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_HG2	Hot Gas Bypass Valve 2
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
CV_MC	MainCooling Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
T_S2	Suction Temperature Sensor 2
T_CO	Cond. Out Temperature Sensor
T_EI	EVI In Temperature Sensor
T_EO	EVI Out Temperature Sensor
T_L	Liquid Pipe Temperature Sensor
T_CT	Comp. Top Temperature Sensor
T_A	Ambient Temperature Sensor
SV_G	Gas Pipe Service Valve
SV_LG	Low P. Gas Pipe Service Valve
SV_L	Liquid Pipe Service Valve

7-6 AM160/180/200/220FXVAGR/EU



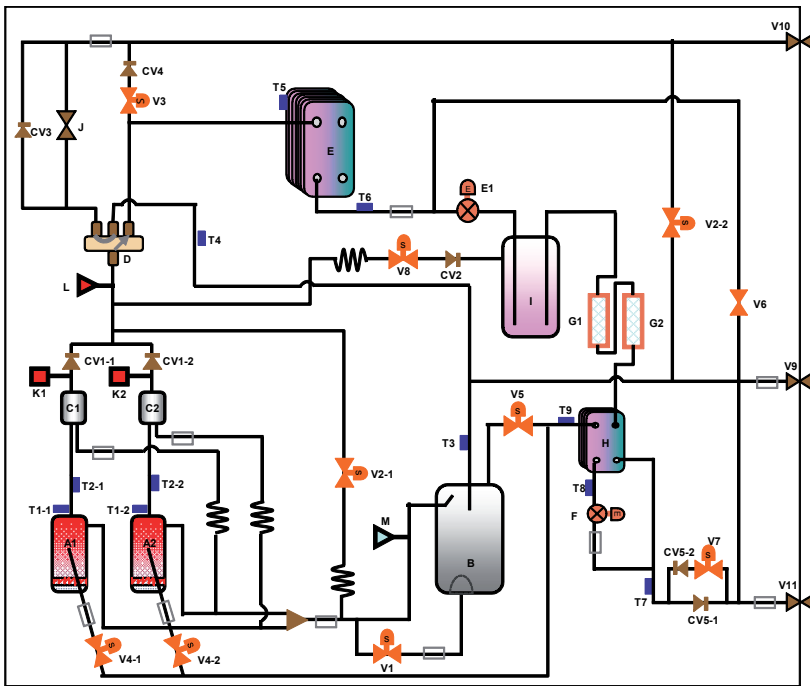
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_HG2	Hot Gas Bypass Valve 2
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
CV_MC	MainCooling Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
T_S2	Suction Temperature Sensor 2
T_CO	Cond. Out Temperature Sensor
T_EI	EVI In Temperature Sensor
T_EO	EVI Out Temperature Sensor
T_L	Liquid Pipe Temperature Sensor
T_CT	Comp. Top Temperature Sensor
T_A	Ambient Temperature Sensor
SV_G	Gas Pipe Service Valve
SV_LG	Low P. Gas Pipe Service Valve
SV_L	Liquid Pipe Service Valve

7-7 AM080/100/120FXWA**



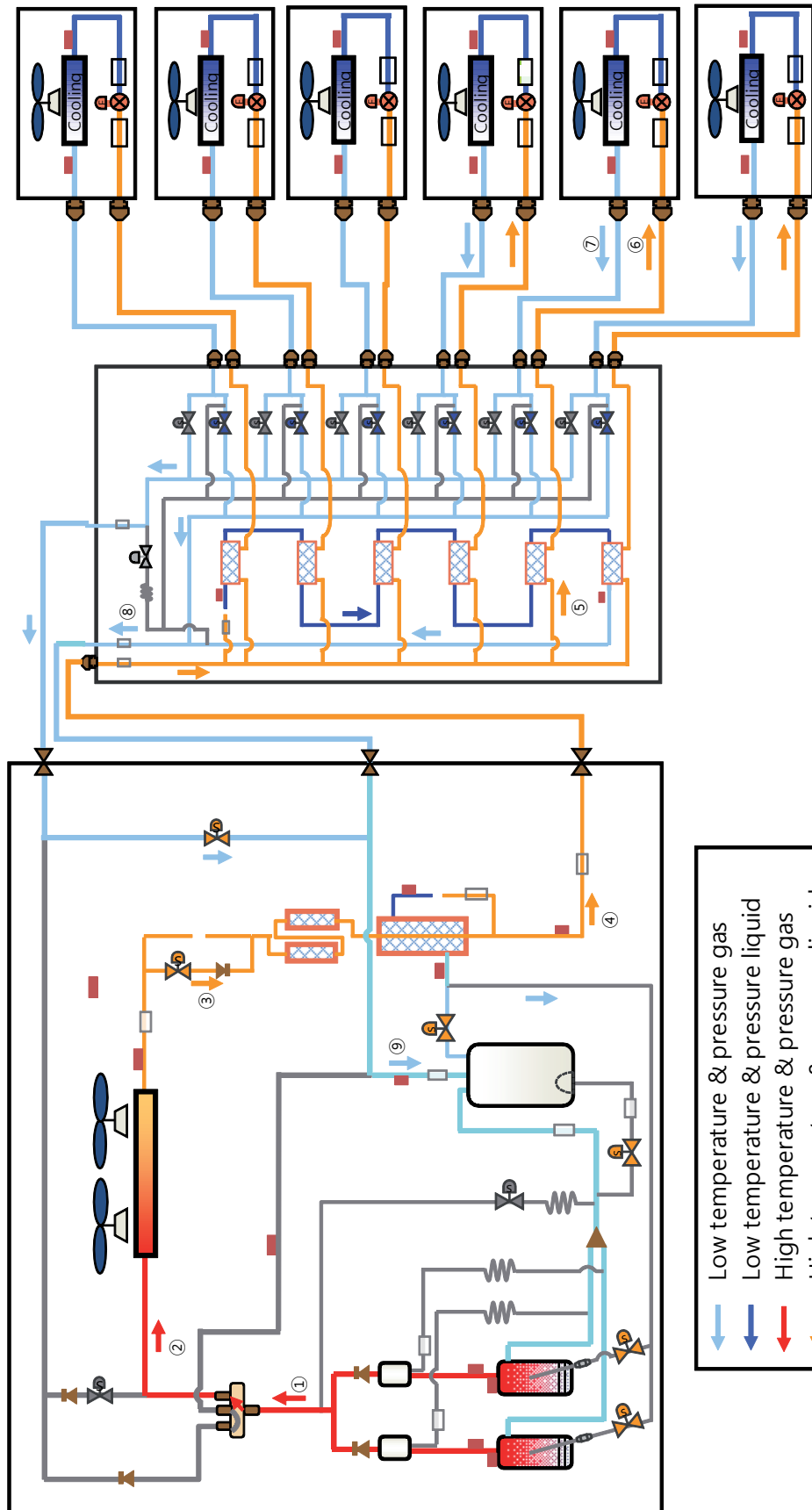
Abbreviation	Name
A	INV COMP
B	ACCUM
C	O/S
D	4WAY V/V
E	PLATE HEAT EXCHANGER
E1	MAIN EEV
F	EVI EEV
G	IPM COOLER
H	SUB COOLER
I	RECEIVER
J	HEAT PUMP V/V
K	HIGH PRE. S/W
L	HIGH PRE. SENSOR
M	LOW PRE. SENSOR
V1	ACCUM RETRUN V/V
V2-1, V2-2	HOT GAS BYPASS V/V
V3	MAIN COOLING V/V
V4	EVI V/V
V5	EVI B/P V/V
V6	DPR V/V
V7	LIQUID TUBE V/V
V8	HOT GAS CHARGING V/V
V9	LOW PRE. GAS SERVICE V/V
V10	HIGH PRE. GAS SERVICE V/V
V11	LIQUID SERVICE V/V
CV1	DISC. CHECK V/V
CV2	HRV CHECK V/V
CV3	HR CHECK V/V
CV4	MAIN COOL CHECK V/V
CV5-1, CV5-2	LIQUID TUBE CHECK V/V
T1	COMP TOP SENSOR
T2	DISC. SENSOR
T3	SUC. SENSOR 2
T4	SUC. SENSOR 1
T5	WATER SENSOR
T6	COND OUT SENSOR
T7	LIQUID TUBE SENSOR
T8	SC IN SENSOR
T9	SC OUT SENSOR

7-8 AM200FXWA**



Abbreviation	Name
A1, A2	INV COMP
B	ACCUM
C1, C2	O/S
D	4WAY V/V
E	PLATE HEAT EXCHANGER
E1	MAIN EEV
F	EVI EEV
G1, G2	IPM COOLER
H	SUB COOLER
I	RECEIVER
J	HEAT PUMP V/V
K1, K2	HIGH PRE. S/W
L	HIGH PRE. SENSOR
M	LOW PRE. SENSOR
V1	ACCUM RETRUN V/V
V2-1, V2-2	HOT GAS BYPASS V/V
V3	MAIN COOLING V/V
V4-1, V4-2	EVI V/V
V5	EVI B/P V/V
V6	DPR V/V
V7	LIQUID TUBE V/V
V8	HOT GAS CHARGING V/V
V9	LOW PRE. GAS SERVICE V/V
V10	HIGH PRE. GAS SERVICE V/V
V11	LIQUID SERVICE V/V
CV1-1, CV1-2	DISC. CHECK V/V
CV2	HRV CHECK V/V
CV3	HR CHECK V/V
CV4	MAIN COOL CHECK V/V
CV5-1, CV5-2	LIQUID TUBE CHECK V/V
T1-1, T1-2	COMP TOP SENSOR
T2-1, T2-2	DISC. SENSOR
T3	SUC. SENSOR 2
T4	SUC. SENSOR 1
T5	WATER SENSOR
T6	COND OUT SENSOR
T7	LIQUID TUBE SENSOR
T8	SC IN SENSOR
T9	SC OUT SENSOR

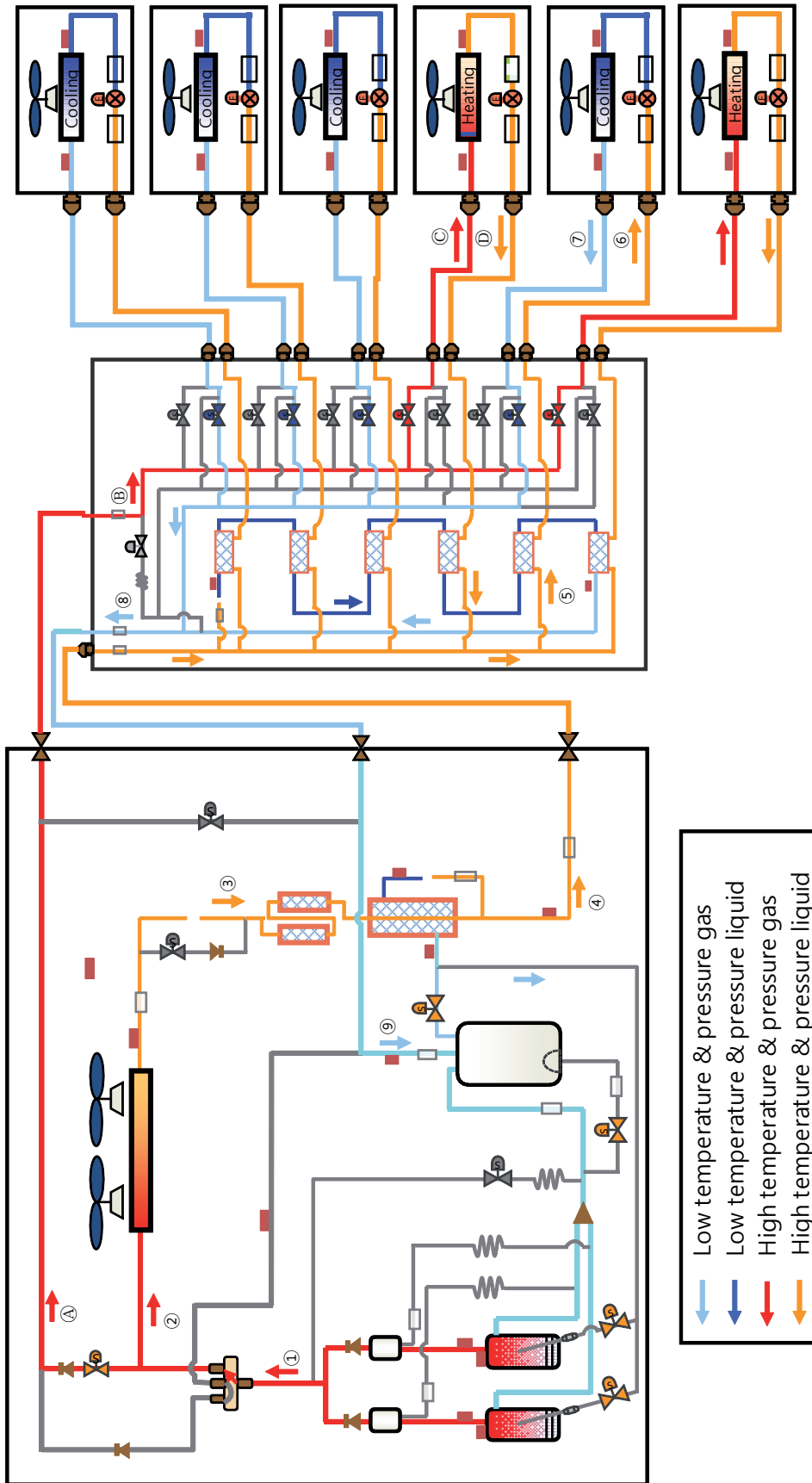
7-9 Cooling operation (H/R)



Low temperature & pressure gas
 Low temperature & pressure liquid
 High temperature & pressure gas
 High temperature & pressure liquid

Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation	① ② ③ ④	⑤	⑥ ⑦	⑧	⑨
Main cooling oper.					
Heating operation					
Main heating oper.					

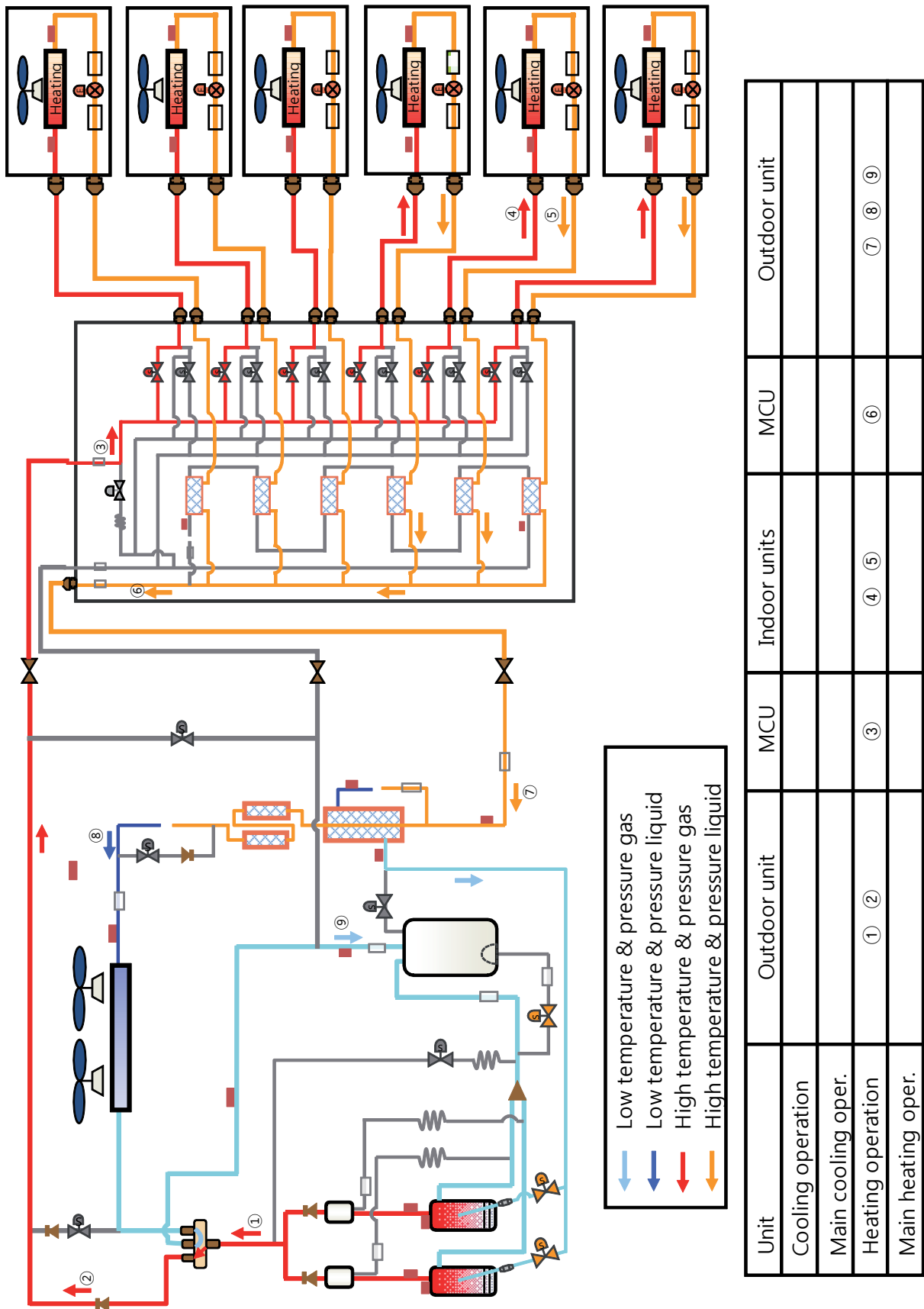
7-10 Main cooling operation (H/R)



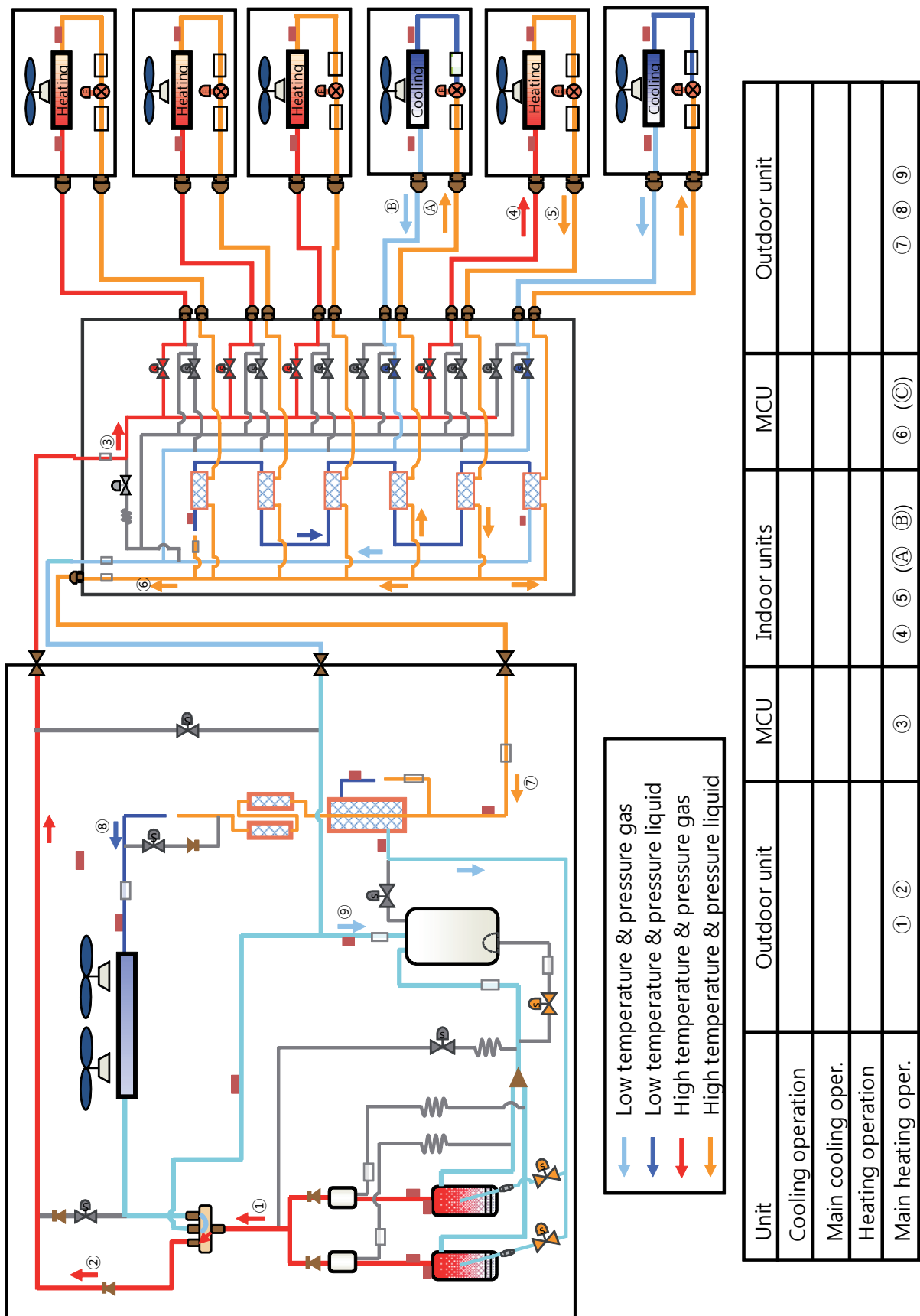
Low temperature & pressure gas
 Low temperature & pressure liquid
 High temperature & pressure gas
 High temperature & pressure liquid

Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation					
Main cooling oper.	① ② ③ ④ (A)	⑤ (B)	⑥ ⑦ (C D)	⑧	⑨
Heating operation					
Main heating oper.					

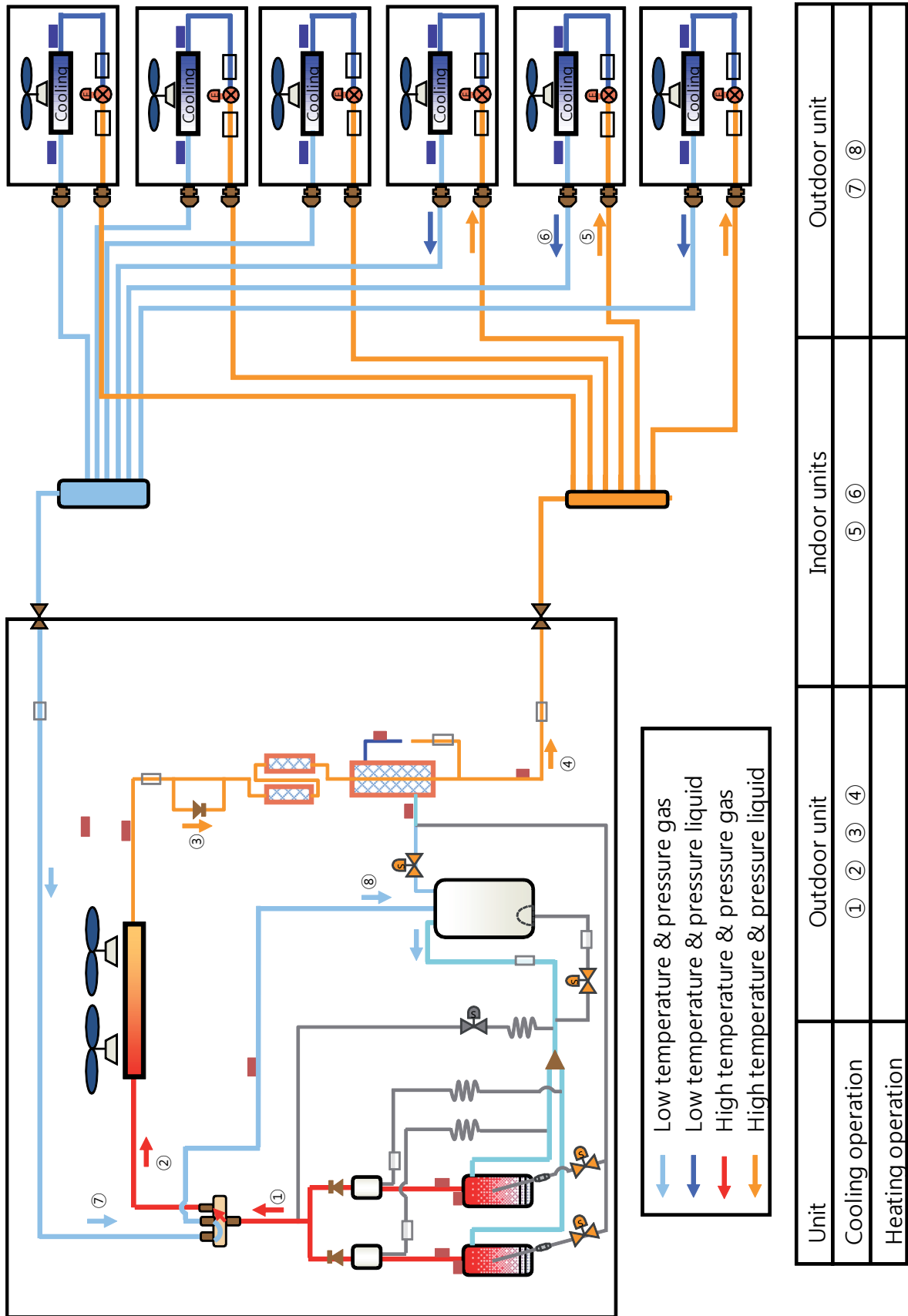
7-11 Heating operation (H/R)



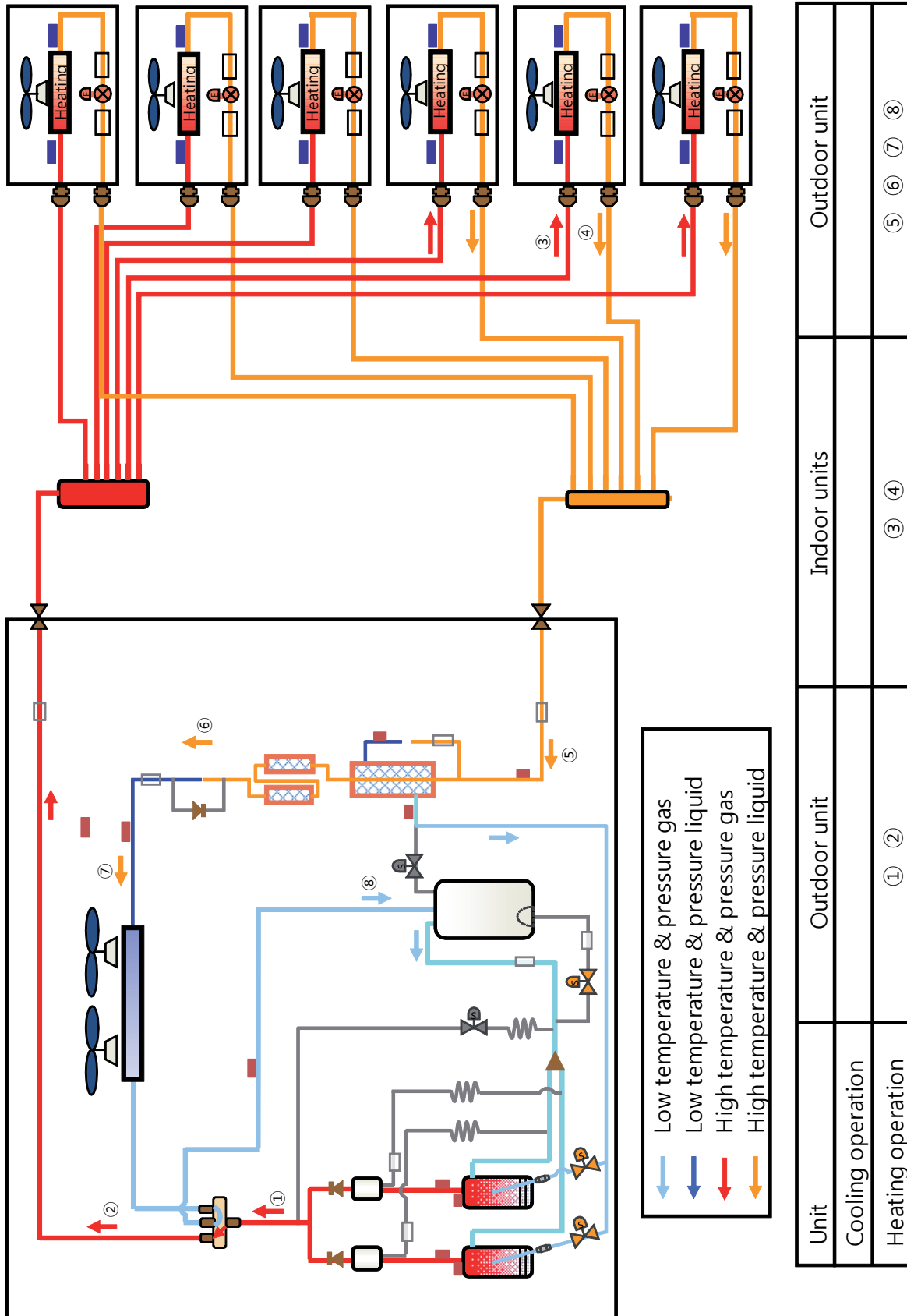
7-12 Main heating operation (H/R)



7-13 Cooling operation (H/P)

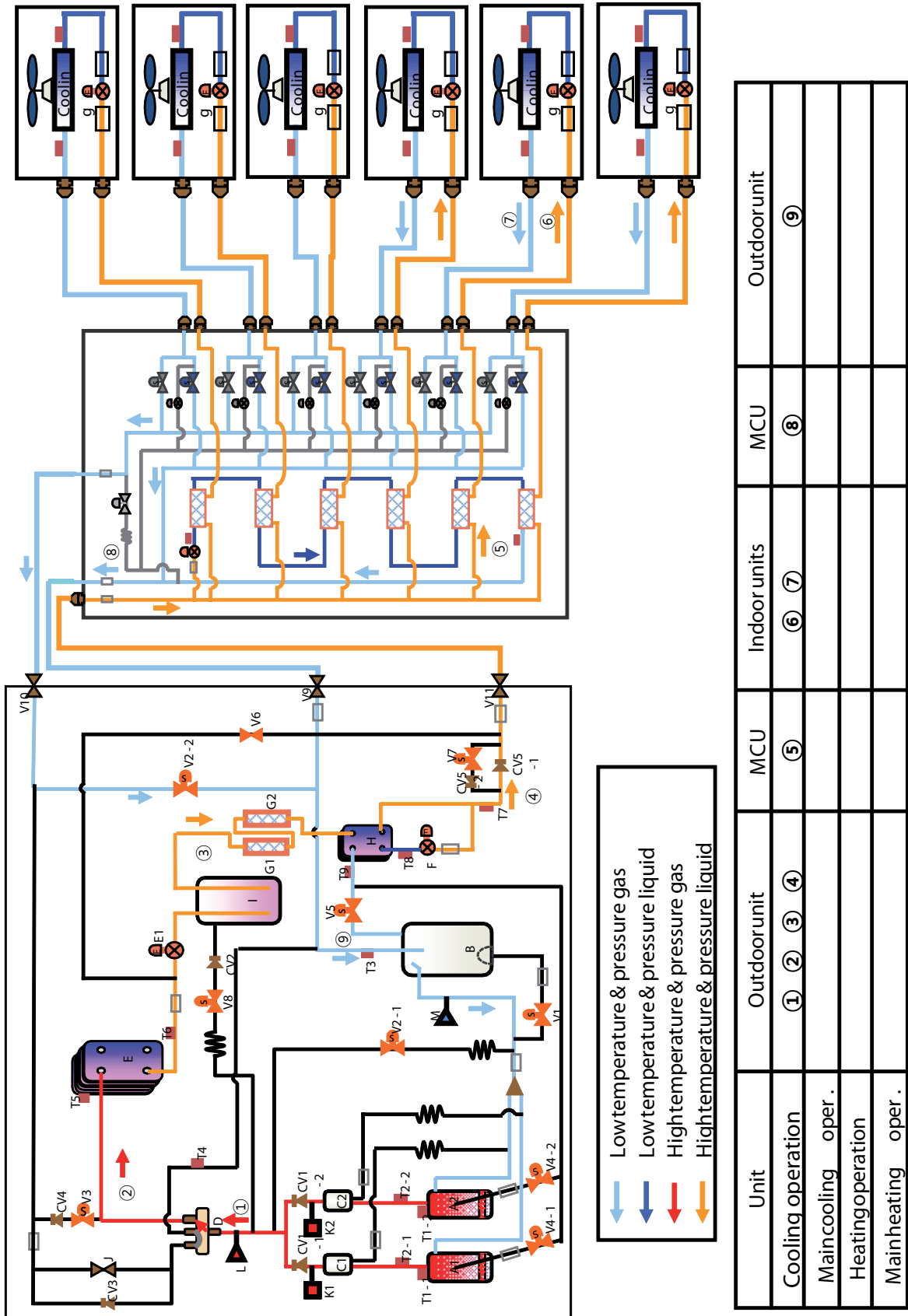


7-14 Heating operation (H/P)



7-15 Cooling operation(H/R)

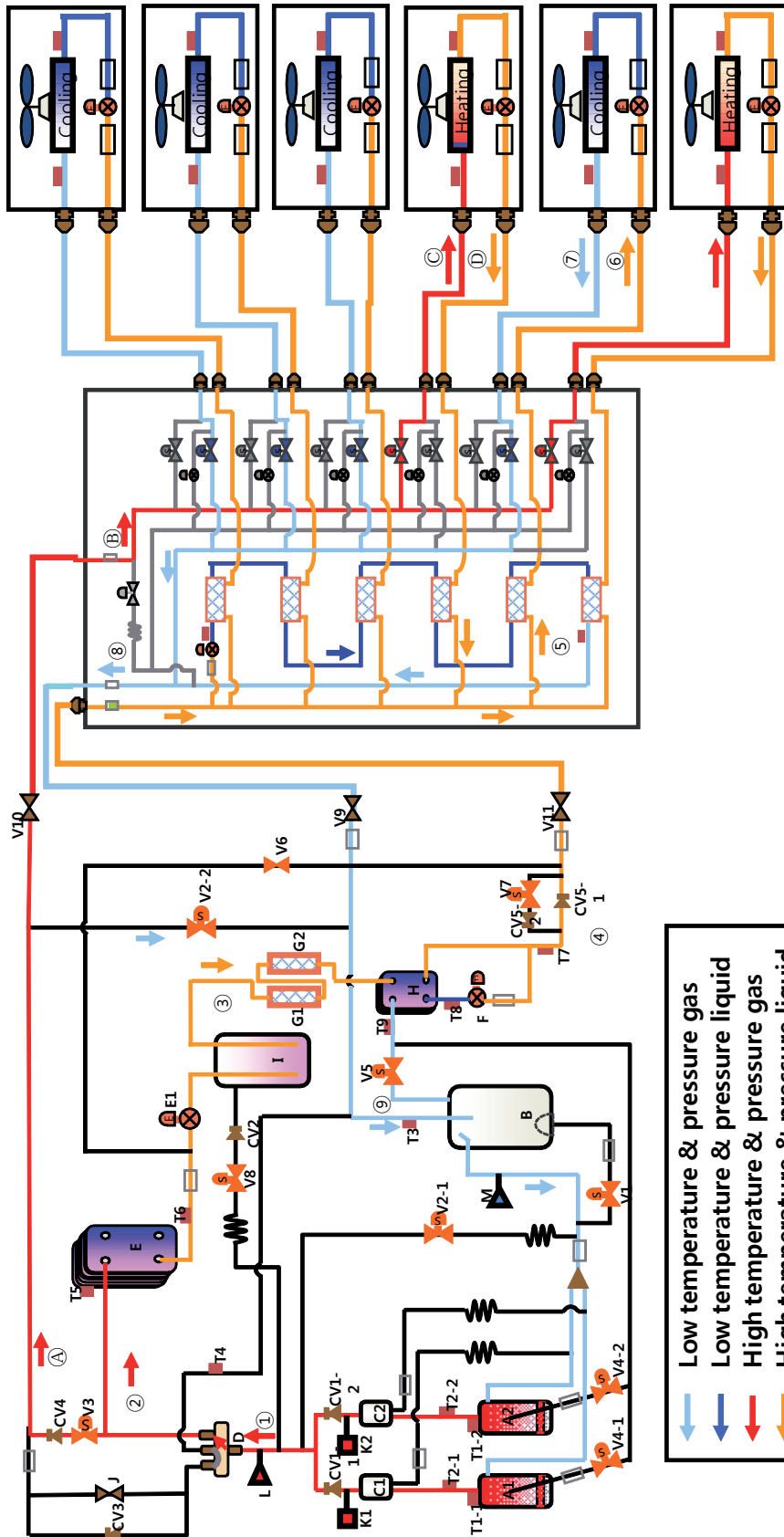
■ AM080/100/120/200FXWA**



Unit	Outdoorunit	MCU	Indoor units	MCU	Outdoorunit
Cooling operation	① ② ③ ④	⑤	⑥ ⑦	⑧	⑨
Maincooling oper.					
Heatingoperation					
Mainheating oper.					

7-16 Main cooling operation(H/R)

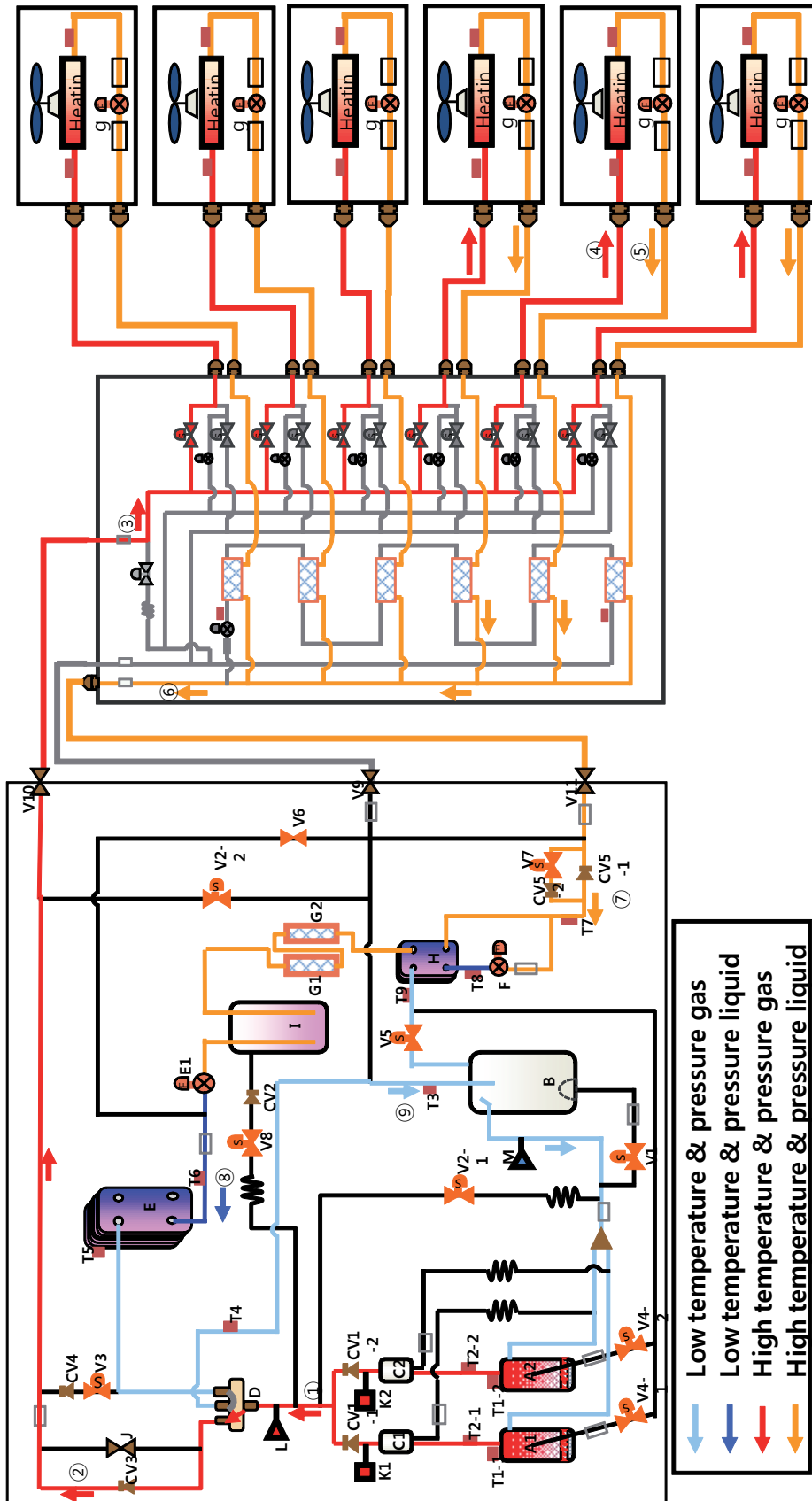
AM080/100/120/200FXWA**



Unit	실외기	MCU	실내기	MCU	실외기
내방 운전					
주냉방 운전	① ② ③ ④ (A)	⑤ (B)	⑥ ⑦ (C D)	⑧	⑨
난방 운전					
주난방 운전					

7-17 Heating operation(H/R)

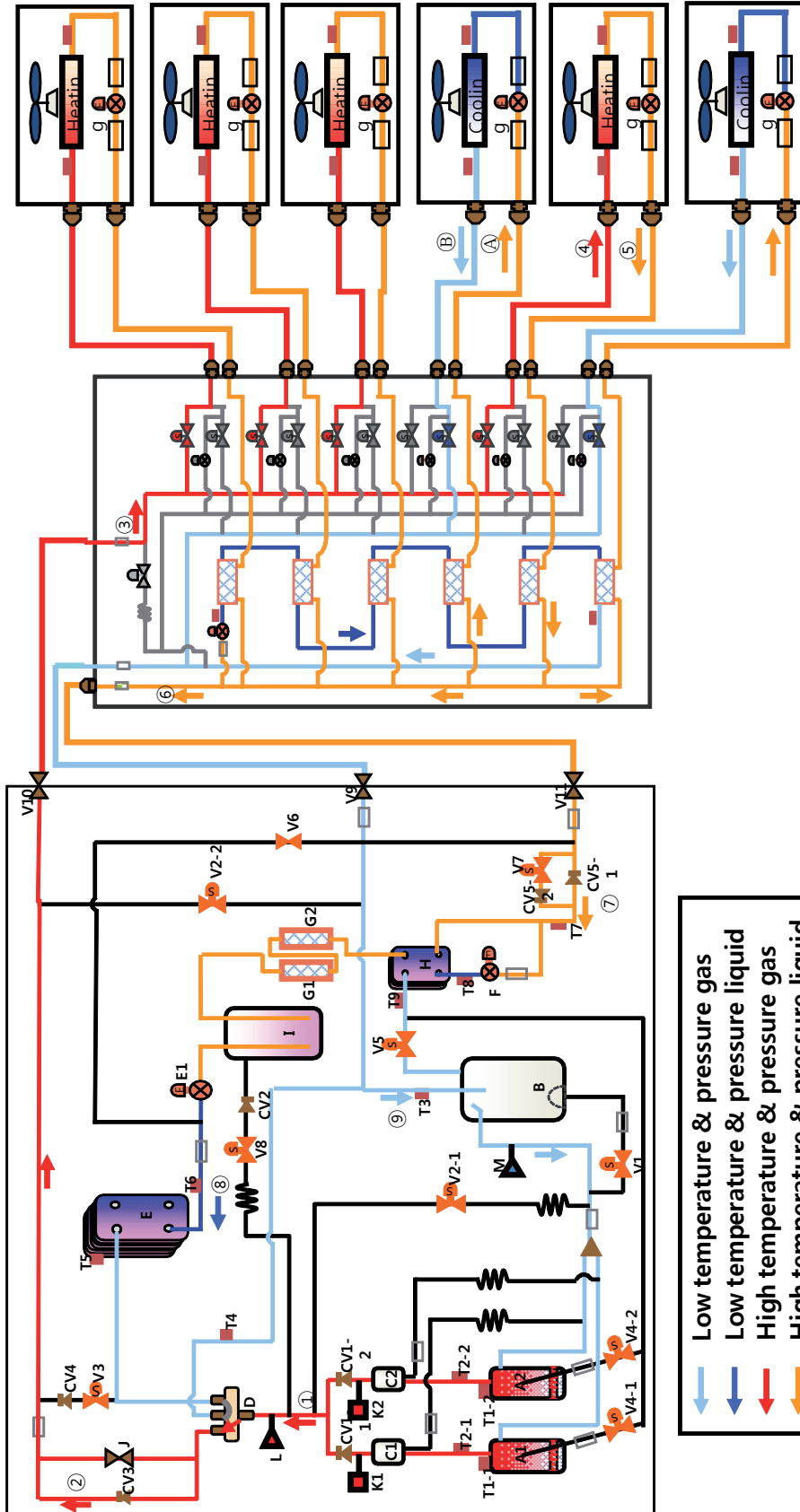
■ AM080/100/120/200FXWA**



Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation					
Main cooling oper.					
Heating operation	(1) (2)	(3)	(4) (5)	(6)	(7) (8) (9)
Main heating oper.					

7-18 Main heating operation(H/R)

□ AM080/100/120/200FXWA**

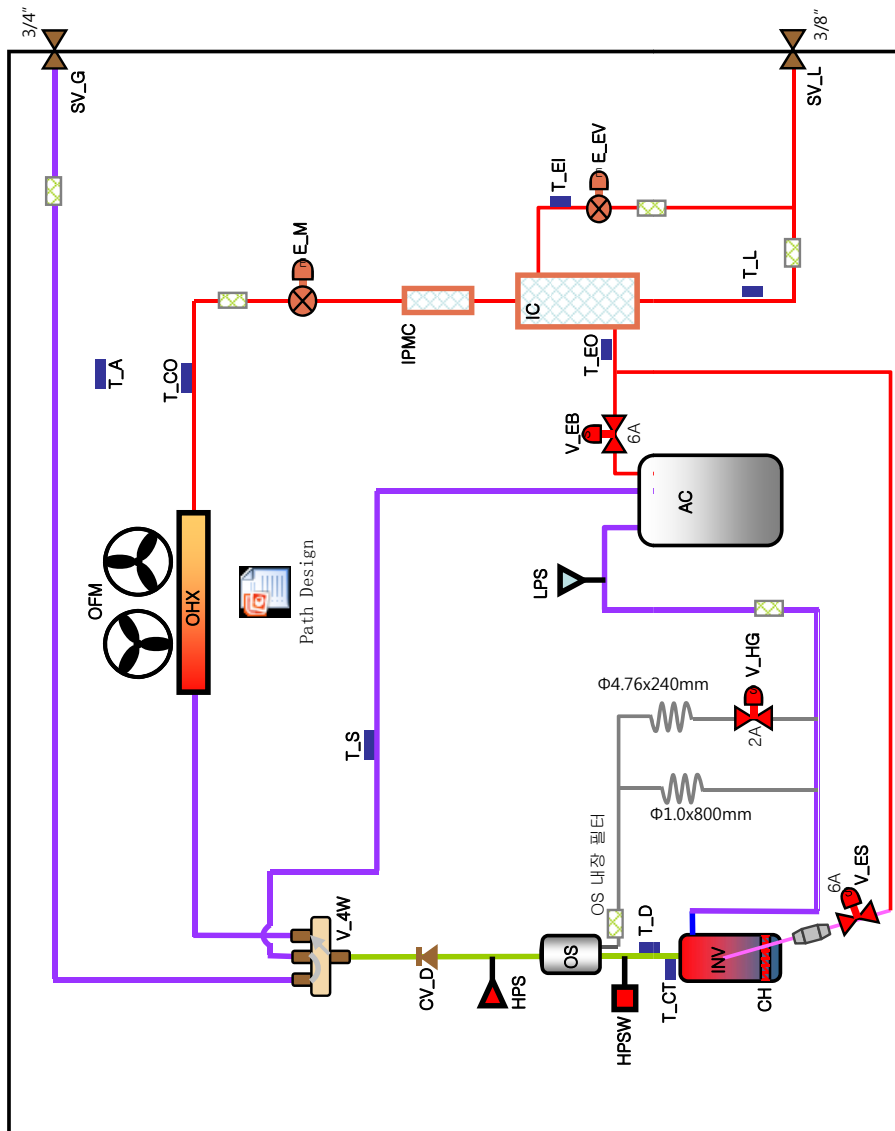


Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation					
Main cooling oper.					
Heating operation					
Main heating oper.	① ②	③	④ ⑤ (A) (B)	⑥ (C)	⑦ ⑧ ⑨

7-19 Main heating operation(H/P)

□ AM080/090FXMDGH**

Abbreviation	Full name
INV	Inverter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
CV_D	Discharge Check Valve



Diameter(Outside)	Piping distinction
28.5 (9/8")	Blue
25.4 (1")	Black
22.2 (7/8")	Purple
19.05 (3/4")	Dark Blue
15.88 (5/8")	Green
12.7 (1/2")	Yellow
9.52 (3/8")	Red
6.52 (1/4")	Grey

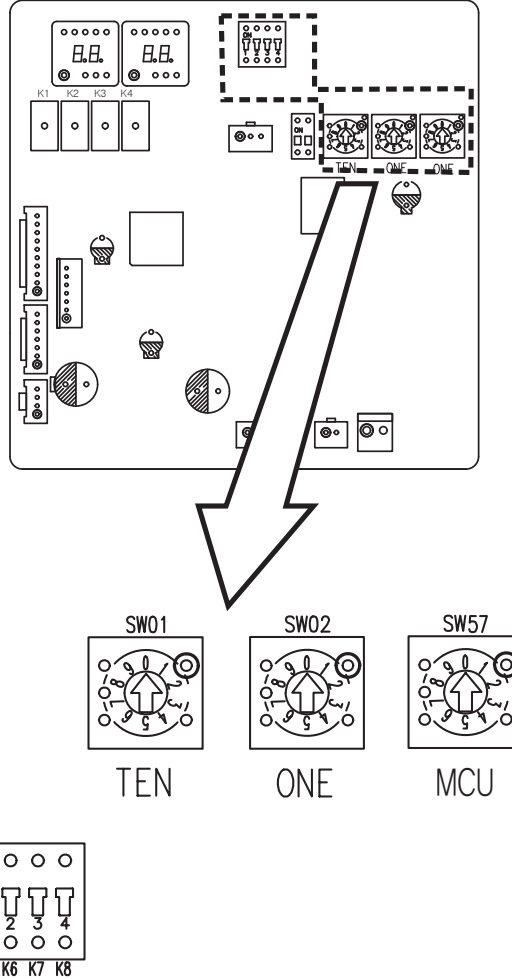
Diameter(Outside)	Piping distinction
28.5 (9/8")	Blue
25.4 (1")	Black
22.2 (7/8")	Purple
19.05 (3/4")	Dark Blue
15.88 (5/8")	Green
12.7 (1/2")	Yellow
9.52 (3/8")	Red
6.52 (1/4")	Grey

7-20 Cycle Component Function Explanation

1. Accumulator : Separating the incoming liquid refrigerant to the compressor in order to prevent liquid refrigerant.
2. Oil Separator : Separating the oil from the refrigerant discharged from the compressor, and the separated oil is returned to the compressor.
3. Intercooler : Supercooled liquid refrigerant through the heat exchanger and makes the medium pressure gas refrigerant injected into the compressor.
4. IPM Cooler : IPM (Intelligent Power Module) by cooling to prevent overheating.
5. High/Low Pressure Sensor : Measure high/low Pressure of system.
6. High Pressure Switch : Suspend immediately for protection of system if high pressure of system exceeds setting value.
7. Outdoor EEV (Main EEV) : Adjust the incoming refrigerant to the outdoor heat exchanger during heating operation.
8. EVI EEV : By adjusting the amount of refrigerant passing through the Subcooler to obtain the degree of supercooling and adjust the amount of gas refrigerant entering to the compressor.
9. 4Way Valve : Change the direction of flow of the refrigerant to the cooling / heating operation.
10. ARV (Accumulator Oil Return Valve) : Remaining at the bottom of the Accumulator recovered oil to the compressor.
11. MainCooling Valve : In the main cooling operation, sending the high pressure refrigerant to indoor unit in heating mode.
12. Outdoor EEV Valve : In the main cooling operation, It's closed so that the Outdoor EEV Valve can control the amount of the refrigerant.
13. Hotgas Valve : Sending the high pressure gas to low pressure pipe in order to protect low pressure.
14. Hotgas Valve 2 : In the cooling operation, changing high pressure pipe to low pressure pipe.
15. EVI SOL V : This valve opens when using the vapor Injection.
16. EVI BYPASS V : This valve opens in the sub cooling control. It's closed when using the vapor injection.
17. Discharge Temperature Sensor : Measure the temperature of the refrigerant discharged from the compressor.
18. Suction Temperature Sensor : Measure the temperature of the refrigerant to the compressor suction.
19. Cond. Out Temperature Sensor : Measure the temperature of the outdoor heat exchanger of the air conditioning operation.
20. EVI In/Out Temperature Sensor : Measure the temperature of the refrigerant inlet and outlet of the Subcooler.
21. Liquid Pipe Temperature Sensor : Measure the temperature of supercooling refrigerant in the outdoor unit of the air conditioning.
22. Comp. Top Temperature Sensor : Measure the temperature of compressor top cover.
23. Ambient Temperature Sensor : Measure the outdoor temperature.
24. Water Temperature Sensor : Plate Heat Exchanger internal temperature measurement
25. Control box temp. Sensor : Control box internal temperature measurement, thermal protection used for the control.
26. Receiver : Storing the refrigerant piping system, a stable liquid refrigerant supply
27. Liquid Tube Valve : Refrigerant in the outdoor unit side, the indoor unit during heating operation to rotate the valve operation.

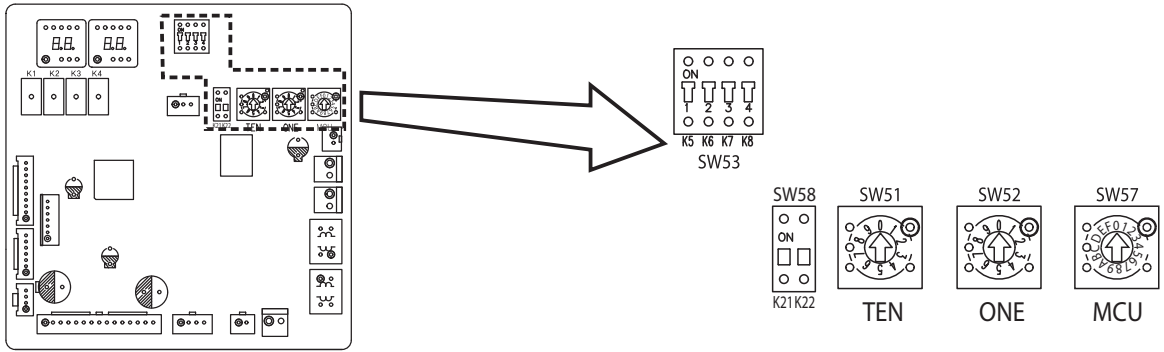
8. Key Options

8-1 Outdoor unit option switch settings



AM080/100/120/140/160/180/200/220FXV***

Switch	Setting		Function	Remarks
SW51/ SW52			Setting total number of installed indoor unit SW51: Tens digit, SW52: Units digit	Setting can be done from the main outdoor unit only (sub unit: setting is unnecessary) Ex) When 12 indoor units are installed → SW51: 1, SW52: 2
SW53	K6	ON	Enable maximum capacity restriction for cooling operation	Restrict excessive capacity increase when operating indoor units with small capacity
		OFF	Disable maximum capacity restriction for cooling operation	-
	K7	K8	Selecting outdoor unit address	
	ON	ON	Outdoor unit address: No 1	Main unit
	ON	OFF	Outdoor unit address: No 2	Sub unit 1
	OFF	ON	Outdoor unit address: No 3	Sub unit 2
OFF	OFF	Outdoor unit address: No 4	Sub unit 3	
SW57			Setting total number of connected MCU	Setting can be done from Main unit only. Ex) When 3 MCUs are installed → SW57: 3, When 10 MCUs are installed → SW57: A

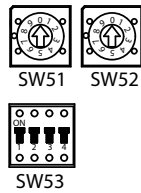
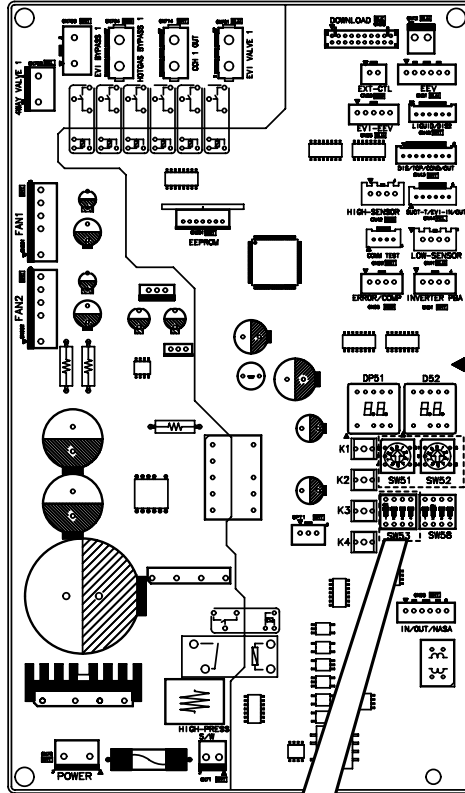


□ AM080/100/120/200FXWA**

※ If you install HR products, you must match the address between the MCU and the indoor unit.

Switch	Setting		Function	Remarks
SW51/ SW52			Setting total number of installed indoor unit SW51: Tens digit, SW52: Units digit	Setting can be done from the main outdoor unit only (sub unit: setting is unnecessary) Ex) When 12 indoor units are installed → SW51: 1, SW52: 2
	K5	ON	H/P(Heat Pump) System	Connect Liguid pipe and High pressure gas pipe
		OFF	HR(Heat Recovery) System	Close outdoor unit's heatpump valve
	K6	ON	Enable maximum capacity restriction for cooling operation	Restrict excessive capacity increase when operating indoor units with small capacity
		OFF	Disable maximum capacity restriction for cooling operation	-
	K7	K8	Selecting outdoor unit address	
	ON	ON	Outdoor unit address: No 1	Main unit
	ON	OFF	Outdoor unit address: No 2	Sub unit 1
	OFF	ON	Outdoor unit address: No 3	Sub unit 2
OFF	OFF	Outdoor unit address: No 4	Sub unit 3	
SW57			Setting total number of connected MCU	Setting can be done from main unit only Ex) When 3 MCUs are installed → SW57: 3, SW52: 2
SW58	K21	K22	Selecting type of circulating water	
	ON	ON	Water circulation	-
	ON	OFF	Anti-freeze circulation (freezing point of anti-freeze must be below -8 °C)	Minimum temperature of entering water -5 °C
	OFF	ON	Anti-freeze circulation (freezing point of anti-freeze must be below -15 °C)	Minimum temperature of entering water -10 °C

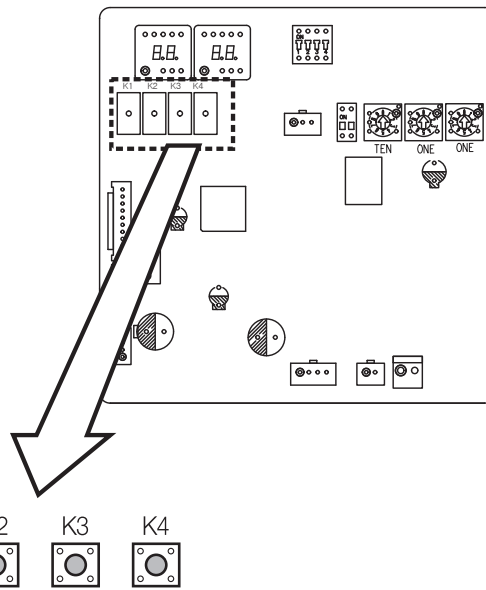
※ Maintain appropriate concentration level of anti-freeze according to SW58 switch setting.



AM080/090FXMDGH**

Switch	Setting	Function	Remarks	
SW51/SW52		Setting total number of installed indoor unit SW51: Tens digit; SW52: Units digit	Setting can be done from the main outdoor unit only Ex) When 12 indoor units are installed → SW51: 1, SW52: 2	
SW53	K5	On	—	Not applicable
		Off	—	
	K6	On	Enable maximum capacity restriction for cooling operation	Restrict excessive capacity increase when operating indoor units with small capacity
		Off	Disable maximum capacity restriction for cooling operation	—
	K7	On	—	Not applicable
		Off	—	
K8	On	—	Not applicable	
	Off	—		

8-2 How to set the key function of the outdoor unit



□ AM080/100/120/140/160/180/200FXV***

Tact switch installation and options of how to set up and functional description

■ Options of how to set up

- Entry by pressing the K2 for a long time.(However, the operation is only possible during the stop.)
- Upon entering the following is displayed. (If the compressor is set truncation, 1 or 2 is displayed in Seg4.)



- Displays the number of the currently selected option. Seg1, Seg2.
- Displays the set value of the currently selected option. Seg3, Seg4.

- After entering the option, briefly press the K1 switch will change the value of Seg1, Seg2 and then select the option to change.

Example)



- Press the switch briefly to the option you want to change the items of K2 will change the value of Seg3, Seg4 and then select the option to change.

Example)



- K2 switch is pressed for 2 seconds after the option is selected, 7-Segment entire blinks and enters the tracking mode, and the option value is saved.

- As described above, if you do not normal shutdown the option settings can not be saved.

※ Press K1 for a long time, if you want to go back to the settings before the entry while setting the option to cancel the setting.

※ If you want the factory settings option in the setting mode, press K4 for a long time.

- K4 switch is pressed for a long time, all options settings return to the factory settings, but the settings are saved is not.

K2 switch is pressed for a long time, 7-Segment enters the tracking mode and the settings will be saved.

How to set the key function of the outdoor unit (cont.)

□ AM080/100/120/200FXWA**

Setting the option

■ Options of how to set up

1. Press and hold K2 to enter the option setting. (Only available when the operation is stopped)
 - If you enter the option setting, display will show the following. (If you have set the 'Emergency operation for compressor malfunction', 1 or 2 will be displayed on Seg 4.)



- Seg 1 and Seg 2 will display the number for selected option.
- Seg 3 and Seg 4 will display the number for set value of the selected option.

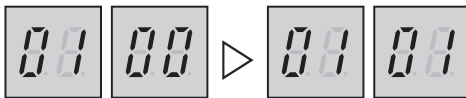
2. If you have entered option setting, you can shortly press the K1 switch to adjust the value of the Seg 1, Seg 2 and select the desired option. (Refer to pages 71~73 for the Seg number of the function for each option)

Example)



3. If you have selected desired option, you can shortly press the K2 switch to adjust the value of the Seg 3, Seg 4 and change the function for the selected option.

Example)

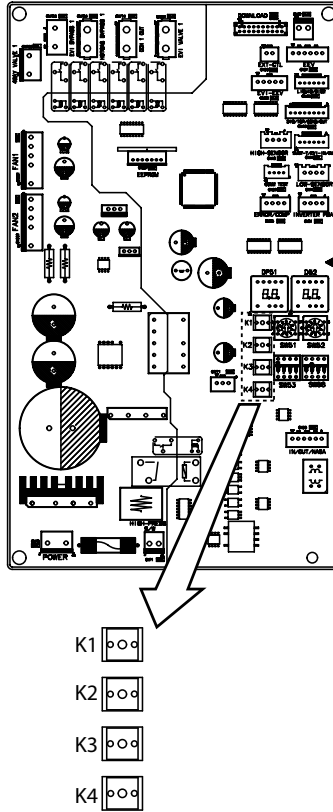


4. After selecting the function for options, press and hold the K2 switch for 2 seconds. Edited value of the option will be saved when entire segments blinks and tracking mode begins.

- Edited option will not be saved if you do not end the option setting as explained in above instruction.

※ While you are setting the option, you may press and hold the K1 button to reset the value to previous setting.

- ※ If you want to restore the setting to factory default, press and hold the K4 button while you are in the option setting mode.
 - If you press and hold the K4 button, setting will be restored to factory default but it doesn't mean that restored setting is saved. Press and hold the K2 button. When the segments shows that tracking mode is in progress, setting will be saved.



□ **AM080/090FXMDGH****

■ Installing and setting the option with tact switch and explanation of the functions

■ Setting the option

(1) Press and hold K2 to enter the option setting. (Only available when the operation is stopped)

- If you enter the option setting, display will show the following.



- Seg 1 and Seg 2 will display the number for selected option.

- Seg 3 and Seg 4 will display the number for set value of the selected option.

(2) If you have entered option setting, you can shortly press the K1 switch to adjust the value of the Seg 1, Seg 2 and select the desired option.



(3) If you have selected desired option, you can shortly press the K2 switch to adjust the value of the Seg 3, Seg 4 and change the function for the selected option.



(4) After selecting the function for options, press and hold the K2 switch for 2 seconds. Edited value of the option will be saved when entire segments blinks and tracking mode begins.

How to set the key function of the outdoor unit (cont.)

■ AM080/100/120/140/160/180/200FXV***

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks
Emergency operation for compressor malfunction	Individual	0	0	0	0	Disabled (Factory default)	E560 will occur when all the compressors are set as malfunction state.
				0	1	Set compressor 1 as malfunction state	
				0	2	Set compressor 2 as malfunction state	
Capacity correction for cooling	Main	0	1	0	0	7-9 (Factory default)	Targeted evaporation temperature [°C] (When low temperature value is set, discharged air temperature of the indoor unit will decrease)
				0	1	5-7	
				0	2	9-11	
				0	3	10-12	
				0	4	11-13	
				0	5	12-14	
				0	6	13-15	
Capacity correction for heating	Main	0	2	0	0	3.0 (Factory default)	Targeted high pressure [MPa] (When low pressure value is set, discharged air temperature of the indoor unit will decrease)
				0	1	2.5	
				0	2	2.6	
				0	3	2.7	
				0	4	2.8	
				0	5	2.9	
				0	6	3.1	
				0	7	3.2	
Current restriction rate	Individual	0	3	0	0	100% (Factory default)	When restriction option is set, cooling and heating performance may decrease
				0	1	95 %	
				0	2	90 %	
				0	3	85 %	
				0	4	80 %	
				0	5	75 %	
				0	6	70 %	
				0	7	65 %	
				0	8	60 %	
				0	9	55 %	
				1	0	50 %	
Oil collection interval	Main	0	4	0	0	Factory default	
				0	1	Shorten the interval by 1/2	
Temperature to trigger defrost operation	Main	0	5	0	0	Factory default	
				0	1	Apply setting when the product is being installed in humid area such as near river or lake	
Fan speed correction for outdoor unit	Individual	0	6	0	0	Factory default	
				0	1	Increase fan speed	Increase the outdoor unit's fan speed to maximum value
Silent mode for night-time	Main	0	7	0	0	Disabled (Factory default)	Enable silent mode for night-time
				0	1	LEVEL 1	
				0	2	LEVEL 2	
				0	3	LEVEL 3	
High-head condition setting	Main	0	8	0	0	Disabled (Factory default)	
				0	1	Level 1 of height difference type 1 (Indoor unit is lower than outdoor unit)	When outdoor unit is located 40~80m above the indoor unit
				0	2	Level 2 of height difference type 1 (Indoor unit is lower than outdoor unit)	When outdoor unit is located over 80m above the indoor unit
Long-piping condition setting (Setting is unnecessary if high-head condition is set)	Main	0	9	0	3	Height difference type 2 (Outdoor unit is lower than indoor unit)	When indoor unit is over 30 m above the outdoor unit
				0	0	Disabled (Factory default)	
				0	1	LEVEL 1	When equivalent length of farthest indoor unit from the outdoor unit is between 100~170m
Energy saving setting	Main	1	0	0	2	LEVEL 2	When equivalent length of farthest indoor unit from the outdoor unit is over 170m
				0	0	Disabled (Factory default)	
Rotation defrost (HR only)	Main	1	1	0	1	Enabled	Energy saving mode triggers when the room temperature reaches desired temperature while operating in heating mode.
				0	0	Disabled (Factory default)	
Expand operational temperature range for cooling operation	Main	1	2	0	1	Enabled	When enabled, continuous heating operation is possible but heating performance will decrease during rotation defrost operation
				0	0	Disabled (Factory default)	
Channel address	Main	1	3	A	U	Automatic setting (Factory default)	Address for classifying the product from upper level controller (DMS, S-NET 3, etc.)
				0~15		Manual setting for channel 0~15	
Snow accumulation prevention control	Main	1	4	0	0	Enabled (Factory default)	During snow accumulation prevention, the fan may spin even when the unit is not in operation
				0	1	Disabled	

How to set the key function of the outdoor unit (cont.)

■ AM080/100/120/200FXWA**

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks	
Current restriction rate	Individual	0	3	0	0	100% (Factory default)	When restriction option is set, cooling and heating performance may decrease.	
				0	1	95 %		
				0	2	90 %		
				0	3	85 %		
				0	4	80 %		
				0	5	75 %		
				0	6	70 %		
				0	7	65 %		
				0	8	60 %		
				0	9	55 %		
				1	0	50 %		
				1	1	No restriction		
Oil collection interval	Main	0	4	0	0	Factory default		
				0	1	Shorten the interval by 1/2		
Disable	Main	0	5	0	0	Disable	This function is not applicable for this model	
				0	1	Disable		
Disable	Individual	0	6	0	0	Disable	This function is not applicable for this model	
				0	1	Disable		
Disable	Main	0	7	0	0	Disable	This function is not applicable for this model	
				0	1	Disable		
				0	2	Disable		
				0	3	Disable		
Setting highhead condition	Main	0	8	0	0	Disable (Factory default)		
				0	1	Level 1 of height difference type 1 (Indoor unit is lower than outdoor unit)		When outdoor unit is over 40 ~ 80 m above the indoor unit
				0	2	Level 2 of height difference type 1 (Indoor unit is lower than outdoor unit)		When outdoor unit is over 80 m above the indoor unit
				0	3	Height difference type 2 (Outdoor unit is lower than indoor unit)		When indoor unit is over 30 m above the outdoor unit
Setting longpiping condition (Setting is unnecessary if high-head condition is set.)	Main	0	9	0	0	Disable (Factory default)		
				0	1	Long piping level 1		When equivalent length of farthest indoor unit from the outdoor unit is between 100~170 m
				0	2	Long piping level 2		When equivalent length of farthest indoor unit from the outdoor unit is over 170 m
Energy saving setting	Main	1	0	0	0	Disable (Factory default)	Energy saving mode triggers when the room temperature reaches desired temperature while operating in heating mode.	
				0	1	Enable		
Disable	Main	1	1	0	0	Disable	This function is not applicable for this model	
				0	1	Disable		
Expand operational temperature range for cooling operation	Main	1	2	0	0	Disable		
				0	1	Enable		
Channel address	Main	1	3	A	U	Automatic setting (Factory default)	Address for classifying the product from upper level controller (DMS, S-NET 3, etc)	
				0 ~ 15		Manual setting for channel 0~15		
Disable	Main	1	4	0	0	Disable	This function is not applicable for this model	
				0	1	Disable		
Circulation water flow control	Individual	1	5	0	0	Disable (Factory default)	When variable flow control valve is applied	
				0	1	7-10 V		
				0	2	5-10 V		
				0	3	3-10 V		

How to set the key function of the outdoor unit (cont.)

□ AM080/090FXMDGH**

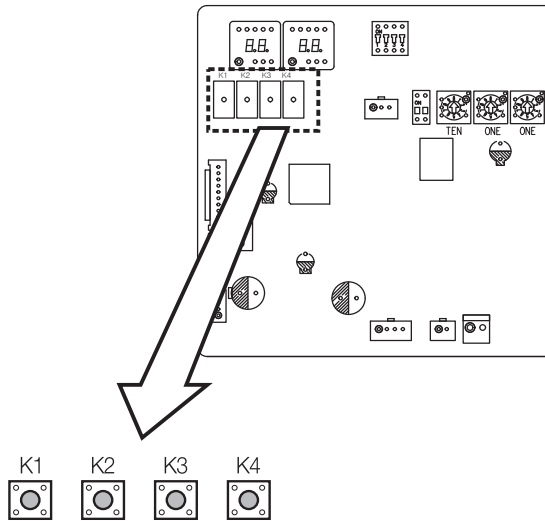
Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks
Emergency operation for compressor malfunction	Main	0	0	0	0	Disabled (Factory Default)	
				0	1	Not applicable	
				0	2	Not applicable	
Cooling capacity correction	Main	0	1	0	0	7-9 (Factory default)	Targeted evaporation temperature [°C]. (When low temperature value is set, discharged air temperature of the indoor unit will decrease)
				0	1	5-7	
				0	2	9-11	
				0	3	10-12	
				0	4	11-13	
				0	5	12-14	
				0	6	13-15	
Capacity correction for heating	Main	0	2	0	0	3.0 (Factory default)	Targeted high pressure [MPa]. (When low pressure value is set, discharged air temperature of the indoor unit will decrease)
				0	1	2.5	
				0	2	2.6	
				0	3	2.7	
				0	4	2.8	
				0	5	2.9	
				0	6	3.1	
				0	7	3.2	
				0	8	3.3	
Current restriction rate	Main	0	3	0	0	100% (Factory default)	When restriction option is set, cooling and heating performance may decrease.
				0	1	95 %	
				0	2	90 %	
				0	3	85 %	
				0	4	80 %	
				0	5	75 %	
				0	6	70 %	
				0	7	65 %	
				0	8	60 %	
				0	9	55 %	
				1	0	50 %	
				1	1	No restriction	
Oil collection interval	Main	0	4	0	0	Factory default	
				0	1	Shorten the interval by 1/2	
Temperature to trigger defrost operation	Main	0	5	0	0	Factory default	
				0	1	Apply setting when the product is being installed in humid area such as near river or lake	
Fan speed correction for outdoor unit	Main	0	6	0	0	Factory default	Increase the outdoor unit's fan speed to maximum value
				0	1	Increase fan speed	
Silent mode for night-time	Main	0	7	0	0	Disabled (Factory default)	Enable silent mode for night-time
				0	1	LEVEL 1	
				0	2	LEVEL 2	
				0	3	LEVEL 3	
High-head condition setting	Main	0	8	0	0	Disabled (Factory default)	
				0	1	Not applicable	
				0	2	Not applicable	
				0	3	Not applicable	

How to set the key function of the outdoor unit (cont.)

□ AM080/090FXMDGH**

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks
Long-pipng condition setting (Setting is unnecessary if high-head condition is set)	Main	0	9	0	0	Disabled (Factory Default)	
				0	1	LEVEL 1	When equivalent length of farthest indoor unit from the outdoor unit is over 100m
				0	2	Not applicable	
Energy saving setting	Main	1	0	0	0	Disabled (Factory default)	
				0	1	Enabled	Energy saving mode triggers when the room temperature reaches desired temperature while operating in heating mode.
Not applicable	Main	1	1	0	0	Not applicable	
				0	1	Not applicable	
Not applicable	Main	1	2	0	0	Not applicable	
				0	1	Not applicable	
Channel address	Main	1	3	A	U	Automatic setting (factory default)	Address for classifying the product from upper level controller(DMS,S-NET 3,etc.)
				0 - 15		Manual setting for channel 0 - 15	
Snow accumulation prevention control	Main	1	4	0	0	Enabled	During snow accmulation , the fan may spin even when the unit is not in operation
				0	1	Disabled (Factory default)	

8-3 How to check the view mode using a tact switch



AM080/100/120/140/160/180/200FXV***

K3 (Number of press)	Key operation	Display on segment	
1 time	Intialize (Reset) setting	Same as initial state	

K4 (Number of press)	Key operation	Display on segment	
		SEG 1	SEG 2, 3, 4
1 time	Outdoor unit model	1	AM160FXV*** → Off, 1, 6
2 times	Order frequency of the compressor 1	2	120 Hz → 1, 2, 0
3 times	Order frequency of the compressor 2	3	120 Hz → 1, 2, 0
4 times	High pressure (MPa)	4	1.52 MPa → 1, 5, 2
5 times	Low pressure (MPa)	5	0.43 MPa → 0, 4, 3
6 times	Discharge temperature (Compressor 1)	6	87 °C → 0, 8, 7
7 times	Discharge temperature (Compressor 2)	7	87 °C → 0, 8, 7
8 times	IPM temperature (Compressor 1)	8	87 °C → 0, 8, 7
9 times	IPM temperature (Compressor 2)	9	87 °C → 0, 8, 7
10 times	CT sensor value (Compressor 1)	A	2 A → 0, 2, 0
11 times	CT sensor value (Compressor 2)	B	2 A → 0, 2, 0
12 times	Suction temperature	C	-42 °C → -, 4, 2
13 times	COND OUT temperautre	D	-42 °C → -, 4, 2
14 times	Temperature of liquid pipe	E	-42 °C → -, 4, 2
15 times	TOP temperature (Compressor 1)	F	87 °C → 0, 8, 7
16 times	TOP temperature (Compressor 2)	G	87 °C → 0, 8, 7
17 times	Outdoor temperature	H	-42 °C → -, 4, 2
18 times	EVI inlet temperature	I	-42 °C → -, 4, 2
19 times	EVI outlet temperature	J	-42 °C → -, 4, 2
20 times	Main EEV1 step	K	2000 → 2, 0, 0
21 times	Main EEV2 step	L	2000 → 2, 0, 0
22 times	EVI EEV step	M	300 → 3, 0, 0
23 times	HR EEV step	N	300 → 3, 0, 0
24 times	Fan step (SSR or BLDC)	O	13 STEP → 0, 1, 3
25 times	Current frequency (Compressor 1)	P	120 Hz → 1, 2, 0
26 times	Current frequency (Compressor 2)	Q	120 Hz → 1, 2, 0
27 times	Suction 2 temperature (HR Only)	R	-42 °C → -, 4, 2
28 times	Master Indoor Unit Address	S	master indoor unit not selected → BLANK, N, D if indoor unit no.1 is selected as the master unit → 0, 0, 1

* When you install the product, optional function for outdoor unit must be set in compliance with installation conditions.

* Press and hold the K4 button for 5 seconds to check the SW version and address of the indoor units. (Information will be displayed in following order; Main-Hub-INV1-INV2-FAN1-FAN2-EEP-Automatically assigned address - Manually assigned address)

* Display method of automatically assigned addresses in K4 View mode (Ex: "AUTO" → "A001" → "AUTO" → "A002" → "AUTO" → "A003")

Page1	Display Page2		
	SEG1	SEG2	SEG3,4
AUTO	Indoor unit: "A" MCU: "C"	Indoor unit: "0" MCU: "1"	Address (No. 1 → 0,1)

* Display method of manually assigned addresses in K4 View mode (Ex: "MANU" → "A004" → "MANU" → "A005" → "MANU" → "A006")

Page1	Display Page2		
	SEG1	SEG2	SEG3,4
MANU	Indoor unit: "A"	Indoor unit: "0"	Address (No. 1 → 0,1)

□ AM080/100/120/200FXWA**

K3 (Number of press)	KEY operation	Display on segment
1 time	Intialize (Reset) setting	Same as initial state

K4 (Number of press)	KEY operation	Display on segment	
		SEG 1	SEG2, 3, 4
1 time	Outdoor unit model	1	AM120FXW* → Off, 1, 2
2 times	Target frequency (Compressor 1)	2	120 Hz → 1, 2, 0
3 times	Target frequency (Compressor 2)	3	120 Hz → 1, 2, 0
4 times	High pressure (MPa)	4	1.52 MPa → 1, 5, 2
5 times	Low pressure (MPa)	5	0.43 MPa → 0, 4, 3
6 times	Discharge temperature (Compressor	6	87 °C → 0, 8, 7
7 times	Discharge temperature (Compressor	7	87 °C → 0, 8, 7
8 times	IPM temperature (Compressor 1)	8	87 °C → 0, 8, 7
9 times	IPM temperature (Compressor 2)	9	87 °C → 0, 8, 7
10 times	CT sensor value (Compressor 1)	A	2 A → 0, 2, 0
11 times	CT sensor value (Compressor 2)	B	2 A → 0, 2, 0
12 times	Suction temperature	C	-42 °C → -, 4, 2
13 times	COND OUT temperautre	D	-42 °C → -, 4, 2
14 times	Temperature of liquid pipe	E	-42 °C → -, 4, 2
15 times	TOP temperature (Compressor 1)	F	-42 °C → -, 4, 2
16 times	TOP temperature (Compressor 2)	G	-42 °C → -, 4, 2
17 times	Water temperature	H	-42 °C → -, 4, 2
18 times	EVI inlet temperature	I	-42 °C → -, 4, 2
19 times	EVI outlet temperature	J	-42 °C → -, 4, 2
20 times	Main EEV 1 step	K	2000 steps → 2, 0, 0
21 times	Main EEV2 step	L	2000 steps → 2, 0, 0
22 times	EVI EEV step	M	300 steps → 3, 0, 0
23 times	HR EEV step	N	2000 steps → 2, 0, 0
24 times	-	O	-
25 times	Current frequency of the compressor	P	120 Hz → 1,2,0
26 times	Current frequency of the compressor	Q	120 Hz → 1,2,0
27 times	Suction 2 temperature	R	-42 °C → -, 4, 2
28 times	Address of master indoor unit	S	When master indoor unit is not set → BLANK, N, D When indoor unit No.1 is set as master indoor unit → 0, 0, 1
29 times	Temperature of control box	T	-42 °C → -, 4, 2

- ※ When you install the product, optional function for outdoor unit must be set in compliance with installation conditions.
- ※ SW version, View mode 2 and address of the indoor unit, press and hold for three seconds to enter the K4.
(Information will be displayed in following order. Main-Hub-INV1-INV2 FAN1-FAN2-EEP-Automatically assigned address - manually assigned address.)

View mode 2

K4 (Number of press)	KEY operation	KEY operation	Display on Page		
			Page 1	Page 2	
1 TIME	Main version	Main version	Main	Version(ex. 1412)	
2 TIMES	HUB version	HUB version	HUB	Version(ex. 1412)	
3 TIMES	Water HUB version	Water HUB version	HUB2	Version(ex. 1412)	
4 TIMES	Inverter1 version	Inverter1 version	INV1	Version(ex. 1412)	
5 TIMES	Inverter2 version	Inverter2 version	INV2	Version(ex. 1412)	
6 TIMES	EEPROM version	EEPROM version	EEPROM	Version(ex. 1412)	
7 TIMES	The device receives automatic address	The device receives automatic address	AUTO	SEG1,2	SEG3,4
				Indoor unit : "A","0" MCU : "C","1"	Adress(ex. 07)
8 TIMES	The device receives a manual address	The device receives a manual address	MANU	SEG1,2	SEG3,4
				Indoor unit : "A","0"	Adress(ex. 15)

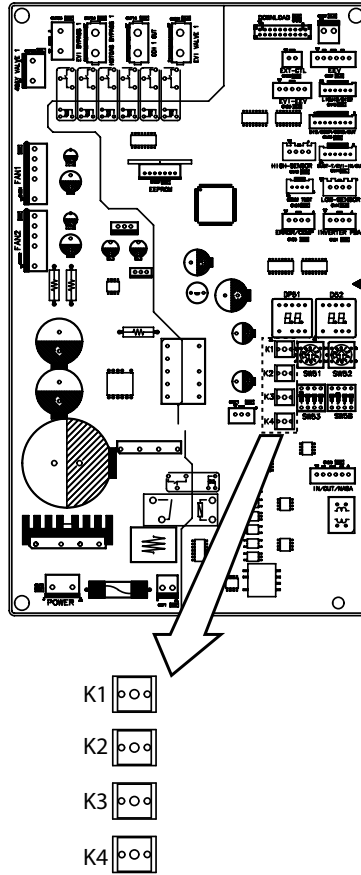
※ Display method of automatically assigned address in K4 View mode. (EX : "AUTO" → "A001" → "AUTO" → "A003")

Page 1	Display		
	Page 2		
AUTO	SEG 1	SEG 2	SEC 3,4
	Indoor unit : "A" MCU : "C"	Indoor unit : "0" MCU : "C"	Address (No. 1→01)

※ Display method of automatically assigned address in K4 View mode. (EX : "MANU" → "A004" → "MANU" → "A005" → "MANU" → "A006")

Page 1	Display		
	Page 2		
MANU	SEG 1	SEG 2	SEC 3,4
	Indoor unit : "A"	Indoor unit : "0"	Address (No. 1→01)

□ AM080/090FXMDGH**



K1 Control	KEY operation	Display on segment
Press and hold 1 time	Auto trial operation	"K" "K" "BLANK" "BLANK"
K1(Number of press)	KEY operation	Display on segment
1 time	Refrigerant charging in Heating mode (Note 1)	"K" "1" "BLANK" "BLANK"
2 times	Trial operation in Heating mode (Note 1)	"K" "2" "BLANK" "BLANK"
3 times	Pump out in Heating mode (Note 1)	"K" "3" "BLANK" "1"
4 times	Vacuuminig	"K" "4" "BLANK" "1"
5 times	End Key operation	—
K2(Number of press)	KEY operation	Display on segment
1 time	Refrigerant charging in Cooling mode	"K" "5" "BLANK" "BLANK"
2 times	Trial operation in Cooling mode	"K" "6" "BLANK" "BLANK"
3 times	Pump down in Cooling mode	"K" "7" "BLANK" "BLANK"
4 times	Automatic setting of operation mode (Cooling/Heating) for trial operation	"K" "8" "BLANK" "BLANK"
5 times	Checking the amount of refrigerant	"K" "9" "X" "X" (Display of last two digits may differ depending on the progress)
6 times	Discharge mode of DC link voltage	"K" "A" "BLANK" "BLANK"
7 times	Forced defrost operation (Note 1)	"K" "B" "BLANK" "BLANK"
8 times	Forced oil collection	"K" "C" "BLANK" "BLANK"
9 times	Inverter compressor check	"K" "D" "BLANK" "BLANK"
10 times	End Key operation	-

(Note 1) Not available on AM***FXM**C Series

- * Even when the outdoor unit power is off, it is dangerous when you come in contact with inverter PCB since it is charged with high DC voltage.
- * When replacing/repairing the PCB, cut-off the power and wait until the DC voltage is discharged before replacing/repairing them. (Wait for more than 15 minutes to allow it to discharge naturally.)
- * When there were error, 'Discharge mode of DC link voltage' may not have been effective. Especially if error E464 has been occurred, power element might be damaged by fire and therefore, do not use the 'Discharge mode of DC link voltage'.
- * During "Discharge mode of DC link voltage", voltage of INV will be displayed.

K3(Number of press)	KEY operation	Display on segment
1 time	Initialize (Reset) setting	Same as initial state

K4 (Press and hold to enter the setting) → K4 press (Number of press)	Displayed content	Display on segment		
		Page 1	Page 2	
0 time	Main version	MAIN	Ver. (ex) 1412)	
1 time	Inverter version	INV1	Ver. (ex) 1412)	
2 times	EEP version	EEP	Ver. (ex) 1412)	
3 times	Assigned address of the units	AUTO	SEG 1,2	SEG 3,4
			Indoor unit: "A" , "0"	Address (ex) 07)
4 times	Manually assigned address of the units	MANU	SEG 1,2	SEG 3,4
			Indoor unit: "A" , "0"	Address (ex) 15)

K4(Number of press)	KEY operation	Display on segment	
		SEG 1	SEG2, 3, 4
1 time	Outdoor unit model	1	AM080FXM* → 0, 0, 8
2 times	Order frequency of compressor	2	120 Hz → 1,2,0
3 times	High pressure	3	1.52 MPa → 1, 5, 2
4 times	Low pressure	4	0.43 MPa → 0, 4, 3
5 times	Discharge temperature of compressor	5	87 °C → 0, 8, 7
6 times	IPM temperature of compressor	6	87 °C → 0, 8, 7
7 times	CT sensor value of compressor	7	2 A → 0, 2, 0
8 times	Suction temperature	8	-42 °C → -, 4, 2
9 times	COND OUT temperature	9	-42 °C → -, 4, 2
10 times	Liquid pipe temperature	A	-42 °C → -, 4, 2
11 times	TOP temperature of compressor	B	87 °C → 0, 8, 7
12 times	Outdoor temperature	C	-42 °C → -, 4, 2
13 times	EVI inlet temperature	D	-42 °C → -, 4, 2
14 times	EVI outlet temperature	E	-42 °C → -, 4, 2
15 times	Main EEV step	F	2000 steps → 2, 0, 0
16 times	EVI EEV step	G	300 steps → 3, 0, 0
17 times	Fan step	H	13 steps → 0, 1, 3
18 times	Current frequency of compressor	I	120 Hz → 1,2,0
19 times	Master indoor unit address	J	Master indoor unit not selected → BLANK , N , D If indoor unit No.1 is selected as the master unit →0, 0, 1

9. Test Operation

9-1 Auto Trial Operation

9-1-1 Auto Trial Operation Synopsis

1) What is the Auto Trial Operation?

DVM S main components defective check and check the status of the installation, provide guidelines that can promptly and accurately resolve the problems that may occur in the field.

If does not end the Auto Trial Operation, normal operation is impossible to enter, it should protect the system from the abnormal state. ("UP")

2) Auto Trial Operation Preliminary checking.

- (1) Check the Power cable of Indoor / Outdoor Unit and communication wire.
 - (2) Turn on the power 6 hours before to start the Auto Trial Operation.
(Crankcase heater to be heated sufficiently.)
 - (3) Check before applying power voltage and phase using a phase tester and voltmeter.
- R, S, T, N Terminal : Check the between the wire, 380V (R-S, S-T, T-R) / phase-to-phase, 220V (R-N, S-N, T-N).
 - (4) Power on, perform the tracking. (Outdoor Unit inspects Indoor Unit and optional.)
 - (5) Card to verify the installation of the control box front : must be record the installation details.
- ※ Necessarily turn on the power 6 hours before to start the Auto Trial Operation.

3) How to use the Auto Trial Operation.

- (1) If does not complete the Auto Trial Operation, normal operation is prohibited.



- If does not complete the Auto Trial Operation, Display the "UP"(Unprepared) on the LED after checking communication.
(Compressor to operate normal operation is prohibited.)

※ UP Mode will be turned off automatically at finished the Auto Trial Operation.

- Auto Trial Operation is carried out by the operating conditions.
(From 20 minutes to maximum 2 hours)

- During Auto Trial Operation due to the valve check, the noise can be generated.
(Sustained abnormal noise occurs, check it)

- (2) When an error occurs during the Auto Trial Operation, check the error code in the product and then service it.

- (3) Shut down the Auto Trial Operation, resulting report will be issued using the S-NET or S-CHECKER.

- The resulting report of the "Undetermined" item, troubleshoot the accordance with the service manual.
- Troubleshoot all the items of "Undetermined" and then restart the Auto Trial Operation.

- (4) Check the following as Trial Operation. (Heating / Cooling)

- Check the Cooling and Heating operation is progressing well.
- Individual Indoor Unit control : check the wind direction, wind speed.
- Check the Indoor and Outdoor abnormal noise.
- Check the drainage of the Indoor Unit cooling operation.
- More operation : Checking status by using the S-NET.

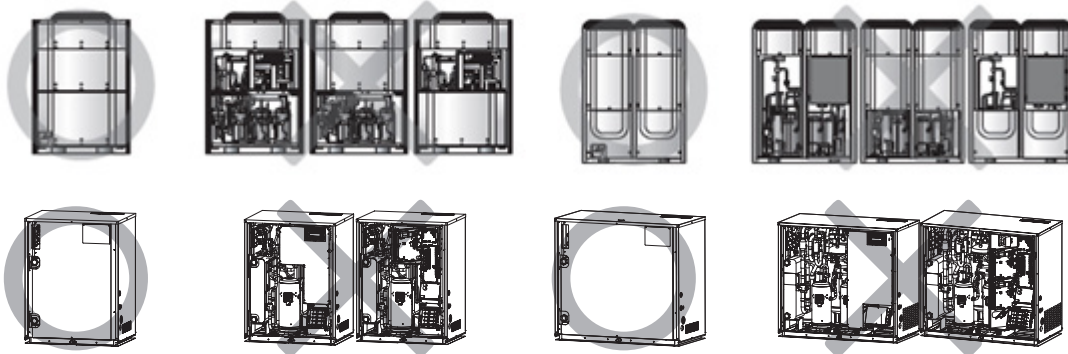
- (5) Refer to manual and explain air conditioner usage to user.

※ If out of warranty coverage and bounds, installation, operation according to the conditions the some of items displayed as "Undetermined" and judgment is not.

Ex) system that module installed : If the outdoor unit is not operation by the load on the indoor and outdoor, corresponding Sub Outdoor Unit does not judge the inspection entries. (However, Indoor / Outdoor Temperature sensor and Pressure sensor judgment is available.)

※ Operation must close the upper and lower cabinets on the front of the Outdoor Unit.

If the cabinet opened while operation : Can cause damage to the product and can not get the exact S-NET data.



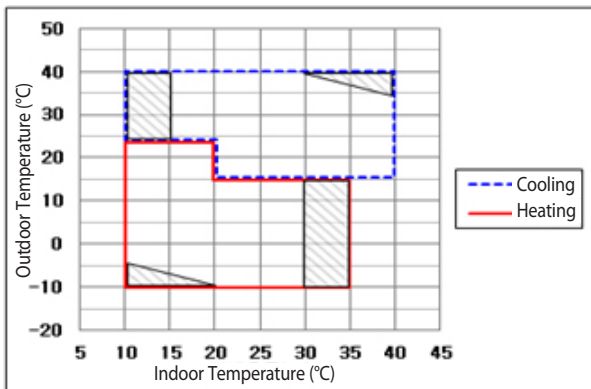
4) Inspection item of the Auto Trial Operation

During the Auto Trial Operation of the DVM S, defect check items are as follows.

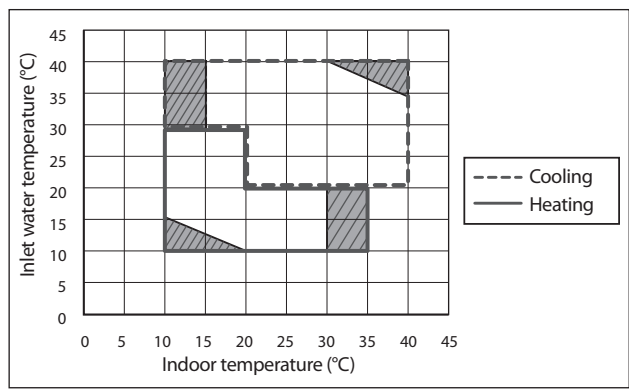
- Indoor Unit Temperature sensor (Indoor temperature of each Indoor Unit, EVA In/Out Temperature sensor)
- Outdoor Unit Temperature sensor (Outdoor temperature of each Outdoor Unit, Cond_Out, EVI In/Out, Suction, Liquid Pipe Temperature sensor)
- Outdoor Unit High Pressure sensor & Low Pressure sensor
- Outdoor Unit Service Valve : judgment of the Open/Closed
- Outdoor Unit Compressor : Judgment of the operation current
- Cycle state judgment of the Outdoor Unit
- Outdoor Unit 4Way Valve : Judgment of the operation
- Outdoor Unit EVI EEV : Judgment of the operation
- (※ The operation mode of the Auto Trial Operation : "Heating" only if the detection.)

5) Warranty Coverage of the Auto Trial Operation

As follows, in order to accurately measure Indoor / Outdoor temperature conditions in the Auto Trial Operation is carried out.



<AM080/100/120/200FXWA**>



<AM080/100/120/140/160/180/200FXV***>

- Heating / Cooling mode is automatically selected of Auto Trial Operation .
- Oblique line marked area in the during operation of the system can be protection control. (Auto Trial Operation of normal judgment can be difficult by the protection control operation.)
- If out of warranty coverage and the boundary area : Auto Trial Operation judgment accuracy may be reduced.

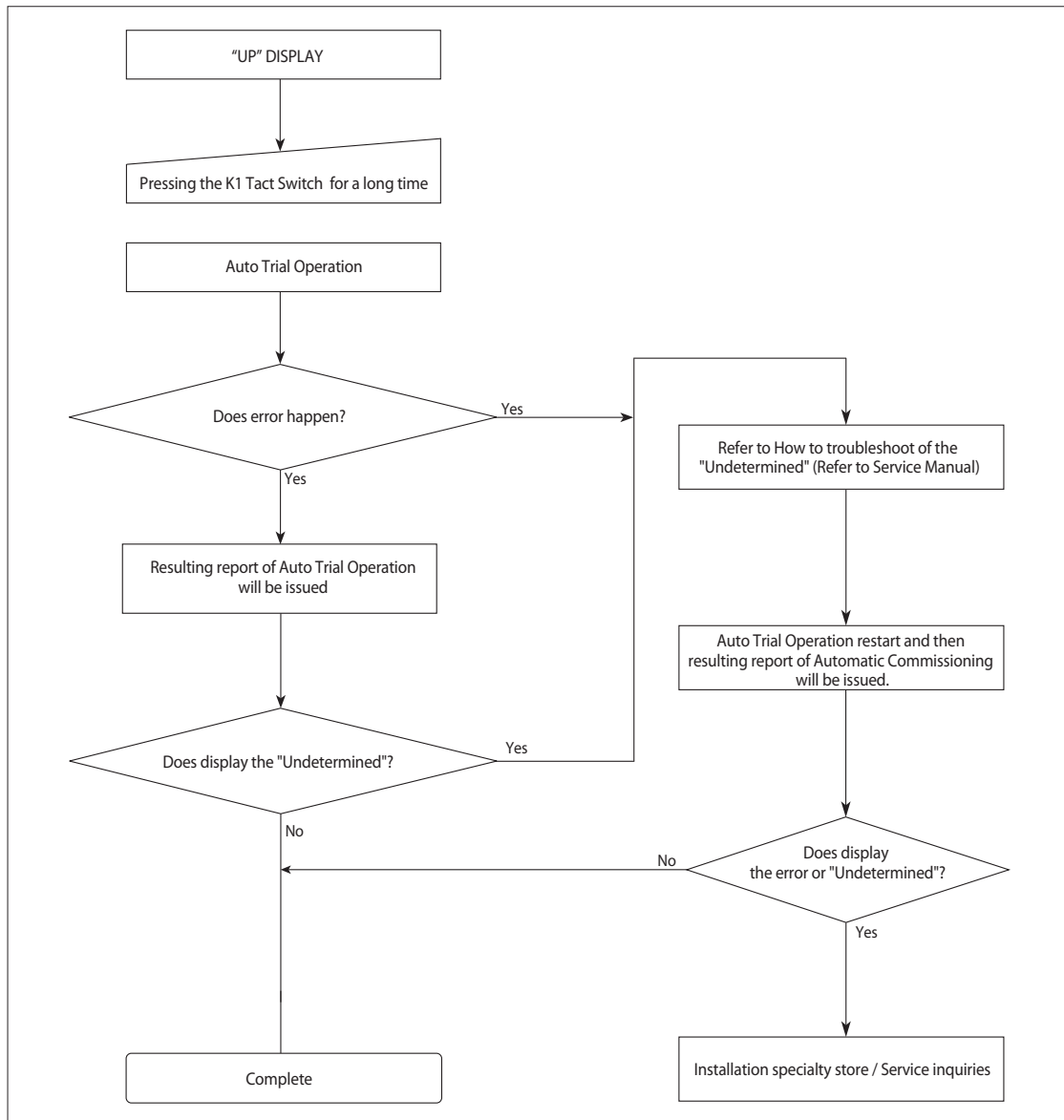
9-1-2 Auto Trial Operation functions

1) Preliminary checking and Auto Trial Operation flow chart

(1) Preliminary checking

- Check the installation status : Outdoor and Indoor Unit piping, Communication, Power, Amount of refrigerant added, etc.

(2) Auto Trial Operation methods



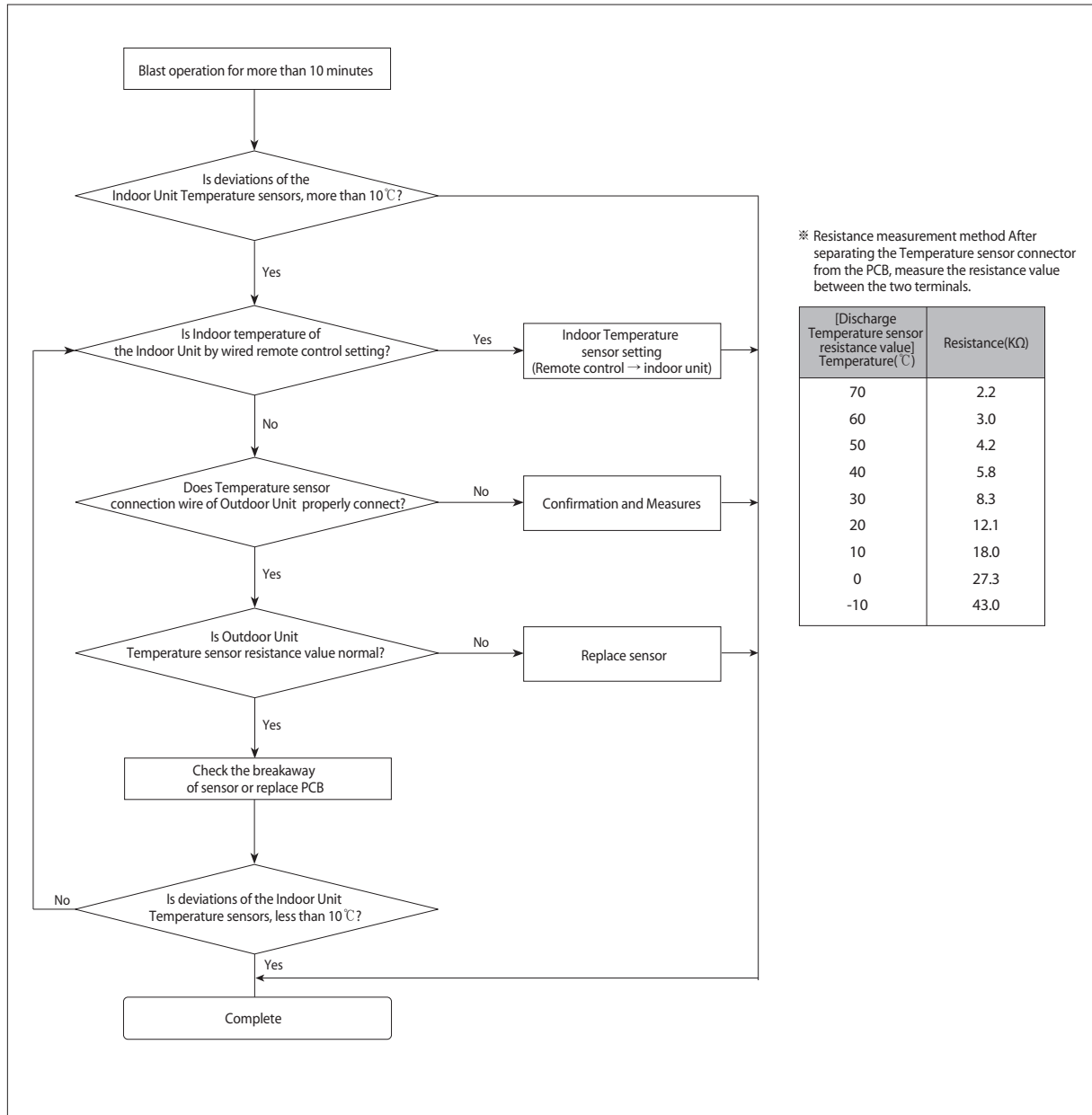
(3) Other Precautions

- If the problem of more than one components at the same time occurs, accurate decisions can be difficult.
- If stop the Sub outdoor during the Auto Trial Operation by load conditions in status of module combination, Outdoor Unit does not judge. (Undetermined)
- If the Outdoor Unit with a history of operation (Auto Trial Operation inclusion) :
 Must be carried out Auto Trial Operation after 1 hour from final operation stopped.
 (In this case, the vacuum mode of the air must maintain for more than 5 minutes.)
- Restart of Auto Trial Operation after troubleshoot the item that "Undetermined"

9-1-3 How to troubleshoot of the "Undetermined"

1) Indoor Unit Temperature sensor

- Inspection item : Indoor temperature of each Indoor Unit, EVA In / Out Temperature sensor
- Error code: None (The resulting report "Undetermined")
- Determine the status of the Temperature sensor of the Indoor Unit installed before the compressor start.
- If the judgment of Indoor Unit temperature sensor is "Undetermined" : Checking in accordance with the following order.

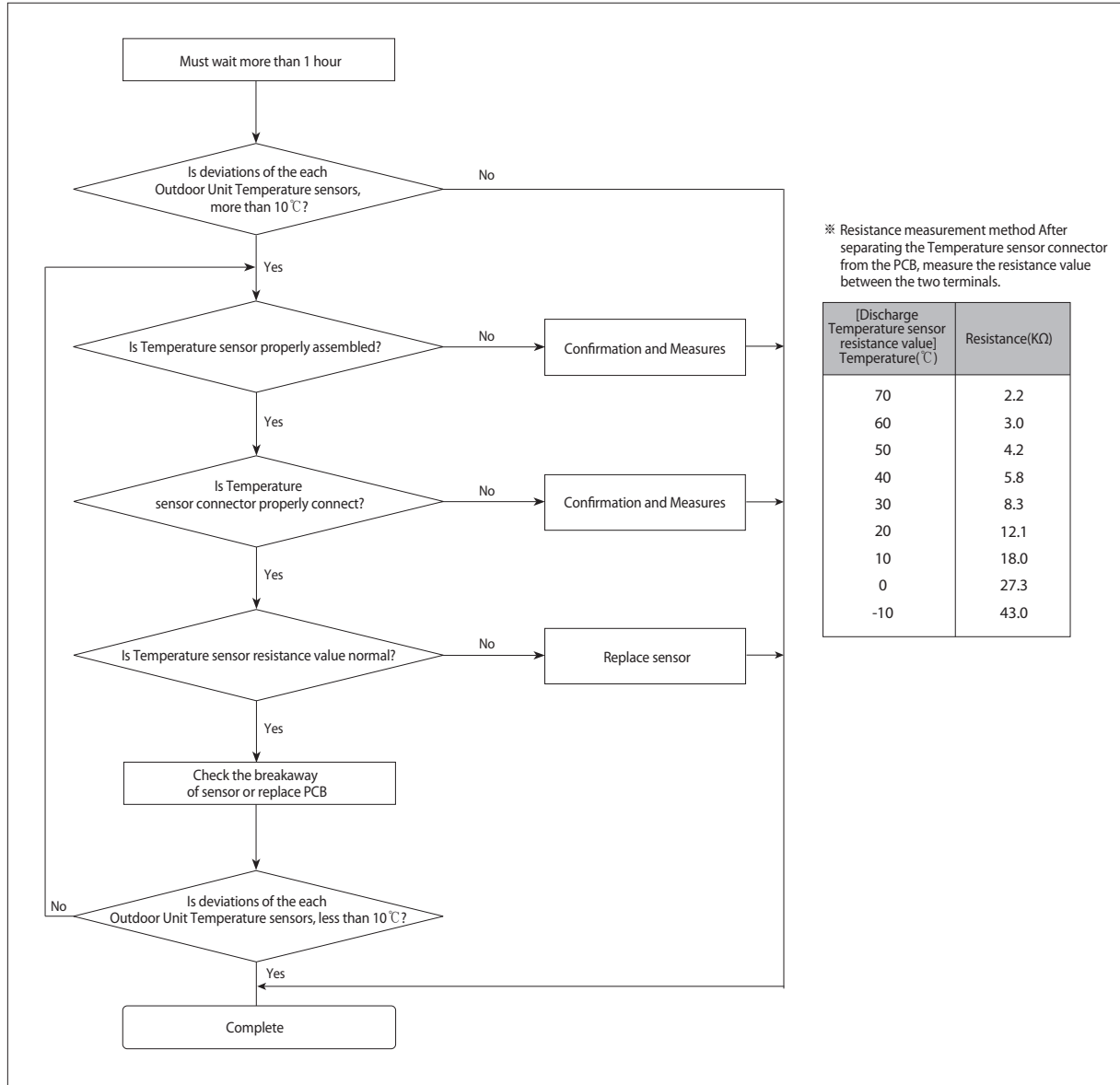


⚠ [Caution]

- If the Outdoor Unit with a history of operation (Auto Trial Operation inclusion) : Must be carried out Auto Trial Operation after 1 hour from final operation stopped.
- If the Indoor temperature setting by wired remote control : Carried out the Auto Trial Operation after setting the Temperature sensor of Indoor Unit.
- Indoor Unit of outdoor air introduction : Will be excluded from the Indoor air temperature, EVA In / Out Temperature sensor checking.

2) Outdoor Unit Temperature sensor

- Inspection item : Outdoor temperature of each Outdoor Unit, Cond_Out, EVI In / Out, Suction, Liquid pipe temperature sensor
- Error code: None (The resulting report "Undetermined")
- Determine the status of the Temperature sensor of the each Outdoor Unit installed before the compressor start.
- If the judgment of Outdoor Unit Temperature sensor is "Undetermined" : Checking in accordance with the following order.

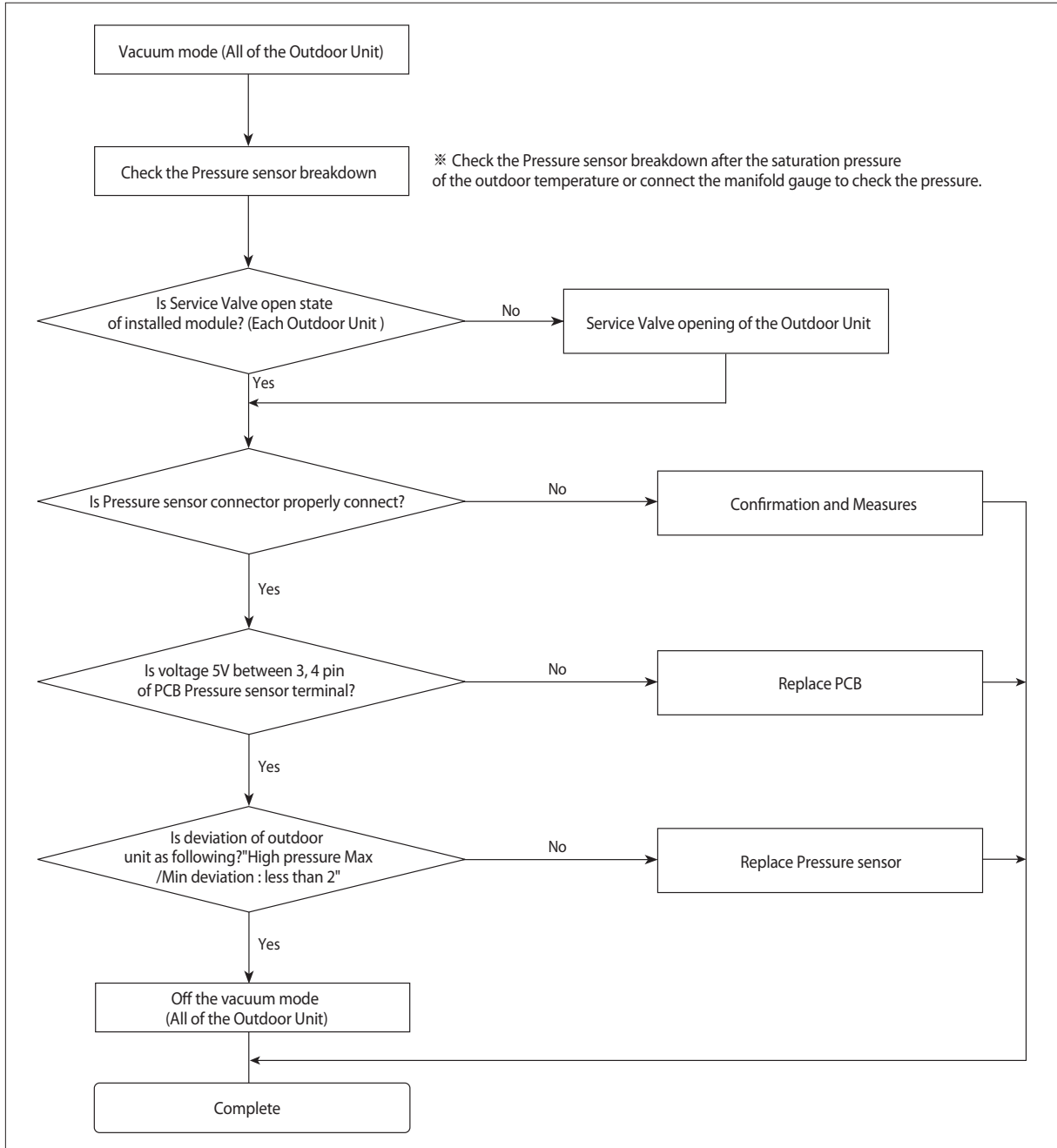


⚠ [Caution]

- If the Outdoor Unit with a history of operation (Auto Trial Operation inclusion) : Must be carried out Auto Trial Operation after 1 hour from final operation stopped.

3) High / Low pressure sensor (Module installed)

- High/Low Pressure sensor of each of the outdoor unit that module is installed.
- Error code of High Pressure sensor : E505 (The resulting report "Undetermined")
Error code of Low Pressure sensor : E506 (The resulting report "Undetermined")
- Determine the status of the High/Low Pressure sensor of the each Outdoor Unit installed before the compressor start.
- If the judgment of Outdoor Unit High/Low Pressure sensor is "Undetermined" : Checking in accordance with the following order.

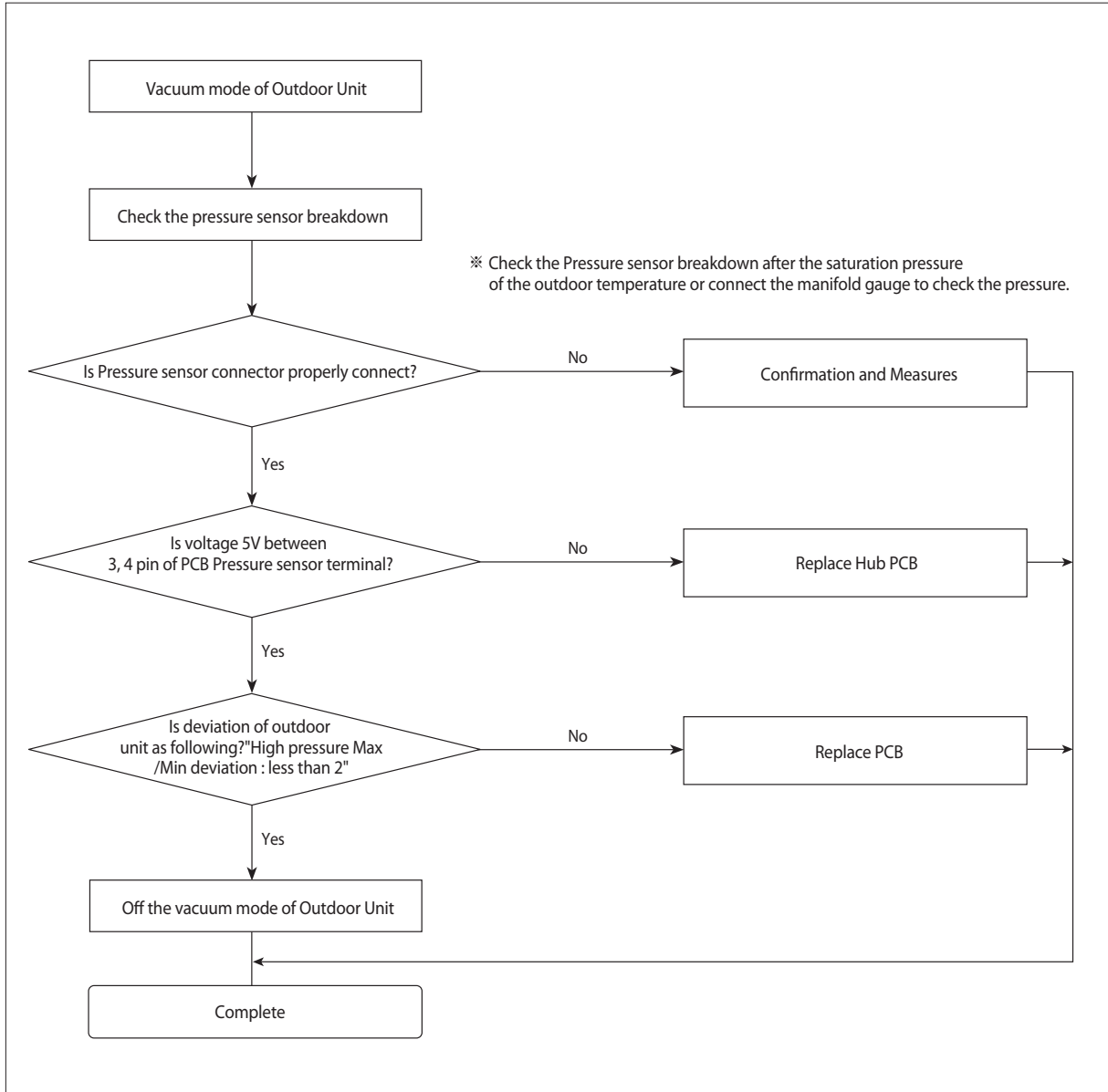


⚠ [Caution]

- If the judgment of Pressure sensor "Undetermined" : Display the error to all of the Outdoor Unit and then Auto Trial Operation is exited. (Stop the overall system)

4) Pressure sensor (Independent installation)

- Inspection item : High/Low Pressure sensor of the independent installed Outdoor Unit.
- Error code: None (The resulting report "Undetermined")
- Determine the status of the Pressure sensor of the independent installed Outdoor Unit before the compressor start.
- If the judgment of Outdoor Unit Pressure sensor is "Undetermined" : Checking in accordance with the following order.

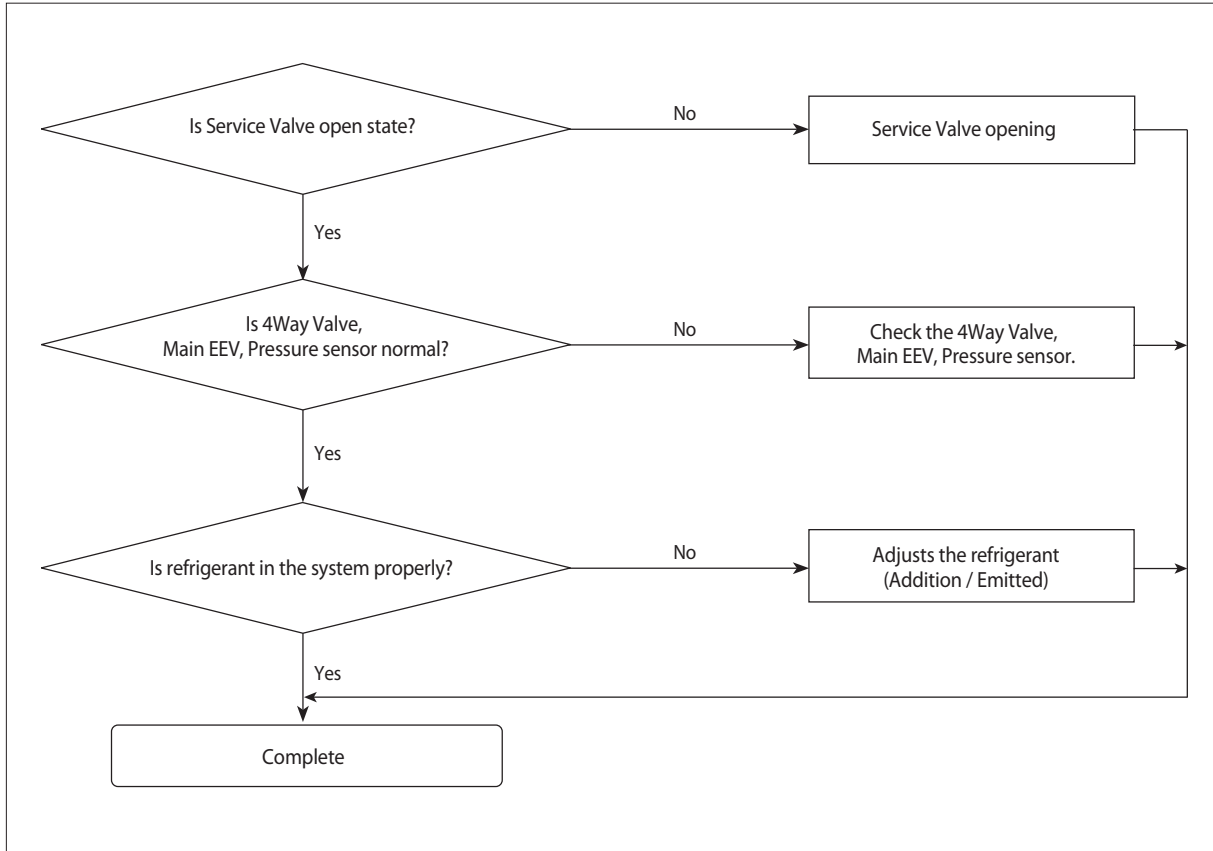


[Caution]

- If the Outdoor Unit with a history of operation (Auto Trial Operation inclusion) : Maintain the vacuum mode for more than 5 minutes.

5) Service Valve

- Inspection item : Outdoor Unit Service Valve is open / closed
- Error code: E503 (The resulting report "Undetermined")
- Determine the status of the Service Valve open / closed of the each Outdoor Unit.
- If the judgment of Outdoor Unit Service Valve is "Undetermined" : Checking in accordance with the following order.

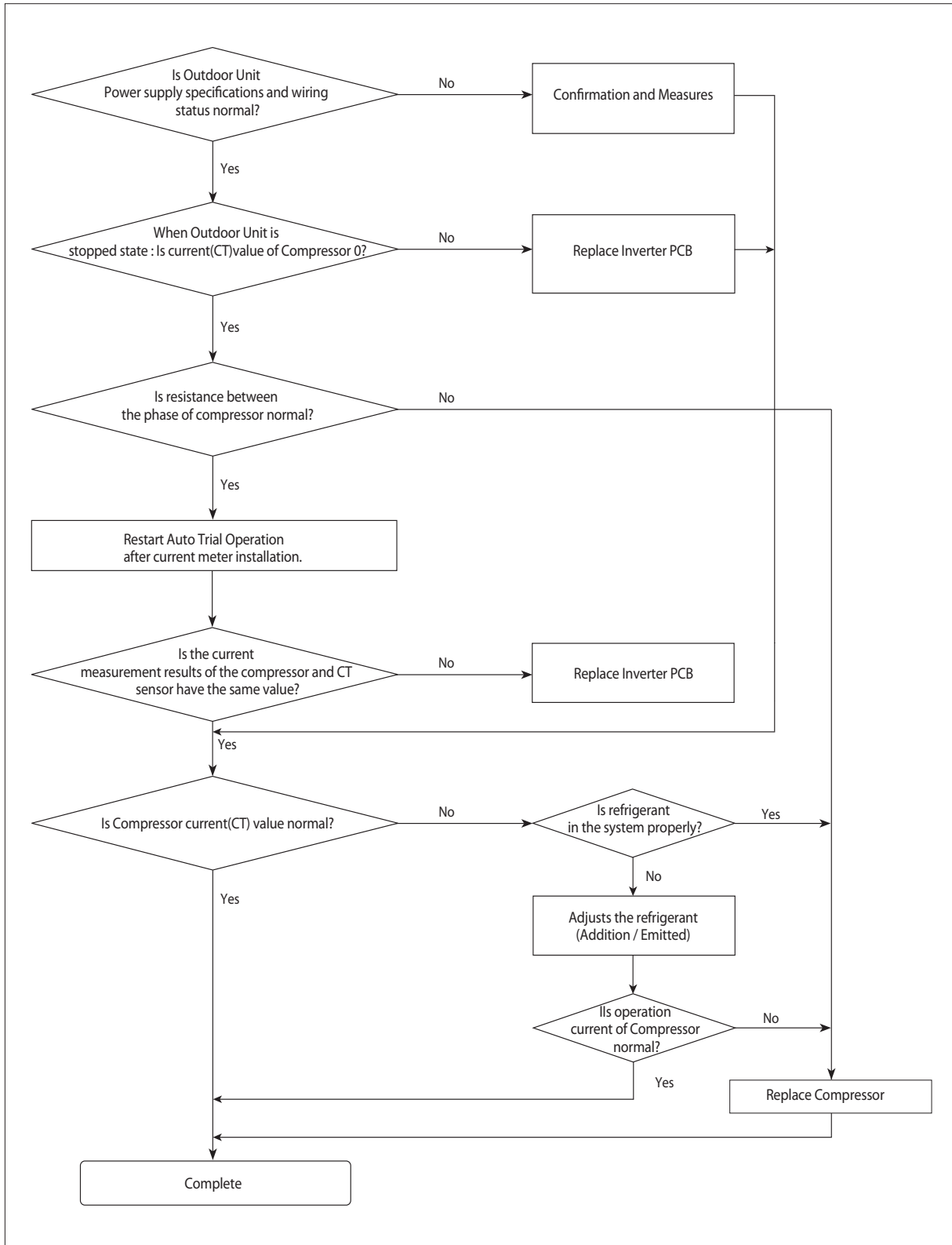


 **[Caution]**

- If the judgment of Service Valve "Undetermined" : Display the error to corresponding Outdoor Unit and then Auto Trial Operation is exited. (Stop the overall system)
- If inspect service valve : Check the Liquid pipe and Gas pipe, Service Valve.
- If the frost formation of Outdoor Heat exchanger, continue Trial Operation until defrost operation begins. And then complete after add more than 1 hour operation after end of defrost operation. (Execute checking of 4Way Valve and Main EEV together.)
- 4Way Valve abnormal symptoms
 - 1) Strange noise of compressor to operate.
 - 2) Indoor unit EVA In/Out maintain the temperature below zero (Less than -0°C)
 - 3) 4Way Valve : Refer to the Service Manual.
- Main EEV abnormal symptoms
 - 1) When closed Main EEV opening : Compressor suction degree of overheat impossible to ensure and less than DSH 20K.
 - 2) When opened Main EEV opening : Compressor suction degree of overheat is high status.
 - 3) Main EEV : Refer to the Service Manual.
- Pressure sensor abnormal symptoms : Refer to the Service Manual.

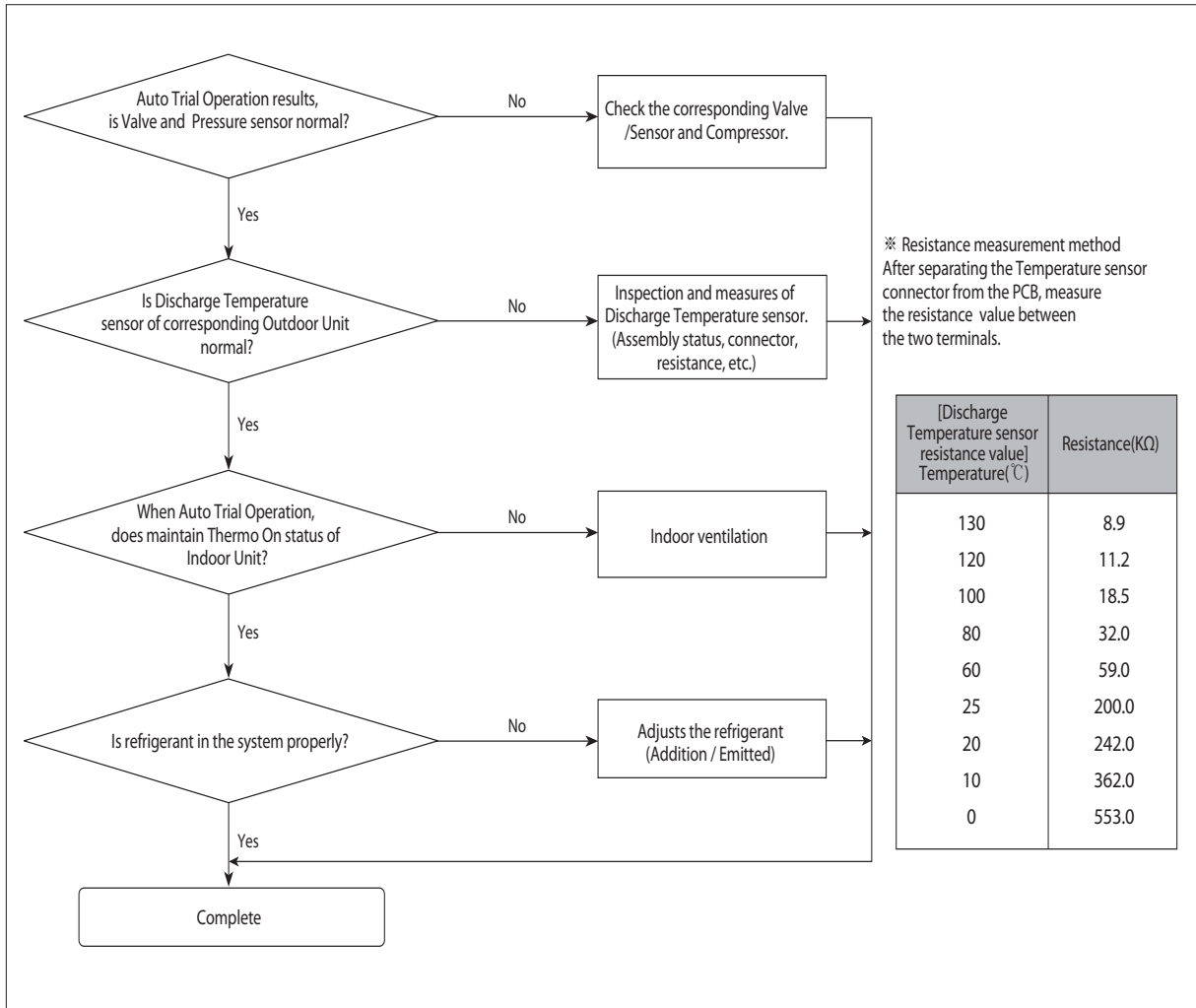
6) Abnormal operation of the Compressor

- Inspection item : Operation current of Outdoor Unit Compressor.
- Error code: None (The resulting report "Undetermined")
- Determine the status of the operating current of the each Outdoor Unit Compressor.
- If the judgment of operation current of Outdoor Unit Compressor is "Undetermined" :
Checking in accordance with the following order.



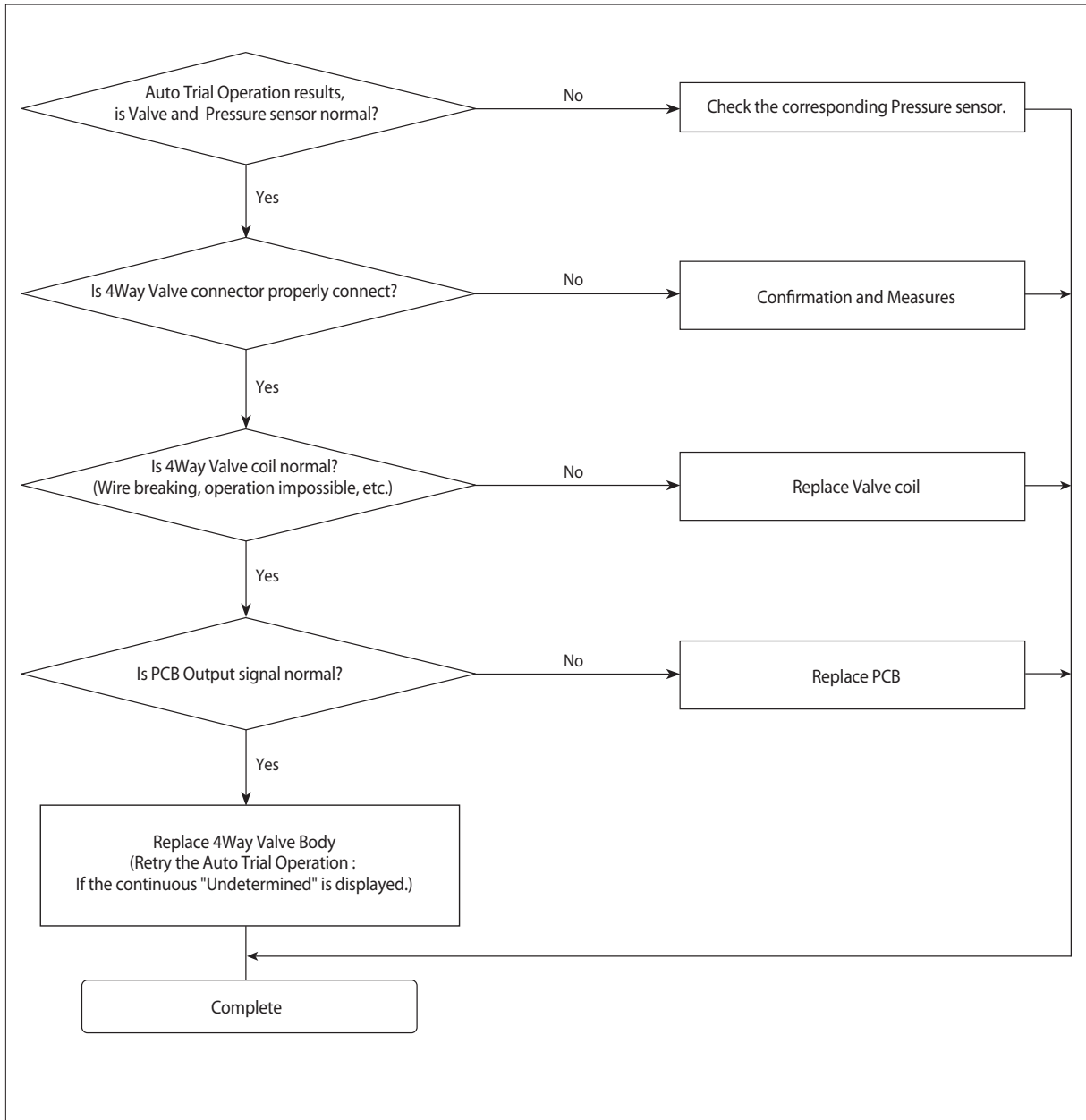
7) Cycle status

- Inspection item : Cycle status of Outdoor Unit.
- Error code: None (The resulting report "Undetermined")
- Determine the Cycle status of the each Outdoor Unit.
- If the judgment of Cycle status is "Undetermined" : Checking in accordance with the following order.



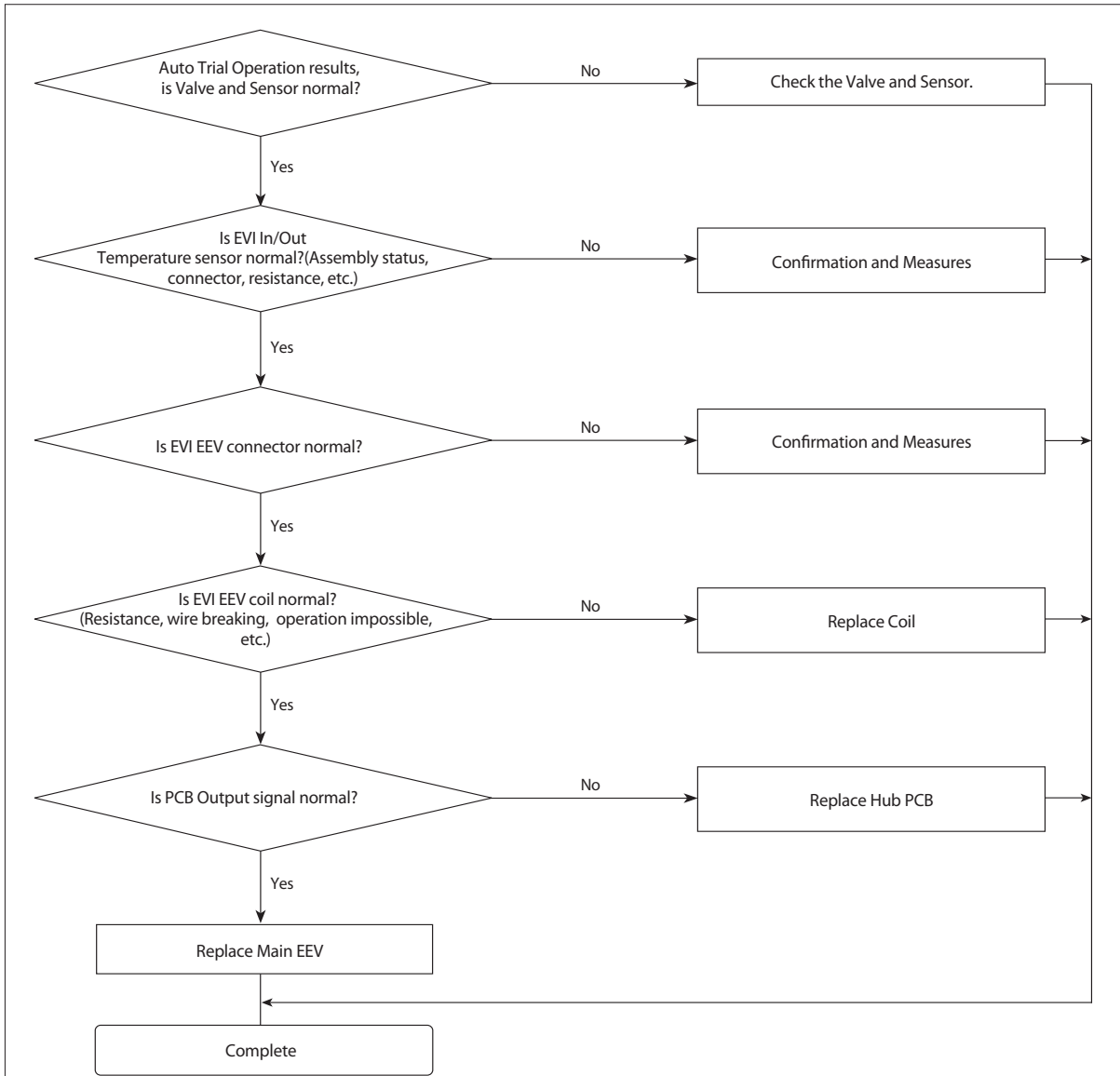
8) 4Way Valve

- Inspection item : 4Way Valve of Outdoor Unit.
- Error code: None (The resulting report "Undetermined")
- Determine the 4Way Valve operation status of the each Outdoor Unit.
- If the judgment of 4Way Valve is "Undetermined" : Checking in accordance with the following order.



9) EVI EEV

- Inspection item : EVI EEV of Outdoor Unit.
- Error code: None (The resulting report "Undetermined")
- Determine the EVI EEV operation status of the each Outdoor Unit.
- If the judgment of EVI EEV is "Undetermined" : Checking in accordance with the following order.

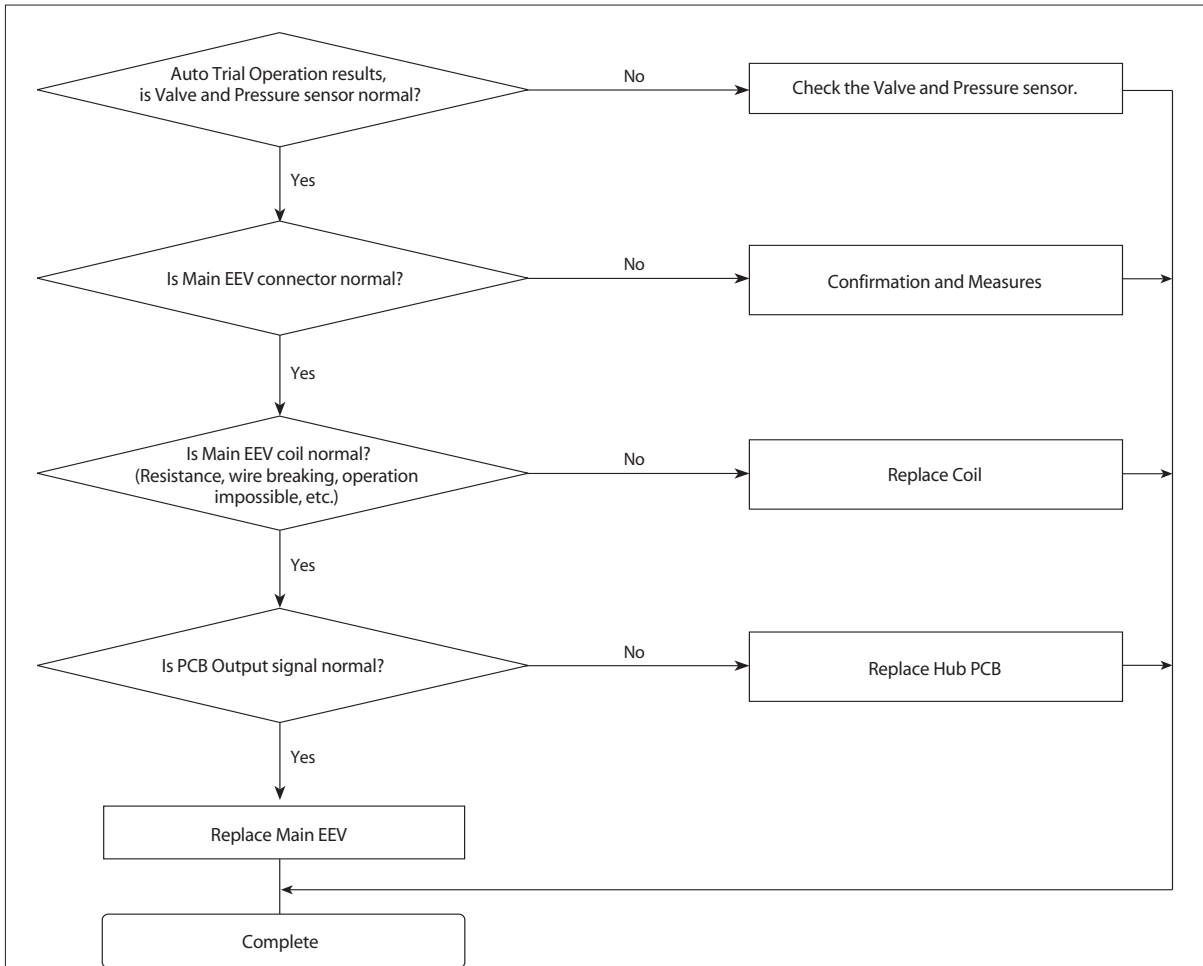


※ Main EEV coil resistance value based (Measured temperature is 20°C)

EEV Wiring Diagram	Operating Voltage (VDC)	Resistance of between the phase (Ω)
	12±2.0	Blue-Orange Blue-Red Blue-Yellow Blue-Black ----- 92±7.4

10) Main EEV

- Inspection item : Main EEV of Outdoor Unit.(Auto Trial Operation : Heating only)
- Error code: None (The resulting report "Undetermined")
- Determine the Main EEV operation status of the each Outdoor Unit.
- If the judgment of Main EEV is "Undetermined" : Checking in accordance with the following order.



※ Main EEV coil resistance value based (Measured temperature is 20°C)

Main EEV Coil	Operating Voltage (VDC)	Resistance of between the phase (Ω)
	12±1.2	Re-Wh Re-Or Br-Ye Br-BI ----- 150±15

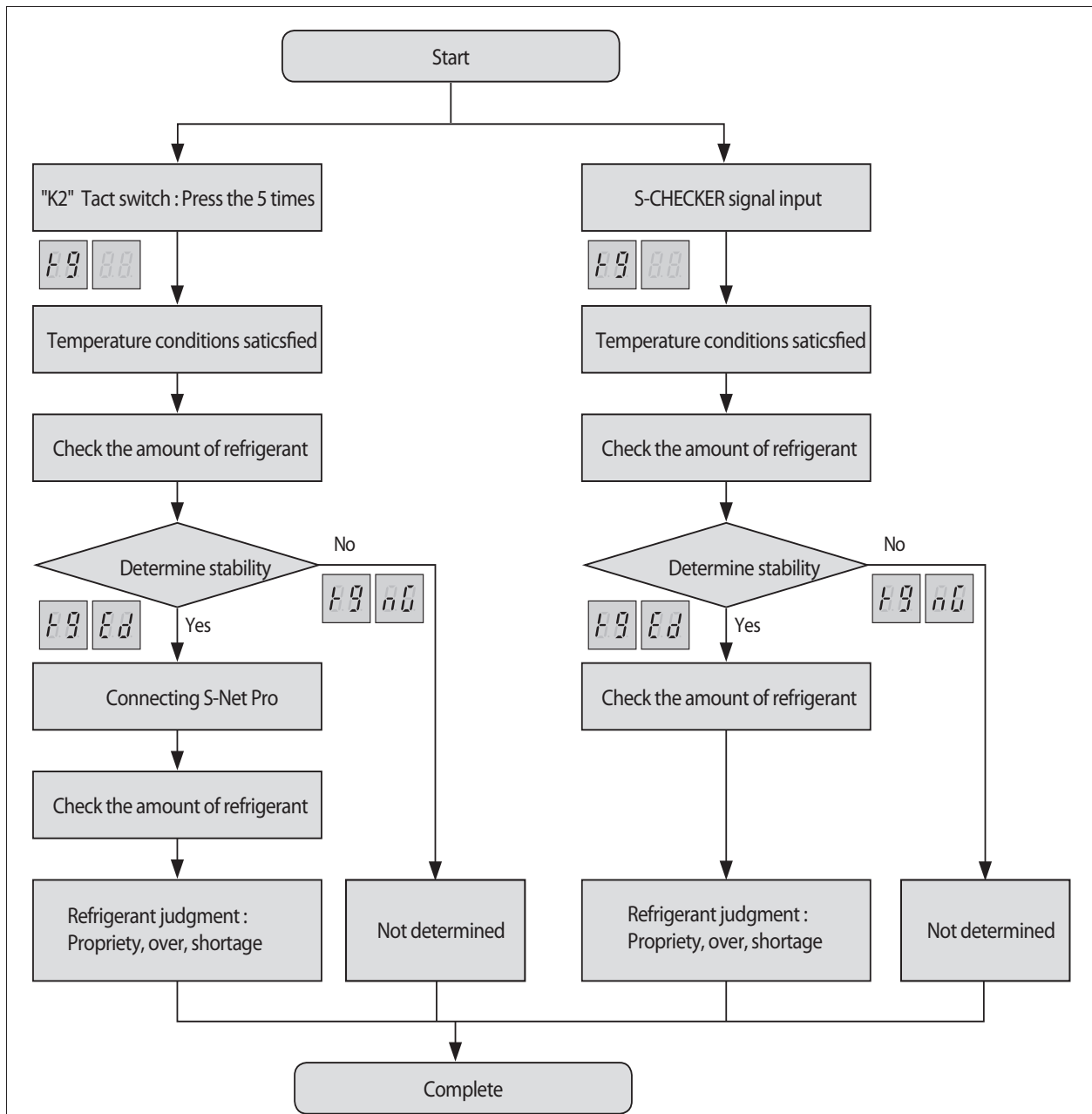
9-1-4 Auto Trial Operation Error Code

Division	Error Code	Description	Remark
Dedicated Error Code	E503	Service Valve is closed	Refer to "Service Valve"
	E505	High pressure sensor breakdown	Refer to "High / Low pressure sensor (Module installed)"
	E506	Low pressure sensor breakdown	

※ Other error codes : Refer to Service Manual.

9-2 Amount of refrigerant automatically checking

Through the detect operation is the ability to verify automatically for the amount of refrigerant.



⚠ [Caution]

- If escape the warranty temperatures, can not get the accurate results.
 - Indoor : 20~30°C
 - Outdoor : 5~43°C
- If operation cycle is not stable, Checking the amount of refrigerant can be forced to shut down.
- If did not operation for a long time, or when running the heating operation, the accuracy may be lower. Therefore carried out for more than 30 minutes cooling operation.
- Depending on the installation environment, system protection operation is performed, in this case, the check result may be inaccurate.

[How to troubleshoot the judged results]

- Excessive of refrigerant amount : After the 5% emissions of calculated total refrigerant amount, retry Checking the amount of refrigerant.
- Deficiency of refrigerant amount : After the 5% addition of calculated total refrigerant amount, retry Checking the amount of refrigerant.
- Deficiency of Over-cooling : After the 10% addition of calculated total refrigerant amount, retry Checking the amount of refrigerant.
- Undetermined : Checking the amount of refrigerant confirms that is performed in warranty temperatures area. Ensure that there is no other problems in the system by Test Operation.



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

This Service Manual is a property of Samsung Electronics Co., Ltd.
Any unauthorized use of Manual can be punished under applicable
International and/or domestic law.

© Samsung Electronics Co., Ltd. December. 2013.
Printed in Korea.
Code No. AC-00003E_4