SAMSUNG

SYSTEM AIR CONDITIONER

OUTDOOR UNIT

AM072/096/120/144FXVAFH
AM072/096/120/144FXVAFR
AM072/096/120/144FXVAJH
AM072/096/120/144FXVAJR
AM072/096/120/192HXWAFR
AM072/096/120/192HXWAJR
AM168/192HXVAFH
AM168/192HXVAFR
AM168/192HXVAJH
AM168/192HXVAJR
AM072/096KXVTFH
AM072/096KXVTJH
AM216KXVGJH
AM216KXVGJR
AM038/048/055KXWDCH

SERVICE Manual

AIR CONDITIONER

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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

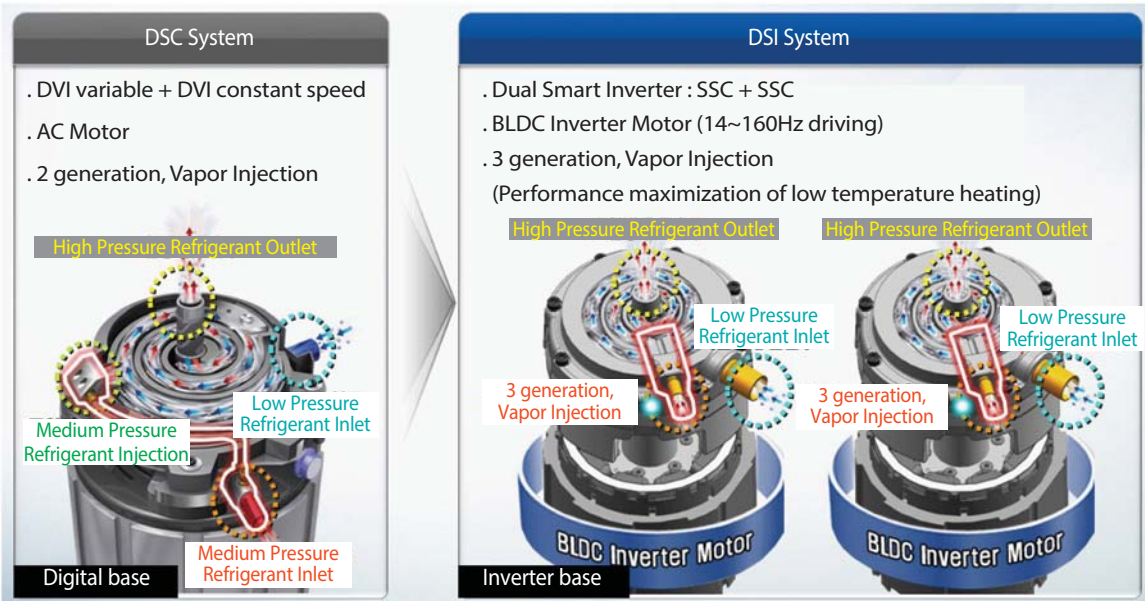
- **There should be no leakage of the pipes after installation. When withdrawing the refrigerant, the compressor should be stopped before removing the connecting pipe.**
  If the compressor is operating while the refrigerant pipe is not correctly connected and the service valve is opened, then air and 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

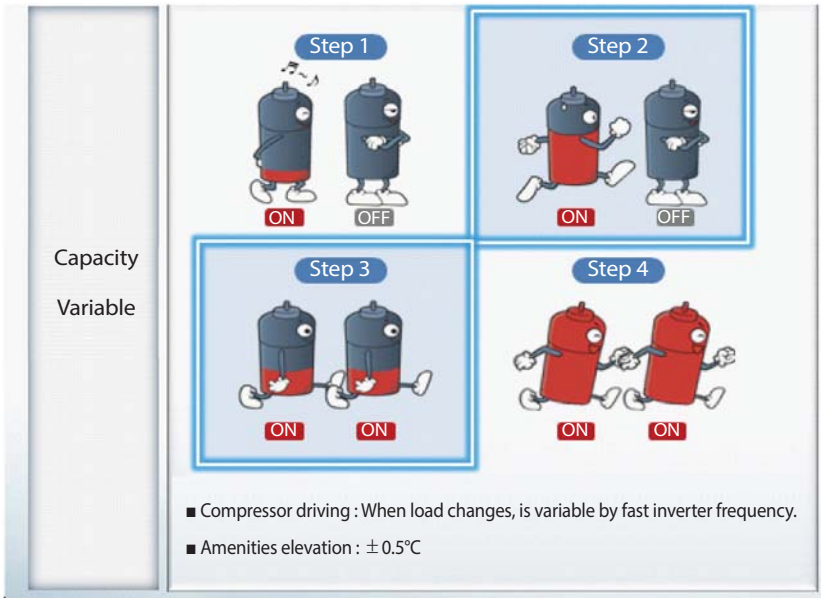
2-1-1 Feature

■ Dual Smart Inverter System



■ Dual SSC System Technology

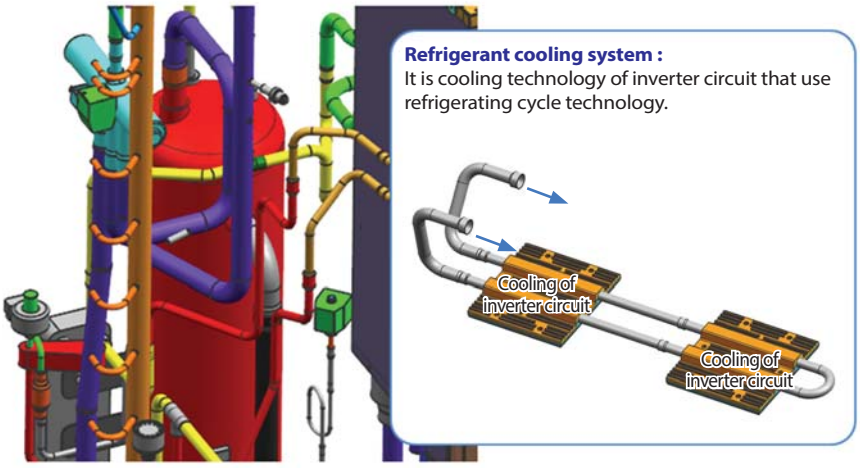
When load changes, capacity amendment that is soft by continuous operation of Dual Inverter is available.



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

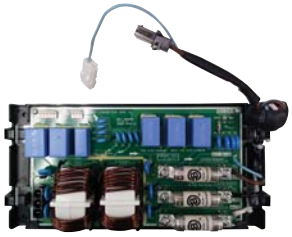
Changed part	Changed item and feature	Basic	After changed
CABINET	Change the color : TOUCH GRAY → EARTH BROWN Wire Harness installation part change LOGO change		

■ Control Box & PCB

Changed part	Changed item and feature	Basic	After changed
Control Box structure	Monolayer structure → Double Layer Structure - Inverter technology integration (Inverter control circuit composition) - C/Box volume maximum use Built-in type Controller embodiment - Integrated power supply + control unit - Piping service easiness	 	

Changes in comparison to basic mode (cont.)

■ AM072/096/120/144FXVA✳✳/168HXVAJ✳/192HXVAJ✳/072KXVA✳✳/096KXVAJ✳

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.		

Changes in comparison to basic mode (cont.)

■ AM168/192✳XVAF✳/AM096KXVAF✳

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)	Inverter PCB newly application - Capacitor size increased - EMI Coil applied		
EMI PCB	EMI PCB newly application - Coil size increased - Fuse capacity changed - Capacitor changed		
Reactor	Reactor newly application. - Terminal block for screw applied		
PCB Cooling Tube	Capacity of heat sink increased. Tube size increased.		
Communication Terminal block	Did Communication Terminal block mount to PCB.		

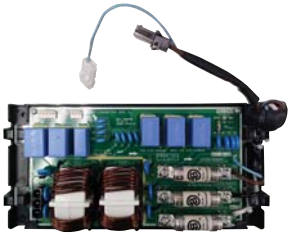
Changes in comparison to basic mode (cont.)

■ AM038/048/055KXWD✳✳

Item	Feture	PBA
Main PCB	Main PCB - Separation for load / control. - Option resistance delete by model. (standardization) - When replace the PCB, must download option. - Enhanced fixing of load / control wire.	
Inverter PCB (Compressor control PCB)	Compressor control Inverter PCB	 3/4HP:PF#4  5/6HP : PF#5
EMI PCB	Single-phase power supply EMI PCB - FUSE mount	
Water Hub PCB	Water Hub PCB -The external contact point of the water-cooled.	

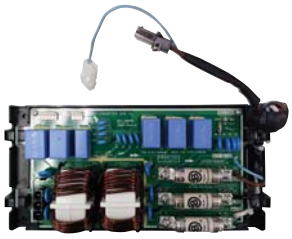
Changes in comparison to basic mode (cont.)

■ AM072/096/120/192HXWA✳✳

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.		←
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	-	

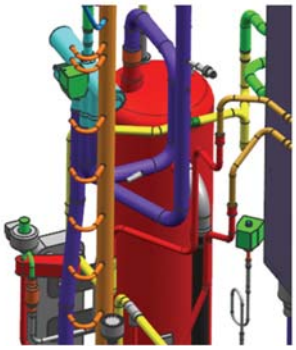
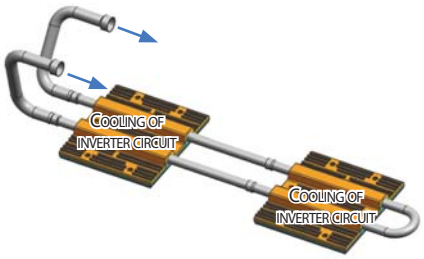
Changes in comparison to basic mode (cont.)

■ AM216KXVGJH/AM216KXVGJR

Changed part	Changed item and feature	Basic	After changed
Main PCB	Change Main PCB - Increase MICOM capability		
FAN PCB	Applies 600V IPM by LC resonance buck-converter		
Inverter PCB (Compressor Control PCB)	- Increases current due to high capacity compressor - Increases capacitor's capacity - Applies EMI coil on board (Deletes core in wire)		
EMI PCB	- Develops 50A EMI PBA → Increases coil size and fuse capacity - Improves EMI characteristic.		
REACTOR	- Increases current due to high capacity compressor - Improved wire connection terminal		
Refrigerant cooling	- Increases heat cooling capacity - Increases pipe size and heat exchange area		

Changes in comparison to basic mode (cont.)

■ Pipe Cooling

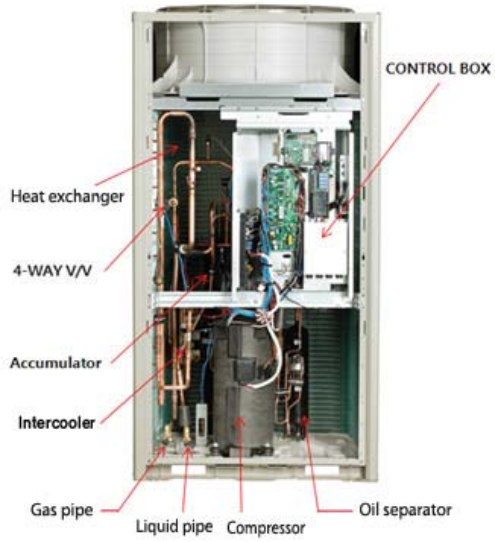
Changed part	Changed item and feature	Basic	After changed
Pipe Cooling	New Pipe Cooling for cooling of inverter PCB.	Unapplied	 **REFRIGERANT COOLING SYSTEM :** IT IS COOLING TECHNOLOGY OF INVERTER CIRCUIT THAT USE REFRIGERATING CYCLE TECHNOLOGY. 

■ Tube

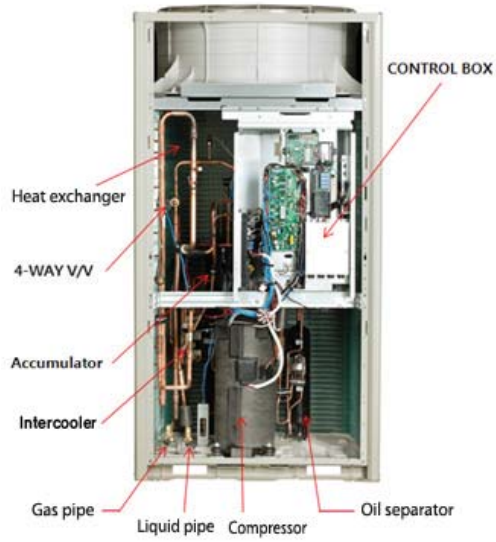
Changed part	Changed item and feature	Basic	After changed [HP]	After changed [HR]
Tube structure	New inverter cycle technology application New piping			

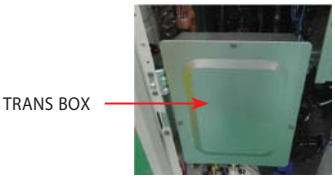
2-1-3 Structure of product

AM072FXVAF✳

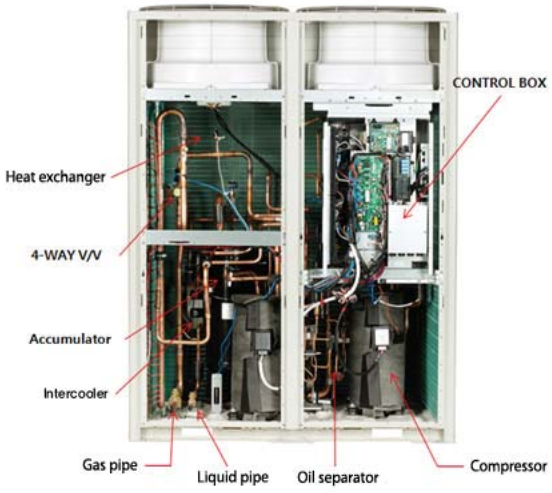


AM072FXVAJ*

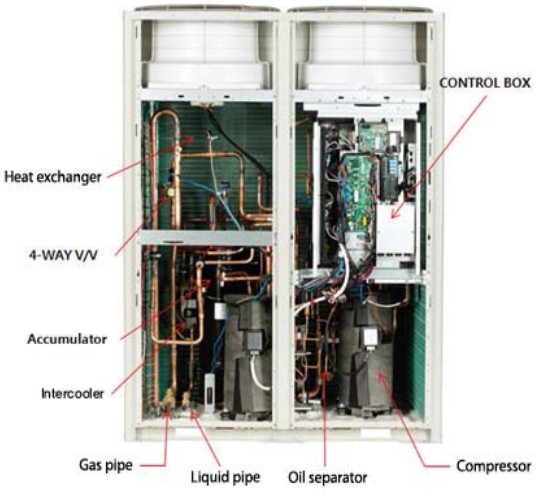


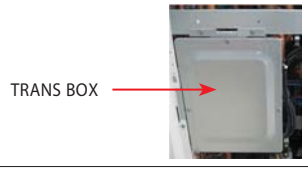


AM096FXVAF✳ AM168HXVAF✳
AM120FXVAF✳ AM192HXVAF✳
AM144FXVAF✳ AM072KXVAF✳
AM096KXVAF✳

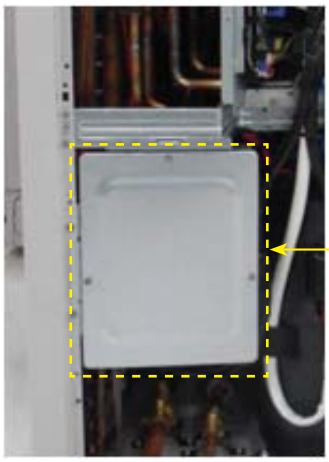


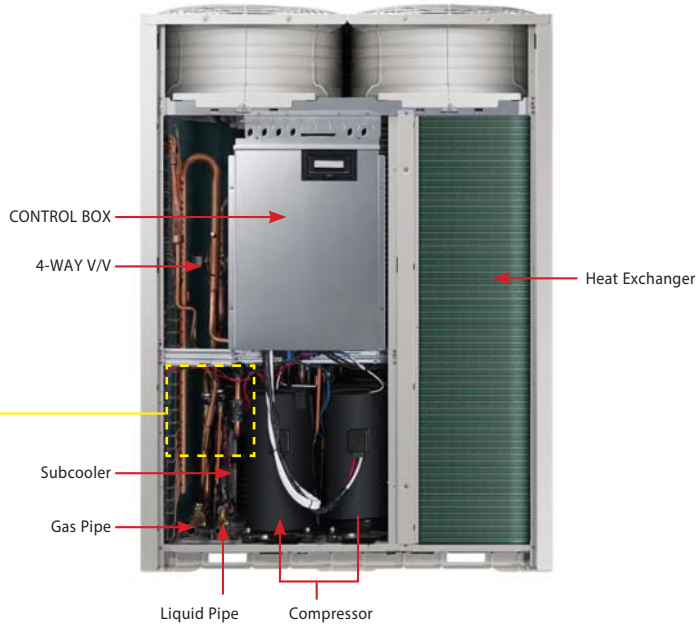
AM096FXVAJ✳ AM168HXVAJ✳
AM120FXVAJ✳ AM192HXVAJ✳
AM144FXVAJ✳ AM072KXVAJ✳
AM096KXVAJ✳



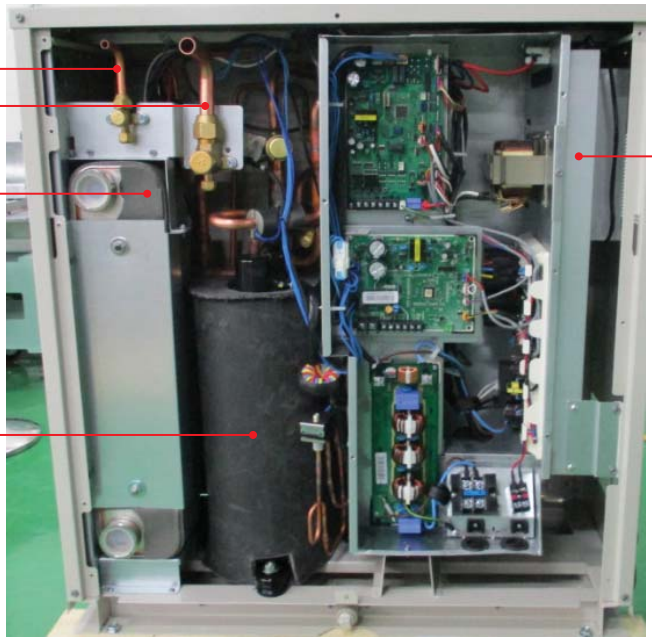


AM216KXVGJ✳

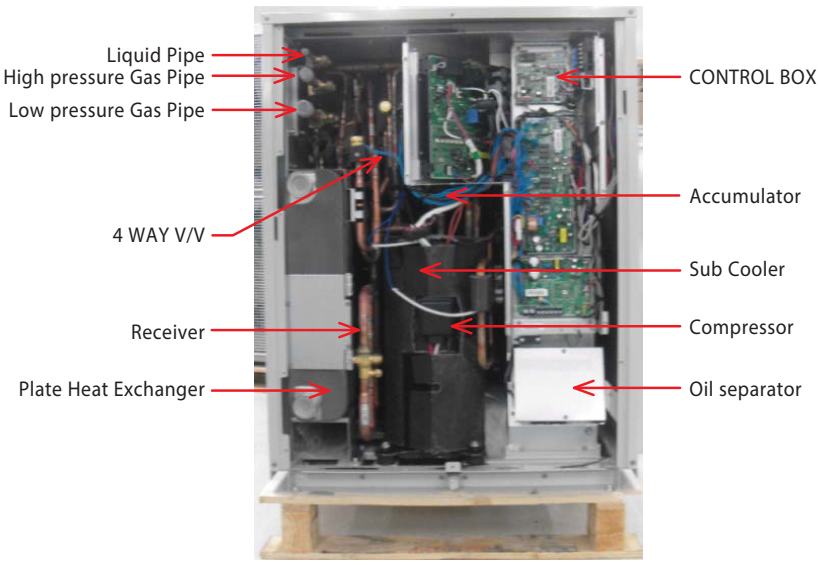



CONTROL BOX
4-WAY V/V
Heat Exchanger
Subcooler
Gas Pipe
Liquid Pipe
Compressor

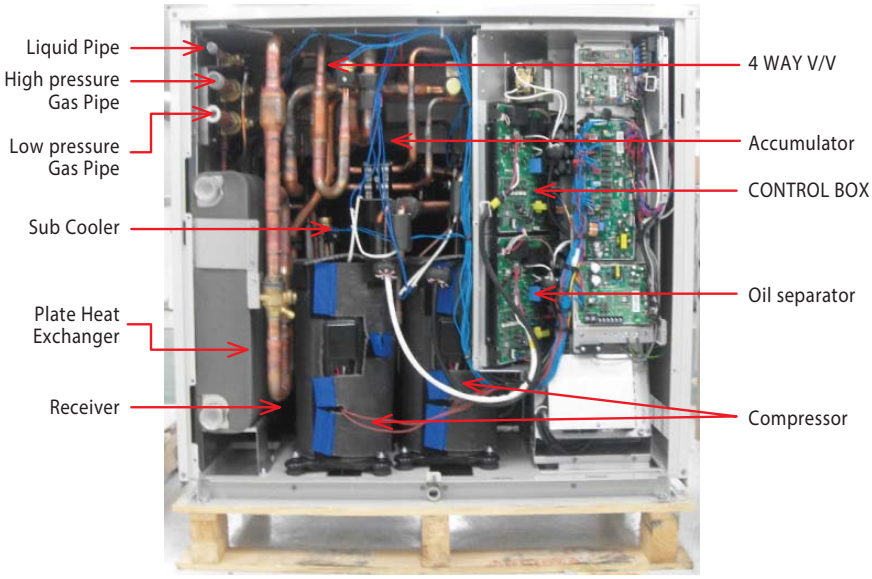
AM038/048/055KXWD✳



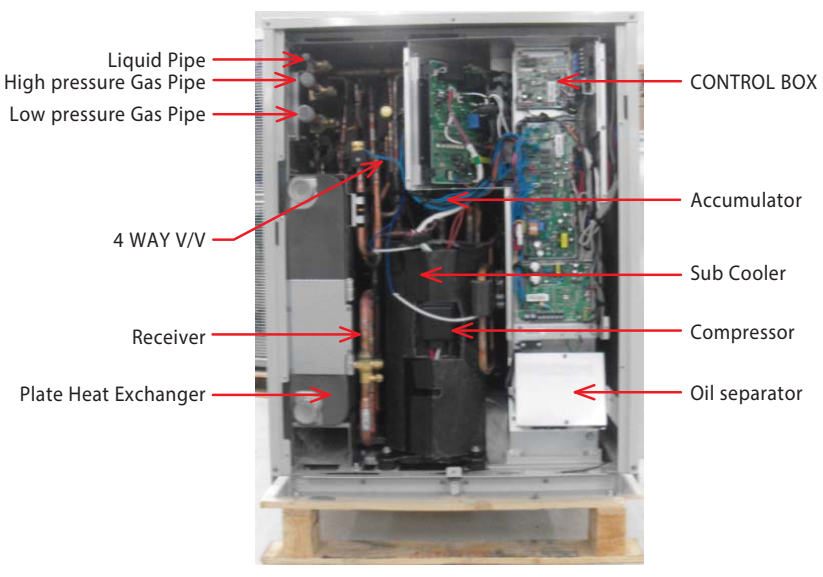
AM072/096/120HXWAF✳



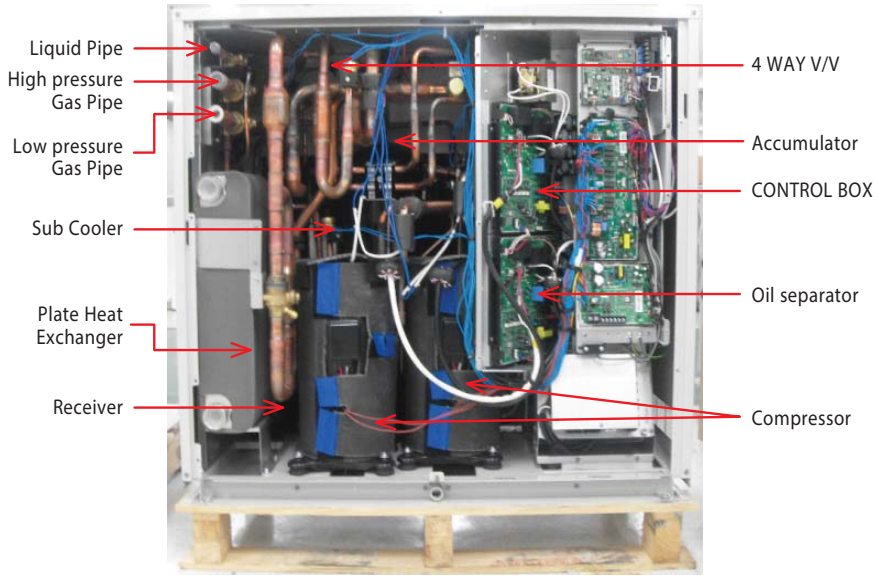
AM192HXWAF✳



AM072/096/120HXWAJ✳



AM192HXWAJ✳



DVM S HP 208-230V

							
	AM072FXVAFH/AA	AM096FXVAFH/AA	AM120FXVAFH/AA	AM144FXVAFH/AA	AM168HXVAFH/AA	AM192HXVAFH/AA	AM072KXVTFH/AA
	HP	HP	HP	HP	HP	HP	HP
Ø,V,Hz	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60
Btu/h	72,000	96,000	120,000	144,000	168,000	192,000	72,000
Btu/h	69,000	92,000	114,000	138,000	160,000	184,000	69,000
Btu/h	81,000	108,000	135,000	162,000	189,000	216,000	81,000
Btu/h	77,000	103,000	129,000	154,000	180,000	206,000	77,000
W	5,350	6,680	9,140	12,340	14,680	17,360	4,450
W	5,430	7,130	9,520	12,400	14,460	17,250	5,010
A	14.6	18.2	24.9	33.7	40.05	47.37	12.1
A	14.8	19.5	26.0	33.8	39.45	47.07	13.7
Btu/Wh	12.9	13.8	12.5	11.2	11.4	11.1	15.5
W/W	4.15	4.23	3.97	3.64	3.83	3.67	4.50
W/W	23.0	26.0	24.2	22.7	24.5	23.0	40.0
-	DS-GB052FBVASG	DS-GB052FBVASG	DS-GB052FBVASG	DS-GB052FBVASG	DS-GB052FBVASG	DS4GJ5066EVASG	DS-GB052FBVASG
kW	5.18	5.18	5.18	5.18	5.18	6.45	5.18
cc/rev	52.0	52.0	52.0	52.0	52.0	66.0	52.0
Btu/h	58,500	58,500	58,500	58,500	58,500	73,500	58,500
EA	1	2	2	2	2	2	2
Liter	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	PV68D(PVE)
Liter	3.9	6.2	6.2	6.2	6.2	6.2	6.2
-	R410A	R410A	R410A	R410A	R410A	R410A	R410A
lb	12.13	16.31	16.31	19.18	24.30	24.30	18.5
mm	700	575	575	575	575	575	575
-	19	29	29	31	35	35	28
-	DB31-00298A	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B
STEP (RPM)	800	1050	1050	1100	1200	1200	1000
EA	1	2	2	2	2	2	2
CMM	205	260	260	270	310	310	240
Inch	3/4"(19.05)	7/8"(22.22)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)
Inch	-	-	-	-	-	-	-
Inch	3/8"(9.52)	3/8"(9.52)	1/2"(12.7)	1/2"(12.7)	5/8"(15.88)	5/8"(15.88)	1/2"(12.7)
mm	880x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765
mm	948x1887x832	1363x1887x832	1363x1887x832	1363x 1887 x832	1363x1887x832	1363x1887x832	1363x1887x832
kg	190	278	278	293	325	333	298
kg	206	300	300	312	342	350	317
°F	23~118	23~118	23~118	23~118	23~118	23~118	23~118
°F	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75

80.6 °F DB/66.2 °F WB, outdoor 95 °F DB, length 50m of piping, fall 0m standard.
68 °F DB, outdoor 44.6 °F DB, length 50m of piping, fall 0ft standard.
ture 44.6 °F standard and outdoor temperature goes down by below zero,
e condition.

Outdoor Unit(Continue)

TYPE			DVM S HR - 208-230V					
								
Model			AM072FXVAFR/AA	AM096FXVAFR/AA	AM120FXVAFR/AA	AM144FXVAFR/AA	AM168HXVAFR/AA	AM192HXVAFR/AA
Mode			HR	HR	HR	HR	HR	HR
Power		Ø,V,Hz	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60	3/208-230/60
Capacity	Cooling (Nominal)	Btu/h	72,000	96,000	120,000	144,000	168,000	192,000
	Cooling (Rated)	Btu/h	69,000	92,000	114,000	138,000	160,000	184,000
	Heating (Nominal)	Btu/h	81,000	108,000	135,000	162,000	189,000	216,000
	Heating (Rated)	Btu/h	77,000	103,000	129,000	154,000	180,000	206,000
Power Consumption (Nonducted, AHRI)	Cooling	W	5,350	6,680	9,140	12,340	14,680	17,360
	Heating	W	5,430	7,130	9,520	12,400	14,460	17,250
current consumption (Nonducted, AHRI)	Cooling	A	14.6	18.2	24.9	33.7	40.05	47.37
	Heating	A	14.8	19.5	26.0	33.8	39.45	47.07
EER (Nonducted, AHRI)	Cooling	Btu/Wh	12.9	13.8	12.5	11.2	11.4	11.1
	Heating	W/W	4.15	4.23	3.97	3.64	3.83	3.67
IEER(AHRI)	Cooling	W/W	23.0	26.0	24.2	22.7	24.5	23.0
Compressor	Model	-	DS-GB052FBVASG	DS-GB052FBVASG	DS-GB052FBVASG	DS-GB052FBVASG	DS-GB052FBVASG	DS4GJ5066EVASG
	Output	kW	5.18	5.18	5.18	5.18	5.18	6.45
	Excluded Volume	cc/rev	52.0	52.0	52.0	52.0	52.0	66.0
	Capacity	Btu/h	58,500	58,500	58,500	58,500	58,500	73,500
	Quantity	EA	1	2	2	2	2	2
Lubricant oil	Type	Liter	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)
	Factory Charging	Liter	3.9	6.2	6.2	6.2	6.2	6.2
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A	R410A
	Factory Charging	lb	12.13	16.31	16.31	19.18	24.30	24.30
FAN	Ø	mm	700	575	575	575	575	575
	MAX STEP	-	19	29	29	31	35	35
	CODE	-	DB31-00298A	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B
	MAX RPM	STEP (RPM)	800	1050	1050	1100	1200	1200
	Quantity	EA	1	2	2	2	2	2
	Airflow	CMM	205	260	260	270	310	310
Piping Connections	Gas	Inch	3/4"(19.05)	7/8"(22.22)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)
	Dis. Gas	Inch	5/8"(15.88)	3/4"(19.05)	7/8"(22.22)	7/8"(22.22)	1+1/8"(28.58)	1+1/8"(28.58)
	Liquid	Inch	3/8"(9.52)	3/8"(9.52)	1/2"(12.7)	1/2"(12.7)	5/8"(15.88)	5/8"(15.88)
DIMENSION	NET	mm	880x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765
	GROSS	mm	948x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832
	NET	kg	195	284	284	299	332	340
	GROSS	kg	211	303	303	318	349	357
Operating Temp. Range	Cooling	°F	23~118	23~118	23~118	23~118	23~118	23~118
	Heating	°F	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75

1. Proper form capacity standard of air conditioning
- Cooling capacity : It is figures that appear in indoor 80.6 °F DB/66.2 °F WB, outdoor 95 °F DB, length 50m of piping, fall 0m standard.
- Heating capacity : It is figures that appear in indoor 68 °F DB, outdoor 44.6 °F DB, length 50m of piping, fall 0ft standard.
2. If proper form heating capacity is outdoor temperature 44.6 °F 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 656ft (Equivalent length 722ft).
5. If the indoor unit is below, height length allows up to 361ft (If over 164ft, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 131ft.

								
	AM072FXVAJH/AA	AM096FXVAJH/AA	AM120FXVAJH/AA	AM144FXVAJH/AA	AM168HXVAJH/AA	AM192HXVAJH/AA	AM072KXVTJH/AA	AM096KXVTJH
	HP	HP	HP	HP	HP	HP	HP	HP
Ø,V,Hz	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60
Btu/h	72,000	96,000	120,000	144,000	168,000	192,000	72,000	96,000
Btu/h	69,000	92,000	114,000	138,000	160,000	184,000	69,000	92,000
Btu/h	81,000	108,000	135,000	162,000	189,000	216,000	81,000	108,000
Btu/h	77,000	103,000	129,000	154,000	180,000	206,000	77,000	103,000
W	5,350	6,600	9,190	12,340	14,680	17,360	4,450	5,940
W	5,430	7,130	9,520	12,400	14,460	17,250	5,010	6,490
A	7.3	9.0	12.5	16.8	20.03	23.68	6.1	8.1
A	7.4	9.7	13.0	16.9	19.73	23.53	6.8	8.9
Btu/Wh	12.9	13.9	12.4	11.2	11.4	11.1	15.5	15.5
W/W	4.15	4.23	3.97	3.64	3.83	3.67	4.50	4.65
W/W	23.0	24.2	23.0	22.7	24.5	23.0	40.0	37.0
-	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB066FAVBSG	DS-GB052FAVBSG	DS-GB066FAV
kW	5.18	5.18	5.18	5.18	5.18	6.39	5.18	6.39
cc/rev	52.0	65.8	65.8	52.0	52.0	66.0	52.0	66.0
Btu/h	58,500	58,500	58,500	58,500	58,500	73,500	58,500	73,500
EA	1	2	2	2	2	2	2	2
Liter	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	PV68D(PVE)	PV68D(PVE
Liter	3.9	6.2	6.2	6.2	6.2	6.2	6.2	6.2
-	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
lb	12.13	16.31	16.31	19.18	24.30	24.30	18.5	18.5
mm	700	575	575	575	575	575	575	575
-	19	29	29	31	35	35	28	29
-	DB31-00298A	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-0328
STEP (RPM)	800	1050	1050	1100	1200	1200	1000	1050
EA	1	2	2	2	2	2	2	2
CMM	205	260	260	270	310	310	240	260
Inch	3/4"(19.05)	7/8"(22.22)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.5
Inch	-	-	-	-	-	-	-	-
Inch	3/8"(9.52)	3/8"(9.52)	1/2"(12.7)	1/2"(12.7)	5/8"(15.88)	5/8"(15.88)	1/2"(12.7)	1/2"(12.7)
mm	880x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x
mm	948x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x8
kg	190	278	278	293	326	334	305	334
kg	206	300	300	312	343	351	324	351
°F	23~118	23~118	23~118	23~118	23~118	23~118	23~118	23~118
°F	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75

30.6 °F DB/66.2 °F WB, outdoor 95 °F DB, length 50m of piping, fall 0m standard.
58 °F DB, outdoor 44.6 °F DB, length 50m of piping, fall 0ft standard.
ture 44.6 °F standard and outdoor temperature goes down by below zero,
e condition.
n heating in the winter, and please buy product for low temperature that heating effect excels at low temperature.

Outdoor Unit(Continue)

TYPE			DVM S HR - 460V						
									
Model			AM072FXVAJR/AA	AM096FXVAJR/AA	AM120FXVAJR/AA	AM144FXVAJR/AA	AM168HXVAJR/AA	AM192HXVAJR/AA	AM216KXVGJR/AA
Mode			HR	HR	HR	HR	HR	HR	HR
Power		Ø,V,Hz	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60	3/460/60
Capacity	Cooling (Nominal)	Btu/h	72,000	96,000	120,000	144,000	168,000	192,000	216,000
	Cooling (Rated)	Btu/h	69,000	92,000	114,000	138,000	160,000	184,000	206,000
	Heating (Nominal)	Btu/h	81,000	108,000	135,000	162,000	189,000	216,000	243,000
	Heating (Rated)	Btu/h	77,000	103,000	129,000	154,000	180,000	206,000	230,000
Power Consumption (Nonducted, AHRI)	Cooling	W	5,350	6,600	9,190	12,340	14,680	17,360	18,730
	Heating	W	5,430	7,130	9,520	12,400	14,460	17,250	17,740
current consumption (Nonducted, AHRI)	Cooling	A	7.3	9.0	12.5	16.8	20.03	23.68	25.6
	Heating	A	7.4	9.7	13.0	16.9	19.73	23.53	24.2
EER (Nonducted, AHRI)	Cooling	Btu/Wh	12.9	13.9	12.4	11.2	11.4	11.1	
	Heating	W/W	4.15	4.23	3.97	3.64	3.83	3.67	3.8
IEER(AHRI)	Cooling	W/W	23.0	24.2	23.0	22.7	24.5	23.0	24.8
Compressor	Model	-	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB052FAVBSG	DS-GB066FAVBSG	DS-GB066FAVB
	Output	kW	5.18	5.18	5.18	5.18	5.18	6.39	6.39
	Excluded Volume	cc/rev	52.0	65.8	65.8	52.0	52.0	66.0	66.0
	Capacity	Btu/h	58,500	58,500	58,500	58,500	58,500	73,500	73,500
	Quantity	EA	1	2	2	2	2	2	2
Lubricant oil	Type	Liter	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	FV68D(PVE)	PV68D(PVE)
	Factory Charging	Liter	3.9	6.2	6.2	6.2	6.2	6.2	6.2
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A	R410A	R410A
	Factory Charging	lb	12.13	16.31	16.31	19.18	24.30	24.30	27.6
FAN	Ø	mm	700	575	575	575	575	575	575
	MAX STEP	-	19	29	29	31	35	35	35
	CODE	-	DB31-00298A	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285B	DB94-03285A
	MAX RPM	STEP (RPM)	800	1050	1050	1100	1200	1200	1200
	Quantity	EA	1	2	2	2	2	2	2
	Airflow	CMM	205	260	260	270	310	310	340
Piping Connections	Gas	Inch	3/4"(19.05)	7/8"(22.22)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)
	Dis. Gas	Inch	5/8"(15.88)	3/4"(19.05)	7/8"(22.22)	7/8"(22.22)	1+1/8"(28.58)	1+1/8"(28.58)	1+1/8"(28.58)
	Liquid	Inch	3/8"(9.52)	3/8"(9.52)	1/2"(12.7)	1/2"(12.7)	5/8"(15.88)	5/8"(15.88)	5/8"(15.88)
DIMENSION	NET	mm	880x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1695x765	1295x1795x765
	GROSS	mm	948x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1887x832	1363x1987x832
	NET	kg	195	284	284	299	333	341	355
	GROSS	kg	211	303	303	318	350	358	377
Operating Temp. Range	Cooling	°F	23~118	23~118	23~118	23~118	23~118	23~118	23~118
	Heating	°F	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75	-13~75

1. Proper form capacity standard of air conditioning
- Cooling capacity : It is figures that appear in indoor 80.6 °F DB/66.2 °F WB, outdoor 95 °F DB, length 50m of piping, fall 0m standard.
- Heating capacity : It is figures that appear in indoor 68 °F DB, outdoor 44.6 °F DB, length 50m of piping, fall 0ft standard.
2. If proper form heating capacity is outdoor temperature 44.6 °F 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 656ft (Equivalent length 722ft).
5. If the indoor unit is below, height length allows up to 361ft (If over 164ft, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 131ft.

el)		AM038KXWDCH/AA	AM048KXWDCH/AA	AM055KXWDCH/AA	AM072HXWAFR/AA	AM096HXWAFR/AA	AM120HXWAFR/AA
	-	HP	HP	HP	HR	HR	HR
	Φ, V, Hz	1Φ,208~230V,60Hz			3Φ,208~230V,60Hz		
	Ton	3	4	5	6	8	10
	Btu/h	38200	47800	54600	72,000	96,000	120,000
		42600	54600	61400	81,000	108,000	135,000
	Btu/h	38000	48000	54500	69,000	92,000	114,000
		42000	54000	61000	77,000	103,000	129,000
	Btu/W*h	15	16.2	14.7	20.20	19.90	12.80
	Btu/W*h	28	28	26	30.10	28.60	22.20
	W/W	5.7	5.6	5.4	6.00	5.90	4.40
	Btu/W*h	-	-	-	26.50	27.40	17.80
	A	20	24	26	16.0	23.0	30.0
		35	40	45	25	40	50
	-	Rotary Inverter	Rotary Inverter	Rotary Inverter	SSC Scroll x 1	SSC Scroll x 1	SSC Scroll x 1
	kW × n	2.82	4.11	4.11	4.96	4.96	4.96
	-	PVE	PVE	PVE	PVE	PVE	PVE
ge	Liter	1.2	1.7	1.7	3.9	3.9	3.9
	-	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger
l)	Φ, inch	1-1/4 FPT	1-1/4 FPT	1-1/4 FPT	1-1/4 FPT	1-1/4 FPT	1-1/4 FPT
	kPa (ftAq)	25(8.4)	20(6.7)	28(9.4)	22(7.3)	30(10.0)	43(14.4)
	LPM(GPM)	40(10.5)	50(13.2)	60(15.8)	80(21.1)	96(25.4)	114(30.1)
	Mpa(Psi)	1.96(285)	1.96(285)	1.96(285)	1.96(285)	1.96(285)	1.96(285)
	Φ, mm	-	-	-	-	-	-
	Φ, inch	3/8	3/8	3/8	3/8	3/8	1/2
	Φ, mm	-	-	-	-	-	-
	Φ, inch	5/8	3/4	3/4	3/4	7/8	1-1/8
	Φ, mm	-	-	-	-	-	-
	Φ, inch	-	-	-	5/8	3/4	3/4
th	m (ft)	75(246)	75(246)	75(246)	170(558)	170(558)	170(558)
ht	m (ft)	30(98)	30(98)	30(98)	50(164)	50(164)	50(164)
	-	R410A	R410A	R410A	R410A	R410A	R410A
	kg (lbs)	1.1(2.4)	1.6(3.5)	1.6(3.5)	5.5(12.1)	5.8(12.8)	6(13.2)
	dB(A)	47	48	49	48	48	50
					70	70	70
	kg (lbs)	73(161)	87(191)	87(191)	160(353)	160(353)	160(353)
	kg (lbs)	80(176)	94(207)	94(207)	167(368)	167(368)	167(368)
D)	mm	750x800x330	750x800x330	750x800x330	770x1000x545	770x1000x545	770x1000x545
	Inch	29.5x31.5x13.0	29.5x31.5x13.0	29.5x31.5x13.0	30.3x39.4x21.5	30.3x39.4x21.5	30.3x39.4x21.5
x-	mm	812x950x392	812x950x392	812x950x392	840x1200x620	840x1200x620	840x1200x620
	Inch	31.9x37.4x15.4	31.9x37.4x15.4	31.9x37.4x15.4	33.1x47.2x24.4	33.1x47.2x24.4	33.1x47.2x24.4
	℃ (°F)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)
	℃ (°F)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)

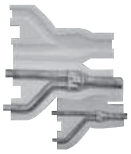
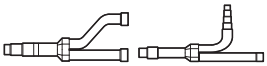
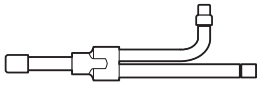
Outdoor Unit(Continue)

TYPE				DVM S Water 460V			
							
Model Name(Samsung Model)				AM072HXWAJR/AA	AM096HXWAJR/AA	AM120HXWAJR/AA	AM192HXWAJR/AA
Mode			-	HR	HR	HR	HR
Power Supply			Φ, V, Hz	3Φ,460V,60Hz			
Performance	Ton		Ton	6	8	10	16
	Capacity (Nominal)	Cooling	Btu/h	72,000	96,000	120,000	192,000
		Heating		81,000	108,000	135,000	216,000
	Capacity (Rated)	Cooling	Btu/h	69,000	92,000	114,000	184,000
		Heating		77,000	103,000	129,000	206,000
	Efficiency Ratings	EER	Btu/W*h	20.20	19.90	15.40	11.60
		IEER	Btu/W*h	30.10	28.60	25.30	18.30
		COP	W/W	6.00	5.90	4.80	4.30
		SCHE	Btu/W*h	26.50	27.40	20.30	20.20
Power	MCA		A	10.0	11.0	15.6	26.2
	MOP			15	15	25	35
Compressor	Type		-	SSC Scroll x 1	SSC Scroll x 1	SSC Scroll x 1	SSC Scroll x 2
	Output		kW × n	4.96	4.96	6.13	4.96 x 2
	Oil	Type	-	PVE	PVE	PVE	PVE
		Initial Charge	Liter	3.9	3.9	3.9	6.2
Condenser	Type		-	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger
	Pipe Size(Female Thread)		Φ, inch	1-1/4 FPT	1-1/4 FPT	1-1/4 FPT	1-1/4 FPT
	Lost Head		kPa (ftAq)	22(7.3)	30(10.0)	43(14.4)	54(18.1)
	Water Flow Rate		LPM(GPM)	80(21.1)	96(25.4)	114(30.1)	190(50.2)
	Water Max. Pressure		Mpa(Psi)	1.96(285)	1.96(285)	1.96(285)	1.96(285)
Piping Connections	Liquid Pipe		Φ, mm	-	-	-	-
			Φ, inch	3/8	3/8	1/2	5/8
	Gas Pipe		Φ, mm	-	-	-	-
			Φ, inch	3/4	7/8	1-1/8	1-1/8
	Discharge Gas Pipe		Φ, mm	-	-	-	-
			Φ, inch	5/8	3/4	3/4	1-1/8
	Installation Limitation	Max. Length	m (ft)	170(558)	170(558)	170(558)	170(558)
		Max. Height	m (ft)	50(164)	50(164)	50(164)	50(164)
Refrigerant	Type		-	R410A	R410A	R410A	R410A
	Factory Charging		kg (lbs)	5.5(12.1)	5.8(12.8)	6(13.2)	9.8(21.6)
Sound	Sound Pressure		dB(A)	48	48	50	51
	Sound Power			70	70	70	73
External Dimension	Net Weight		kg (lbs)	167(368)	167(368)	167(368)	247(545)
	Shipping Weight		kg (lbs)	174(384)	174(384)	174(384)	257(567)
	Net Dimensions (WxHxD)		mm	790x1000x545	790x1000x545	790x1000x545	1120x1000x545
			Inch	31.1x39.4x21.5	31.1x39.4x21.5	31.1x39.4x21.5	44.1x39.4x21.5
	Shipping Dimensions (WxHxD)		mm	840x1200x620	840x1200x620	840x1200x620	1170x1200x620
			Inch	33.1x47.2x24.4	33.1x47.2x24.4	33.1x47.2x24.4	46.1x47.2x24.4
Operating Temp. Range(Water)	Cooling		℃ (°F)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)
	Heating		℃ (°F)	10~45(50~113)	10~45(50~113)	10~45(50~113)	10~45(50~113)

1. Proper form capacity standard of air conditioning
- Cooling capacity : It is figures that appear in indoor 80.6 °F DB/66.2 °F WB, outdoor 95 °F DB, length 50m of piping, fall 0m standard.
- Heating capacity : It is figures that appear in indoor 68 °F DB, outdoor 44.6 °F DB, length 50m of piping, fall 0ft standard.
2. If proper form heating capacity is outdoor temperature 44.6 °F 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 656ft (Equivalent length 722ft).
5. If the indoor unit is below, height length allows up to 361ft (If over 164ft, decide whether to install the PDM kit). If the outdoor unit is below, allowable height length is 131ft.

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	2 ROOM
		MCU-S2NEK1N	2 ROOM
	EEV KIT (1 Room)	MEV-E24SA	Applty 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

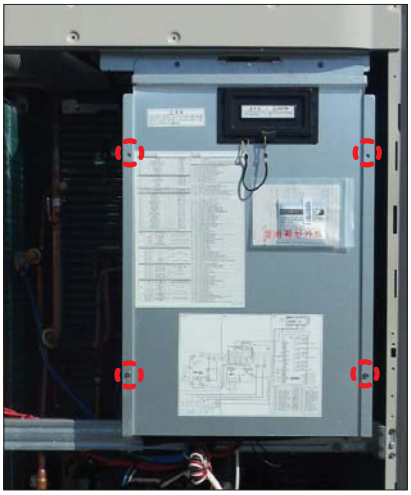
3-1 Necessary Tools

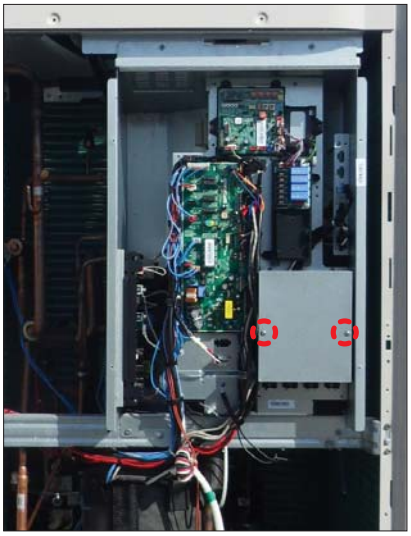
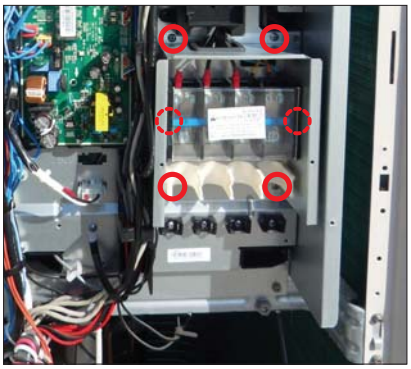
Item	Remark
+SCREW DRIVER	
MONKEY SPANNER	
-SCREW DRIVER	
NIPPER	
ELECTRIC MOTION DRIVER	
L-WRENCH	

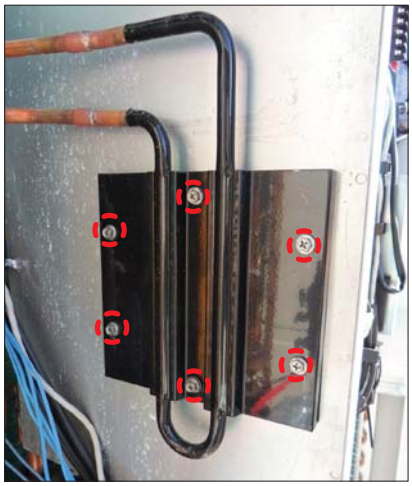
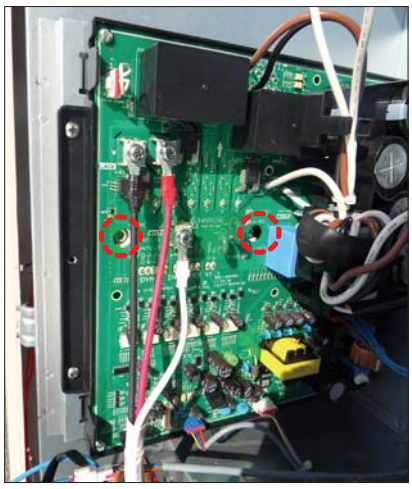
● For "disassembly and assembly" DVM PLUS Ⅳ indoor unit, please refer to the products with the same structures.
Only those products that are not specified elsewhere are described here.

3-2 Disassembly and Reassembly

3-2-1 AM072FXVA✳✳

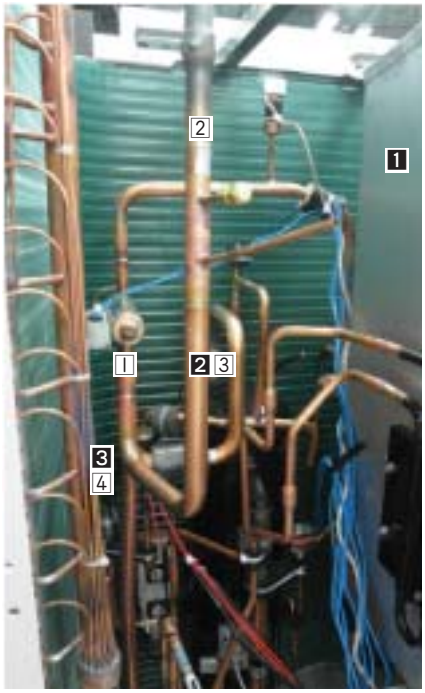
No.	Parts	Procedure	Remark
1	Electrical equipment Part	1) Remove 14 screws from the cabinet (Use + screw driver)	
		2) Remove 4 screws that is fixing and separate Cover Control Box. (Use + Screw driver)	
		3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.	

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

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

Binding Wire 1

■ AM072FXVA✳H

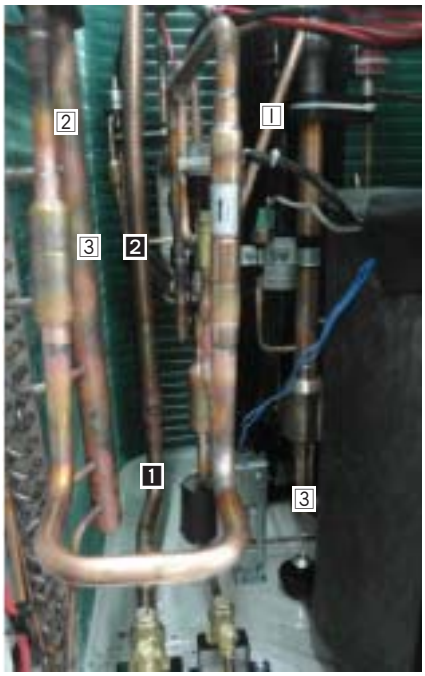


VALVE & SENSOR

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	AM072FXVA✳H	DB62-04154C	
2	AM072FXVA✳H	DB62-03808B	
3	AM072FXVA✳H	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	AM072FXVA✳H	DB62-03808C	
2	AM072FXVA✳H	DB62-03808E	

Binding Wire 2

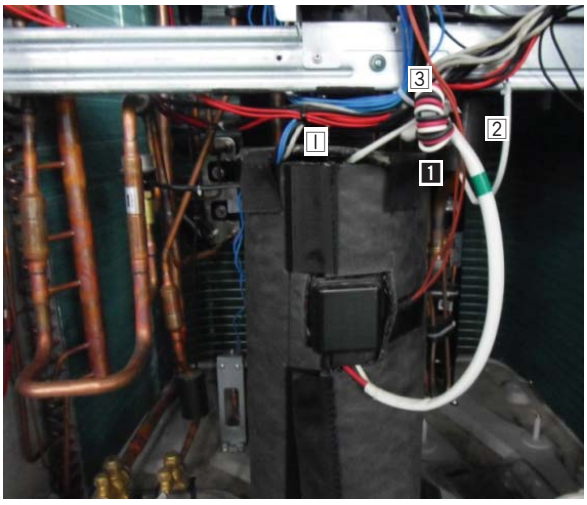
■ AM072FXVA✳H

VALVE & SENSOR

No	Valve & Sensor
1	Low Pressure Sensor

VALVE & SENSOR

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



VALVE & SENSOR

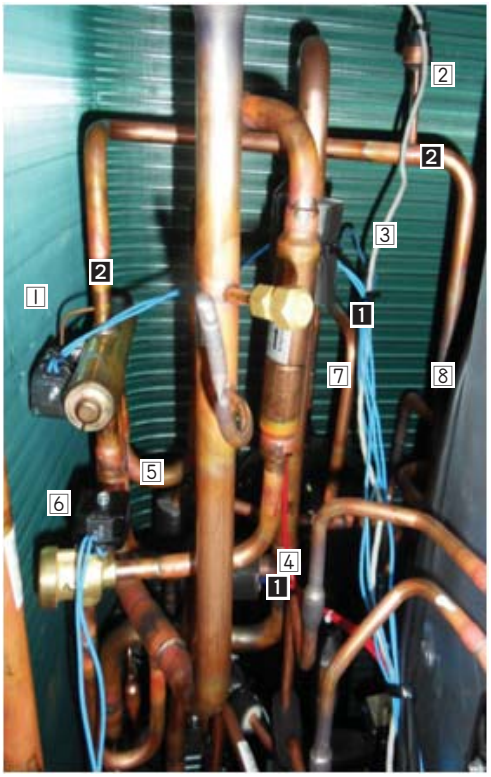
No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor
3	High Pressure Switch

INSULATION

No	Model	Insu Code	Binding Wire
1	AM072FXVA✳H	DB62-03808D	

Binding Wire 1

■ AM072FXVA✳R

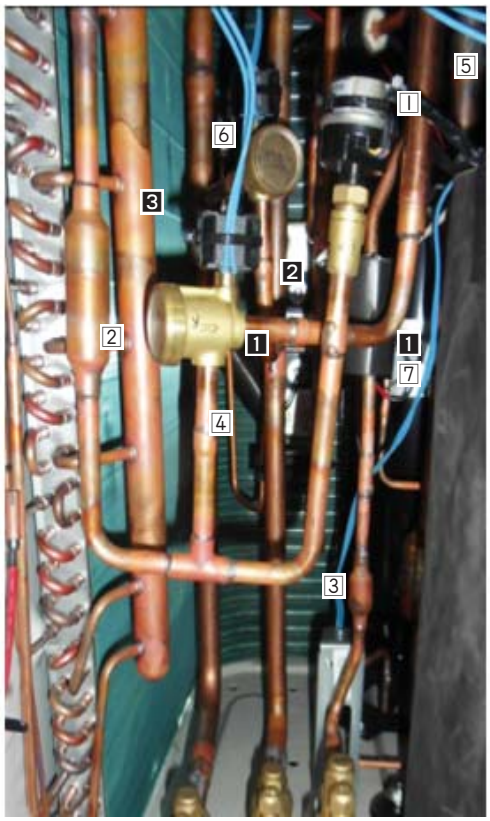


VALVE & SENSOR

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	AM072FXVA✳R	DB62-03808B	
2	AM072FXVA✳R	DB62-04154B	



VALVE & SENSOR

No	Valve & Sensor
1	Main EEV Valve
2	OD 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	AM072FXVA✳R	DB62-03808E	
2	AM072FXVA✳R	DB62-04154B	
3	AM072FXVA✳R	DB62-03808C	

Binding Wire 2

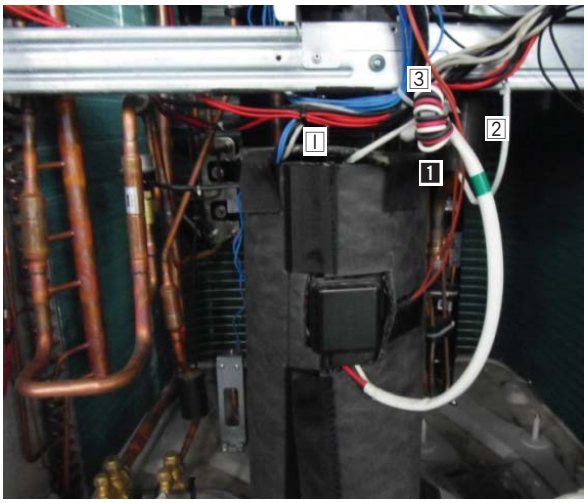
■ AM072FXVA✳R

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

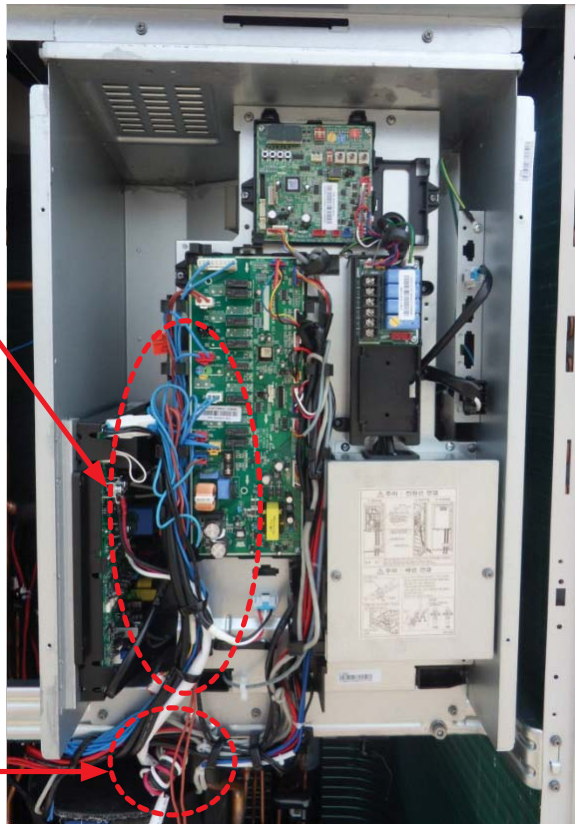
INSULATION

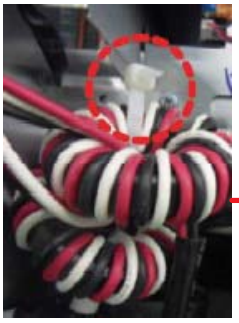
No	Model	Insu Code	Binding Wire
1	AM072FXVA✳R	DB62-03808D	

Binding Wire 3

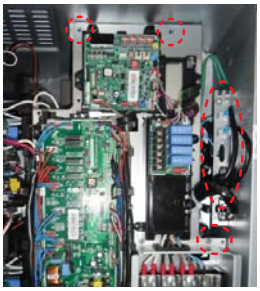
■ AM072FXVA✳✳

► Comp Wire fix by Holder Wire.





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

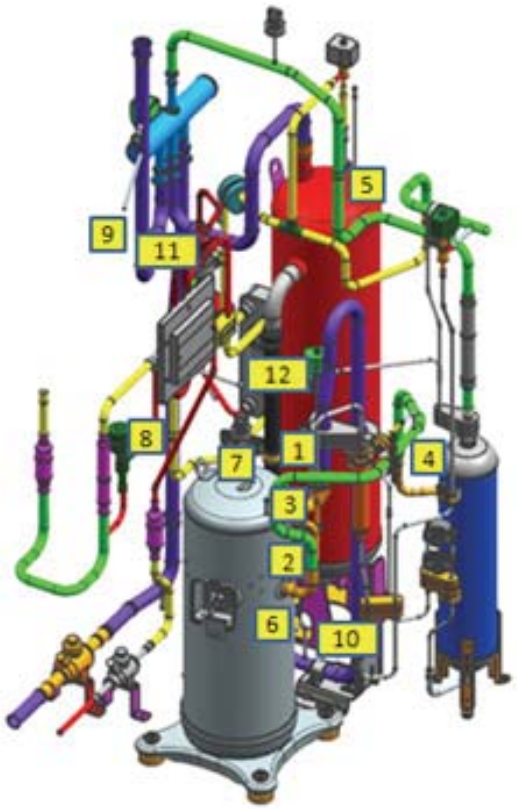
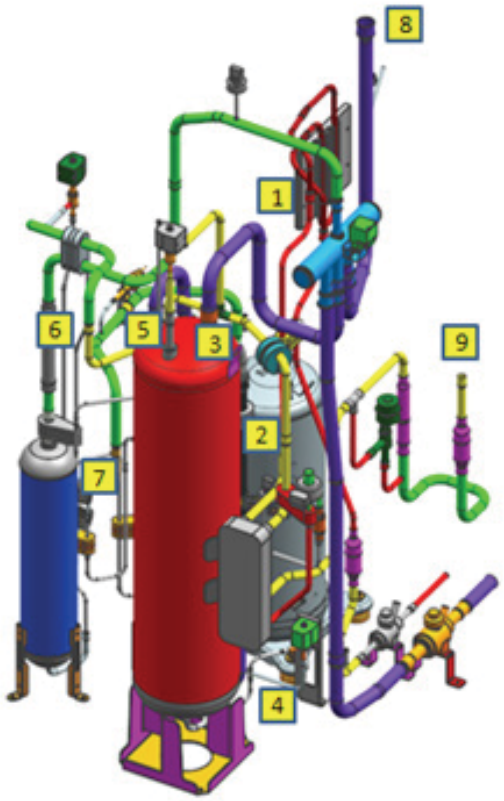


► Separate double layer structure of C/Box after remove 3 screws and connector.

[Reference Sheet]

Pipe Welding Position

■ AM072FXVA✳H

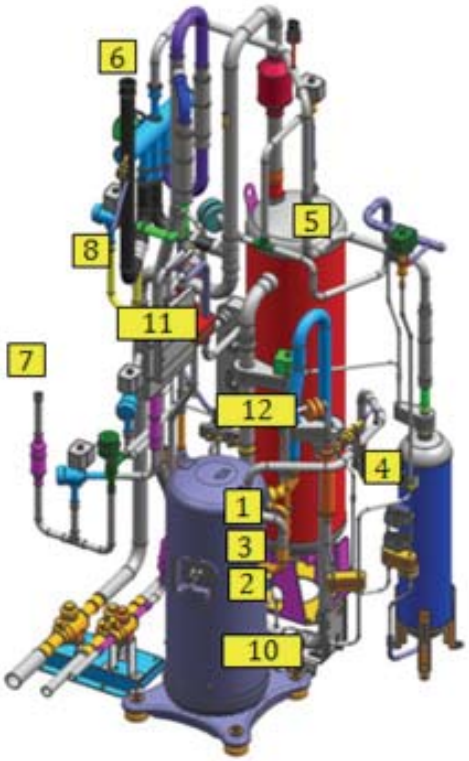
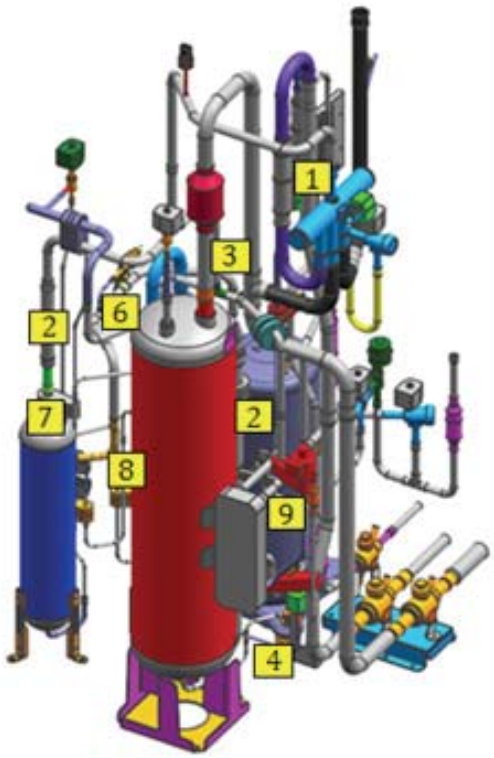
Front Welding Parts	Rear Welding Parts
	

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

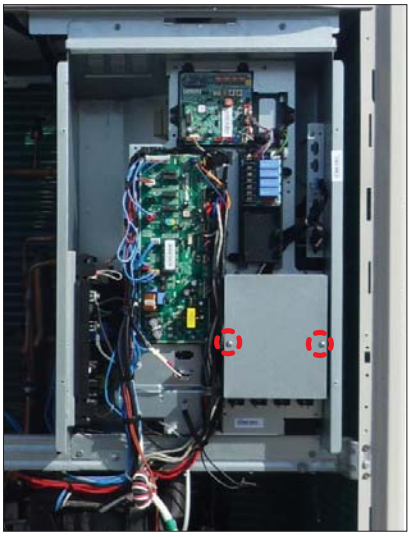
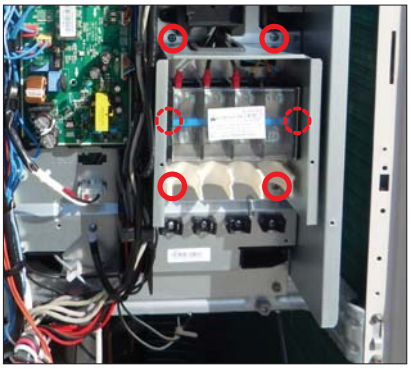
■ AM072FXVA✳R

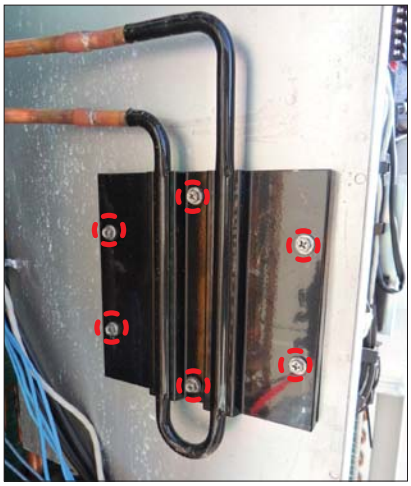
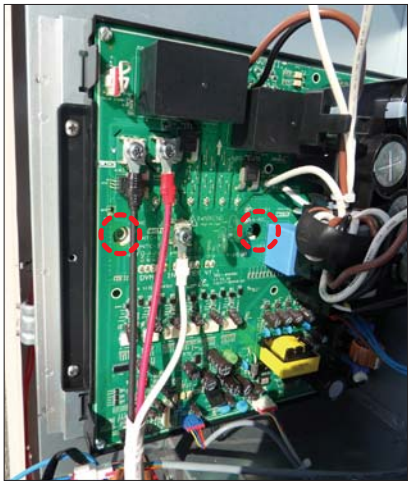
Front Welding Parts	Rear Welding Parts
	

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	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 AM096FXVAJ✳/AM120FXVAJ✳/AM168HXVA✳✳/AM192HXVA✳✳/096KXVA✳✳

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

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

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

Binding Wire 1

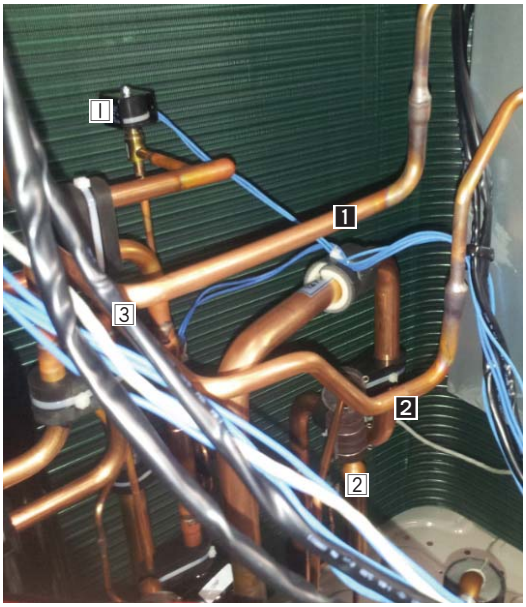
■ AM096FXVAJH/AM120FXVAJH

VALVE & SENSOR

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

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAJH/ AM120FXVAJH	DB62-03808G	



VALVE & SENSOR

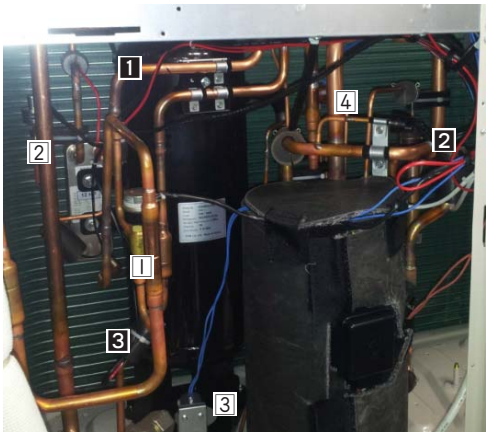
No	Valve & Sensor
1	EVI SOL Valve
2	Low Pressure Sensor
3	Hot Gas Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAJH/ AM120FXVAJH	DB62-04154D	
2	AM096FXVAJH/ AM120FXVAJH	DB62-04154D	

Binding Wire 2

■ AM096FXVAJH/AM120FXVAJH

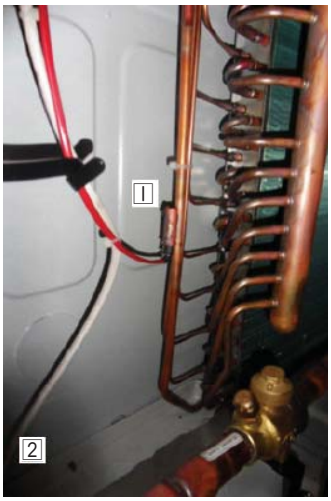


VALVE & SENSOR

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

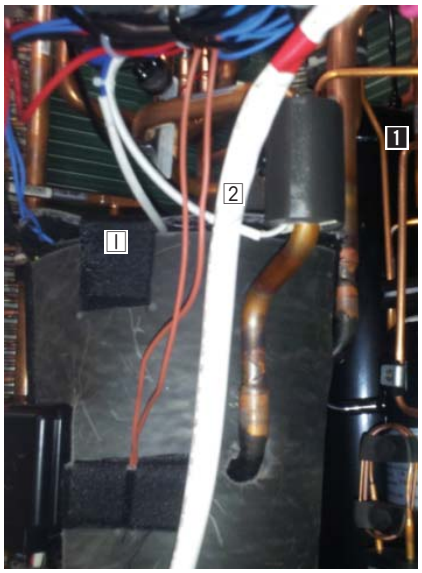
INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAJH/ AM120FXVAJH	DB62-03808C	
2	AM096FXVAJH/ AM120FXVAJH	DB62-03808D	
3	AM096FXVAJH/ AM120FXVAJH	DB62-03808E	



VALVE & SENSOR

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



VALVE & SENSOR

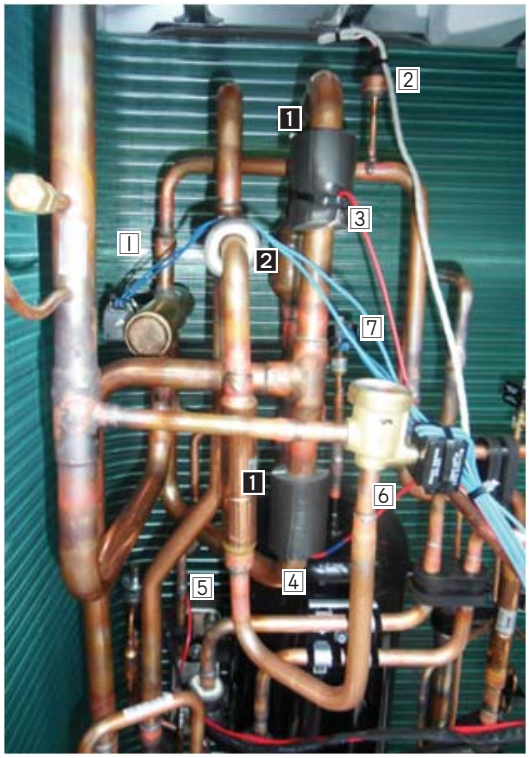
No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAJH/ AM120FXVAJH	DB62-03808C	

Binding Wire 1

■ AM096FXVAJR/AM120FXVAJR

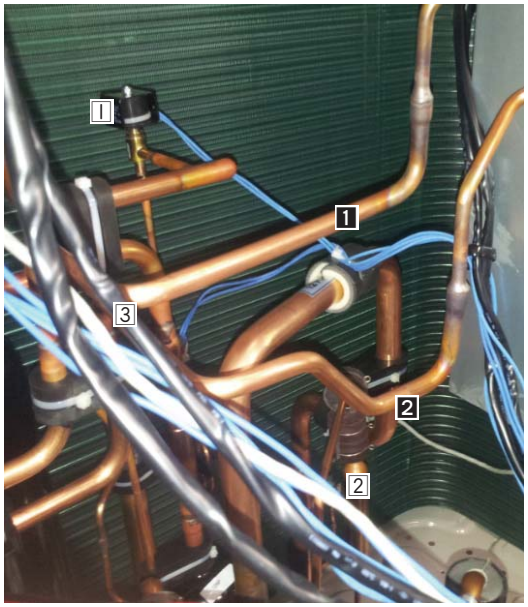


VALVE & SENSOR

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	AM096FXVAJR/ AM120FXVAJR	DB62-03808G	
2	AM096FXVAJR/ AM120FXVAJR	DB62-04154C	



VALVE & SENSOR

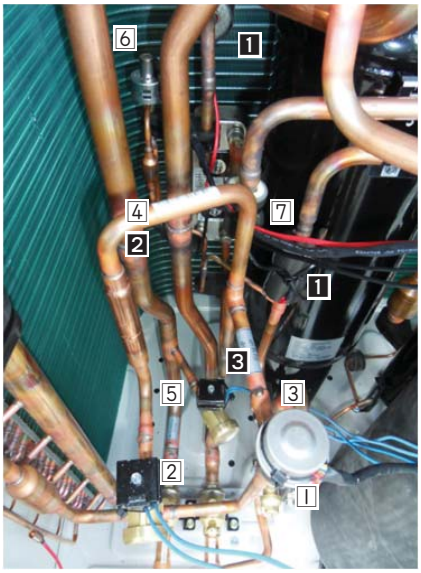
No	Valve & Sensor
1	EVI SOL Valve
2	Low Pressure Sensor
3	Hot Gas Valve

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAJR/ AM120FXVAJR	DB62-04154D	
2	AM096FXVAJR/ AM120FXVAJR	DB62-04154D	

Binding Wire 2

■ AM096FXVAJR/AM120FXVAJR



VALVE & SENSOR

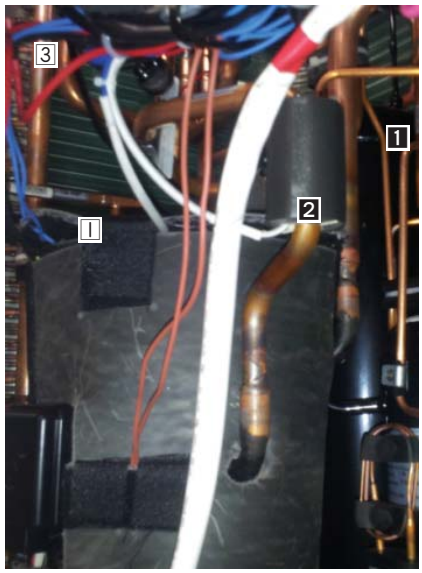
No	Valve & Sensor
1	Main EEV Valve
2	OD EEV Valve
3	Accum Return Valve
4	EVI In Sensor
5	Hot Gas 2 Valve
6	EVI EEV Valve
7	Liquid Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAJR/ AM120FXVAJR	DB62-03808C	
2	AM096FXVAJR/ AM120FXVAJR	DB62-03808E	
3	AM096FXVAJR/ AM120FXVAJR	DB62-04154B	

VALVE & SENSOR

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



VALVE & SENSOR

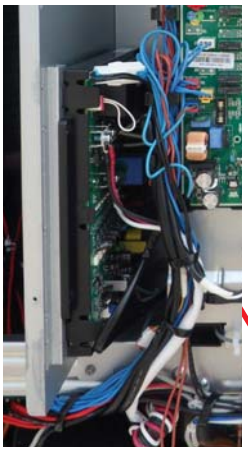
No	Valve & Sensor
1	Comp Top Sensor
2	Discharge Sensor
3	High Pressure Switch

INSULATION

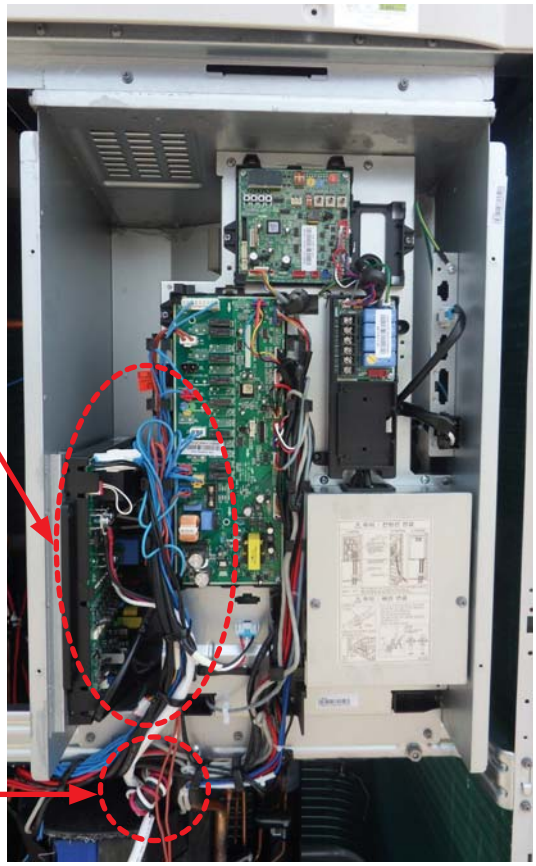
No	Model	Insu Code	Binding Wire
1	AM096FXVAJR/ AM120FXVAJR	DB62-03808C	
2	AM096FXVAJR/ AM120FXVAJR	DB62-03808D	

Binding Wire 3

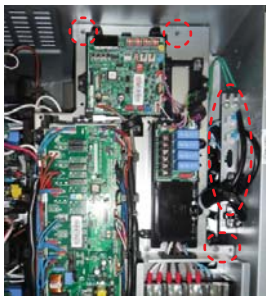
■ AM096FXVAJ✳/AM120FXVAJ✳



► Comp Wire fix by Holder Wire.



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

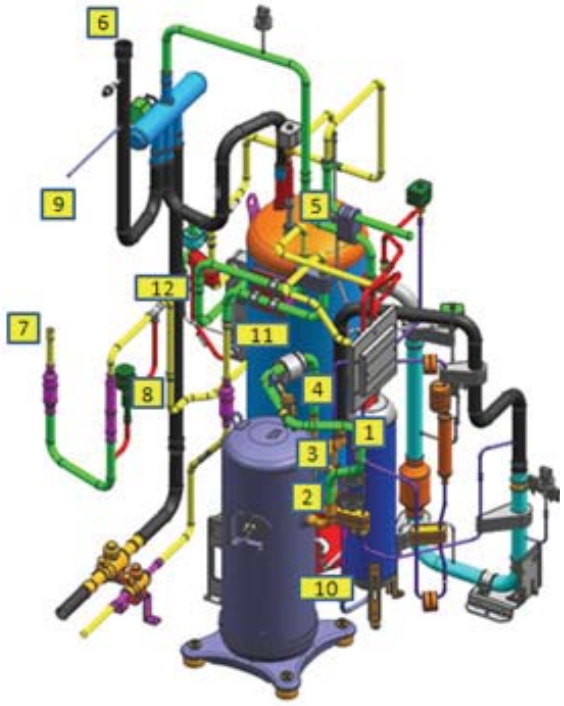
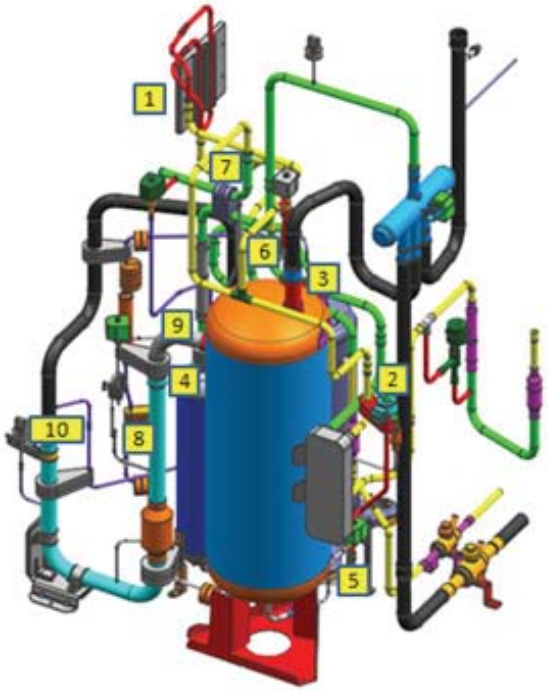


► Separate double layer structure of C/Box after remove 3 screws and connector.

[Reference Sheet]

Pipe Welding Position

■ AM096FXVAJH/AM120FXVAJH

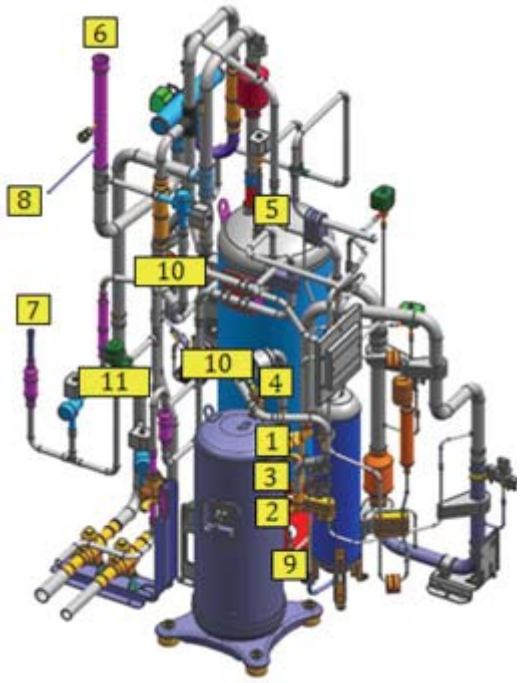
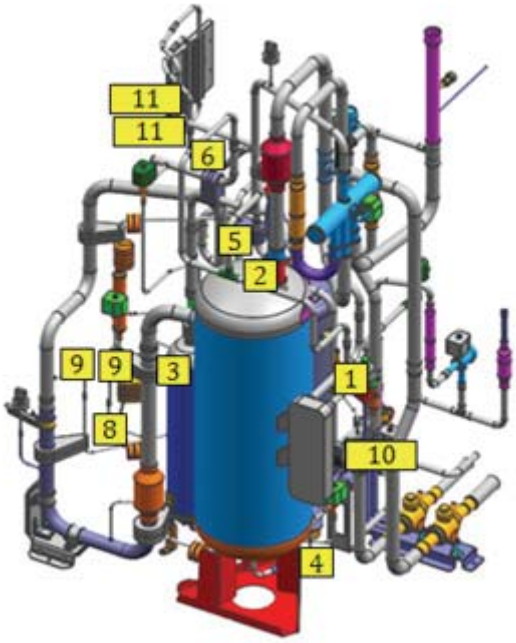
Front Welding Parts	Rear Welding Parts
	

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

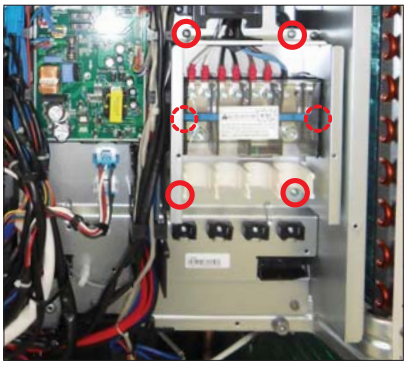
■ AM096FXVAJR/AM120FXVAJR

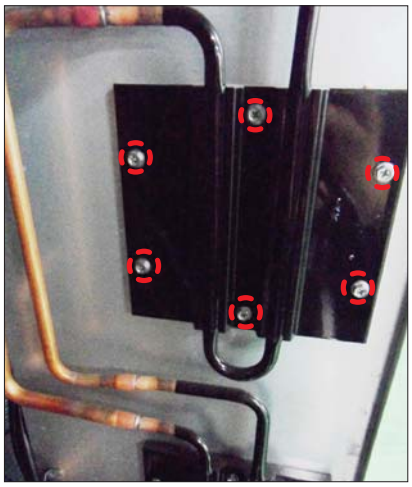
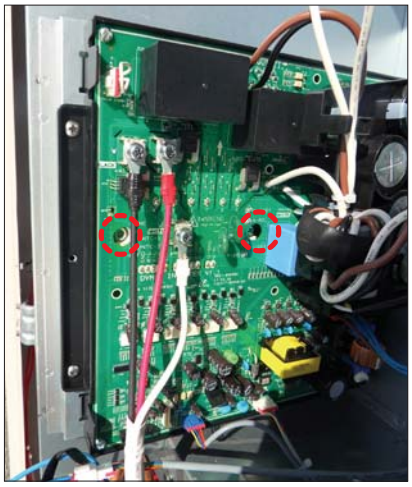
Front Welding Parts	Rear Welding Parts
	

No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp+Suction	1	1	Subcooler+EVI Bypass	2
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 AM096FXVAF✳/AM120FXVAF✳/AM144FXVA✳✳ /072KXVA✳✳

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

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

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

No.	Parts	Procedure	Remark
	< Reference > Heat Sink	To Heat Sink Thermal Grease Spread service work - 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

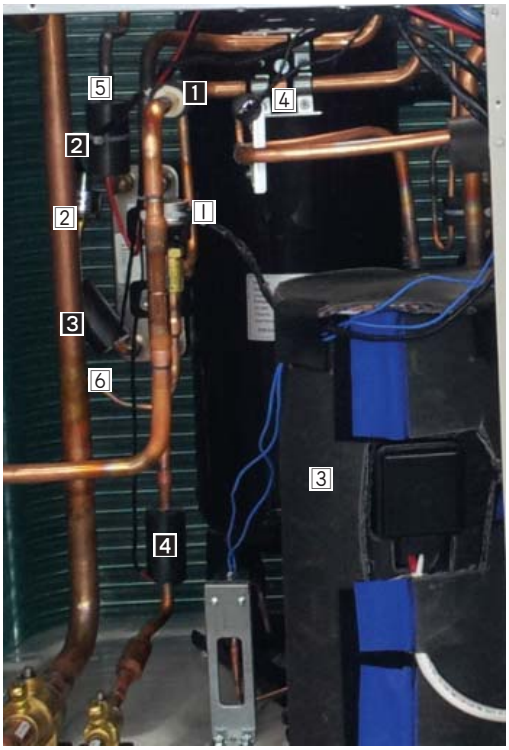
■ AM096FXVAFH/AM120FXVAFH/AM144FXVA✳H/AM168HXVA*H/AM192HXVA✳H

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	AM096FXVAFH/AM120FXVAFH/ AM144FXVA✳H/AM168HXVA*H/ AM192HXVA✳H /AM072KXVA*H/ AM096KXVA✳H	DB62-03808A	



VALVE & SENSOR

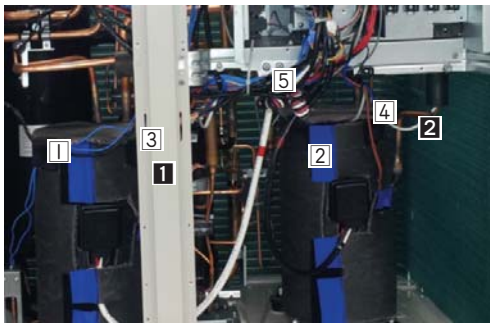
No	Valve & Sensor
1	Expansion Valve
2	EVI EEV Valve
3	Accum Oil Return Valve
4	High Pressure Switch #1
5	EVI Out Sensor
6	EVI In Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAFH/AM120FXVAFH/ AM144FXVA✳H/AM168HXVA✳H/ AM192HXVA✳H /AM072KXVA✳H/ AM096KXVA✳H	DB62-04154B	
2	AM096FXVAFH/AM120FXVAFH/ AM144FXVA✳H/AM168HXVA✳H/ AM192HXVA✳H /AM072KXVA✳H/ AM096KXVA✳H	DB62-03808D	
3	AM096FXVAFH/AM120FXVAFH/ AM144FXVA✳H/AM168HXVA✳H/ AM192HXVA✳H /AM072KXVA✳H/ AM096KXVA✳H	DB62-03808E	
4	AM096FXVAFH/AM120FXVAFH/ AM144FXVA✳H/AM168HXVA✳H/ AM192HXVA✳H /AM072KXVA✳H/ AM096KXVA✳H	DB62-03808C	

Binding Wire 2

■ AM096FXVAFR/AM120FXVAFR/AM144FXVA✳R/AM168HXVA✳R/AM192HXVA✳R

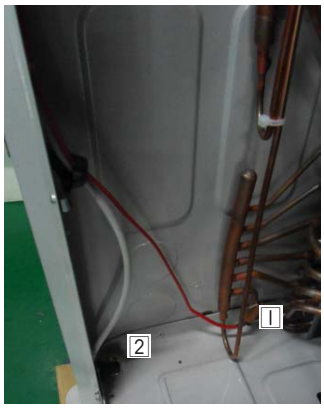


VALVE & SENSOR

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

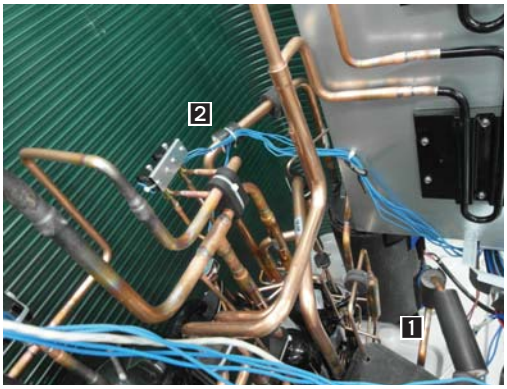
INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HX-VA✳R/AM192HXVA8R	DB62-03808A	
	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HX-VA✳R/AM192HXVA8R	DB62-03808D	
2	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/ AM168HXVA✳R/AM192HXVA8R	DB62-03808C	
	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/ AM168HXVA✳R/AM192HXVA8R	DB62-03808D	



VALVE & SENSOR

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

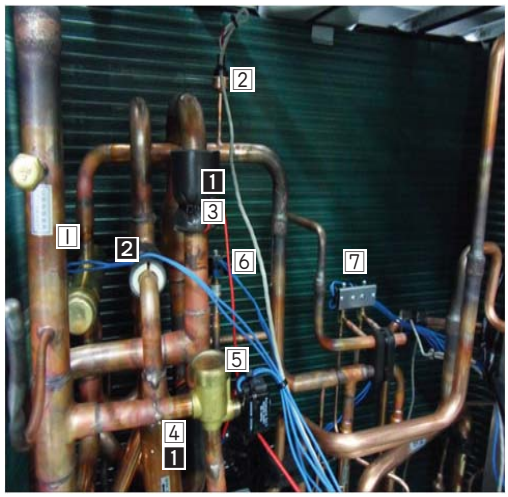


INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R	DB62-04154J	
	AM168HXVA✳R/AM192HXVA*R	DB62-05142C	
2	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R	DB62-04154C	
	AM168HXVA✳R/AM192HXVA✳R	-	

Binding Wire 1

■ AM096FXVAFR/AM120FXVAFR/AM144FXVA✳R/AM168HXVA✳R/AM192HXVA✳R

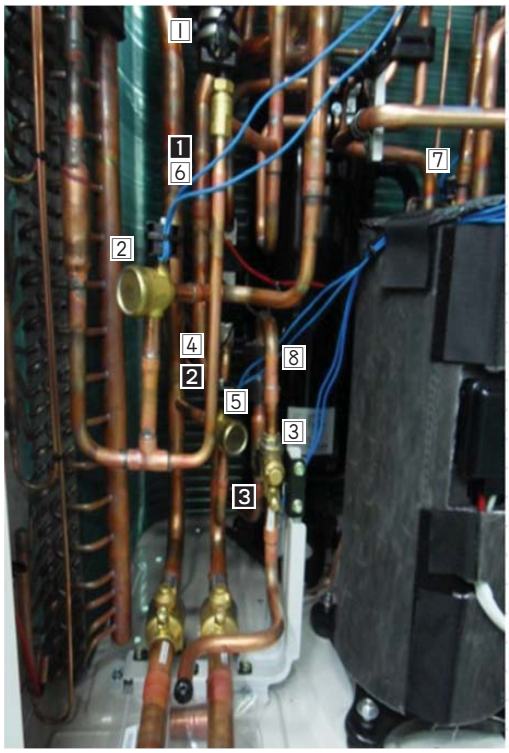


VALVE & SENSOR

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	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVA✳R/ AM192HXVA✳R	DB62-03808A	
2	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVA✳R/ AM192HXVA✳R	DB62-04154C	



VALVE & SENSOR

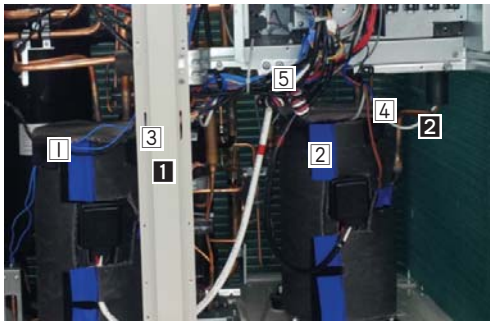
No	Valve & Sensor
1	Main EEV Valve
2	OD EEV Valve
3	ARV Valve
4	EVI In Sensor
5	Hot Gas 2 Valve
6	EVI Out Sensor
7	Hot Gas 1 Valve
8	Liquid Sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVA✳R/ AM192HXVA✳R	DB62-03808C	
2	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVA✳R/ AM192HXVA✳R	DB62-03808E	
3	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVA✳R/ AM192HXVA✳R	DB62-03808C	

Binding Wire 2

■ AM096FXVAFR/AM120FXVAFR/AM144FXVA✳R/AM168HXVA✳R/AM192HXVA✳R

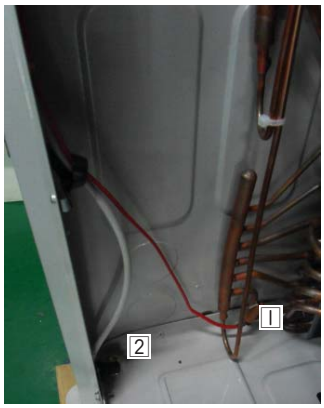


VALVE & SENSOR

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

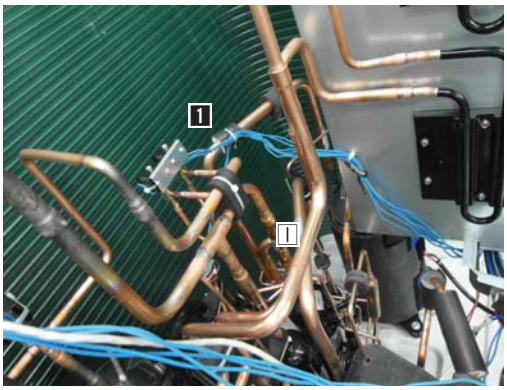
INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVASR/ AM192HXVA✳R	DB62-03808C	
2	AM096FXVAFR/AM120FXVAFR/ AM144FXVA✳R/AM168HXVASR/ AM192HXVA✳R	DB62-03808C	



VALVE & SENSOR

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



VALVE & SENSOR

No	Valve & Sensor
1	Low Pressure Sensor

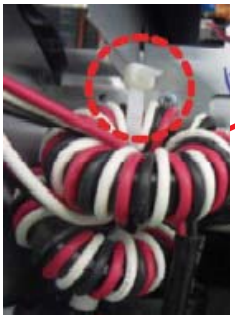
INSULATION

No	Model	Insu Code	Binding Wire
1	AM096FXVAFR/ AM120FXVAFR/ AM144FXVA✳R/ AM168HXVASR/ AM192HXVA✳R	DB62-04154C	

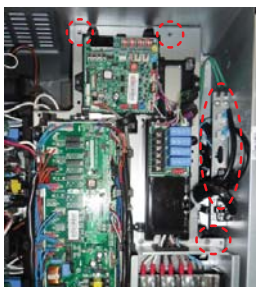
Binding Wire 3

■ AM096FXVAF✳/AM120FXVAF✳/AM144FXVA✳✳/AM168HXVA✳✳/AM192HXVA✳✳/ AM072KXVA*H/ AM096KXVA*H

► Comp Wire fix by Holder Wire.



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

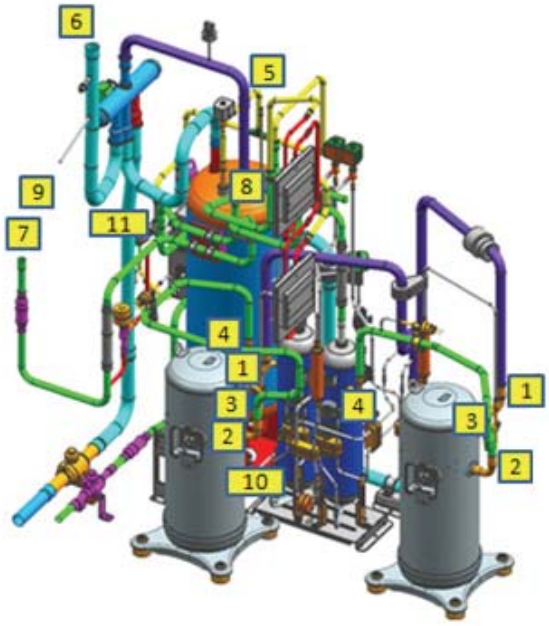
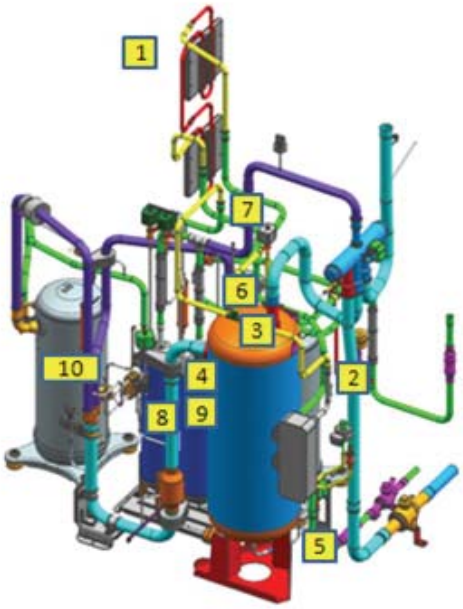


► Separate double layer structure of C/Box after remove 3 screws and connector.

[Reference Sheet]

Pipe Welding Position 4

■ AM096FXVAFH/AM120FXVAFH/AM144FXVAFH/AM144FXVAJH/
AM168HXVAJH/AM168HXVAFH/AM192HXVAJH/AM192HXVAFH/
AM072KXVAFH/AM072KXVTJH/AM096KXVTFH/AM096KXVTJH

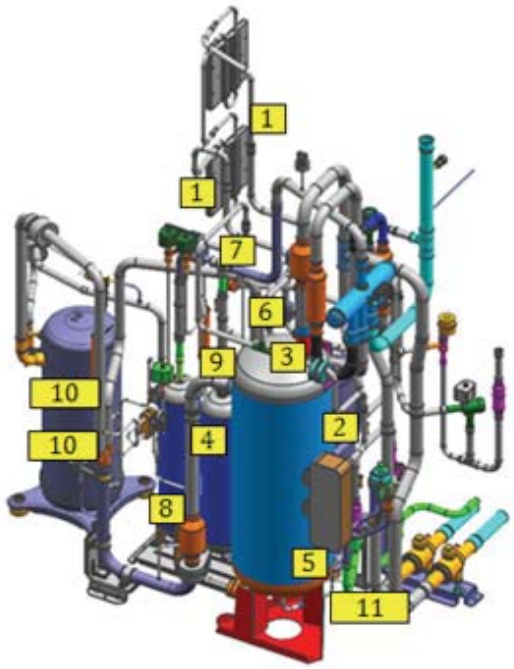
Front Welding Parts	Rear Welding Parts
	

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

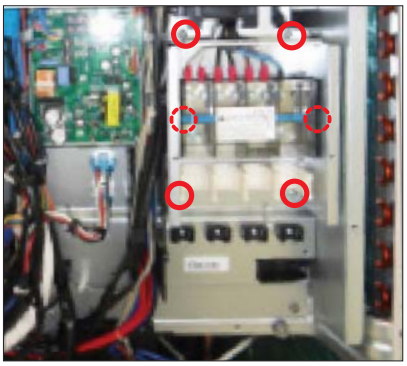
■ AM096FXVAFR/AM120FXVAFR/AM144FXVAFR/AM144FXVAJR
AM168HXVAJR/AM168HXVAFR/AM192HXVAJR/AM192HXVAFR

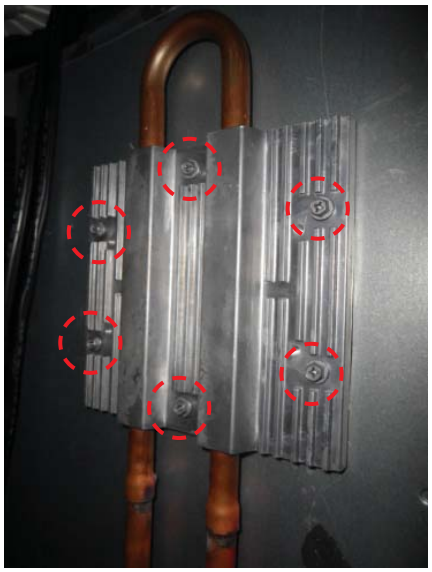
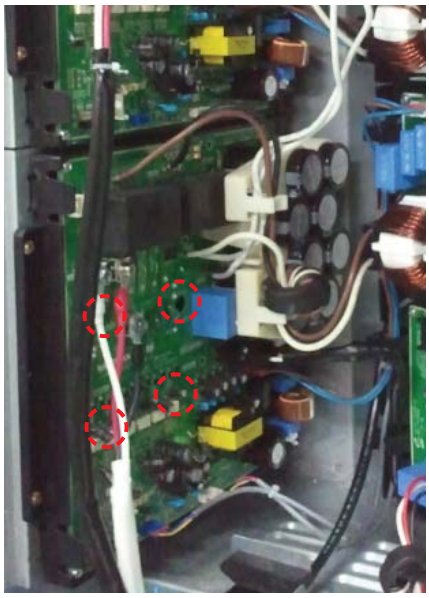
Front Welding Parts	Rear Welding Parts
	

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 AM216KXVGJ✳

No.	Parts	Procedure	Remark
1	Electrical equipment Part	1) 11 screws that is fixing CABINET remove. (Use Screw driver) 1. 9 screw remove of CABINET 2.Press the position with both hands and push down ('A' direction) 3.Carefully remove the CABINET ('B' direction)	
		2) Remove 4 screws that is fixing and separate Cover Control Box. (Use + Screw driver)	
		3) Power, Compressor, Valve, Motor, Sensor connector connected to ASSY PCB remove.	

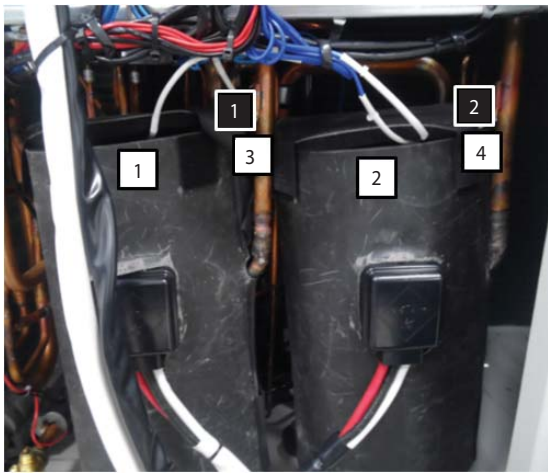
No.	Parts	Procedure	Remark
		4) 2 screws had fixed in terminal block cover when change power terminal block, communication terminal block remove.	
		5) 2 screws had fixed in terminal block after remove 4 screws had fixed to Cabinet for terminal block protection remove.	
		6) 5 screws had fixed to Front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

No.	Parts	Procedure	Remark
		7) 6 screws had fixed on side refrigerant cooling part outside remove . ⚠ Do not separate Heat Sink pulling Assy Piping Cooling piping compulsorily. (It can be a cause of parts damage)	
		8) 2 screws had fixed on side refrigerant cooling part inside remove. ⚠ Use the driver with magnetic.	

No.	Parts	Procedure	Remark
	< Reference > Heat Sink	Spread therminal grease on heat sink - 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

■ AM216KXVGJ✳

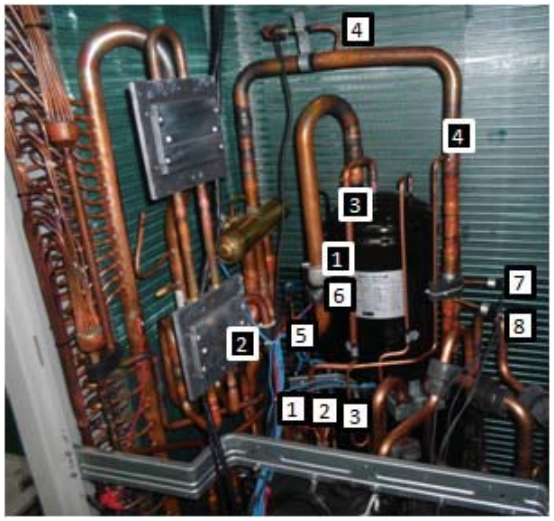


VALVE & SENSOR

No	Valve & Sensor
1	Comp Top #1 Sensor
2	Comp Top #2 Sensor
3	Discharge #1 Sensor
4	Discharge #2 Sensor

INSULATION

No	Insu Code	Binding Wire
1	DB62-03808F	
2	DB62-03808F	



VALVE & SENSOR

No	Valve & Sensor
1	EVI SOL Valve
2	EVI Bypass Valve
3	Hot Gas Valve
4	High Pressure Sensor
5	Low Pressure Sensor
6	Suction Sensor
7	High Pressure Switch #1
8	High Pressure Switch #2

INSULATION

No	Insu Code	Binding Wire
1	DB62-08751F	
2	DB62-04154C	
3	DB62-08752D	
4	DB62-04154D	

Binding Wire 2

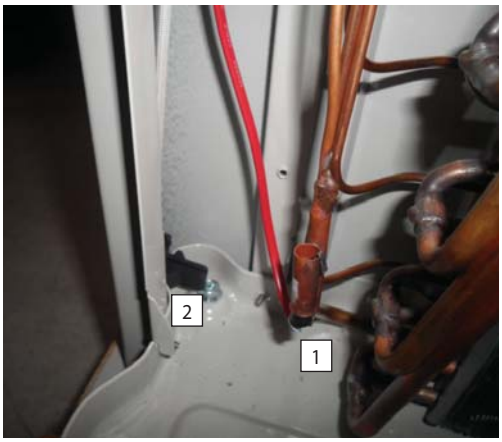
■ AM216KXVGJ✳

VALVE & SENSOR

No	Valve & Sensor Insu Code
1	Accum Oil Return Valve

INSULATION

No	Insu Code	Binding Wire
1	DB62-08752F	



VALVE & SENSOR

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

VALVE & SENSOR

No	Valve & Sensor
1	Expansion Valve
2	Liquid Sensor
3	EVI In Sensor
4	EVI Out Sensor

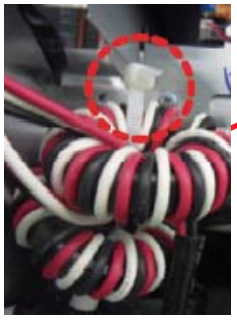
INSULATION

No	Insu Code	Binding Wire
1	DB62-08751G	
2	DB62-08751C	
3	DB62-04154C	

Binding Wire 3

■ AM216KXVG✳

► Comp Wire fix by Holder Wire.



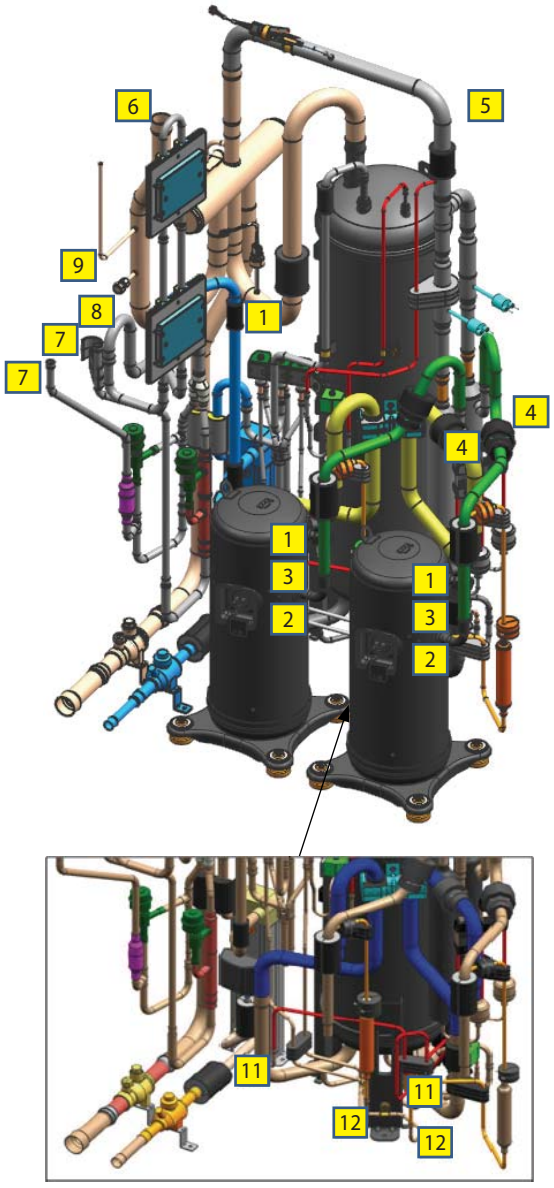
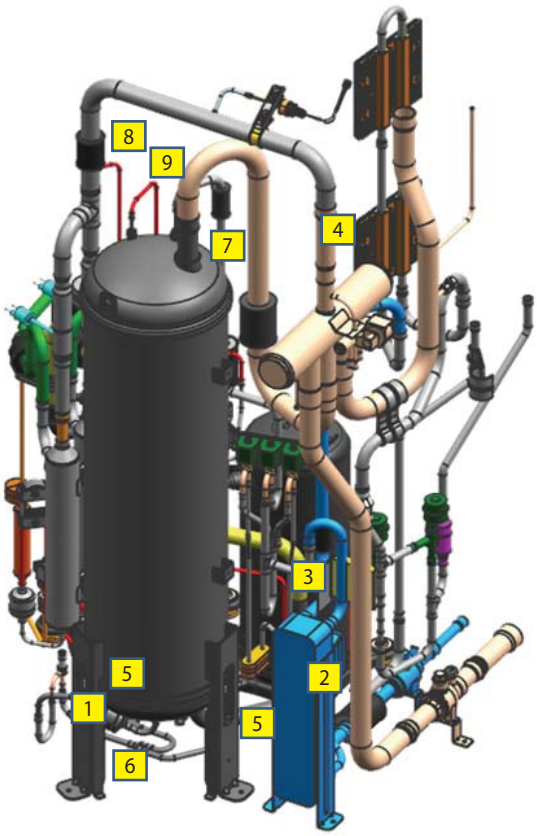
► Fix Comp Wire-Core to Bracket Beam Control Box using large size Cable Tie(350mm).

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

[Reference Sheet]

Pipe Welding Position 4

■ AM216KXVGJH

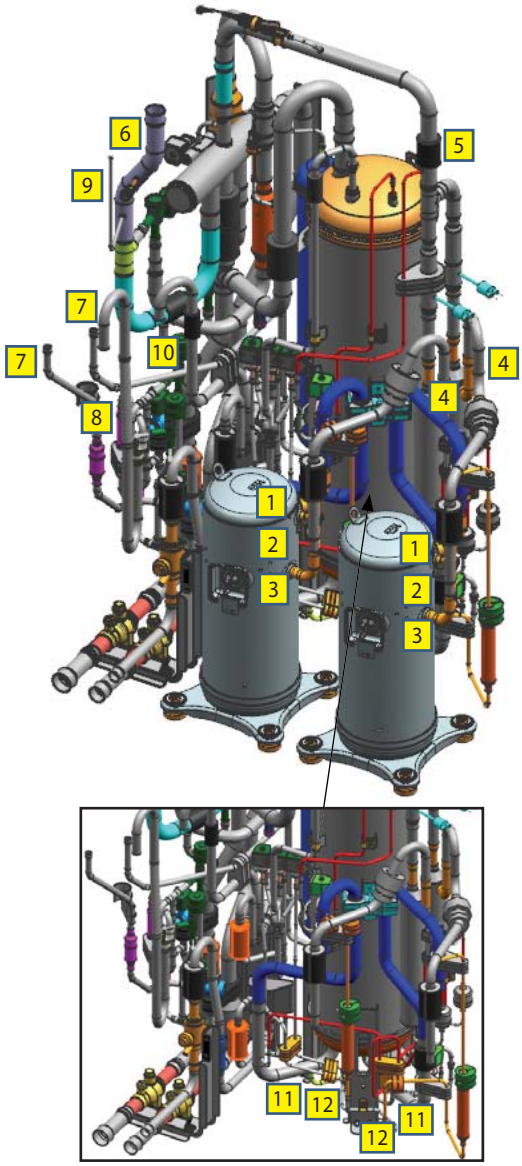
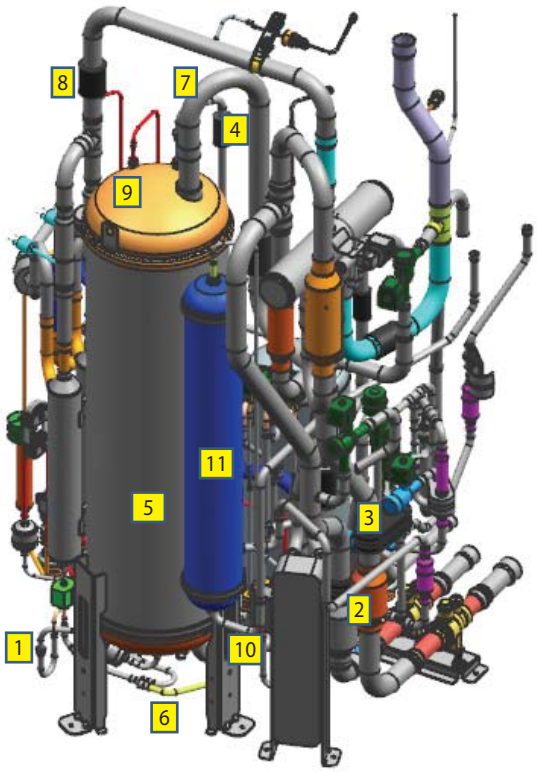
Front Welding Parts	Rear Welding Parts
	

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

[Reference Sheet]

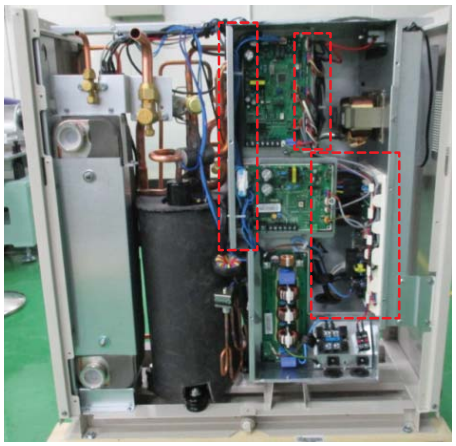
Pipe Welding Position 4

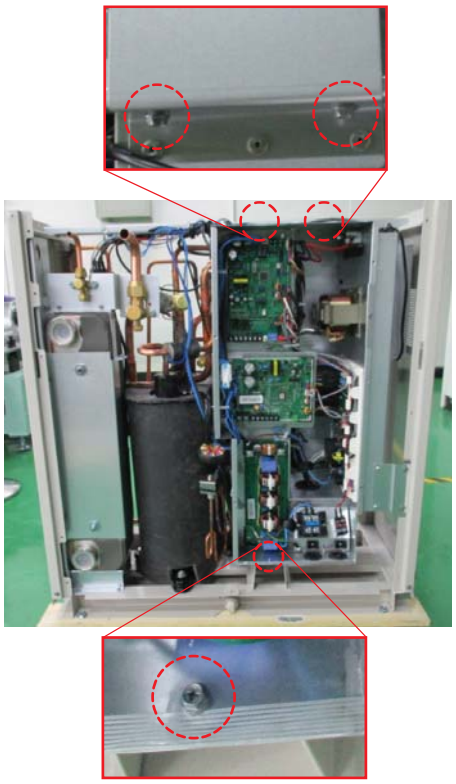
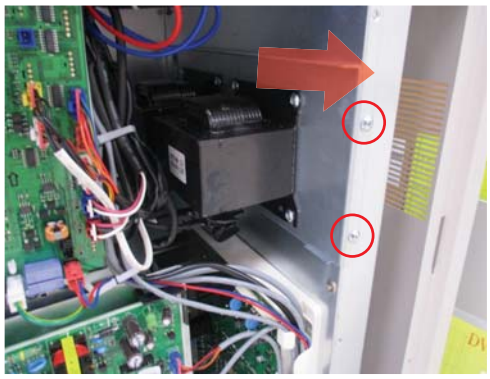
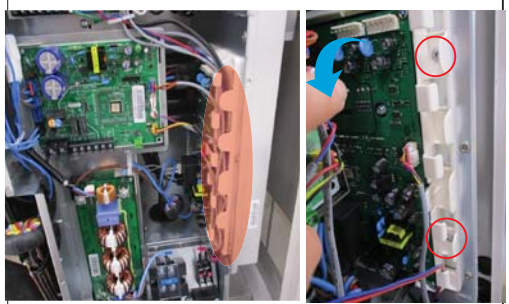
■ AM216KXVGJR

Front Welding Parts	Rear Welding Parts
	

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

■ AM038/048/055KXWD✳✳

No.	Parts	Procedure	Remark
1	Electrical equipment Part	1) Remove the 14 screws which is fixed to the CABINET. (Use +Screw driver)	 
		2) Remove the 4 screws which is fixed to the Cover Control Box and then separate the Cover Control Box. (Use +Screw driver)	
		3) Disconnect the Power, Compressor, Valve, Motor, Sensor connector from the Assy PCB.	

No.	Parts	Procedure	Remark
		4) Remove the 3 bolts from the front part as shown in the picture.	
		5) Remove the 2 screws and then separate the reactor in the direction of arrow as shown in the picture.	
		6) First, separate the wires which is fixed to the holder as shown in the picture. And then remove the 2 screws and separate the PBA in the direction of arrow as shown in the picture.	

Binding Wire 3

■ AM038/048/055KXWD✳✳

VALVE & SENSOR

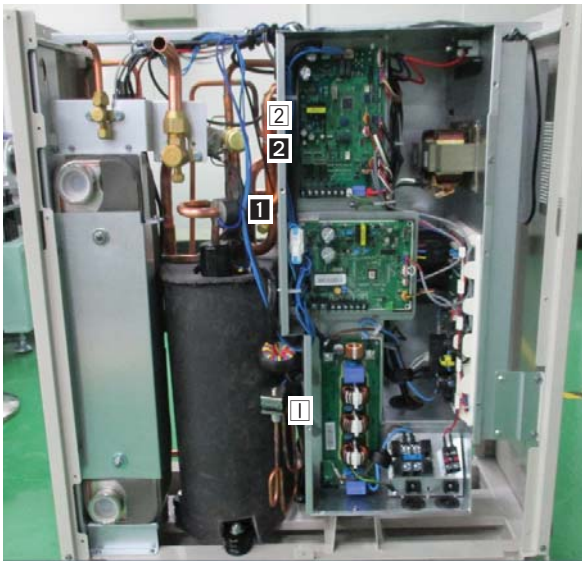
No	Valve & Sensor
1	COND OUT Temperature Sensor
2	MAIN EEV
3	Sub-cooler OUT Temperature Sensor
4	HOT GAS CHARGING VALVE
5	Water Temperature Sensor
6	4WAY VALVE
7	EVI EEV
8	Suction Temperature Sensor
9	High Pressure Switch
10	High Pressure Sensor
11	Low Pressure Sensor

INSULATION

No	Insu Code	Binding Wire
1	DB62-03808E	
2	DB62-03808F	

Binding Wire 2

■ AM038/048/055KXWD✳✳

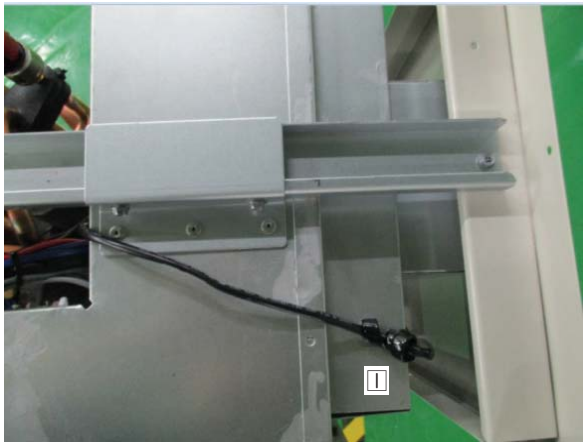


VALVE & SENSOR

No	Valve & Sensor
1	HOT GAS BYPASS VALVE
2	Discharge Temperature Sensor

INSULATION

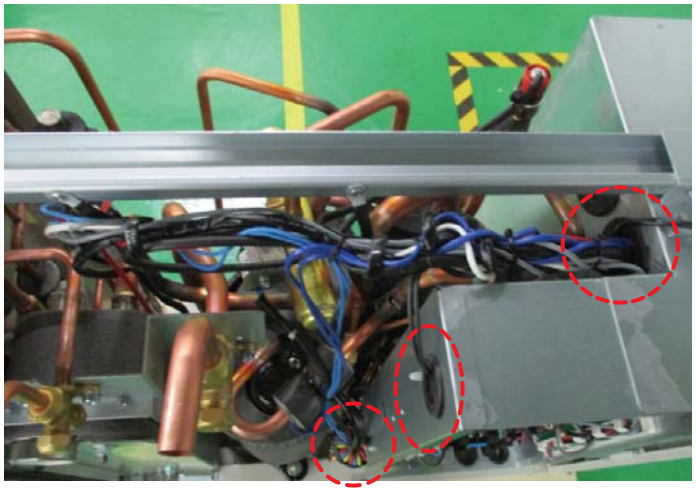
No	Insu Code	Binding Wire
1	DB62-04154N	
2	DB62-03808C	

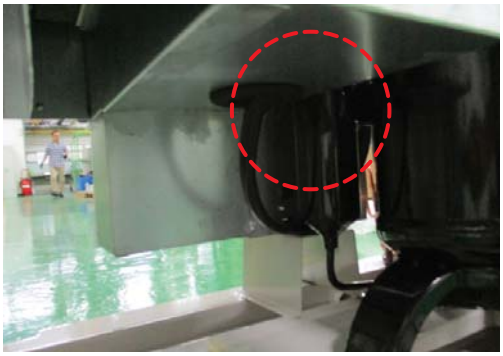


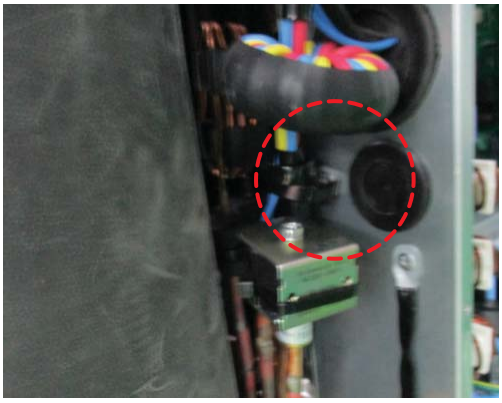
No	Valve & Sensor
1	DC FAN WIRE

Binding Wire 3

■ AM038/048/055KXWD✳✳





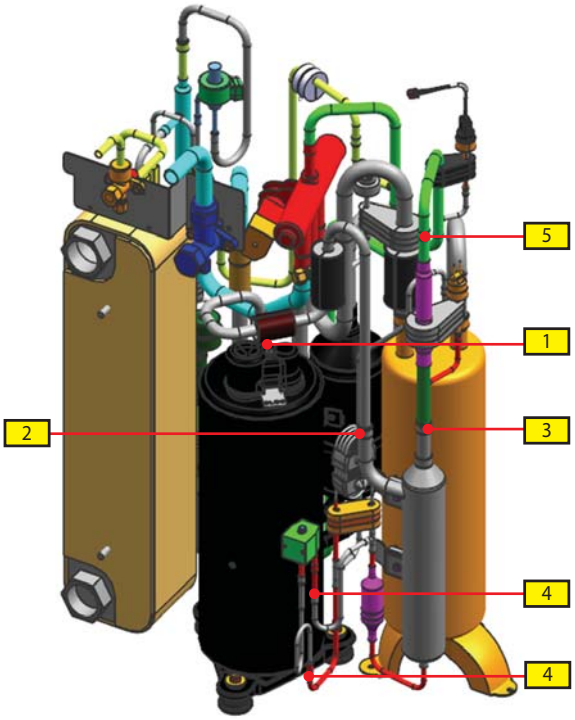
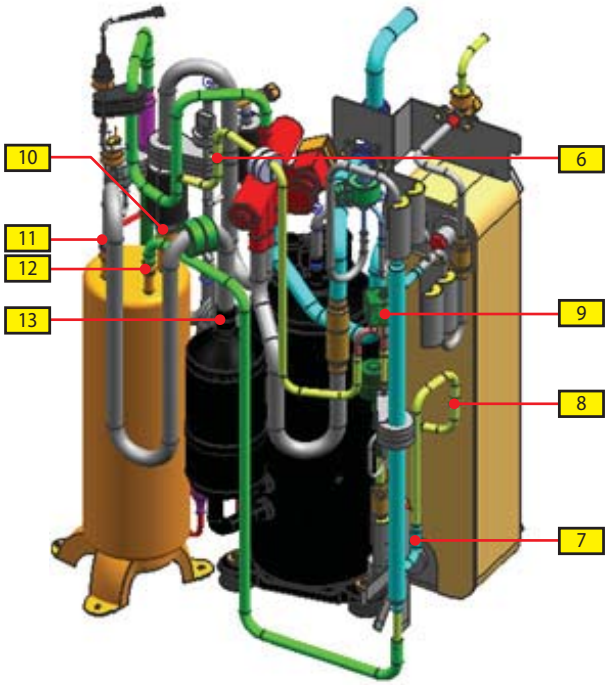


Comp wire and Valve / Sensors wire is passed through the Rubber-Cover and then fix using a Wire Holder.

[Reference Sheet]

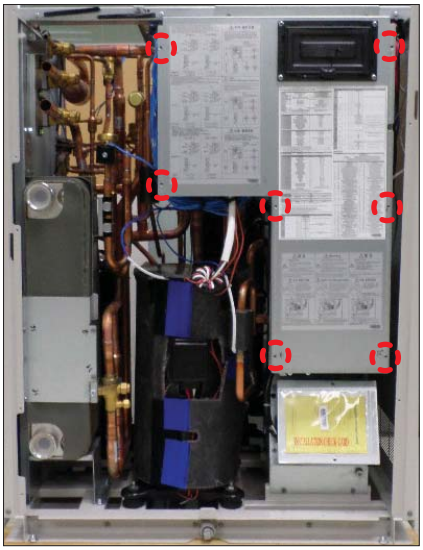
Pipe Welding Position 4

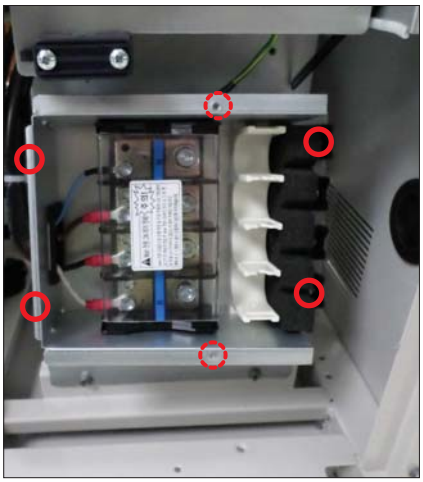
■ AM038/048/055KXWD✳✳

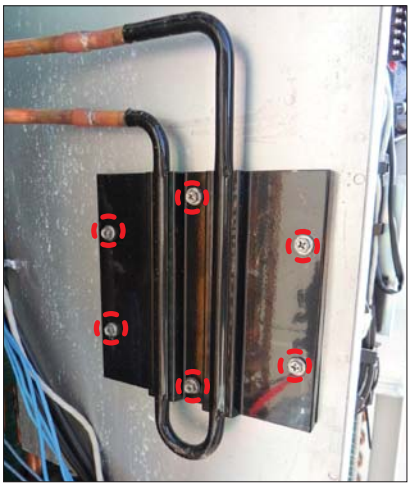
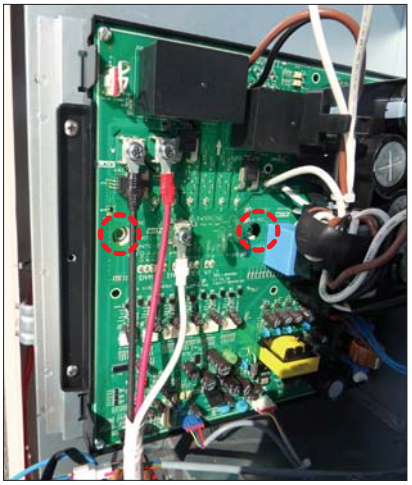
Front Welding Parts	Rear Welding Parts
	

No.	Welding Position	Q'ty	No.	Welding Position	Q'ty
1	Comp + Discharge	1	6	4Way + Hot Gas Charging	1
2	Discharge + Oil Separator	1	7	Hot Gas Charging + Subcooler	1
3	Oil Separator + Oil Sepa Out	1	8	Subcooler + Cond	1
4	Oil Separator + Hot Gas Bypass	2	9	Cond + 4Way	1
5	Oil Sepa Out + 4Way	1	10	4Way + Accum	1
			11	Accum + Suction	1
			12	Accum + Subcooler	1
			13	Comp + Suction	1

3-2-5 AM072/096/120HXWA✳✳

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

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

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

No.	Parts	Procedure	Remark
	< Reference > Heat Sink	To Heat Sink Thermal Grease Spread service work - 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

■ AM072/096/120HXWA✳✳

VALVE & SENSOR

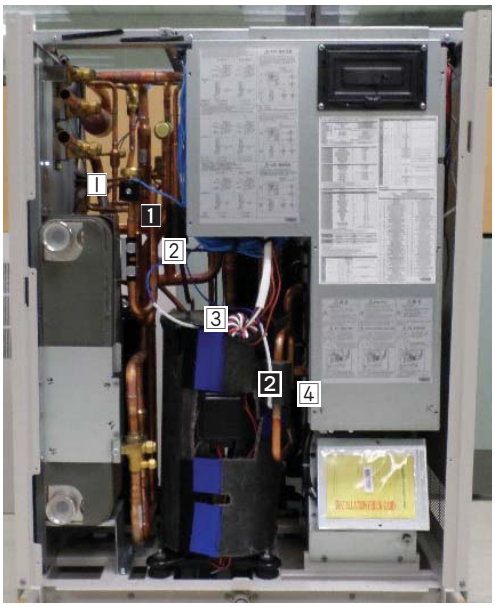
No	Valve & Sensor
1	4WAY Valve
2	High Pressure Sensor
3	Suciton 1 Sensor
4	Suciton 2 Sensor
5	Main Cooling Valve
6	EVI Bypass Valve
7	EVI SOL Valve
8	4WAY Valve
9	High Pressure Sensor
10	Suciton 1 Sensor
11	Suciton 2 Sensor
12	Main Cooling Valve
13	EVI Bypass Valve
14	EVI SOL Valve
15	Main Cooling Valve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

INSULATION

No	Model	Insu Code	Binding Wire
1	AM072/096/120HXWA✳✳	DB62-03808A	
2	AM072/096/120HXWA✳✳	DB62-04154C	
3	AM072/096/120HXWA✳✳	DB62-03808A	
4	AM072/096/120HXWA✳✳	DB62-04154C	
5	AM072/096/120HXWA✳✳	DB62-03808A	
6	AM072/096/120HXWA✳✳	DB62-04154C	

Binding Wire 2

■ AM072/096/120HXWA✳✳



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	AM072/096/120HXWA✳✳	DB62-04154A	
2	AM072/096/120HXWA✳✳	DB62-03808D	

VALVE & SENSOR

No	Valve & Sensor
1	Water temp. sensor

Binding Wire 3

■ AM072/096/120HXWA✳✳

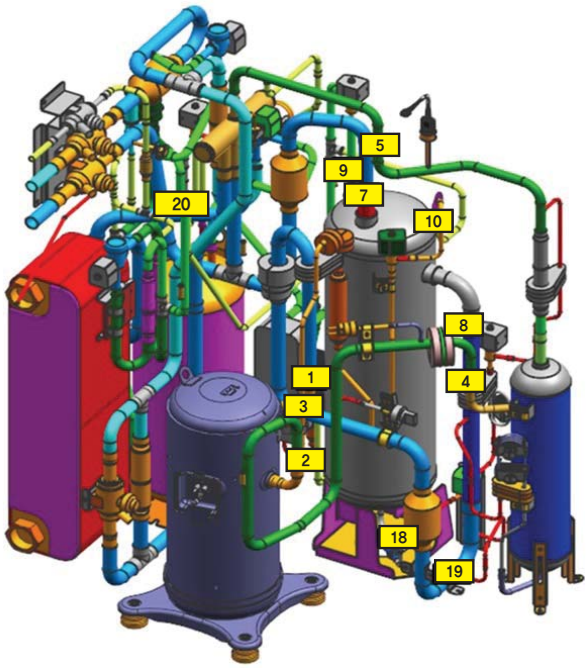
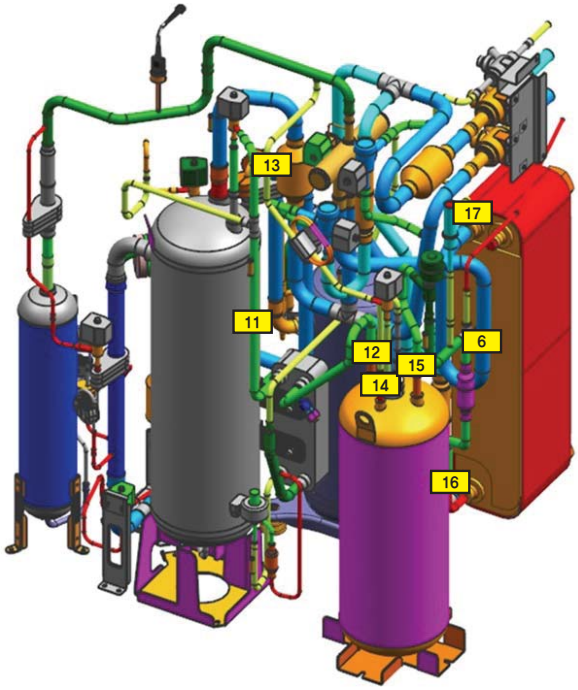
► Comp wire & valve,sensor wires fix by Holder wire with cover bushing hole.

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

[Reference Sheet]

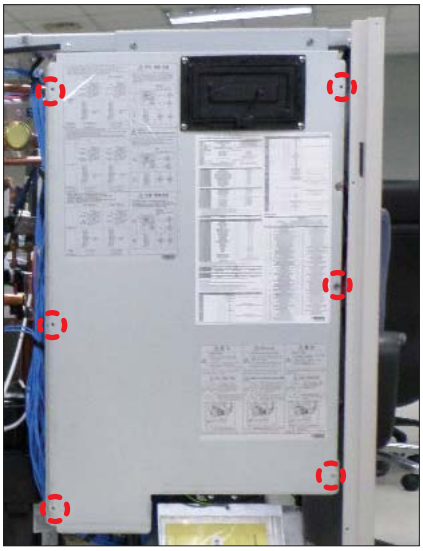
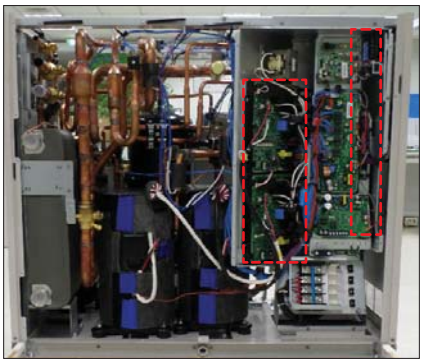
Pipe Welding Position 4

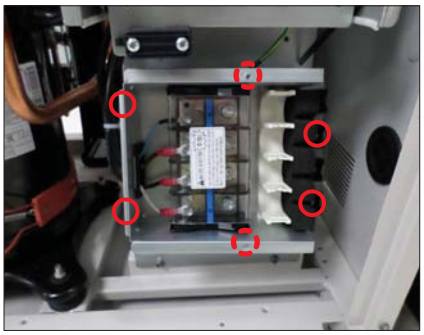
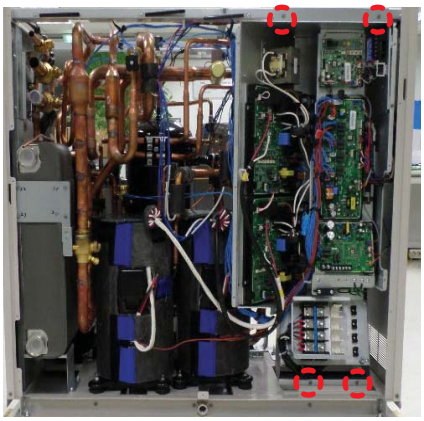
■ AM072/096/120HXWA✳✳

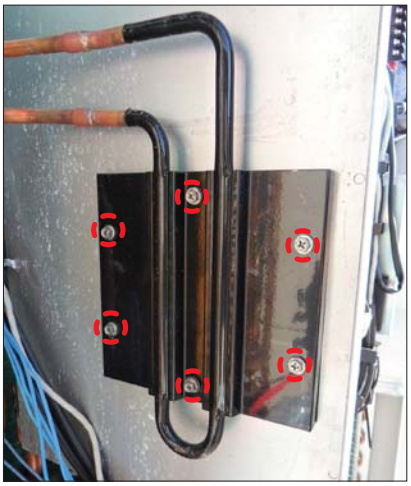
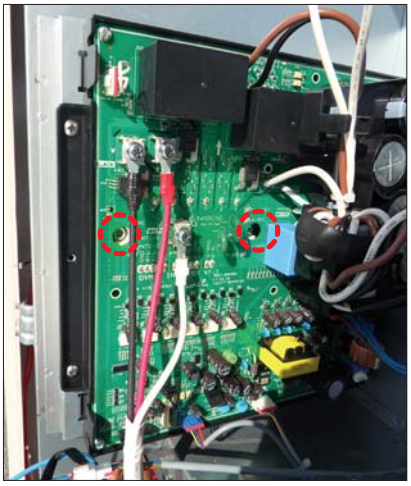
Front Welding Parts	Rear Welding Parts
	

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

3-2-6 AM192HXWA✳✳

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

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

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

Binding Wire 1

■ AM192HXWA✳✳

VALVE & SENSOR

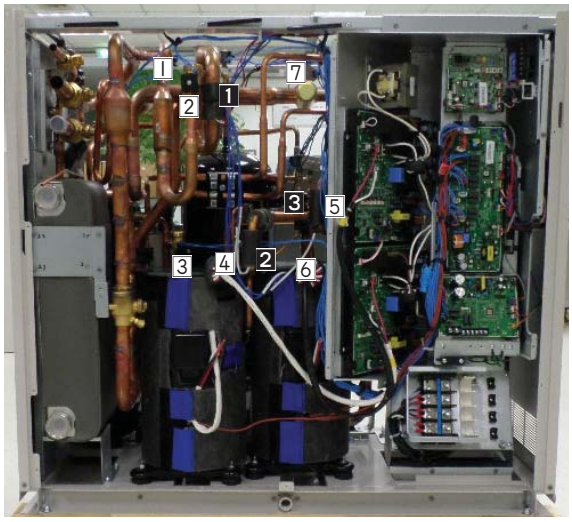
No	Valve & Sensor
1	Low pressure sensor
2	ACCUM. Return valve
3	HOT GAS #1 valve
4	High pressure sensor
5	EVI valve
6	SUCTION #2 temp. sensor
7	Subcooler inlet temp. sensor
8	Liquid temp. sensor
9	HOT GAS #2 valve
10	Main EEV
11	COND OUT temp. sensor
12	Bypass valve
13	High pressure sensor

INSULATION

No	Model	Insu Code	Binding Wire
1	AM192HXWA✳✳	DB62-04154A	
2	AM192HXWA✳✳	DB62-03808C	
3	AM192HXWA✳✳	DB62-03808E	
4	AM192HXWA✳✳	DB62-03808D	
2	AM192HXWA✳✳	DB62-03808D	

Binding Wire 2

■ AM192HXWA✳✳



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	AM192HXWA✳✳	DB62-03808A	
2	AM192HXWA✳✳	DB62-03808D	
3	AM192HXWA✳✳	DB62-03808D	

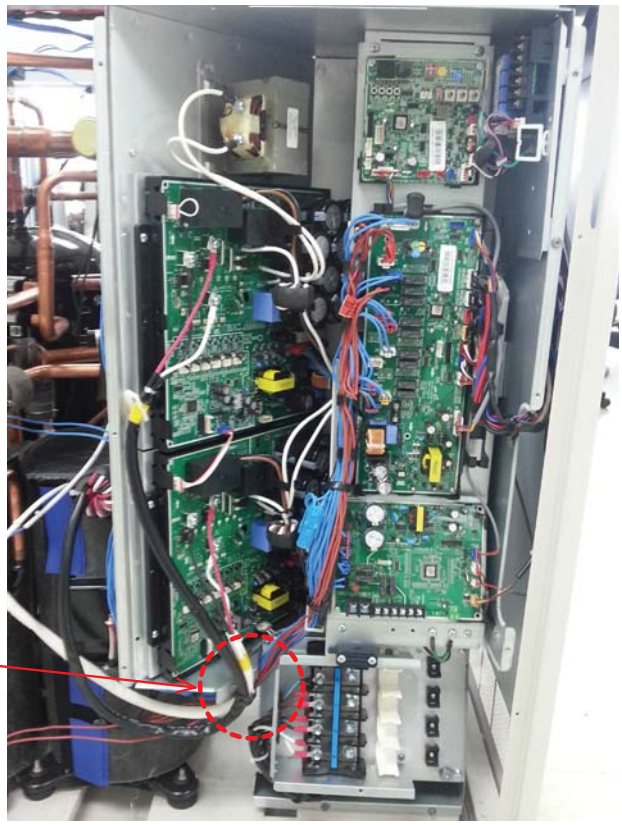
VALVE & SENSOR

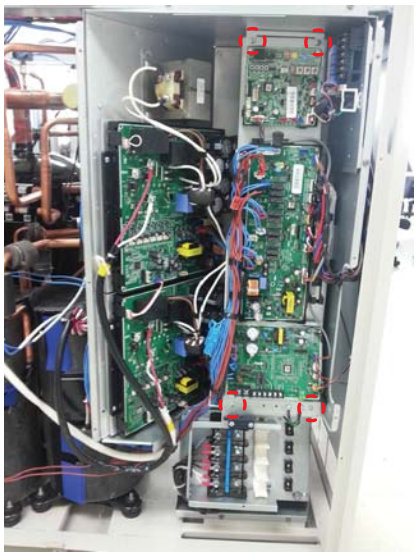
No	Valve & Sensor
1	Water temp. sensor

Binding Wire 3

■ AM192HXWA✳✳

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



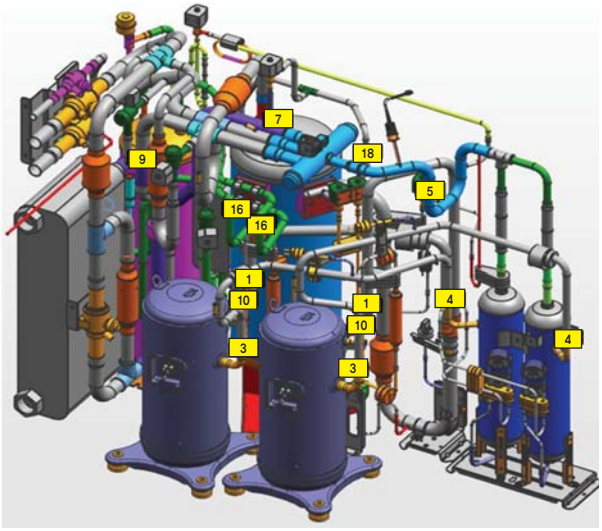
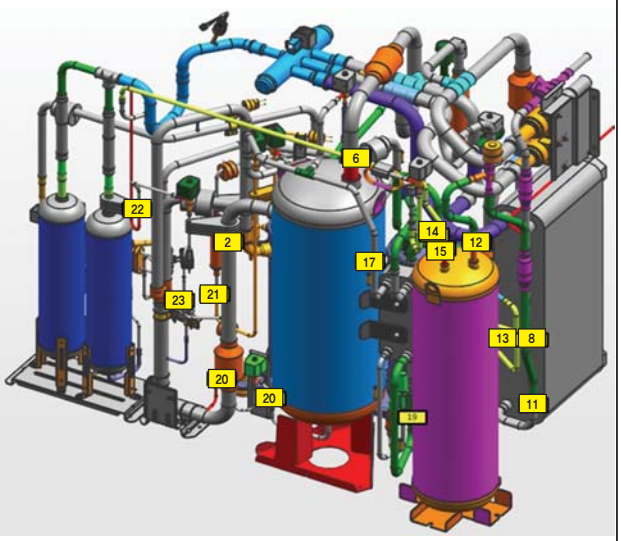


► Separate double layer structure of C/Box after remove 3 screws and connector.

[Reference Sheet]

Pipe Welding Position

■ AM192HXWA✳✳

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			

3-3 Caution at compressor exchange

■ Compressor exchange order

– **AM038/048/055KXWD✳✳**

STEP	Occasion that compressor is 1 inside outdoor unit
1	-
2	-
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 0.5kg 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	-
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.

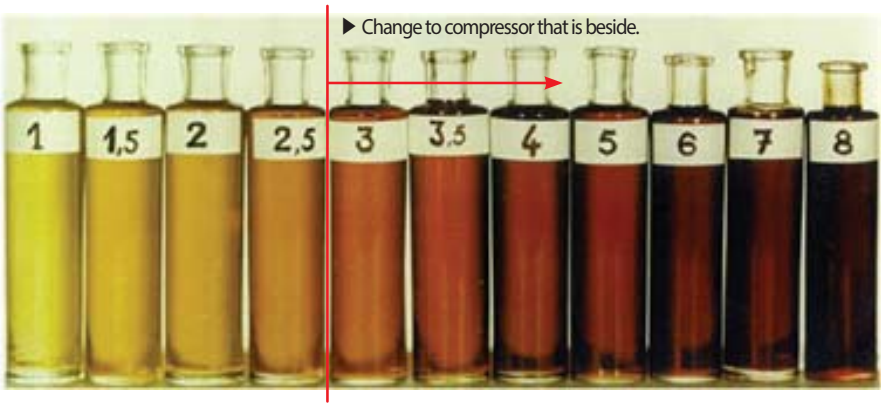
– **AM072/096/120/192HXWA**✳✳

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 1st 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.
- GB052F✳✳✳ of weight of compressor including oil is 31.6kg, and GB066F✳✳✳ 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.
- Compressor contains the oil at factory shipment as follow(compressor single item standards). - UG8T300FUBJU: 1200cc, UG5T450FUEJX: 1700cc
- The weight of compressor including oil is as follow. - UG8T300FUBJU: 16.45kg, UG5T450FUEJX: 22.95kg

OIL SEPARATOR		
SVC CODE	**Weight information**	**Fig**
DB96-16927A	3.54kg	
DB96-17888A (DB96-17639A DB96-17640A)	7.86kg (7.14kg except for bracket base)	
DB96-20380A	16.21kg	
DB96-21970A	2.71kg	

ACCUMULATOR		
SVC CODE	**Weight information**	**Fig**
DB96-17091A	16.64kg	
DB96-16928A	22.08kg	
DB96-20395A	30.37kg	
DB96-21912A	32.33kg	

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.)

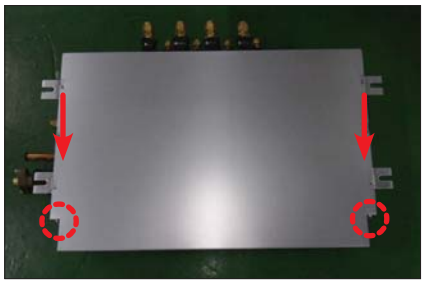
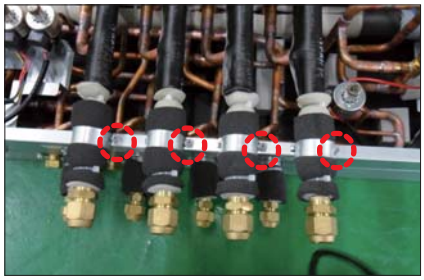
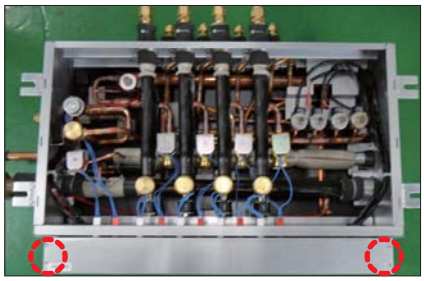
- Confirm that is blocked in stationary state through nitrogen pressurization availability.

② Breakdown of Accum Oil Return Valve (ARV)

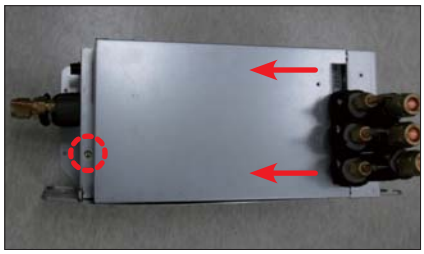
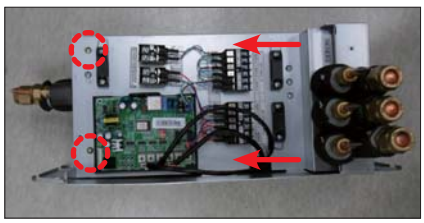
- Damage can become cause of compressor breakdown because oil is not collected if filter of valve front/piping etc.. is blocked with ARV is closed.
- Power connector of ARV confirms that was linked right.
- Extract connector in vacuum mode or confirm whether when insert, action sound of valve happens.

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

3-4 MCU

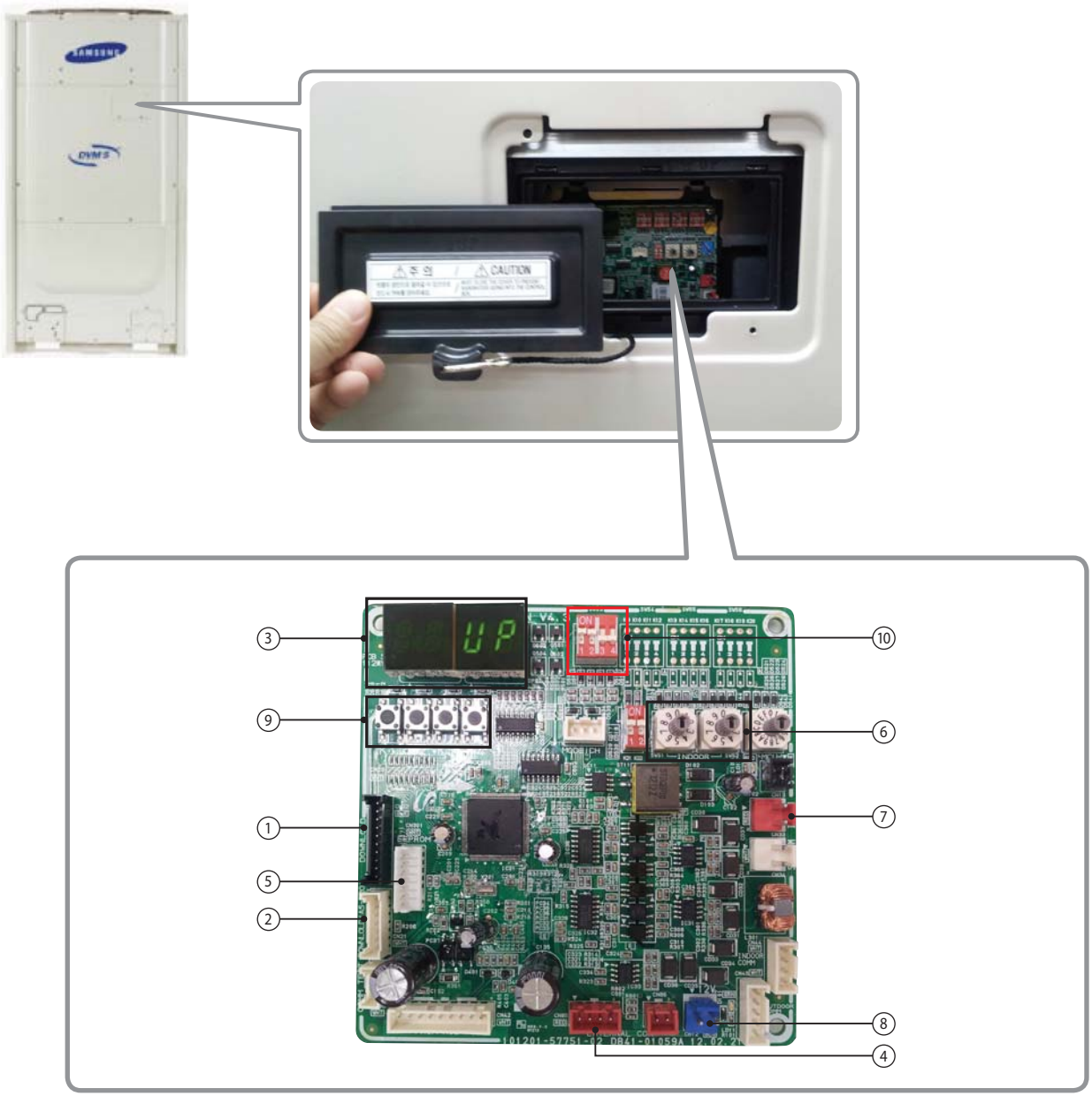
No	Parts	Procedure	Remark
1	Cabinet upper	1) Separate 2 fixing screws from the cabinet. (Use + Serew Driver) 2) Separate cabinet from MCU.	
2	Cabinet front	1) Separate 4 fixing screws from the cabinet. (Use + Serew Driver)	
		2) Separate 4 fixing screws from the brackets. (Use + Serew Driver)	
3	Cabinet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

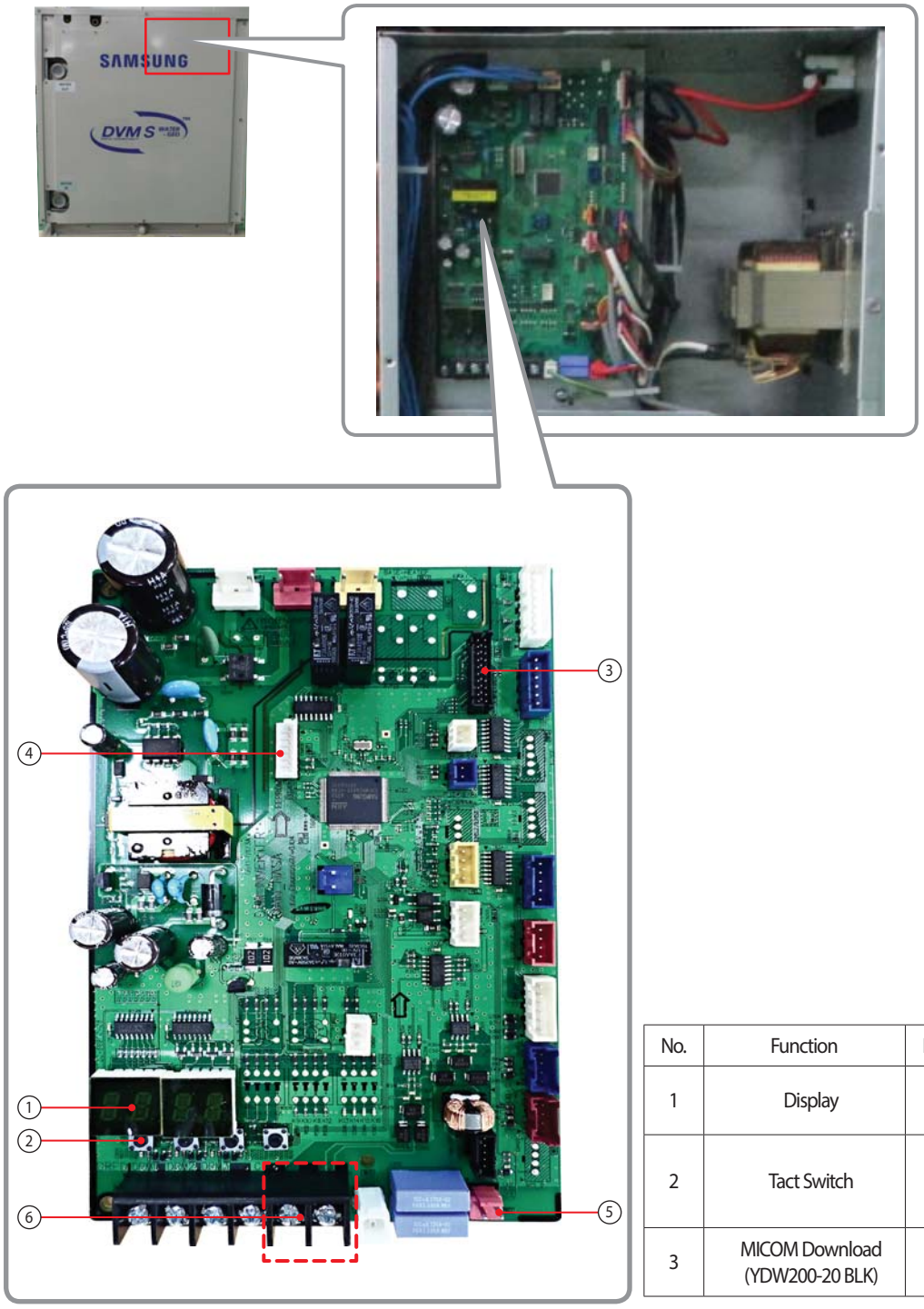
4-1 Check-up Window Description



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 PCB Description

■ AM030/040/050/060KXWD✳✳



No.	Function	No	Function
1	Display	4	EEPROM Connector (B7P-MQ WHT)
2	Tact Switch	5	Communication connector between indoor and outdoor unit.
3	MICOM Download (YDW200-20 BLK)	6	The central controller communication

4-3. Service Operation

4-3-1 Special Operation

► 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	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	-
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	K2 Tact Switch twice
Compressor	Normal operation, but the maximum frequency limit (differ by model)	
Indoor Unit	Whole operation (The set temperature=37.4˚F)	Whole operation (The set temperature=104˚F)
Outdoor fan and valves	Normally control conduct	
Operation time	Min : 60 minutes, Max : 10 hours	
Etc.	· 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=37.4˚F)	Whole operation (The set temperature=104˚F)
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=104˚F)
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=37.4˚F)
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.

► MCU pipe connection check
- How to start : Press K2 4time (Heat Recovery only)
※ In heat pump model : select trial opration mode in cooling or heating mode automatically

- Operation sequence

	OUD	IDU for checking	Other IDUs	Check point
Cooling	Normal operation	Fan on / EEV open	Fan on / EEV close	Evap in temp-lowest
Heating	Normal operation	Fan on / EEV close	Fan on / EEV open	Evap out temp-lowest

- Display

1. Starting | P | i | P | E | ↔ | C | o | o | L | or | P | i | P | E | ↔ | H | E | A | T |

2. Starting | A | B | C | D | ↔ | E | F | G | H |

A , B : Checking IDU address
C , D : IDU which evap in temp changed, "--" means none
E , F : no display
G , H : IDU which evap out temp changed, "--" means none

3. Finishing | H | O | L | D |

4. Result - Normal communication or | E | r | r | P |

※ When we have | E | r | r | P | press K2 to see more information

Error code(E190) → MCU address & port (C00A) → IDU address chesked & IDU address temp changed(00--)
※E190 - No or wrong IDU's Evap in temp chaged
※E191 - No or wrong IDU's Evap out temp chaged

► Heat Pump Model : Outdoor temperature is more than 59˚F / Cooling commissioning start
Outdoor temperature is less than 59˚F / Heating commissioning 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.

► 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 6 times
Start pattern	Heating commissioning 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 7 times
Start pattern	Outdoor temperature is more than 50˚F : Cooling commissioning Outdoor temperature is less than 50˚F : Heating commissioning
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.

■ AM038/048/055KXWD✳✳

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

KEY setting		
K1 (Number of press)	Key operation	Display on segment
1 time	Refrigerant charging in Heating mode	H1 00
2 times	Trial operation in Heating mode	H2 00
3 times	Refrigerant discharging (Outdoor unit address 1)	H3 01
4 times	Vacuum (Outdoor unit address 1)	H4 01
5 times	End KEY operation	-
Press and hold 1 time	Auto inspection operation	HH 00

KEY setting		
K1 (Number of press)	Key operation	Display on segment
1 time	Refrigerant charging in Cooling mode	H5 00
2 times	Trial operation in Cooling mode	H6 00
3 times	Pump down all units in Cooling mode	H7 00
4 times	Auto trial operation	H8 00
5 times	Checking the amount of refrigerant	H9 XX (Display of last two digits may differ depending on the progress)
6 times	Forced oil collection	HA 00
7 times	Inverter compressor 1 check	Hb 00
8 times	Water pipe connection inspection operation	Hc 00
9 times	Load inspection operation	Hd 00
10 times	End KEY operation	-

※ 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.)

■ AM072/096/120/192HXWA✳✳

► 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, 'Dicharge mode of DC link voltage' may not have been effective. Especialy if error E464 and E364 have been occured, 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℃(37.4˚F))	Whole operation (The set temperature= 40℃(104˚F))
Other Actuators	Normally control conduct	
Operation time	Min : 60 minutes, Max : 10 hours	
Etc.	· 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℃(37.4˚F))	Whole operation (The set temperature=40℃(104˚F))
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℃(104˚F))
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℃(37.4˚F))
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
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 : Water temperature is more than 25℃(77˚F) / Cooling Auto Trial Operation start
Water temperature is less than 25℃ / 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.

4-3-2 DVM S Models EEPROM Code Table

No.	Model Name	Inverter PBA	EEP Code	No.	Model Name	Inverter PBA	EEP Code
1	AM072FXVAFH	DB92-03526C	DB82-01437A	21	AM072HXWAJR	DB92-03526A	DB82-02085A
2	AM096FXVAFH	DB92-03526C	DB82-01439A	22	AM096HXWAJR	DB92-03526A	DB82-02086A
3	AM120FXVAFH	DB92-03526C	DB82-01441A	23	AM120HXWAJR	DB92-03526A	DB82-02087A
4	AM144FXVAFH	DB92-03526C	DB82-01443A	24	AM192HXWAJR	DB92-03526A	DB82-02088A
5	AM072FXVAFR	DB92-03526C	DB82-01448A	25	AM168HXVAFH	DB92-03337B	DB82-02310A
6	AM096FXVAFR	DB92-03526C	DB82-01449A	26	AM192HXVAFH	DB92-03337B	DB82-02311A
7	AM120FXVAFR	DB92-03526C	DB82-01450A	27	AM168HXVAFR	DB92-03337B	DB82-02312A
8	AM144FXVAFR	DB92-03526C	DB82-01451A	28	AM192HXVAFR	DB92-03337B	DB82-02313A
9	AM072FXVAJH	DB92-03526B	DB82-01438A	29	AM168HXVAJH	DB92-03526A	DB82-02314A
10	AM096FXVAJH	DB92-03526A	DB82-01440A	30	AM192HXVAJH	DB92-03526A	DB82-02315A
11	AM120FXVAJH	DB92-03526A	DB82-01442A	31	AM168HXVAJR	DB92-03526A	DB82-02316A
12	AM144FXVAJH	DB92-03526B	DB82-01444A	32	AM192HXVAJR	DB92-03526A	DB82-02317A
13	AM072FXVAJR	DB92-03526B	DB82-01452A	33	AM072KXVTFH	DB92-03526C	DB82-03381A
14	AM096FXVAJR	DB92-03526A	DB82-01453A	34	AM096KXVTFH	DB92-03337B	DB82-03382A
15	AM120FXVAJR	DB92-03526A	DB82-01454A	35	AM072KXVTJH	DB92-03526A	DB82-03383A
16	AM144FXVAJR	DB92-03526B	DB82-01455A	36	AM096KXVTJH	DB92-03526A	DB82-03384A
17	AM072HXWAFR	DB92-03526C	DB82-02081A	37	AM216KXVGJH	DB92-03337A	DB82-03420A
18	AM096HXWAFR	DB92-03526C	DB82-02082A	38	AM216KXVGJR	DB92-03337A	DB82-04259A
19	AM120HXWAFR	DB92-03526C	DB82-02083A	39	AM038KXWDCH	DB92-03686A	DB82-03454A
20	AM192HXWAFR	DB92-03526C	DB82-02084A	40	AM048KXWDCH	DB92-03687A	DB82-03455A
				41	AM055KXWDCH	DB92-03687A	DB82-03456A

4-3-3 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	
C	When E206 occurs	Displays address of subordinate within the set C001 : HUB, C002: FAN, C003: INV1, C004: INV2
	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 adress 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	Error due to repeated address setting (When 2 or more devices has same address within the network)
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 errorE206-C003: INV1 PBA communication error / E206-C004: INV2 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	hen 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-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)
E-346	Error due to operation failure of Fan2
E-347	Motor wire of Fan2 is not connected

■ Diagnosis and Adjustment (Error Code)

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

Error mode	Cause
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-374	Heat sink temperature sensor error of inverter PBA2
E-378	Error due to overcurrent 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-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-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
E-441	Cooling mode restriction due to low air temperature
E-442	Refrigerant charing restriction in heating mode when air temperature is over 15 ℃
E-443	Operation prohibited due to low pressure
E-445	CCH is deatched
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-455	Error due to overheated IPM of Fan1
E-461	Error due to operation failure of inverter compressor 1

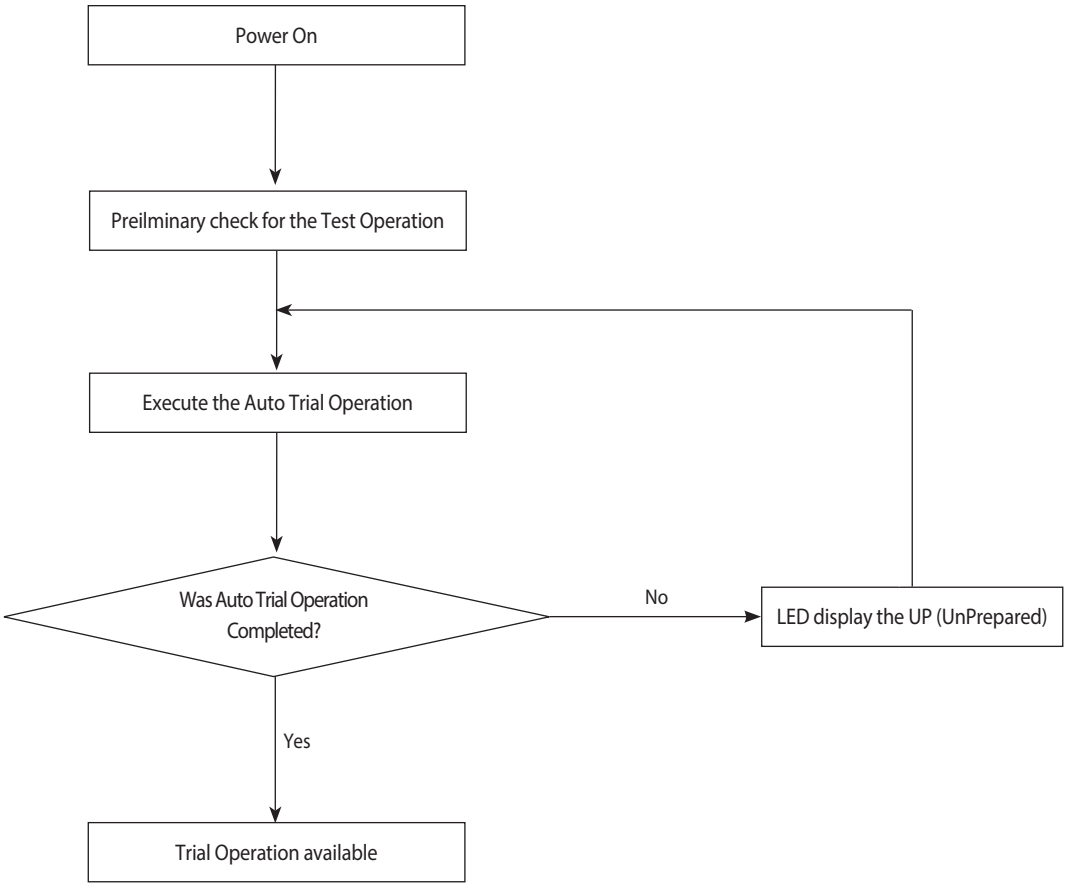
■ Diagnosis and Adjustment (Error Code)

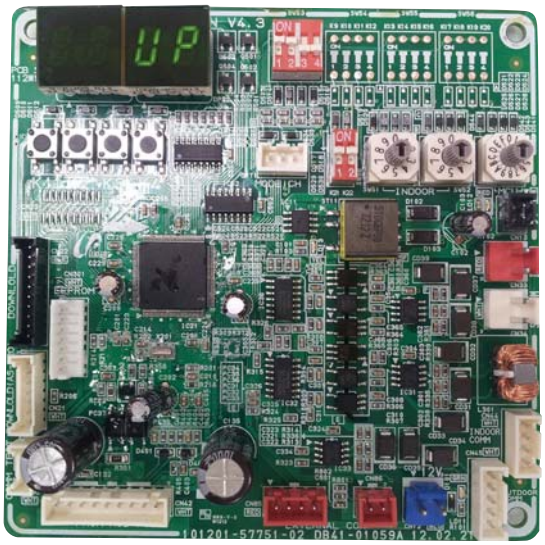
► Error code related to the Communications / Settings / HW (cont.)

Error mode	Cause
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-474	Heat sink temperature sensor error of inverter PBA1
E-478	Error due to overcurrent 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-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-560	Outdoor unit's option switch setting error (when iinappropriate 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)
E-901	EHS water in sensor (Short or Open)
E-902	EHS water out sensor (Short or Open)
E-904	EHS water tank sensor (Short or Open)
E-907	EHS freezing protection srror
E-908	EHS freezing protection error (EHS reoperatable)
E-909	EHS freezing protection error (EHS not reoperatable)
E-910	EHS water out sensor detached
E-911	EHS flow switch error
E-913	EHS flow switch error (6th detection)(EHS not reoperatable)
E-914	EHS thermostat detached
E-915	EHS radiating fan unoperate error
UP	Auto Trial Operation incompleted (UnPrepared)

4-4 Appropriate Measures for Different Symptom

4-4-1 Outdoor Unit Test Operation Flow





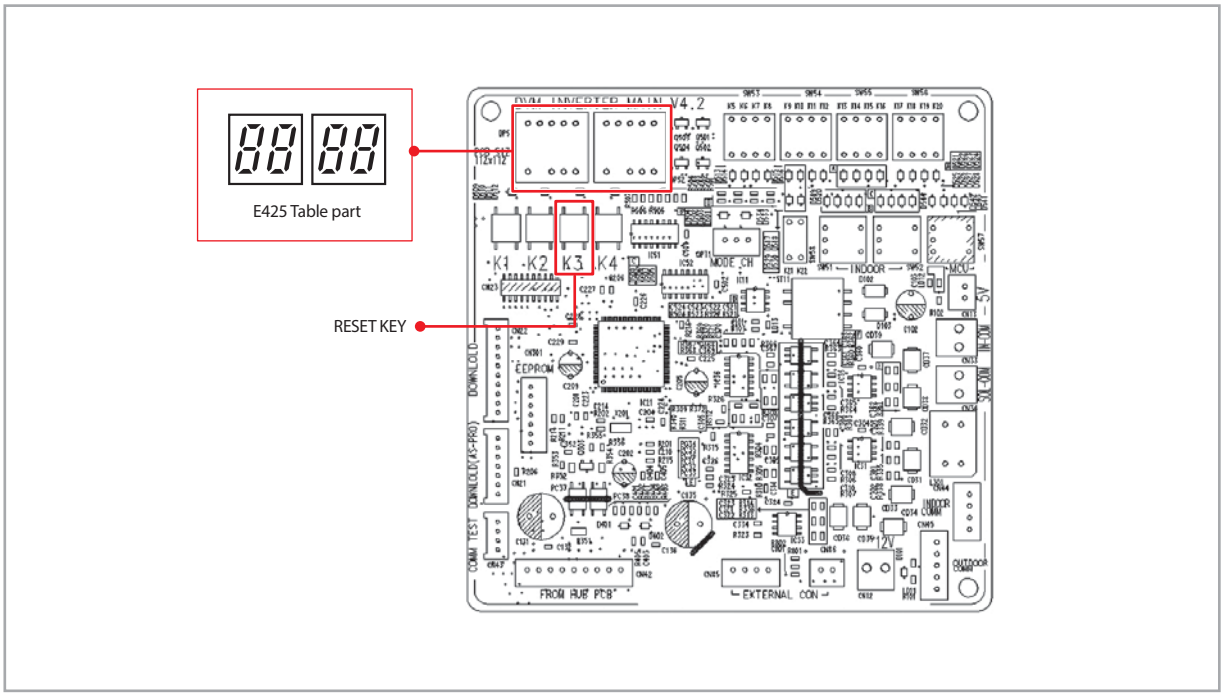
If the Auto Trial Operation is not completed - UPis displyed(UnPrepared)

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.

⚠ Caution

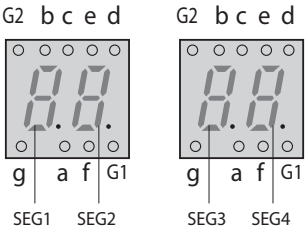
● In case of wiring error (N-phase is changed with one of R, S and T) with the N-phase, will operate the power protection function, display E425 or stop the power. This is not a PCB power defect in this case, before PCB replacement, please check the power on.

■ 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

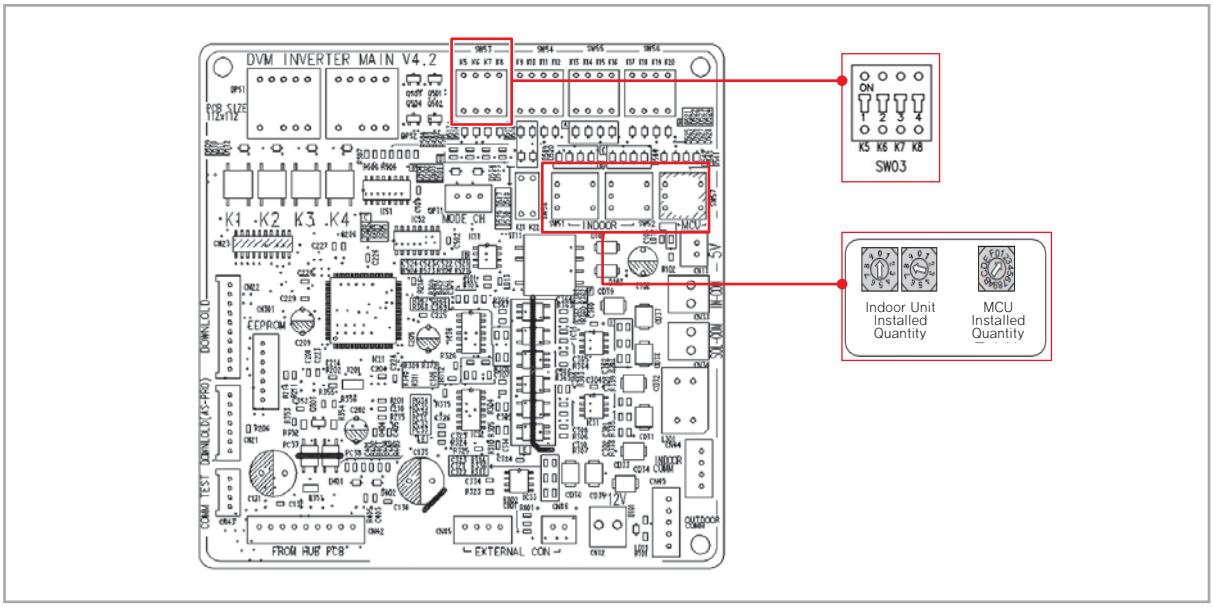


Outdoor Unit Display Parts

   - 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

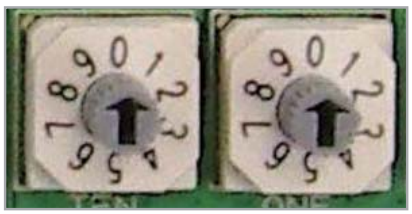
2. The number of the indoor Units Connected to the outdoor unit can be configured by using the indoor unit installation quantity setup switch.



■ Indoor Unit Installation Quantity Setup Switch

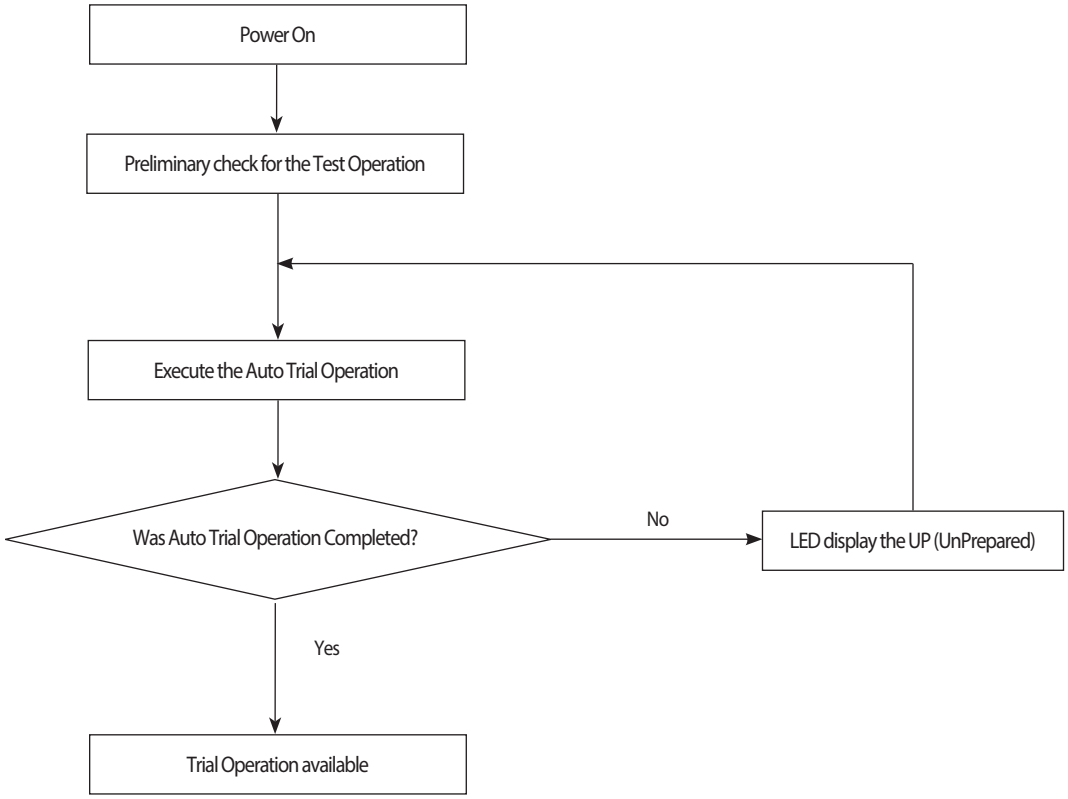
The following is an example of how to use the switch according to the number of indoor unit installations. The maximum number of possible indoor unit connections is 64.

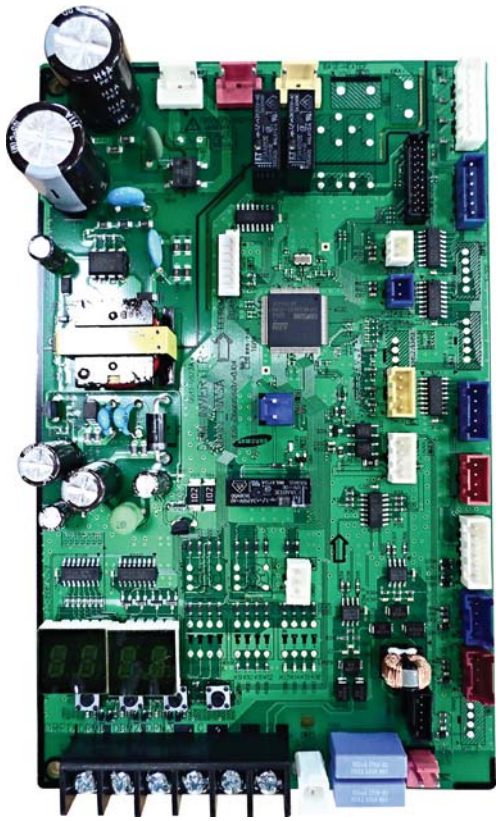
3Units Connected		17Units Connected		31Units Connected		64Units Connected	
10's Digit	1's Digit	10's Digit	1's Digit	10's Digit	1's Digit	10's Digit	1's Digit
0	3	1	7	3	1	6	4


10's Digit (0~9) 1's Digit (0~9)

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.

■ AM038/048/055KXWD✳✳





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

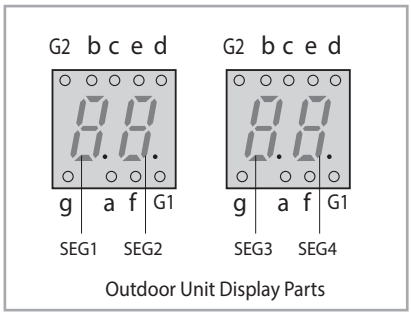
Prior to starting the air conditioning operation after the initial installation and Auto Trial Operation is carried out.
This process, the stable operation to protect the system and verify the defect of the product.

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.

■ 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

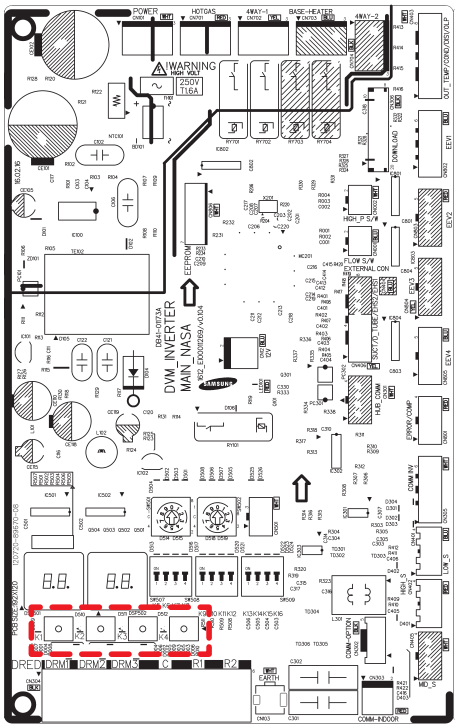
Step	Display content	Display			
At initial power input	Checking SEG display	SEG1	SEG2	SEG3	SEG4
		"8"	"8"	"8"	"8"
While setting communication between indoor and outdoor unit (Addressing)	Number of connected indoor units	SEG1	SEG2	SEG3, 4	SEG3, 4
		"A"	"d"	Number of communicated units ※ Refer to "View 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)	

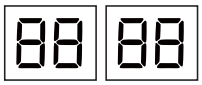


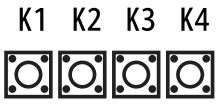
Outdoor Unit Display Parts

※ 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.







Make sure that the indoor unit numbers set by the following method.

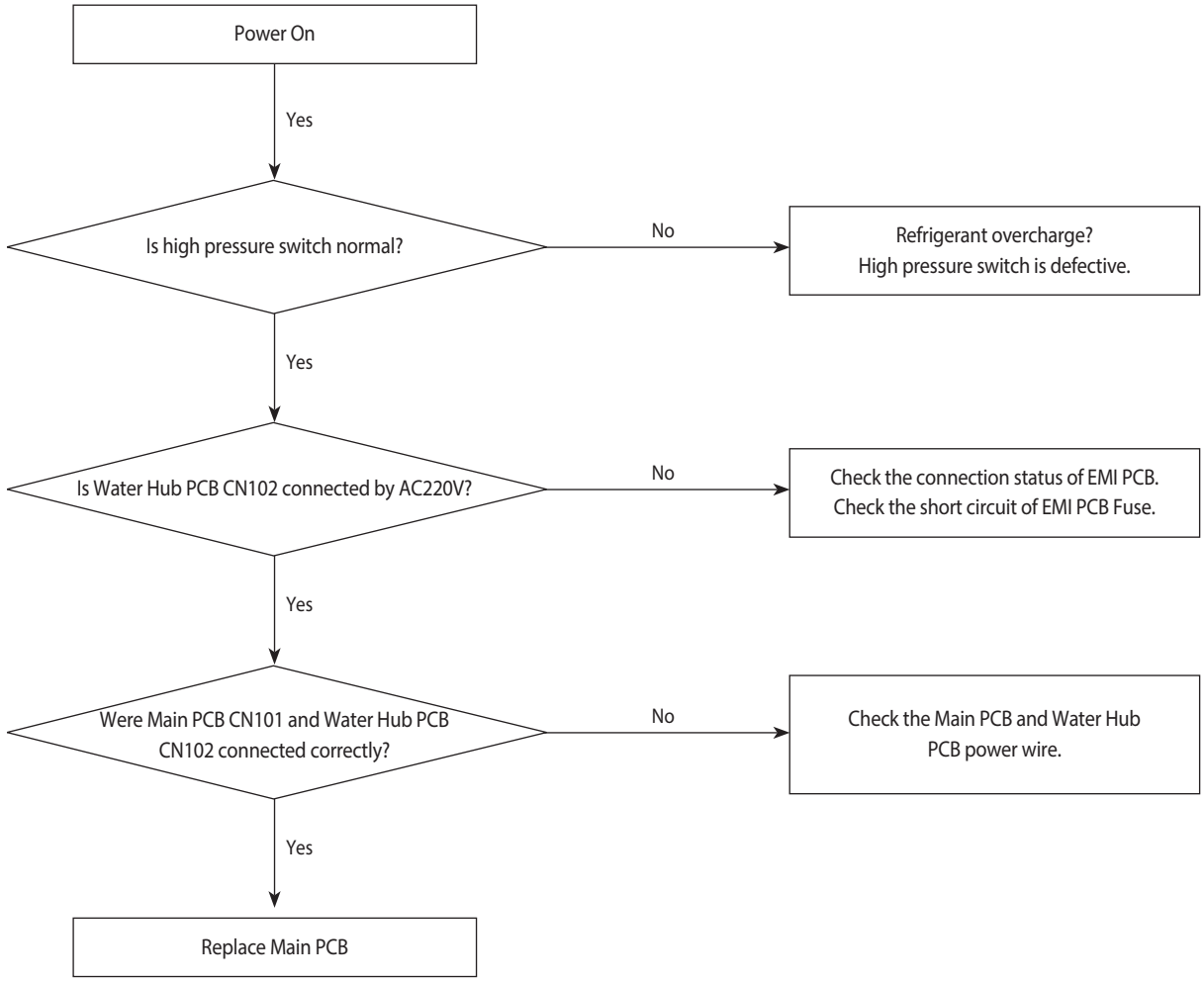
Step	Push button	Display	Description	Remark
Number of connections units				
Step 1	Outdoor unit display	1d nd	Needs to establish	-
Step 2	At the same time, press the 2 seconds K1+K2	1d 00	Prepared to setting on	Example) 03 : 1's Digit 3 times 64 : 10's Digit 6 times + 1's Digit 4 times
	Press K2 n times	1d X0	10's Digit (0~6)	
	Press K4 n times	1d 0X	1's Digit (0~9)	
	Press the 2 seconds K4 : number of indoor units automatically senses.			
Step 3	Press the 2 seconds K2, after save is ended (system reset)			

4-4-2 Main PCB has no power phenomenon

■ AM038/048/055KXWD✳✳

Outdoor unit display	Main PCB has no power phenomenon (7-seg does not blink)
Judgment Method	Water Hub PCB power and connection wire to detect.
Cause of problem	1) Water Hub PCB connector wire defects and the connection is not. 2) Main PCB defective. 3) High pressure switch operation 4) Water Hub PCB defective.

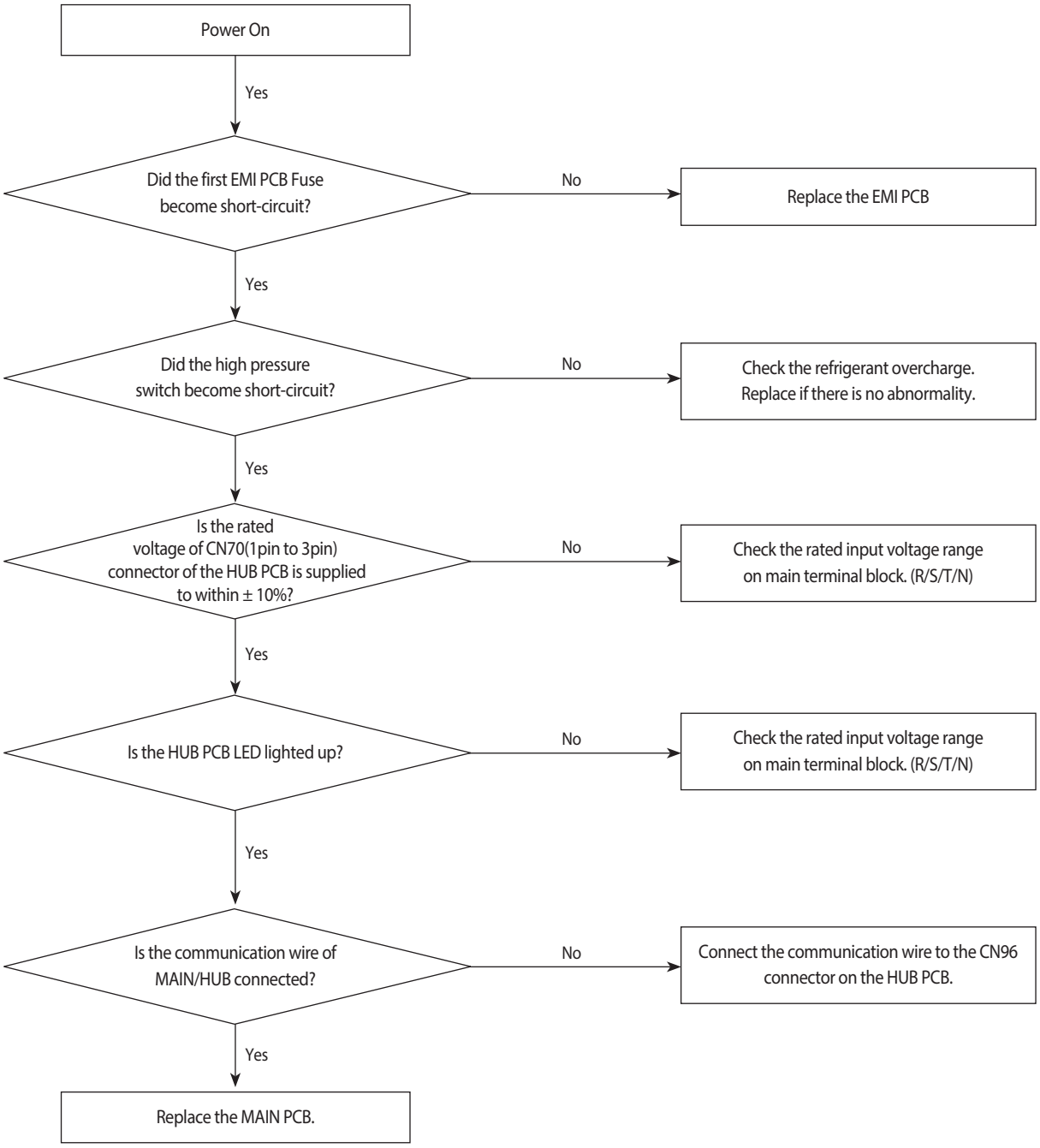
1. How to check



Main PCB has no power phenomenon (cont.)

Outdoor unit display	Main PCB has no power phenomenon (7-seg does not blink)
Judgment Method	Hub PCB power and connection wire to detect.
Connector check Method	CN96 on HUB PCB - 1pin to 4pin : DC 12V - 9pin to 4pin : DC 5V
Cause of problem	· 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. How to check

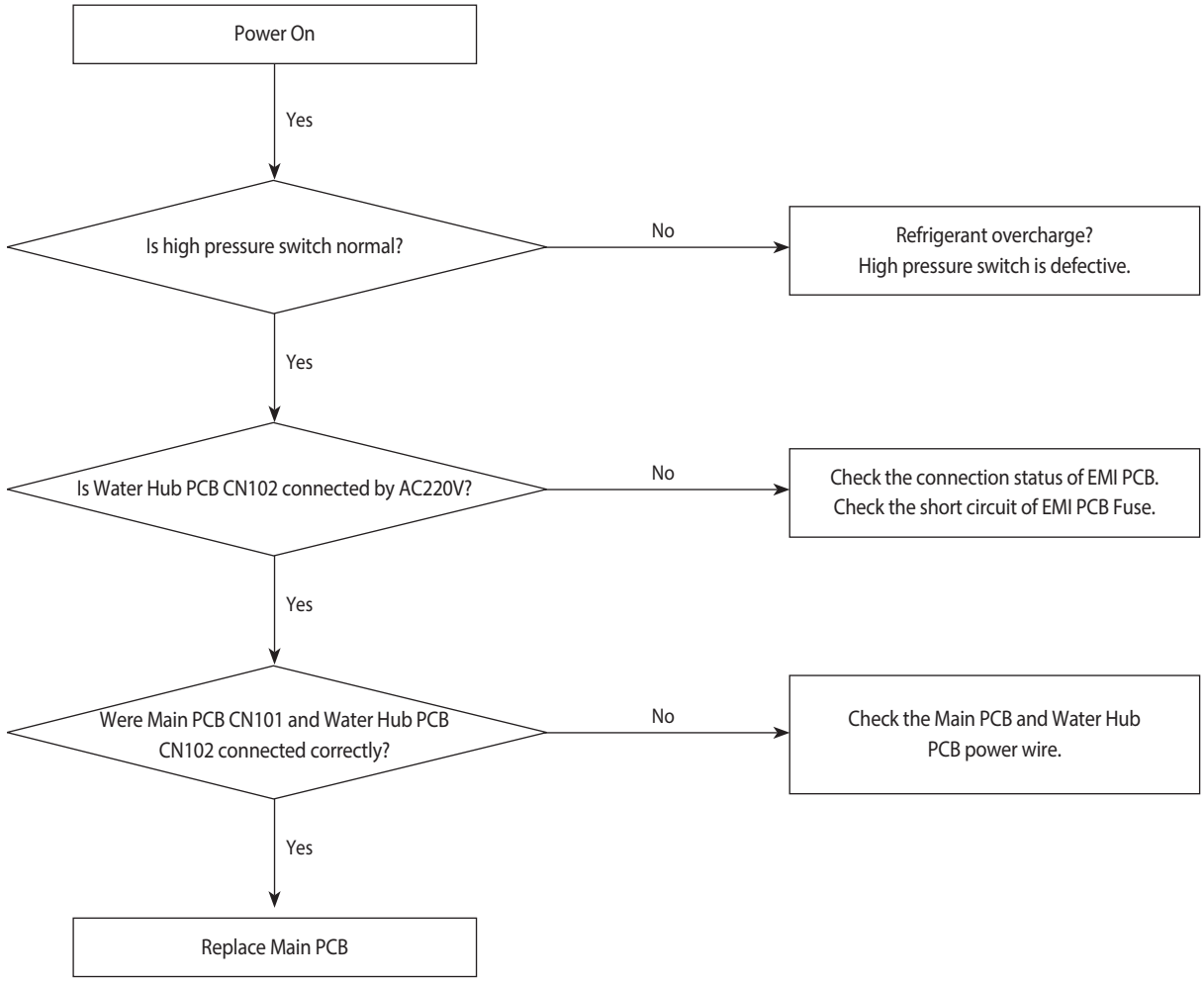


Main PCB has no power phenomenon (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	Main PCB has no power phenomenon (7-seg does not blink)
Judgment Method	Water Hub PCB power and connection wire to detect.
Cause of problem	1) Water Hub PCB connector wire defects and the connection is not. 2) Main PCB defective. 3) High pressure switch operation 4) Water Hub PCB defective.

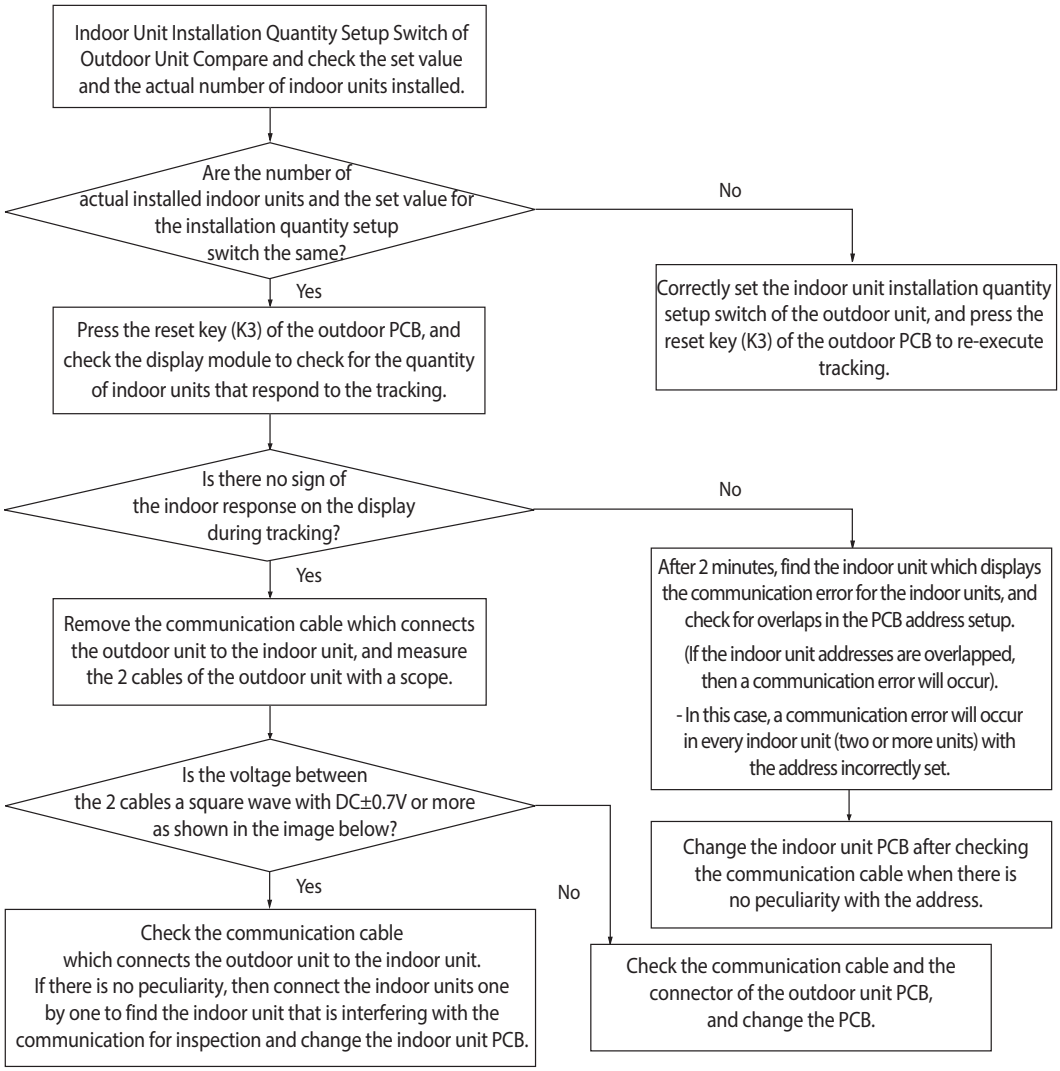
1. How to check



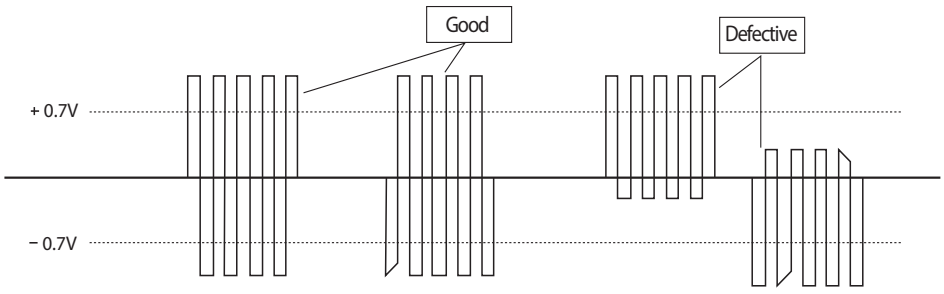
4-4-3- Communication Error between Indoor and Outdoor Units during Tracking

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

1. How to check



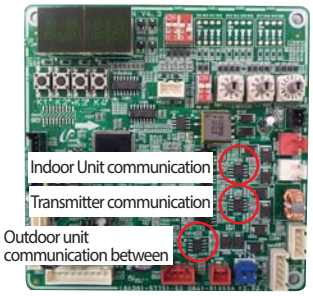
* Essential Requirements before Changing PCB in Case of Communication Error: Refer to p.50



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

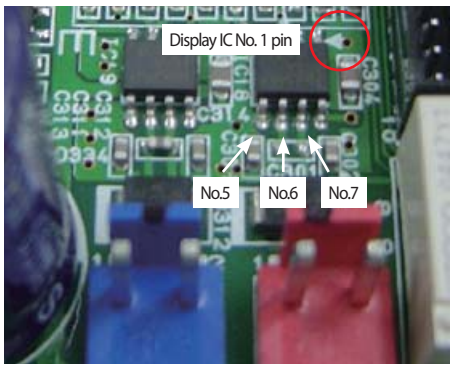
1. Find the communication IC near the communication terminal.
   - ● Indoor Unit
   - - Above Red Connector : Communication IC between indoor and outdoor units.
   - - Above Blue Connector : Communication IC for cable remote control.
   - ● Outdoor Unit
   - - When there is module communication as in 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

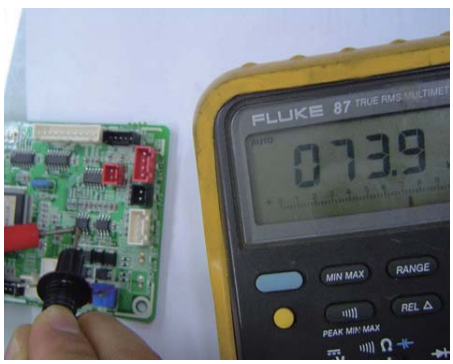


Outdoor Unit

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

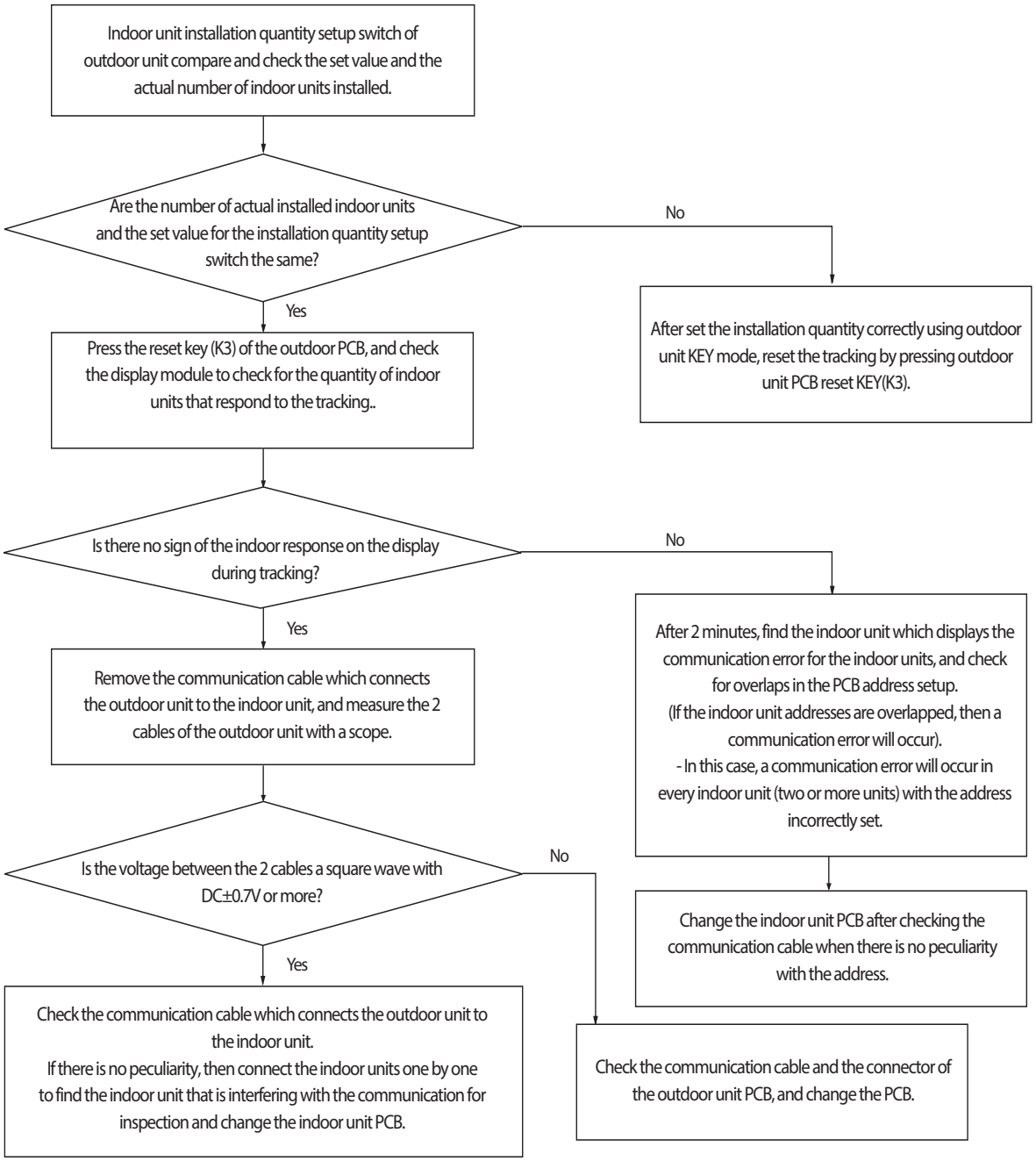


Communication Error between Indoor and Outdoor Units during Tracking (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E201
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filterr × Wall-mounted (NeoForte): 18℃ × / 21℃ × / Timer ◑ / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Communication error between indoor and outdoor units.
Cause of problem	· Refer to the how to check below..

1. How to check



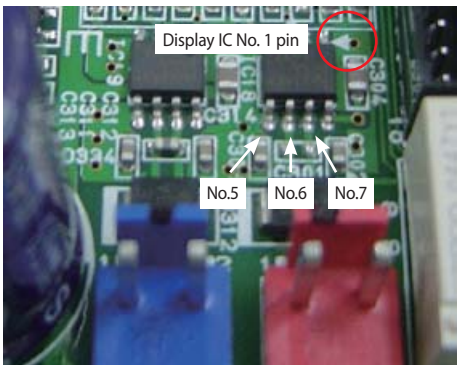
※ Essential requirements before PCB changes in case of communication error occurrence

■ AM038/048/055KXWD✳✳

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
   - Other outdoor unit - Above communication connector : Communication IC between indoor and outdoor unit.

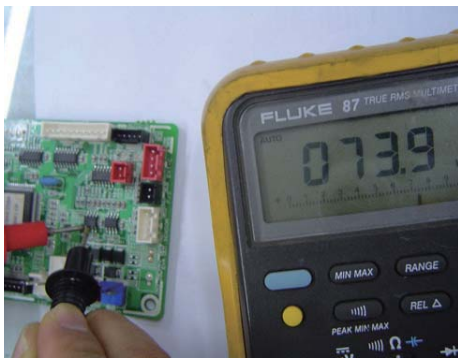
Indoor Unit

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.

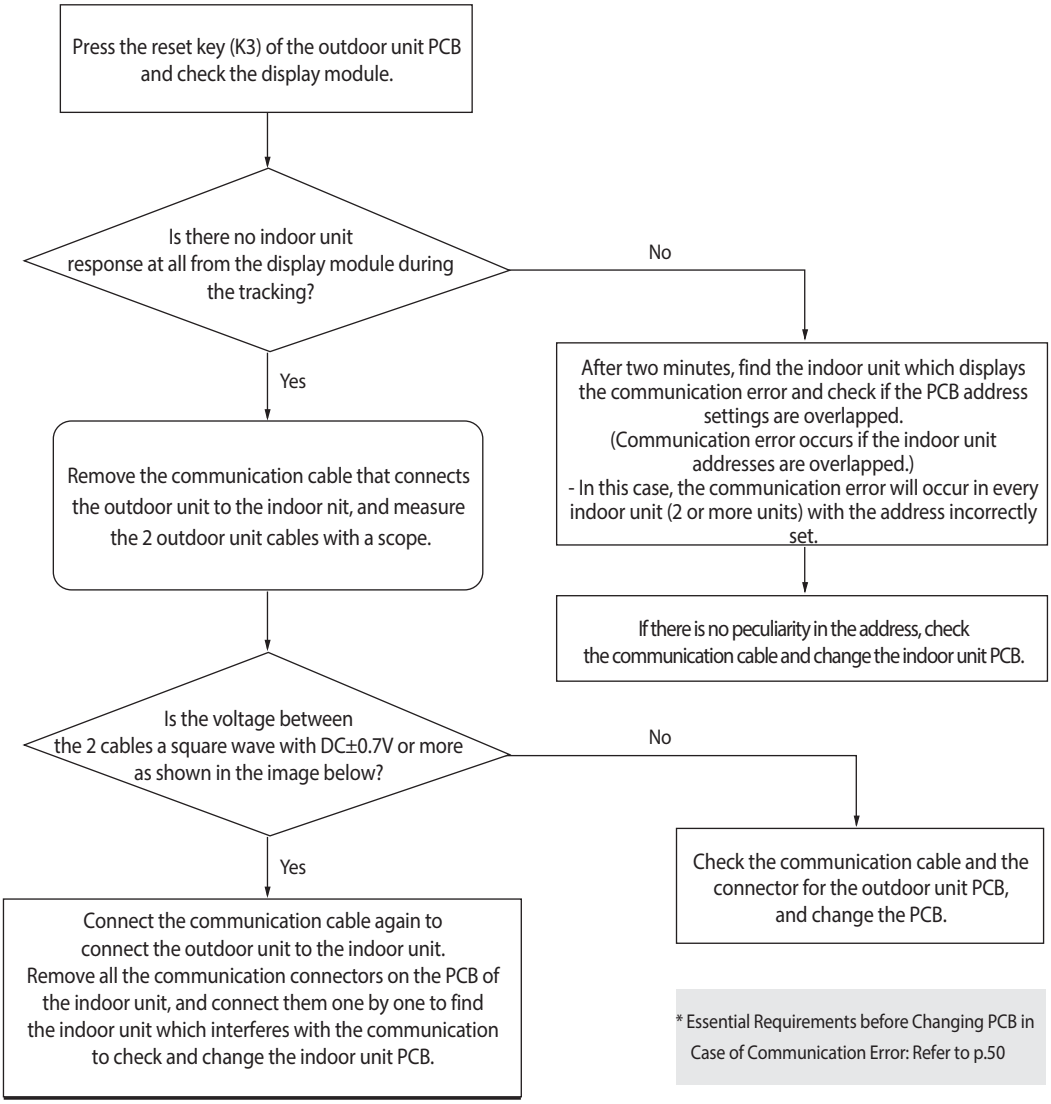
   · Judging as defective
   - One or both are low with tens of Ω
   - One or both of them is open

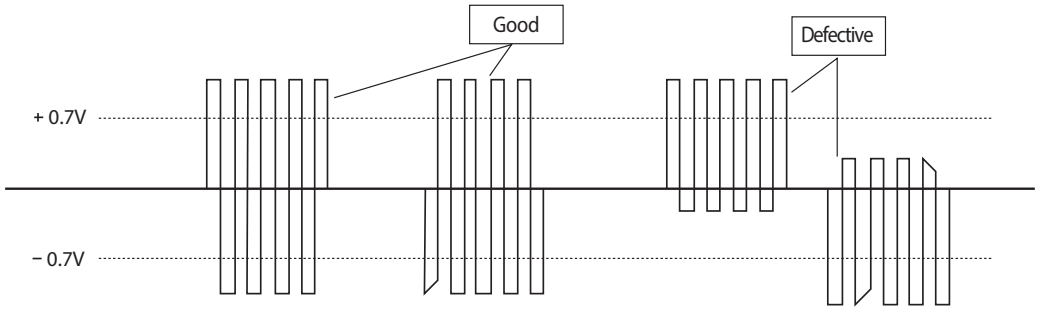


4-4-4 Communication Error between Indoor and Outdoor Units after Tracking

Outdoor unit display	E202
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation × / Timer × / Turbo ◑ / 24℃ ◑ / 27℃ × ※ ● : 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. How to check



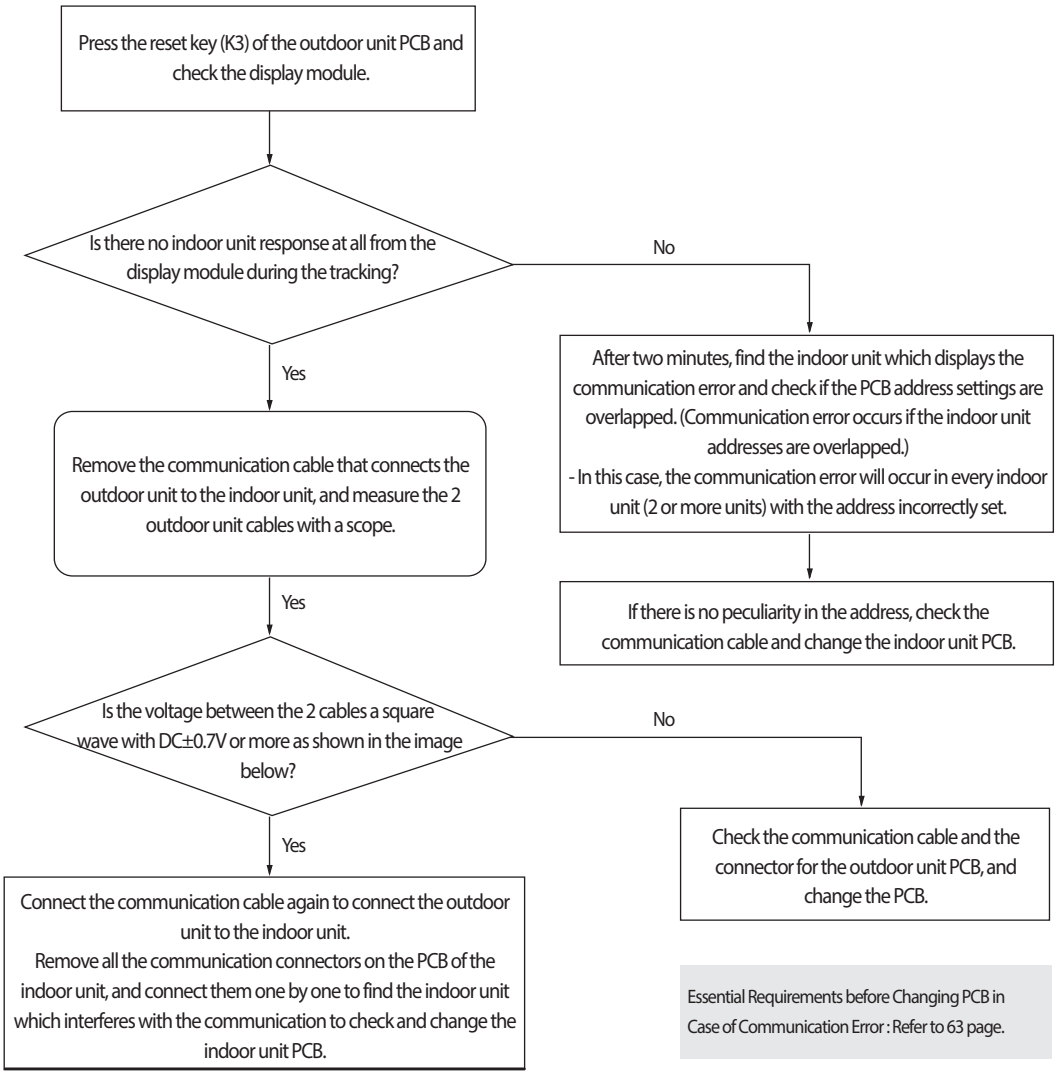


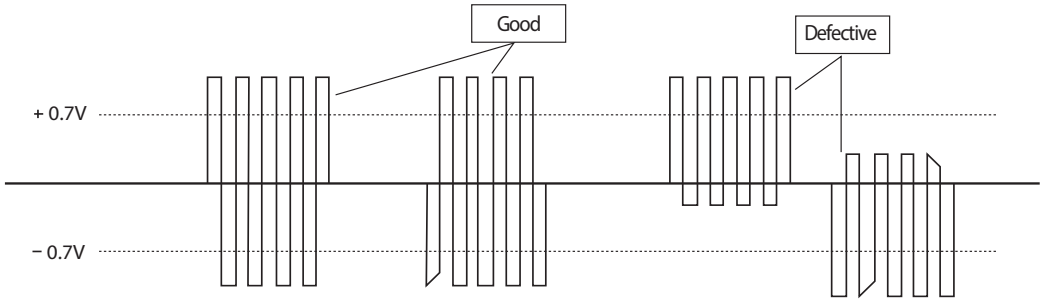
Communication Error between Indoor and Outdoor Units after Tracking (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E202
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation / Defrost / Timer / Fan / Filter/MPI; Cassette (4/Mini4 Way): Operation / Defrost / Timer / Filter; Wall-mounted (NeoForte): 18℃ / 21℃ / Timer / 24℃ / 27℃ × / × / ◑ / ◑ / × / × / ◑ / ◑ / × / × / × / ◑ / ◑ / × ※ ● : 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. How to check

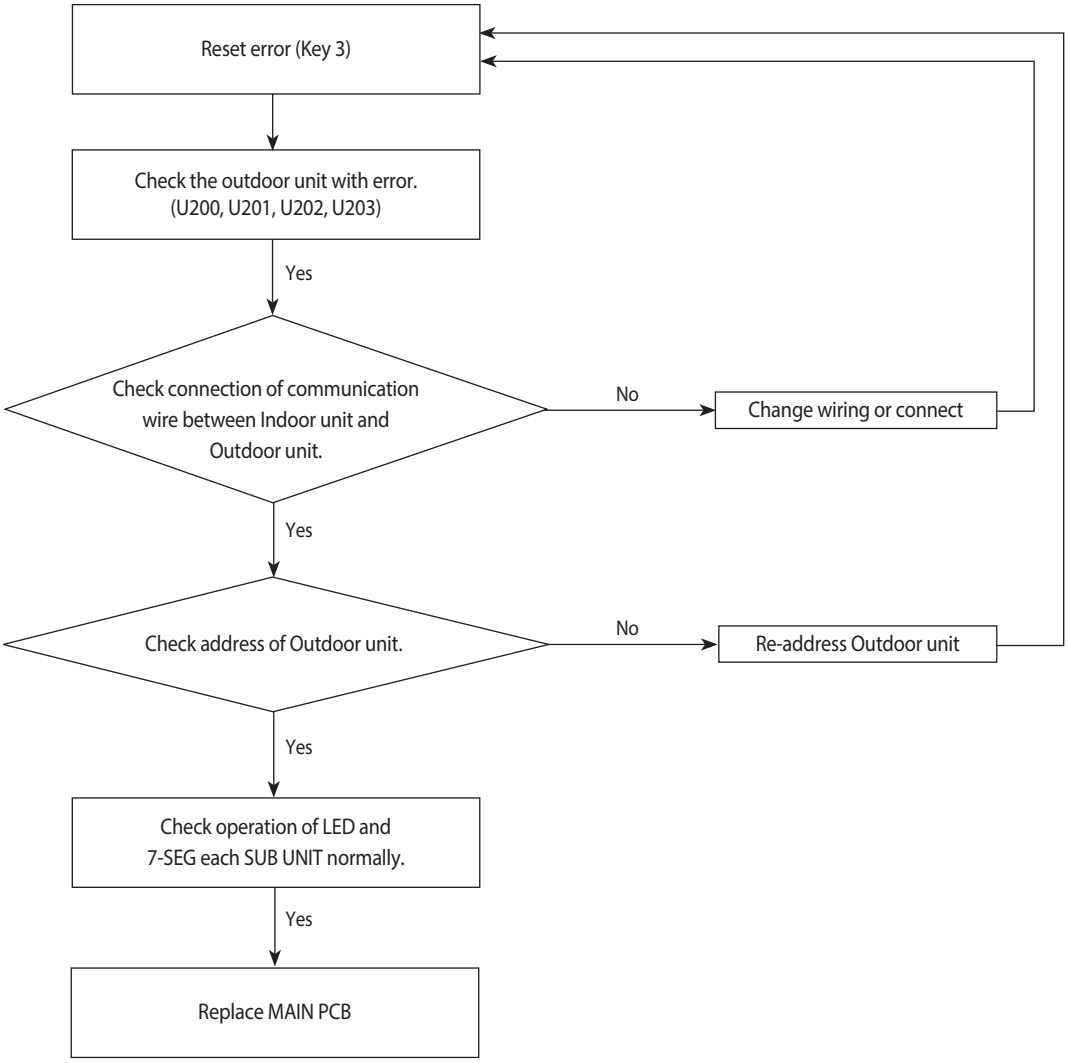




4-4-5 Communication error between main and sub Unit of outdoor unit or between outdoor units

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

1. How to check



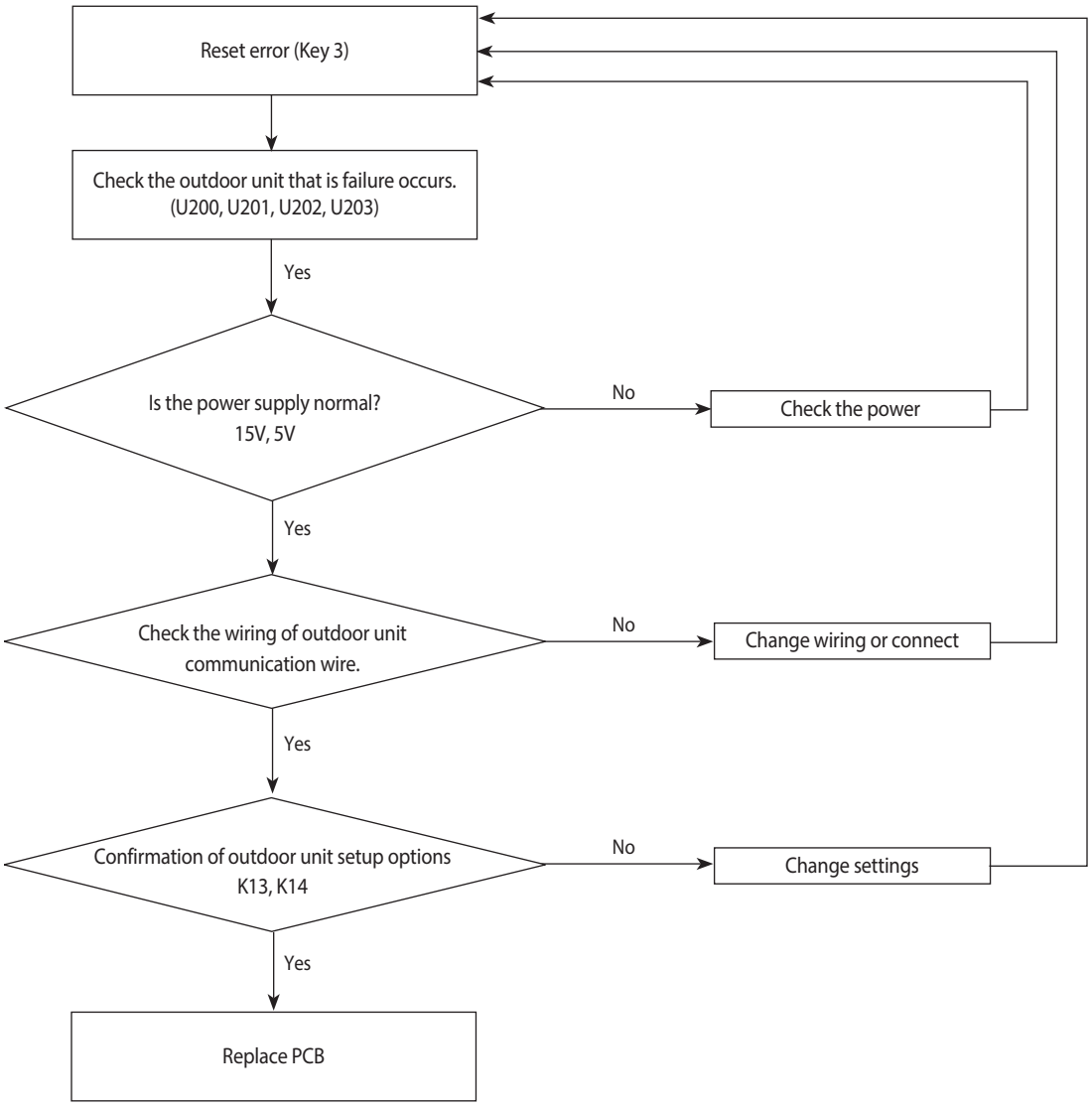
Essential Requirements before Changing PCB in Case of Communication Error: Refer to p.59

Communication error between main and sub Unit of outdoor unit or between outdoor units (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E203
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): 18℃ × / 21℃ × / Timer ◑ / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below.
Cause of problem	· Communication error between outdoor units.

1. How to check

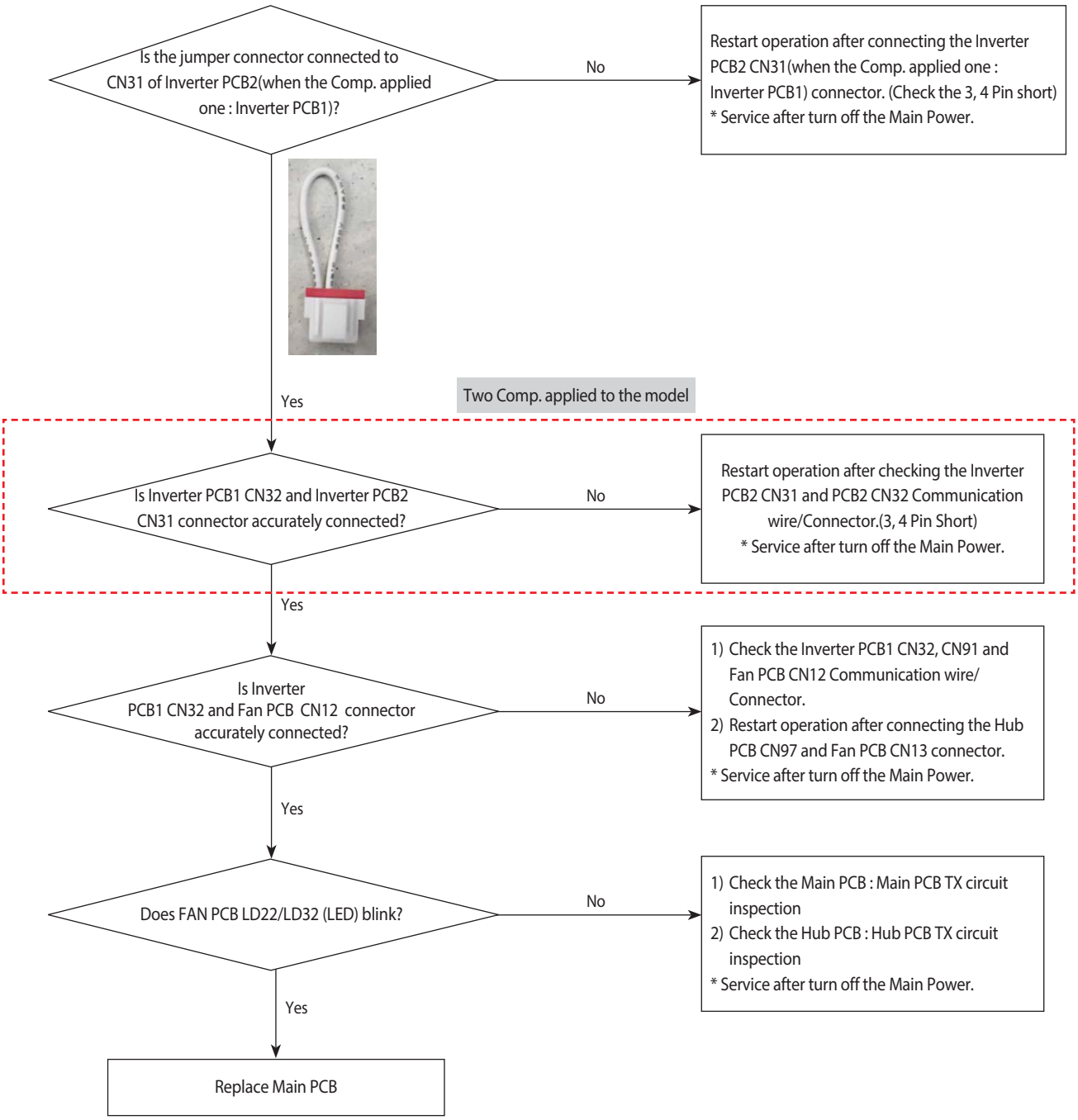


Essential Requirements before Changing PCB in Case of Communication Error : Refer to 63 page.

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

Outdoor unit display	E205 - All boards of outdoor unit are not communicating
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation, Defrost, Timer, Fan, Filter/MPI — × × ◑ ◑ × Cassette (4/Mini4 Way): Operation, Defrost, Timer, Filter — × ◑ ◑ × Wall-mounted (NeoForte): Operation, Timer, Turbo — × ◑ ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Communication error between the C-Box PCB
Cause of problem	· Communication wire inside the C-Box is unconnected · Main PCB defective

1. How to check

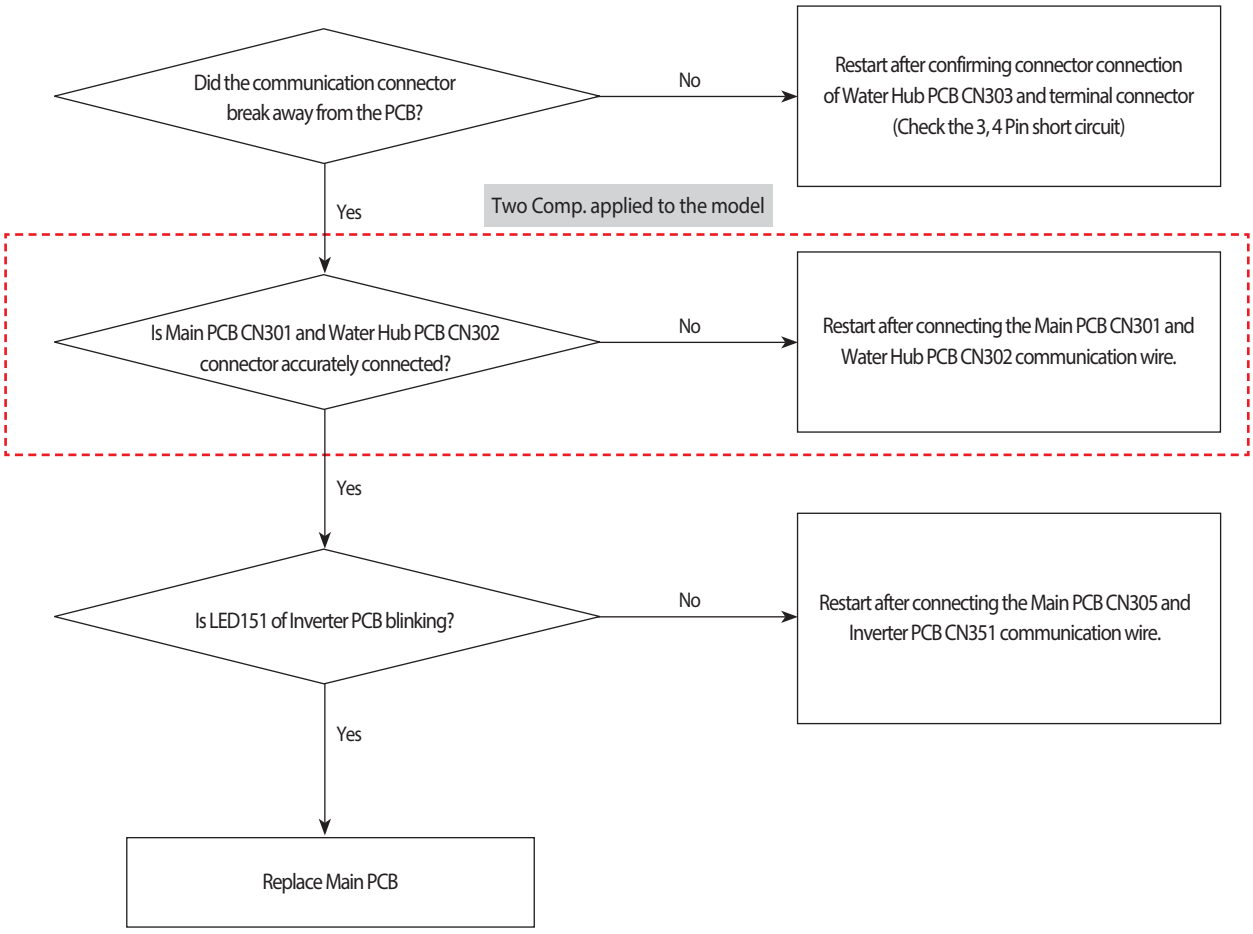


Internal communication error of the outdoor unit C-Box (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E205
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): 18℃ × / 21℃ × / Timer ◑ / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Communication error between the C-Box PCB.
Cause of problem	· Communication wire inside the C-Box is unconnected. · Main PCB defective.

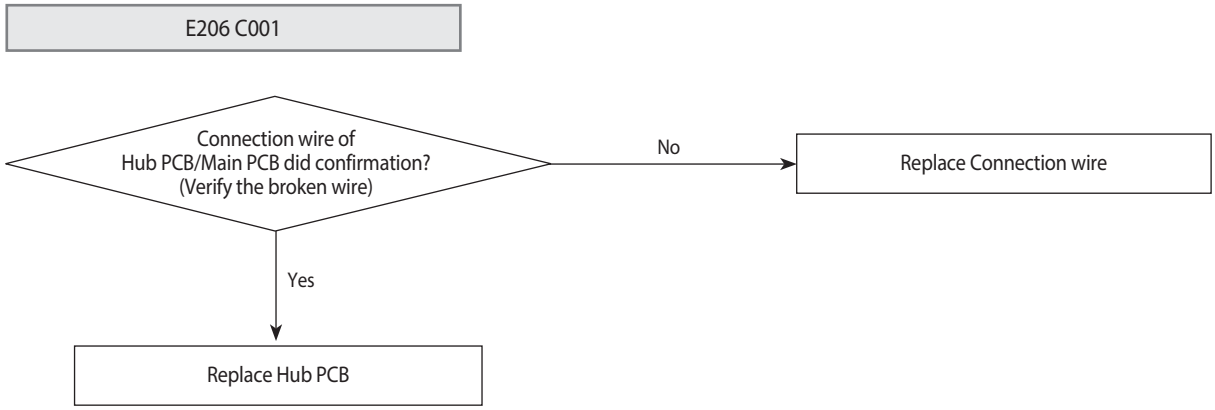
1. How to check

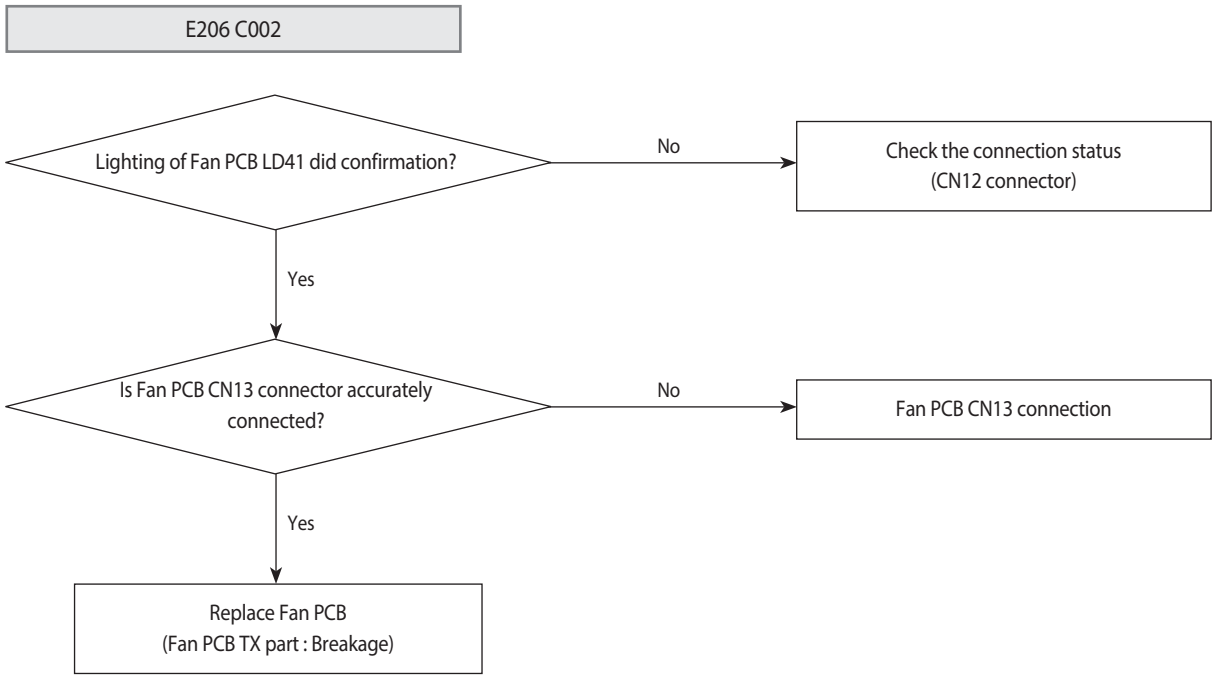


4-4-7 Internal PCB Communication error of the Outdoor Unit C-Box

Outdoor unit display	E206 (C001 - C004) - some boards of outdoor unit are not communicating
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation × / Timer ◑ / Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
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. How to check



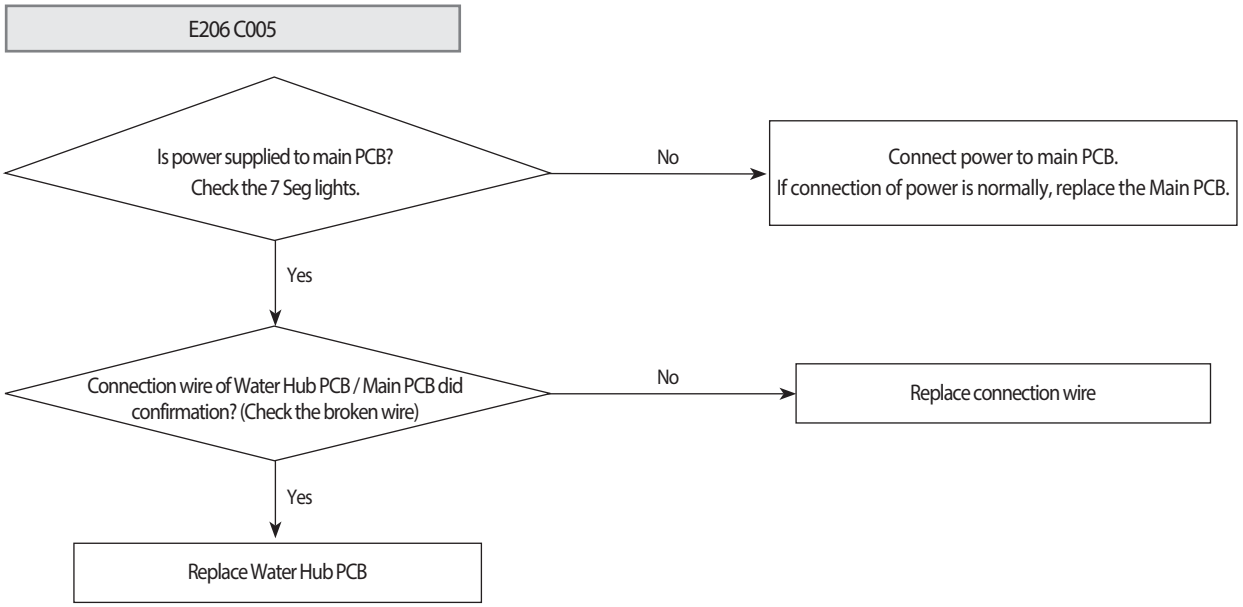


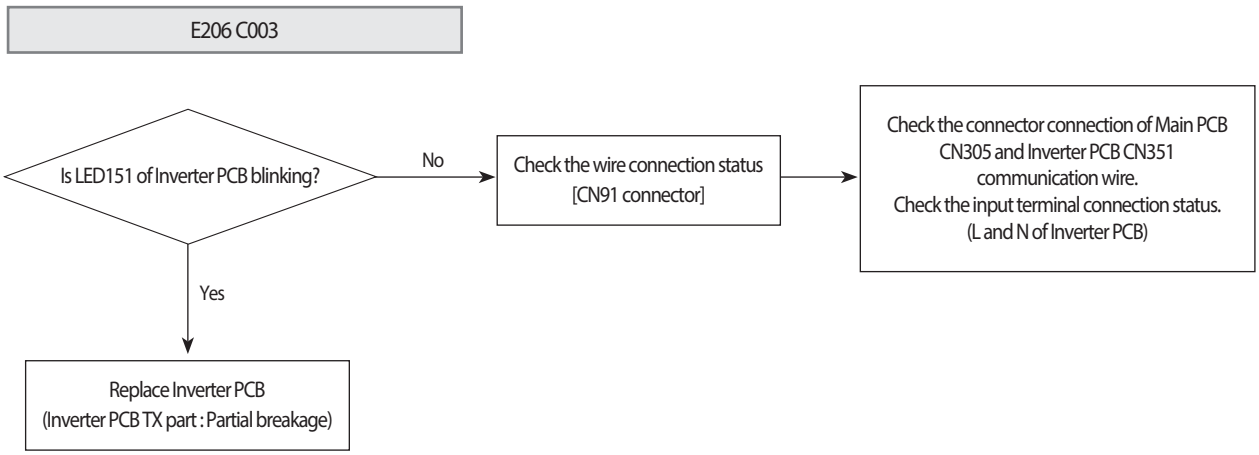
Internal PCB Communication error of the Outdoor Unit C-Box (cont.)

■ AM038/048/055KXWD✳✳

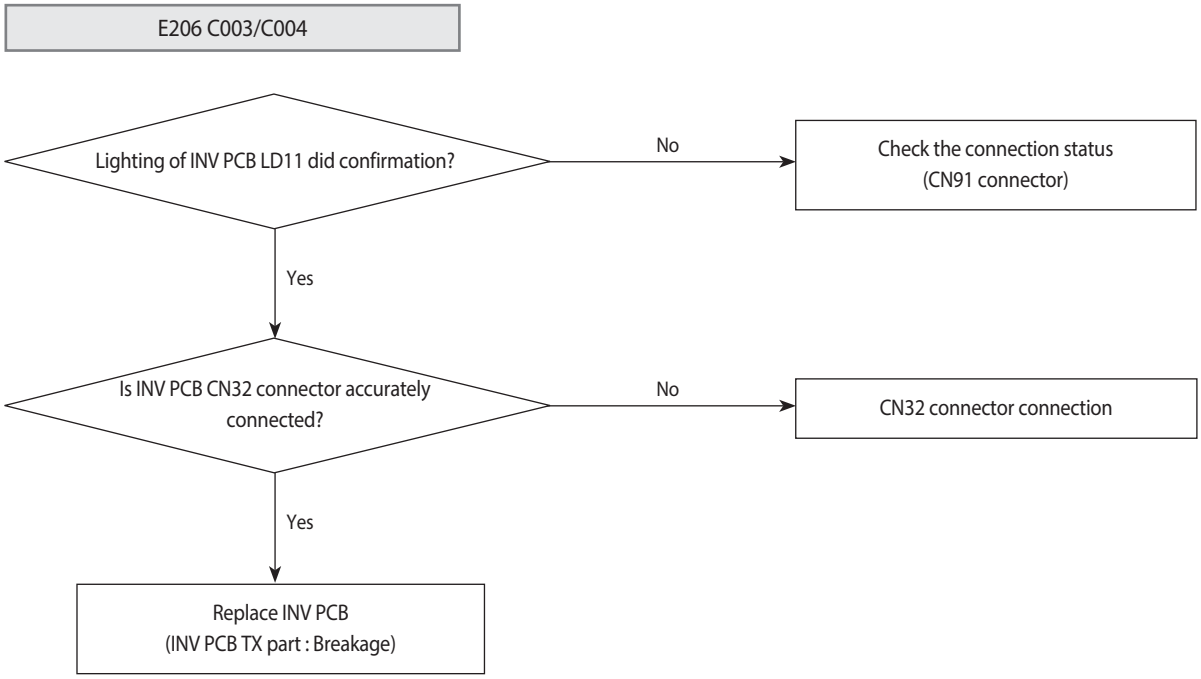
Outdoor unit display	E206
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation / Defrost / Timer / Fan / Filter/MPI Cassette (4/Mini4 Way): Operation / Defrost / Timer / Filter Wall-mounted (NeoForte): 18℃ / 21℃ / Timer / 24℃ / 27℃ × × ◑ ◑ × × ◑ ◑ × × × ◑ ◑ × ※ ● : ON ◑ : Flash × : OFF
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. How to check





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

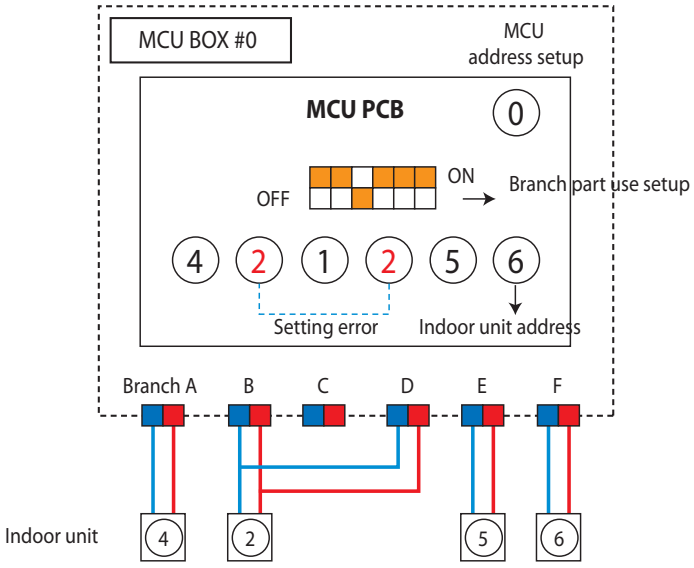


4-4-8 MCU branch part setup error – inconsecutive connection with the use of 2 branch parts

<table>
<tr><td>Outdoor unit display</td><td>E211</td></tr>
<tr><td>Indoor unit display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way),Console, Celing</td><td colspan="4">Cassette (4/Mini4 Way)</td><td colspan="5">Wall-mounted (NeoForte)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter/MPI</td><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<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>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Criteria</td><td>• When 2 branch parts are used for one indoor unit without connecting them consecutively.</td></tr>
<tr><td>Cause of problem</td><td>• Branch part assembly error</td></tr>
</table>

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.

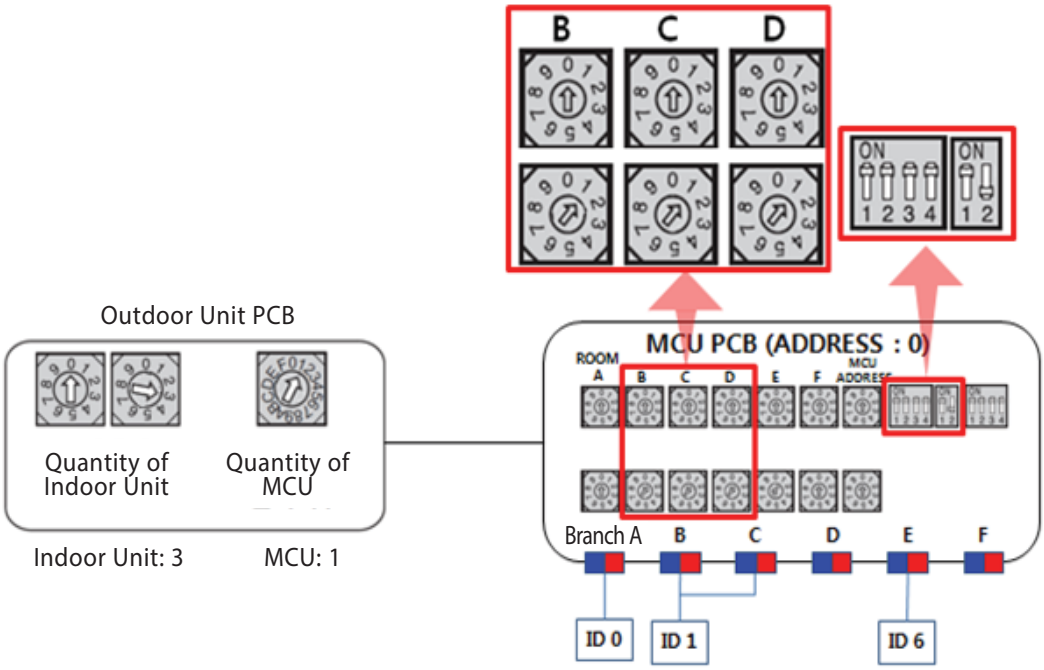


4-4-9 MCU branch part setup error – Repeated setup for the same address over 3 times

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

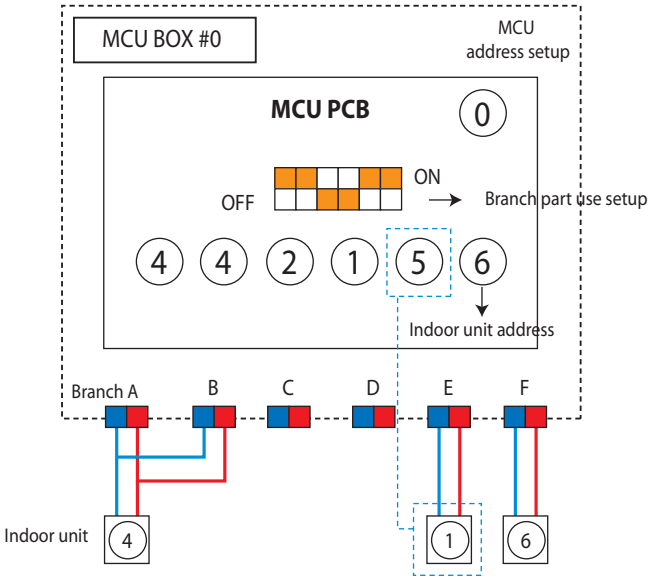


4-4-10 MCU branch part setup error – non-installed address setup

Outdoor unit display	E213
Indoor unit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation × / Timer × / Turbo ◑ / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Criteria	• 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.

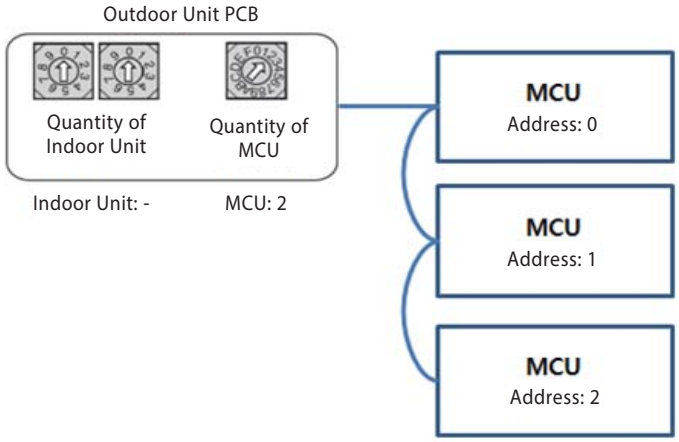


4-4-11 Setup Error for MCU Branch part – Setup Error for MCU Quantity Used

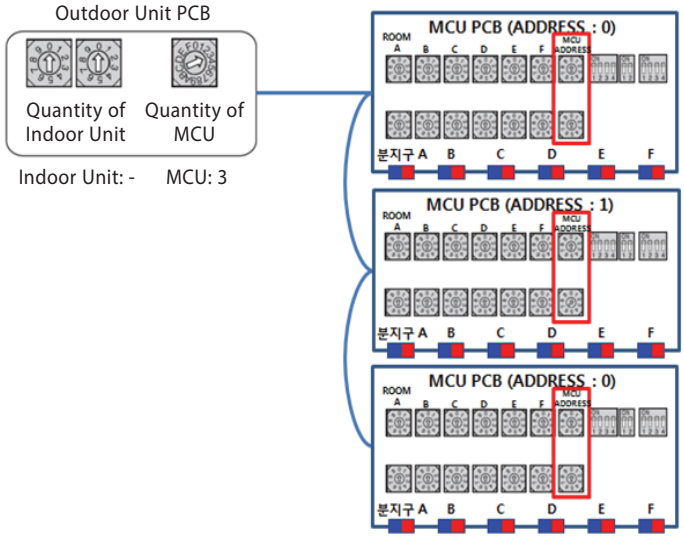
Outdoor Unit Display	E214
Indoor Unit Display	Duct, Cassette (1/2 Way), Console, Celing: Operation ×, Defrost ×, Timer ◑, Fan ◑, Filter/MPI × Cassette (4/Mini4 Way): Operation ×, Defrost ◑, Timer ◑, Filter × Wall-mounted (NeoForte): Operation ×, Timer ×, Turbo ◑, 24℃ ◑, 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	• 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 .

1. 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



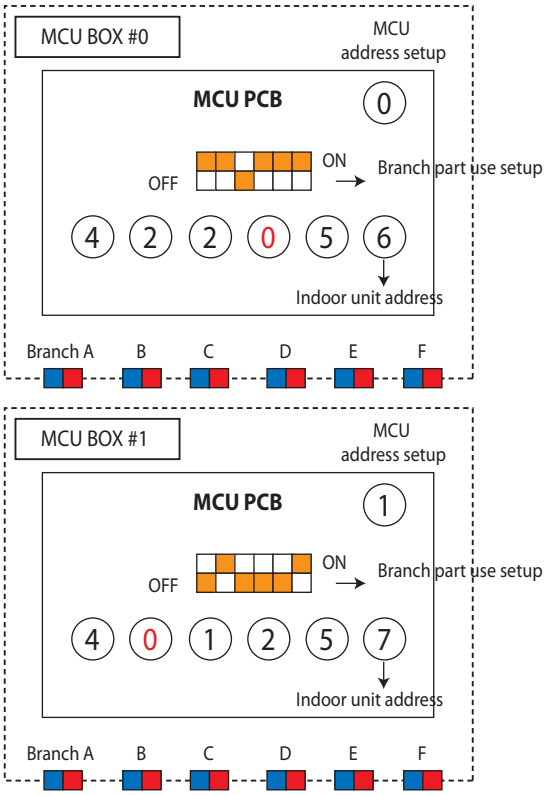
4-4-12 MCU branch part setup error – Overlapping Indoor unit Address setup

Outdoor unit display	E215
Indoor unit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation × / Timer × / Turbo ◑ / 24℃ ◑ / 27℃ × ※ ● : 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

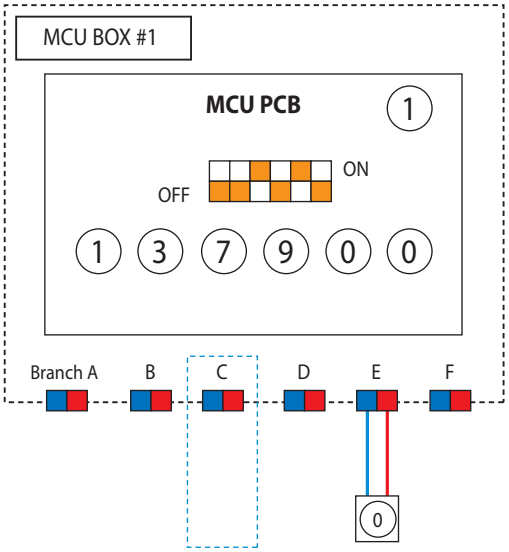
   After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



4-4-13 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, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation × / Timer × / Turbo ◑ / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
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

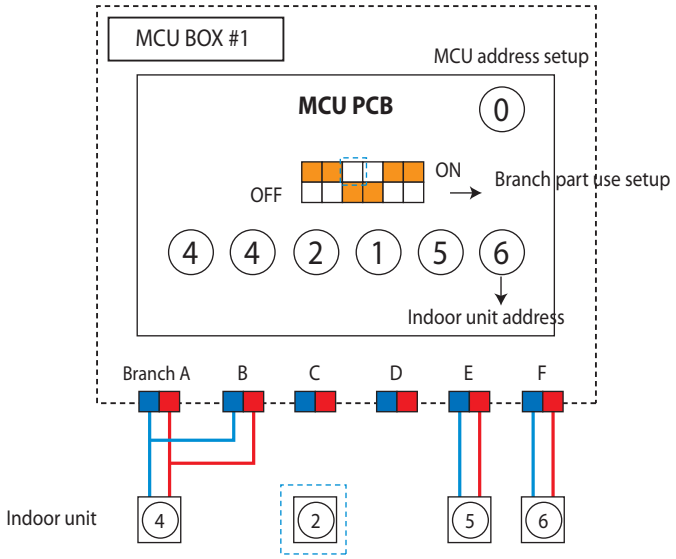
1. How to check
   Adjust the Dip switch that sets up the use of MCU branch part to 'Not-Used'. After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



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

Outdoor unit display	E217
Indoor unit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation × / Timer × / Turbo ◑ / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
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.



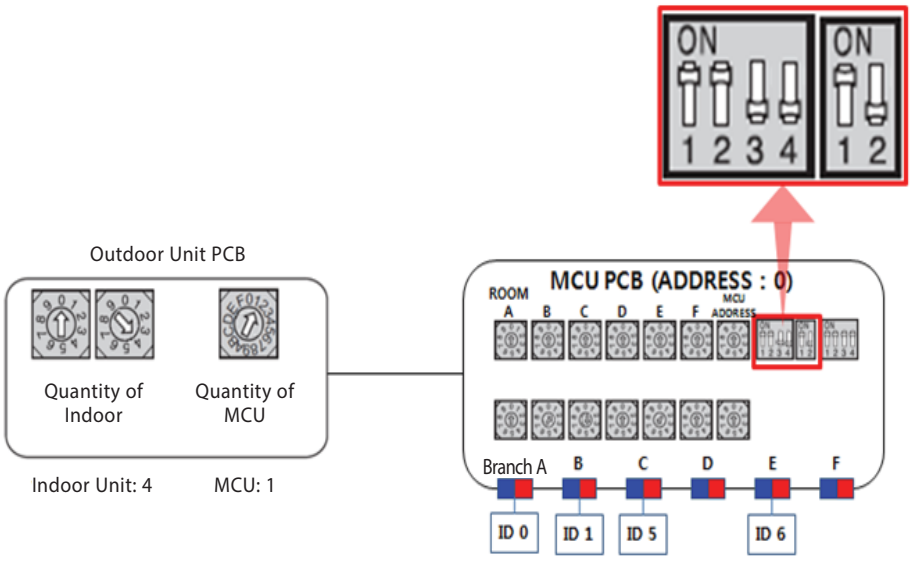
4-4-15 MCU branch part setup error – Connect more Indoor units than what is actually set up in MCU

Outdoor unit display	E218
Indoor unit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ×, Defrost ×, Timer ◑, Fan ◑, Filter/MPI × Cassette (4/Mini4 Way): Operation ×, Defrost ◑, Timer ◑, Filter × Wall-mounted (NeoForte): Operation ×, Timer ×, Turbo ◑, 24℃ ◑, 27℃ × ※ ● : 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

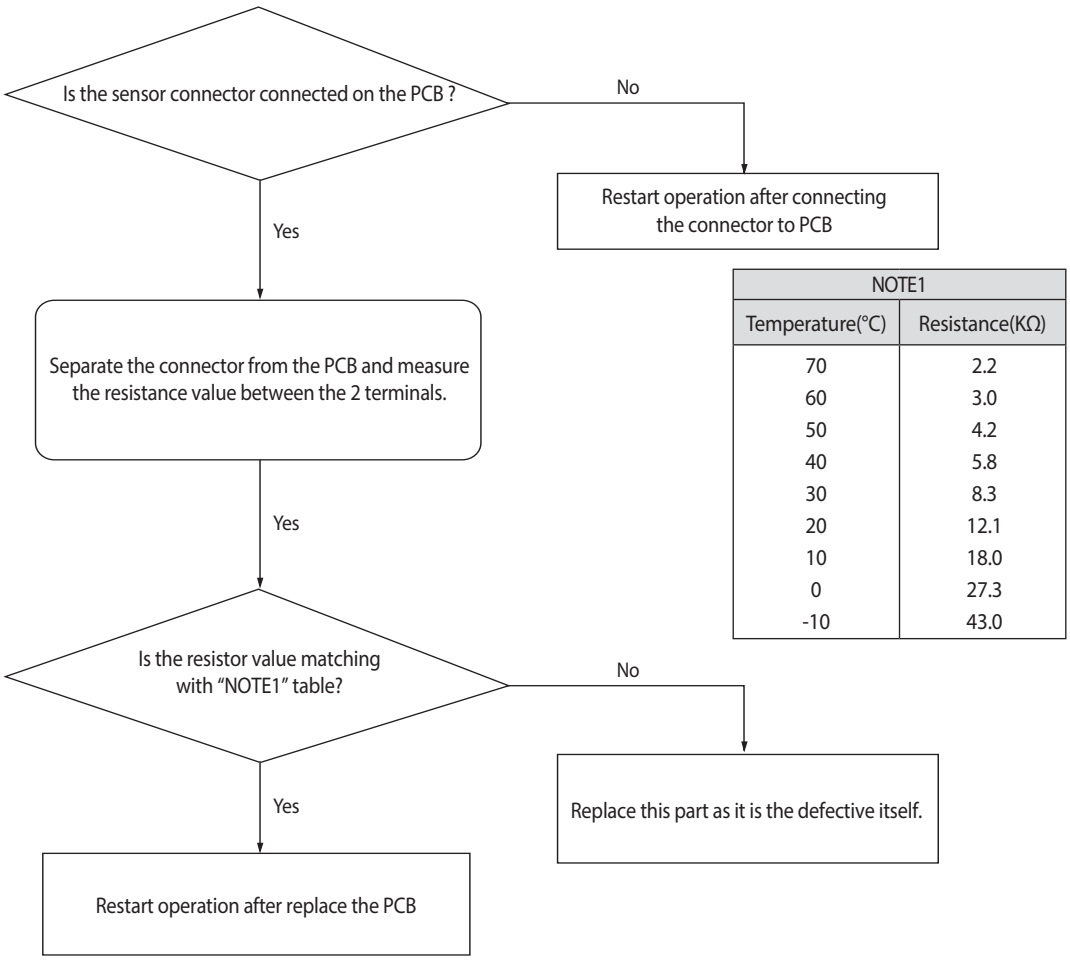
ex) Indoor unit No.5 was connected to branch part C, but DIP switch No.3 (branch part C) is off.



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

<table>
<tr><td>Outdoor unit display</td><td>E219 (MCU subcooler)
E220 (MCU)</td></tr>
<tr><td>Indoor Unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Refer to the judgement method below.</td></tr>
<tr><td>Cause of problem</td><td>· MCU/MCU subcooler entrance/exit sensor is open/short</td></tr>
</table>

1. Cause of problem



NOTE1

Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

4-4-17 Outdoor Temperature Sensor Error

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

1. How to check

Is the outdoor temperature sensor connector (CN43) connected to PCB?

No

Restart operation after connecting the connector to the PCB.

Yes

After separating the outdoor temperature sensor connector from the PCB, measure the resistance value between the terminals.

Resistance value measure part

Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

Did the resistance value significantly stray from the following temperature table?

No

Replace this since it is the defective of the outdoor temperature sensor itself.

Yes

Restart operation after replace the PCB

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

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

1. How to check

Is the COND OUT sensor connector (CN43) connected to PCB?

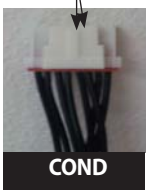
No

Restart operation after connecting the connector to the PCB.

Yes

After separating the outdoor Cond Out sensor connector from the PCB, measure the resistance value between the two terminals.

Resistance value measure part



Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

Did the resistance value significantly stray from the following temperature table?

No

Replace this part as it is the defective of the outdoor Cond Out sensor itself.

Yes

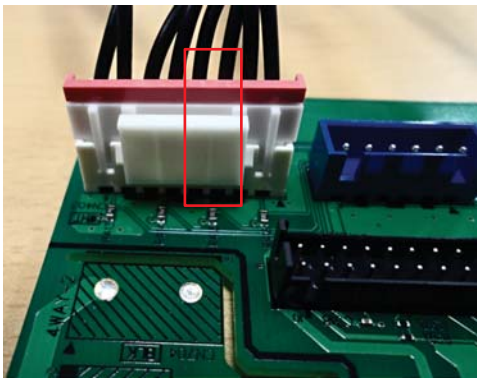
Restart operation after replace the PCB

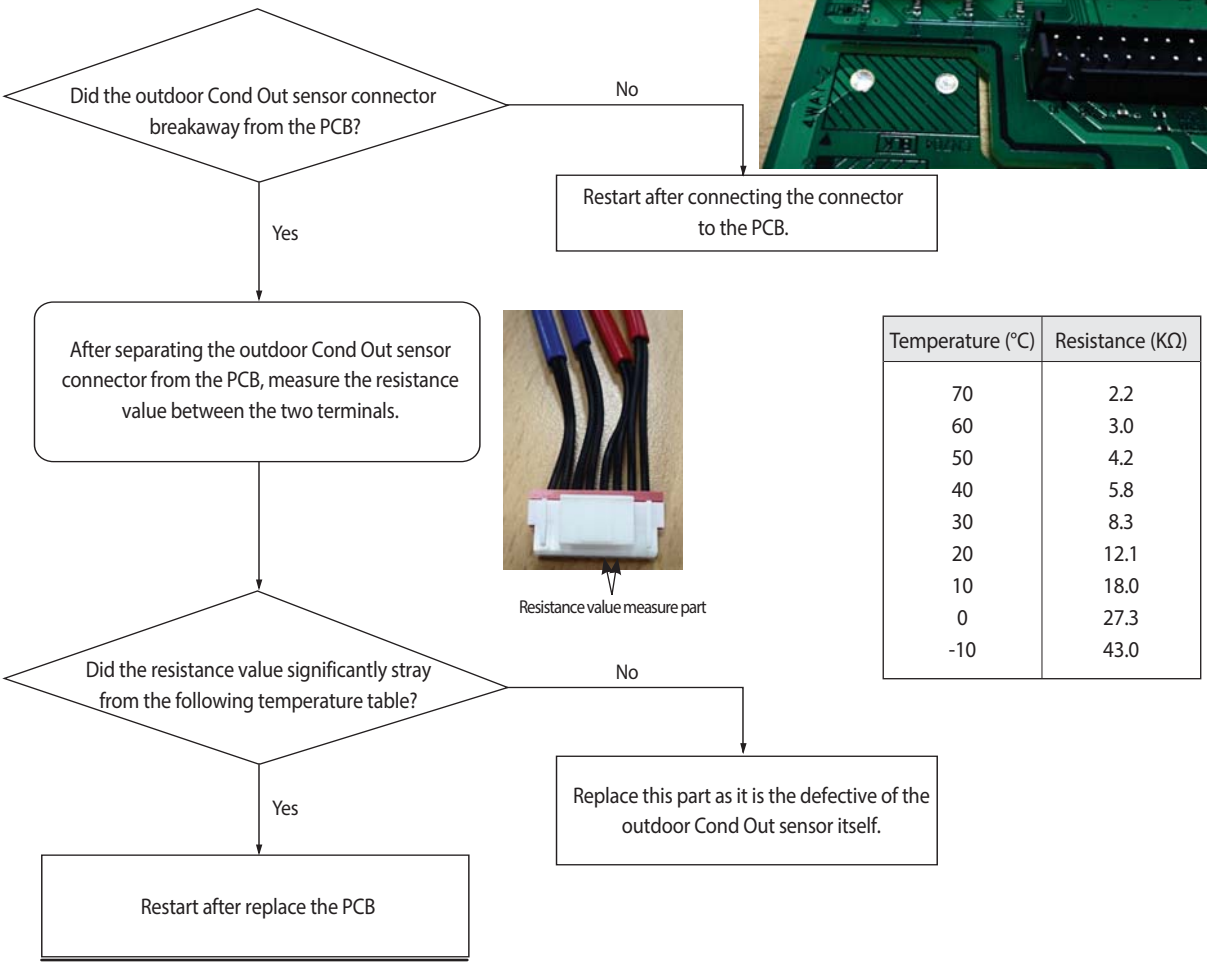
Cond Out Temperature Sensor Error (Open/Short) (con.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E231
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ◑ / Defrost × / Timer × / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation ◑ / Defrost × / Timer ◑ / Filter × Wall-mounted (NeoForte): Operation ◑ / Timer × / Turbo × / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below.
Cause of problem	· Disconnection or breakdown of relevant sensor.

1. How to check





Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

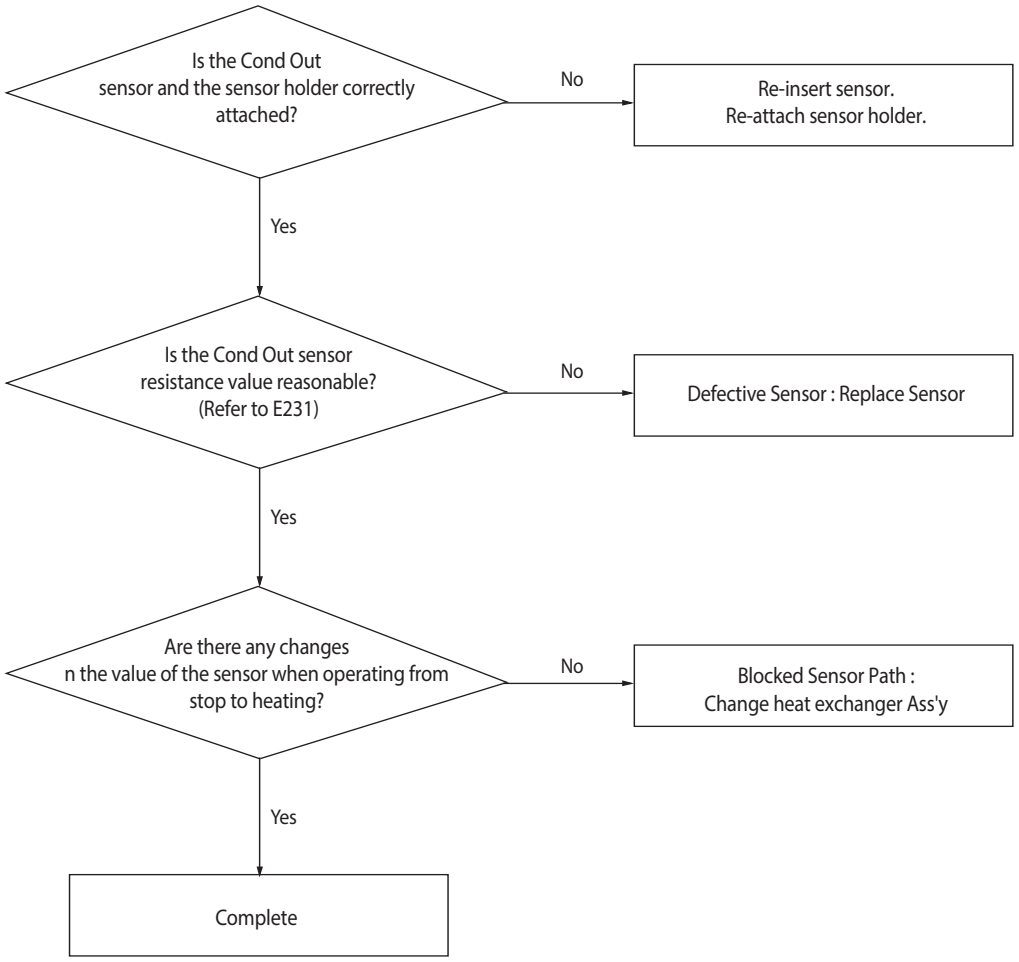
4-4-19 Outdoor Cond Out sensor breakaway error

Outdoor unit display	E241 (Air Cooled)
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : 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.)

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

2. How to check

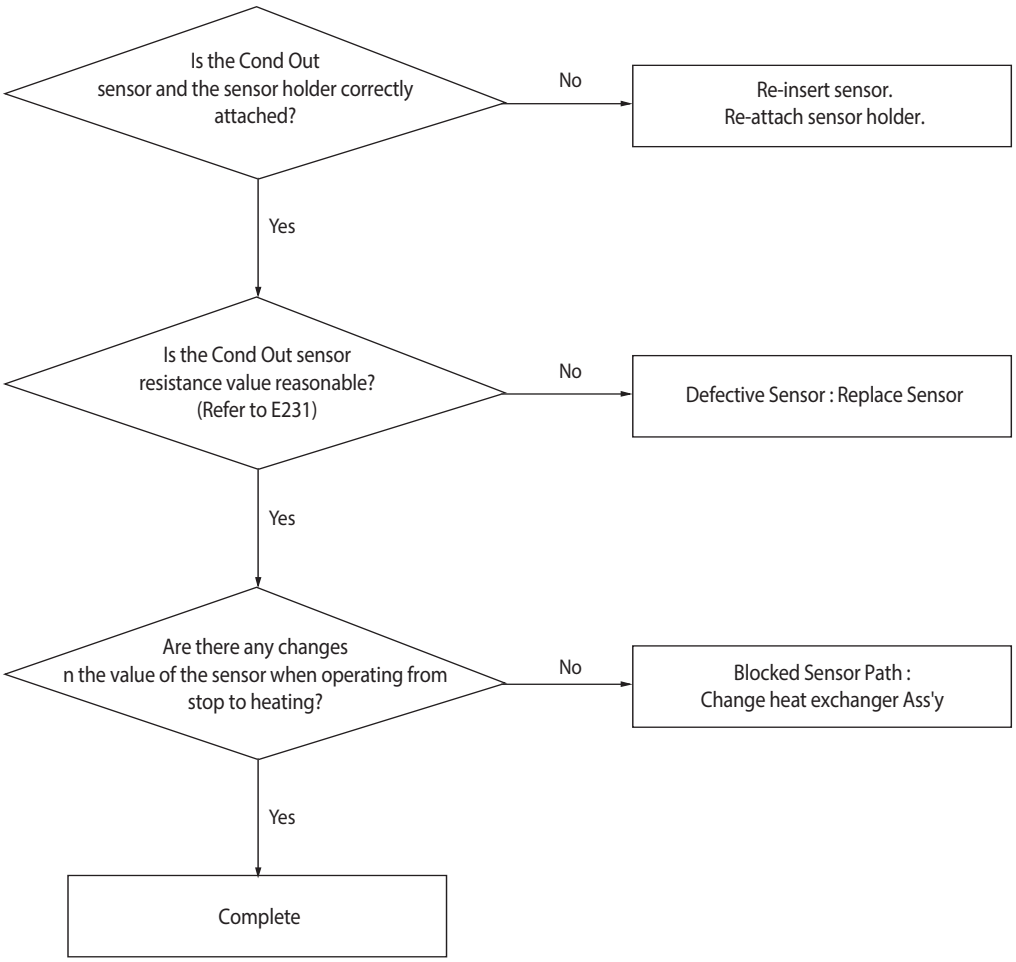


<table>
<tr><td>Outdoor unit display</td><td>E241 (Water Cooled)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">Wall-mounted (NeoForte)</th></tr>
<tr><th>Operation</th><th>Defrost</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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Refer to the judgment method below.</td></tr>
<tr><td>Cause of problem</td><td>· Outdoor Cond Out sensor breakaway/defective/ relevant path blocked.</td></tr>
</table>

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 I Tcondout_real-Tcondout_ini I < 2℃ maintain conditions during 40 minutes.

      ※ Tcondout_ini : Condout out temperature just before the compressor operating starts.
      Tcondout_real : Condout temperature of the current compressor.

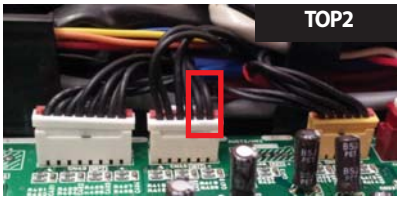
2. How to check

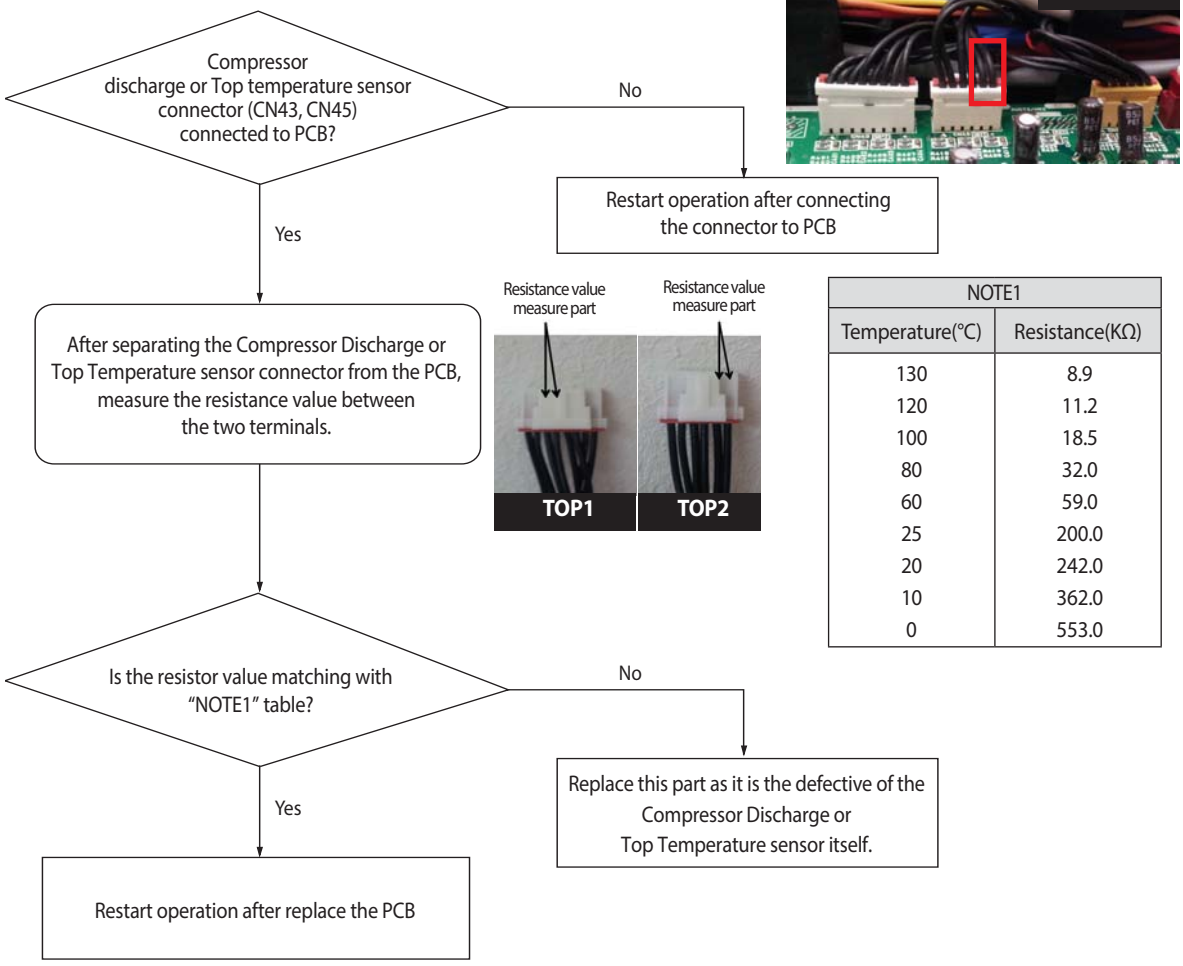


4-4-20 Compressor Discharge or Top 1/2 Temperature sensor error

<table>
<tr><td>Outdoor unit display</td><td>E251 (Compressor 1 Discharge) E257 (Compressor 2 Discharge)
E276 (Compressor 1 Top) E277 (Compressor 2 Top)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Refer to the judgment method below.</td></tr>
<tr><td>Cause of problem</td><td>· Compressor Discharge or Top Temperature sensor defective. (Open/Short)</td></tr>
</table>

1. How to check





NOTE1

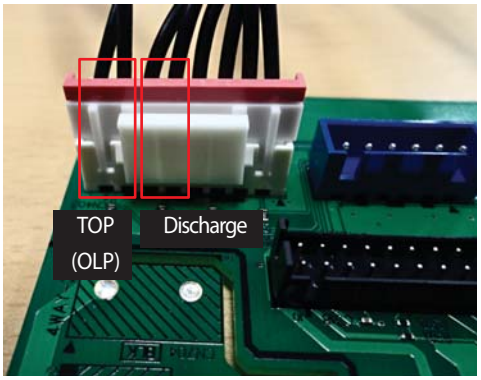
Temperature(℃)	Resistance(KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200.0
20	242.0
10	362.0
0	553.0

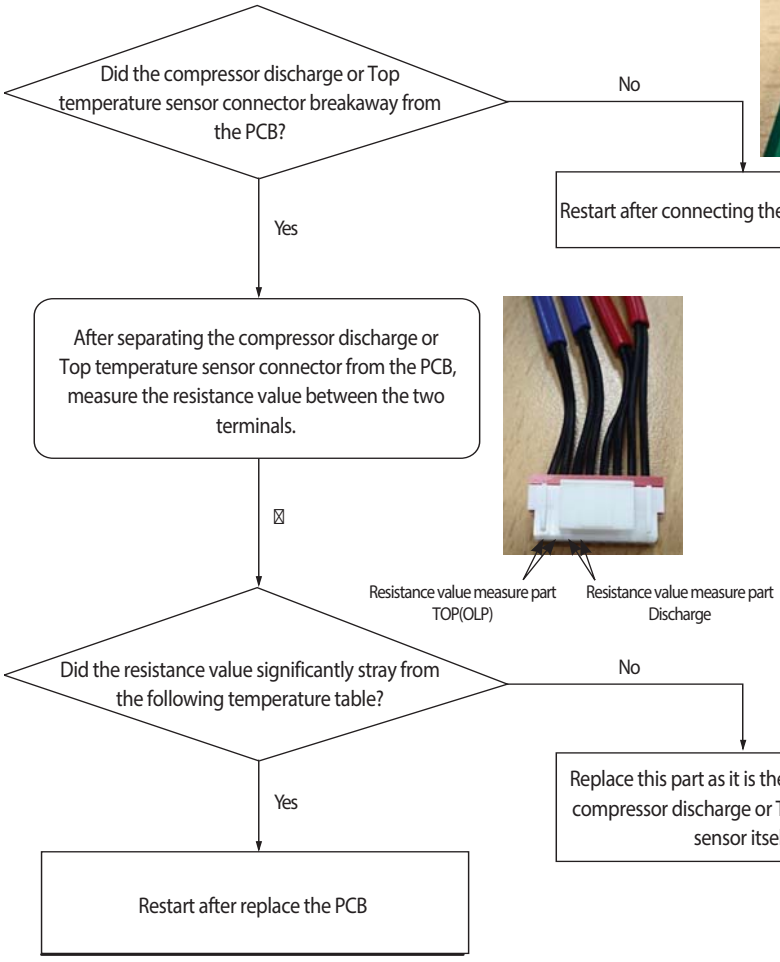
Compressor Discharge or Top 1/2 Temperature sensor error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E251 (Compressor 1 Discharge) E276 (Compressor 1 Top)
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ◑ / Defrost × / Timer × / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation ◑ / Defrost × / Timer ◑ / Filter × Wall-mounted (NeoForte): 18℃ ◑ / 21℃ × / Turbo × / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below.
Cause of problem	· Compressor discharge or Top temperature sensor defective. (Open / Short)

1. How to check



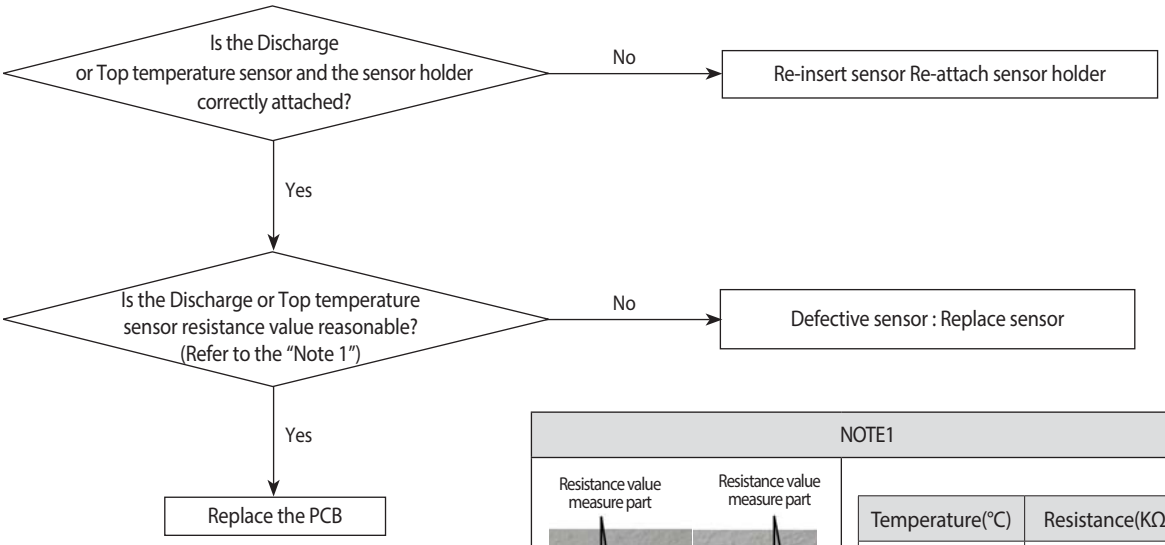


Temperature (°C)	Resistance (KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200.0
20	242.0
10	362.0
0	553.0

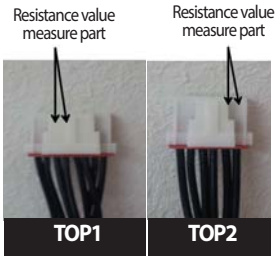
4-4-21 Compressor Discharge or Top temperature sensor breakaway error

<table>
<tr><td>Outdoor unit display</td><td>E262 (Compressor 1 Discharge) E263 (Compressor 2 Discharge)
E266 (Compressor 1 Top) E267 (Compressor 2 Top)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</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℃</th><th>27℃</th></tr>
<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>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>1) Faulty compressor frequency of 60Hz or higher.
2) Suction temperature > Low pressure saturation temperature +10 ℃
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) for 30min.</td></tr>
<tr><td>Cause of problem</td><td>· Compressor discharge or Top temperature sensor breakaway and defective / Ineffective start of compressor</td></tr>
</table>

1. Cause of problem



NOTE1



TOP1 : CN43 (3, 4)
TOP2 : CN45 (5, 6)
DIS1 : CN43 (1, 2)
DIS2 : CN45 (3, 4)

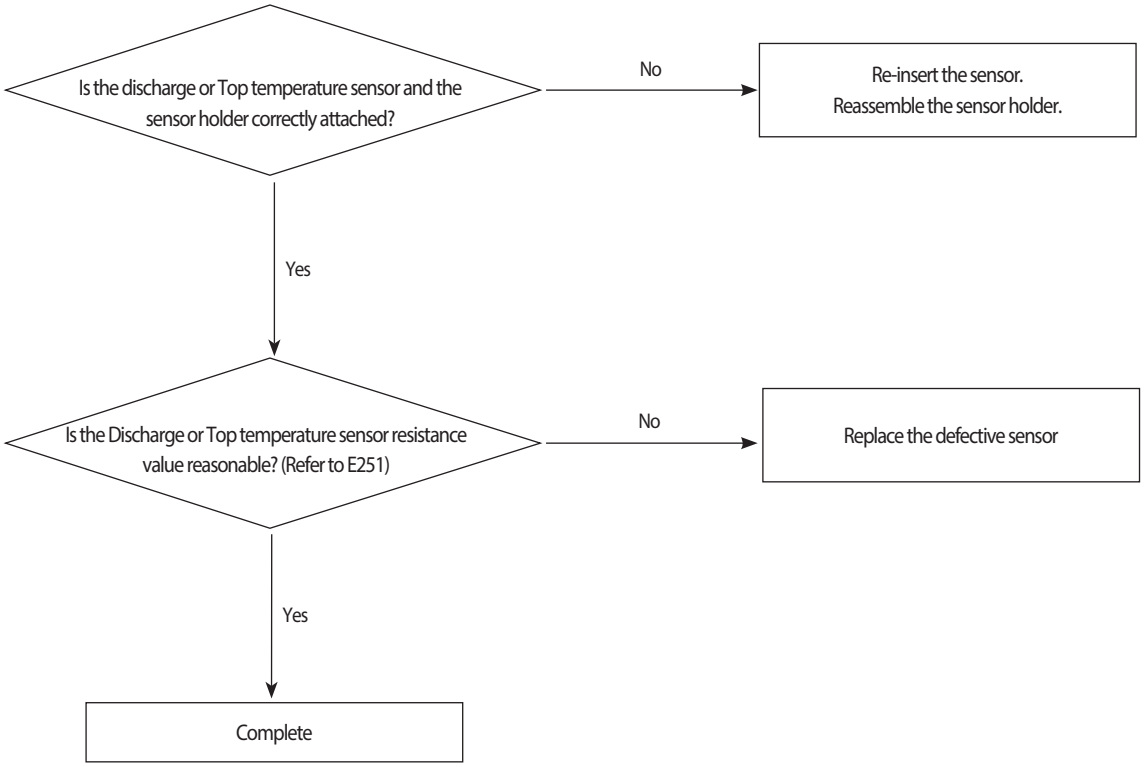
Temperature(℃)	Resistance(KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200.0
20	242.0
10	362.0
0	553.0

Compressor Discharge or Top temperature sensor breakaway error (cont.)

■ AM038/048/055KXWD✳✳

<table>
<tr><td>Outdoor unit display</td><td>E262 (Compressor 1 Discharge)
E266 (Compressor 1 Top)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</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>18℃</th><th>21℃</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<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>
</table>
※ ● : ON ◑ : Flash × : OFF</td></tr>
<tr><td>Judgment Method</td><td>1) Relevant compressor frequency of 60Hz or higher.
2) Suction temperature > Low pressure saturation temperature +10℃
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).</td></tr>
<tr><td>Cause of problem</td><td>· Compressor discharge or Top temperature sensor breakaway and defective / starting badness of compressor</td></tr>
</table>

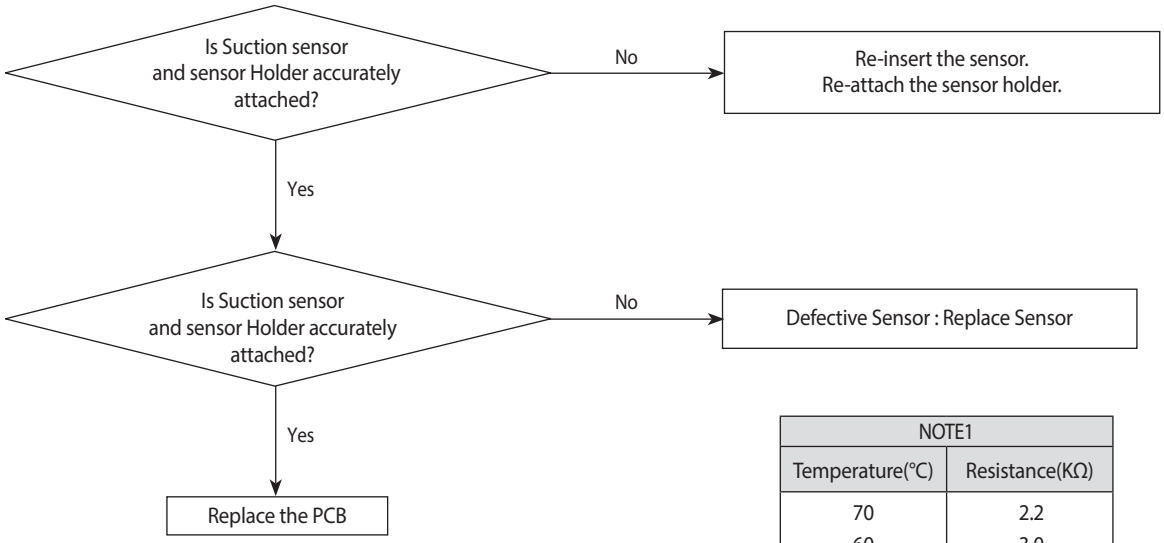
1. How to check



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

<table>
<tr><td>Outdoor unit display</td><td>E269</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ●: ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Judgment Method : Difference of suction temperature of compressor starting verge and suction temperature that is on present operation : If less than 2 ℃ for 30 minutes to keep.(Judgment at heating operation only)</td></tr>
<tr><td>Cause of problem</td><td>· Suction temperature sensor breakaway/defective.</td></tr>
</table>

1. How to check



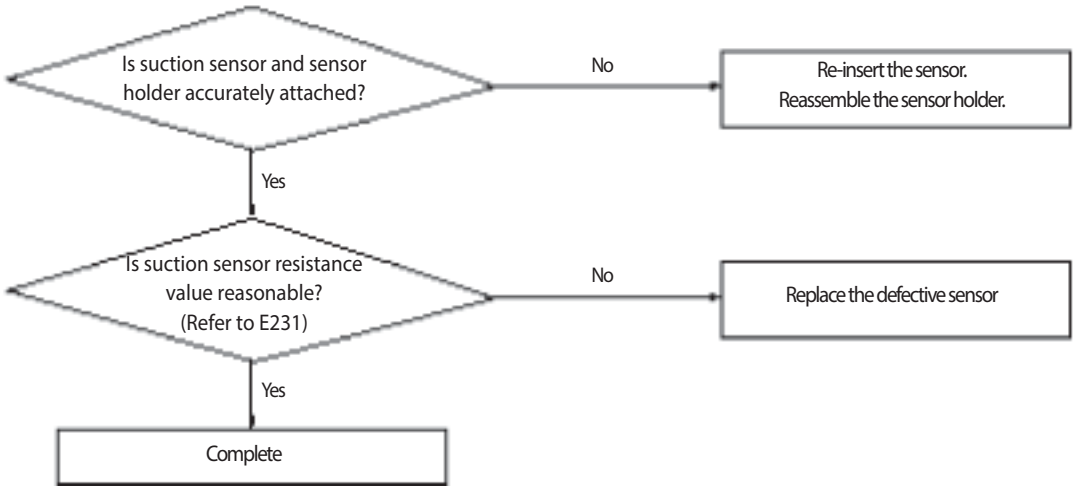
NOTE1	
Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

E269 : Suction Temperature sensor breakaway error (cont.)

■ AM038/048/055KXWD✳✳

<table>
<tr><td>Outdoor unit display</td><td>E269</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</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>18℃</th><th>21℃</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<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>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Difference of suction temperature of compressor starting verge and suction temperature that is on present operation : When less than 2 ℃ for 30 minutes to keep. (Judgment at heating operation only)</td></tr>
<tr><td>Cause of problem</td><td>· Suction temperature sensor breakaway / defective</td></tr>
</table>

1. How to check

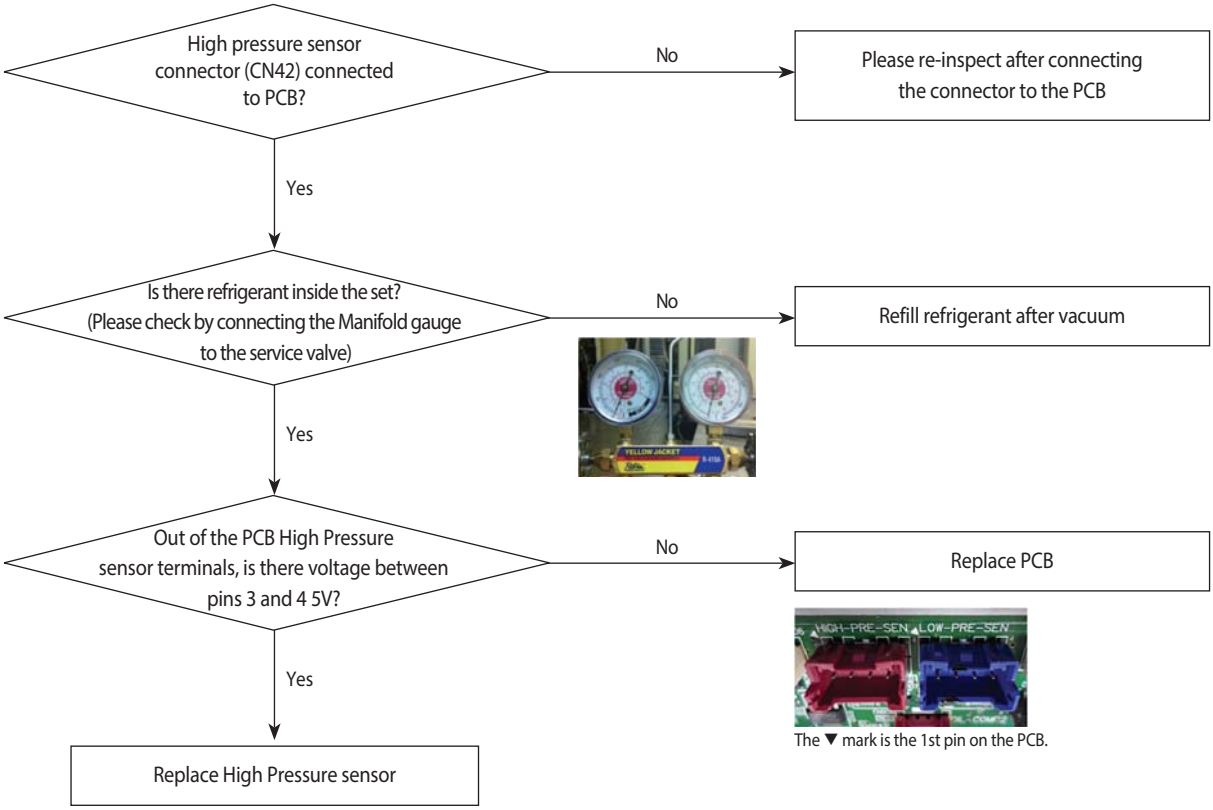


4-4-23 High Pressure sensor error (Open/Short)

<table>
<tr><td>Outdoor unit display</td><td>E291</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Refer to the judgment method below</td></tr>
<tr><td>Cause of problem</td><td>· Disconnection or breakdown of relevant sensor.</td></tr>
</table>

1. High 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



The ▼ mark is the 1st pin on the PCB.

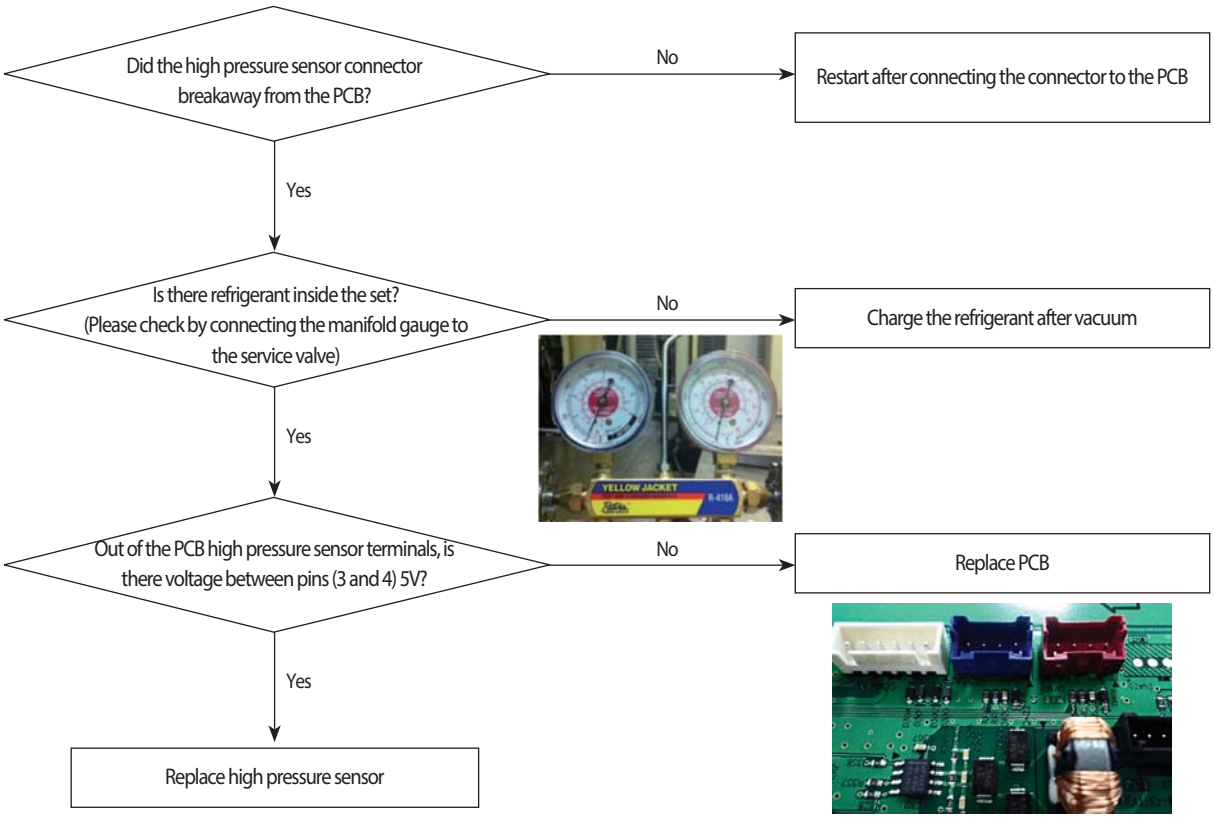
High pressure sensor error (Open / Short) (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E291
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ◑ / Defrost × / Timer × / Fan ◑ / Filter/MPI × — Cassette (4/Mini4 Way): Operation ◑ / Defrost × / Timer ◑ / Filter × — Wall-mounted (NeoForte): 18℃ ◑ / 21℃ × / Turbo × / 24℃ ◑ / 27℃ ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below.
Cause of problem	· Disconnection or breakdown of relevant sensor.

1. High 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. How to check



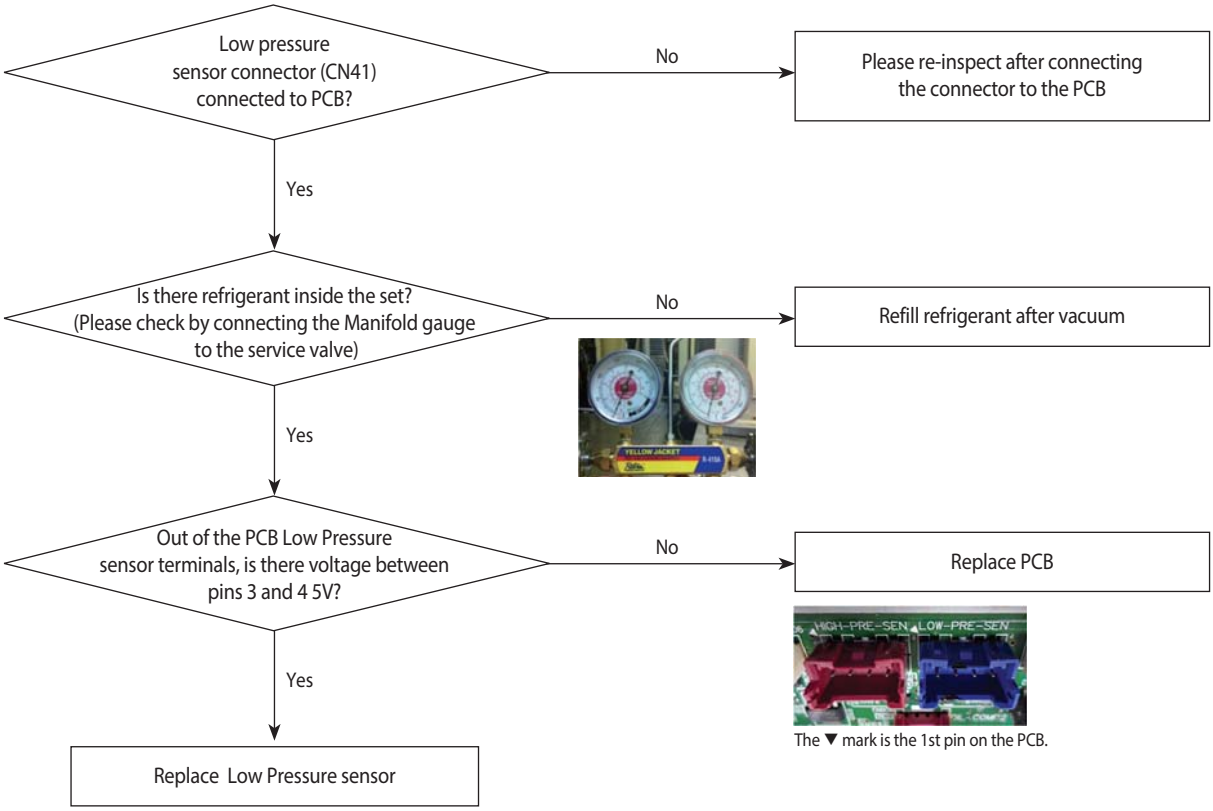
The ▼ mark is the 1st pin on the PCB.

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

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

1. Low 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



The ▼ mark is the 1st pin on the PCB.

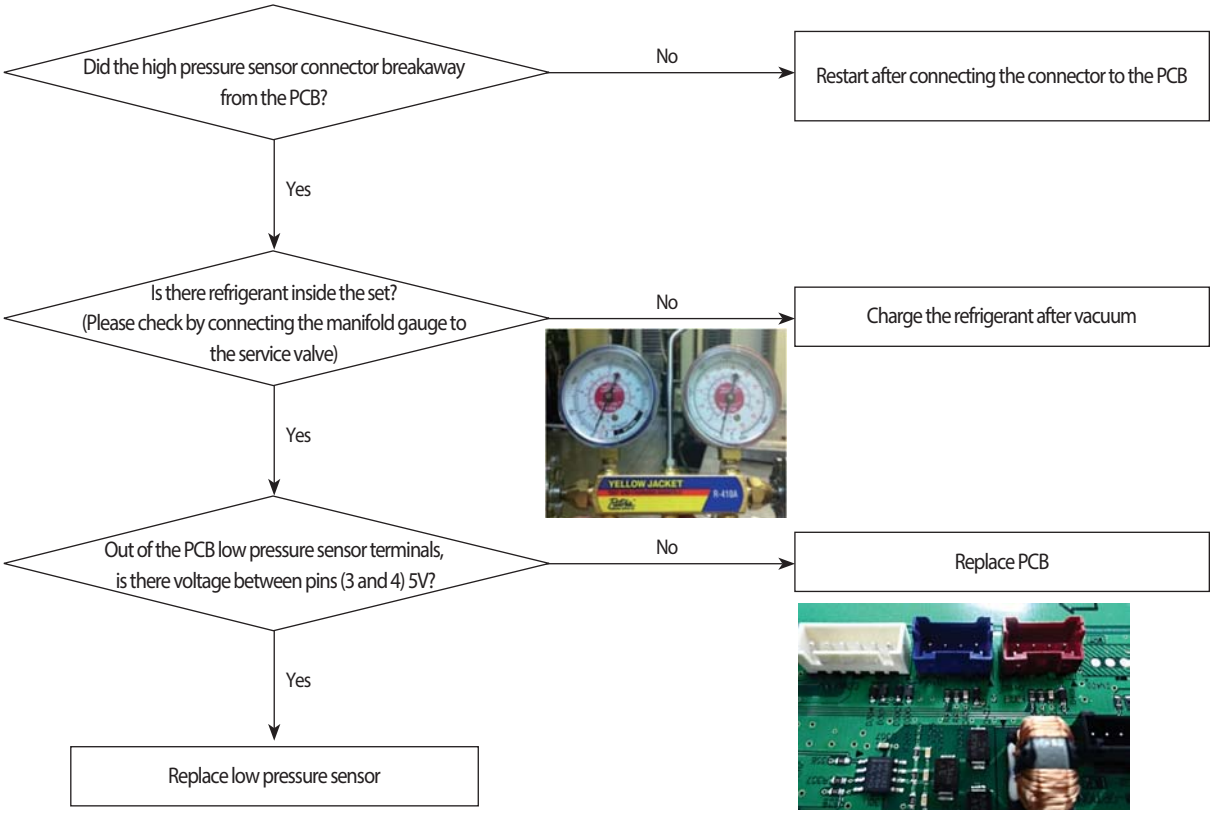
Low pressure sensor error (Open / Short) (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E296
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ◑ / Defrost × / Timer × / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation ◑ / Defrost × / Timer ◑ / Filter × Wall-mounted (NeoForte): 18℃ ◑ / 21℃ × / Turbo × / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below..
Cause of problem	· Disconnection or breakdown of relevant sensor.

1. Low 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. How to check

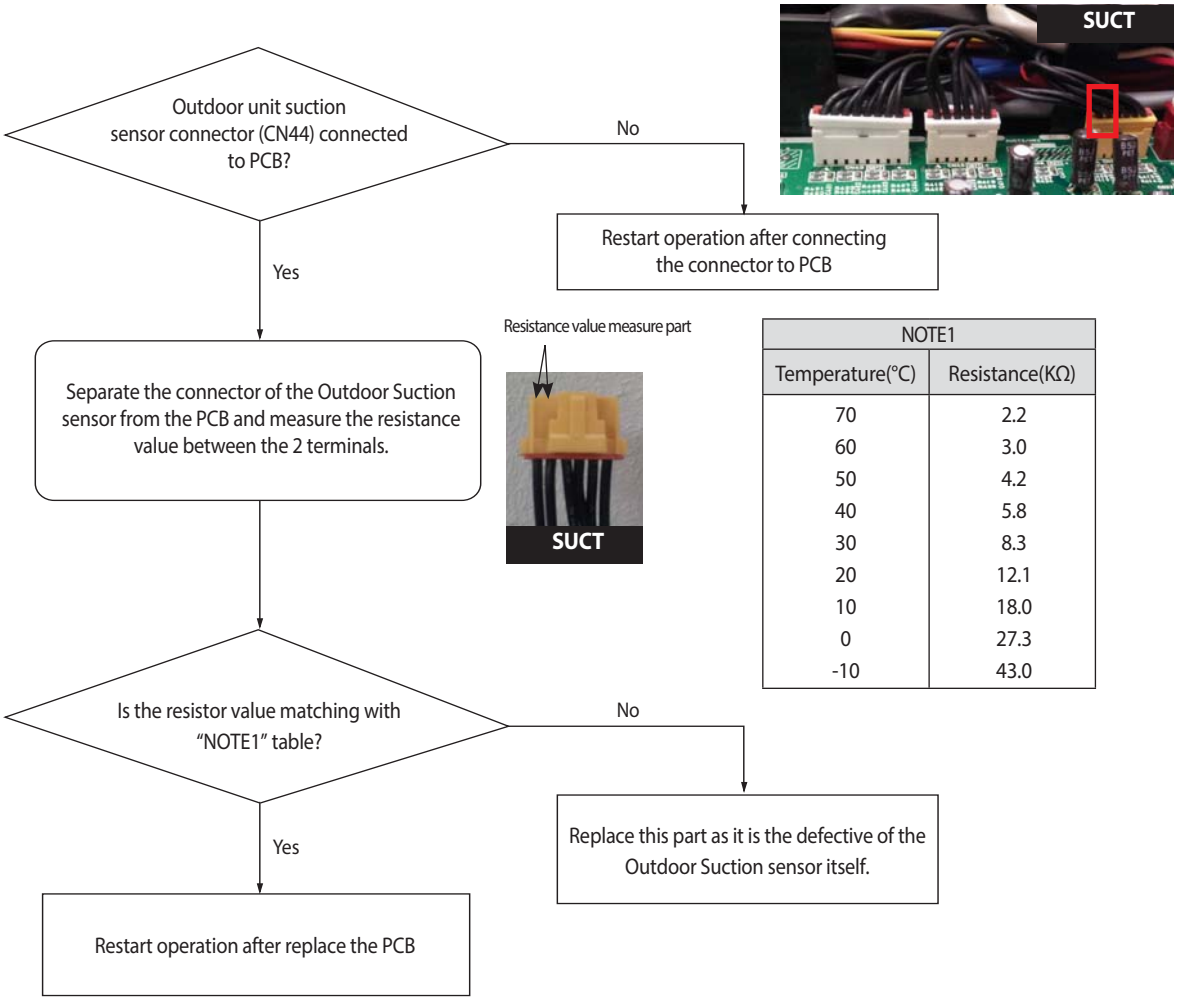


The ▼ mark is the 1st pin on the PCB.

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

<table>
<tr><td>Outdoor unit display</td><td>E308</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Refer to the judgment method below.</td></tr>
<tr><td>Cause of problem</td><td>· Disconnection or breakdown of relevant sensor. (More than 4.5V or 0.5V less than)</td></tr>
</table>

1. How to check

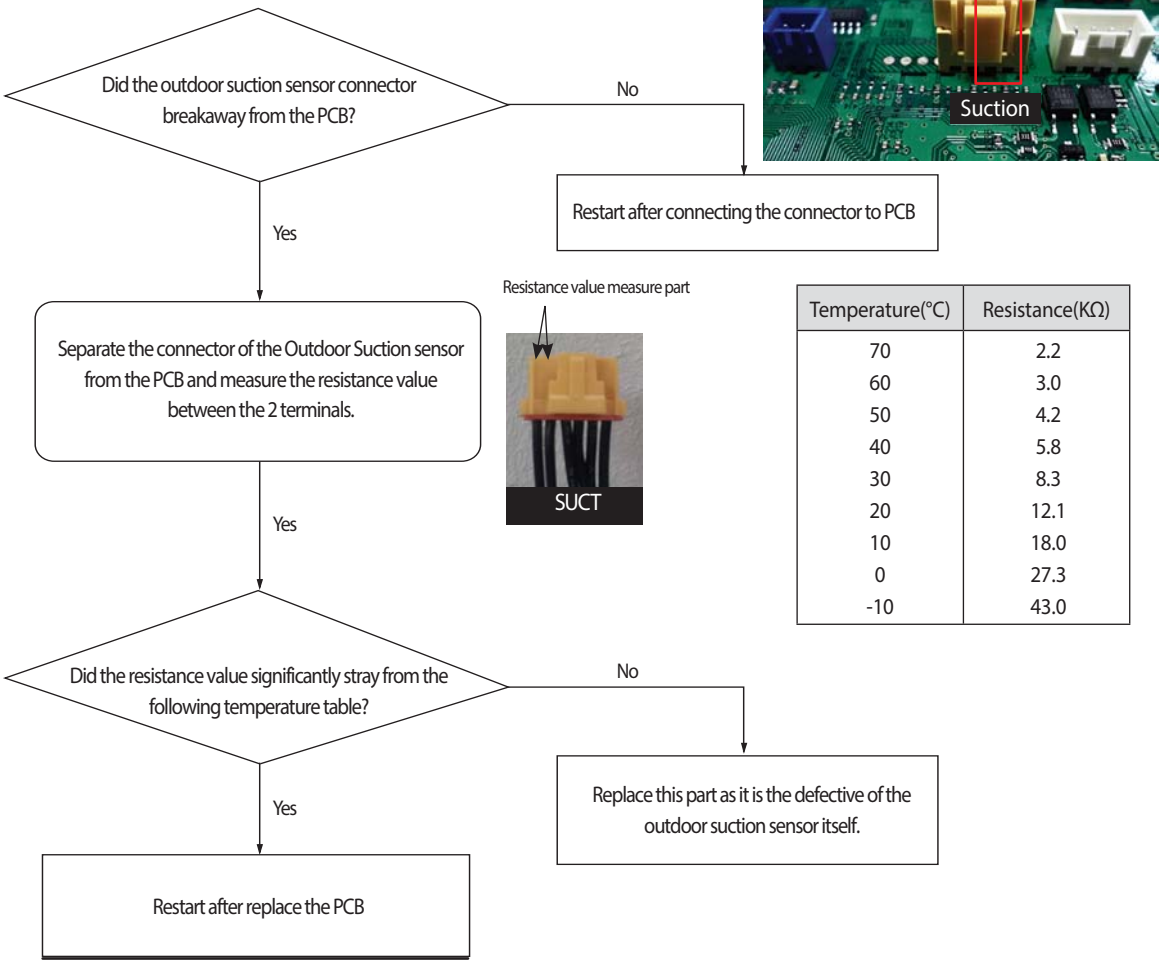


Suction temperature sensor error (Open / Short) (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E308
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ◑ / Defrost × / Timer × / Fan ◑ / Filter/MPI × Cassette (4/Mini4 Way): Operation ◑ / Defrost × / Timer ◑ / Filter × Wall-mounted (NeoForte): 18℃ ◑ / 21℃ × / Turbo × / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below..
Cause of problem	· Disconnection or breakdown of relevant sensor.

1. How to check



Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

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

Outdoor unit display	E311
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ×, Defrost ×, Timer ◑, Fan ◑, Filter/MPI ◑ Cassette (4/Mini4 Way): Operation ×, Defrost ◑, Timer ◑, Filter ◑ Wall-mounted (NeoForte): Operation ●, Timer ◑, Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the judgment method below.
Cause of problem	· Disconnection or breakdown of relevant sensor. (More than 4.5V or 0.5V less than)

1. How to check

Liquid pipe temperature sensor connector (CN45) connected to PCB?

No

Restart operation after connecting the connector to PCB

Yes

Separate the connector of the Liquid Pipe Temperature sensor from the PCB and measure the resistance value between the 2 terminals.

Resistance value measure part

NOTE1	
Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

Is the resistor value matching with "NOTE1" table?

No

Replace this part as it is the defective of the Liquid Pipe Temperature sensor itself.

Yes

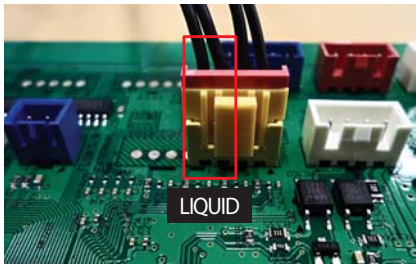
Restart operation after replace the PCB

Liquid pipe temperature sensor error (Open / Short) (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E311
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ◑ / Defrost × / Timer × / Fan ◑ / Filter/MPI × — Cassette (4/Mini4 Way): Operation ◑ / Defrost × / Timer ◑ / Filter × — Wall-mounted (NeoForte): 18℃ ◑ / 21℃ × / Turbo × / 24℃ ◑ / 27℃ × ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the how to check below..
Cause of problem	· Disconnection or breakdown of relevant sensor.

1. How to check



Did the liquid pipe temperature sensor connector breakaway from the PCB?

No

Restart after connecting the connector to PCB

Yes

Separate the connector of the liquid pipe temperature sensor from the PCB and measure the resistance value between the 2 terminals.

Resistance value measure part
LIQUID

Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

Yes

Did the resistance value significantly stray from the following temperature table?

No

Replace this part as it is the defective of the liquid pipe temperature sensor itself.

Yes

Restart after replace the PCB

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

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

1. How to check

Outdoor EVI IN sensor connector (CN44) connected to PCB?

No

Restart operation after connecting the connector to PCB

Yes

Separate the connector of the Outdoor EVI In Temperature sensor from the PCB and measure the resistance value between the 2 terminals.

Resistance value measure part

NOTE1	
Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

Is the resistor value matching with "NOTE1" table?

No

Replace this part as it is the defective of the Outdoor EVI In Temperature sensor itself.

Yes

Restart operation after replace the PCB

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

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

1. How to check

Outdoor EVI OUT sensor connector (CN44) connected to PCB?

No

Restart operation after connecting the connector to PCB

Yes

Separate the connector of the Outdoor EVI Out Temperature sensor from the PCB and measure the resistance value between the 2 terminals.

Resistance value measure part

NOTE1	
Temperature(°C)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

Is the resistor value matching with "NOTE1" table?

No

Replace this part as it is the defective of the Outdoor EVI Out Temperature sensor itself.

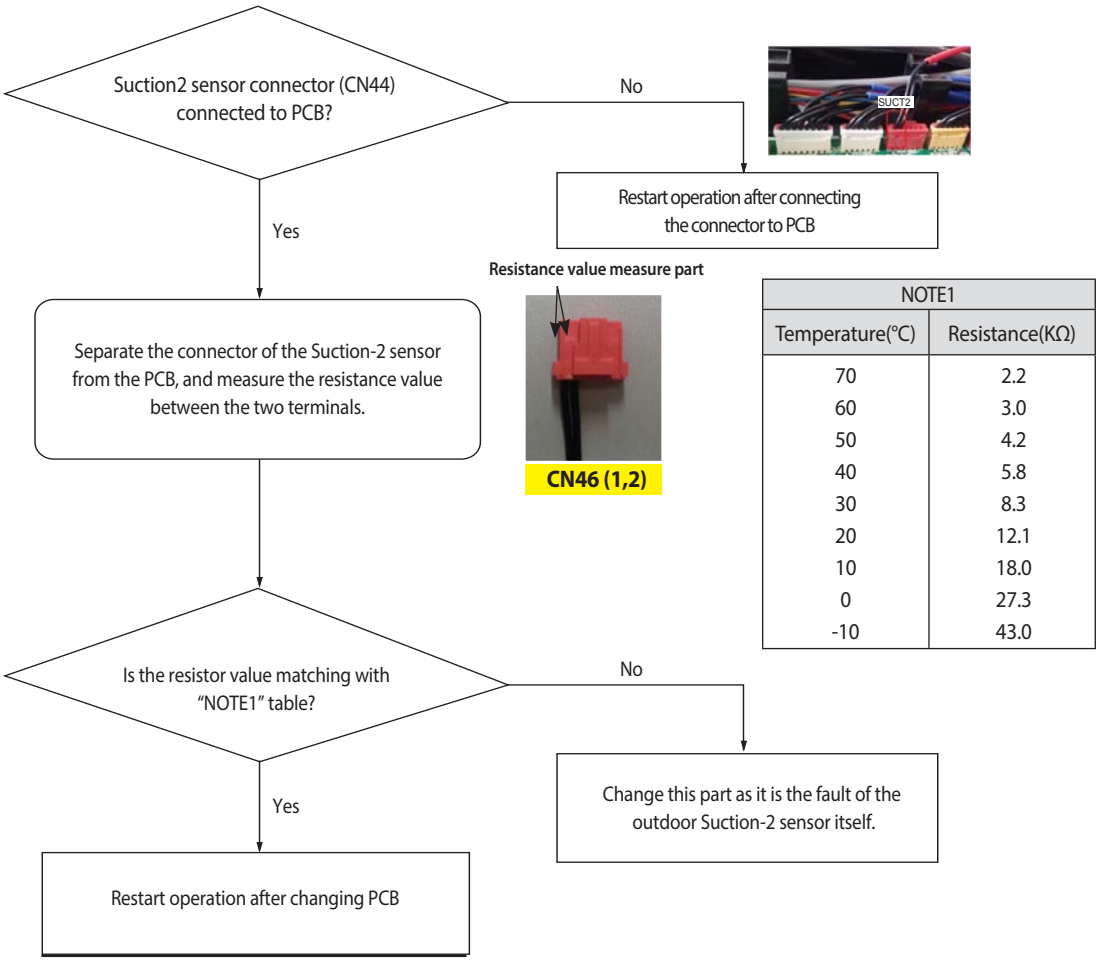
Yes

Restart operation after replace the PCB

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

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

1. Inspection Method



4-4-30 Measures of other outdoor unit error

<table>
<tr><td>Outdoor unit display</td><td>
E347 FAN2 wire unconnected error
E447 FAN1 wire unconnected error
E367 COMP.2 wire unconnected error
E467 COMP.1 wire unconnected error
E399 FAN2 PBA IPM temperature sensor error
E499 FAN1 PBA IPM temperature sensor error
E374 Inverter PBA2 IGBT temperature sensor error
E474 Inverter PBA1 IGBT temperature sensor error
</td></tr>
<tr><td>Indoor Unit Display</td><td>
<table>
<tr><th colspan="6">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="5">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Refer to the measures code below.</td></tr>
<tr><td>Cause of problem</td><td>· Refer to the measures code below.</td></tr>
</table>

1. Judgement by code

Code	Error	Measures
E347	FAN2 wire unconnected error	1. Check the FAN motor and PBA connection. 2. When connected Inverterr checker, if LED operates in the normality : External factors or when LED operates by abnormality, replace the FAN PBA.
E447	FAN1 wire unconnected error	1. Check the FAN motor and PBA connection. 2. When connected Inverterr checker, if LED operates in the normality : External factors or when LED operates by abnormality, replace the FAN PBA.
E367	COMP.2 wire unconnected error	1. Check the Compressor and Inverter PBA connection. 2. When connected inverter checker, if LED operates in the normality : External factors or when LED operates by abnormality, replace the Inverter PBA.
E467	COMP.1 wire unconnected error	1. Check the Compressor and Inverter PBA connection. 2. When connected inverter checker, if LED operates in the normality : External factors or when LED operates by abnormality, replace the Inverter PBA.
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

Measures of other outdoor unit error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E467 COMP.1 wire unconnected error E474 Inverter PBA1 IGBT temperature sensor error
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation, Defrost, Timer, Fan, Filter/MPI Cassette (4/Mini4 Way): Operation, Defrost, Timer, Filter Wall-mounted (NeoForte): 18℃, 21℃, Turbo, 24℃, 27℃ × × ◑ ◑ ◑ × ◑ ◑ ◑ × × ◑ ◑ ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Refer to the measures by code below.
Cause of problem	· Refer to the measures by code below.

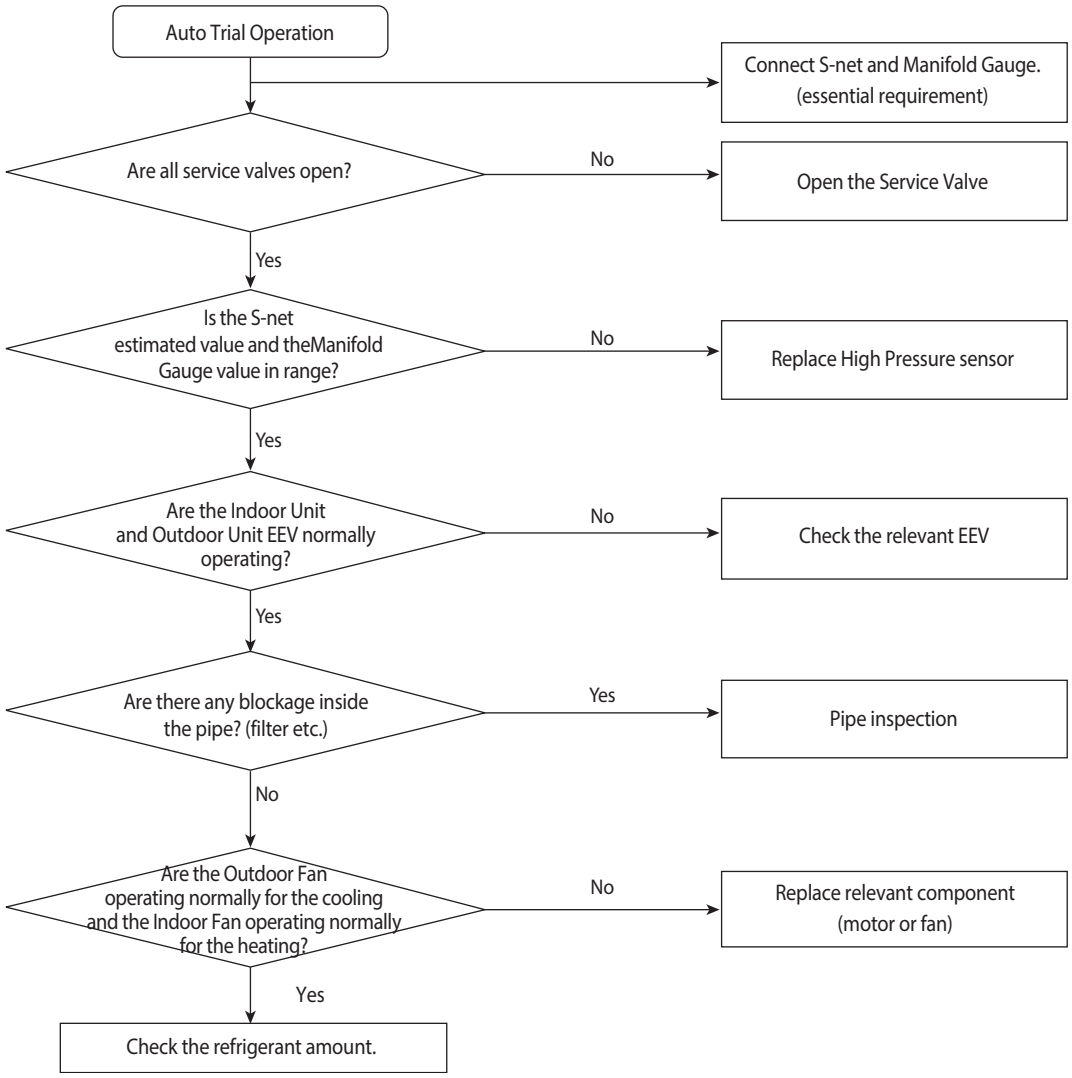
1. Measures by code

Code	Error	Measures
E467	COMP.1 wire unconnected error	Check the connection of COMP and Inverter PBA (If there is no abnormality, replace the PBA)
E474	Inverter PBA1 IGBT temperature sensor error	Replace Inverter PBA

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

Outdoor unit display	E407 (Air Cooled)
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Value of the high pressure sensor is detected at 41kg/cm^2 or more
Cause of problem	**<Cooling Operation>** · Outdoor unit fan motor problem (constrained, defective) · Outdoor heat exchanger is contaminated. · Service valve locked/Fill refrigerant **<Heating Operation>** · Service valve locked/Excessive refrigerant

1. How to check

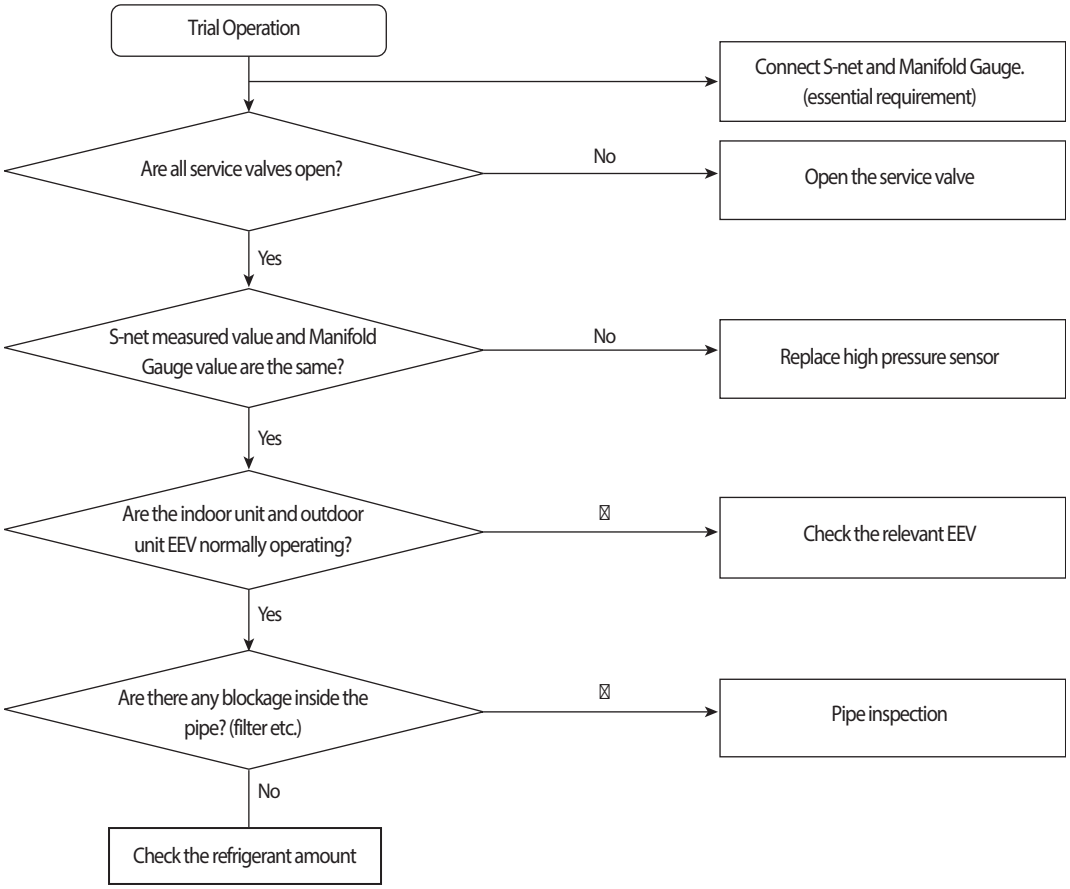


Comp. Down due to high pressure protection control (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E407
Indoorunit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Judgment Method	· Value of the high pressure sensor is detected at 41kg/cm^2 or more
Cause of problem	**<Cooling Operation>** · Outdoor unit fan motor problem (constrained, defective) · Motor driver defective or wire short circuit · Contaminated outdoor heat exchanger · Service valve locked / Excessive refrigerant **<Heating Operation>** · Outdoor unit fan motor problem (constrained, defective) · Fan motor capacitor defective or wire short circuit · Service valve locked / Excessive refrigerant

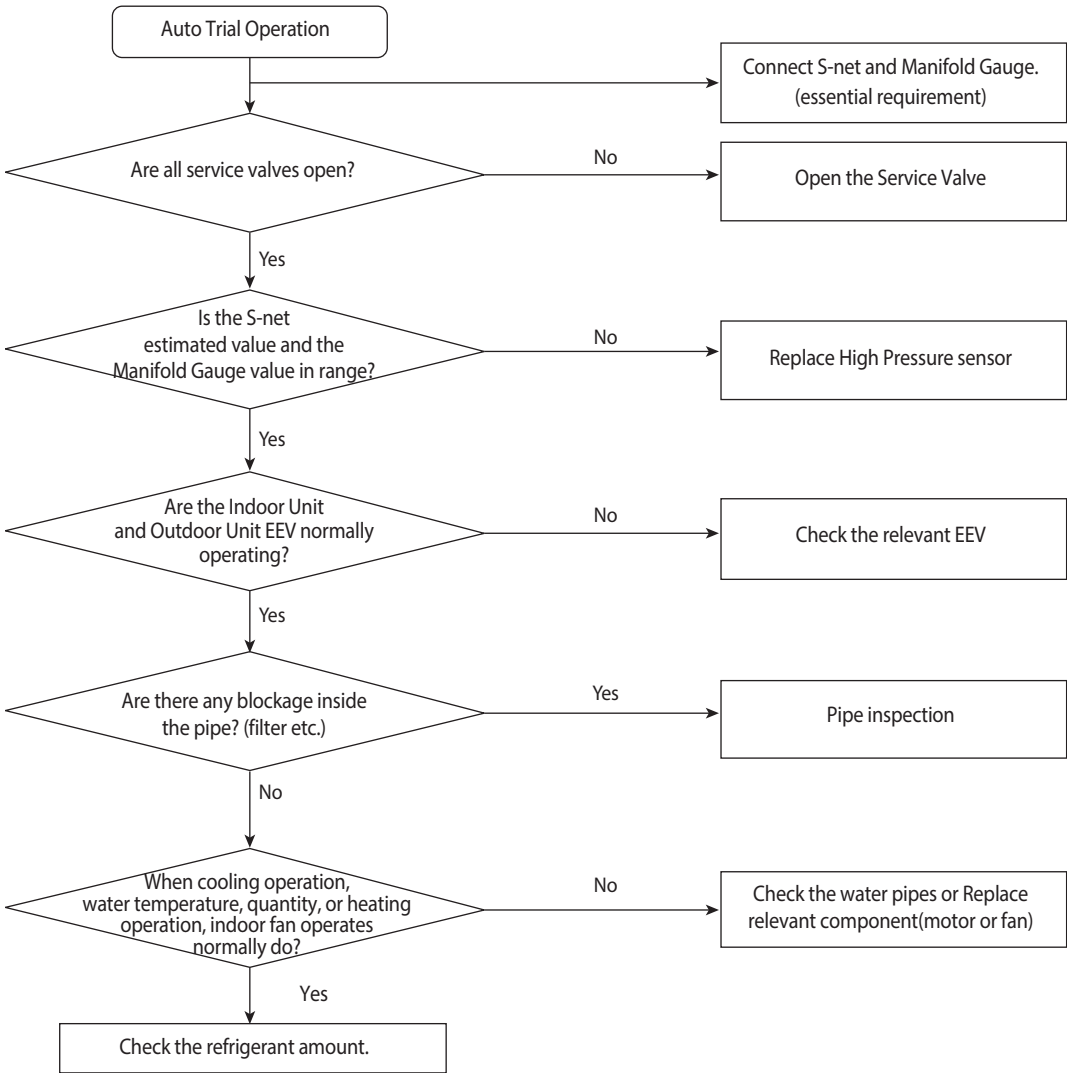
1. How to check



Comp. Down due to high pressure protection control (cont.)

Outdoor unit display	E407 (Water Cooled)
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Value of the high pressure sensor is detected at 41kg/cm^2 or more
Cause of problem	**<Cooling Operation>** · Overheat of supplying water · Shortage of supplying water · Outdoor heat exchanger is contaminated. · Service valve locked/Fill refrigerant **<Heating Operation>** · Indoor unit fan motor problem(constrained, defective) · Service valve locked/Excessive refrigerant

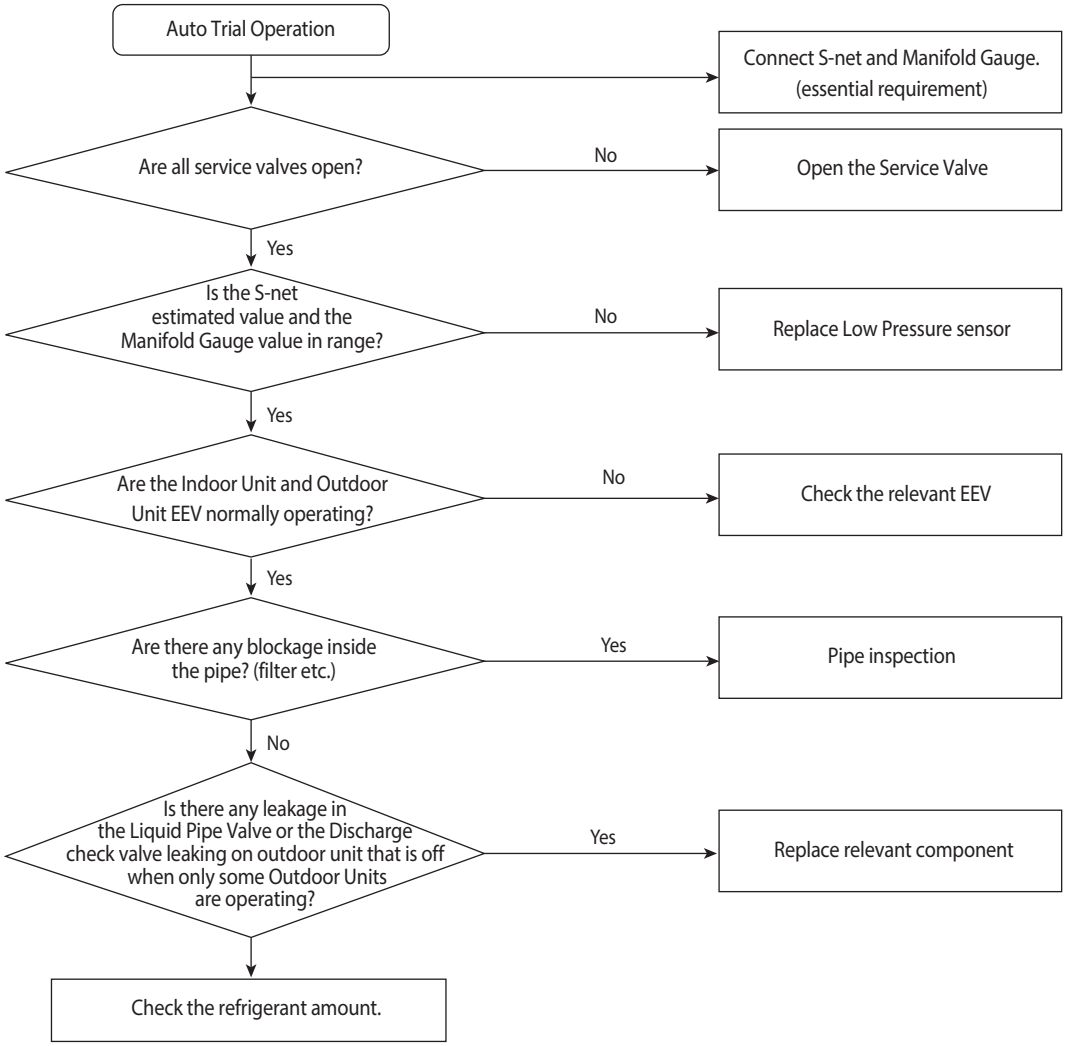
1. How to check



4-4-32 E410 : Comp. Down due to Low Pressure Protection Control

<table>
<tr><td>Outdoor unit display</td><td>E410 (Air Cooled)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Judgment Method : Inspection when the value of low pressure sensor is 1.8kg//cm², or less for air conditioning and 0.8kg//cm² for heating</td></tr>
<tr><td>Cause of problem</td><td>· Refrigerant shortage
· Electronic expansion valve blocked
· Service valve blocked
· Low pressure sensor defective
· Discharge check valve leaking on outdoor unit that is off
· Error may be found when used in temperature range outside the conditions of use
(Operating outside temperature at -20℃ or less for heating and operating outside temperature at -5℃ or less for Cooling)</td></tr>
</table>

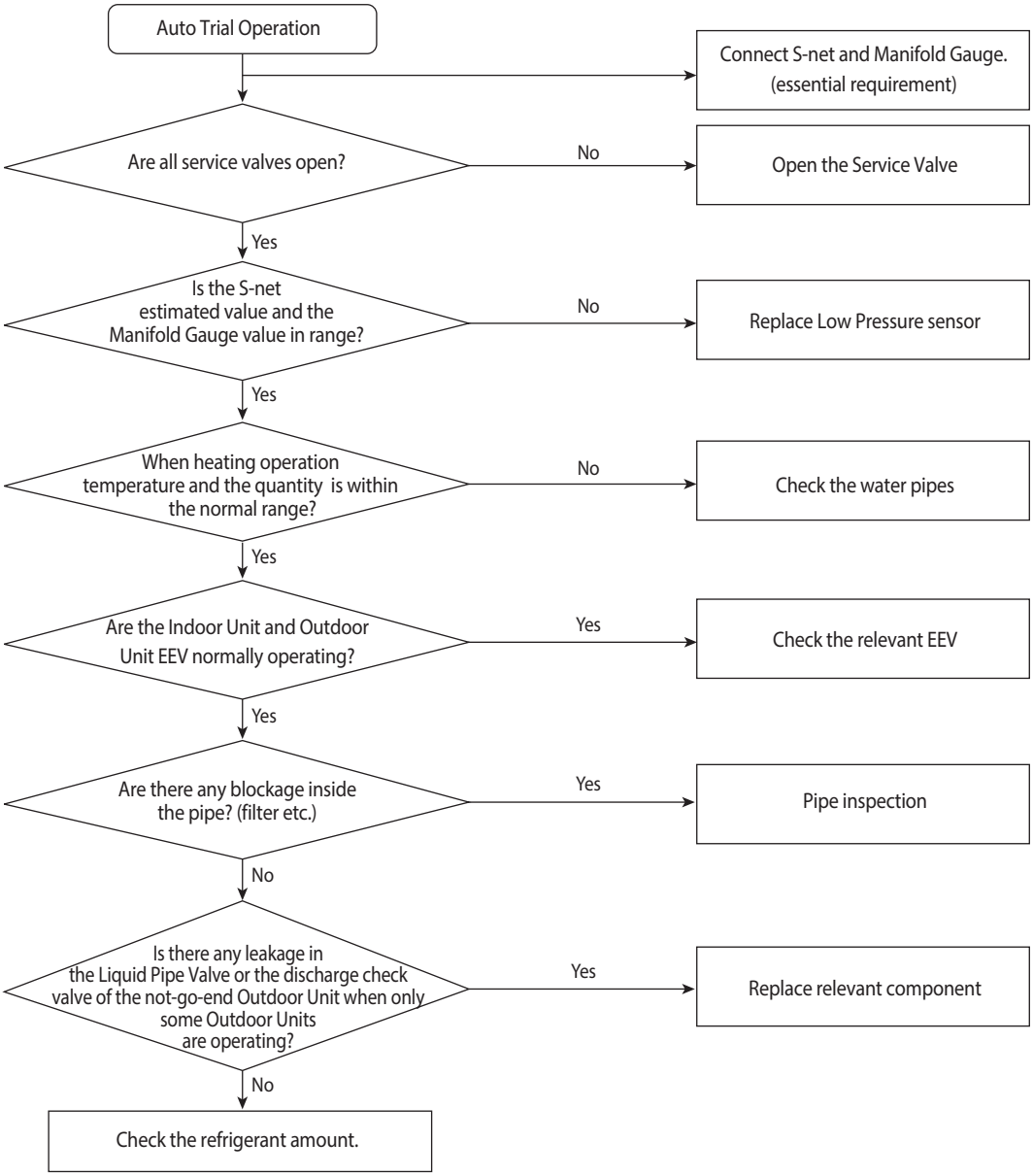
1. How to check



E410 : Comp. Down due to Low Pressure Protection Control (cont.)

<table>
<tr><td>Outdoor unit display</td><td>E410 (Water Cooled)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· 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.</td></tr>
<tr><td>Cause of problem</td><td>· Refrigerant shortage
· Electronic expansion valve blocked
· Low pressure sensor defective
· 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℃ or less for heating and operating outside temperature at -5℃ or less for Cooling)
· When heating operation, if the water temperature and quantity are below the normal range.</td></tr>
</table>

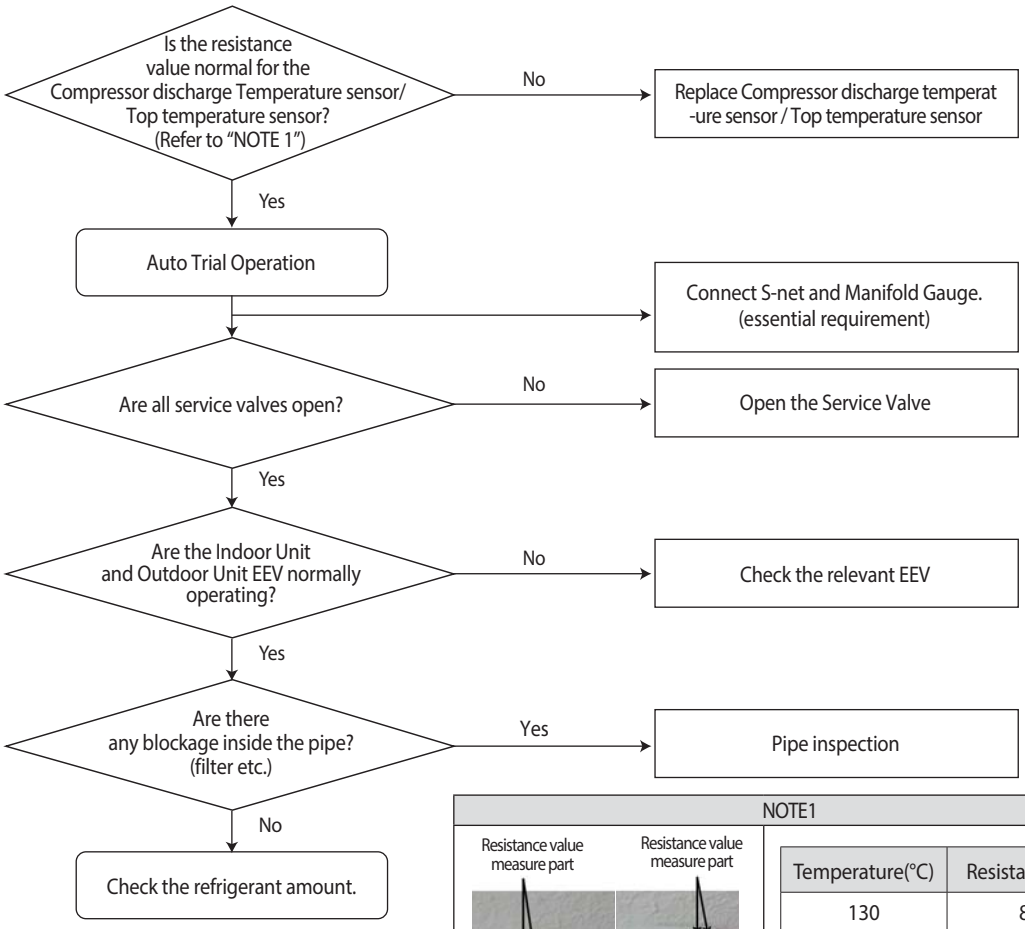
1. How to check



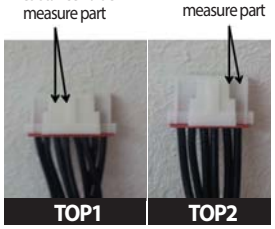
4-4-33 E416 : Suspension of starting due to Compressor discharge temperature sensor / Top temperature sensor

Outdoor unit display	E416
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· When value of Compressor discharge temperature sensor / Top temperature sensor is checked at 120℃ or more.
Cause of problem	· Refrigerant shortage. · Electronic expansion valve is blocked. · Service valve blocked. · Defective discharge temperature sensor. · TOP temperature sensor defective. · Blocked pipe and defective. · Discharge check valve leaking on outdoor unit that is off.

1. How to check



NOTE1



TOP1 : CN43 (3, 4)
TOP2 : CN45 (5, 6)
DIS1 : CN43 (1, 2)
DIS2 : CN45 (3, 4)

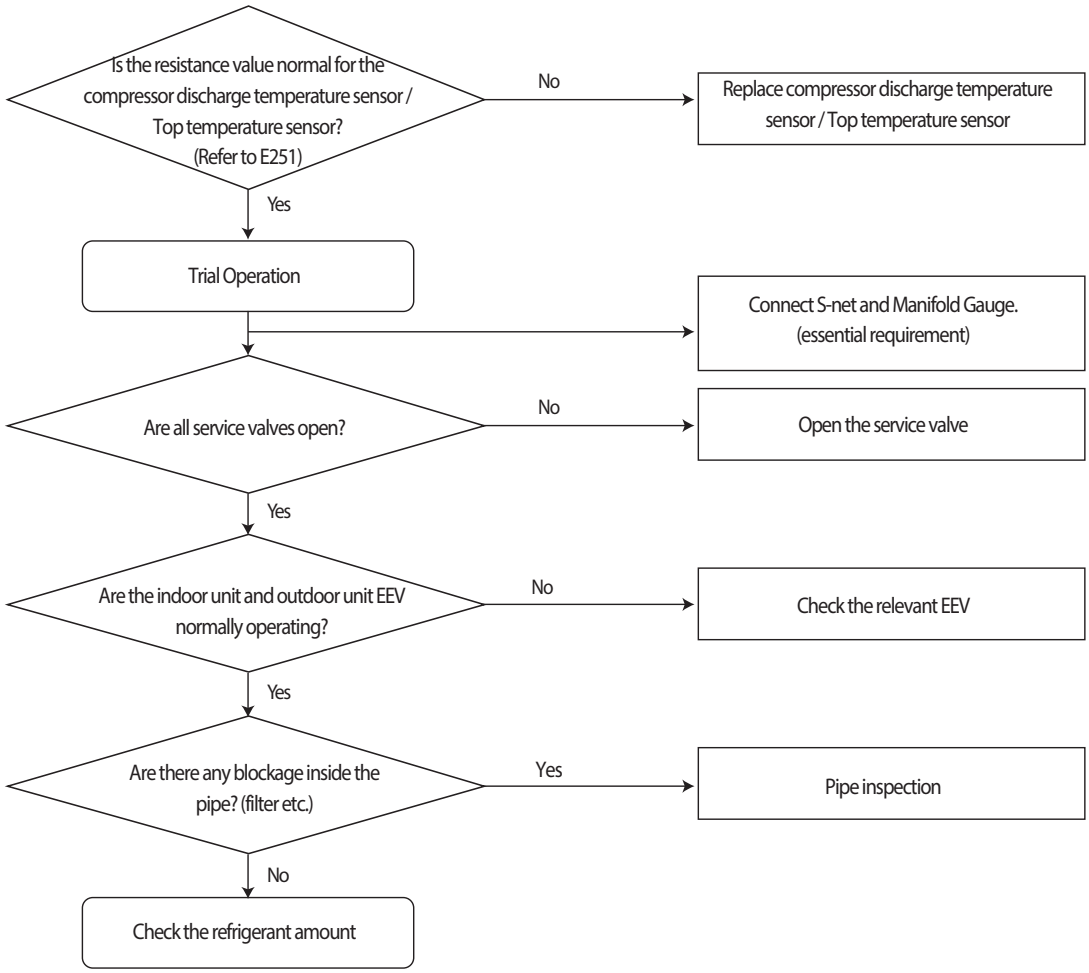
Temperature(℃)	Resistance(KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200.0
20	242.0
10	362.0
0	553.0

E416 : Suspension of starting due to Compressor discharge temperature sensor / Top temperature sensor (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E416
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): 18℃ × / 21℃ × / Turbo ◑ / 24℃ ◑ / 27℃ ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· When value of compressor discharge temperature sensor / Top temperature sensor is checked at 120℃ or more.
Cause of problem	· Refrigerant shortage. · EEV is blocked. · Service valve is blocked. · Discharge temperature sensor is defective. · TOP temperature sensor is defective. · Pipe and filter is blocked · Leakage of compressor discharge check valve of stopped side outdoor unit

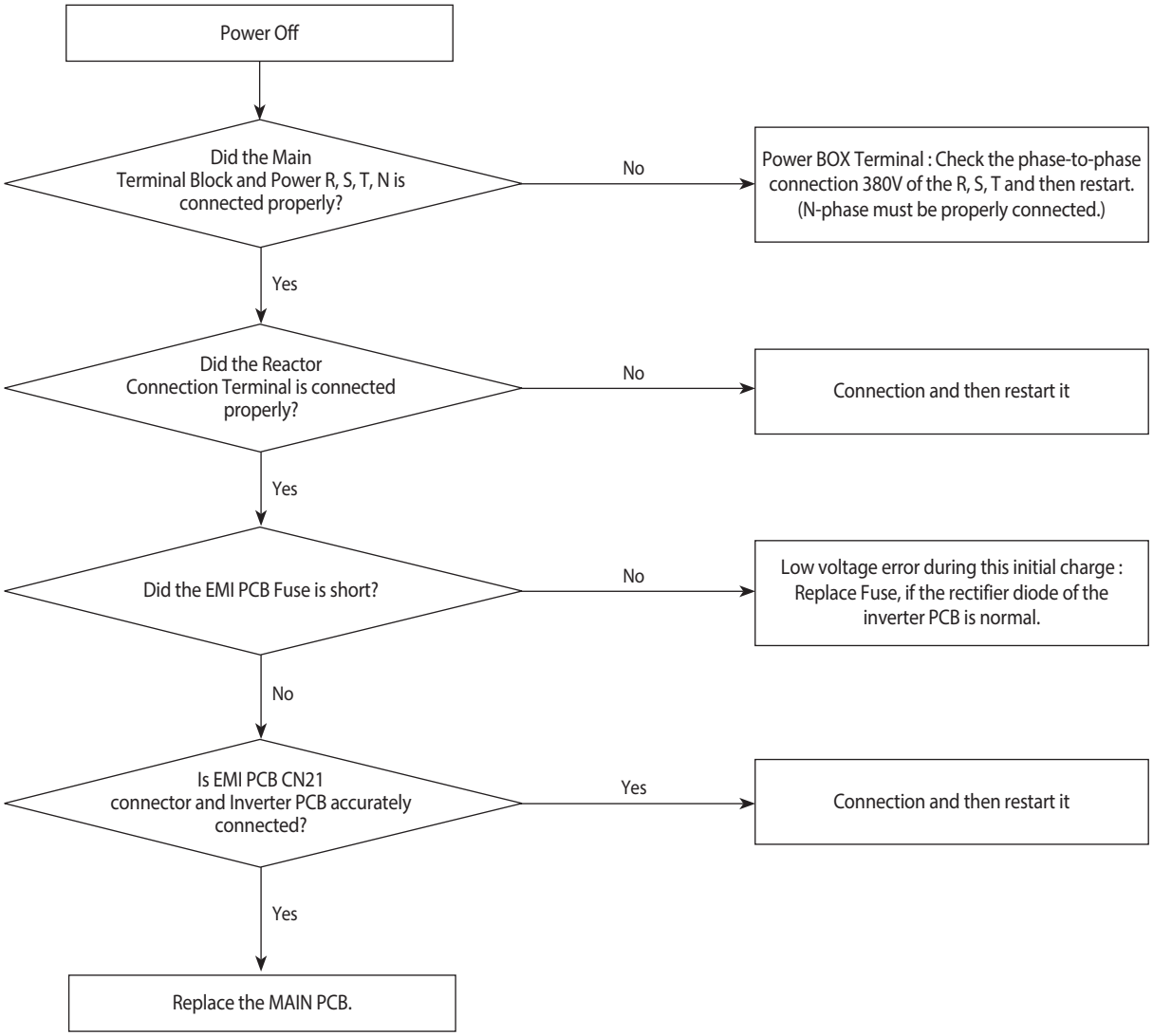
1. How to check



4-4-34-phase Input Wiring error

Outdoor unit display	E425
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation ×, Defrost ×, Timer ◑, Fan ◑, Filter/MPI ◑ / Cassette (4/Mini4 Way): Operation ×, Defrost ◑, Timer ◑, Filter ◑ / Wall-mounted (NeoForte): Operation ●, Timer ◑, Turbo ◑ ※ ● : 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

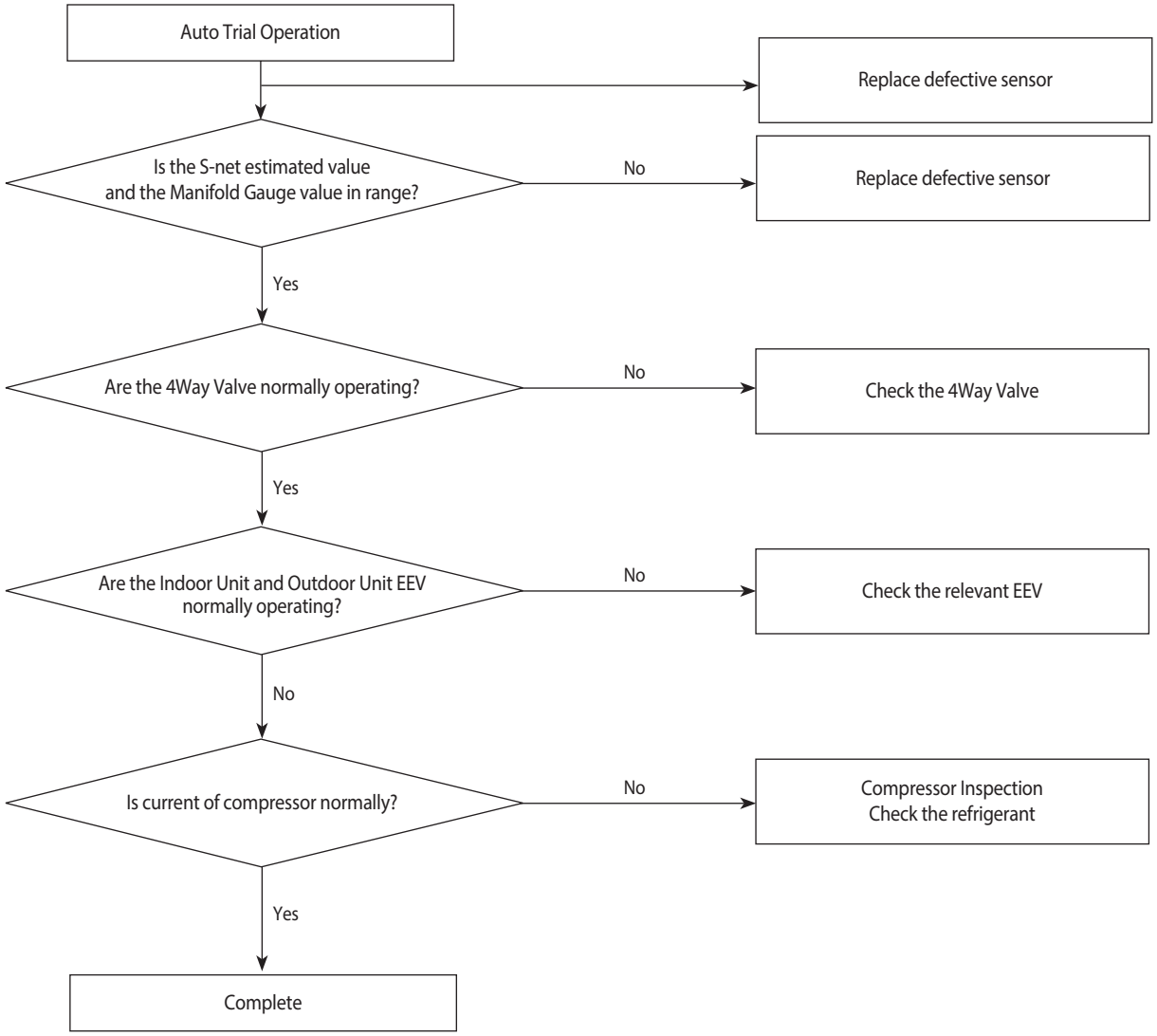
1. How to check



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

<table>
<tr><td>Outdoor unit display</td><td>E428</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Compression ratio [(High pressure+1.03)/(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</td></tr>
<tr><td>Cause of problem</td><td>· Indoor and Outdoor EEV breakdown
· 4Way Valve breakdown
· High and Low pressure sensor defective
· Refrigerant shortage</td></tr>
</table>

1. How to check



4-4-36 EVI EEV Open error

Outdoor unit display	E438
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	. DSH<5℃ , EVI Out-EVI In<0℃ & 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.

※ For the indoor EEV leakage check, operate one of the indoor units in cooling mode and the others in fan mode.

· In case of normal units in fan mode, EVA In/Out temperatures become close to the room temperature within 5minutes.

· Change the cooling unit to the fan mode and one of the fan unit to the cooling mode, and then check again.

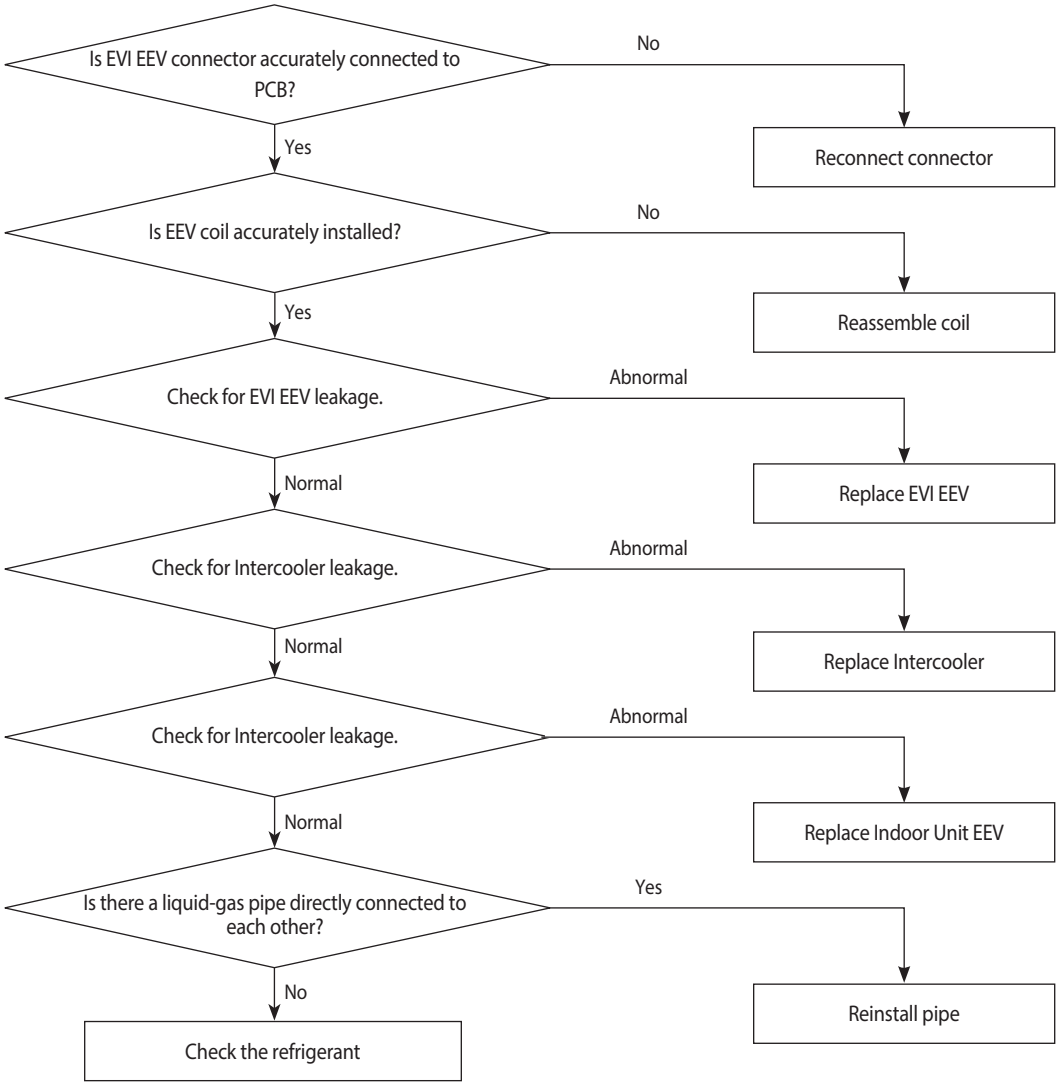
※ If the refrigerant amount was excessively charged, DSH may be decreased during the cooling operation at low temperature.

※ For the EVI EEV leakage check, check for the EVI in sensor temperature when the cooling operation with the EVI EEV 0step.

· Separate the EVI EEV connector from the HUB PBA, when the outdoor unit is off.

· In case of EVI EEV leakage in cooling mode, EVI In temperature at least 10℃ lower than the outside temperature.

1. How to check



ESC EEV Open error (cont.)

■ AM038/048/055KXWD✳✳

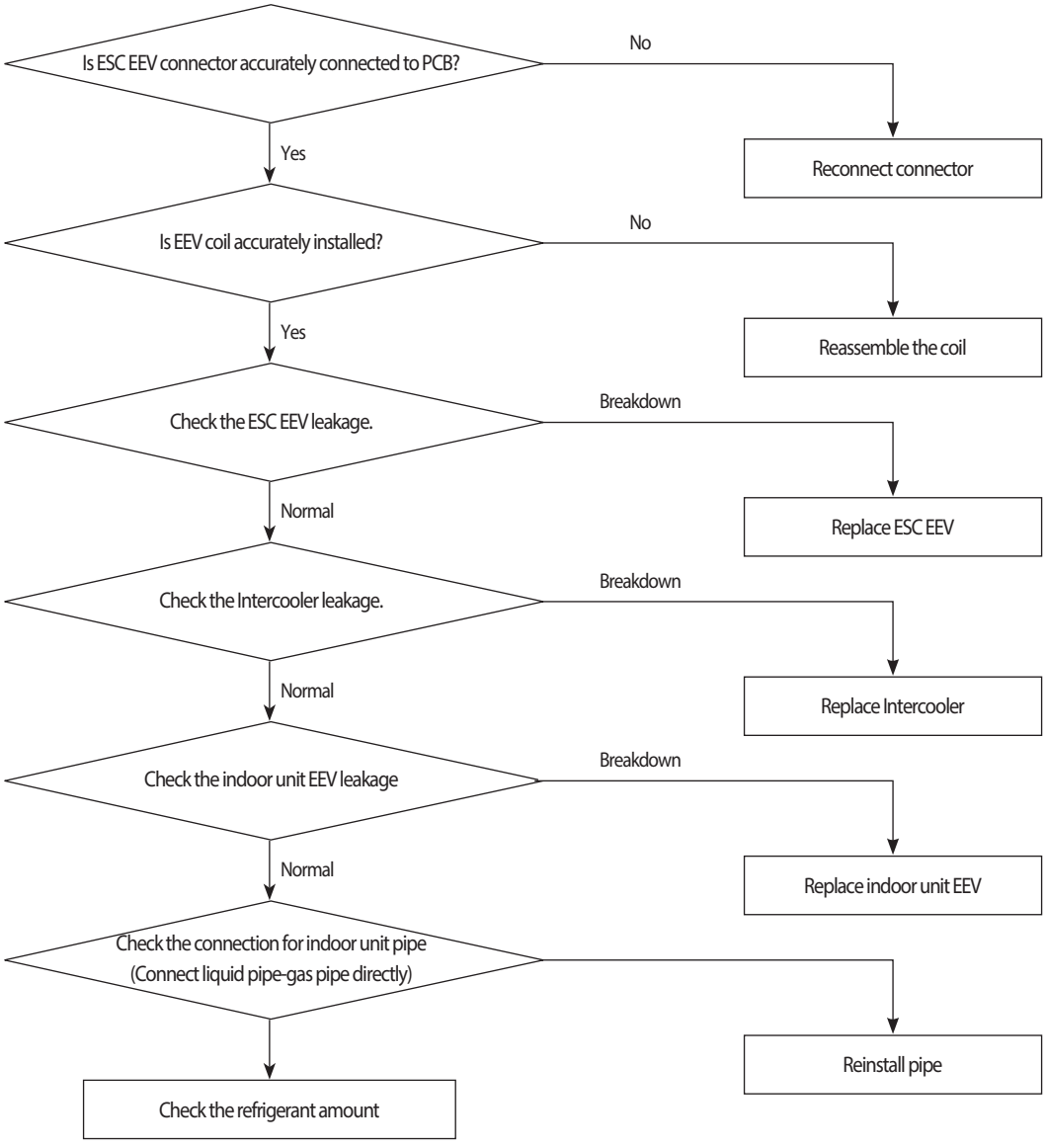
Outdoor unit display	E438
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): 18℃ × / 21℃ × / Turbo ◑ / 24℃ ◑ / 27℃ ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· DSH<10℃ , ESC EEV=0step, satisfaction more than 30minutes
Cause of problem	· ESC EEV and Intercooler leakage, excessive refrigerant amount, outdoor check valve inserted opposite. · Indoor unit EEV leakage, direct connection between Indoor side liquid pipe and the gas pipe.

※ Indoor unit EEV leakage confirmation (In case it is normal, the EVA In and Out temperatures for the fan operation may rise.)
· Operate cooling in one room any of the selected indoor unit. (Remainder indoor unit can confirm simply at the fan operation.)

※ In case it is normal, the EVA In /Out temperature of indoor unit that is on fan operation within 5 minutes is ascending to value that approaching in indoor temperature. (Setting as opposed to the indoor unit fan 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. How to check

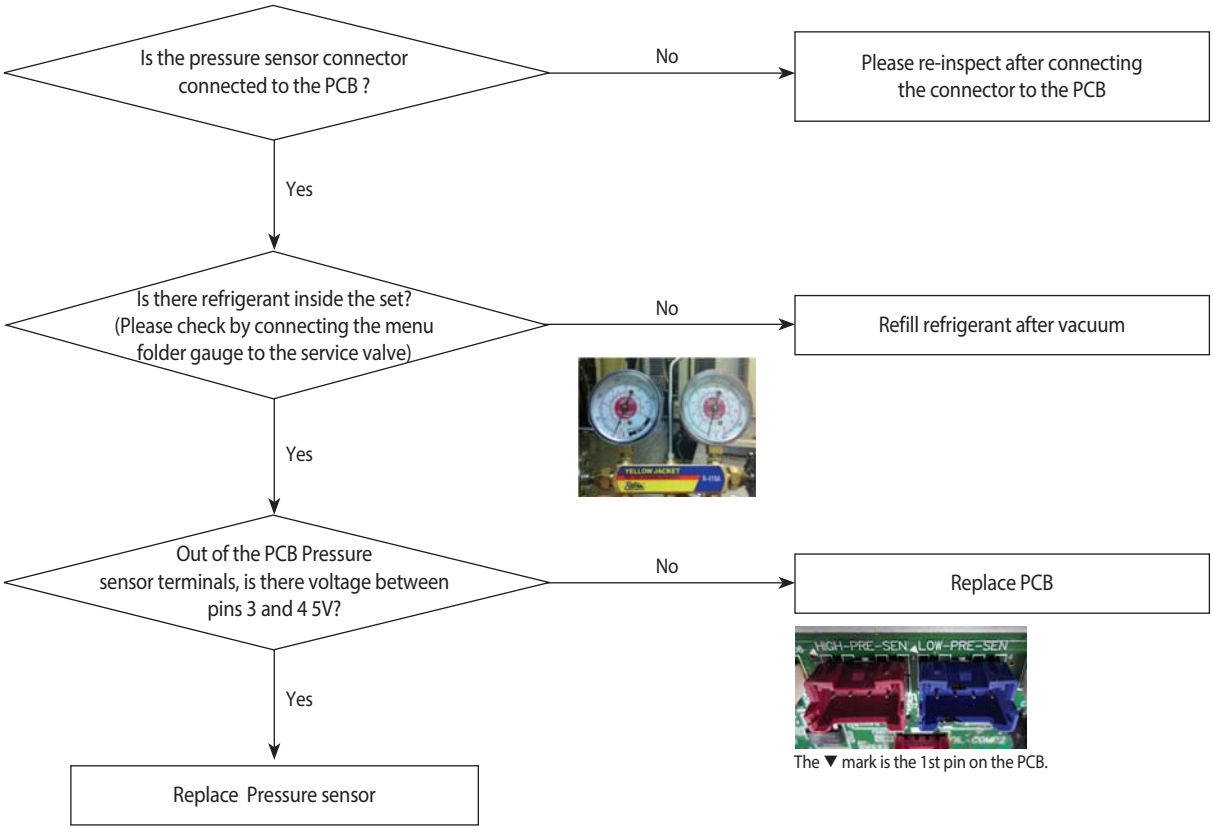


4-4-37 Refrigerant leakage error

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/cm2 or less) · When start : When the high pressure sensor value(cooling 3.1kg/ ㎠ , heating 2.2kg/ ㎠) 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



The ▼ mark is the 1st pin on the PCB.

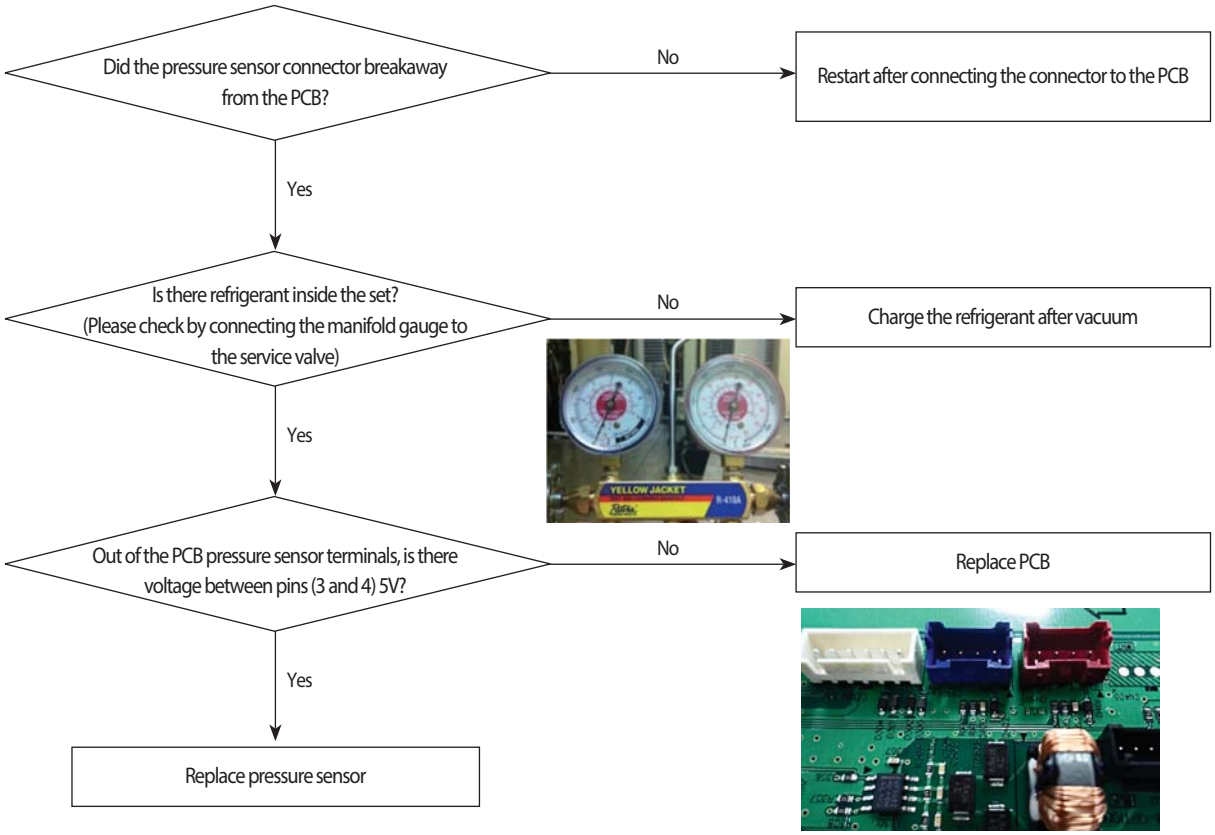
Refrigerant leakage error (cont.)

■ AM038/048/055KXWD✳✳

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 and1kg/ ㎠ or less) · When start : When the high pressure sensor value(cooling 3.1kg/ ㎠ , heating 2.2kg/ ㎠) 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. How to check



The ▼ mark is the 1st pin on the PCB.

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

<table>
<tr><td>Outdoor unit display</td><td>E440 (Prevention of heating operation due to high temperature of outdoor)
E441 (Prevention of cooling operation due to low temperature of outdoor)</td></tr>
<tr><td>Indoor Unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="5">Cassette (4/Mini4 Way)</th><th colspan="3">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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>· Heating operation : When the outdoor temperature is more than 30℃
· Cooling operation : When the outdoor temperature is less than -25℃</td></tr>
<tr><td>Cause of problem</td><td>· System protection operation status (Is not breakdown)
· If the outdoor temperature is satisfied the operating range, it will clear the error and start the operation automatically.</td></tr>
</table>

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

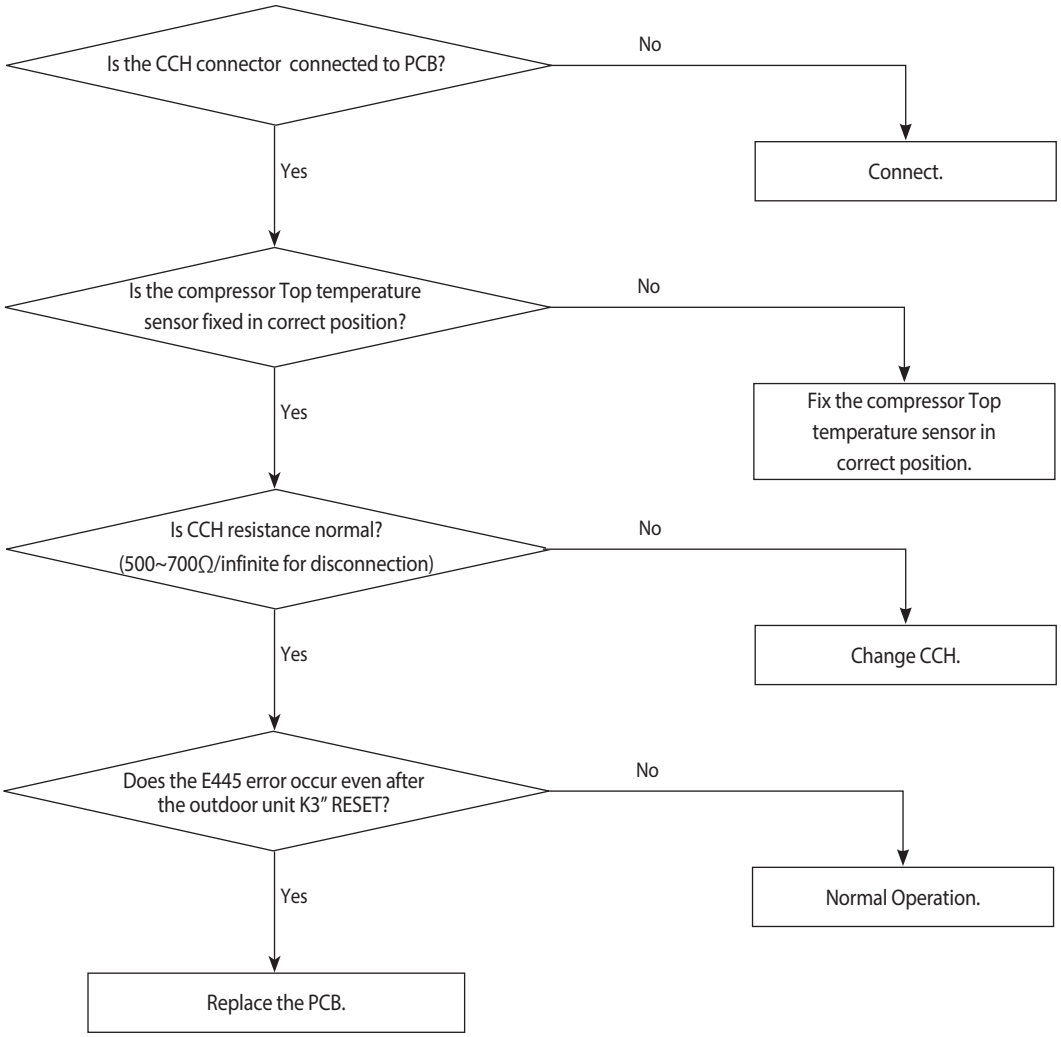
<table>
<tr><td>Outdoor Unit Display</td><td>E442</td></tr>
<tr><td>Indoor Unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way),Console, Celing</th><th colspan="4">Cassette (4/Mini4 Way)</th><th colspan="3">Wall-mounted (NeoForte)</th></tr>
<tr><th>Operation</th><th>Defrost</th><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></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>• When the heating refrigerant charge : If the outdoor temperature is more than 15℃</td></tr>
<tr><td>Special Cause</td><td>• System protection operation status (Is not breakdown)</td></tr>
</table>

4-4-40 CH wire breaking error

<table>
<tr><td>Outdoor unit display</td><td>E445 (Air Cooled)</td></tr>
<tr><td>Indoorunit display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way),Console, Celing</td><td colspan="4">Cassette (4/Mini4 Way)</td><td colspan="3">Wall-mounted (NeoForte)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter/MPI</td><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td><td>Operation</td><td>Timer</td><td>Turbo</td></tr>
<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></tr>
</table>
※ ● : ON ◑ : Flash × : OFF
</td></tr>
<tr><td>Judgment Method</td><td>. Refer to the judgment method below.</td></tr>
<tr><td>Cause of problem</td><td>. CCH Connector PCB is not connected / Compressor Top sensor breakaway / Own problem of CCH</td></tr>
</table>

1. Judgment Method (2hours after reset or power on, It will be judged once.)
   ① Compressor Top temperature at the time of judgment - Tini < 2℃ (※ Tini : Power on or temperature of initial compressor Top after reset)
   ② Compressor Top temperature at the time of judgment - Outdoor temperature < 2℃
   ③ Outdoor temperature < 30℃
   ④ UP state

※ If all the conditions are satisfied at the same time : Mark the CCH wire breaking error (E445)

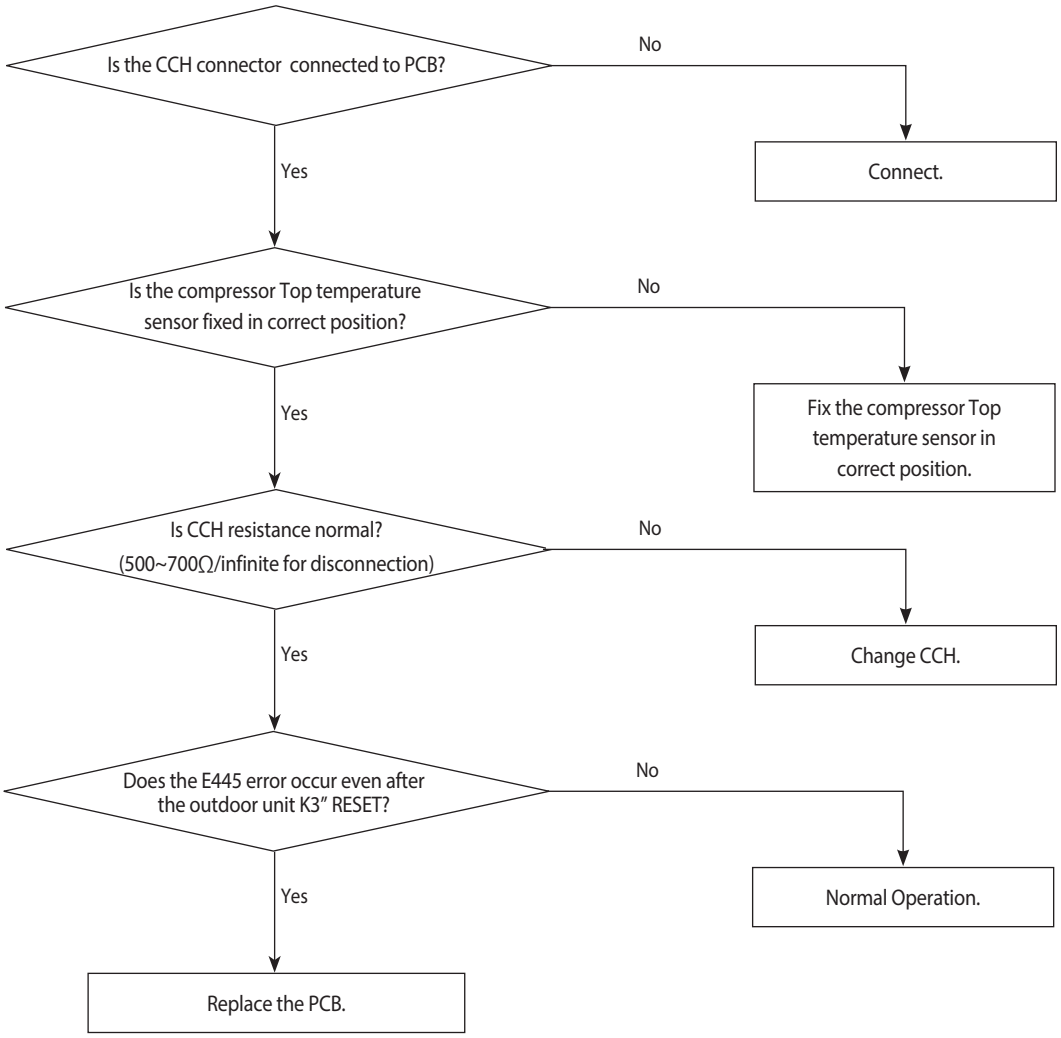


CH wire breaking error (CONT.)

Outdoor unit display	E445 (Water Cooled)
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : ON ◑ : Flash × : OFF
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 (2hours after reset or power on, It will be judged once.)
   ① Compressor Top temperature at the time of judgment - Tini < 2℃ (※ Tini : Power on or temperature of initial compressor Top after reset)
   ② Compressor Top temperature at the time of judgment- suction1 temp. sensor < 30℃
   ③ Outdoor temperature < 30℃
   ④ UP state

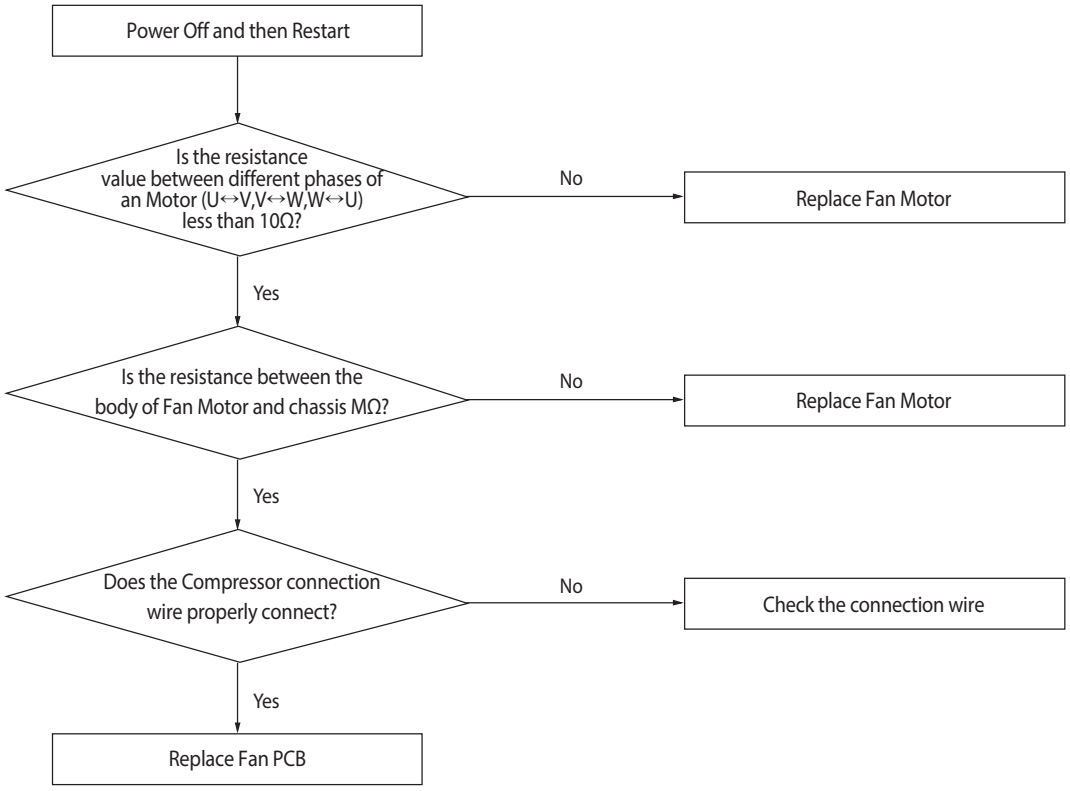
※ If all the conditions are satisfied at the same time : Mark the CCH wire breaking error (E445)



4-4-41 Fan starting error

Outdoor unit display	E446 (FAN PCB(FAN1)) E346 (FAN PCB(FAN2))
Judgment Method	· Startup, and then if the speed increase is not normally. · Detected by H/W or S/W
Cause of problem	· Compressor connection error · Defective FAN Motor · Defective PCB

1. How to check



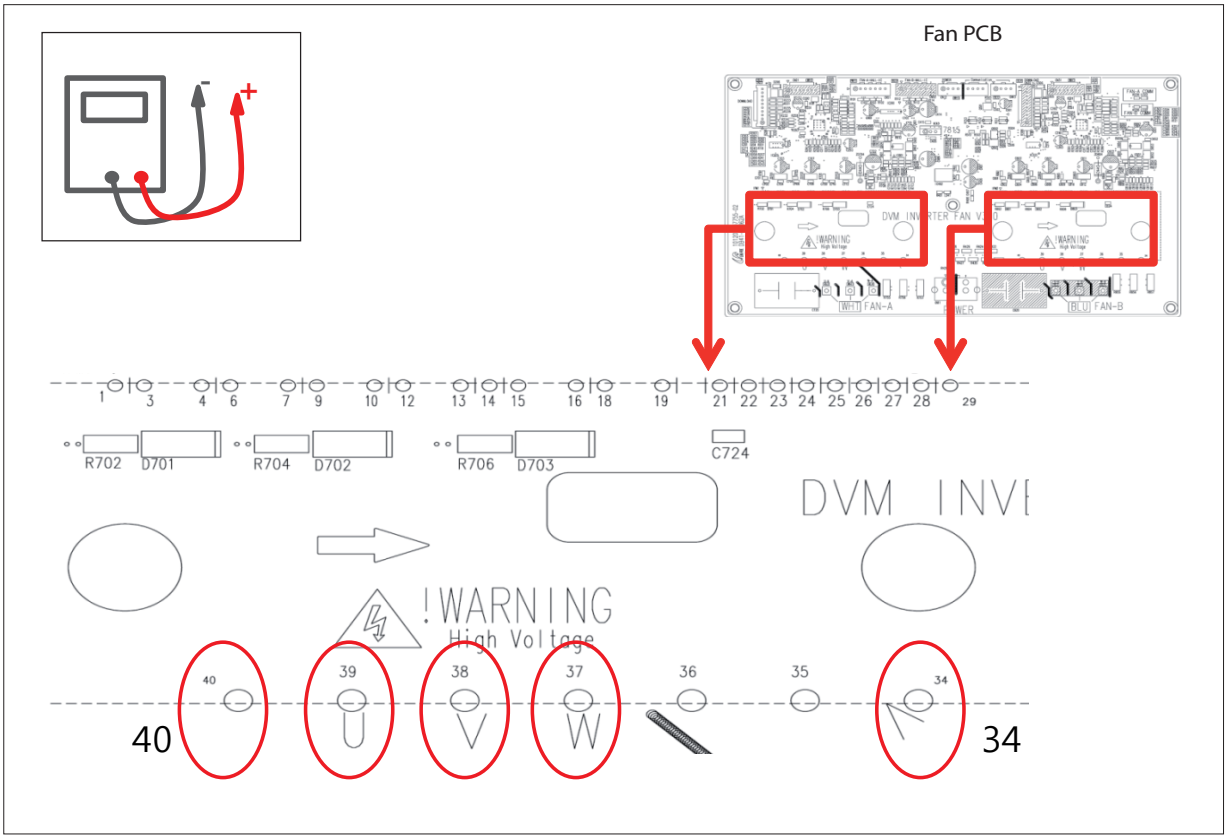
IPM breakdown diagnostics (FAN PCB)

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 500 kΩ	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 >

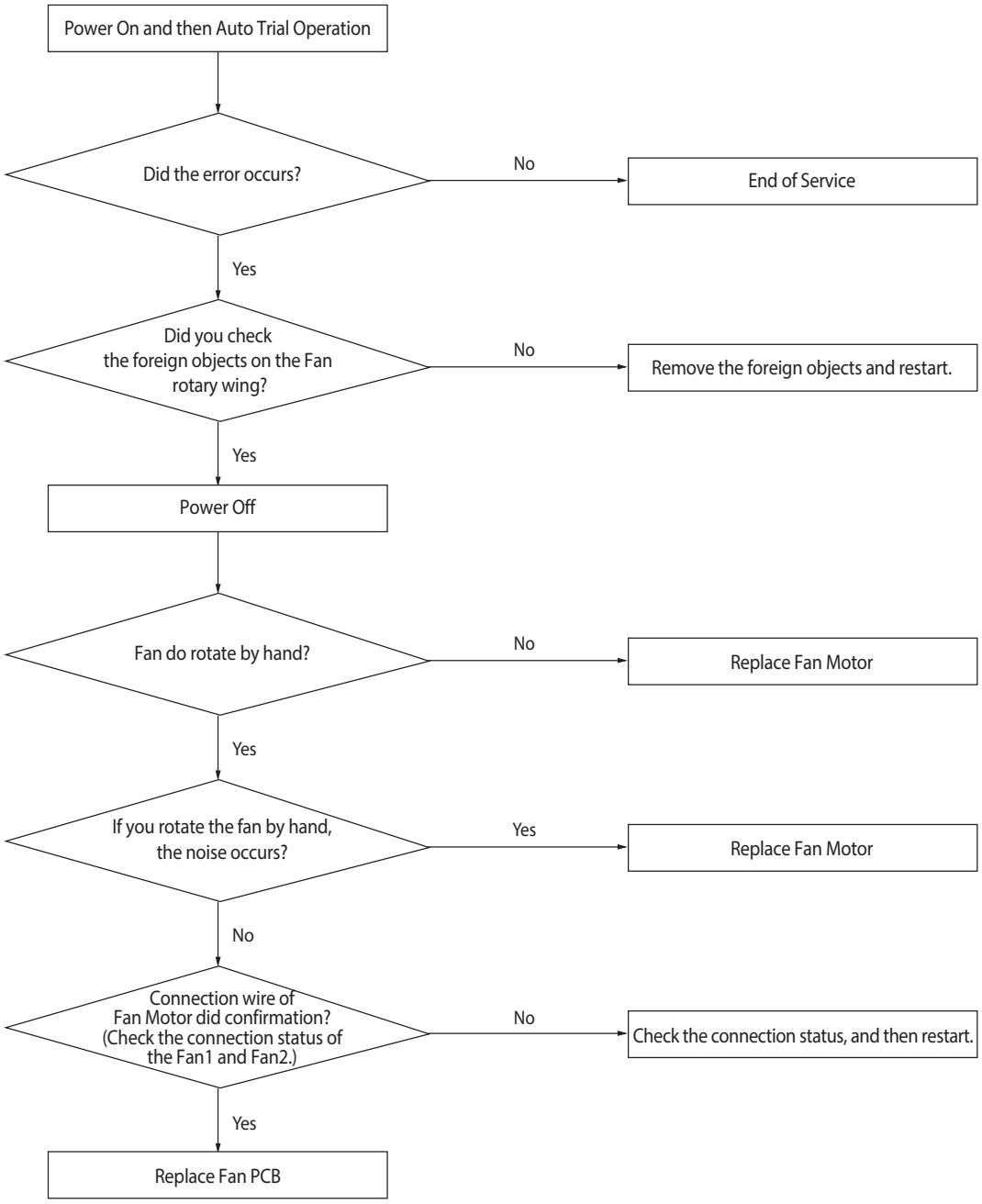


< Figure 1 >

4-4-42 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



4-4-43 Momentary Blackout error

Outdoor unit display	E452
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): Operation ● / Timer ◑ / Turbo ◑ ※ ● : 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 PCB.

■ AM030/040/050/060KXWD✳✳

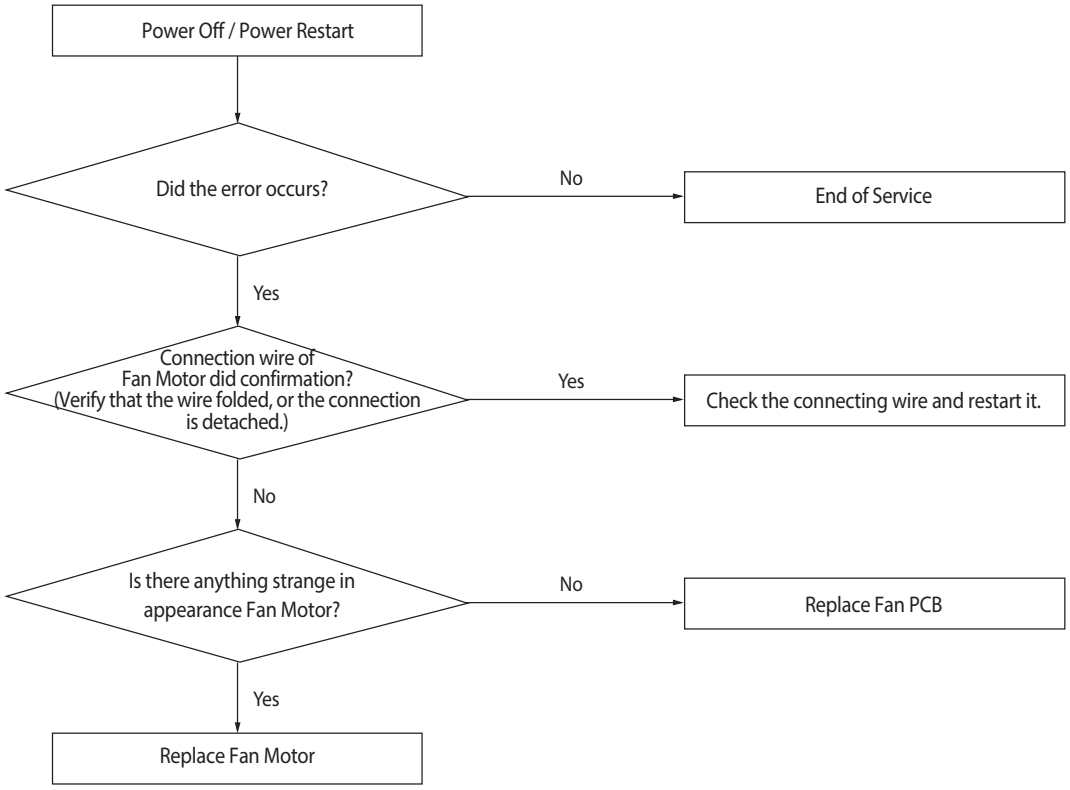
Outdoor unit display	E452 (Prevention of heating operation due to high temperature of outdoor)
Indoorunit display	Duct, Cassette (1/2 Way),Console, Celing: Operation × / Defrost × / Timer ◑ / Fan ◑ / Filter/MPI ◑ Cassette (4/Mini4 Way): Operation × / Defrost ◑ / Timer ◑ / Filter ◑ Wall-mounted (NeoForte): 18℃ × / 21℃ × / Turbo ◑ / 24℃ ◑ / 27℃ ◑ ※ ● : ON ◑ : Flash × : OFF
Judgment Method	· Momentary stop of compressor due to momentary blackout.
Cause of problem	· System protection operation status (Is not breakdown)

1. Measures : Replace Hub PCB or Main Hub connection wire.

4-4-44 Outdoor Fan Motor overheating

Outdoor unit display	E453 (FAN PCB(FAN1)) E353 (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

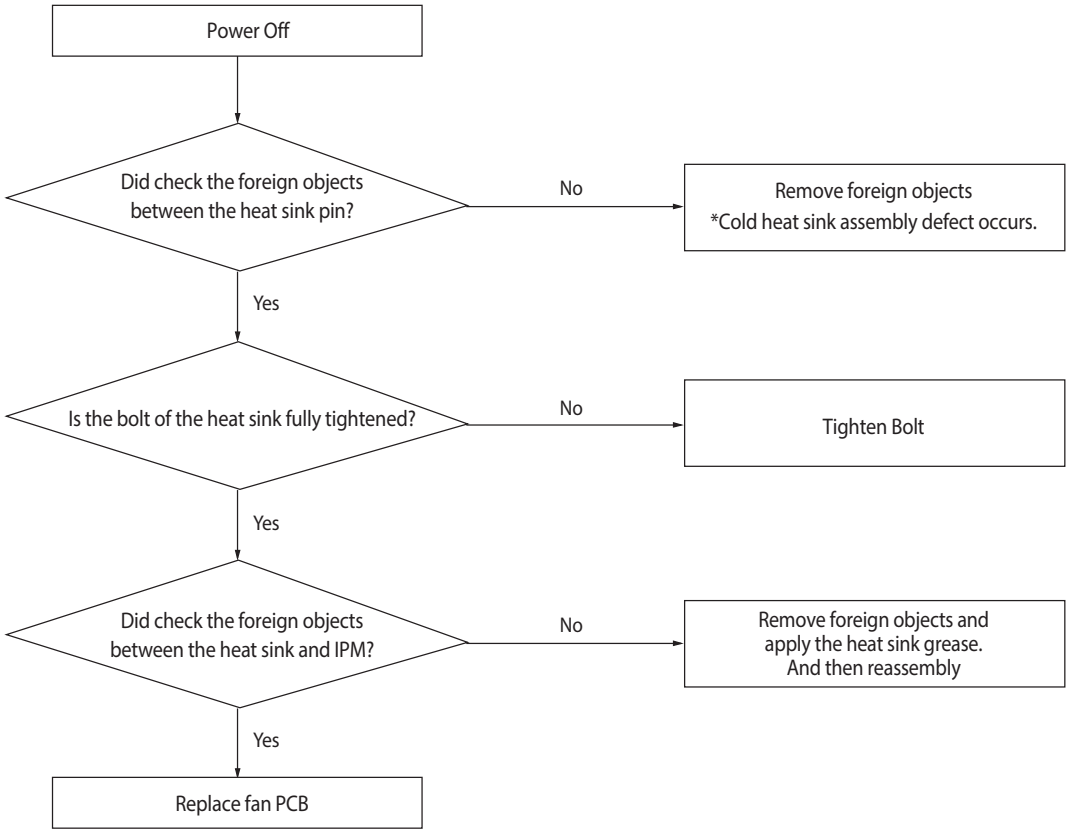
1. How to check



4-4-45 Fan IPM Overheat error

Outdoor unit display	E455 (FAN1 PCB) E355 (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

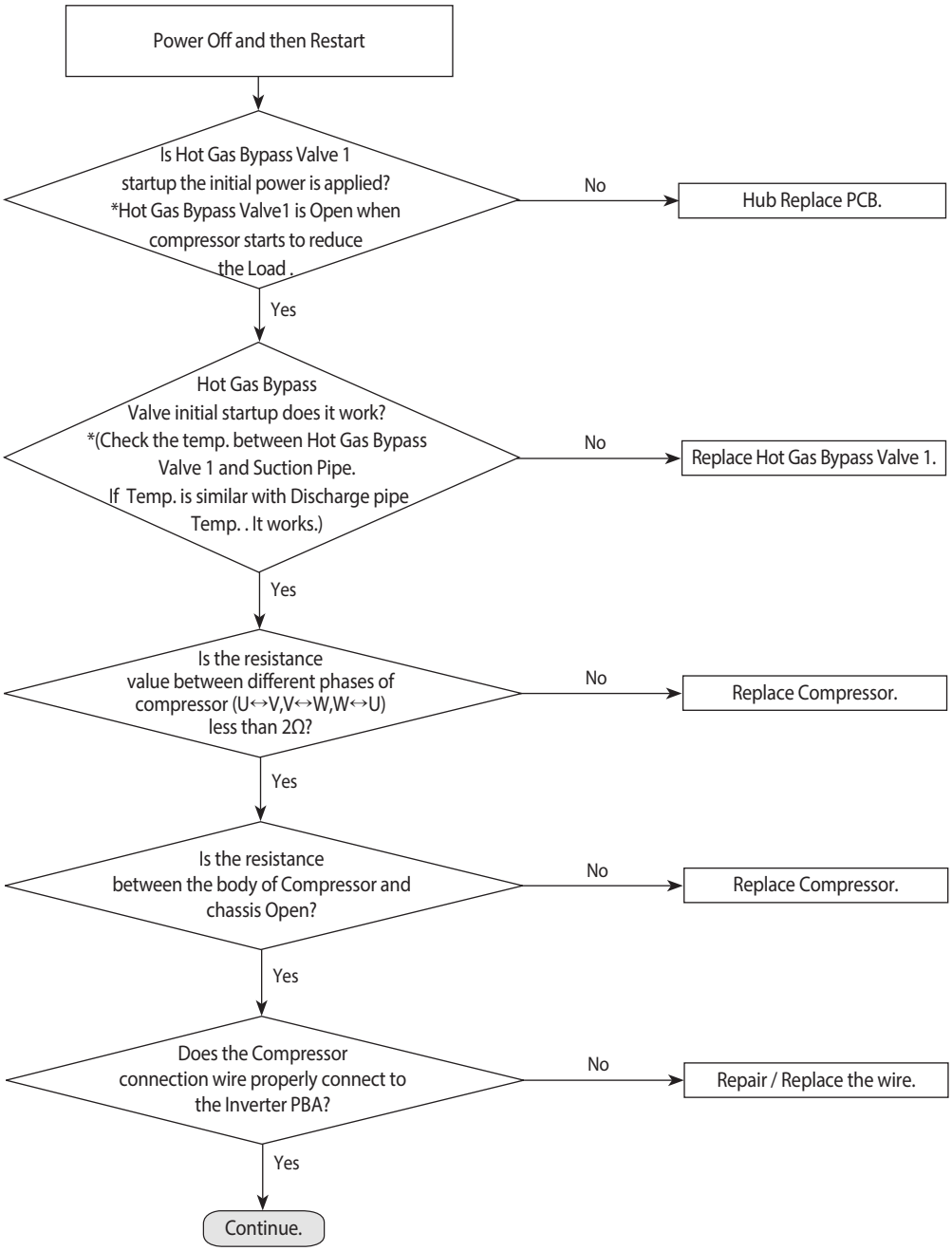
1. How to check



4-4-46 Compressor starting error

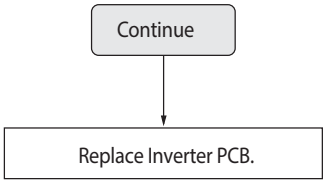
Outdoor unit display	E461 (INVERTER1 PCB) E361 (INVERTER2 PCB)
Judgment Method	· Startup, and then if the speed increase is not normally. · Detected by H/W or S/W.
Cause of problem	· Compressor connection error · Defective Compressor

1. How to check

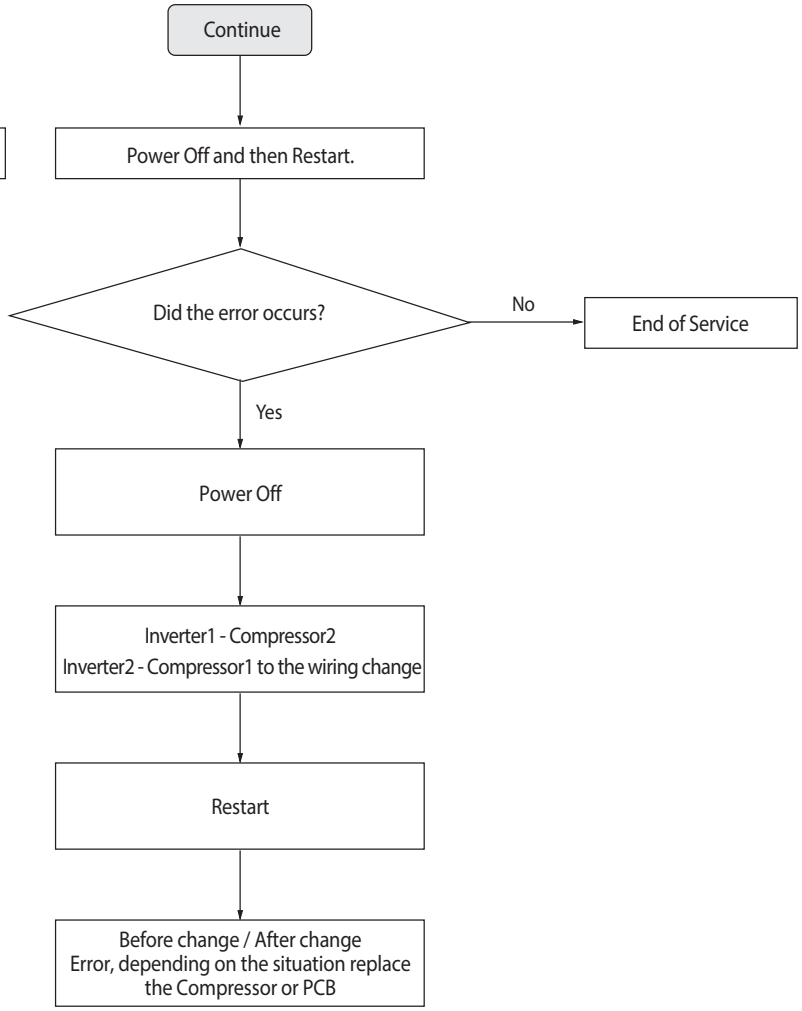


Comperssor starting error (cont.)

■ Compressor applied one



■ Compressor applied two



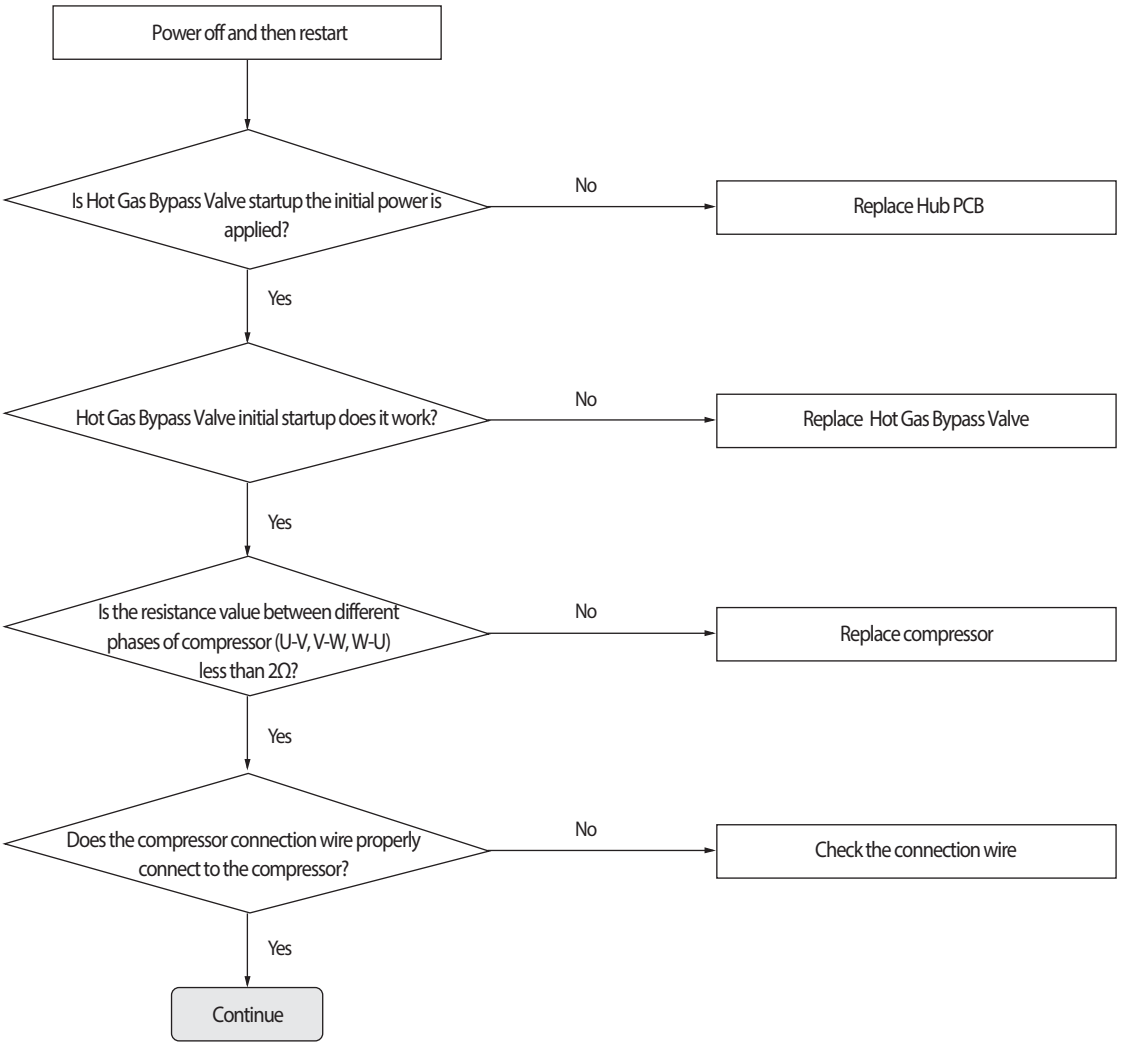
Before change	After change	Measure
E464	E464	Replace No.1Inverter PCB
E464	E364	Replace No.1 Compressor
E364	E364	Replace No.2 Inverter PCB
E364	E464	Replace No.2 Compressor

Comperssor starting error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E461 (INVERTER1 PCB)
Judgment Method	· Startup, and then if the speed increase is not normally. · Detected by hardware or software.
Cause of problem	· Compressor connection error · Defective compressor · Defective PCB

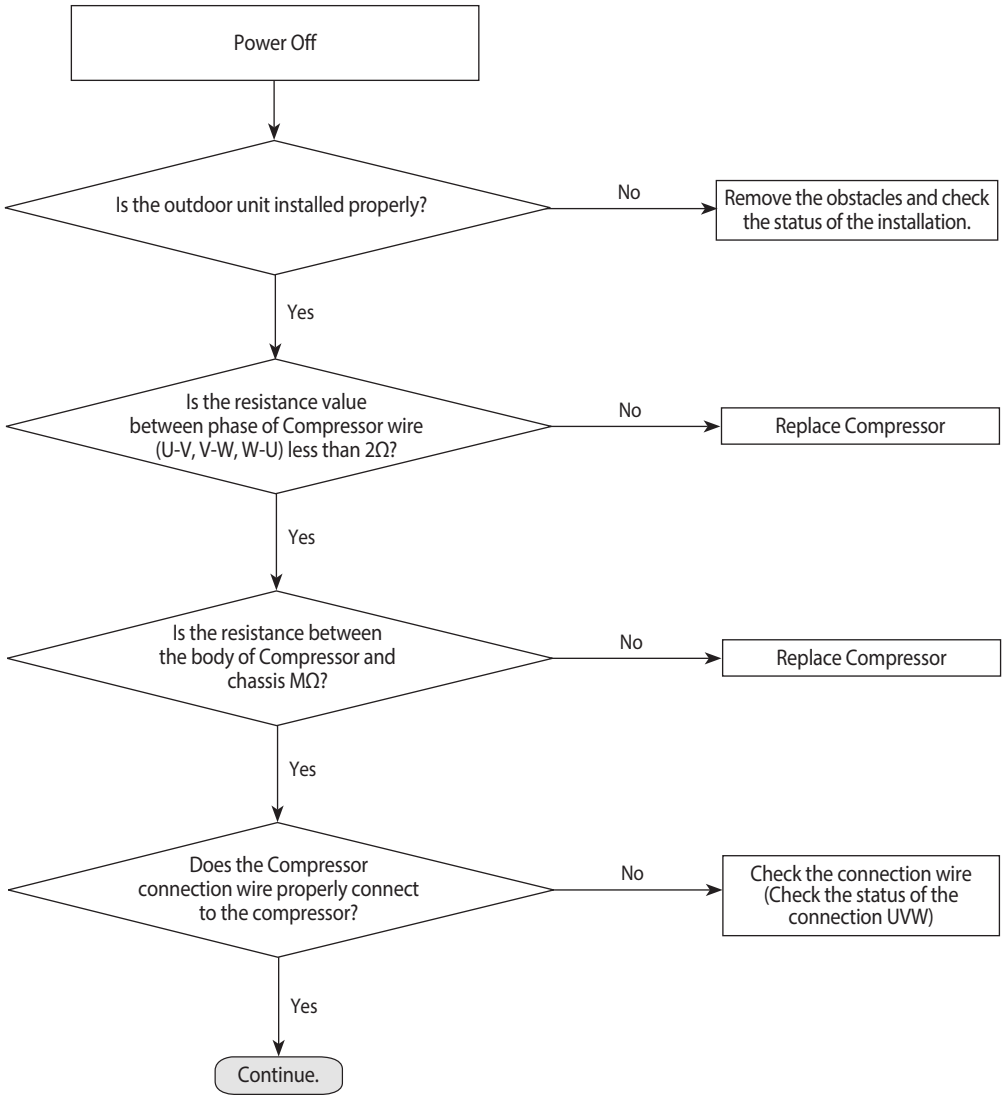
1. How to check



4-4-47 COMP Overcurrent error

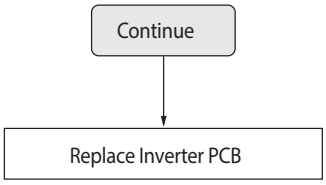
Outdoor unit display	E464/E465 (INVERTER1 PCB) E364/E365 (INVERTER2 PCB)
Judgment Method	· Will occur if the overcurrent flowing in the IPM. · Detected by H/W or S/W
Cause of problem	· COMP. defective. · Inverter PCB Defective.

1. How to check

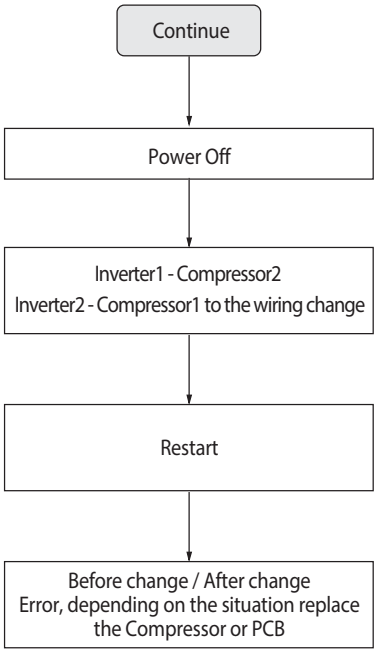


Inverter Overcurrent error (cont.)

■ Compressor applied one



■ Compressor applied two



Before change	After change	Measure
E464	E464	Replace No.1Inverter PCB
E464	E364	Replace No.1 Compressor
E364	E364	Replace No.2 Inverter PCB
E364	E464	Replace No.2 Compressor

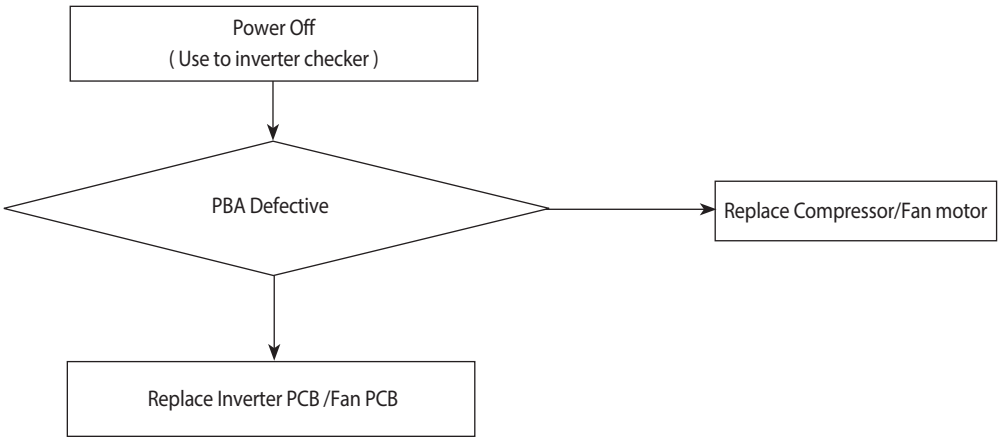
■ How to use inverter checker (Warning for high pressure)

► Check between MOTOR ↔ FAN PBA

1) After cut off, connect inverter checker with U,V,W of Motor
2) After turn on, enter Comp. check mode by pushing K2 in main PBA
3) Judgment
   - 6 LEDs of inverter checker are lightning successively (MOTOR PBA OK, MOTOR NG)
   - If one of 6 LEDs in inverter checker is not lightning (MOTOR PBA NG, MOTOR OK)

■ How to enter check mode/7Seg display

Type	DVM S	
Model	Air Cooled	Water Cooled
COMP 1	9times (KD__)	8times (KD__)
COMP 2	10times (KE__)	9times (KE__)
MOTOR 1	11times (KF__)	
MOTOR 2	12times (KG__)	



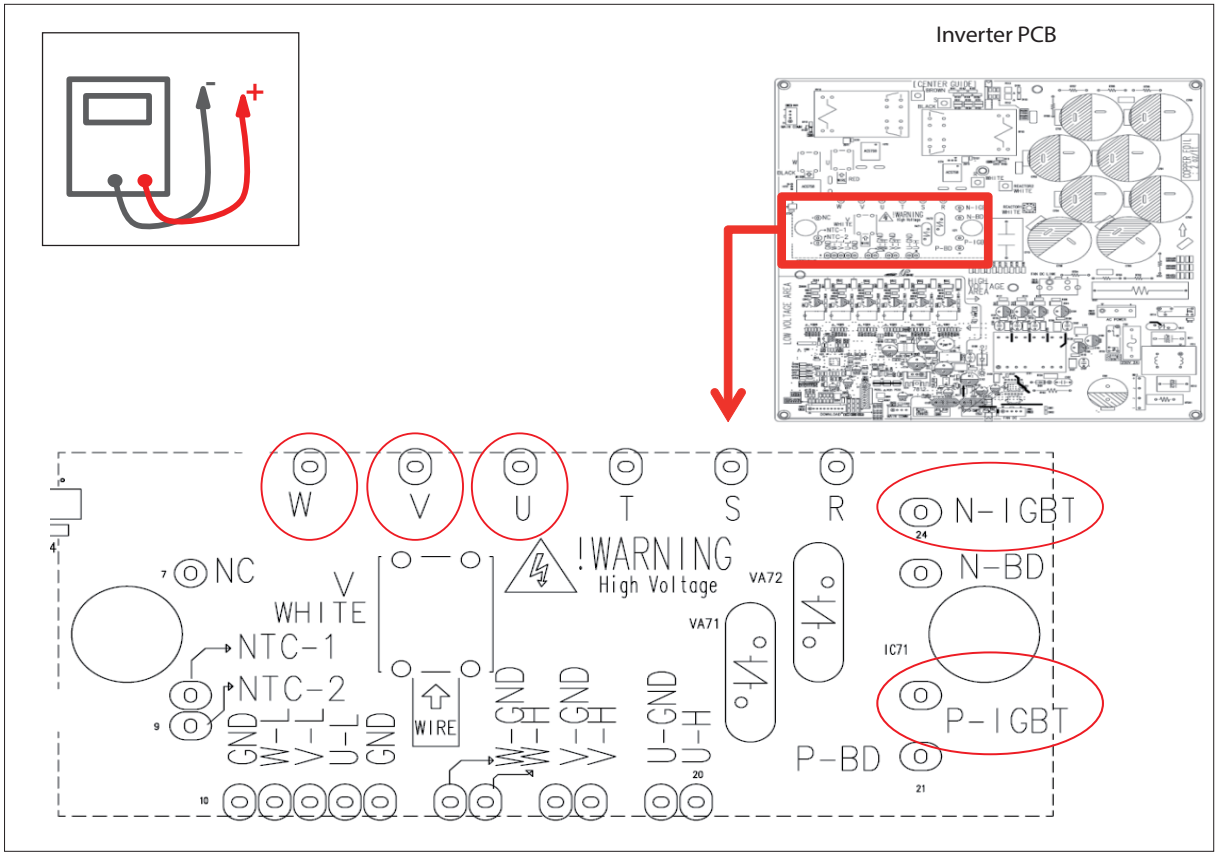
IPM [IGBT] breakdown diagnostics (Inverter PCB)

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 500 kΩ	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 >



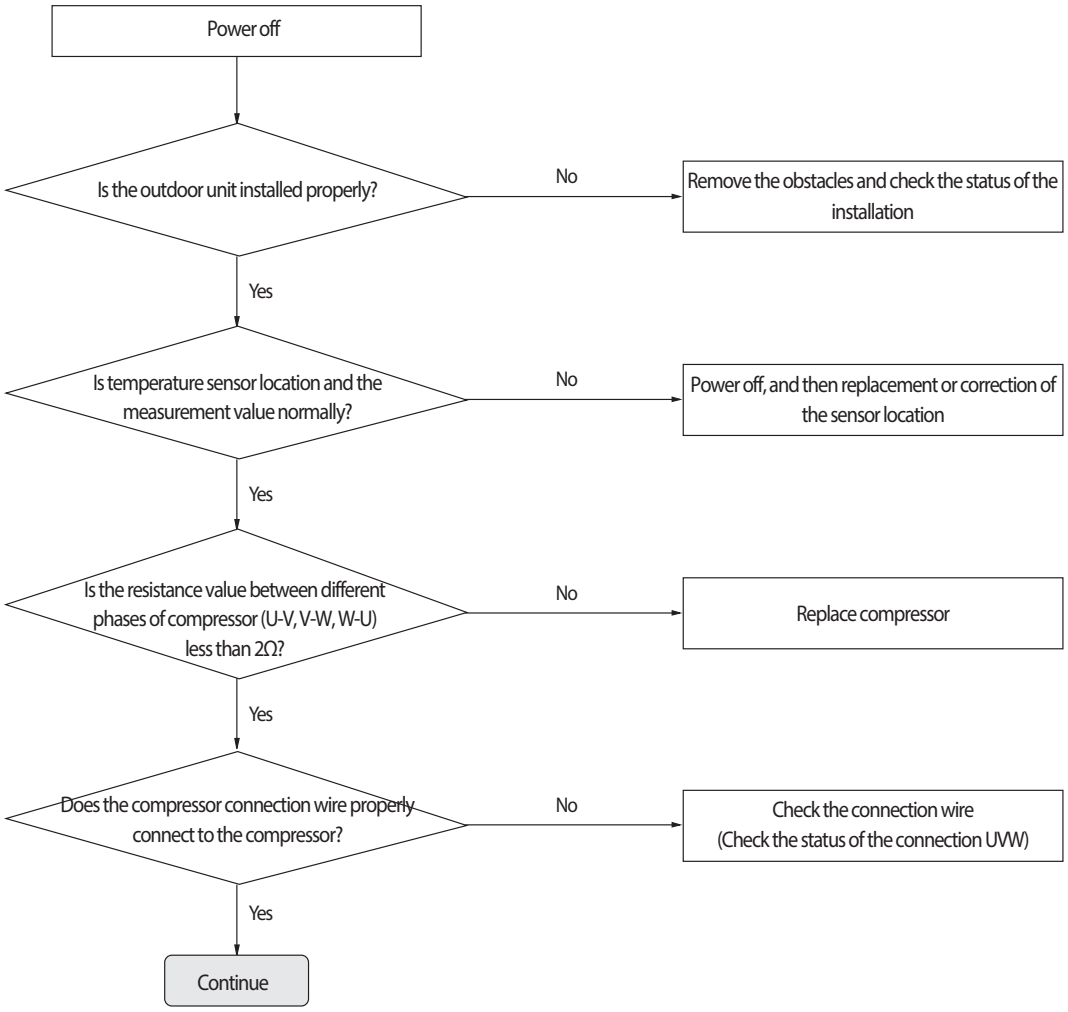
< Figure 1 >

Inverter Overcurrent error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E464/E465 (INVERTER1 PCB)
Judgment Method	· Will occur if the overcurrent flowing in the IPM. · Detected by hardware or software.
Cause of problem	· Defective installation · Defective compressor · Defective PCB · Connection wire error · Defective motor

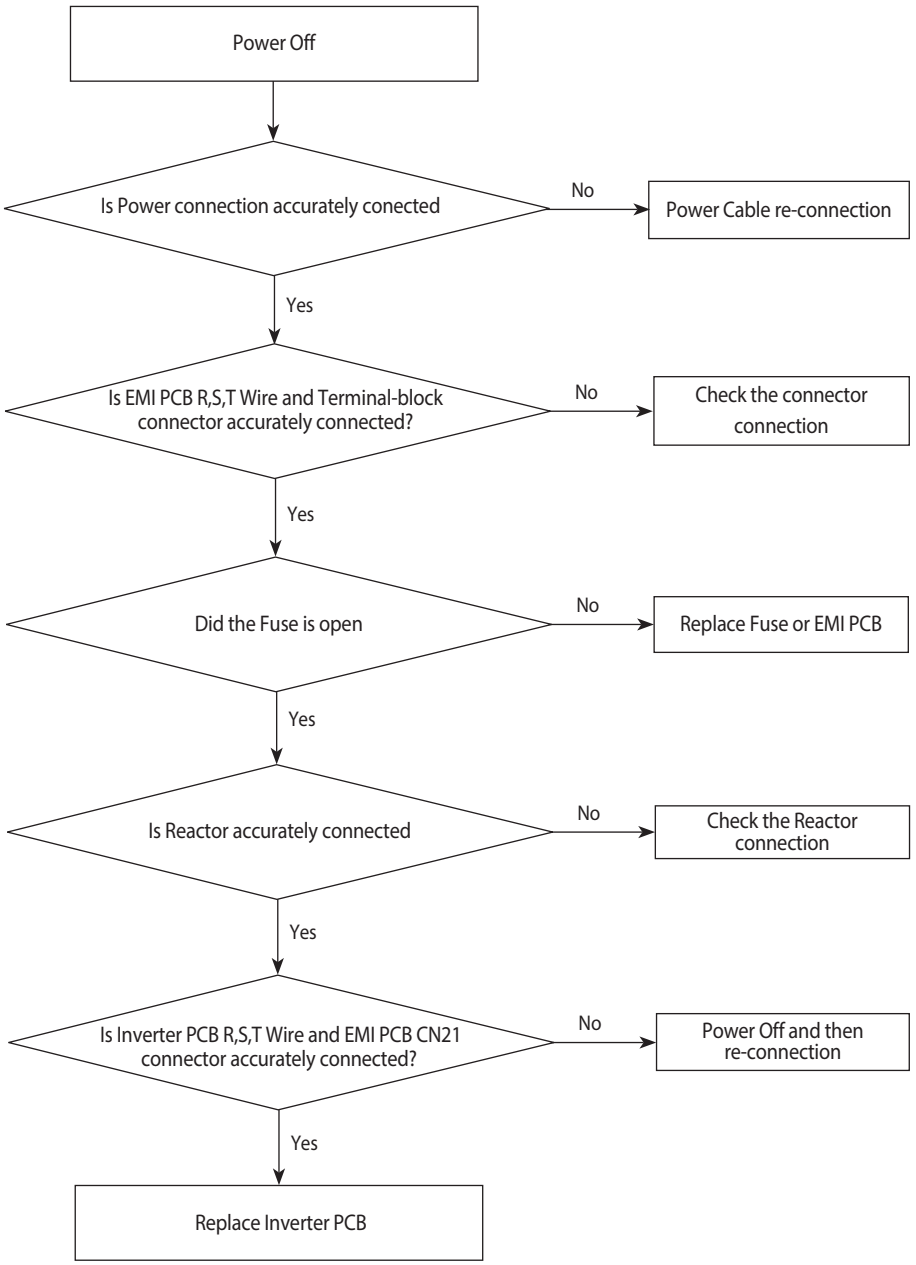
1. How to check



4-4-48 Overvoltage / Low voltage error

Outdoor unit display	E466 (INVERTER1 PCB) E366 (INVERTER2 PCB)
Judgment Method	· Input wiring error EMI Fuse open. · DC-Link Overvoltage / Low voltage occurs.
Cause of problem	· Check the input wiring · EMI Fuse OPEN

1. How to check



EMI PCB R,S,T Wire and Terminal-block connector

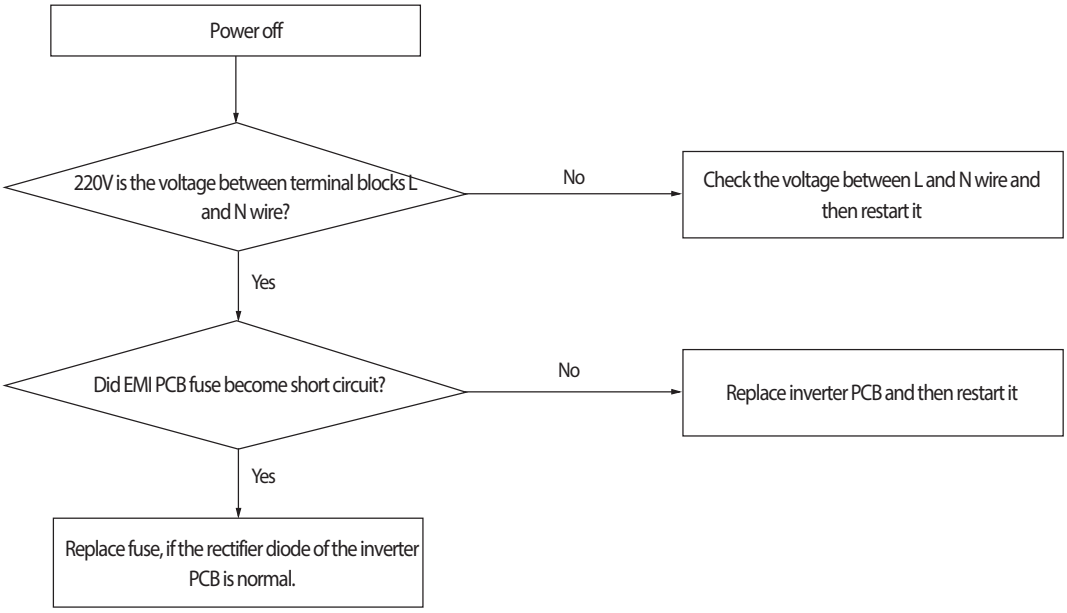
Type of Power Source	AC Input Voltage	Standard AC Voltage(Vac)		Standard DC Voltage(Vdc)	
		Min.	Max.	Min.	Max.
F	208~230V	177	265	250	374
J	460V	391	552	553	781

Overvoltage / Low voltage error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E466 (INVERTER1 PCB)
Judgment Method	· N-phase wiring error and EMI fuse short. · DC-Link Overvoltage / Low voltage occurs.
Cause of problem	· Check the input wiring · EMI fuse short circuit

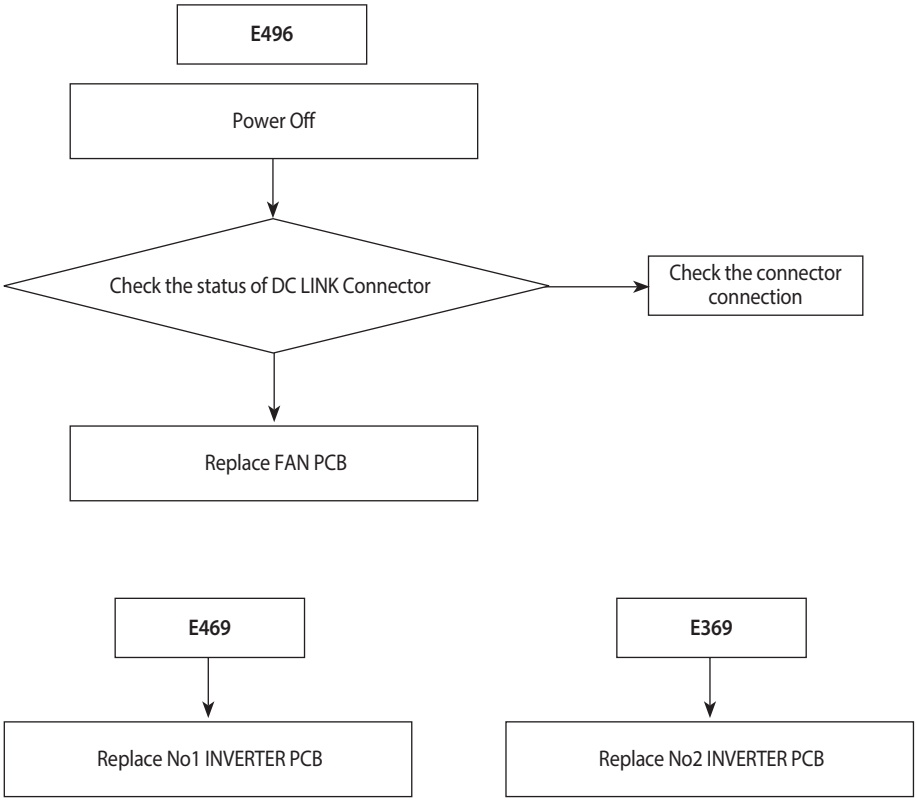
1. How to check

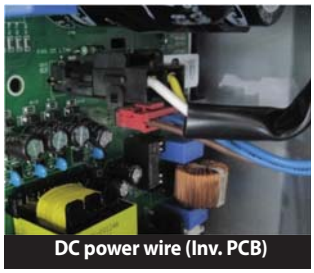


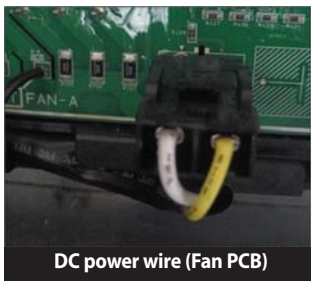
4-4-49 DC Link voltage sensor error

Outdoor unit display	E469 (INVERTER1 PCB) E369 (INVERTER2 PCB) E496 (OUTDOOR FAN 1 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	· DC Link Connector disconnected · PCB voltage sensing circuit defective

1. How to check




DC power wire (Inv. PCB)



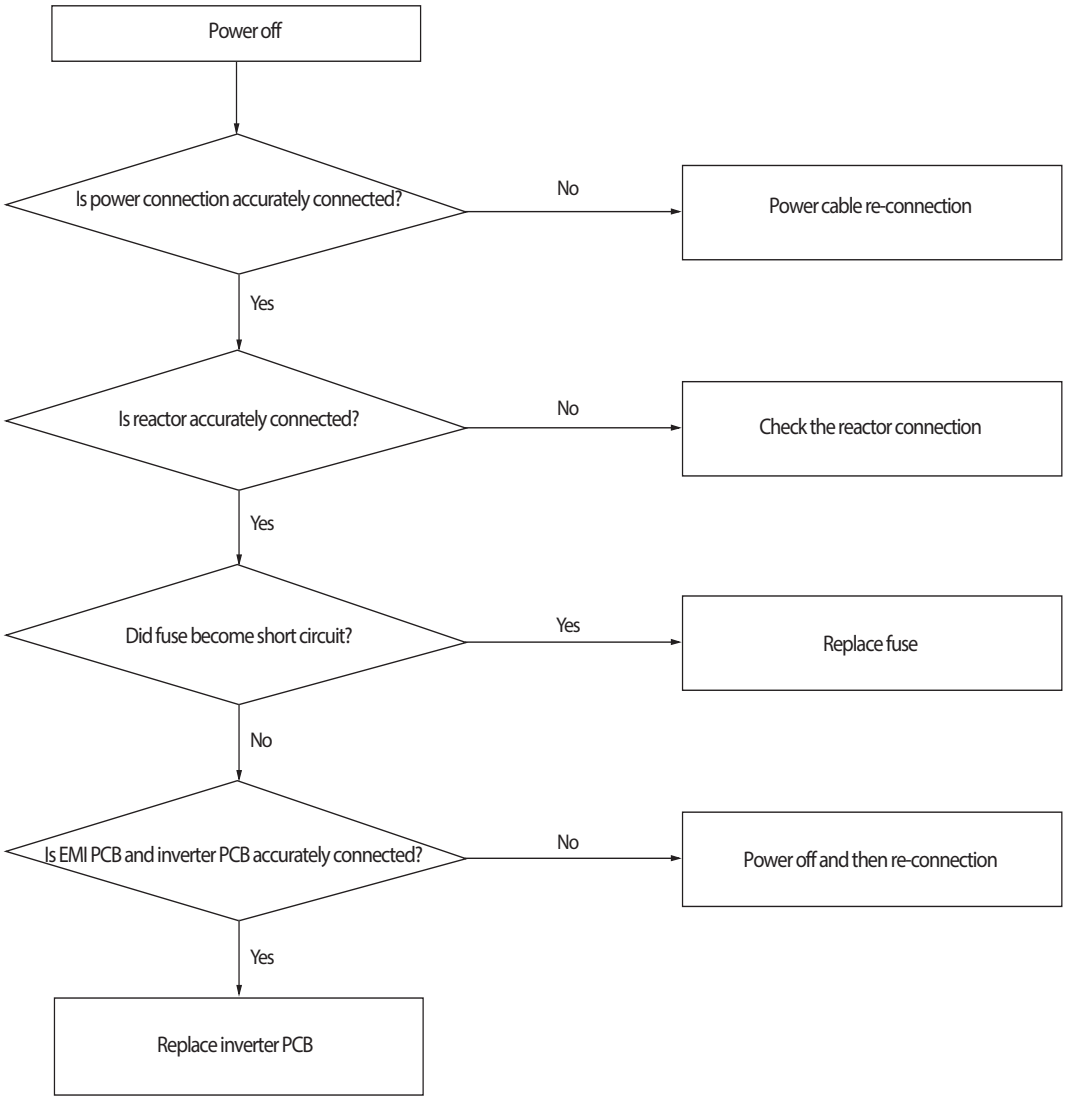
DC power wire (Fan PCB)

DC Link voltage sensor error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E469 (INVERTER1 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	· Defective Input voltage · AC power wiring error · Momentary Overvoltage / Low voltage occurs · Defective PCB voltage sensing circuit

1. How to check

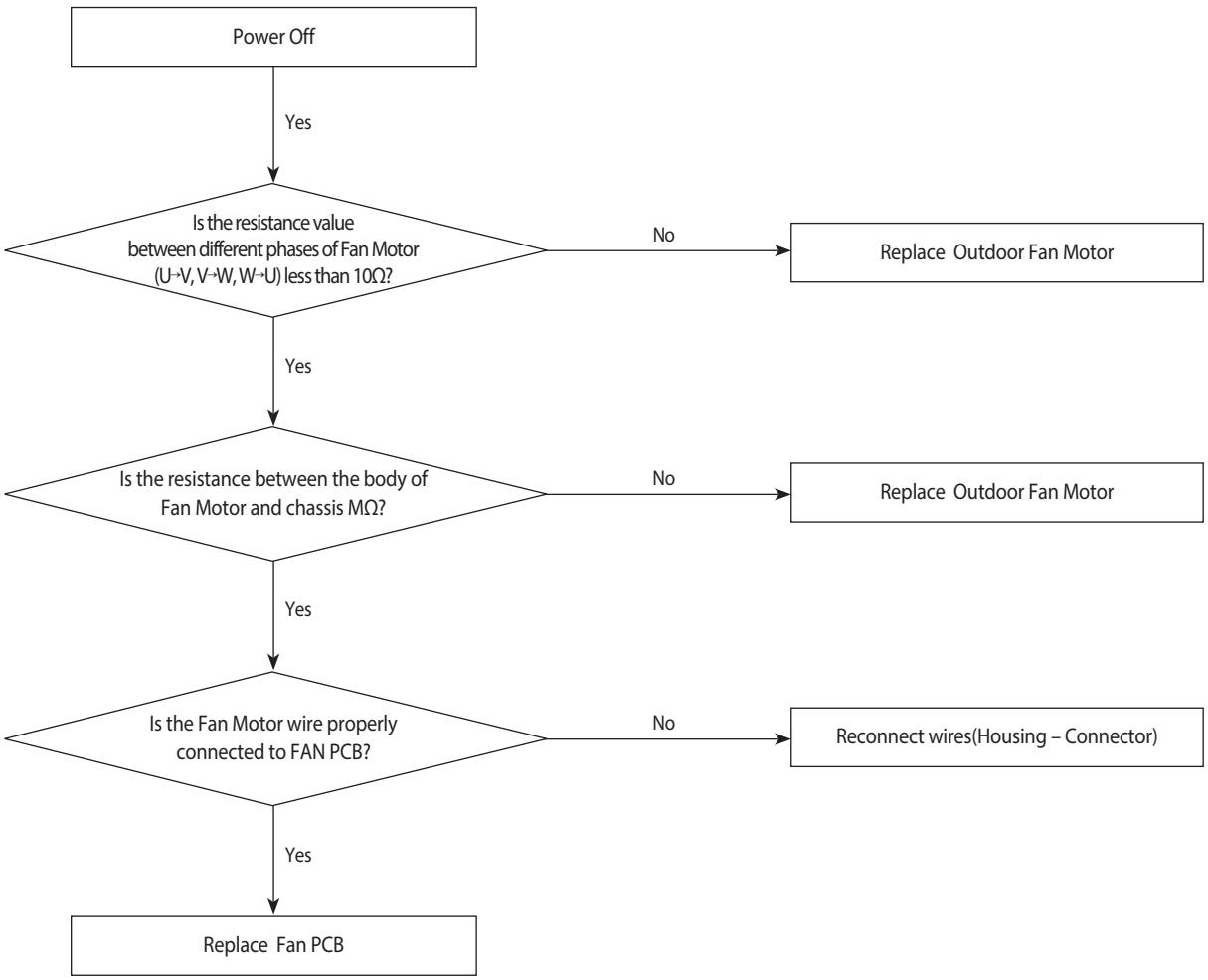


The case of E396, E498

4-4-50 Fan Motor Overcurrent error

Outdoor unit display	E478/E489 (FAN PCB(FAN1)) E378/E389 (FAN PCB(FAN2))
Judgment Method	· Occurs when overcurrent flows in the IPM. · Detected by H/W or S/W
Cause of problem	· Defective FAN PCB · Connector error · Defective Motor

1. How to check



Fan PCB wire connection


FAN Motor Connector

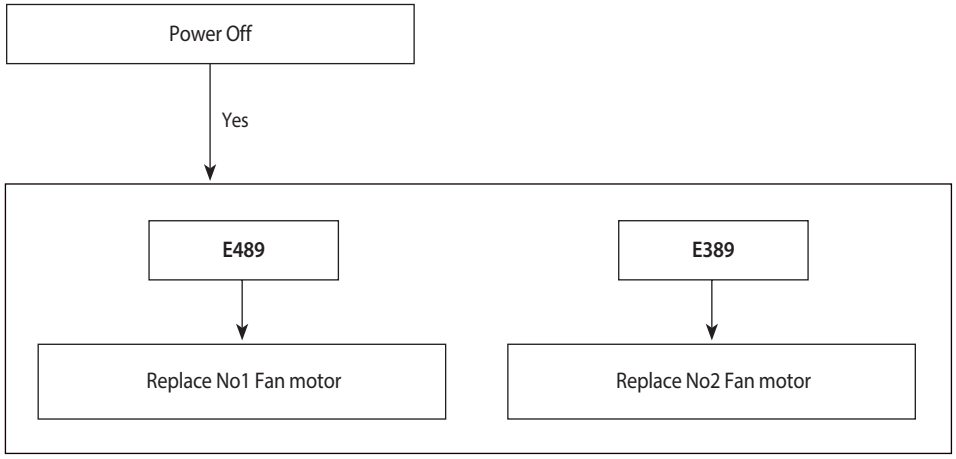

Hall-sensor Connector


[FAN PCB]
Hall-sensor Connector

Fan Motor Overcurrent error (cont.)

Outdoor unit display	E489 (FAN PCB(FAN1)) E389 (FAN PCB(FAN2))
Judgment Method	· Occurs when overcurrent flows in the IPM. · Detected by H/W or S/W
Cause of problem	· Defective FAN Motor

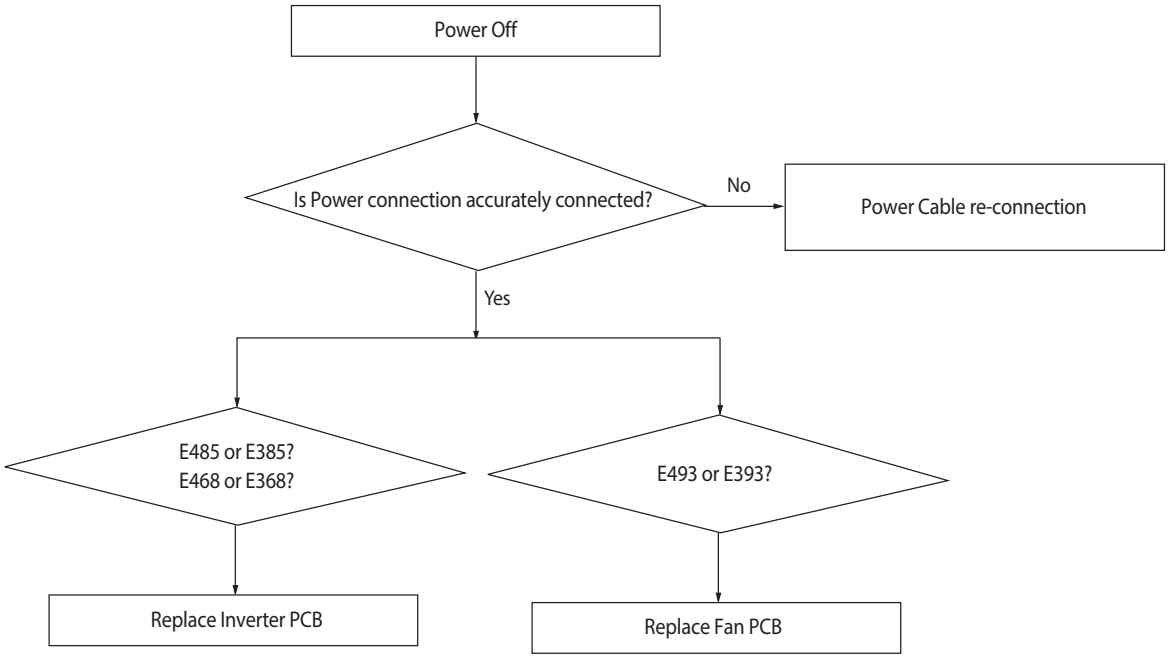
1. How to check



4-4-51 Input / Output Current sensor error

Outdoor unit display	E485 INVERTER1 PCB(Input Current sensor) E385 INVERTER2 PCB(Input Current sensor) E468 INVERTER1 PCB(Output Current sensor) E368 INVERTER 2 PCB(Output Current sensor) E493 OUTDOOR FAN PCB (FAN1 Output Current sensor) E393 OUTDOOR FAN PCB (FAN2 Output Current sensor)
Judgment Method	· Sensor Output detection : Judged as an error if the detected value is More than 4.5V or less than 0.5V
Cause of problem	· Input voltage defective · PCB voltage sensing circuit defective

1. How to check

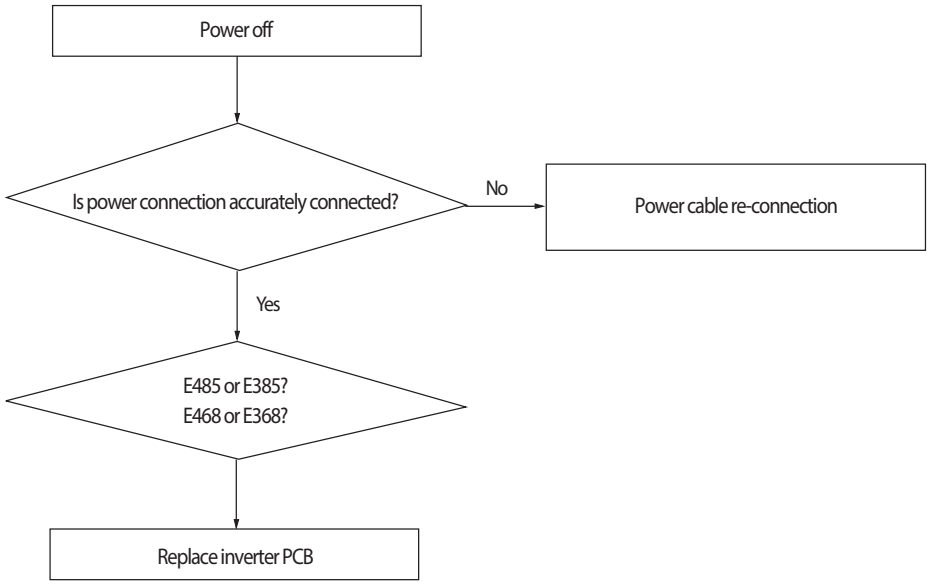


Input / Output Current sensor error (cont.)

■ AM038/048/055KXWD✳✳

Outdoor unit display	E485 INVERTER1 PCB (Input current sensor) E468 INVERTER1 PCB (Output current sensor)
Judgment Method	· Sensor Output detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than
Cause of problem	· Defective Input voltage · Defective PCB voltage sensing circuit

1. How to check



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

Outdoor unit display	E486
Judgment Method	· DC-Link Overvoltage / Low voltage occurs.
Cause of problem	· Check the status of DC LINK Connector

1. How to check

• Be careful when you check DC voltage.(600Vdc ↑)

How to check voltage from DC LINK connector disconnect from FAN PCB

ⓐ Turn off the MAIN Power

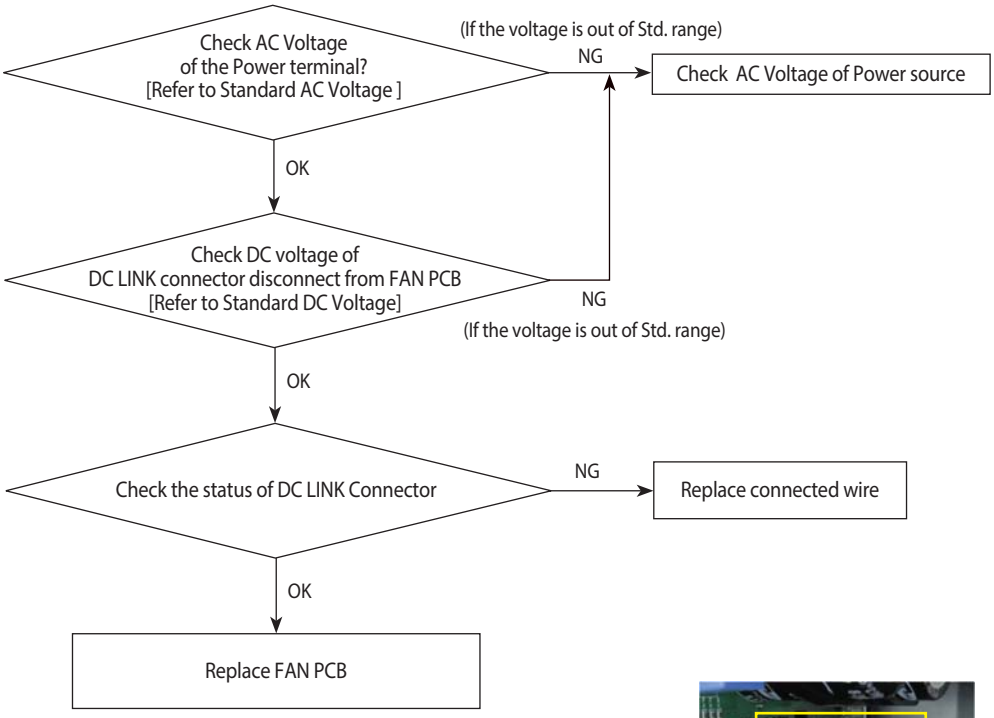
→ ⓑ Disconnect the DC LINK connector from FAN PCB

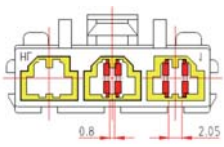
→ ⓒ Turn on the MAIN Power

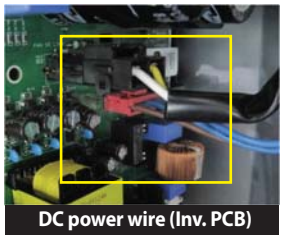
→ ⓓ Check voltage of connector

Standard voltage range of DC and AC

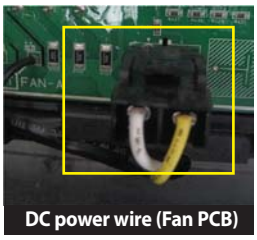
AC Input Voltage	Standard AC Voltage(Vac)		Standard DC Voltage(Vdc)	
	Min.	Max.	Min.	Max.
208~230V	187	253	265	358
460V	414	506	585	715
380~415V	342	457	484	646







DC power wire (Inv. PCB)

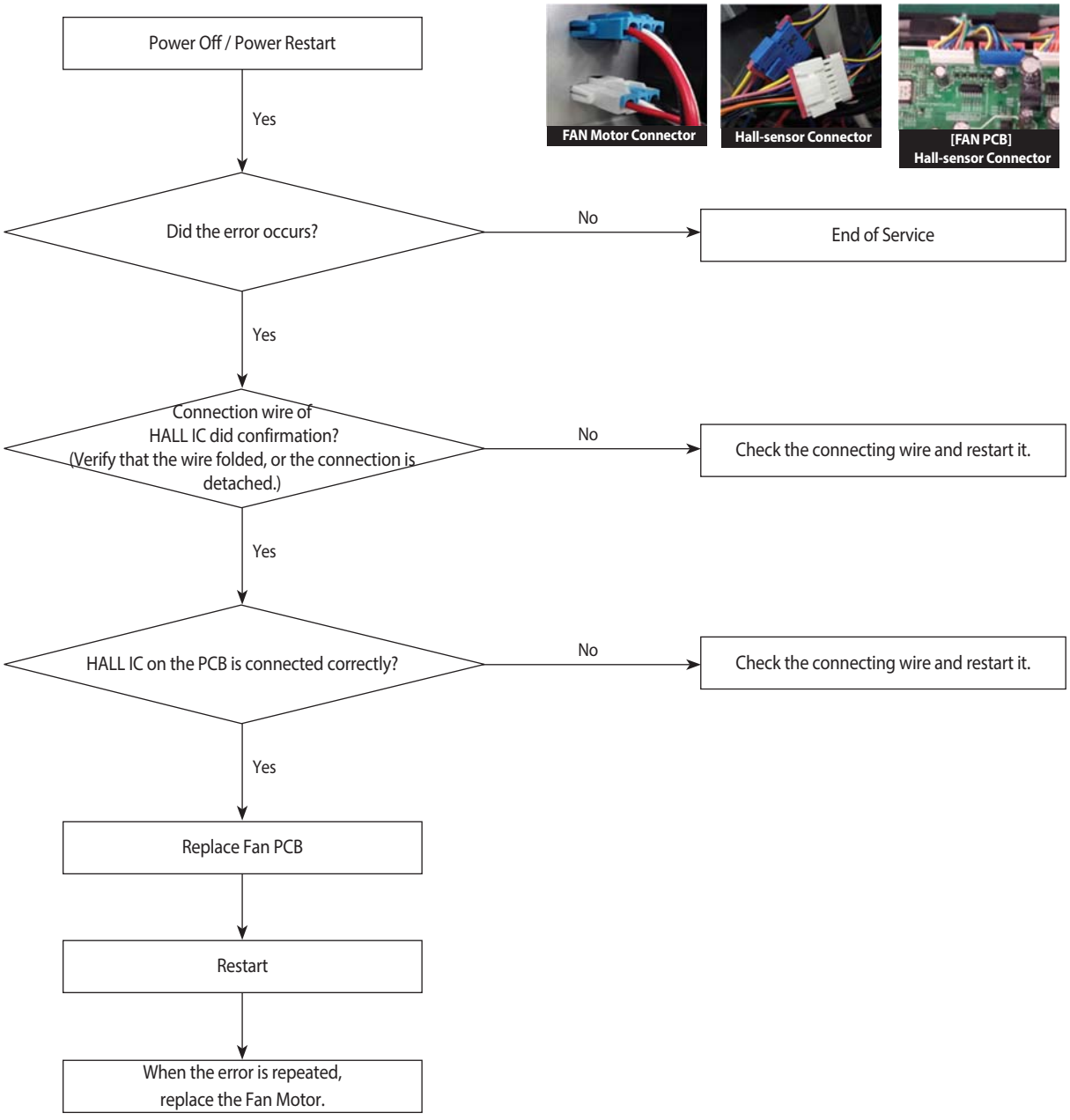


DC power wire (Fan PCB)

4-4-53 Hall IC(Fan) error

Outdoor unit display	E487 (FAN PCB(FAN1)) E387 (FAN PCB(FAN2))
Judgment Method	· 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



4-4-54 Inverter Overheat error

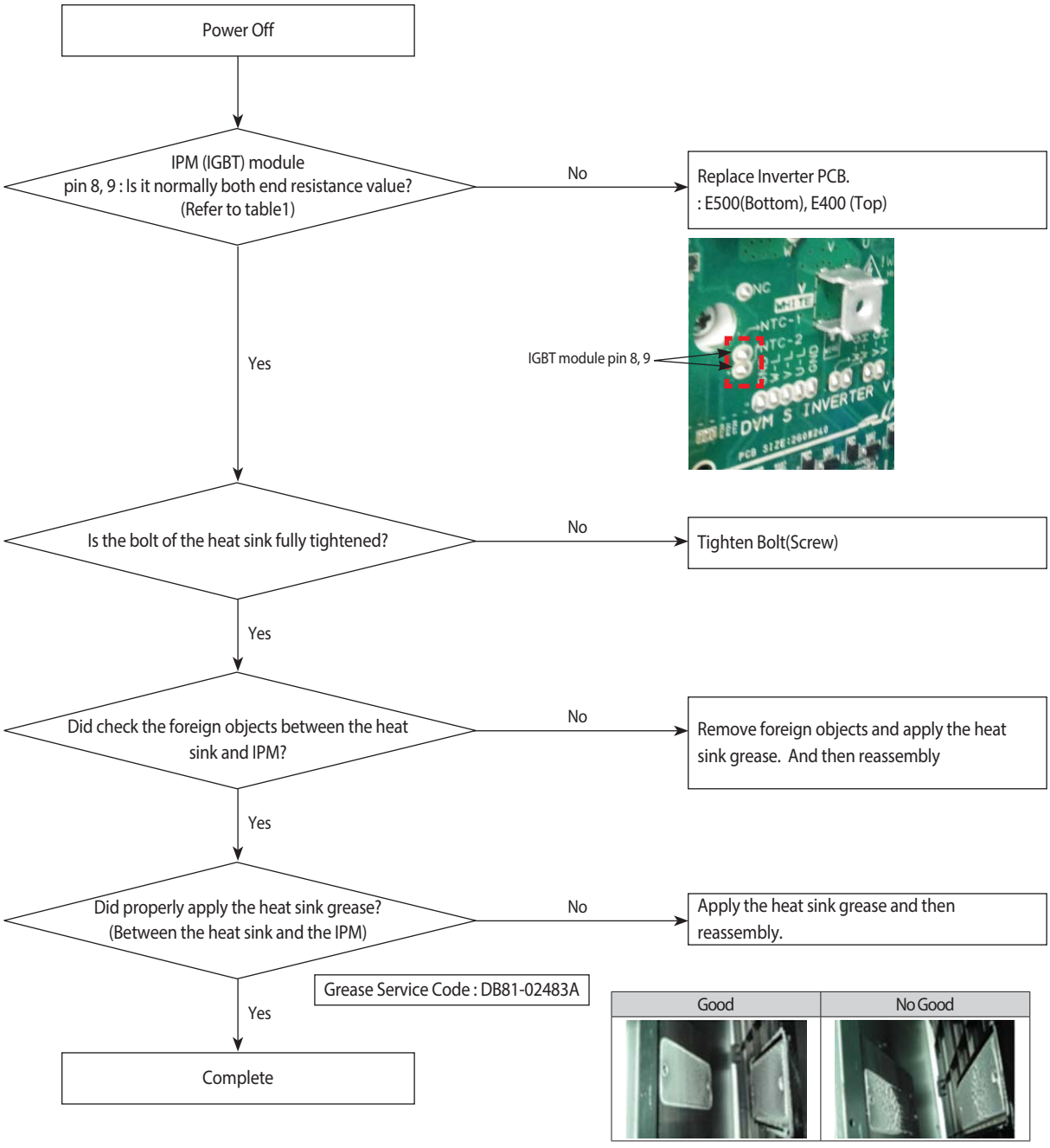
Outdoor unit display	E500 (INVERTER1 PCB) E400 (INVERTER2 PCB)
Judgment Method	· IGBT module internal temperature : 105℃ more than (E500, E400)
Cause of problem	· Cooling Pin and the IGBT junction part assembly defective. · Refrigerant cooling heat sink and refrigerant piping assembly defective. · Assembled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

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

Temperature [℃]	NTC [ohm]	AD [V]
10	9000	2.58
20	6000	2.33
30	4000	2.03
40	3000	1.80
50	2000	1.47
60	1600	1.29
70	1200	1.07
80	750	0.76
90	650	0.68

Temperature [℃]	NTC [ohm]	AD [V]
100	500	0.55
105	450	0.51
110	380	0.44
120	300	0.35
130	250	0.30
140	200	0.25

1. How to check



Inverter Overheat error (cont.)

■ AM038/048/055KXWD✳✳

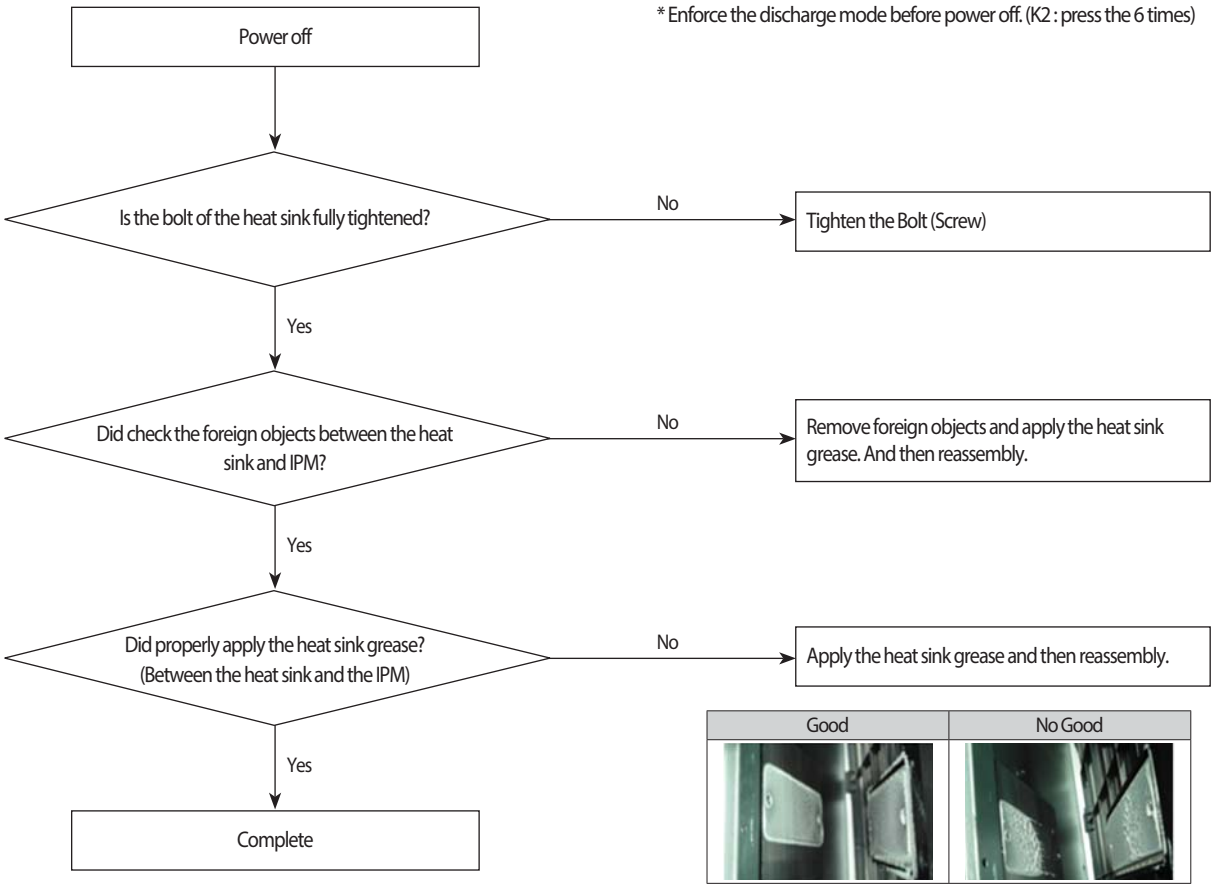
Outdoor unit display	E500 (INVERTER1 PCB)
Judgment Method	· IGBT module internal temperature : 105℃ more than (E500, E400)
Cause of problem	· Cooling pin and the IGBT junction part assembly defective. · Refrigerant cooling heat sink and refrigerant piping assembly defective. · Assembled bolt defective.

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

Temperature [℃]	NTC [ohm]	AD [V]
10	9000	2.58
20	6000	2.33
30	4000	2.03
40	3000	1.80
50	2000	1.47
60	1600	1.29
70	1200	1.07
80	750	0.76
90	650	0.68

Temperature [℃]	NTC [ohm]	AD [V]
100	500	0.55
105	450	0.51
110	380	0.44
120	300	0.35
130	250	0.30
140	200	0.25

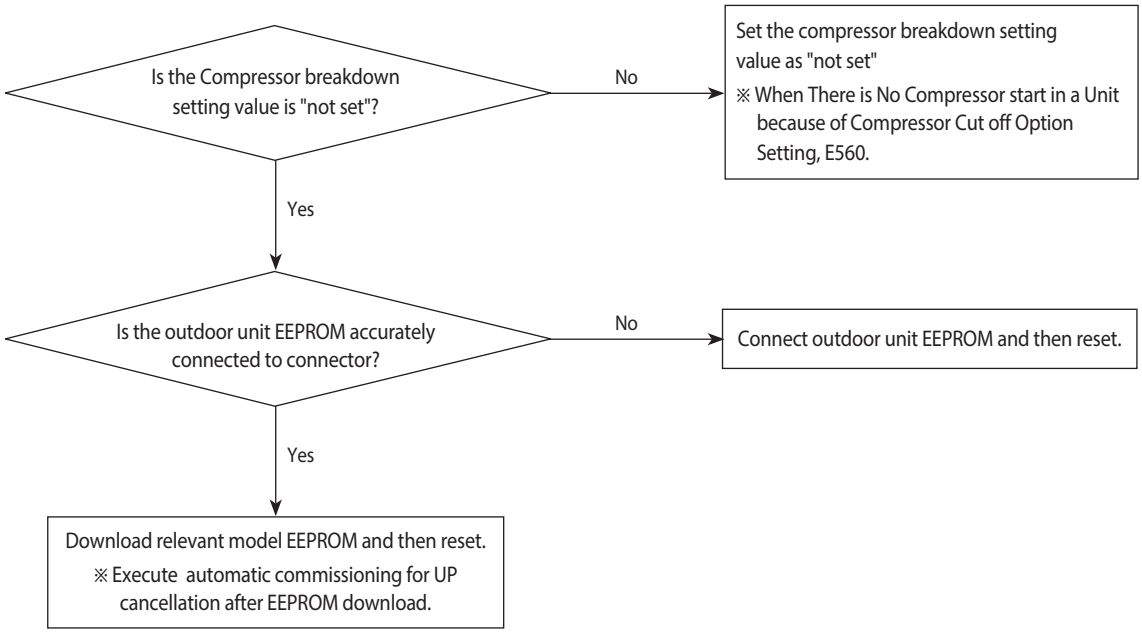
1. How to check



4-4-55 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 (There is No Compressor start in a Unit because of Compressor Cut off Option Setting.)

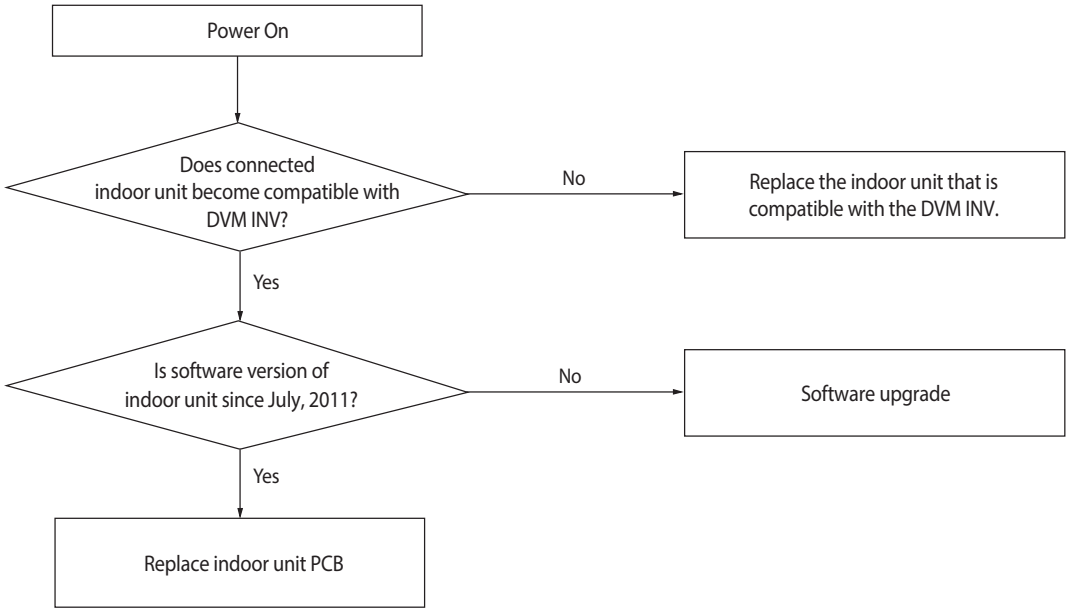
1. How to check



4-4-56 Model mismatching of Indoor unit.

Outdoor unit display	E563
Judgment Method	· 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	· Check the software version of the indoor unit. · Check whether the support of the indoor unit.

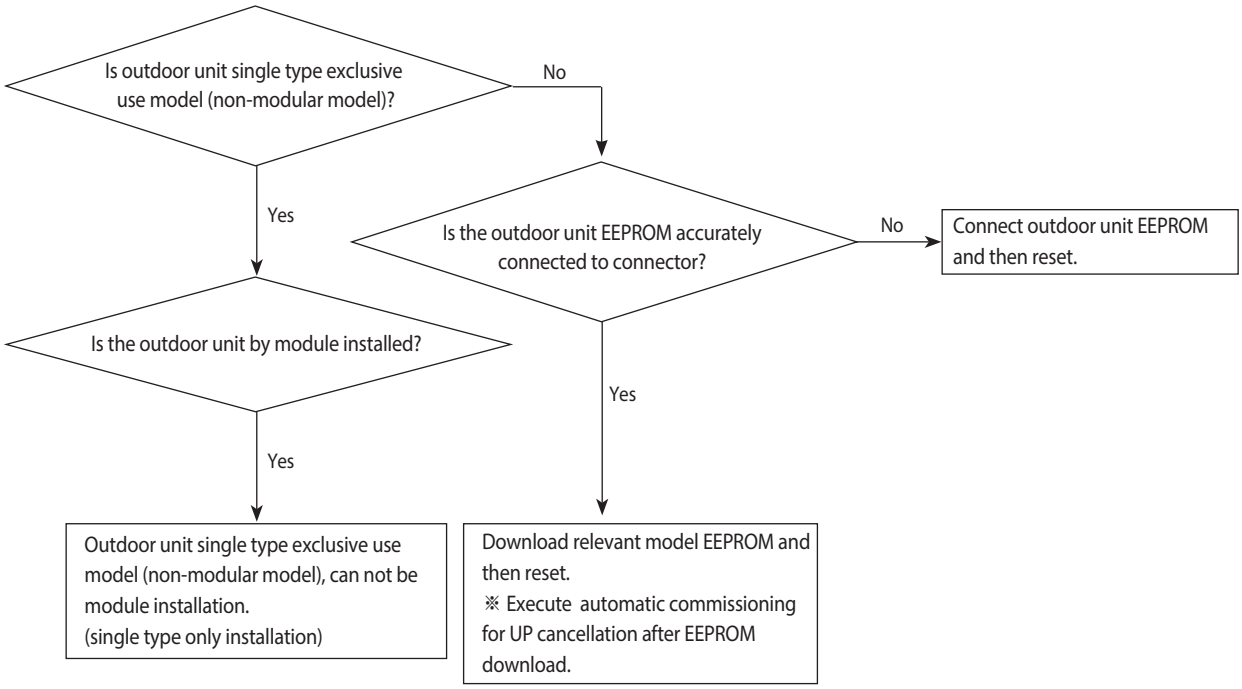
1. Cause of problem



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

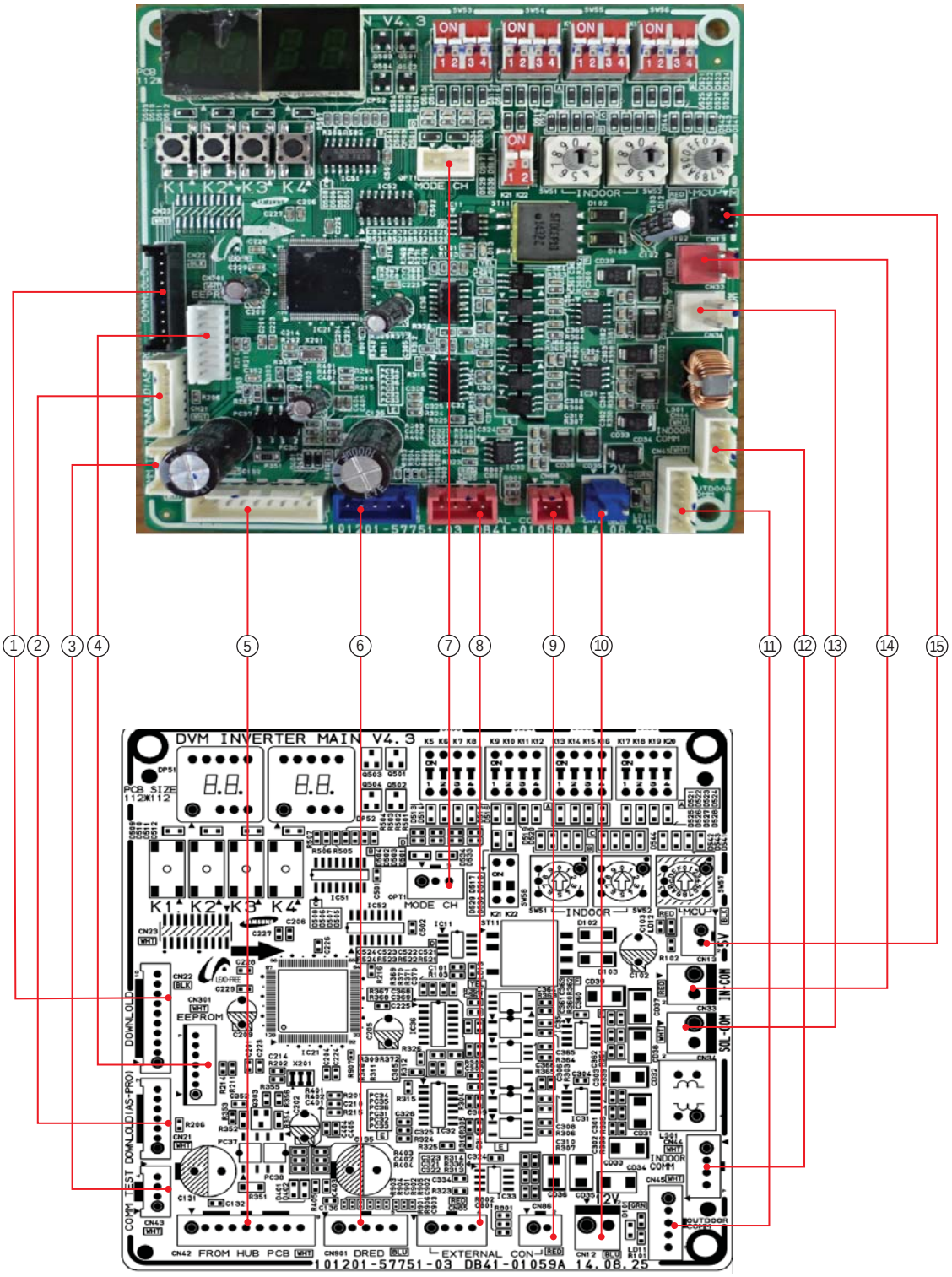
Outdoor Unit Display	E573
Indoor Unit Display	-
Judgment Method	• Refer to the judgment method below.
Special Cause	• Using single type outdoor unit (non-modular model) in a module installation.

1. Cause of problem



5. PCB Diagram and Parts List

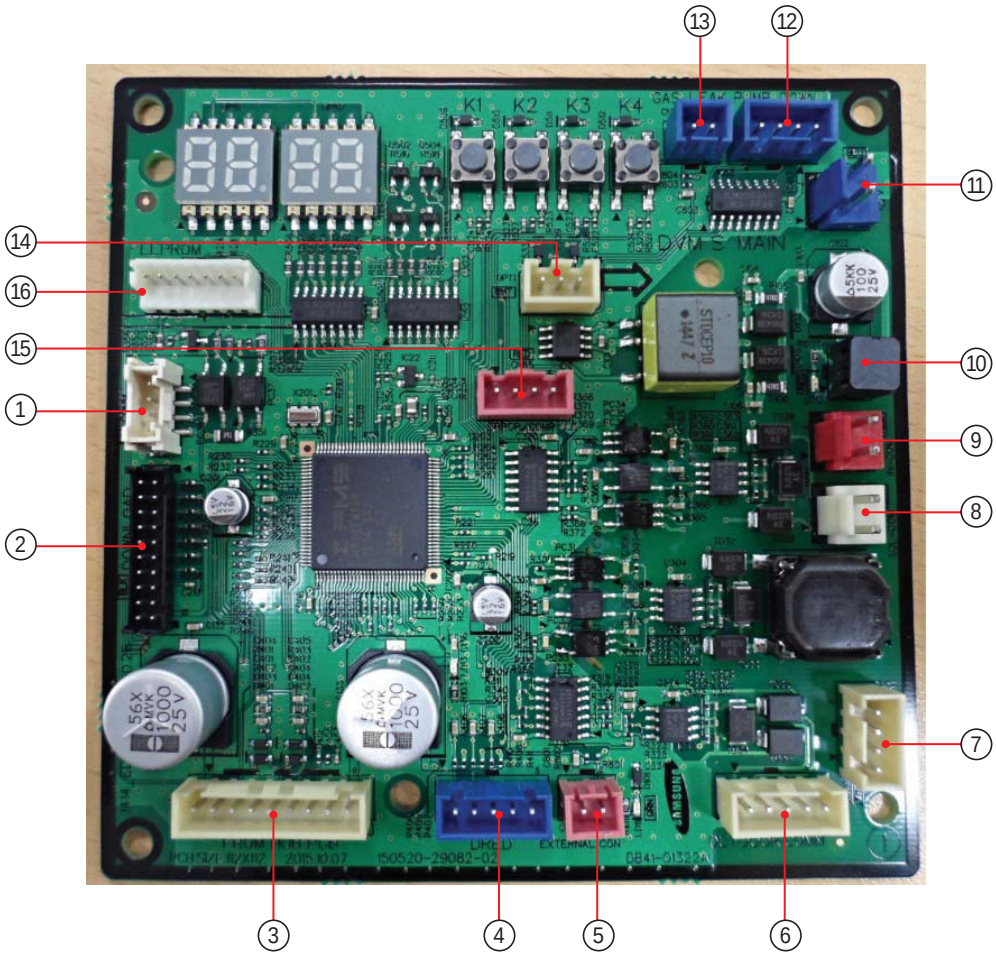
5-1 ASS'Y PCB MAIN



ASS'Y PCB MAIN (cont.)

① CN22-DOWNLOAD #1 : RX-DOWN #2 : TX-DOWN #3 : N-TRST #4 : TDO #5 : TCK #6 : TDI #7 : TMS #8 : #9 : GND #10 : VCC	② CN21-ASPRO DOWNLOAD #1 : VCC #2 : MODE0 #3 : RESET_MAIN #4 : #5 : F_SCLK #6 : F_SDAT #7 : GND	③ CN43-COMM TEST #1 : 12V #2 : INVERTER-INRUSH-OUT #3 : INVERTER-COMM #4 : GND	④ CN301-EEPROM #1 : GND #2 : #3 : VCC #4 : EEPROM-SELECT #5 : EEPROM-SO #6 : EEPROM-SI #7 : EEPROM-CLOCK
⑤ CN42 - HUB COMM #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	⑥ CN901-DRED #1 : KEY3 #2 : GRID #3 : KEY4 #4 : GND #5 : VCC	⑦ OPT1 -MODE SELECTOR #1 : KEY3 #2 : GRID #3 : KEY4	⑧ CN85-CONDITION CHECK #1 : 12V #2 : ERROR-CHECK-OUT #3 : 12V #4 : COMP-CHECK-OUT
⑨ CN86-EXTERNAL CONTROL #1 : CONTROL #2 : GND	⑩ CN12 - 12V POWER #1 : 12V #2 : GND	⑪ CN45 -OUTDOOR COMM #1 : COM-C #2 : COM-D #3 : #4 : 12V #5 : GND	⑫ CN44 - INDOOR COMM #1 : COM-A #2 : COM-B #3 : 5V #4 : AGND
⑬ CN34- UNUSED COMM #1 : COM-E #2 : COM-F	⑭ CN33-INDOOR COMM (EXTRA) #1 : COM-A #2 : COM-B	⑮ CN13-5V POWER #1 : COM-A #2 : COM-B	

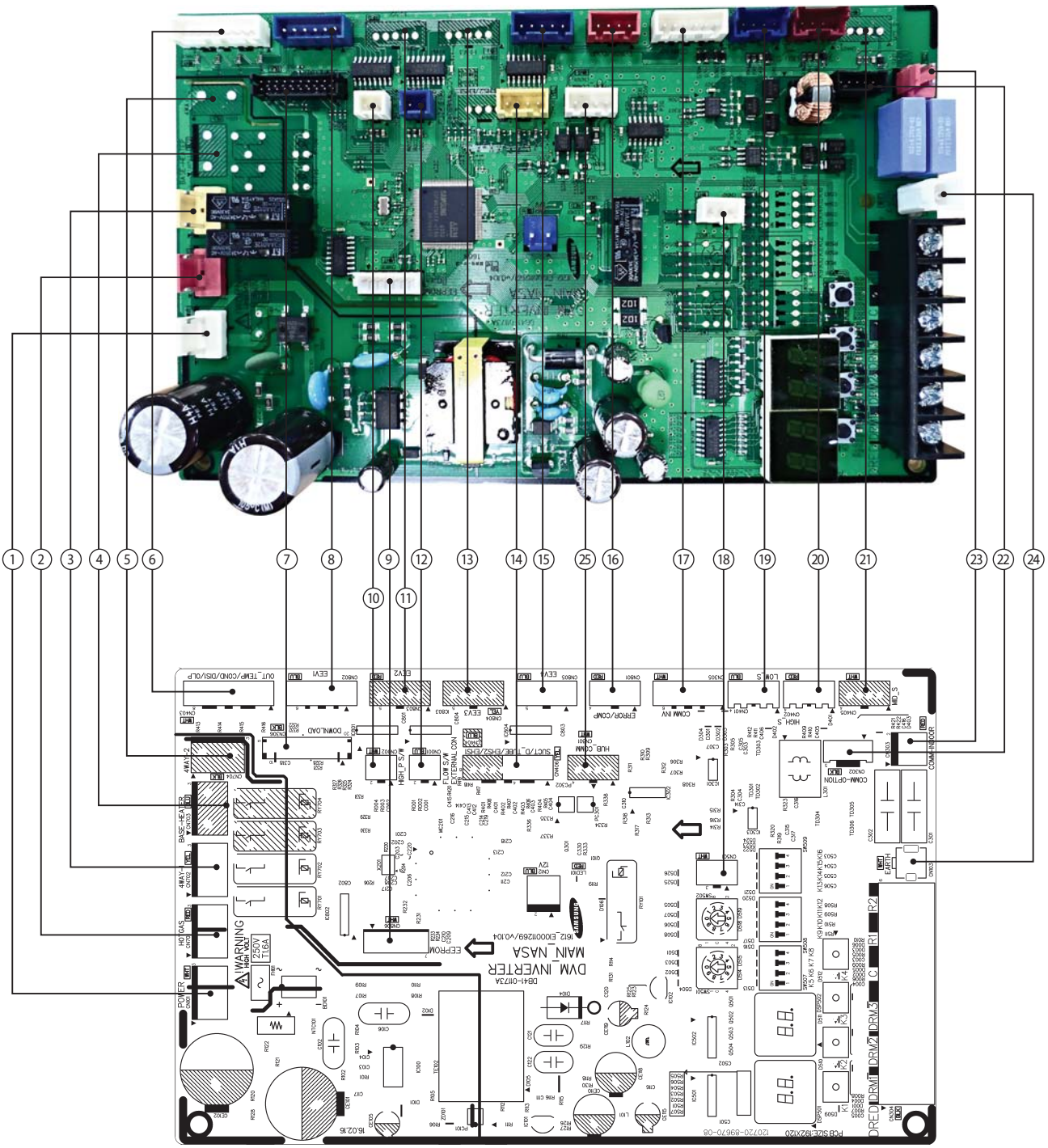
ASS'Y PCB MAIN (cont.)



1	INV COMM
2	Download
3	HUB PBA Comm.
4	DRED
5	External Con
6	COMM PBA Comm.(Outdoor)
7	COMM PBA Comm.(Indoor)
8	COMM PBA Comm.(SOL-COM)
9	IN-COM
10	5V
11	12V
12	Pump Down
13	Gas Leak
14	Option Switch
15	Error/Comp
16	EEPROM

ASS'Y PCB MAIN (cont.)

- AM038/048/055KXWD✳✳



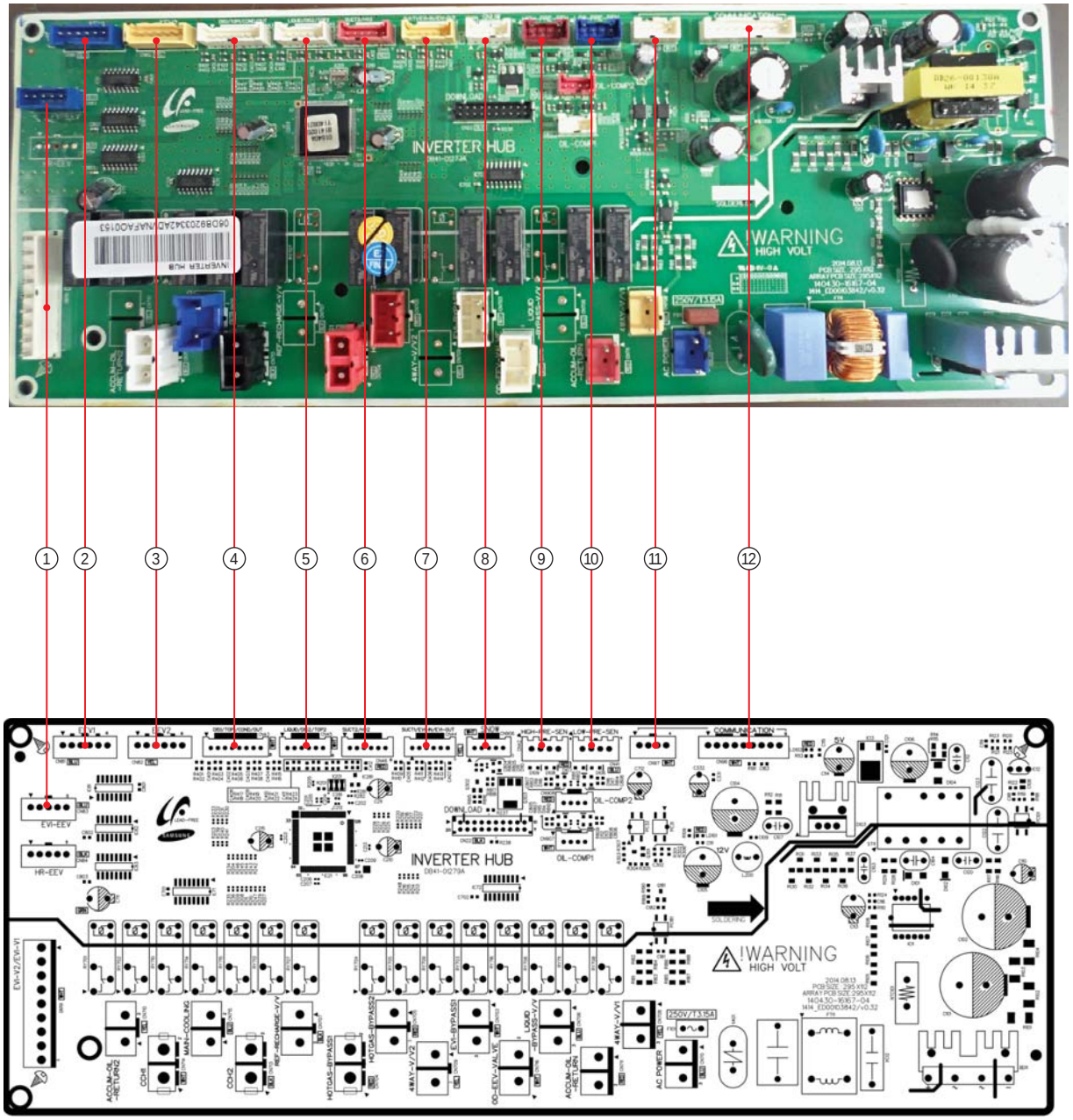
ASS'Y PCB MAIN (cont.)

- AM038/048/055KXWD✳✳

① CN101-AC INPUT #1: L #3: N	② CN701-HOT GAS #1: L #3: N	③ CN702-4WAY VALVE 1 #1: L #3: N	④ CN703-BASE HEATER #1: L #3: N
⑤ CN704-4WAY VALVE 2 #1: L #3: N	⑥ CN403- TEMP SENSOR #1 : OUT TEMP #2,4,6,8: GND #3 : COND TEMP #5 : DISCHARGE TEMP #7 : OLP SENSOR	⑦ CN306-MICOM DOWNLOAD	⑧ CN802-EEV1 #1~4:EEV CONTROL #5,6: 12V
⑨ CN806-E2PMODULE	⑩ CN002-HIGH PRESSURE S/W #1: INPUT #2: GND	⑪ CN803-EEV2 #1~4:EEV CONTROL #5: 12V	⑫ CN001-FLOW S/W #1: INPUT #2: GND
⑬ CN804-EEV3 #1~4:EEV CONTROL #5: 12V	⑭ CN406	⑮ CN805-EEV4 #1~4:EEV CONTROL #5: 12V	⑯ CN801-EXTERNAL CONTROL OUT #1,3: 12V #2: ERROR CHECK OUT #4: COM CHK OUT
⑰ CN305-INVERTER PBA COMM	⑱ CN501-COLD SELECT	⑲ CN401-LOW PRESSURE SENSOR #2: INPUT #3: GND #4: VCC	⑳ CN401-HIGH PRESSURE SENSOR #1: INPUT #3: GND #4: VCC
㉑ CN401-MEDIUM PRESSURE SENSOR #1: INPUT #2: GND #4: VCC	㉒ CN302-SUB PBA COMM	㉓ CN303-INDOOR/OUTDOOR COMM	㉔ CN103-EARTH
㉕ CN301-WATER HUB COMM			

5-2 ASS'Y PCB MAIN-HUB

■ AC



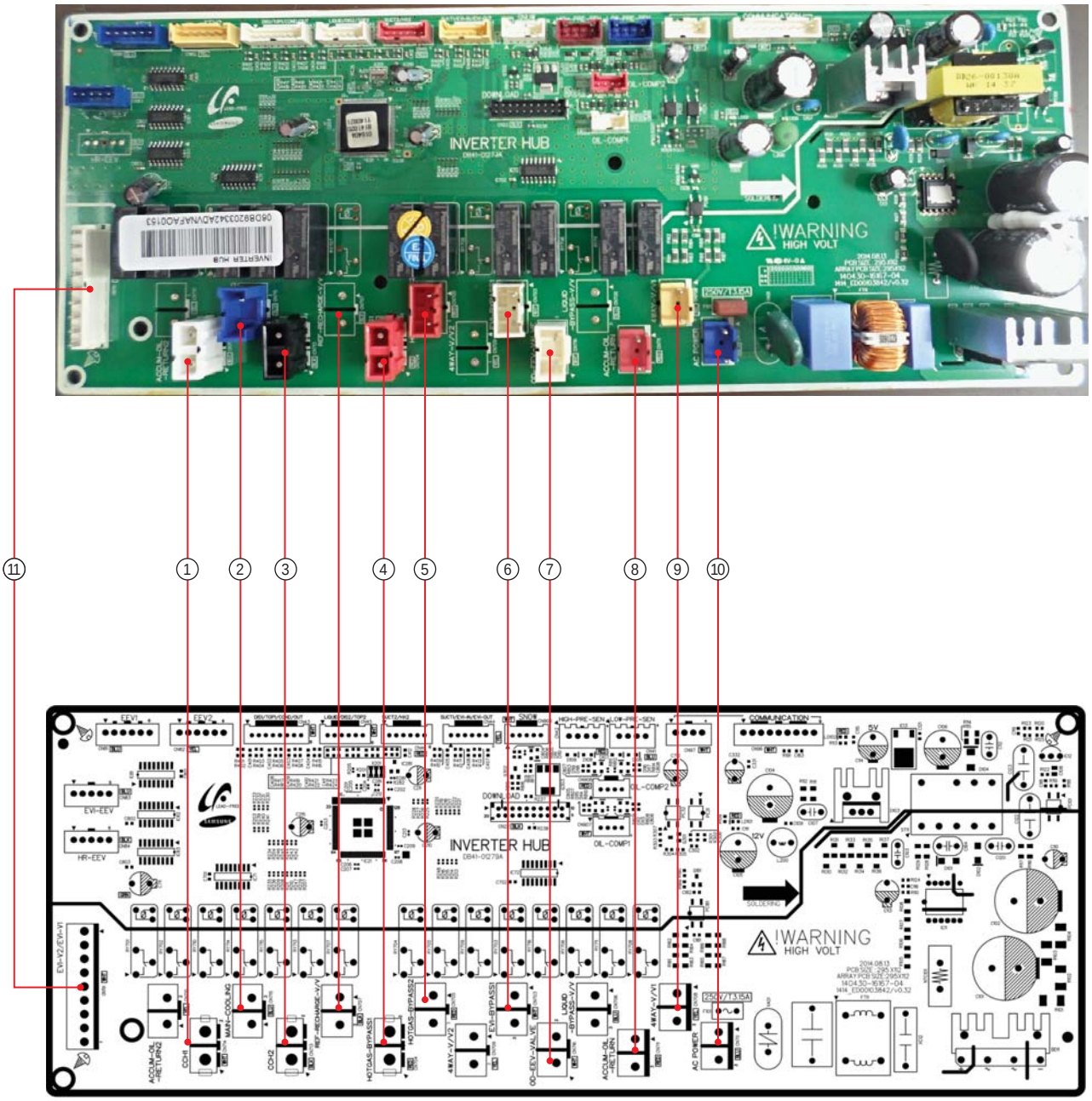
ASS'Y PCB MAIN-HUB (cont.)

■ AC (cont.)

① CN83-EVI EEV #1 : EEV3_A_OUT #2 : EEV3_B_OUT #3 : EEV3_A'_OUT #4 : EEV3_B'_OUT #5 : 12V	② CN81-EEV1 #1 : EEV1_B'_OUT #2 : EEV1_A'_OUT #3 : EEV1_B_OUT #4 : EEV1_A_OUT #5 : 12V #6 : 12V	③ CN82-EEV2 #1 : EEV2_B'_OUT #2 : EEV2_A'_OUT #3 : EEV2_B_OUT #4 : EEV2_A_OUT #5 : 12V #6 : 12V	④ CN43-TEMP. SENSOR #1 : COMP1 DISACHRGE #2 : COMP1 DISCHARGE #3 : COMP1 TOP #4 : COMP1 TOP1 #5 : COND OUT #6 : COND OUT #7 : OUTDOOR TEMP. #8 : OUTDOOR TEMP.
⑤ CN45-TEMP. SENSOR #1 : LIQUID #2 : LIQUID #3 : COMP2 DISCHARGE #4 : COMP2 DISCHARGE #5 : COMP2 TOP #6 : COMP2 TOP	⑥ CN46-SUCT #1 : SUCTION 2 #2 : SUCTION 2 #3 : GND #4 : GND #6 : GND	⑦ CN44 – TEMP. SENSOR #1 : SUCTION 1 #2 : SUCTION 1 #3 : EVI INLET #4 : ENI INLET #5 : ENI OUT ##6 : EVI OUT	⑧ CN906 –SNOW SENSOR #1 : 12V #3 : GND #4 : SNOW_SENSOR #5 : PSD_POWER
⑨ CN42 –HIGH PRESSURE SENSOR #1 : HIGH PRESSURE SENSOR #3 : GND #4 : VCC	⑩ CN41- LOW PRESSURE SENSOR #2 : LOW PRESSURE SENSOR #3 : GND #4 : VCC	⑪ CN97- INV COMM #1 : 12V #2 : INV_SMPS_RELAY #3 : COMM OUT #4 : GND	⑫ CN96 – MAIN–HUB COMM. #1 : 12V #2 : INV_SMPS_RELAY #3 : COMM-MAIN #4 : GND #5 : HIGH-PRESSURE-SENSOR #6 : LOW-PRESSURE-SENSOR #7 : ZERO-CROSSING #8 : GND #9 : VCC

ASS'Y PCB MAIN-HUB (cont.)

■ DC

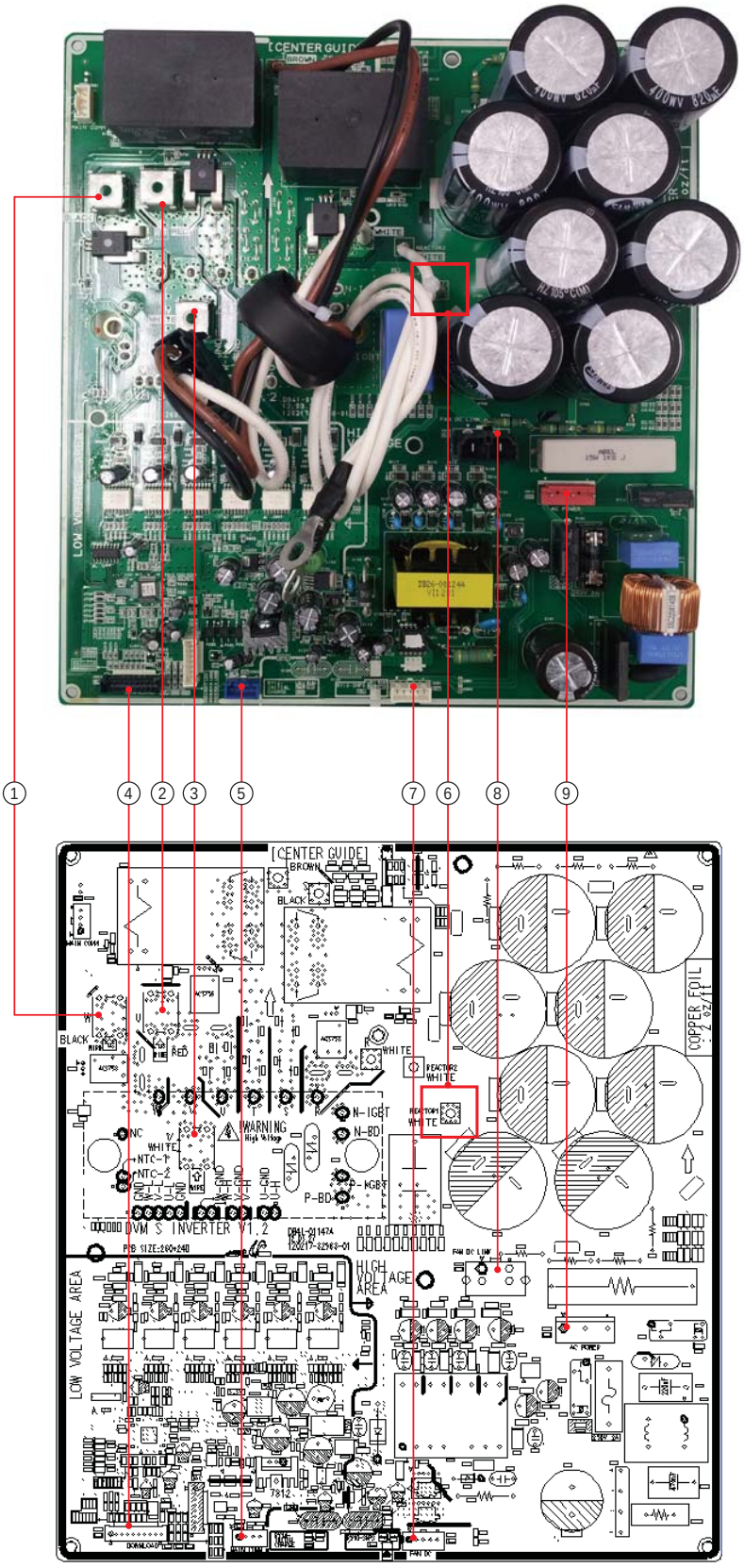


ASS'Y PCB MAIN-HUB (cont.)

■ DC (cont.)

① CN714-CCH1 #1 : CCH1 #2 : CCH1	② CN715-MAIN-COOLING #1: MAIN-COOLING #2: MAIN-COOLING	③ CN713-CCH2 ##1 : CCH2 #2 : CCH2	④ CN704-HOTGAS-VALVE1 #1 : HOTGAS BYPASS1 #2 : HOTGAS BYPASS1
⑤ CN705-HOTGAS-BYPASS2 #1:HOTGAS BYPASS2 #2:HOTGAS BYPASS2	⑥ CN703-EVI-BYPASS #1 : EVI BYPASS1 #2 : EVI BYPASS1	⑦ CN716-OD-EEV-VALVE #1: OD EEV VALVE #2: OD EEV VALVE	⑧ CN711-OIL-RETURN-VALVE #1 : ACCUM OIL RETURN VALVE #2 : ACCUM OIL RETURN VALVE
⑨ CN708- 4-WAY-VALVE #1 : 4-WAY VALVE #2 : 4-WAY VALVE	⑩ CN70-AC POWER INPUT #1 : AC LIVE #2 : AC NEUTRAL	⑪ CN701 EVI VALVE 1,2 #1: EVI VALVE 1 #3: EVI VALVE 2 #7: EVI VALVE 1 #8: EVI VALVE 2 #9: AC NEUTRAL	

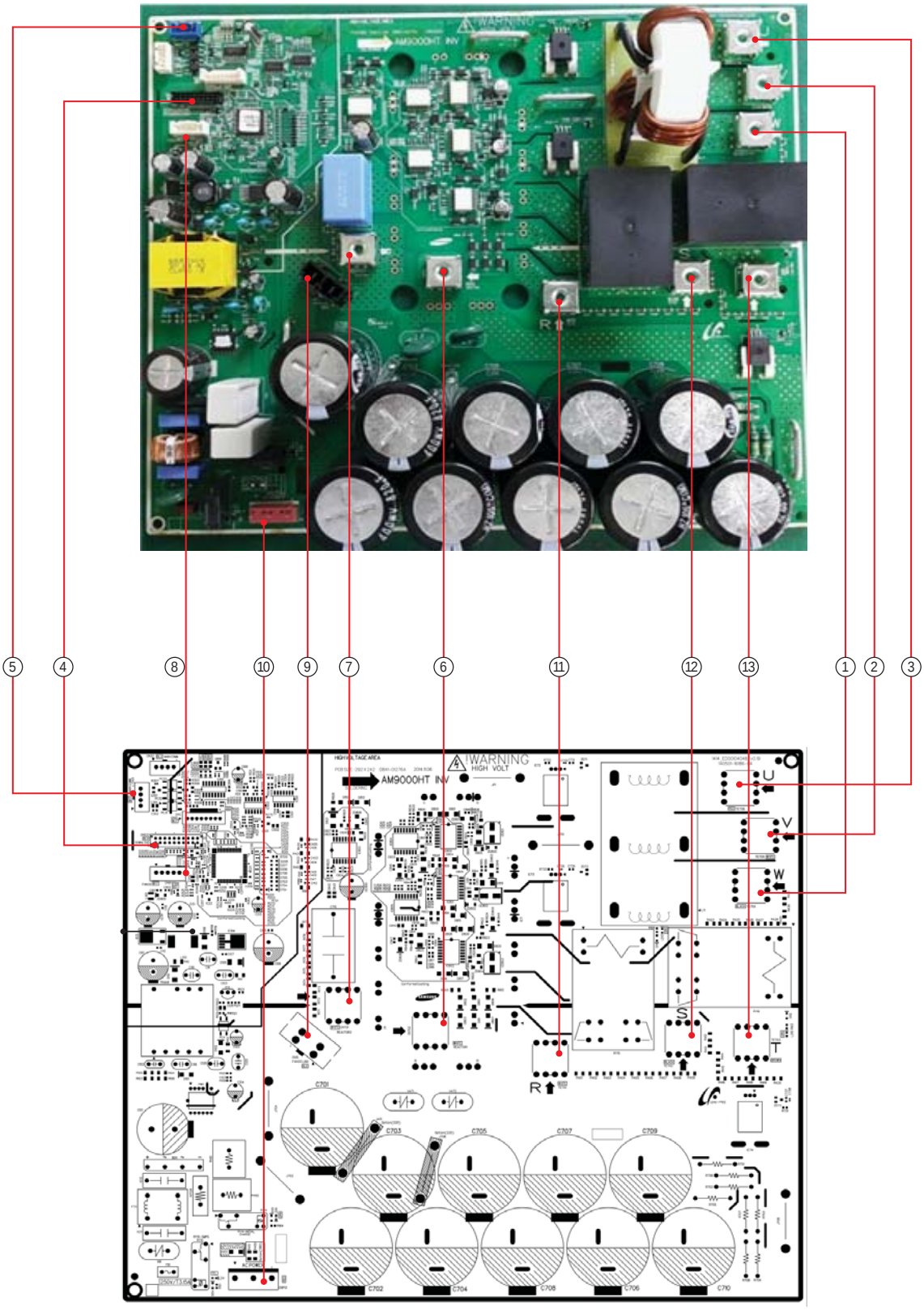
5-3 ASSY PCB INVERTER



ASSY PCB INVERTER (cont.)

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

ASS'Y PCB INVERTER (cont.)



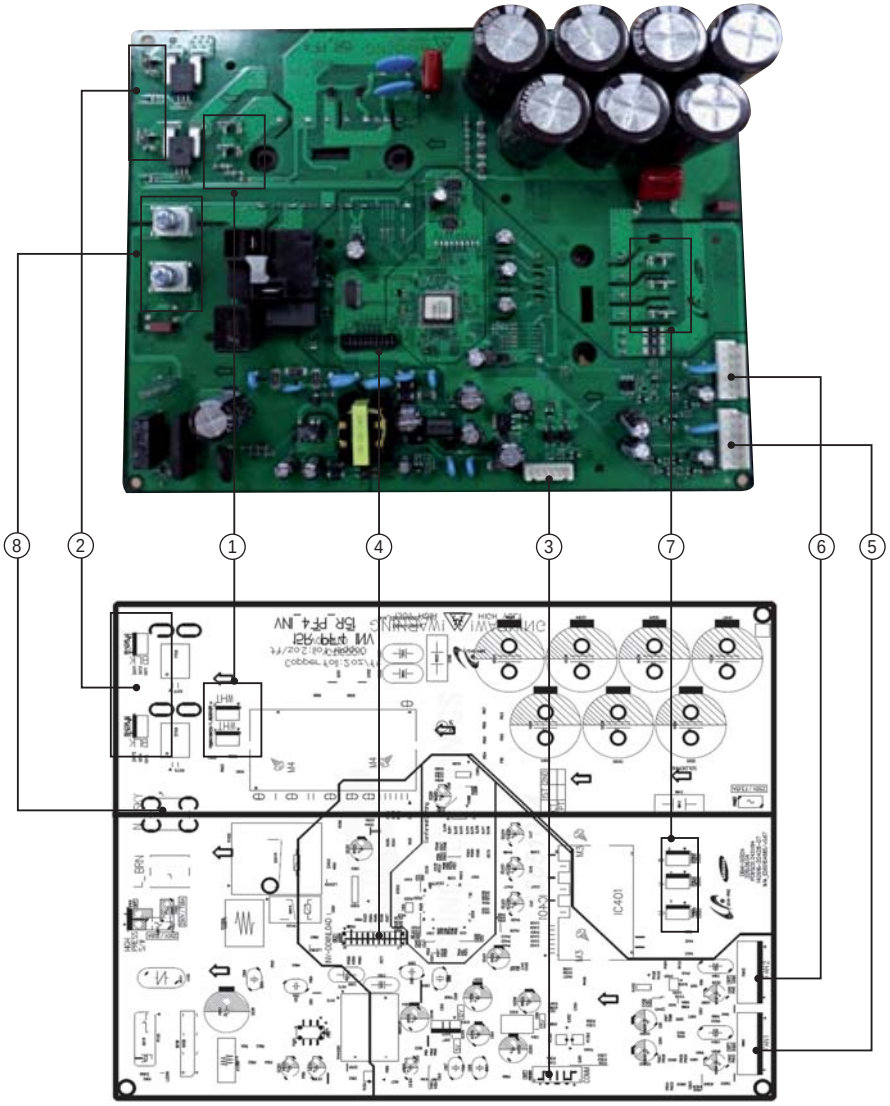
ASSY PCB INVERTER (cont.)

① W-COMP W #1 : COMP W	② U-COMP U #1 : COMP U	③ V-COMP V #1 : COMP V	④ CN22-DOWNLOAD #1: RX-DOWN #2: TX-DOWN #3: BOOT #4: TDO #5: TCK #6: TDI #7: TMS #9: GND #10: VCC
⑤ CN32 – MAIN COMM #1 : 12V-MAIN #2 : IN-SMPS-RELAY #3 : COMM-IN #4 : GND-MAIN	⑥ CN702-REACTOR1 #1: REACTOR1	⑦ CN701-REACTOR2 #1: REACTOR2	⑧ CN91-FAN DC #1: 18V #2: GND #3: 5V-FAN #4: AD-SELECT
⑨ CN15-FAN DC LINK #1 : AC #2 : #3 : AC	⑩ CN13-AC POWER #1: AC LIVE #2: AC NEUTRAL #3: AC NEUTRAL	⑪ R-INPUT R TOP #1: R-IN	⑫ S-INPUT S TOP #1: S-IN
⑬ T-INPUT T TOP #1: T-IN			

5-4 OUTDOOR UNIT PCB

■ PF#4 Inverter PBA : Single-Phase I

- AM038KXWD✳✳

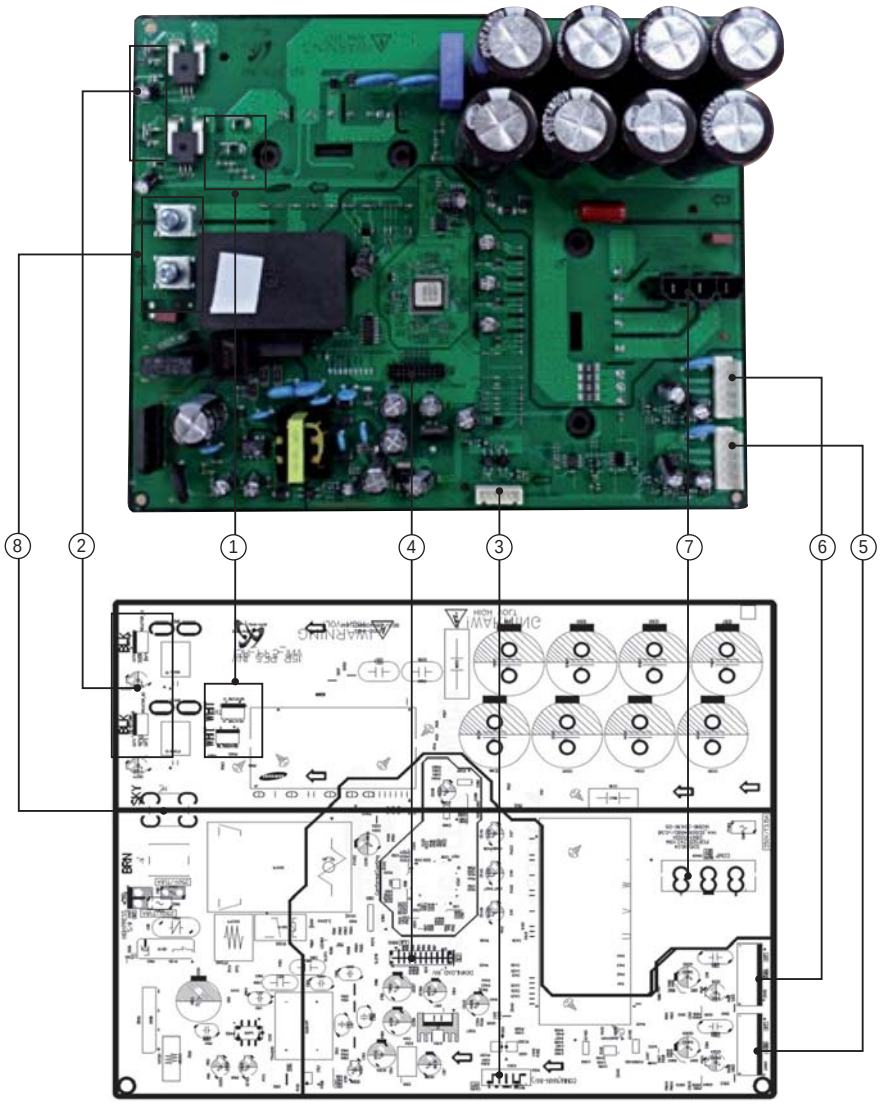


① REACTOR-A1/B1	② REACTOR-A2/B2	③ CN351 - MAIN COMM	④ CN551 – DOWNLOADER
#REACTOR-A1 : WHT #REACTOR-B1 : WHT	#REACTOR-A2 : BLK #REACTOR-B2 : BLK	#1 : RXD #2 : TXD #3 : GND #4 : DV5V #5 : DV12V #6 : INV,SMPSSIGNAL	#1 : RXD_INV #2 : TXD_INV #3 : BOOT_INV #4 : TDO_INV #5 : TCK_INV #6 : TDI_INV #7 : TMS_INV #8 : nTRST #9 : GND #10~#11: 5V #14 #18 #19 : ENC #17 : GND #20 : SUB
⑤ CN901 – FAN1	⑥ CN911 – FAN2	⑦ CN401,402,403 – COMP	⑧ L,N- 220V POWER
#1 : DC310V #2 : N.C #3 : GND #4 : DV15V #5 : FAN RPM#6 : FAN RPM FEEDBACK	#1 : DC310V #2 : N.C #3 : GND #4 : DV15V #5 : FAN RPM #6 : FAN RPM FEEDBACK	CN401 : COMP U-phase(RED) CN402 : COMP V-phase(BLU) CN403 : COMP W-phase(YEL)	#1 : L phase/BRN #2 : N phase/SKY

OUTDOOR UNIT PCB (cont.)

■ PF#5 Inverter PBA : Single-Phase II

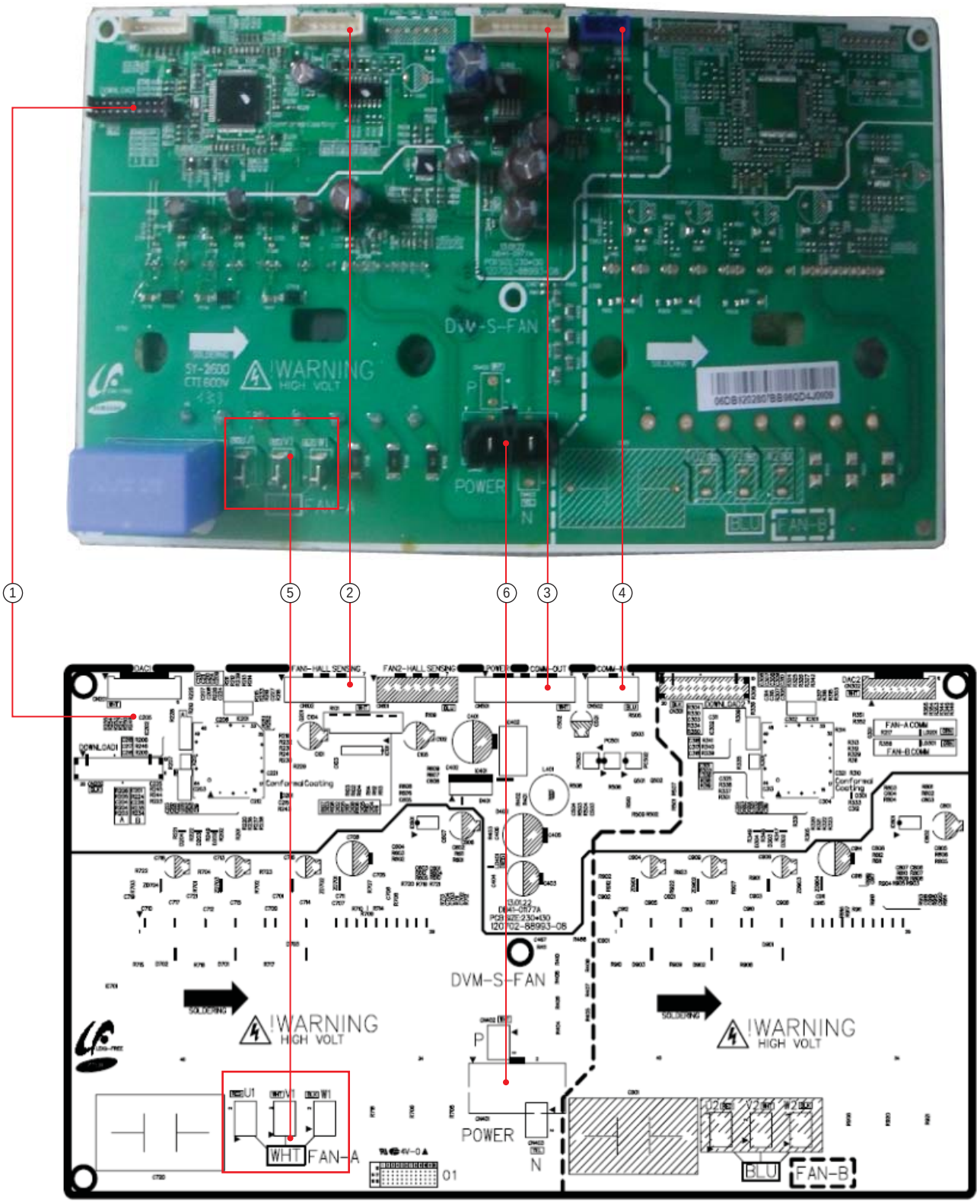
- AM048/055KXWD✳✳



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

5-5 ASS'Y PCB FAN

- Model : 1-FAN chassis

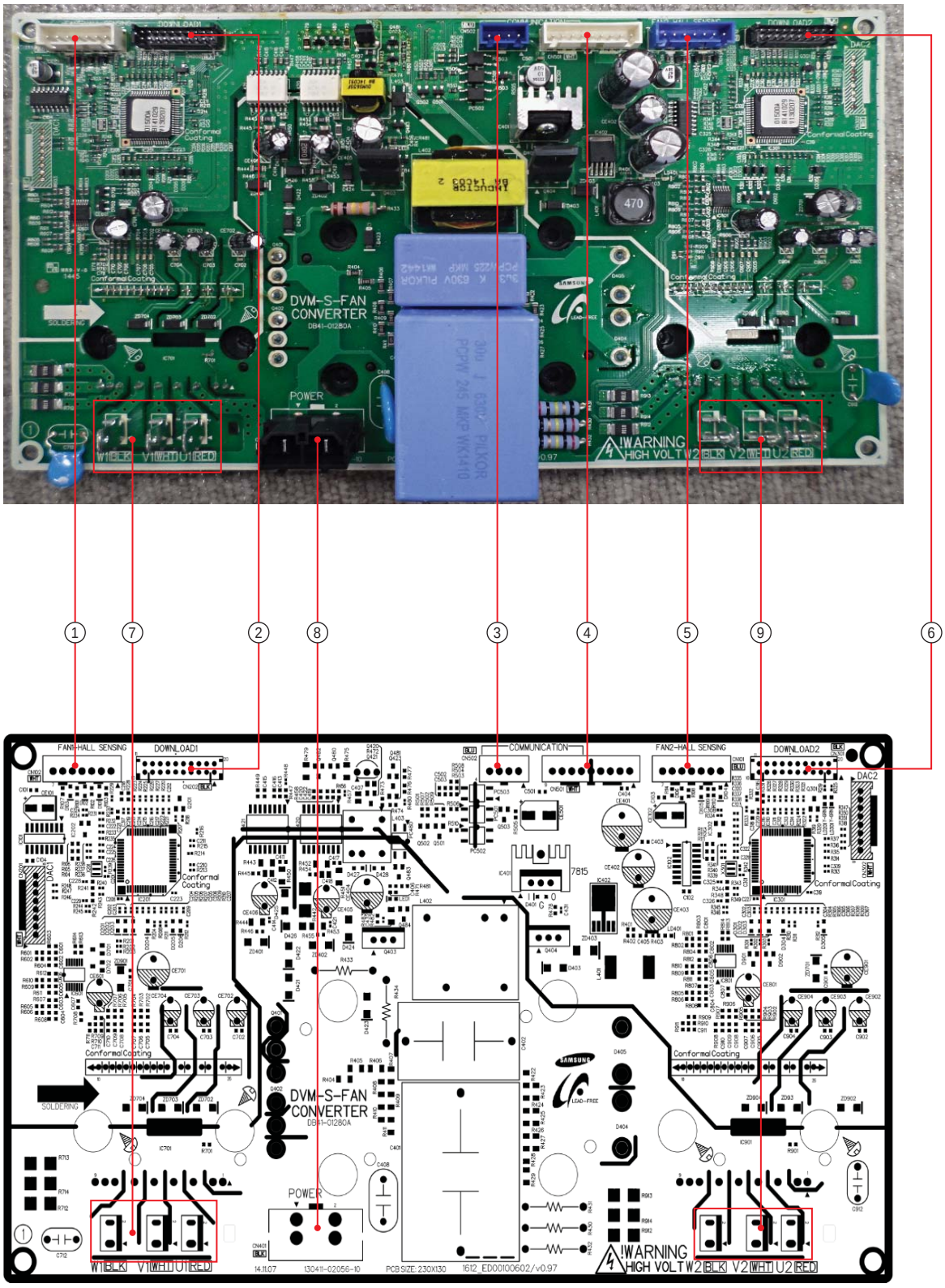


ASS'Y PCB FAN (cont.)

① CN102-FAN1 HALL SENSING	② CN202-DOWNLOAD1	③ CN502-COMMUNICATION	④ CN501-COMMUNICATION
#1 : HALL-U #2 : 5V #3 : HALL-V #4 : GND #5 : HALL-W #6 : MOTOR-TEMP #7 : GND	#1 : RX-DEBUG #2 : TX-DEBUG #3 : BOOT #4 : TDO #5 : TCK #6 : TDI #7 : TMS #9 : GND #10 : 5V	#1 : 12V-MAIN #2 : INV SMPS RELAY-MAIN #3 : COMM-MAIN #4 : GND-MAIN	#1 : 18V-INV #2 : GND-INV #4 : GND-INV #6 : 12V-MAIN #7 : INV SMPS RELAY-INV #8 : COMM-INV #9 : GND-INV
⑤ U1-V1-W1	⑥ CN401-POWER		
#1 : FAN1-U #2 : FAN1-V #3 : FAN1-W	#1 : DC 540V #2 : GND		

ASS'Y PCB FAN (cont.)

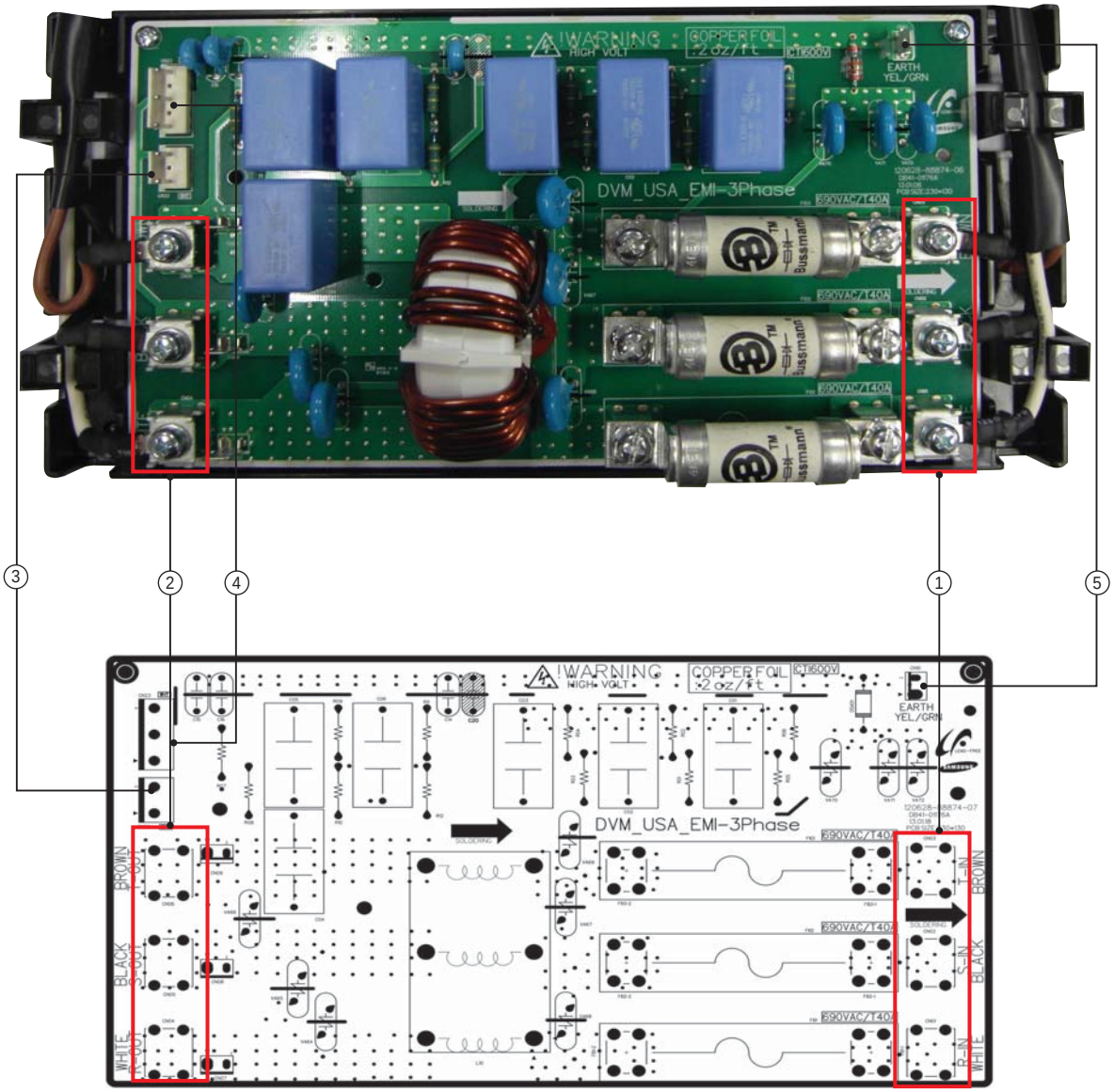
- Model : 2-FAN chassis



ASS'Y PCB FAN (cont.)

① CN102-FA1 HALL SENSING #1 : HALL-U #2 : 5V #3 : HALL-V #4 : GND #5 : HALL-W #6 : MOTOR-TEMP #7 : GND	② CN202-DOWNLOAD1 #1 : RX-DEBUG #2 : TX-DEBUG #3 : BOOT #4 : TDO #5 : TCK #6 : TDI #7 : TMS #9 : GND #10 : 5V	③ CN502-COMMUNICATION #1 : 12V-MAIN #2 : INV SMPS RELAY-MAIN #3 : COMM-MAIN #4 : GND-MAIN	④ CN501-COMMUNICATION #1 : 18V-INV #2 : GND-INV #4 : GND-INV #6 : 12V-MAIN #7 : INV SMPS RELAY-INV #8 : COMM-INV #9 : GND-INV
⑤ CN101-FAN2 HALL SENSING #1 : HALL-U #2 : 5V #3 : HALL-V #4 : GND #5 : HALL-W #6 : MOTOR-TEMP #7 : GND	⑥ CN301-DOWNLOAD2 #1 : RX-DEBUG #2 : TX-DEBUG #3 : BOOT #4 : TDO #5 : TCK #6 : TDI #7 : TMS #9 : GND #10 : 5V	⑦ U1-V1-W1 #1 : FAN1-U #2 : FAN1-V #3 : FAN1-W	⑧ CN401-POWER #1 : DC 540V #2 : GND
⑨ U2-V2-W2 #1 : FAN2-U #2 : FAN2-V #3 : FAN2-W			

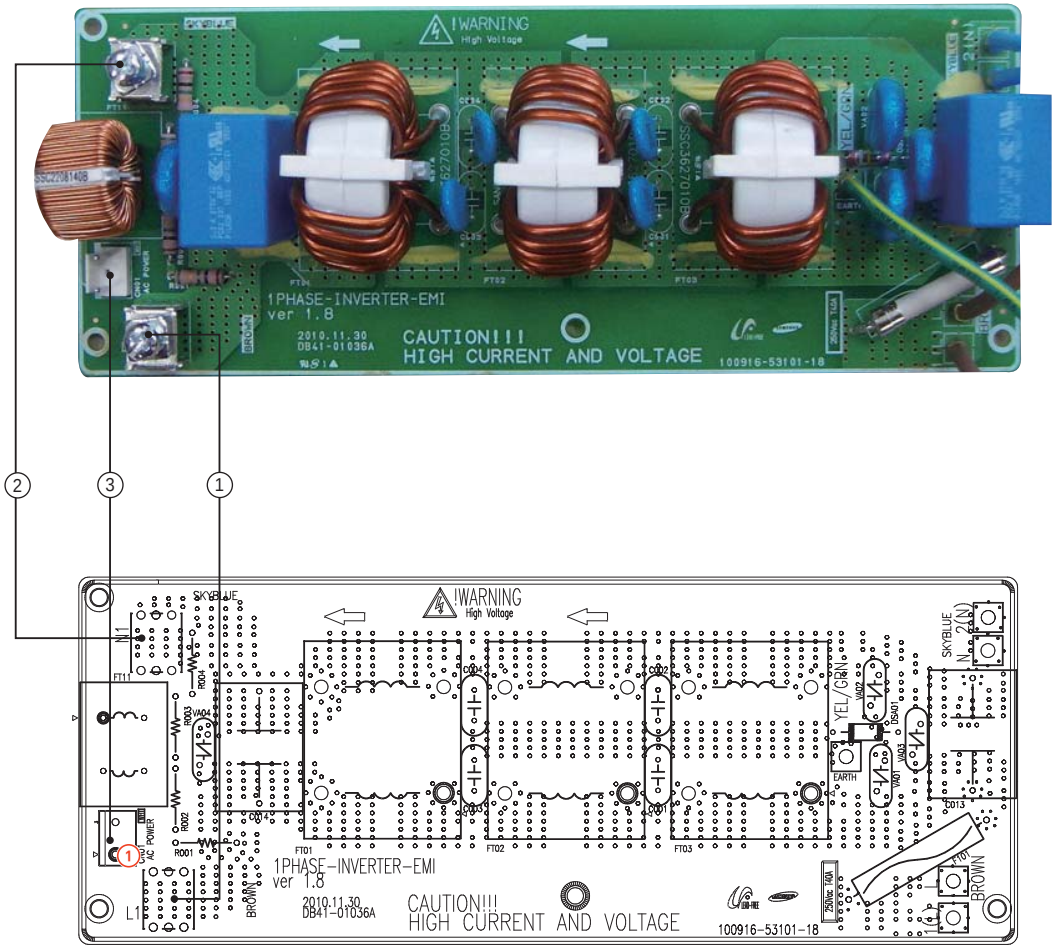
5-6 ASS'Y PCB EMI



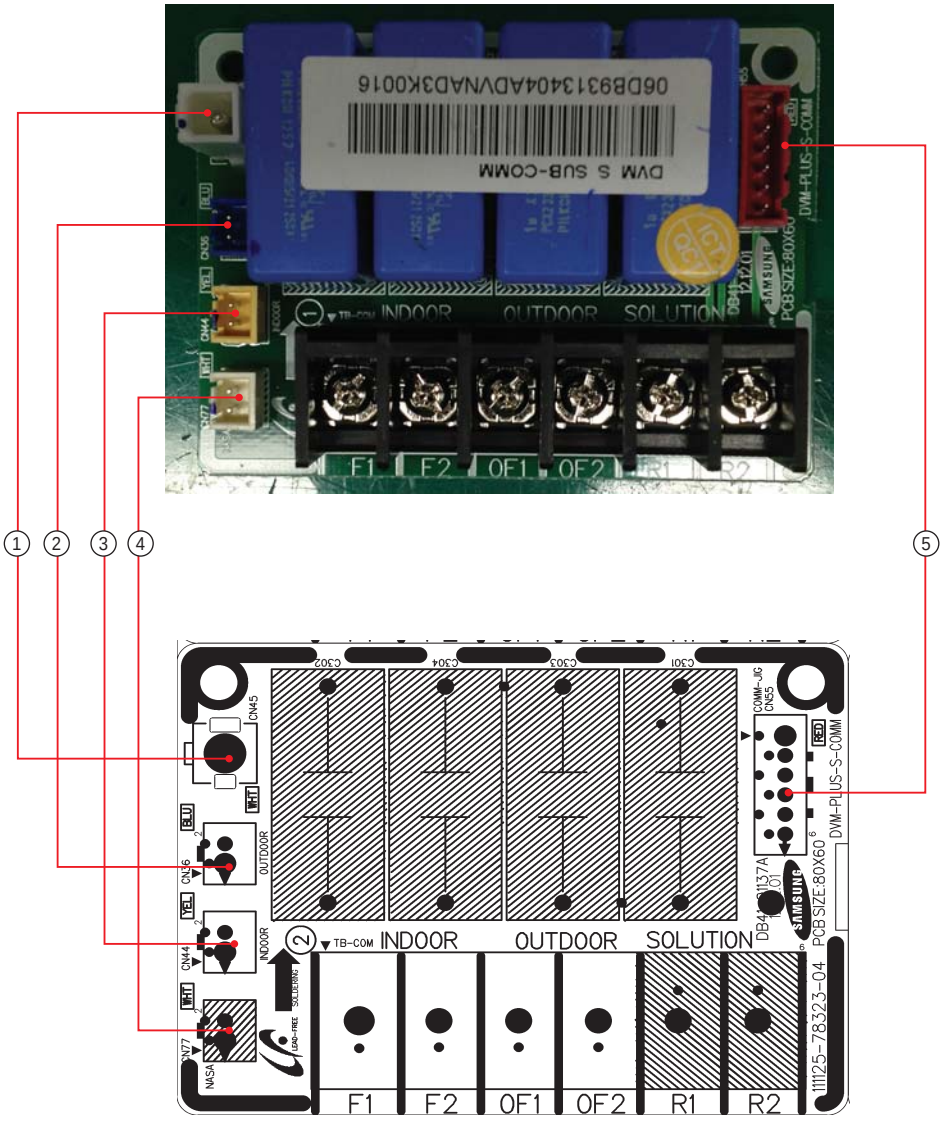
① CN01,02,03-R,S,T INPUT	② CN04,05,06-R,S,T OUTPUT	③ CN22-HUB 220V	④ CN23-INVERTER 220V
CN01: T-IN CN02: S-IN CN03: R-IN	CN04: R-OUT CN05: S-OUT CN06: T-OUT	#1: LIVE #2: NEUTRAL	#1: LIVE #2: NEUTRAL #3: NEUTRAL
⑤ CN10-EARTH			
#1: EARTH			

■ EMI PBA : Single-Phase

- AM038/048/055KXWD✳✳

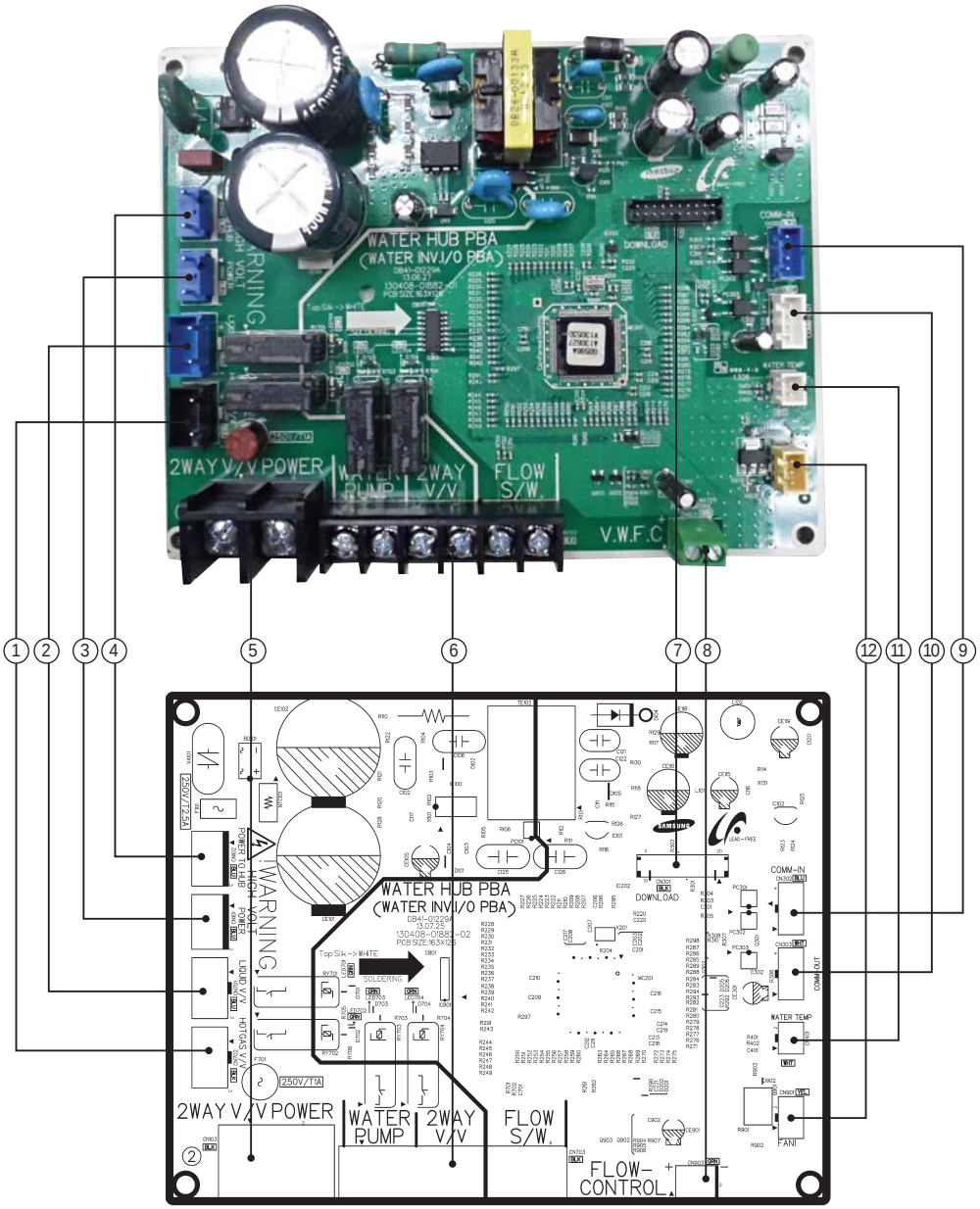


① L1-AC POWER L phase	② N1-AC POWER N phase	③ CN01-AC POWER
L1 : BRN	N1 : SKY-BLU	#1-#3 : AC 220~240V

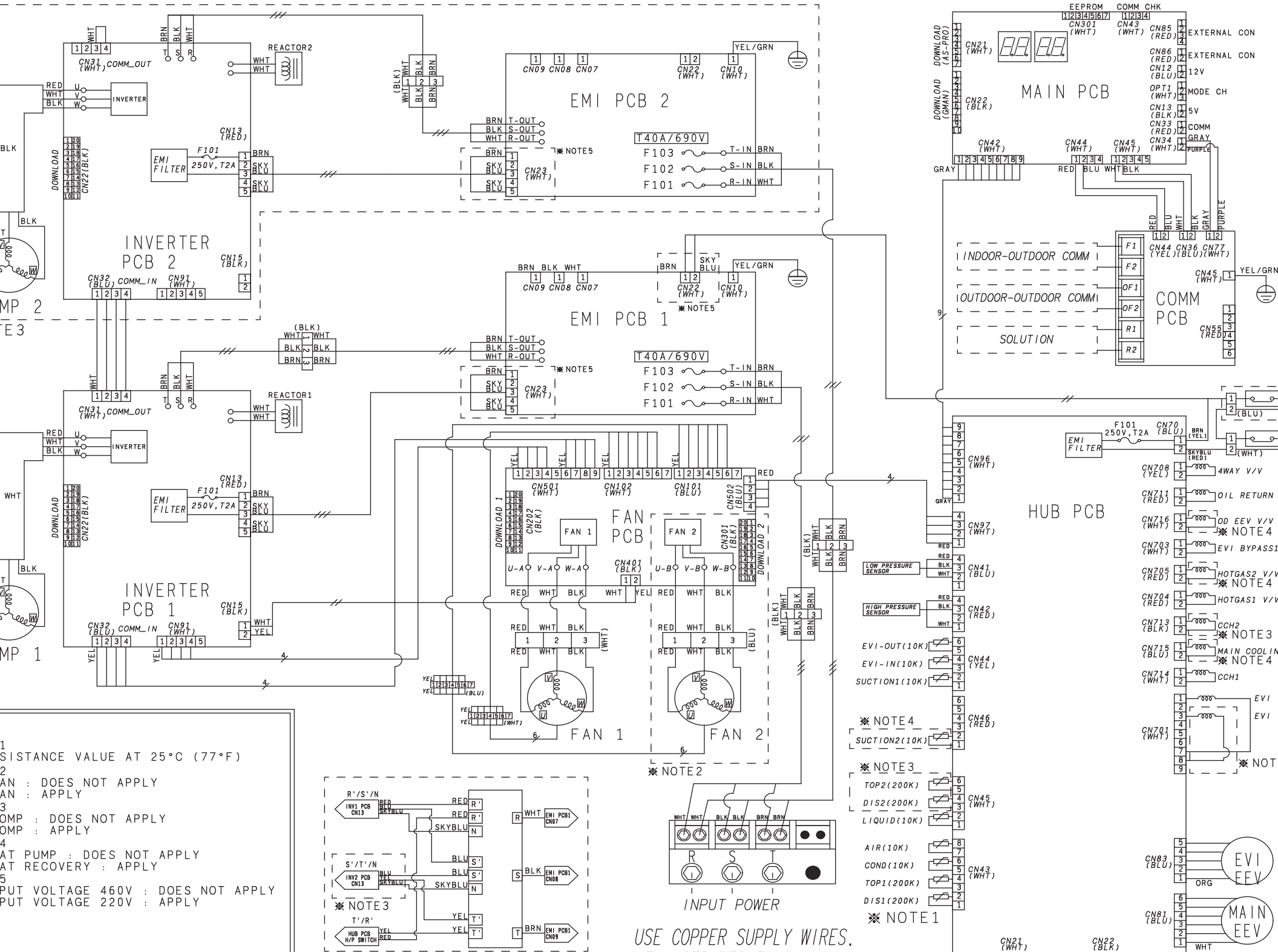


① CN44	② CN36	③ CN#44	④ CN45	⑤ CN55
#1:F1 #2:F2	#1:OF1 #2:OF2	#1:R1 #2:R2	GND	#1:F1 #2:F2 #3:OF1 #4:OF2 #5:R1 #6:R2

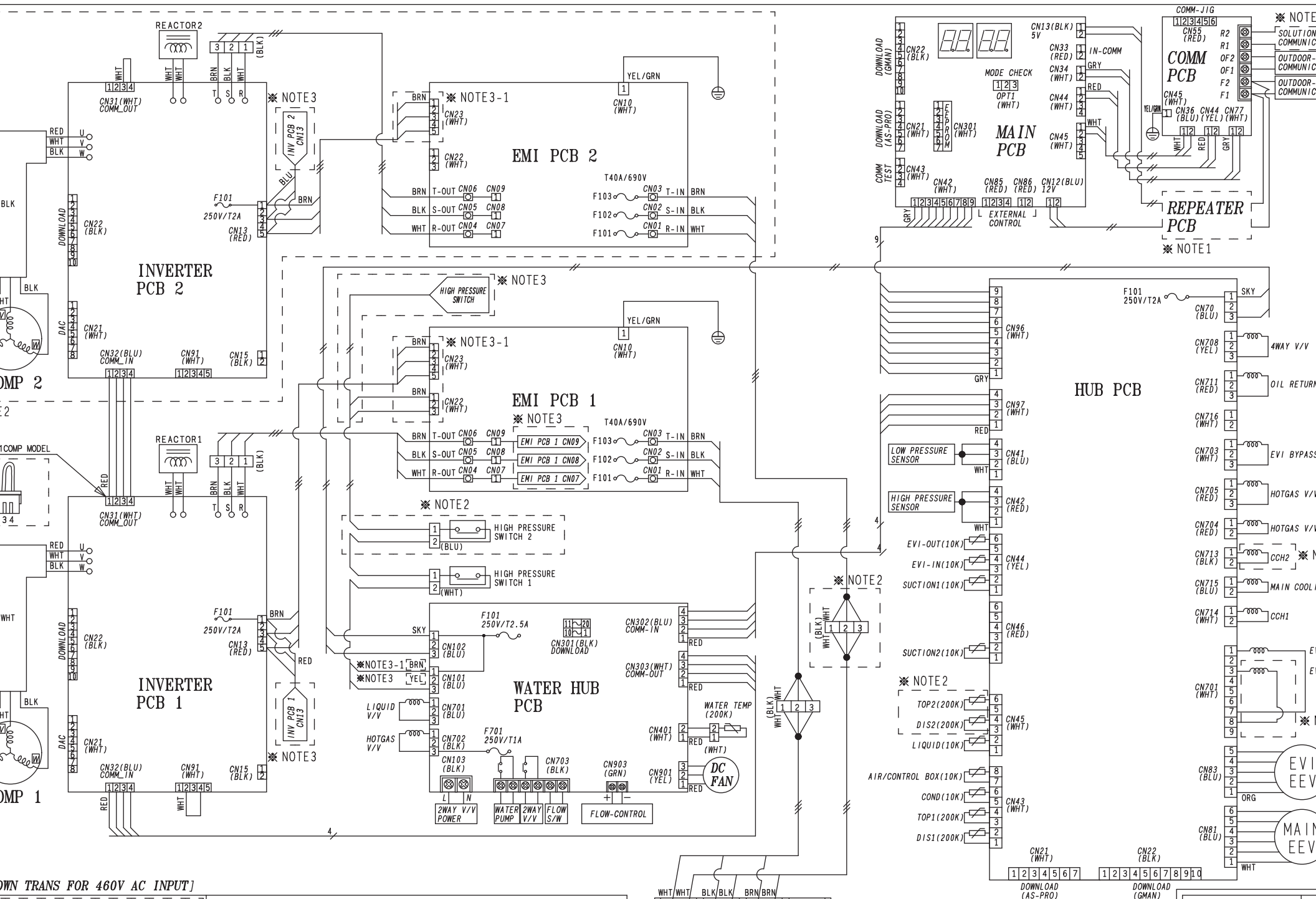
5-9 ASSY PCB WATER-HUB



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



1
SISTANCE VALUE AT 25°C (77°F)
2
AN : DOES NOT APPLY
AN : APPLY
3
OMP : DOES NOT APPLY
OMP : APPLY
4
AT PUMP : DOES NOT APPLY
AT RECOVERY : APPLY
5
PUT VOLTAGE 460V : DOES NOT APPLY
PUT VOLTAGE 220V : APPLY



[DOWN TRANS FOR 460V AC INPUT]

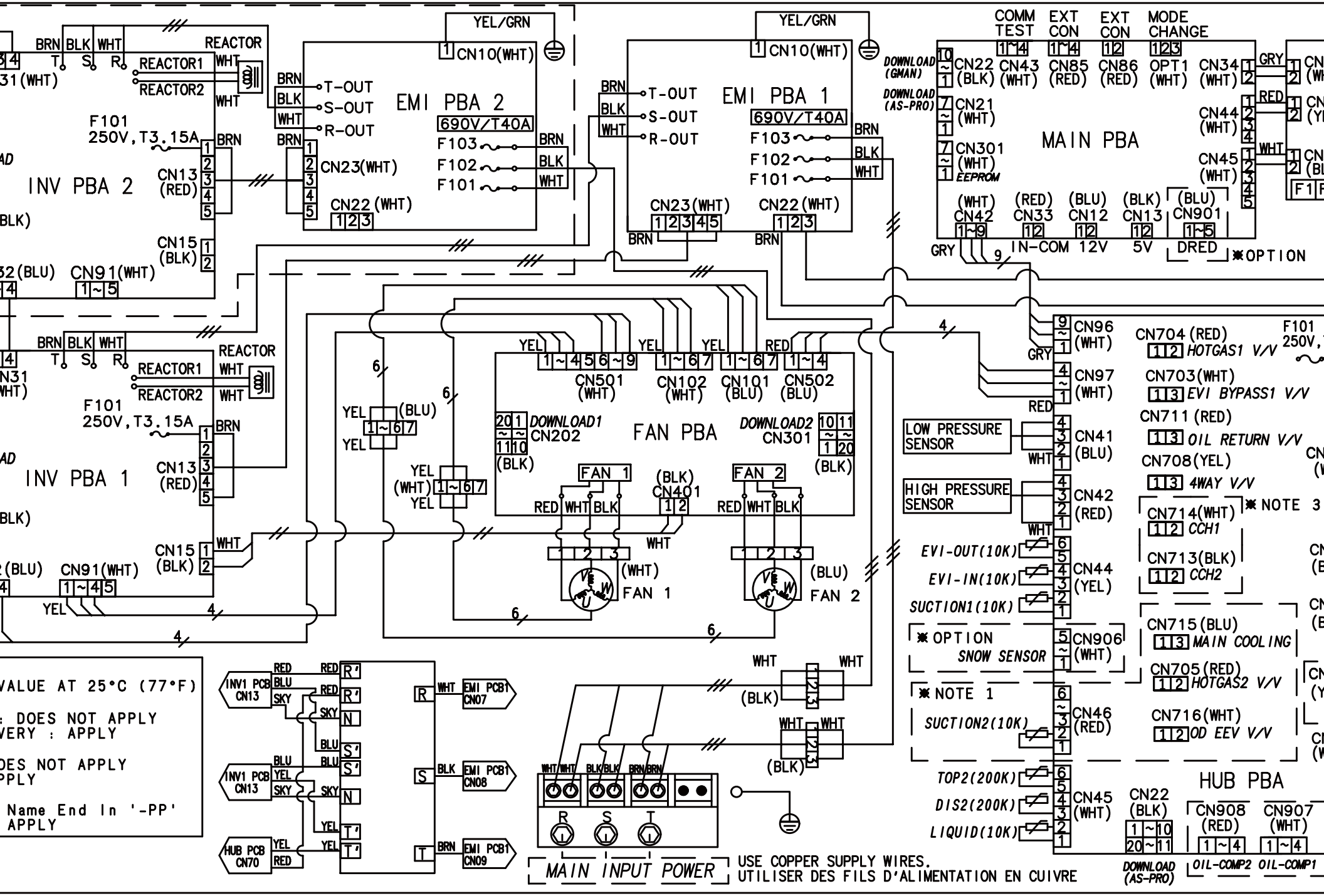
External Contact	Input/Output	AC/DC	Remarks
2WAY V/V POWER	Output	AC	Optional
WATER PUMP	Contact Output	-	Optional
2WAY V/V	Contact Output	-	Optional
FLOW S/W	Contact Input	-	Mandatory

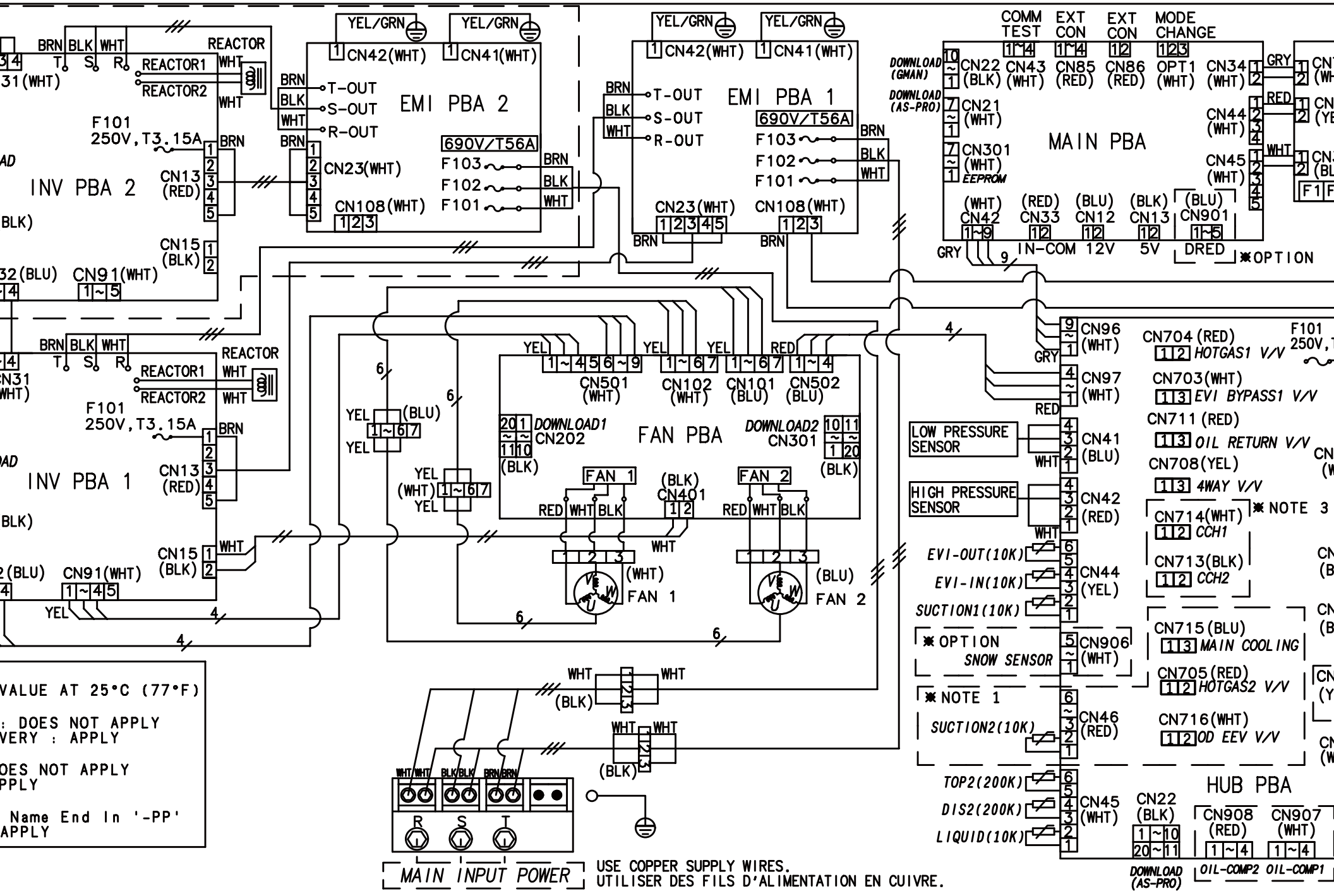
3PHASE AC INPUT POWER

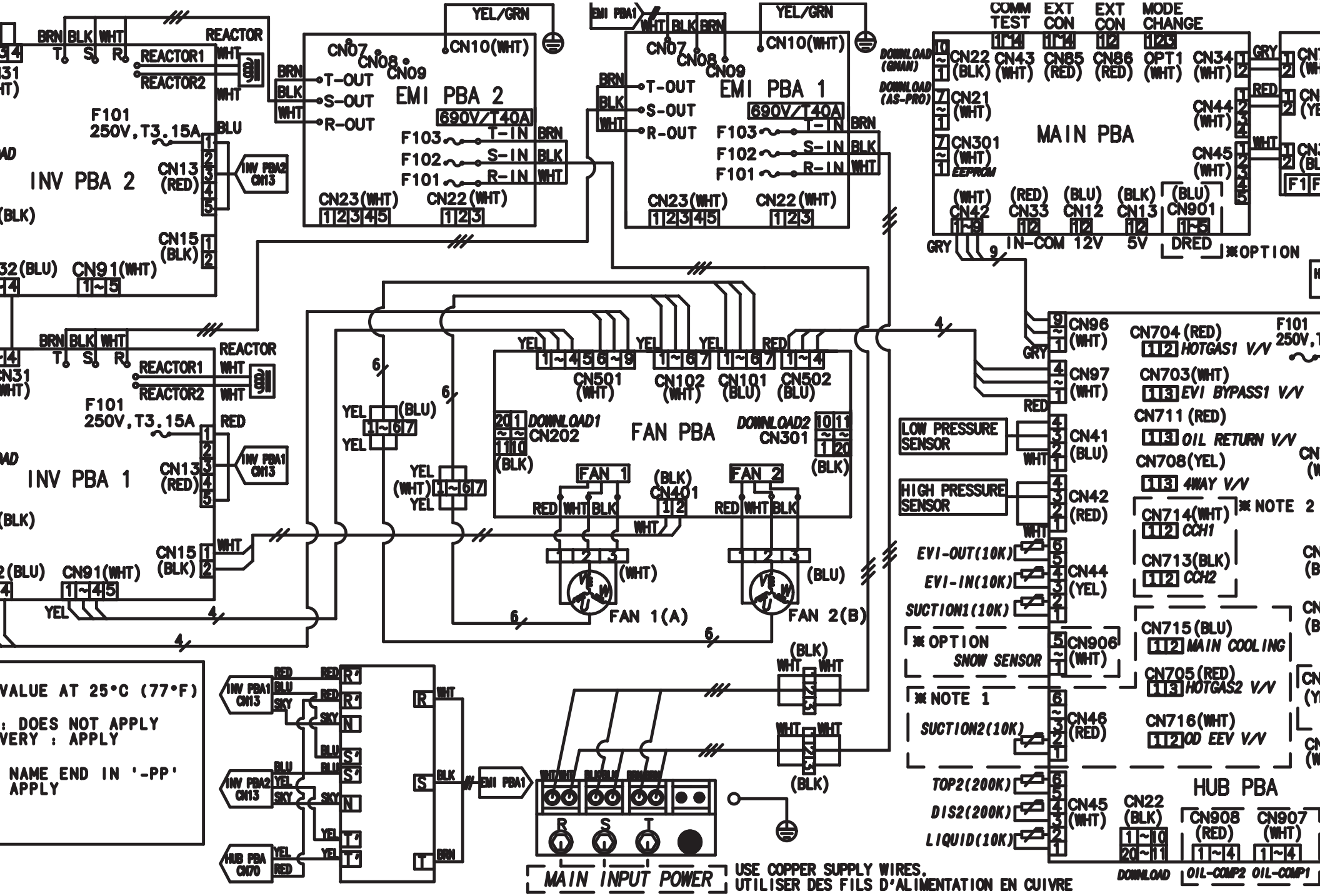
RESISTANCE VALUE 10Kohm AT 25°C (77°F)
RESISTANCE VALUE 200Kohm AT 25°C (77°F)

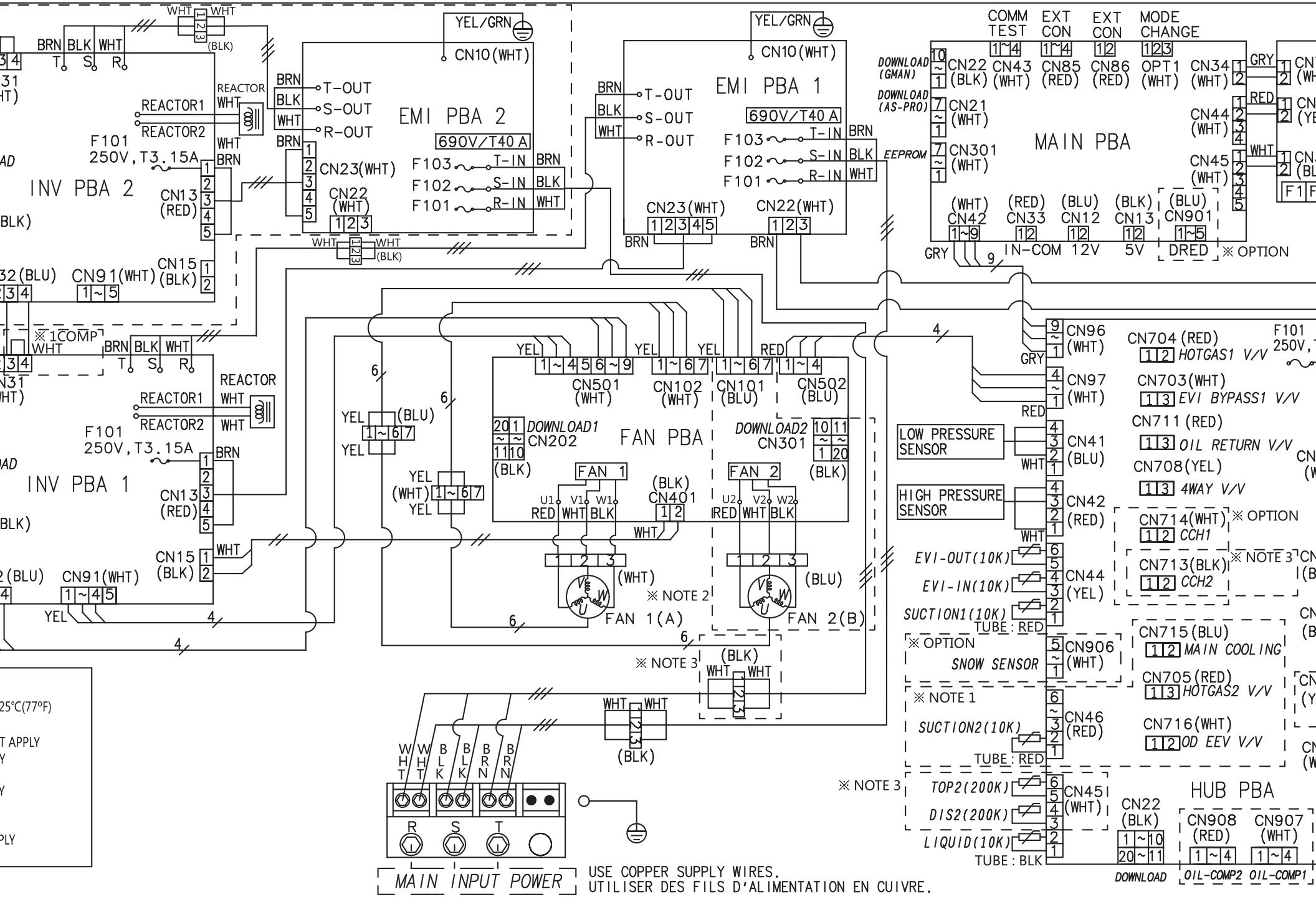
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE

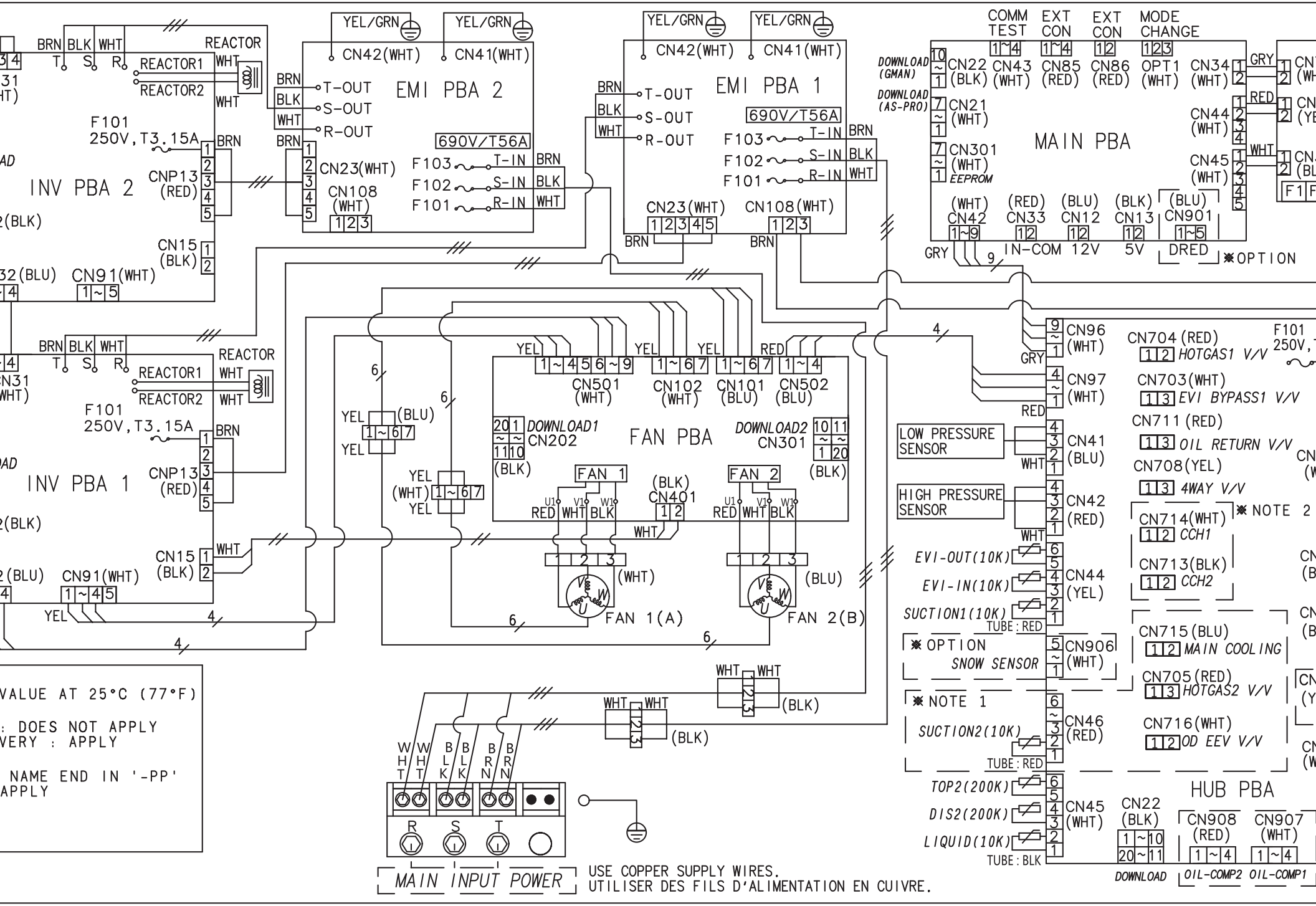
※ NOTE1
-INSTALL OPTION
※ NOTE2
- 1COMP : N/A
- 2COMP : APPLY
※ NOTE3
- 460V AC INPUT

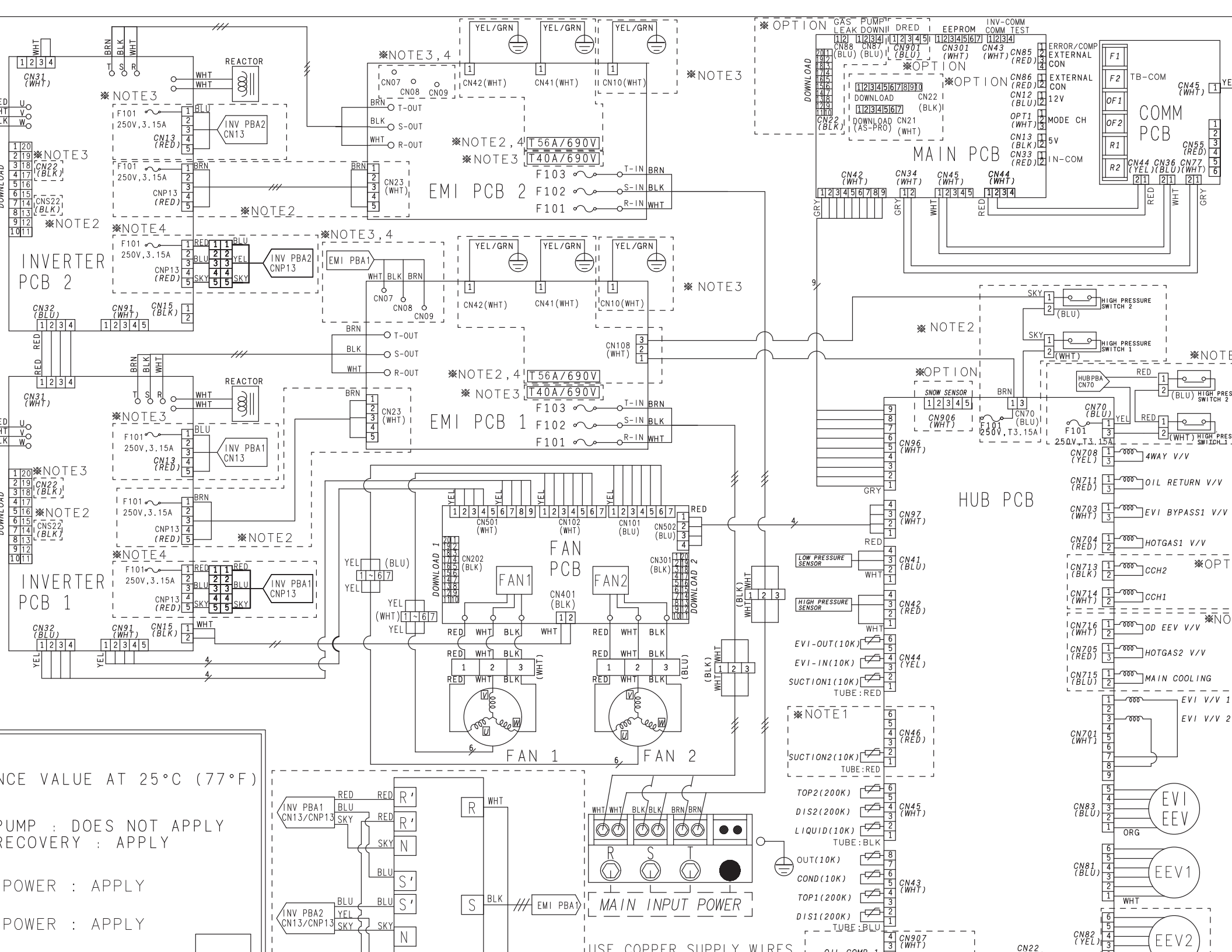

INV PBA 2
INV PBA 1
EMI PBA 2
EMI PBA 1
690V/T40A
MAIN PBA
FAN PBA
HUB PBA
REACTOR
REACTOR1
REACTOR2
F101
250V,T3.15A
F103
F102
F101
T-OUT
S-OUT
R-OUT
CN10(WHT)
CN23(WHT)
CN22(WHT)
CN13 (RED)
CN15 (BLK)
CN91(WHT)
CN32(BLU)
CN31(WHT)
COMM TEST
EXT CON
EXT CON
MODE CHANGE
DOWNLOAD (GMAN)
DOWNLOAD (AS-PRO)
CN22 (BLK)
CN43 (WHT)
CN85 (RED)
CN86 (RED)
OPT1 (WHT)
CN34 (WHT)
CN21 (WHT)
CN301 (WHT)
EEPROM
CN44 (WHT)
CN45 (WHT)
CN42 (WHT)
CN33 (RED)
CN12 (BLU)
CN13 (BLK)
CN901 (BLU)
IN-COM 12V
5V
DRED
OPTION
CN501 (WHT)
CN102 (WHT)
CN101 (BLU)
CN502 (BLU)
DOWNLOAD1
CN202
DOWNLOAD2
CN301
FAN 1
FAN 2
CN401
CN96 (WHT)
CN97 (WHT)
CN41 (BLU)
CN42 (RED)
CN44 (YEL)
CN906 (WHT)
CN46 (RED)
CN45 (WHT)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
EVI-OUT(10K)
EVI-IN(10K)
SUCTION1(10K)
SUCTION2(10K)
TOP2(200K)
DIS2(200K)
LIQUID(10K)
SNOW SENSOR
NOTE 1
NOTE 3
CN704 (RED) HOTGAS1 V/V
CN703(WHT) EVI BYPASS1 V/V
CN711 (RED) OIL RETURN V/V
CN708(YEL) 4WAY V/V
CN714(WHT) CCH1
CN713(BLK) CCH2
CN715(BLU) MAIN COOLING
CN705(RED) HOTGAS2 V/V
CN716(WHT) OD EEV V/V
CN22 (BLK)
CN908 (RED)
CN907 (WHT)
DOWNLOAD (AS-PRO)
OIL-COMP2
OIL-COMP1
INV1 PCB CN13
HUB PCB CN70
EMI PCB1 CN07
EMI PCB1 CN08
EMI PCB1 CN09
MAIN INPUT POWER
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE
VALUE AT 25°C (77°F)
: DOES NOT APPLY
VERY : APPLY
OES NOT APPLY
PPLY
Name End In '-PP'
APPLY


INV PBA 2
INV PBA 1
EMI PBA 2
EMI PBA 1
FAN PBA
MAIN PBA
HUB PBA
REACTOR
REACTOR1
REACTOR2
F101
250V,T3.15A
690V/T56A
F103
F102
F101
T-OUT
S-OUT
R-OUT
CN13 (RED)
CN15 (BLK)
CN91(WHT)
CN23(WHT)
CN108(WHT)
CN42(WHT)
CN41(WHT)
CN501 (WHT)
CN102 (WHT)
CN101 (BLU)
CN502 (BLU)
CN202
CN301
DOWNLOAD1
DOWNLOAD2
FAN 1
FAN 2
CN401
COMM TEST
EXT CON
EXT CON
MODE CHANGE
CN22 (BLK)
CN43 (WHT)
CN85 (RED)
CN86 (RED)
OPT1 (WHT)
CN34 (WHT)
CN21 (WHT)
CN301 (WHT)
EEPROM
CN44 (WHT)
CN45 (WHT)
CN42 (WHT)
CN33 (RED)
CN12 (BLU)
CN13 (BLK)
CN901 (BLU)
DOWNLOAD (GMAN)
DOWNLOAD (AS-PRO)
IN-COM 12V
5V
DRED
OPTION
CN96 (WHT)
CN97 (WHT)
CN41 (BLU)
CN42 (RED)
CN44 (YEL)
CN906 (WHT)
CN46 (RED)
CN45 (WHT)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
EVI-OUT(10K)
EVI-IN(10K)
SUCTION1(10K)
SNOW SENSOR
SUCTION2(10K)
TOP2(200K)
DIS2(200K)
LIQUID(10K)
CN704 (RED) HOTGAS1 V/V
CN703(WHT) EVI BYPASS1 V/V
CN711 (RED) OIL RETURN V/V
CN708(YEL) 4WAY V/V
CN714(WHT) CCH1
CN713(BLK) CCH2
CN715(BLU) MAIN COOLING
CN705(RED) HOTGAS2 V/V
CN716(WHT) OD EEV V/V
NOTE 1
NOTE 3
CN908 (RED)
CN907 (WHT)
OIL-COMP2
OIL-COMP1
MAIN INPUT POWER
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE.
VALUE AT 25°C (77°F)
: DOES NOT APPLY
VERY : APPLY
OES NOT APPLY
PPLY
Name End In '-PP'
APPLY

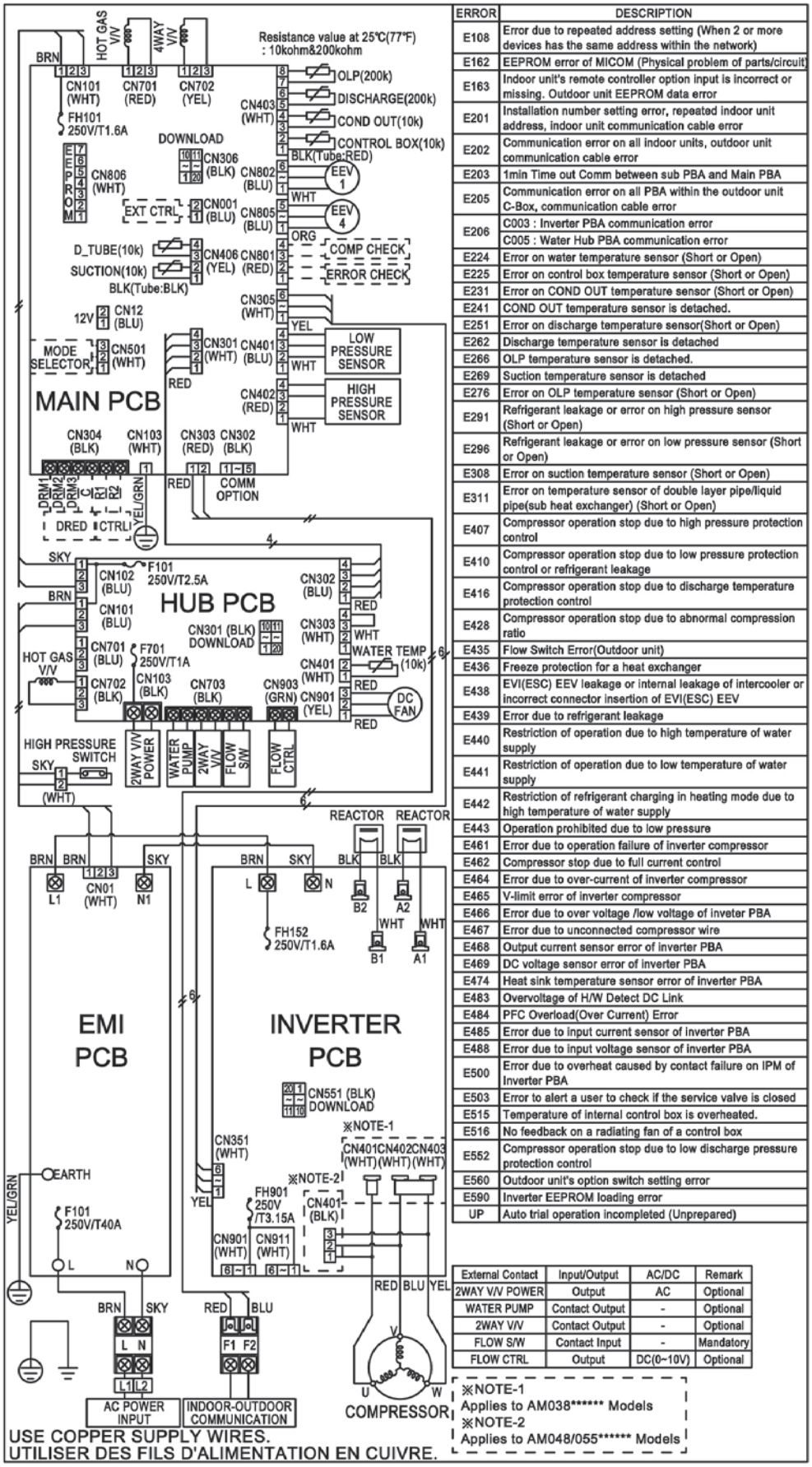

INV PBA 2
INV PBA 1
EMI PBA 2
EMI PBA 1
FAN PBA
MAIN PBA
HUB PBA
REACTOR
REACTOR1
REACTOR2
F101
250V,T3.15A
F103
F102
F101
T-IN
S-IN
R-IN
T-OUT
S-OUT
R-OUT
690V/T40A
CN07
CN08
CN09
CN10(WHT)
CN13 (RED)
CN15 (BLK)
CN23(WHT)
CN22(WHT)
CN91(WHT)
CN501 (WHT)
CN102 (WHT)
CN101 (BLU)
CN502 (BLU)
DOWNLOAD1 CN202
DOWNLOAD2 CN301
FAN 1
FAN 2
CN401
FAN 1(A)
FAN 2(B)
COMM TEST
EXT CON
MODE CHANGE
CN22 (BLK)
CN43 (WHT)
CN85 (RED)
CN86 (RED)
OPT1 (WHT)
CN34 (WHT)
CN21 (WHT)
CN44 (WHT)
CN301 (WHT)
CN45 (WHT)
EEPROM
CN42 (WHT)
CN33 (RED)
CN12 (BLU)
CN13 (BLK)
CN901 (BLU)
DRED
IN-COM 12V
5V
OPTION
CN96 (WHT)
CN97 (WHT)
CN41 (BLU)
CN42 (RED)
CN44 (YEL)
CN906 (WHT)
CN46 (RED)
CN45 (WHT)
CN22 (BLK)
CN908 (RED)
CN907 (WHT)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
EVI-OUT(10K)
EVI-IN(10K)
SUCTION1(10K)
SUCTION2(10K)
TOP2(200K)
DIS2(200K)
LIQUID(10K)
SNOW SENSOR
NOTE 1
NOTE 2
CN704 (RED) HOTGAS1 V/V
CN703(WHT) EVI BYPASS1 V/V
CN711 (RED) OIL RETURN V/V
CN708(YEL) 4WAY V/V
CN714(WHT) CCH1
CN713(BLK) CCH2
CN715(BLU) MAIN COOLING
CN705(RED) HOTGAS2 V/V
CN716(WHT) OD EEV V/V
DOWNLOAD
OIL-COMP2 OIL-COMP1
MAIN INPUT POWER
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE
VALUE AT 25°C (77°F)
: DOES NOT APPLY
VERY : APPLY
NAME END IN '-PP' APPLY


INV PBA 2
INV PBA 1
EMI PBA 2
EMI PBA 1
FAN PBA
MAIN PBA
HUB PBA
690V/T40 A
F101 250V,T3.15A
REACTOR1
REACTOR2
REACTOR
※1COMP
CN10(WHT)
CN23(WHT)
CN22(WHT)
CN13(RED)
CN15(BLK)
CN91(WHT)
CN501(WHT)
CN102(WHT)
CN101(BLU)
CN502(BLU)
CN202
CN301
CN401
FAN 1
FAN 2
FAN 1(A)
FAN 2(B)
※NOTE 2
※NOTE 3
※NOTE 1
※OPTION
DOWNLOAD1
DOWNLOAD2
DOWNLOAD (GMAN)
DOWNLOAD (AS-PRO)
EEPROM
COMM TEST
EXT CON
MODE CHANGE
CN22 (BLK)
CN43 (WHT)
CN85 (RED)
CN86 (RED)
OPT1 (WHT)
CN34 (WHT)
CN21 (WHT)
CN301 (WHT)
CN44 (WHT)
CN45 (WHT)
CN42 (WHT)
CN33 (RED)
CN12 (BLU)
CN13 (BLK)
CN901 (BLU)
IN-COM 12V
5V
DRED
CN96 (WHT)
CN97 (WHT)
CN41 (BLU)
CN42 (RED)
CN44 (YEL)
CN906 (WHT)
CN46 (RED)
CN451 (WHT)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
EVI-OUT(10K)
EVI-IN(10K)
SUCTION1(10K)
SUCTION2(10K)
TUBE : RED
SNOW SENSOR
TOP2(200K)
DIS2(200K)
LIQUID(10K)
TUBE : BLK
CN704 (RED) HOTGAS1 V/V
CN703(WHT) EVI BYPASS1 V/V
CN711 (RED) OIL RETURN V/V
CN708(YEL) 4WAY V/V
CN714(WHT) CCH1
CN713(BLK) CCH2
CN715(BLU) MAIN COOLING
CN705(RED) HOTGAS2 V/V
CN716(WHT) OD EEV V/V
CN908 (RED)
CN907 (WHT)
OIL-COMP2
OIL-COMP1
MAIN INPUT POWER
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE.


INV PBA 2
INV PBA 1
EMI PBA 2
EMI PBA 1
FAN PBA
MAIN PBA
HUB PBA
REACTOR
REACTOR1
REACTOR2
F101
250V,T3.15A
690V/T56A
CNP13 (RED)
CN15 (BLK)
CN91(WHT)
CN23(WHT)
CN108 (WHT)
CN42(WHT)
CN41(WHT)
T-OUT
S-OUT
R-OUT
T-IN
S-IN
R-IN
DOWNLOAD1 CN202
DOWNLOAD2 CN301
CN501 (WHT)
CN102 (WHT)
CN101 (BLU)
CN502 (BLU)
CN401 (BLK)
FAN 1
FAN 2
FAN 1(A)
FAN 2(B)
COMM TEST
EXT CON
MODE CHANGE
CN22 (BLK)
CN43 (WHT)
CN85 (RED)
CN86 (RED)
OPT1 (WHT)
CN34 (WHT)
CN21 (WHT)
CN301 (WHT)
EEPROM
CN44 (WHT)
CN45 (WHT)
CN42 (WHT)
CN33 (RED)
CN12 (BLU)
CN13 (BLK)
CN901 (BLU)
IN-COM 12V
5V
DRED
OPTION
CN96 (WHT)
CN97 (WHT)
CN41 (BLU)
CN42 (RED)
CN44 (YEL)
CN906 (WHT)
CN46 (RED)
CN45 (WHT)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
EVI-OUT(10K)
EVI-IN(10K)
SUCTION1(10K)
SUCTION2(10K)
TOP2(200K)
DIS2(200K)
LIQUID(10K)
TUBE : RED
TUBE : BLK
SNOW SENSOR
NOTE 1
NOTE 2
CN704 (RED) HOTGAS1 V/V
CN703(WHT) EVI BYPASS1 V/V
CN711 (RED) OIL RETURN V/V
CN708(YEL) 4WAY V/V
CN714(WHT) CCH1
CN713(BLK) CCH2
CN715(BLU) MAIN COOLING
CN705(RED) HOTGAS2 V/V
CN716(WHT) OD EEV V/V
CN22 (BLK)
CN908 (RED)
CN907 (WHT)
DOWNLOAD
OIL-COMP2 OIL-COMP1
MAIN INPUT POWER
USE COPPER SUPPLY WIRES.
UTILISER DES FILS D'ALIMENTATION EN CUIVRE.
VALUE AT 25°C (77°F)
: DOES NOT APPLY
VERY : APPLY
NAME END IN '-PP'
APPLY


INVERTER PCB 2
INVERTER PCB 1
EMI PCB 2
EMI PCB 1
MAIN PCB
COMM PCB
HUB PCB
FAN PCB
FAN 1
FAN 2
REACTOR
INV PBA2 CN13
INV PBA1 CN13
INV PBA2 CNP13
INV PBA1 CNP13
EMI PBA1
※NOTE1
※NOTE2
※NOTE3
※NOTE4
※OPTION
T56A/690V
T40A/690V
F101 250V,3.15A
F102
F103
T-OUT
S-OUT
R-OUT
T-IN
S-IN
R-IN
CN31 (WHT)
CN32 (BLU)
CN91 (WHT)
CN15 (BLK)
CN22 (BLK)
CNS22 (BLK)
CN13 (RED)
CNP13 (RED)
CN23 (WHT)
CN07
CN08
CN09
CN42(WHT)
CN41(WHT)
CN10(WHT)
CN108 (WHT)
CN501 (WHT)
CN102 (WHT)
CN101 (BLU)
CN502 (BLU)
CN202 (BLK)
CN301 (BLK)
CN401 (BLK)
DOWNLOAD 1
DOWNLOAD 2
CN88 (BLU)
CN87 (BLU)
CN901 (BLU)
CN301 (WHT)
CN43 (WHT)
CN85 (RED)
CN86 (RED)
CN12 (BLU)
OPT1 (WHT)
CN13 (BLK)
CN33 (RED)
CN22 (BLK)
CN21 (WHT)
CN42 (WHT)
CN34 (WHT)
CN45 (WHT)
CN44 (WHT)
CN55 (RED)
CN44 CN36 CN77
ERROR/COMP
EXTERNAL CON
12V
MODE CH
5V
IN-COM
TB-COM
GAS PUMP
LEAK DOWN
DRED
EEPROM
INV-COMM COMM TEST
DOWNLOAD
SNOW SENSOR
CN906 (WHT)
CN70 (BLU)
HUB PBA CN70
HIGH PRESSURE SWITCH 2
HIGH PRESSURE SWITCH 1
CN96 (WHT)
CN97 (WHT)
CN41 (BLU)
CN42 (RED)
CN44 (YEL)
CN46 (RED)
CN45 (WHT)
CN43 (WHT)
CN907 (WHT)
LOW PRESSURE SENSOR
HIGH PRESSURE SENSOR
EVI-OUT(10K)
EVI-IN(10K)
SUCTION1(10K)
SUCTION2(10K)
TUBE:RED
TOP2(200K)
DIS2(200K)
LIQUID(10K)
TUBE:BLK
OUT(10K)
COND(10K)
TOP1(200K)
DIS1(200K)
TUBE:BLU
CN708 (YEL)
CN711 (RED)
CN703 (WHT)
CN704 (RED)
CN713 (BLK)
CN714 (WHT)
CN716 (WHT)
CN705 (RED)
CN715 (BLU)
CN701 (WHT)
CN83 (BLU)
CN81 (BLU)
CN82 (YEL)
4WAY V/V
OIL RETURN V/V
EVI BYPASS1 V/V
HOTGAS1 V/V
CCH2
CCH1
OD EEV V/V
HOTGAS2 V/V
MAIN COOLING
EVI V/V 1
EVI V/V 2
EVI EEV
EEV1
EEV2
ORG
MAIN INPUT POWER
USE COPPER SUPPLY WIRES
NCE VALUE AT 25°C (77°F)
PUMP : DOES NOT APPLY
RECOVERY : APPLY
POWER : APPLY
POWER : APPLY

6-9 AM038/048/055KXWD✳✳

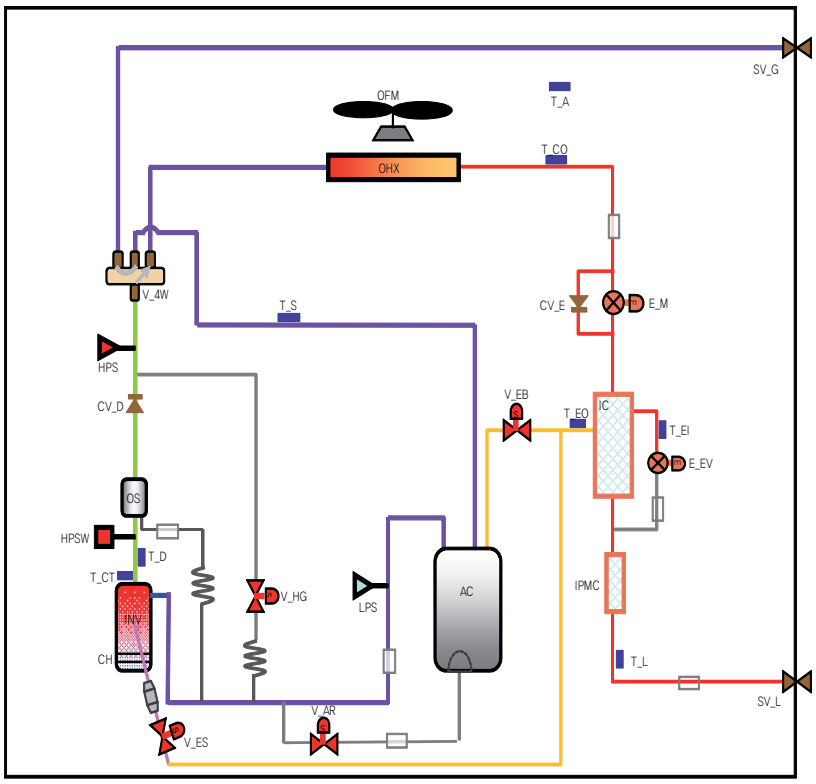


ERROR	DESCRIPTION
E108	Error due to repeated address setting (When 2 or more devices has the same address within the network)
E162	EEPROM error of MICOM (Physical problem of parts/circuit)
E163	Indoor unit's remote controller option input is incorrect or missing. Outdoor unit EEPROM data error
E201	Installation number setting error, repeated indoor unit address, indoor unit communication cable error
E202	Communication error on all indoor units, outdoor unit communication cable error
E203	1min Time out Comm between sub PBA and Main PBA
E205	Communication error on all PBA within the outdoor unit C-Box, communication cable error
E206	C003 : Inverter PBA communication error C005 : Water Hub PBA communication error
E224	Error on water temperature sensor (Short or Open)
E225	Error on control box temperature sensor (Short or Open)
E231	Error on COND OUT temperature sensor (Short or Open)
E241	COND OUT temperature sensor is detached.
E251	Error on discharge temperature sensor(Short or Open)
E262	Discharge temperature sensor is detached
E266	OLP temperature sensor is detached.
E269	Suction temperature sensor is detached
E276	Error on OLP temperature sensor (Short or Open)
E291	Refrigerant leakage or error on high pressure sensor (Short or Open)
E296	Refrigerant leakage or error on low pressure sensor (Short or Open)
E308	Error on suction temperature sensor (Short or Open)
E311	Error on temperature sensor of double layer pipe/liquid pipe(sub heat exchanger) (Short or Open)
E407	Compressor operation stop due to high pressure protection control
E410	Compressor operation stop due to low pressure protection control or refrigerant leakage
E416	Compressor operation stop due to discharge temperature protection control
E428	Compressor operation stop due to abnormal compression ratio
E435	Flow Switch Error(Outdoor unit)
E436	Freeze protection for a heat exchanger
E438	EVI(ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI(ESC) EEV
E439	Error due to refrigerant leakage
E440	Restriction of operation due to high temperature of water supply
E441	Restriction of operation due to low temperature of water supply
E442	Restriction of refrigerant charging in heating mode due to high temperature of water supply
E443	Operation prohibited due to low pressure
E461	Error due to operation failure of inverter compressor
E462	Compressor stop due to full current control
E464	Error due to over-current of inverter compressor
E465	V-limit error of inverter compressor
E466	Error due to over voltage /low voltage of inveter PBA
E467	Error due to unconnected compressor wire
E468	Output current sensor error of inverter PBA
E469	DC voltage sensor error of inverter PBA
E474	Heat sink temperature sensor error of inverter PBA
E483	Overvoltage of H/W Detect DC Link
E484	PFC Overload(Over Current) Error
E485	Error due to input current sensor of inverter PBA
E488	Error due to input voltage sensor of inverter PBA
E500	Error due to overheat caused by contact failure on IPM of Inverter PBA
E503	Error to alert a user to check if the service valve is closed
E515	Temperature of internal control box is overheated.
E516	No feedback on a radiating fan of a control box
E552	Compressor operation stop due to low discharge pressure protection control
E560	Outdoor unit's option switch setting error
E590	Inverter EEPROM loading error
UP	Auto trial operation incompleted (Unprepared)

External Contact	Input/Output	AC/DC	Remark
2WAY V/V POWER	Output	AC	Optional
WATER PUMP	Contact Output	-	Optional
2WAY V/V	Contact Output	-	Optional
FLOW S/W	Contact Input	-	Mandatory
FLOW CTRL	Output	DC(0~10V)	Optional

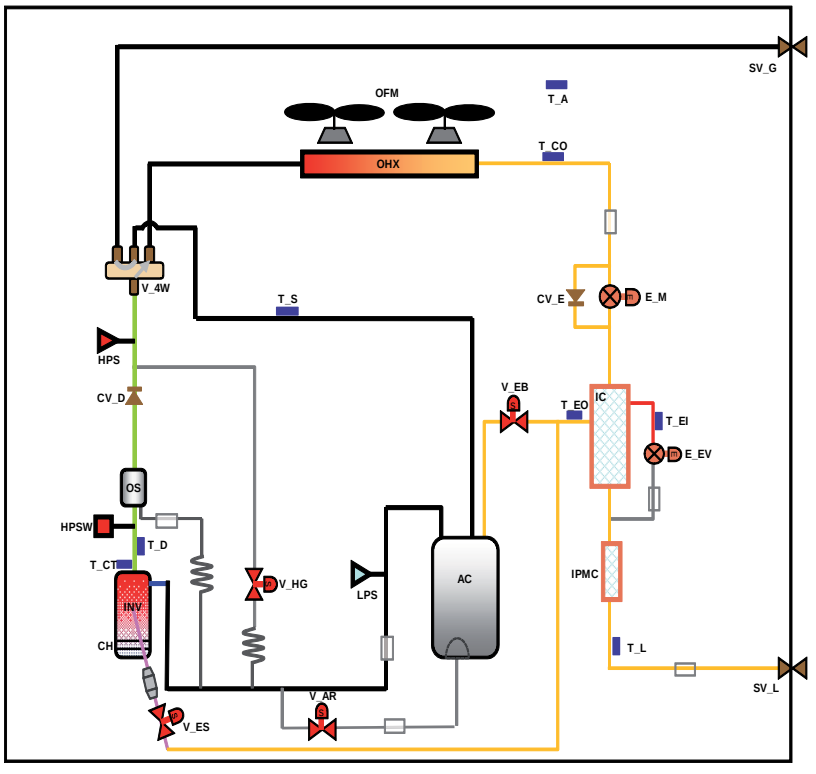
7. Cycle Diagram

7-1 AM072FXVAFH/AM072FXVAJH



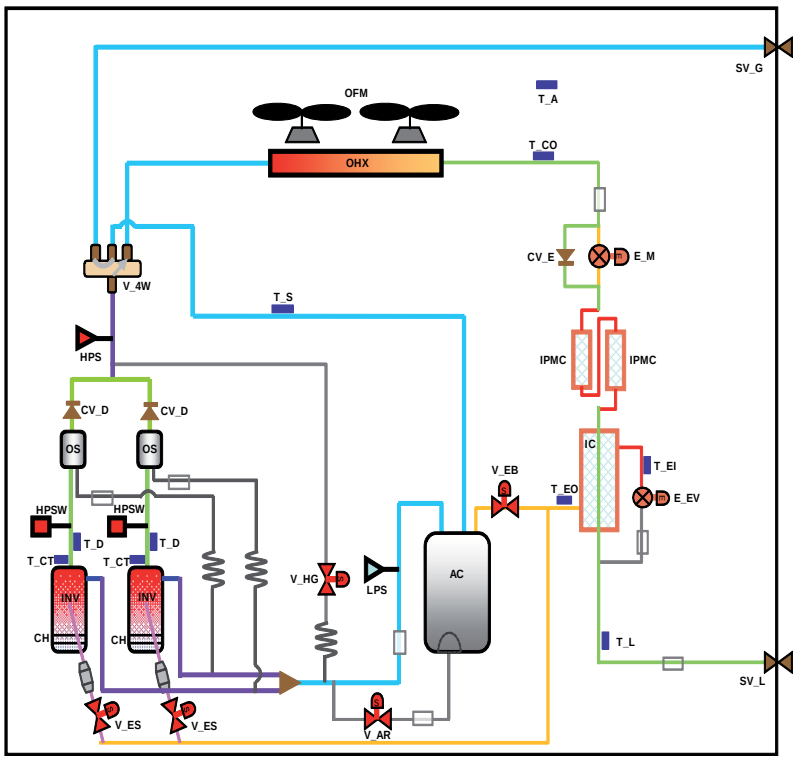
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
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_L	Liquid Pipe Service Valve

7-2 AM096FXVAJH/AM120FXVAJH



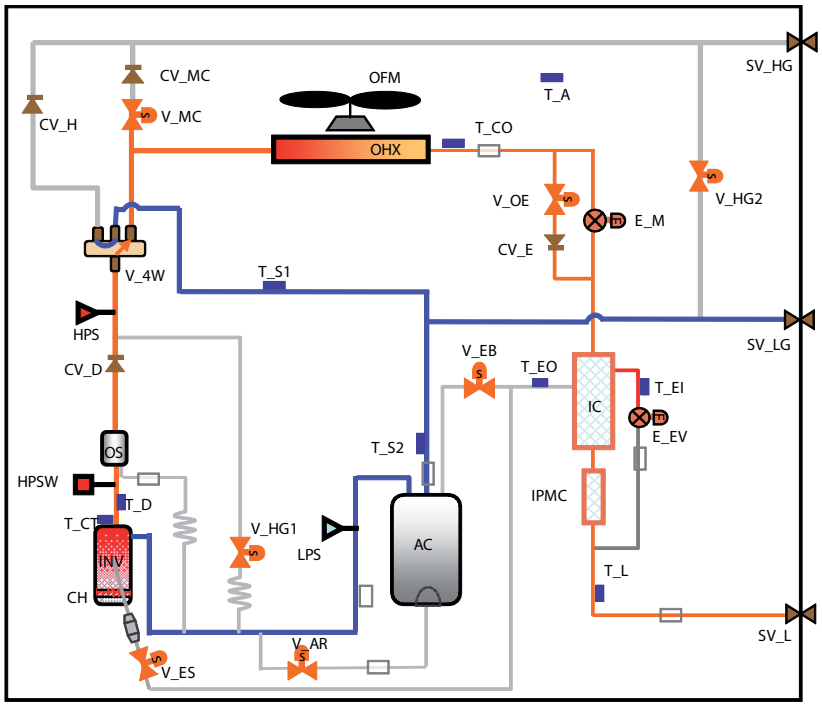
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
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_L	Liquid Pipe Service Valve

7-3 AM096FXVAFH/AM120FXVAFH/AM144FXVAFH/AM144FXVAJH/ AM168HXVAJH/AM168HXVAFH/AM192HXVAJH/AM192HXVAFH



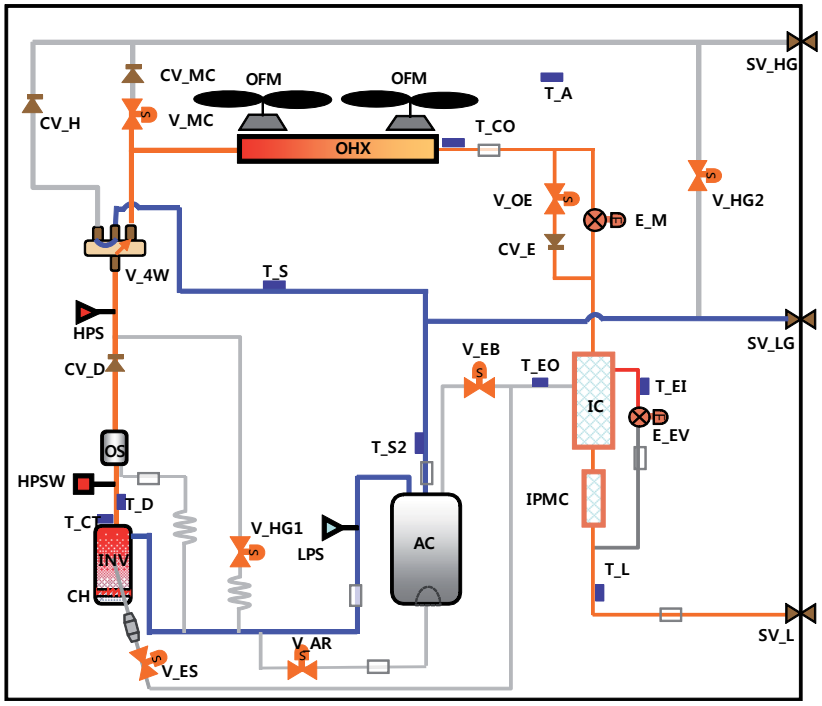
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
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_L	Liquid Pipe Service Valve

7-4 AM072FXVAFR/AM072FXVAJR



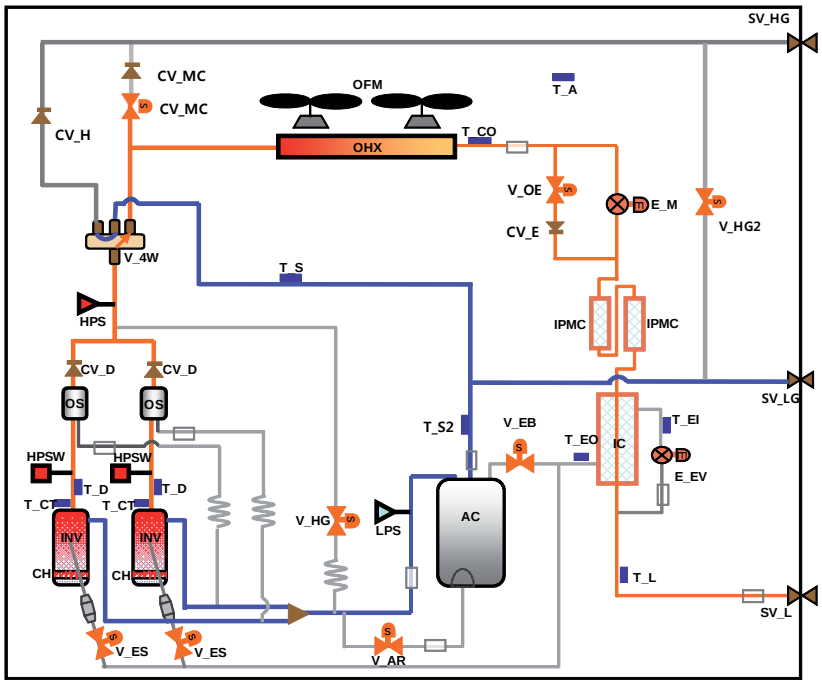
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
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_L	Liquid Pipe Service Valve

7-5 AM096FXVAJR/AM120FXVAJR



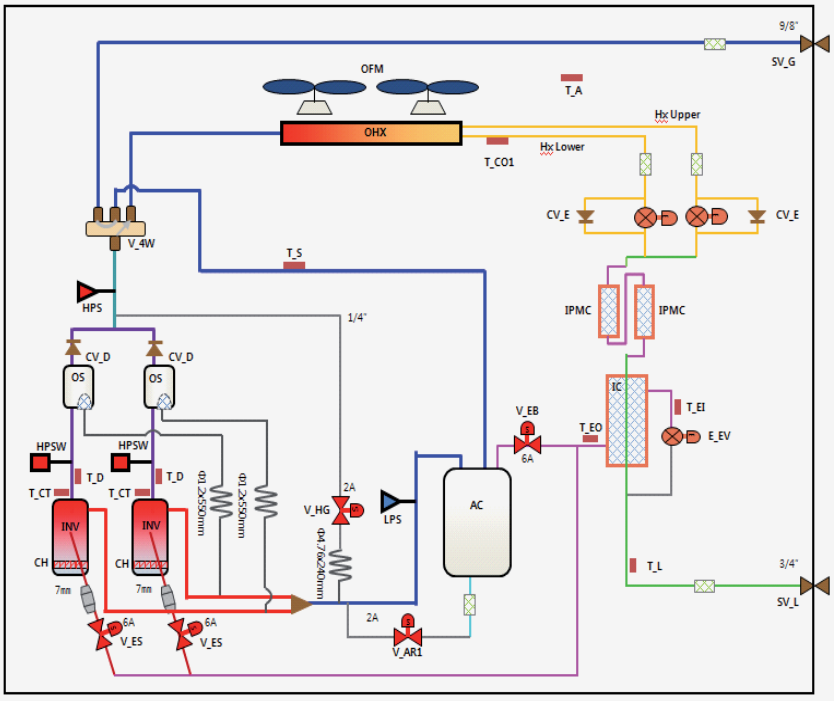
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
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_L	Liquid Pipe Service Valve

7-6 AM096FXVAFR/AM120FXVAFR/AM144FXVAFR/AM144FXVAJR/ AM168HXVAJR/AM168HXVAFR/AM192HXVAJR/AM192HXVAFR



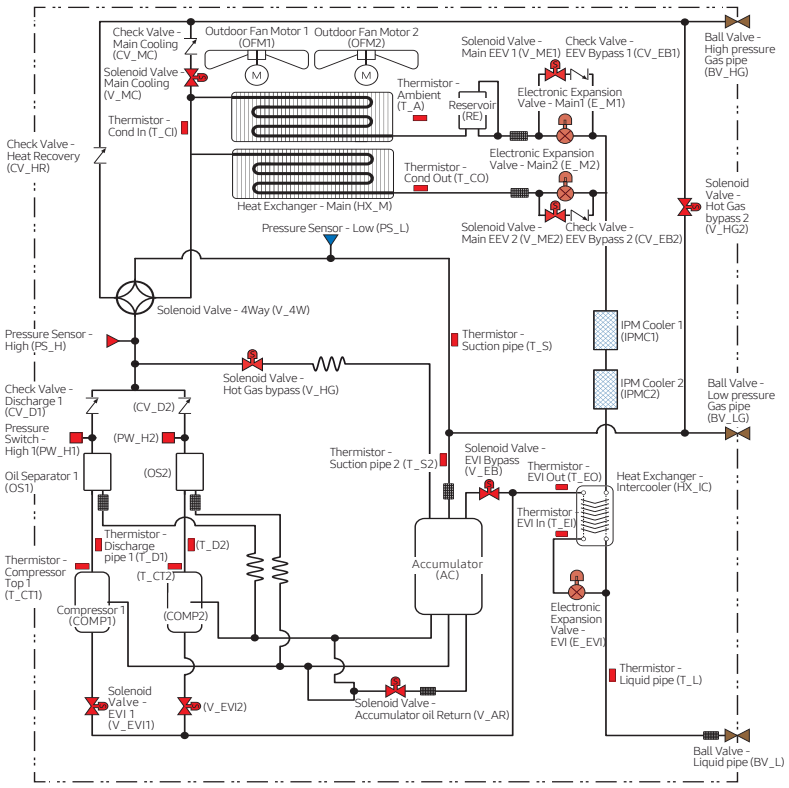
Abbreviation	Name
INV	Inveter Compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB	EVI Bypass Valve
V_HG	Hot Gas Bypass Valve
V_4W	4Way Valve
V_AR	Accumulator Oil Return Valve
CV_E	EEV Bypass Check Valve
CV_D	Discharge Check Valve
T_D	Discharge Temperature Sensor
T_S	Suction Temperature Sensor
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_L	Liquid Pipe Service Valve

7-7 AM216KXVGJH



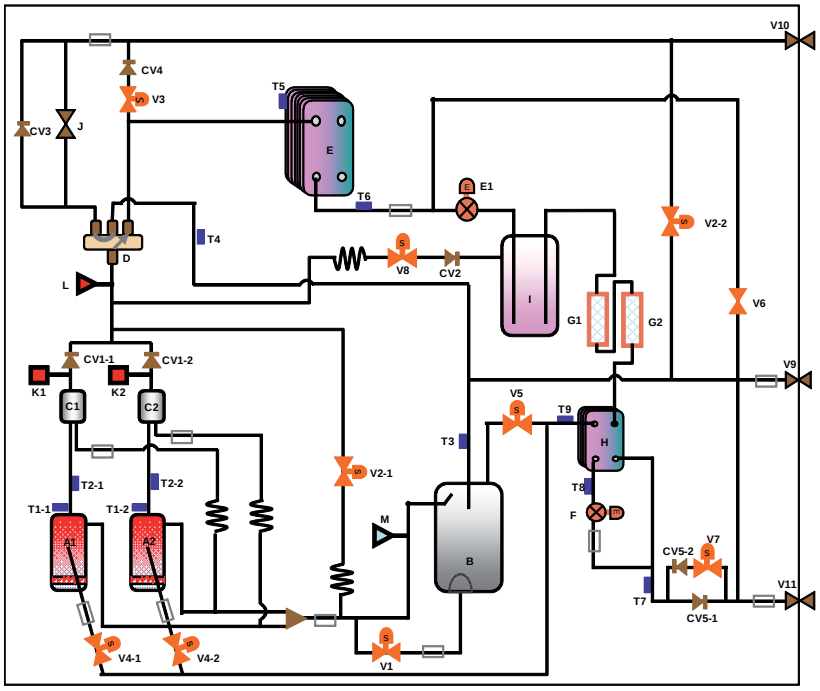
Abbreviation	Name
INV	Inverter compressor
OFM	Outdoor Fan Motor
OHX	Outdoor Heat Exchanger
AC	Accumulator
OS	Oil Separator
IC	Intercooler
IPMC	IPM Cooler
CH	Crank Case Heater
HPS	High Pressure Sensor
LPS	Low Pressure Sensor
HPSW	High Pressure Switch
E_M	Main EEV
E_EV	EVI EEV
V_ES	EVI Sol. Valve
V_EB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

7-8 AM216KXVGJR



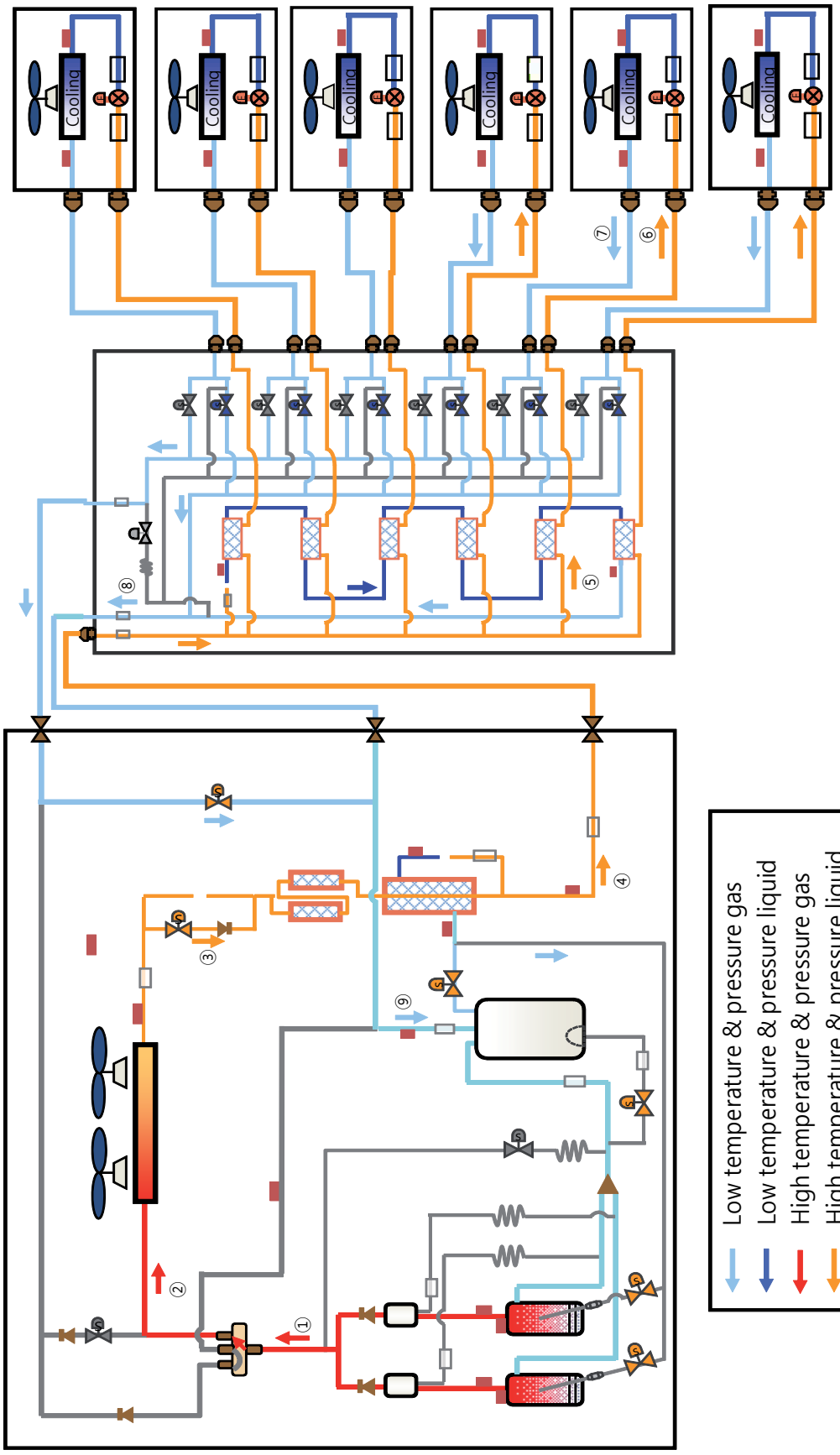
Abbreviation	Name
A1, A2	INV COMP
B	ACCUM
C1, C2	O/S
D	4WAY V/V
E	PLATE HEAT EXCHANGER
E1	MAIN EEV
F	EVI EEV
G1, G2	IPM COOLER
H	SUB COOLER
I	RECEIVER
J	HEAT PUMP V/V
K1, K2	HIGH PRE. S/W
L	HIGH PRE. SENSOR
M	LOW PRE. SENSOR
V1	ACCUM RETRUN V/V
V2-1, V2-2	HOT GAS BYPASS VV
V3	MAIN COOLING V/V
V4-1, V4-2	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, CV-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 AM192HXWA✳✳



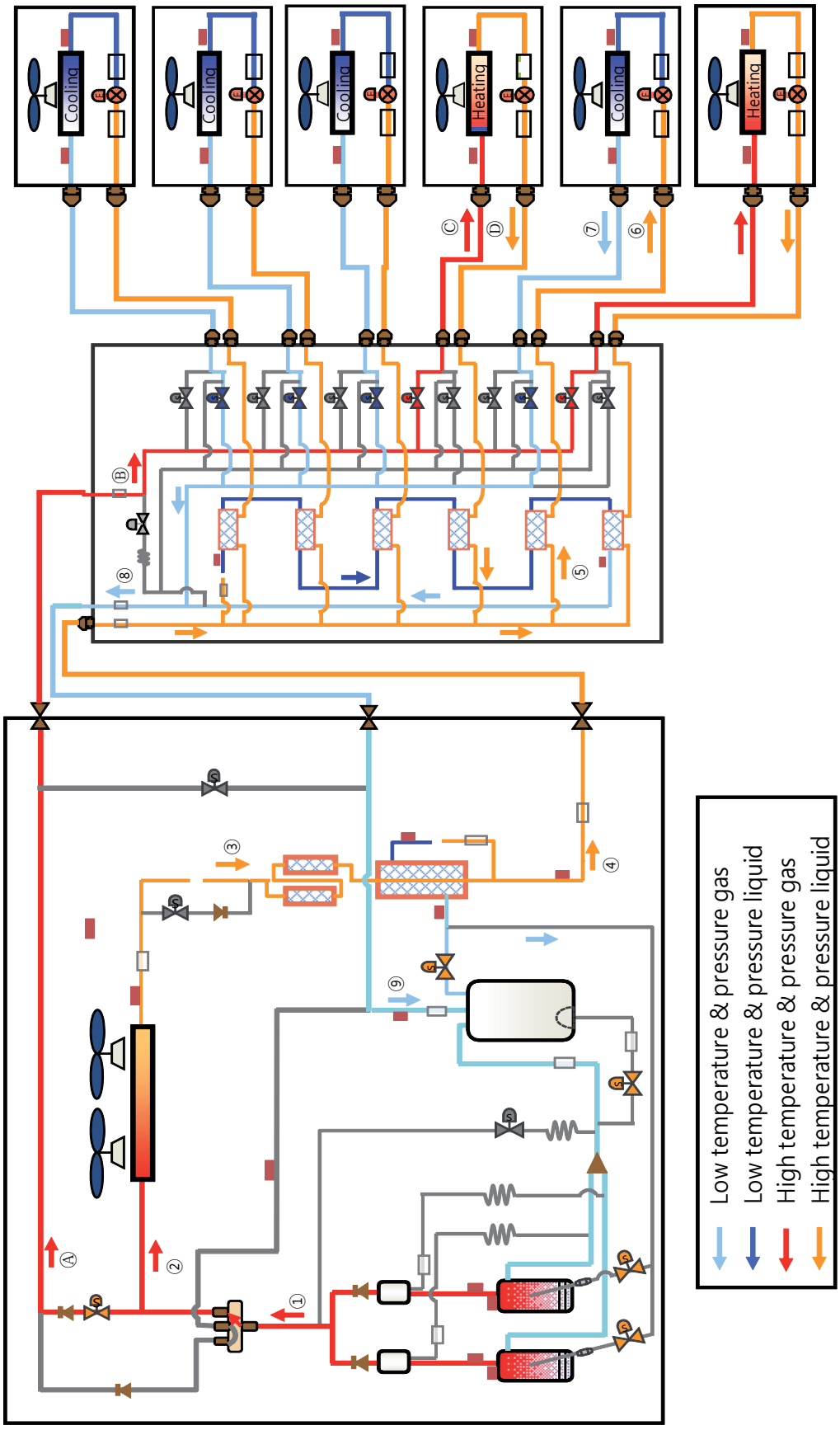
Abbreviation	Name
A1, A2	INV COMP
B	ACCUM
C1, C2	O/S
D	4WAY V/V
E	PLATE HEAT EXCHANGER
E1	MAIN EEV
F	EVI EEV
G1, G2	IPM COOLER
H	SUB COOLER
I	RECEIVER
J	HEAT PUMP V/V
K1, K2	HIGH PRE. S/W
L	HIGH PRE. SENSOR
M	LOW PRE. SENSOR
V1	ACCUM RETRUN V/V
V2-1, V2-2	HOT GAS BYPASS VV
V3	MAIN COOLING V/V
V4-1, V4-2	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, CV-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

7-10 Cooling operation (H/R)

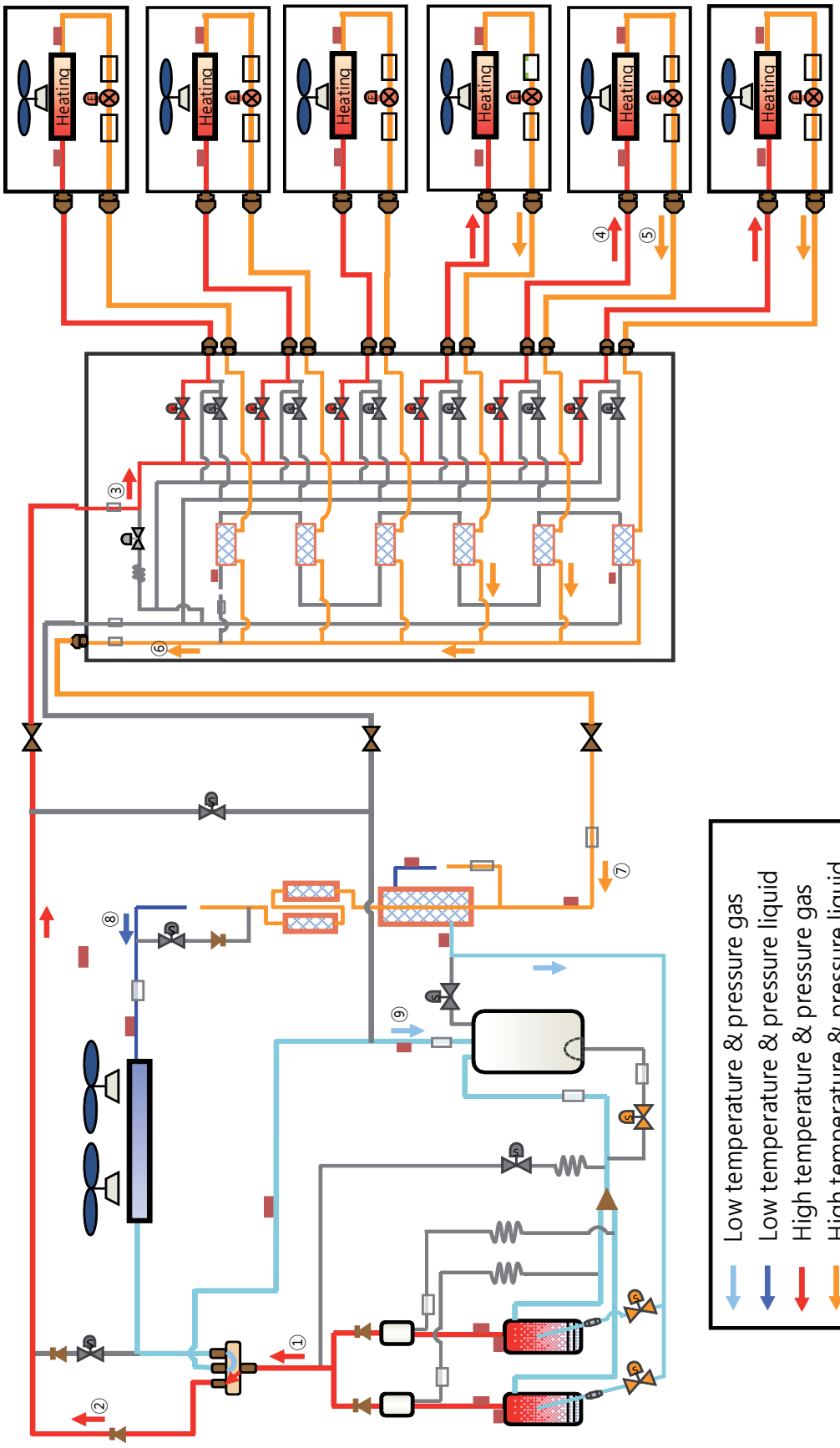


Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
	① ② ③ ④	⑤	⑥ ⑦	⑧	⑨
Cooling operation					
Main cooling oper.					
Heating operation					
Main heating oper.					

7-11 Main cooling operation (H/R)

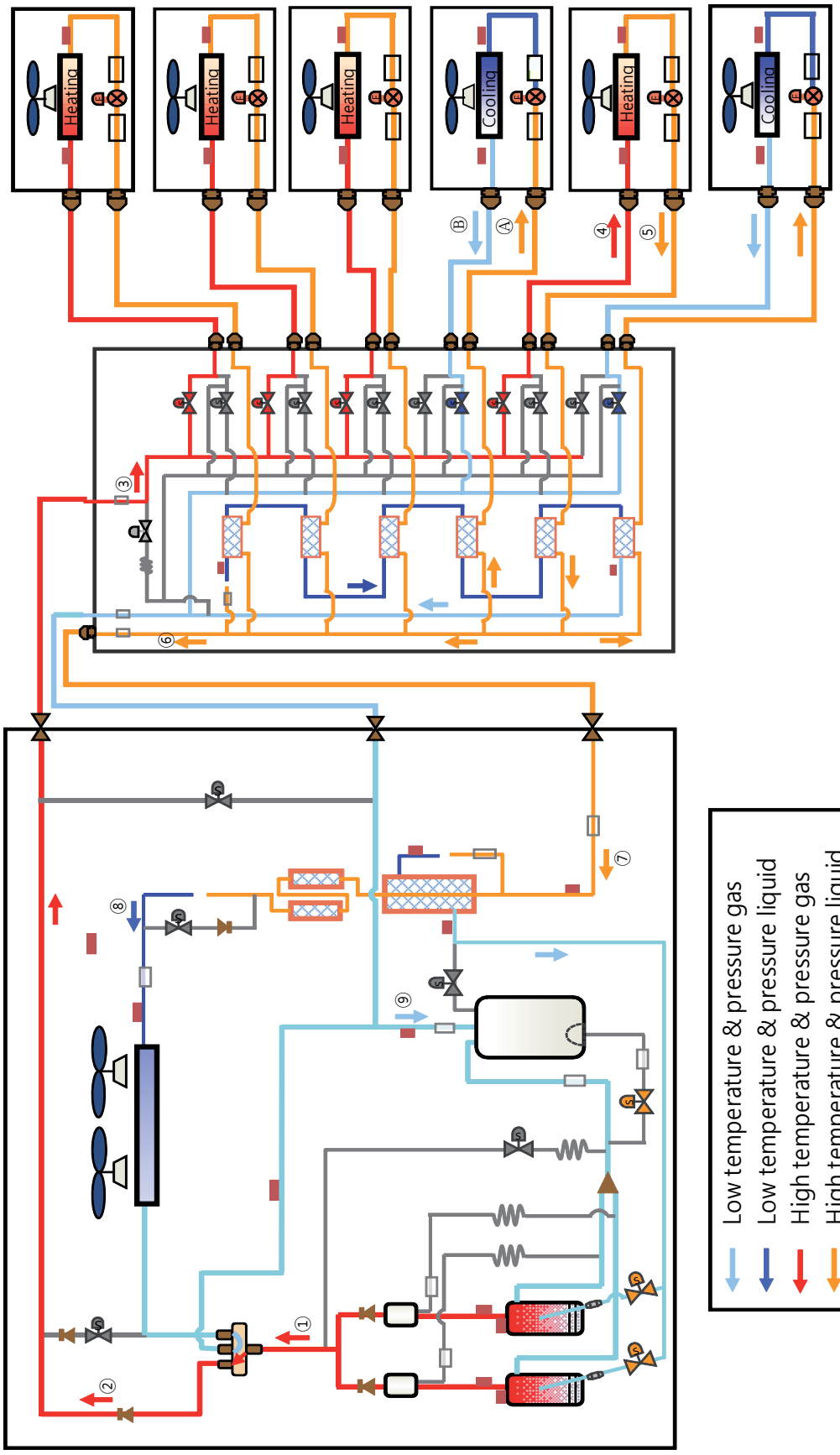


Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation					
Main cooling oper.	① ② ③ ④ (Ⓐ)		⑤ (Ⓑ)	⑥ ⑦ (Ⓒ Ⓓ)	⑧	⑨
Heating operation					
Main heating oper.					



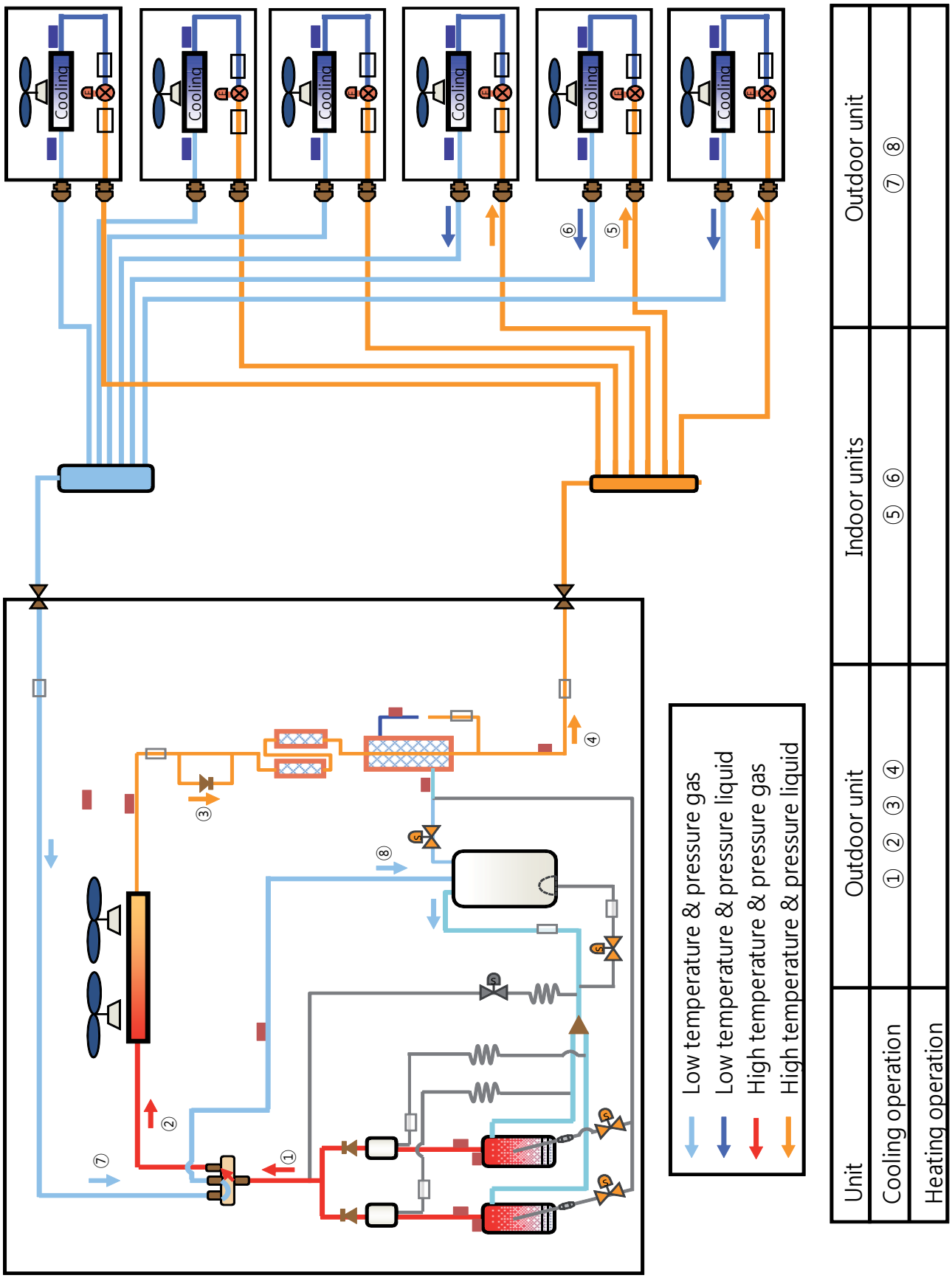
Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation					
Main cooling oper.					
Heating operation	① ②	③	④ ⑤	⑥	⑦ ⑧ ⑨
Main heating oper.					

7-13 Main heating operation (H/R)

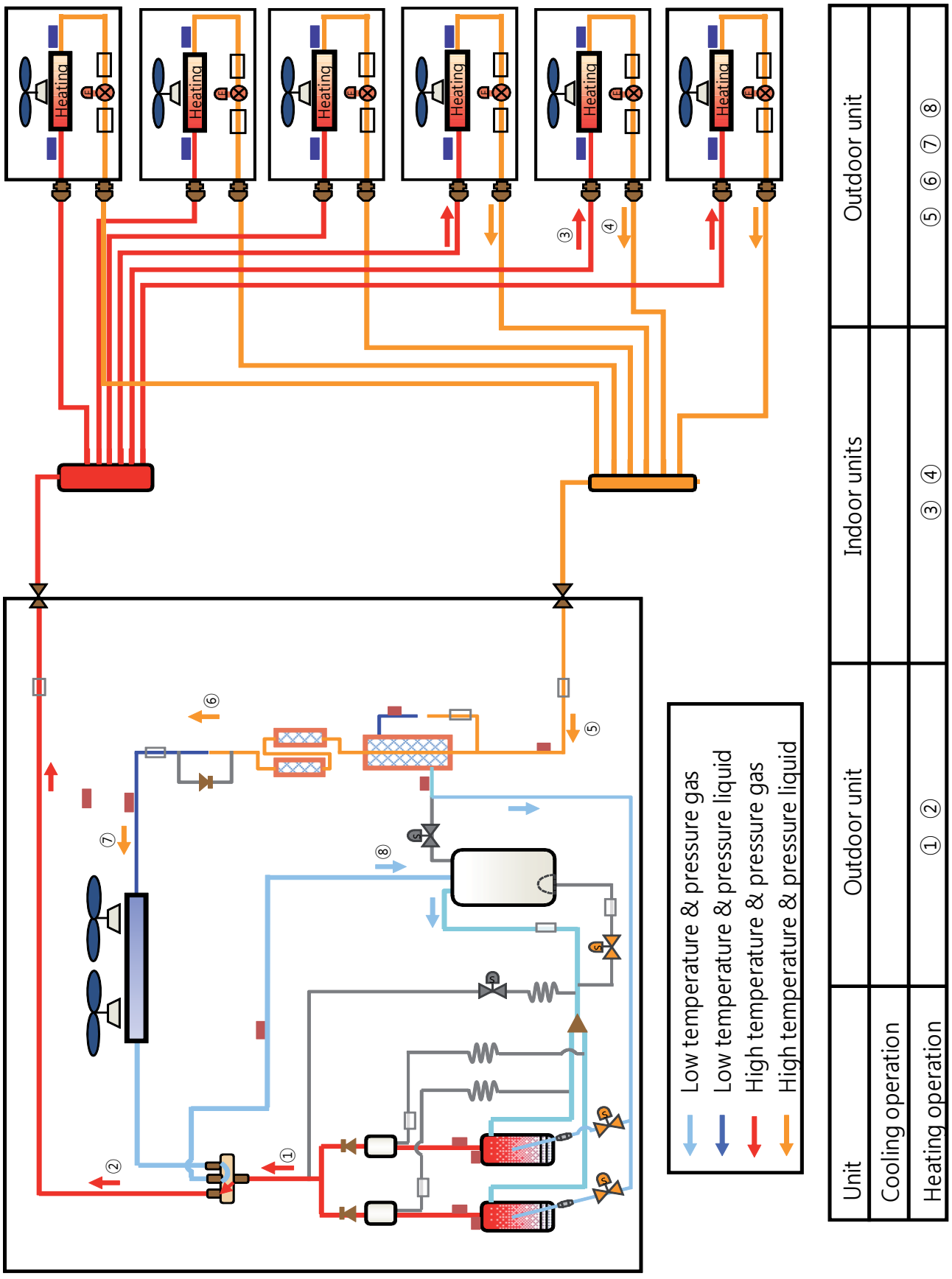


Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation					
Main cooling oper.					
Heating operation					
Main heating oper.	① ②	③	④ ⑤ (Ⓐ Ⓑ)	⑥ (Ⓒ)	⑦ ⑧ ⑨

7-14 Cooling operation (H/P)

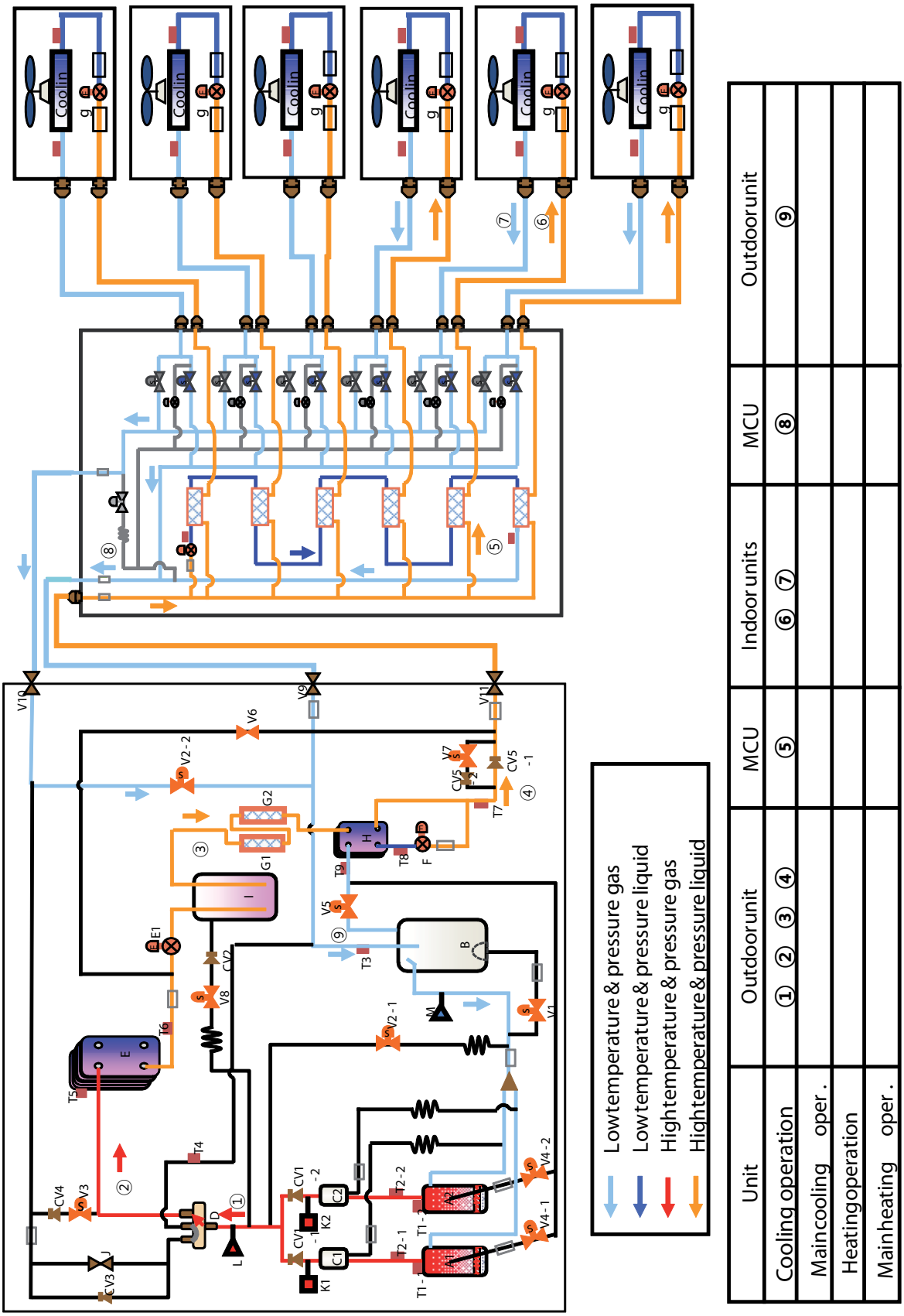


7-15 Heating operation (H/P)



7-16 Cooling operation(H/R)

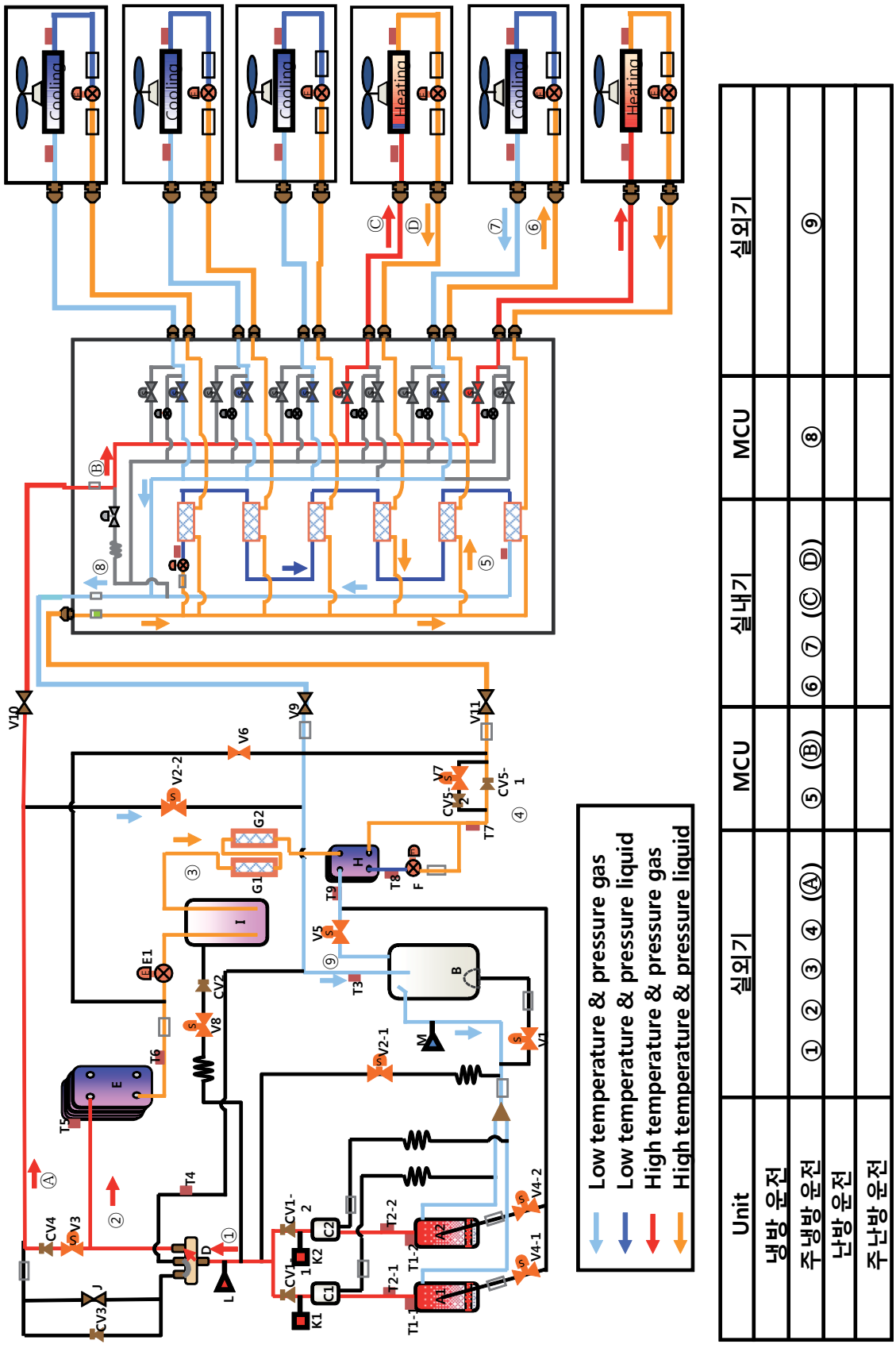
■ **AM080/100/120/200FXWA**✳✳



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

7-17 Main cooling operation(H/R)

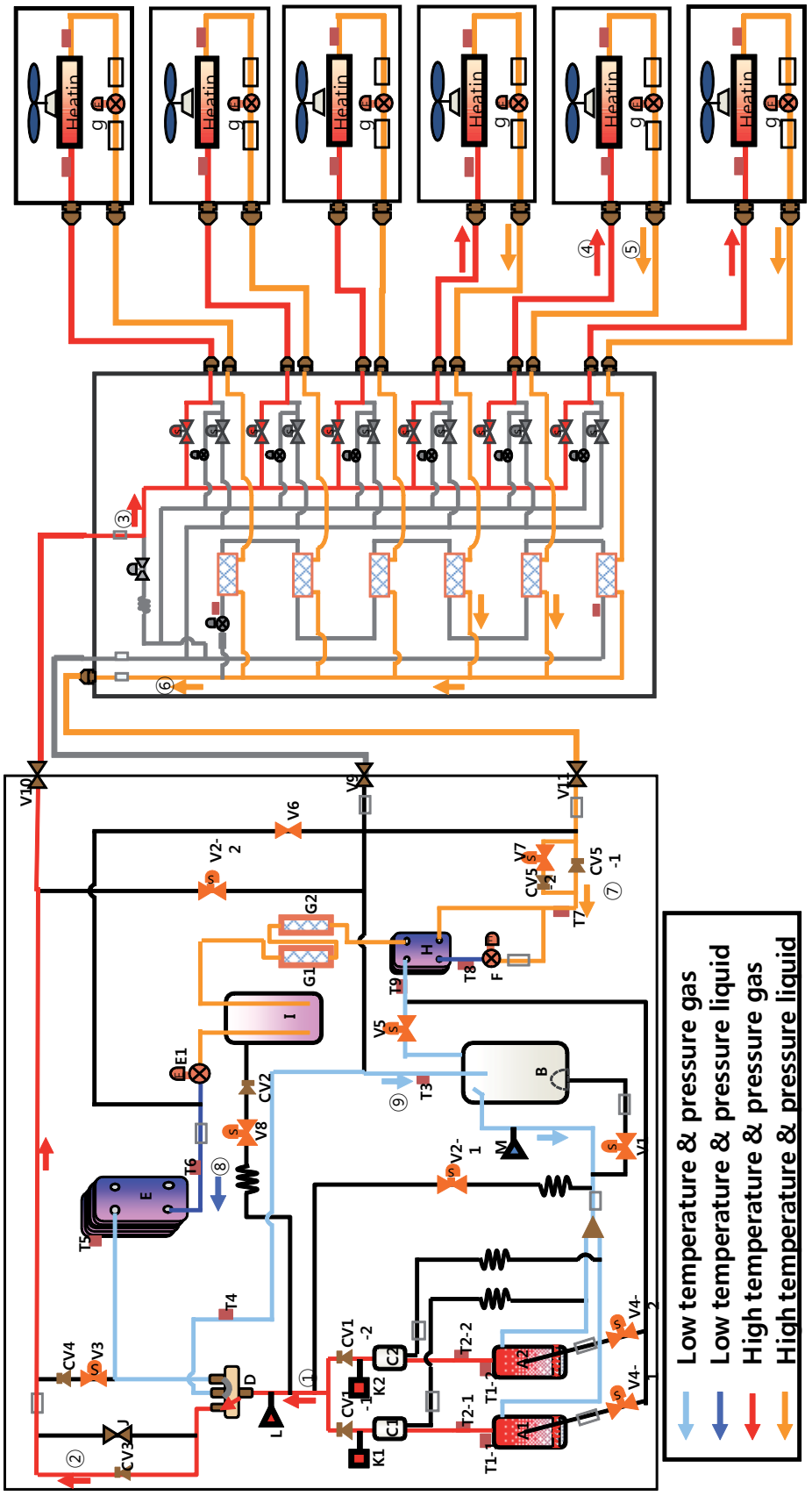
■ AM080/100/120/200FXWA✳✳



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

7-18 Heating operation(H/R)

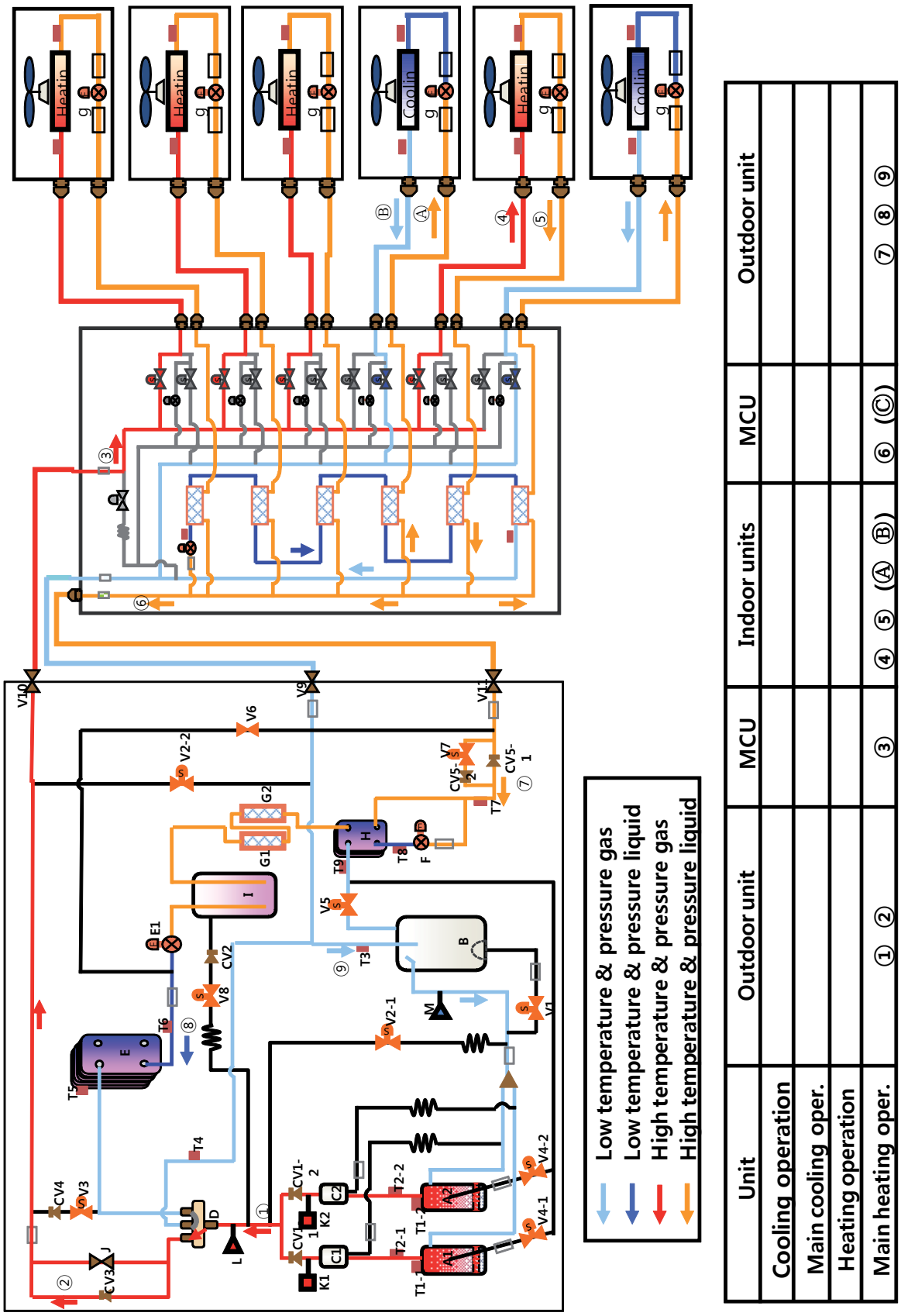
■ **AM080/100/120/200FXWA**✳✳



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.					

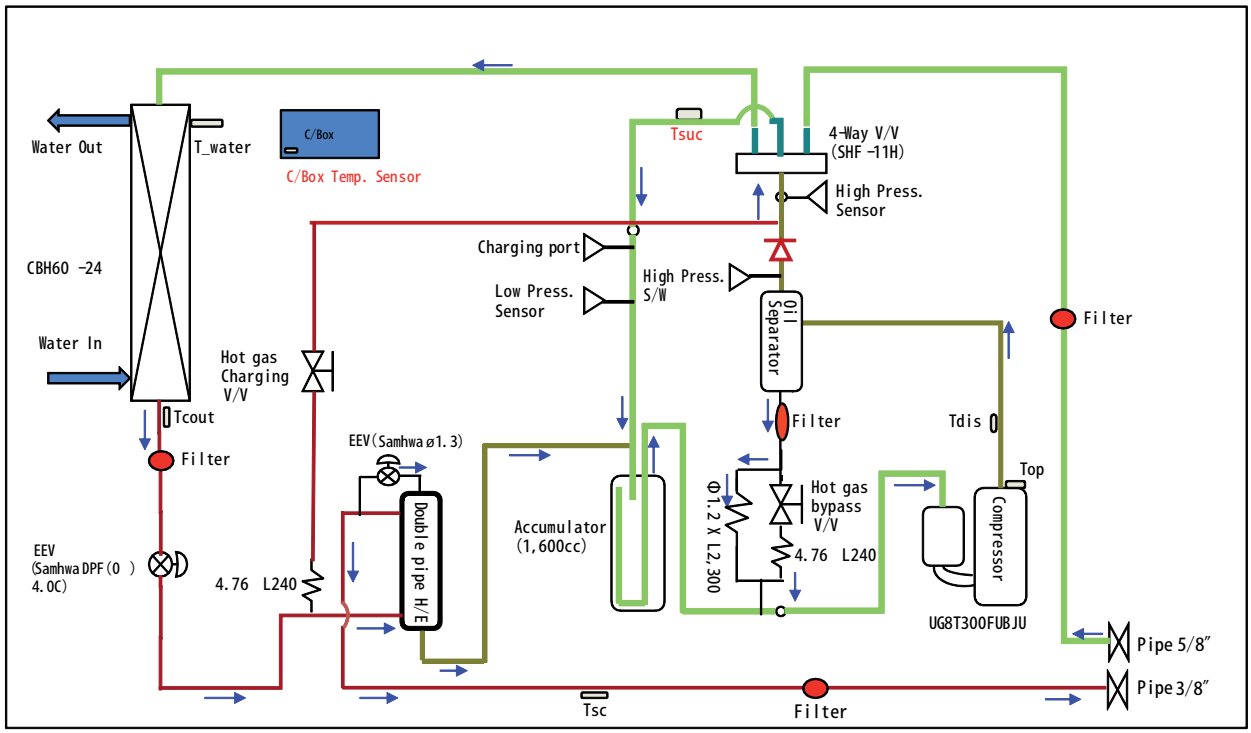
7-19 Main heating operation(H/R)

■ AM080/100/120/200FXWA✳✳



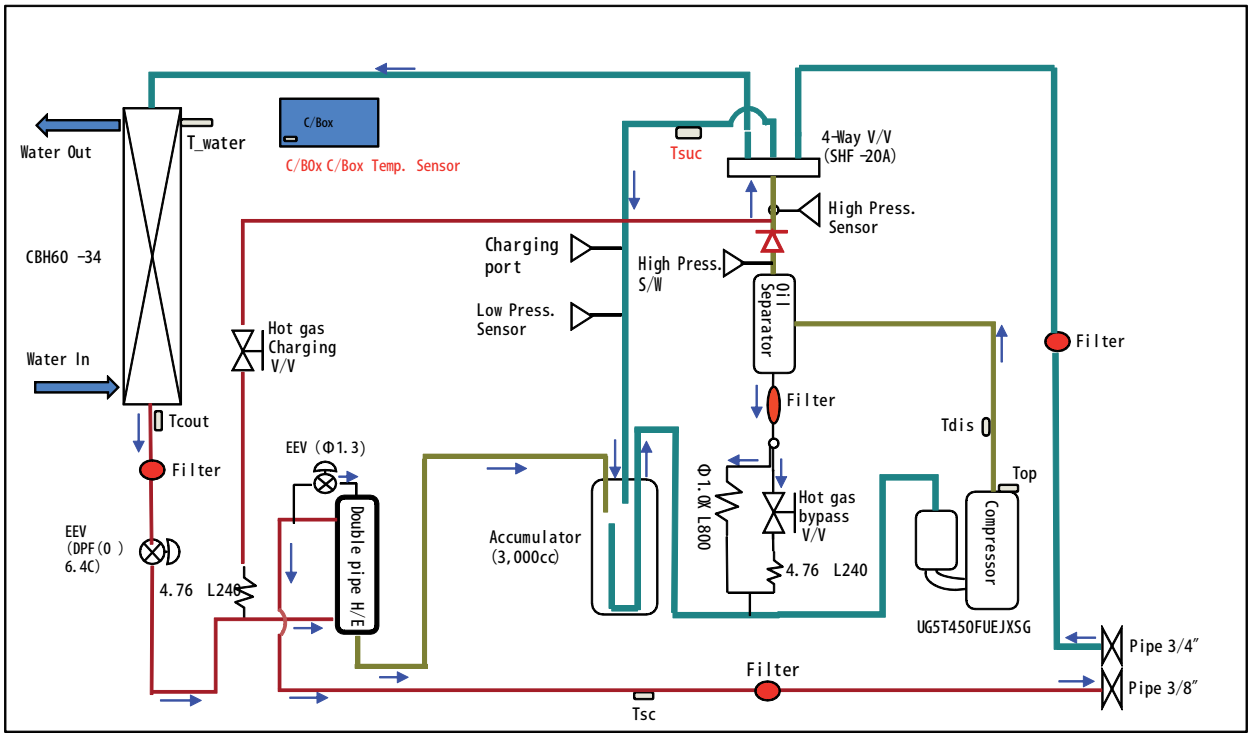
Unit	Outdoor unit	MCU	Indoor units	MCU	Outdoor unit
Cooling operation	① ②	③	④ ⑤ (Ⓐ Ⓑ)	⑥ (Ⓒ)	⑦ ⑧ ⑨
Main cooling oper.					
Heating operation					
Main heating oper.					

7-20 AM038KXWD✳✳



Pipe Size ——— 1/4″ ——— 3/8″ ——— 1/2″ ——— 5/8″ ——— 3/4″

7-21 AM048/055KXWD✳✳



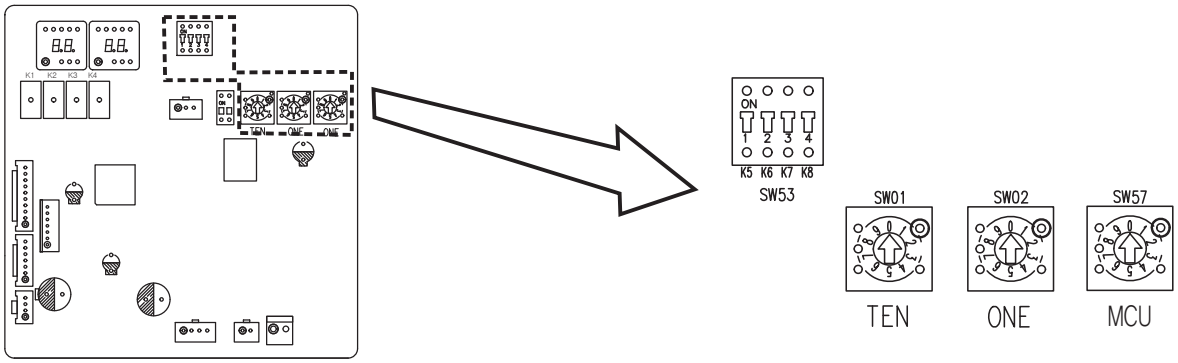
Pipe Size ——— 1/4 ″ ——— 3/8″ ——— 1/2″ ——— 5/8″ ——— 3/4″

7-22 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. ESC EEV: Securing of the super cooling degree by controling a refrigerant amount passing through subcooler.
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. It opens at single cooling operation and is used as super heat temperature control at heating operation.
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

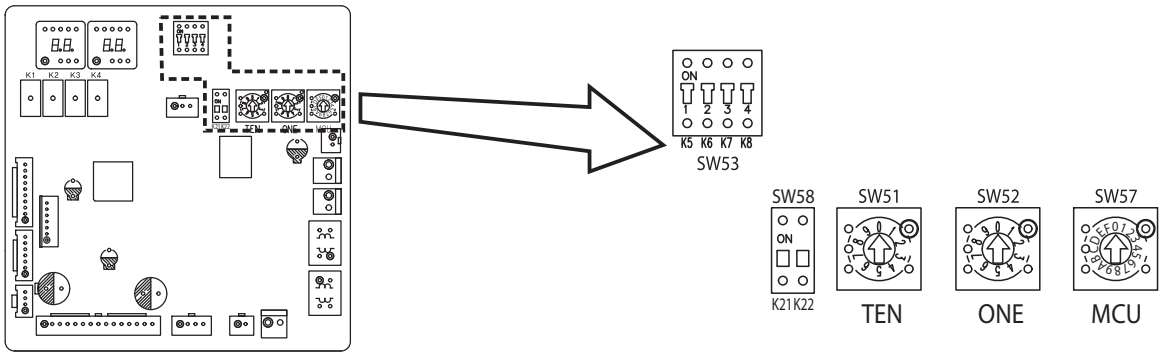
8-1 Outdoor unit option switch settings



< A TYPE >

■ AM✳✳✳✳XV✳✳✳

Switch	Setting		Setting	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 nnecessary) 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



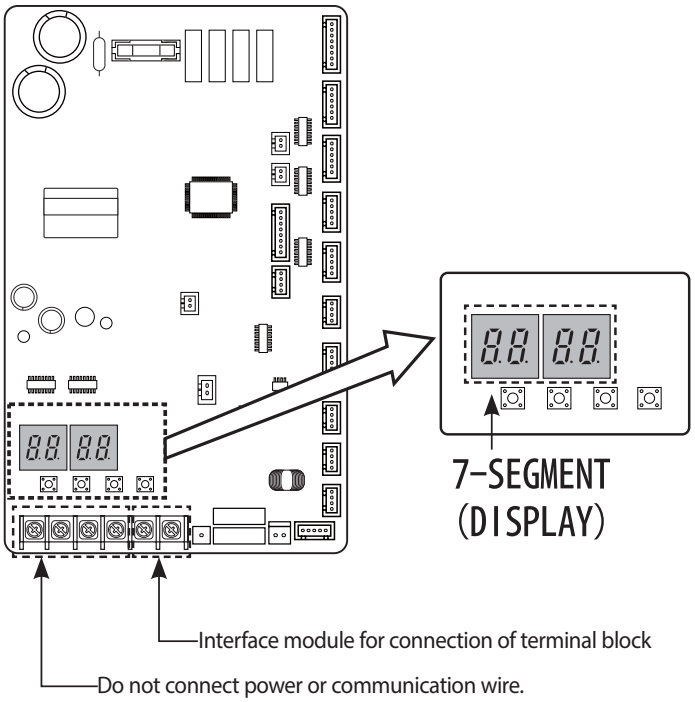
■ AM✳✳✳✳XW✳✳✳

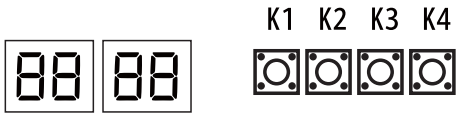
※ If you install HR products, you must match the address between the MCU and the indoor unit.

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
SW53	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 ℃)	Minimum temperature of entering water -5 ℃
	OFF	ON	Anti-freeze circulation (freezing point of anti-freeze must be below -15 ℃)	Minimum temperature of entering water -10 ℃

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

■ AM038/048/055KXWD✳✳

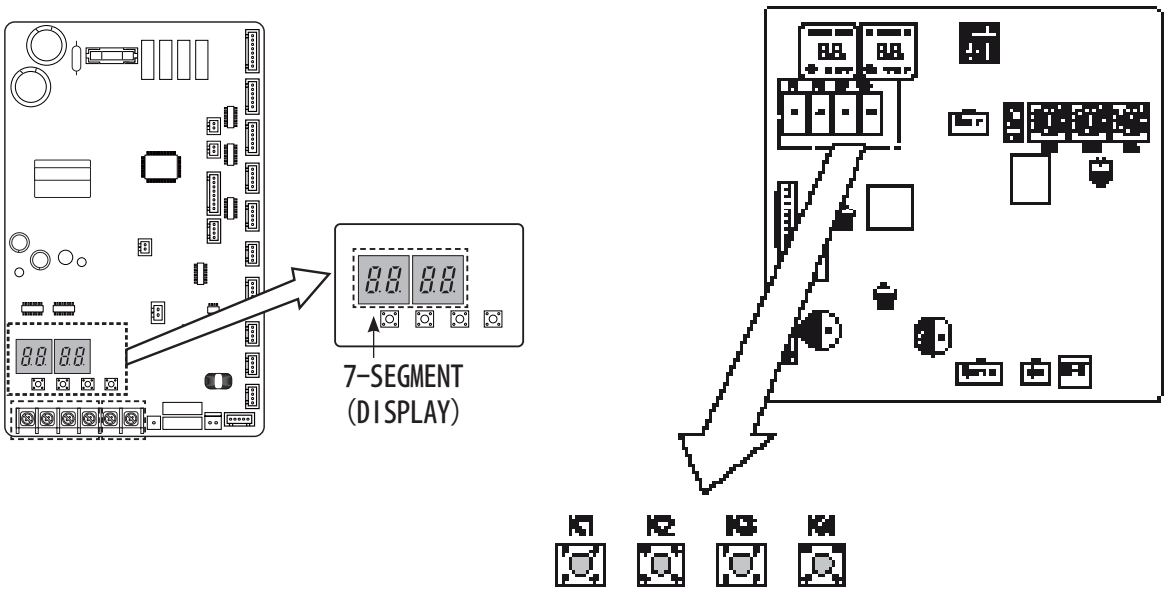




Step	Push button	Display	Description	Remark
Number of connections units				
Step 1	Outdoor unit display	Idnd	Needs to establish	-
Step 2	At the same time, press the 2 seconds K1+K2	Id00	Prepared to setting on	Example) 03 : 1's Digit 3 times 64 : 10's Digit 6 times + 1's Digit 4 times
	Press K2 n times	IdX0	10's Digit (0~6)	
	Press K4 n times	Id 0X	1's Digit (0~9)	
	Press the 2 seconds K4 : number of indoor units automatically senses.			
Step 3	Press the 2 seconds K2, after save is ended (system reset)			

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

■ AM038/048/055KXWD✳✳



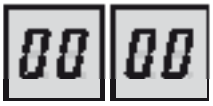
■ AM✳✳✳✳XV✳✳✳

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

■ Options of how to set up

(1) 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.

(2) After entering the option, briefly press the K1 switch will change the value of Seg1, Seg2 and then select the option to change.
(Option Seg numbers, see the table on page 39.)

Ex)

(3) 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.

Ex)

(4) 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.

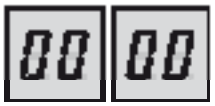
How to set the key function of the outdoor unit (cont.)

■ AM✳✳✳✳XW✳✳✳

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.

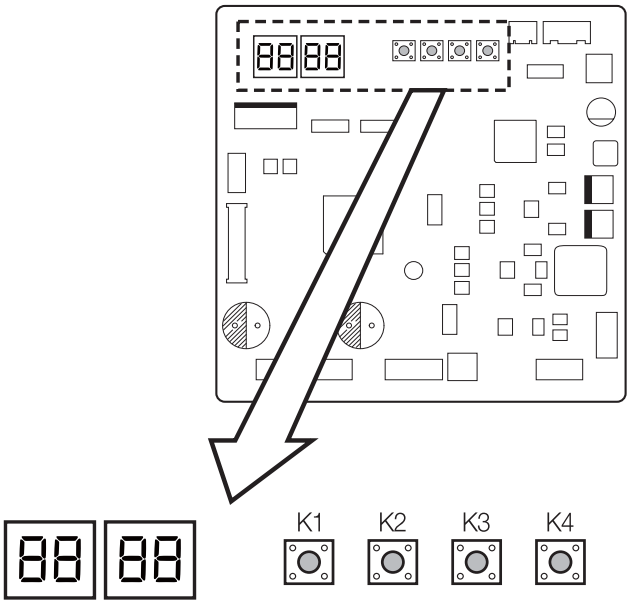
※ While you are setting the option, you may press and hold the K1 button to reset the value to previous setting.

※ 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.

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

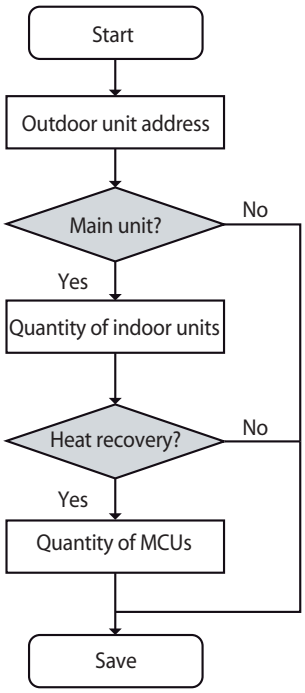
■ AM✳✳✳✳XW✳✳✳

※ Setting outdoor install option



< B type >

Step	Button	Display	Description	Note
Outdoor unit address				
Step1	Outdoor unit display	ad nd	Setting required-	
Step2	Press (K1+K2) for 2 seconds	ad 00	Unit address for module combination	00: Main unit
	K4 x 1 time	ad 01		01: Sub1 unit
	K4 x 2 times	ad 02		02: Sub2 unit
	K4 x 3 times	ad 03		03: Sub3 unit
Step3	If it is main unit, go to step4. Otherwise, press K2 button for 2 seconds to save & exit (system will be reset)			
Quantity of indoor units				
Step4	Press K1	Nd 00	Ready to set-	
Step5	K2 x n times	NdX0	Tens digit (0 ~ 6)	Ex) 03: 3 units 64: 64 units
	K4 x n times	Nd0X	Ones digit (0 ~ 9)	
	* K4: Press for 2 seconds - automatic detection of indoor units' quantity			
Step6	If it is heat recovery model, go to step 7. Otherwise, press K2 button for 2 seconds to save & exit (system will be reset)			
Quantity of MCUs * Heat recovery model only				
Step7	Press K1	nC 00	Ready to set-	
Step8	K2 x n times	nCX0	Tens digit (0 ~ 1)	Ex) 03: 3 units 16: 16 units
	K4 x n times	nC0X	Ones digit (0 ~ 9)	
	* K4: Press for 2 seconds - automatic detection of MCUs' quantity			
Step9	K2: long	Ad 00	Save	Restart
* Press K1 for 2 seconds to exit without save regardless of setting step.				



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

■ AM✳✳✳✳XV✳✳✳

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 in case of A type PBA)	Targeted evaporation temperature[℃] (When low temperature value is set, discharged air temperature of the indoor unit will decrease)
				0	1	5-7 (Factory default in case of B type PBA)	
				0	2	9-11	
				0	3	10-12	
				0	4	11-13	
				0	5	12-14	
				0	6	13-15	
Capcity 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	Individual	0	3	0	0	100% (Factory default)	When restriction option is set, cooling and heating performance may decrea
				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 %	
				0	0	50 %	
				0	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	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 (It operates automatically depending on the temperature.) However, if the external contact interface module (MIM-B14) is used, entering the silent mode is available with contact signal.
				0	1	LEVEL 1 / Auto	
				0	2	LEVEL 2 / Auto	
				0	3	LEVEL 3 / Auto	
				0	4	LEVEL 1 / External contact	
				0	5	LEVEL 2 / External contact	
				0	6	LEVEL 3 / External contact	
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
				0	3	Height difference type 2 (Outdoor unit is lower than outdoor unit)	When indoor unit is over 30m above the outdoor unit

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

■ AM✳✳✳✳XV✳✳✳

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks
Long-piping 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 between 100~170m
				0	2	LEVEL 2	When equivalent length of farthest indoor unit from the outdoor unit is over 170m
Energy saving setting (A type PBA)	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.
Energy control Operaton (B type PBA)	Main	1	0	0	0	Basic (Factory default)	Energy control option of designated operation sequence ✻ Operating in energy saving mode, capacity might decrease compared to normal operation mode
				0	1	Energy saving	
				0	2	Power	
Rotation defrost (HR only)	Main	1	1	0	0	Disabled (Factory default)	
				0	1	Enabled	When enabled, continuous heating operation is possible but heatin
Expand operational temperature range for cooling operation	Main	1	2	0	0	Disabled (Factory default)	
				0	1	Enabled	When enabled, continuous cooling operation is possible even in low temperature condition up to -15°C, but noise of the MCU will increase
Channel address	Main	1	3	A	U	Automatic setting (Factory default)	Address for classifying the product from upper level 0~15 Manual setting for channel 0~15 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.)

■ AM038/048/055KXWD✳✳

Optional item	Input unit	SEG 1	SEG 2	SEG 3	SEG 4	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 Comp1 as malfunction state	
				0	2	Set Comp2 as malfunction state	
Capacity correction for cooling	Main	0	1	0	0	7-9 (Factory default)	Targeted evaporation temperature [℃] (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 (However, the specific model without air conditioning)	Main	0	2	0	0	2.8 (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	2.9	
				0	5	3.0	
				0	6	3.1	
				0	7	3.2	
				0	8	3.3	
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	
Unused option	Main	0	5	0	0	Unused option	
				0	1	Unused option	
Unused option	Individual	0	6	0	0	Unused option	
				0	1	Unused option	
Unused option	Main	0	7	0	0	Unused option	
				0	1	Unused option	
				0	2	Unused option	
				0	3	Unused option	
Setting high-head condition	Main	0	8	0	0	Disabled (Factory default)	
				0	1	Reverse height difference type level 1	When outdoor unit is located 40~80m above the indoor unit
				0	2	Reverse height difference type level 2	When outdoor unit is located over 80m above the indoor unit
				0	3	Net height difference type	When indoor unit is over 30m above the outdoor unit

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

■ AM038/048/055KXWD✳✳

Optional item	Input unit	SEG 1	SEG 2	SEG 3	SEG 4	Function of the option	Remarks
Long-piping condition setting (Setting is unnecessary if high-head condition is set)	Main	0	9	0	0	⊠⊠⊠ (⊠⊠⊠⊠)	
				0	1	LEVEL 1	When equivalent length of farthest indoor unit from the outdoor unit is between 100~170m
				0	2	LEVEL 2	When equivalent length of farthest indoor unit from the outdoor unit is over 170m
Energy saving setting (However, the specific model without air conditioning)	Main	1	0	0	0	Disabled (Factory default)	
				0	1	Enabled	Enter the energy saving mode when the room temperature reaches desired temperature while operating in heating mode.
Unused option	Main	1	1	0	0	Disabled	Unused option by this model
				0	1	Disabled	
Expand operational temperature range for cooling operation	Main	1	2	0	0	Disabled (Factory default)	
				0	1	Enabled	
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	
Unused option	Main	1	4	0	0	Unused option	Unused option by this model
				0	1	Unused option	
Circulation water flow control	Main	1	5	0	0	Disable (Factory default)	When variable flow control valve is applied
				0	1	7-10V	
				0	2	5-10V	
				0	3	3-10V	
Compulsion silent mode (Unused)	Main	1	6	0	0	Unused option	
Speed operatin (Unused)	Main	1	7	0	0	Disabled(Factory default)	Enabling this setting will command the air conditioner to cool/heat faster at initial start-up. However, this function will not work when high-head condition setting or Long-piping condition setting is enabled.
				0	1	Enable	
Heating maximum capacity limit	Main	1	8	0	0	Enabled	Heating maximum capacity limit
				0	1	Disable (Factory default)	
Unused option	Main	1	9	0	0	Disable (Factory default)	Gas leak refrigerant recovery
				0	1	Enabled	
Setting circulating fluid	Individual	2	0	0	0	Water	Setting circulating fluid
				0	1	Antifreeze 1	
				0	2	Antifreeze 2	
				0	3	Water	

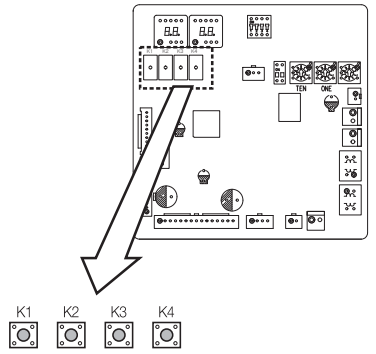
■ AM072/096/120/192HXWA✳✳

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks
Rotation defrost (HR only)	Main	1	1	0	0	Disabled (Factory default)	
				0	1	Enabled	When enabled, continuous heating operation is possible but heating performance will decrease during rotation defrost operation
Expand operational temperature range for cooling operation	Main	1	2	0	0	Disabled (Factory default)	
				0	1	Enabled	When enabled, continuous cooling operation is possible even in low temperature condition up to -15?C, but noise of the MCU will increase
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 mayspin even when the unit is not in operation
				0	1	Disabled	
Unused option	Main	1	5	0	0	Unused option	Unused option option by this model
Unused option	Main	1	6	0	0	Unused option	Unused option option by this model
Speed operatin	Main	1	7	0	0	Disabled(Factory default)	Enabling this setting will command the air conditioner to cool/heat faster at initial start-up However this function will not wortk when High-head conditionsetting or Long-piping condition setting is enabled.
				0	1	Enable	
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

■ AM072/096/120/192HXWA✳✳

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Function of the option	Remarks
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)	
				0	1	Enable	Energy saving mode triggers when the room temperature reaches desired temperature while operating in heating mode.
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)	
				0	1	7-10 V	When variable flow control valve is applied
				0	2	5-10 V	
				0	3	3-10 V	

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



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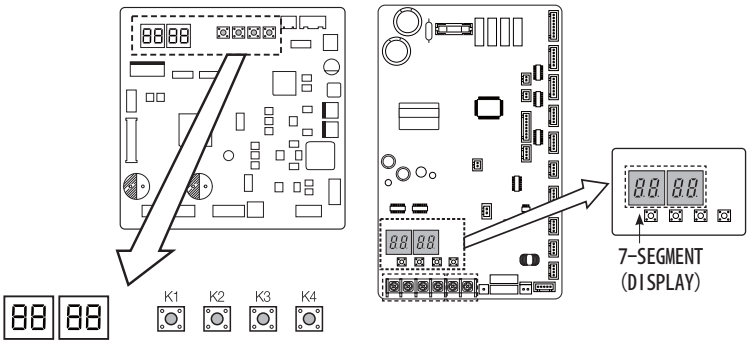

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■ AM✳✳✳✳XV✳✳✳

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✳✳✳✳ → 0ff, 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)

How to check the view mode using a tact switch (cont.)

■ AM072/096/120/192HXWA✳✳

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 ℃ → 0, 8, 7
7 times	Discharge temperature (Compressor	7	87 ℃ → 0, 8, 7
8 times	IPM temperature (Compressor 1)	8	87 ℃ → 0, 8, 7
9 times	IPM temperature (Compressor 2)	9	87 ℃ → 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 ℃ → -, 4, 2
13 times	COND OUT temperautre	D	-42 ℃ → -, 4, 2
14 times	Temperature of liquid pipe	E	-42 ℃ → -, 4, 2
15 times	TOP temperature (Compressor 1)	F	-42 ℃ → -, 4, 2
16 times	TOP temperature (Compressor 2)	G	-42 ℃ → -, 4, 2
17 times	Water temperature	H	-42 ℃ → -, 4, 2
18 times	EVI inlet temperature	I	-42 ℃ → -, 4, 2
19 times	EVI outlet temperature	J	-42 ℃ → -, 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 ℃ → -, 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 ℃ → -, 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)

How to check the view mode using a tact switch (cont.)

※ 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)

How to check the view mode using a tact switch (cont.)

■ AM038/048/055KXWD✳✳

K3 (Number of press)	Key operation	Display on 7-segment
1 time	Initialize setting (Reset)	Same as Initial state

DVM S water cooled view mode			
View mode 1			
K4 (Number of press)	Key operation	Display on segment	
		SEG 1	SEG 2,3,4
1 time	Outdoor Capacity	1	16 Horsepower → 0,1,6
2 times	Target frequency (Compressor 1)	2	120Hz → 1,2,0
3 times	High pressure (kg/cm2)	3	15.2K → 1,5,2
4 times	Low pressure (kg/cm2) (1 second value)	4	4.3K → 0,4,3
5 times	Discharge temperature (Compressor 1)	5	87℃ → 0,8,7
6 times	IPM temperature (Compressor 1)	6	87℃ →0,8,7
7 times	CT sensor value (Compressor 1)	7	2 A → 0,2,0
8 times	Suction temperature	8	-42℃ → -,4,2
9 times	Cond Out temperature	9	-42℃ → -,4,2
10 times	Liquid temperature	A	87℃→ 0,8,7
11 times	TOP temperature (Compressor 1)	B	87℃ → 0,8,7
12 times	Water temperature	C	-42℃ → -,4,2
13 times	Main EEV step	D	2000 → 2,0,0
14 times	ESC EEV step	E	300 → 3,0,0
15 times	Current frequency of the compressor 1	F	120Hz → 1,2,0
16 times	Address of master indoor unit	G	When master indoor unit is not set → BLANK, N, D
			When indoor unit No.1 is set as master indoor unit → 0, 0, 1
17 times	Temperature of control box	H	-42℃ → -,4,2

To enter the view mode 2 : Press the K4 during 3 seconds.				
View mode 2				
K4 (Number of press)	Key operation	Display on page		
		Page 1	Page 2	
1 time	Main version	MAIN	Version (ex) 1412)	
2 times	Water Hub version	HUB2	Version (ex) 1412)	
3 times	Inverter 1 version	INV1	Version (ex) 1412)	
4 times	EEP version	EEP	Version (ex) 1412)	
5 times	Receiving device	AUTO	SEG1, 2	SEG3, 4
	Automatic address		Indoor unit : "A","0"	Adress (ex) 07)
			MCU : "C","1"	
6 times	Receiving device	MANU		SEG3, 4
	Manual address		Indoor unit : "A","0"	Adress (ex) 15)

9. Test Operation

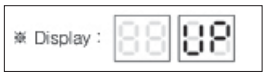
9-1 Auto Trial Operation

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.

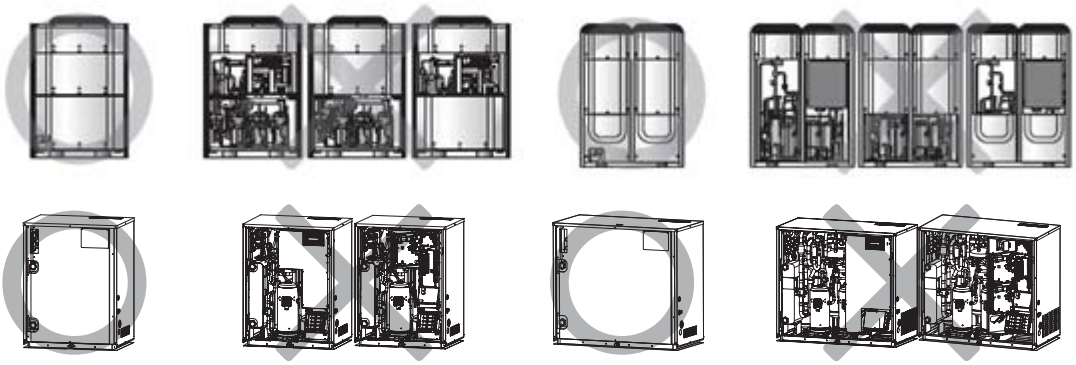
(3) Shut down the Auto Trial Operation, resulting report will be issued using the S-NET or S-CHECKER.
- The resulting report of the "Undetermined"item, troubleshoot the accordance with the service manual.
- Troubleshoot all the items of "Undetermined" and then restart the Auto Trial Operation.

(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.



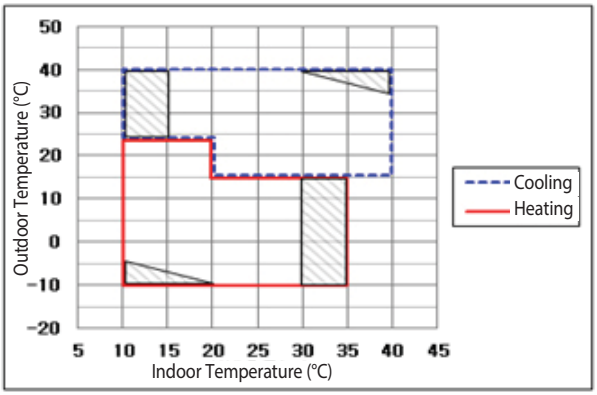
4) Inspection item of the Auto Trial Operation

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.



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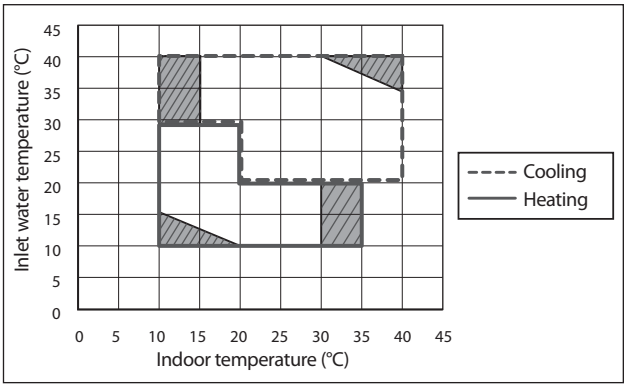

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- Heating / Cooling mode is automatically selected of Auto Trial Operation .
- Oblique line marked area in the during operation of the system can be protection control.
  (Auto Trial Operation of normal judgment can be difficult by the protection control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

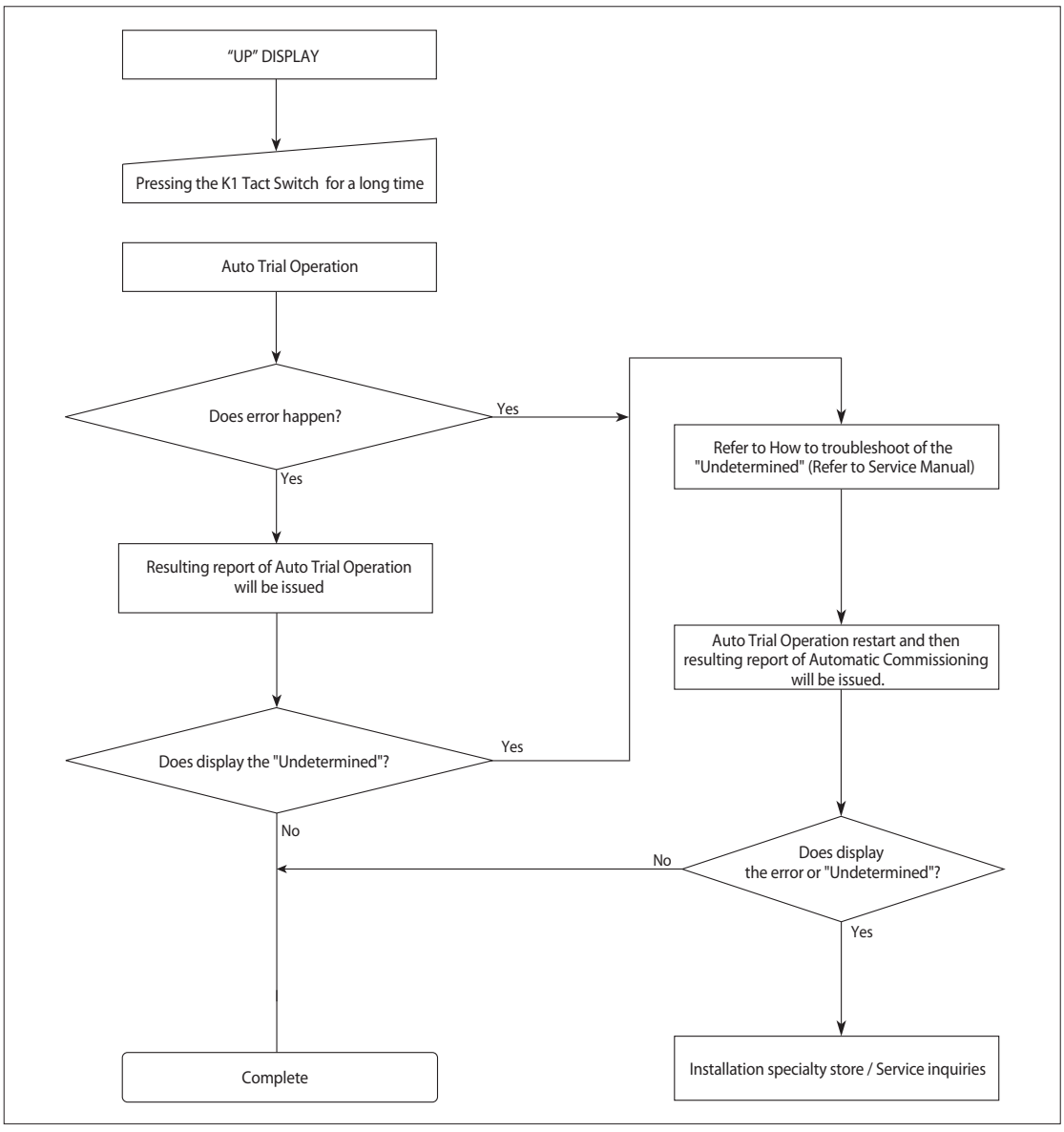
9-1-2 Auto Trial Operation functions

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



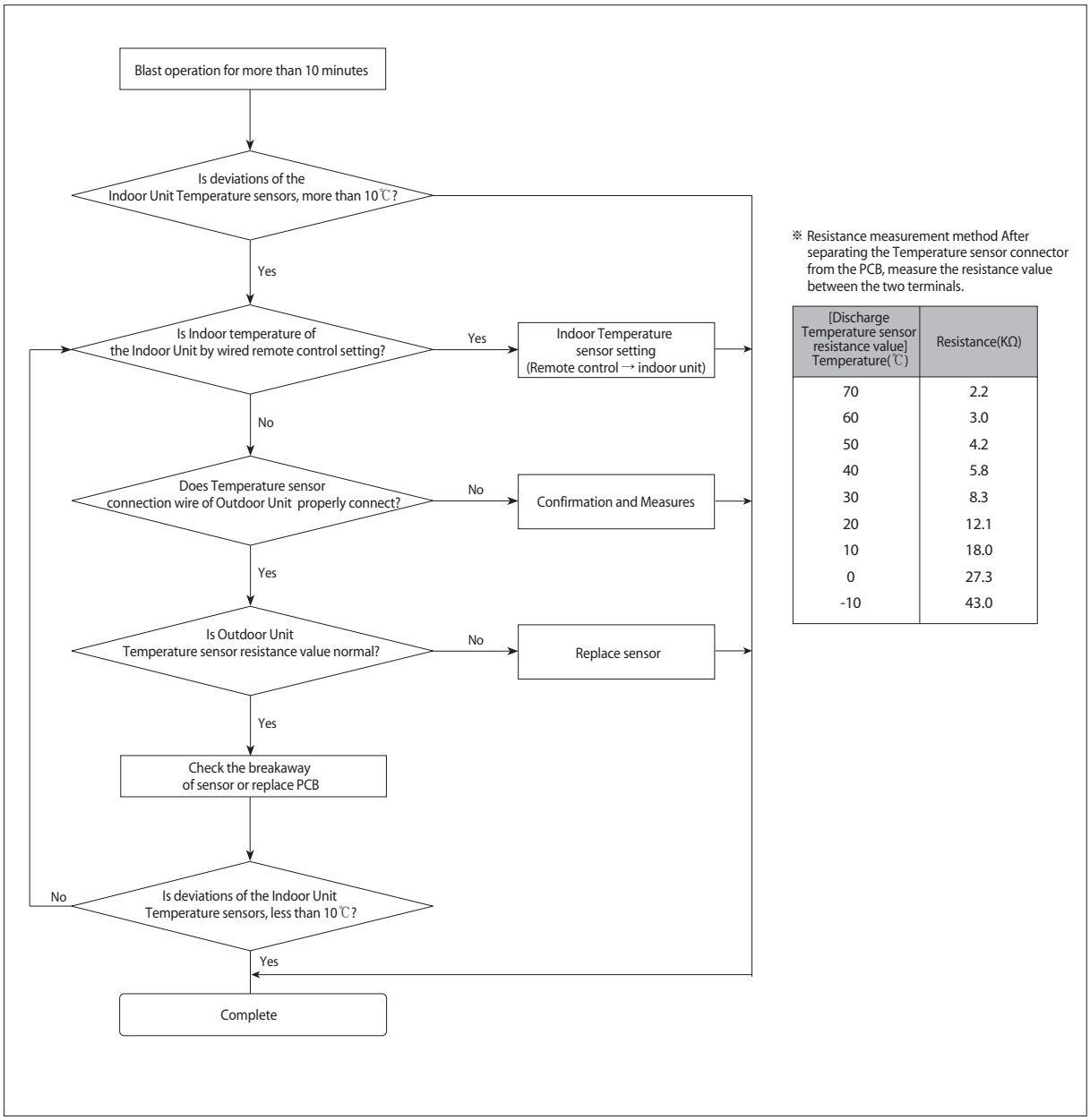
(3) Other Precautions

- 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.



※ Resistance measurement method After separating the Temperature sensor connector from the PCB, measure the resistance value between the two terminals.

[Discharge Temperature sensor resistance value] Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

[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.

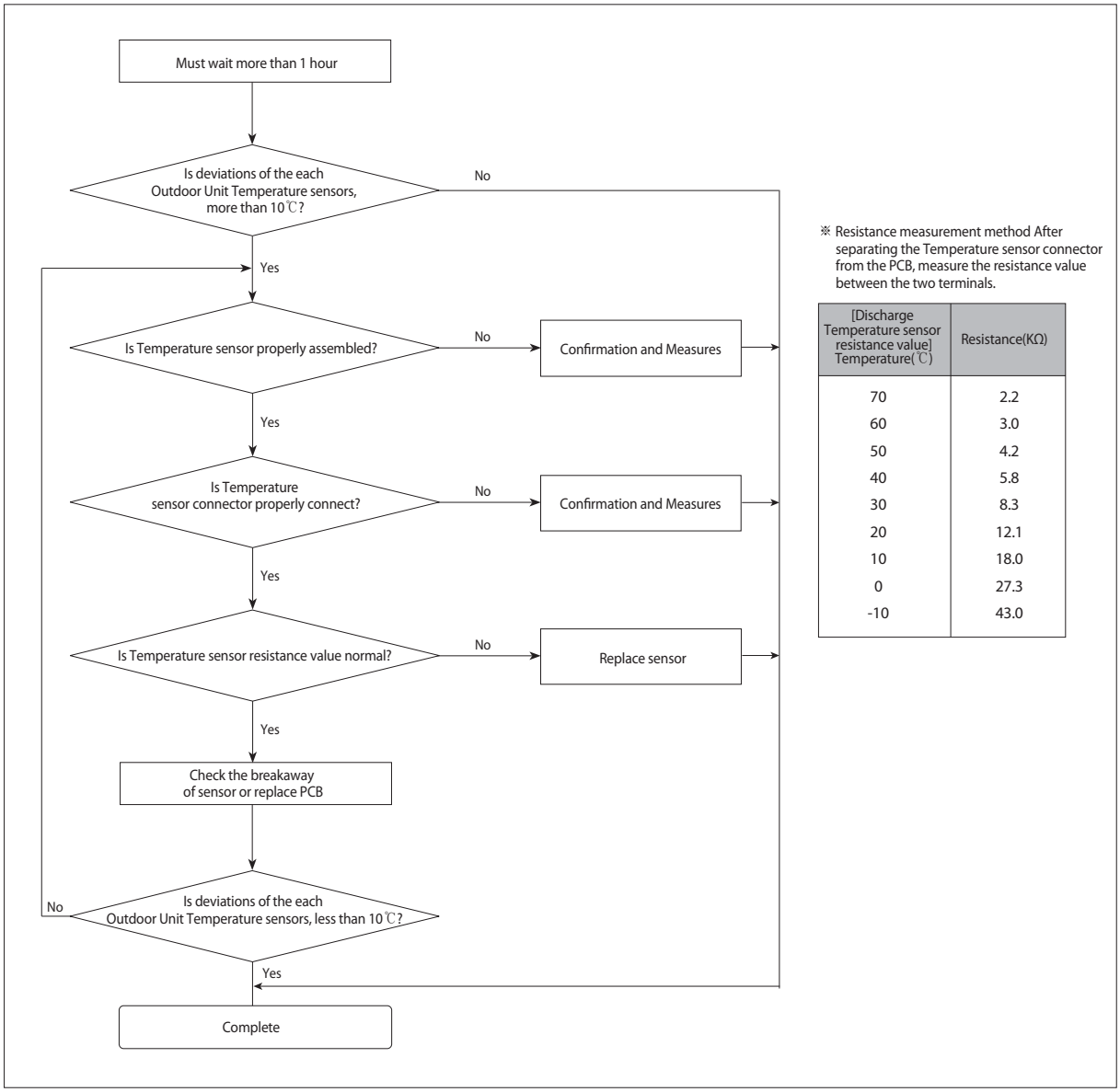
2) Outdoor Unit Temperature sensor

■ 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.



※ Resistance measurement method After separating the Temperature sensor connector from the PCB, measure the resistance value between the two terminals.

[Discharge Temperature sensor resistance value] Temperature(℃)	Resistance(KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
20	12.1
10	18.0
0	27.3
-10	43.0

[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.

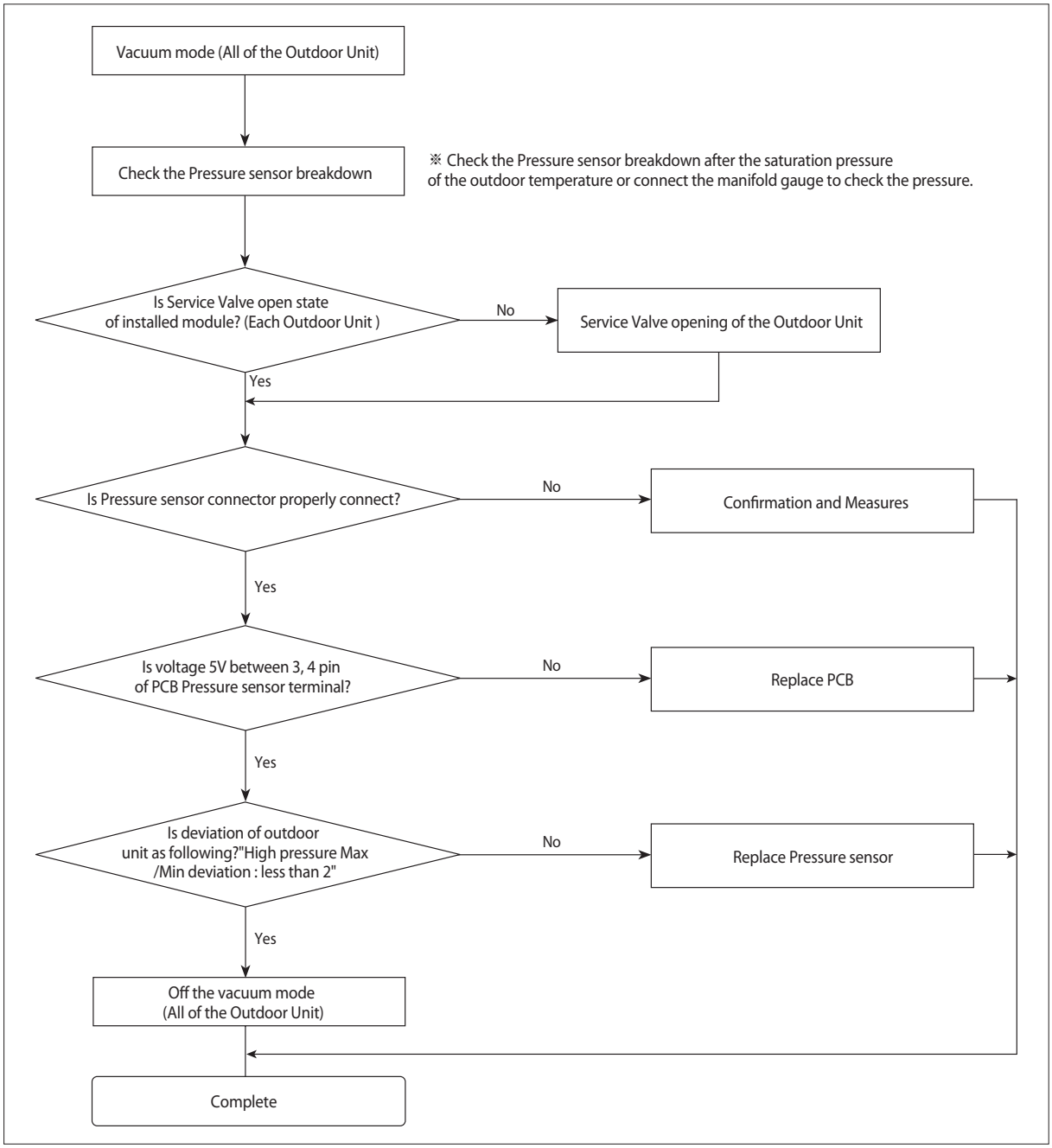
3) High / Low pressure sensor (Module installed)

■ 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)

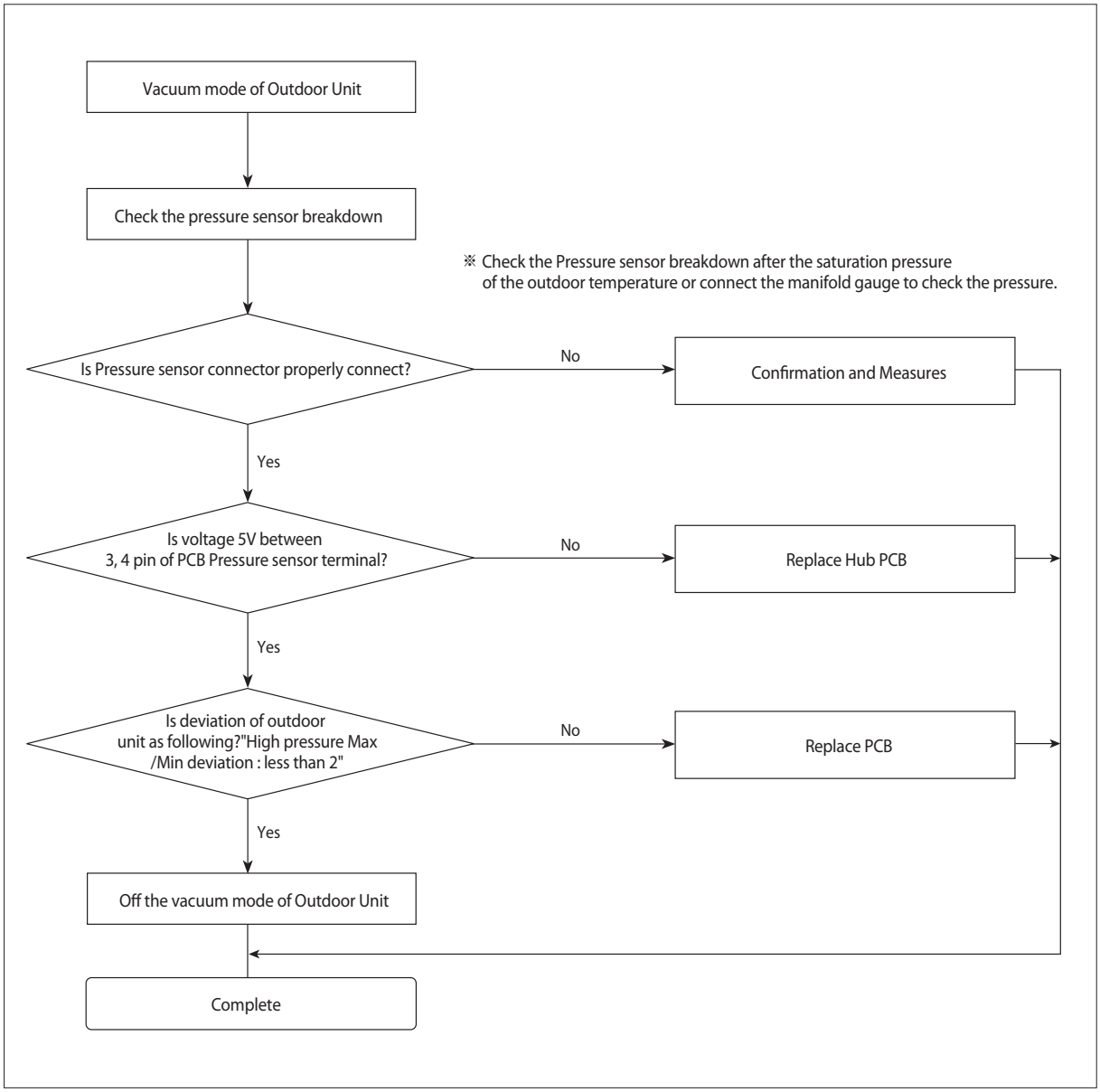
4) Pressure sensor (Independent installation)

■ 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.

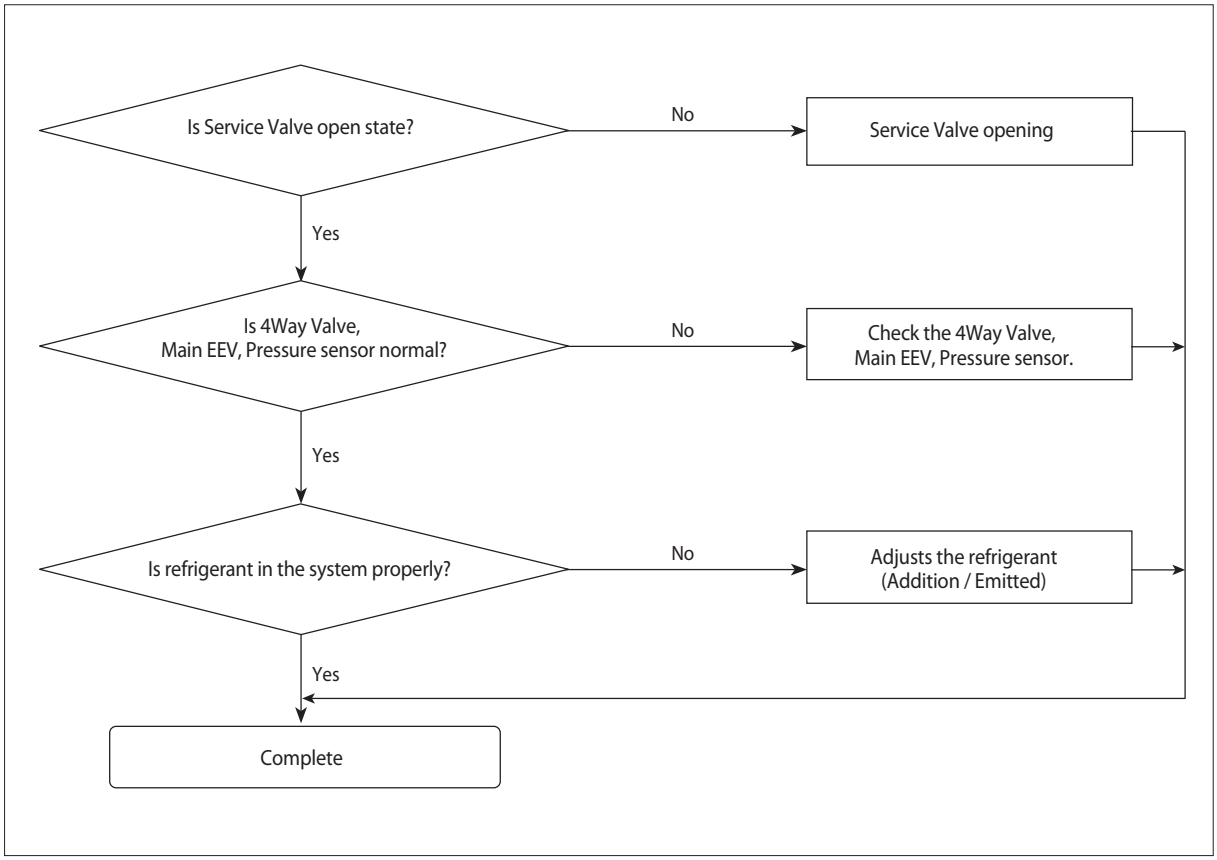
5) Service Valve

■ 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.

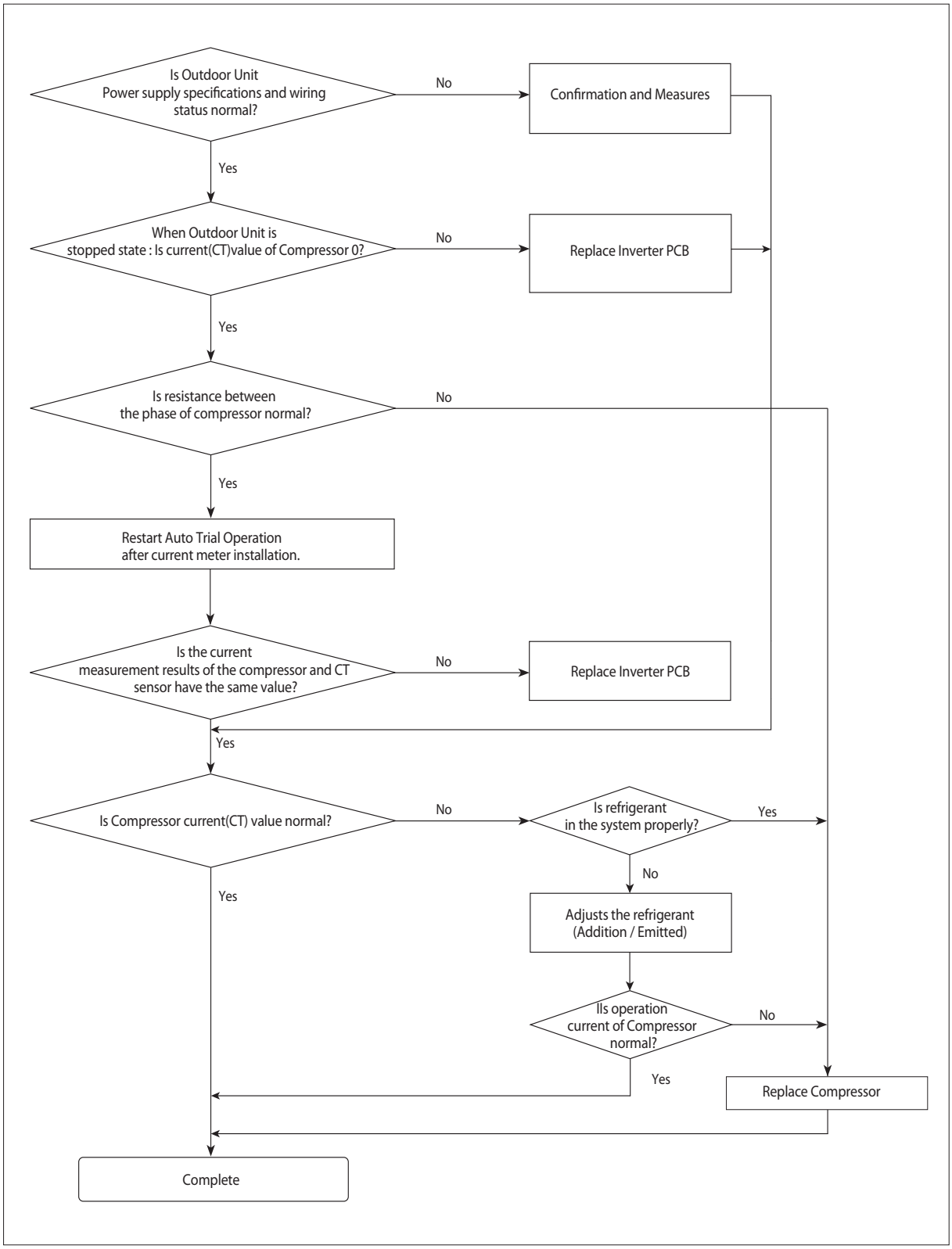
6) Abnormal operation of the Compressor

■ 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.



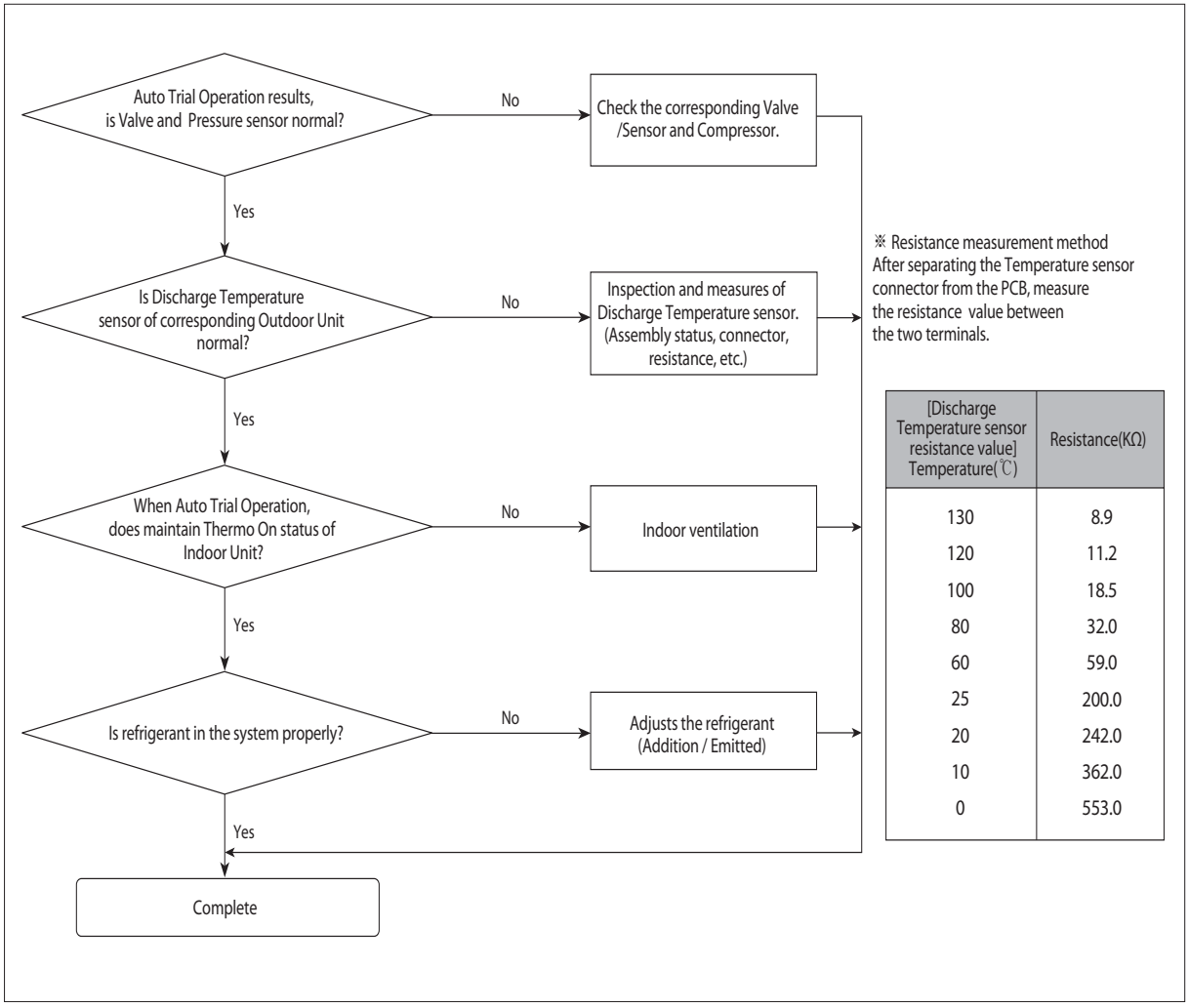
7) Cycle status

■ 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.



[Discharge Temperature sensor resistance value] Temperature(℃)	Resistance(KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200.0
20	242.0
10	362.0
0	553.0

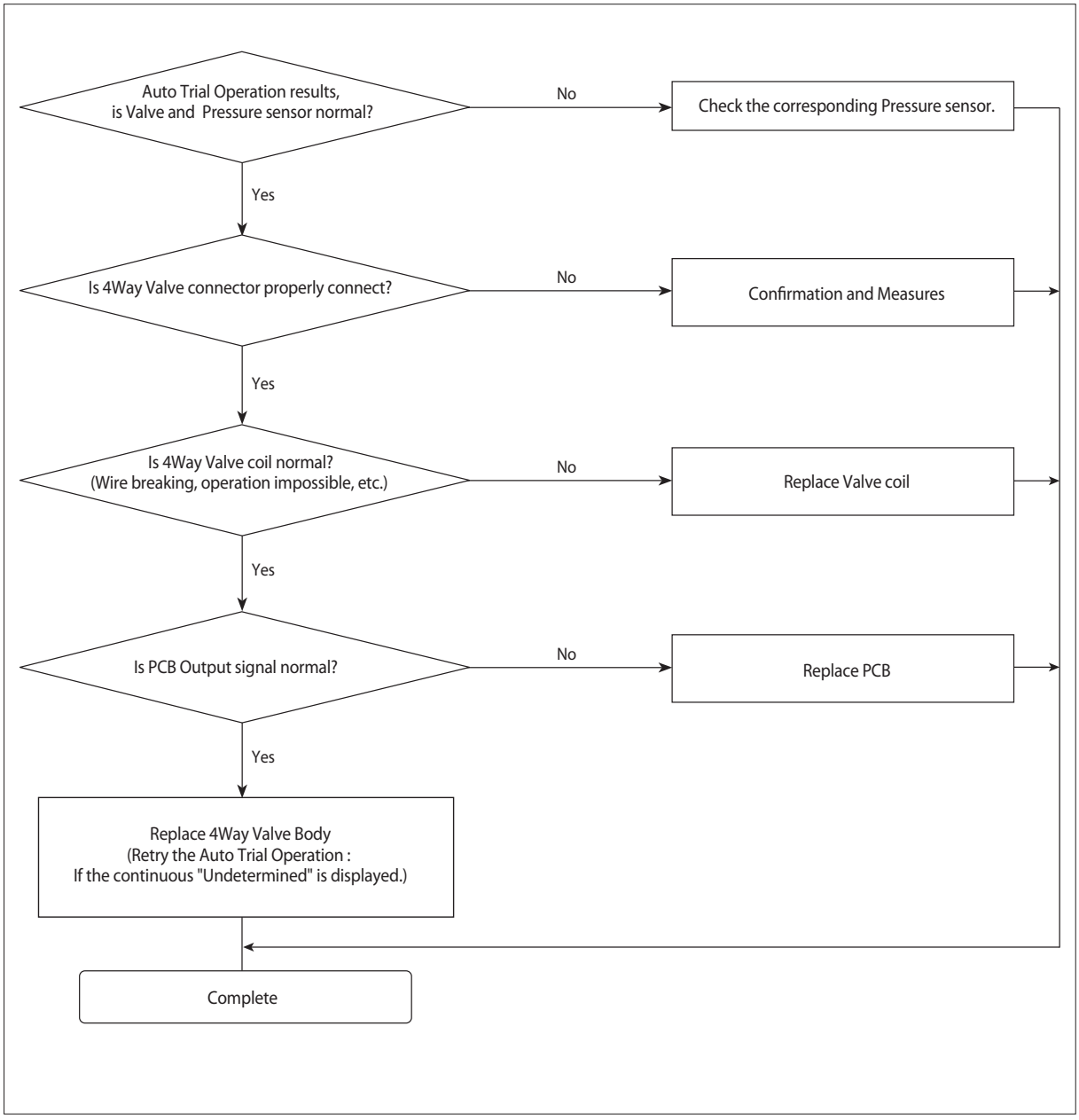
8) 4Way Valve

■ 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.



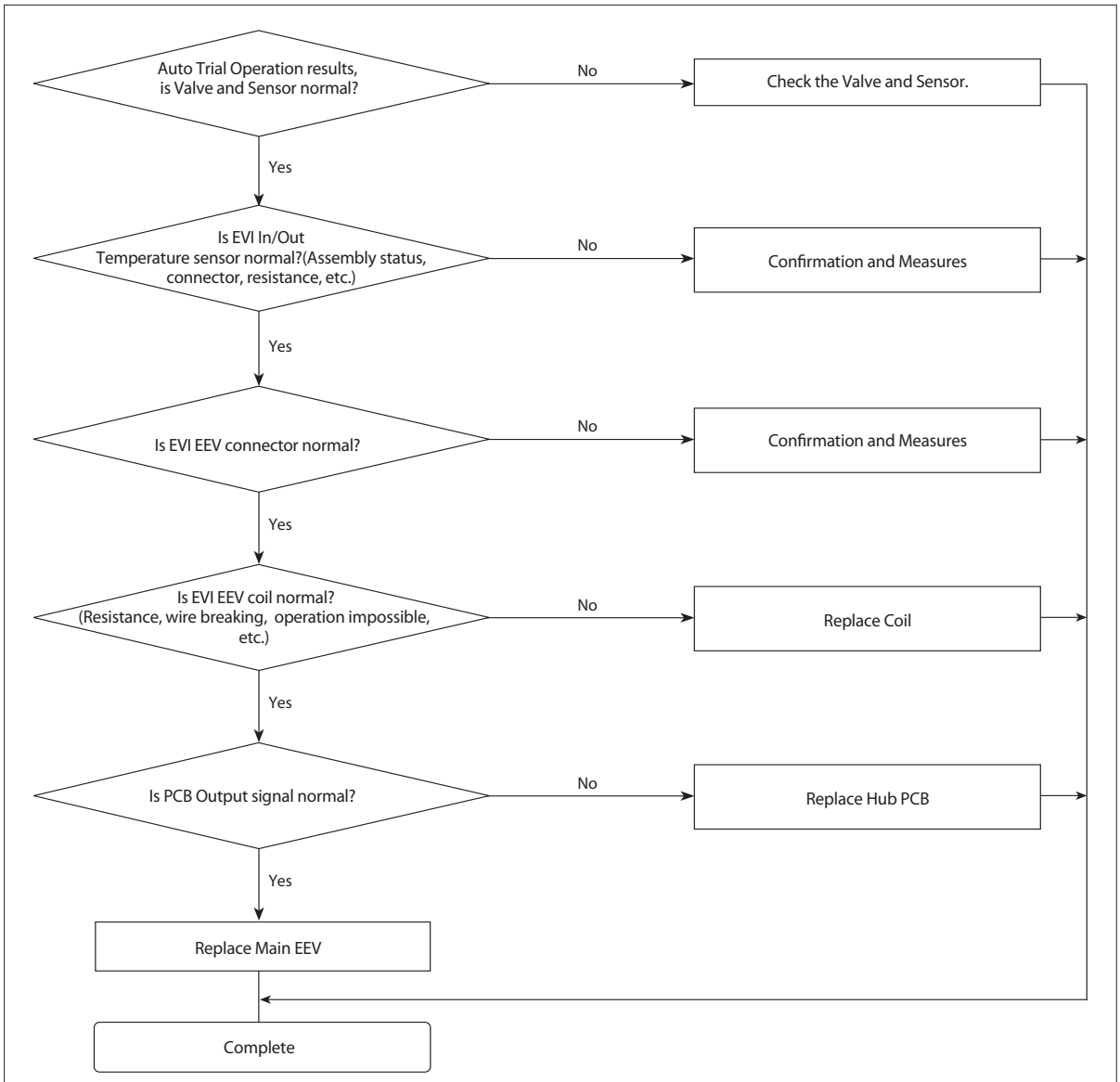
9) EVI EEV

■ Inspection item : EVI EEV of Outdoor Unit.

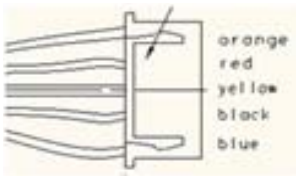
■ Error code: None (The resulting report "Undetermined")

■ 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

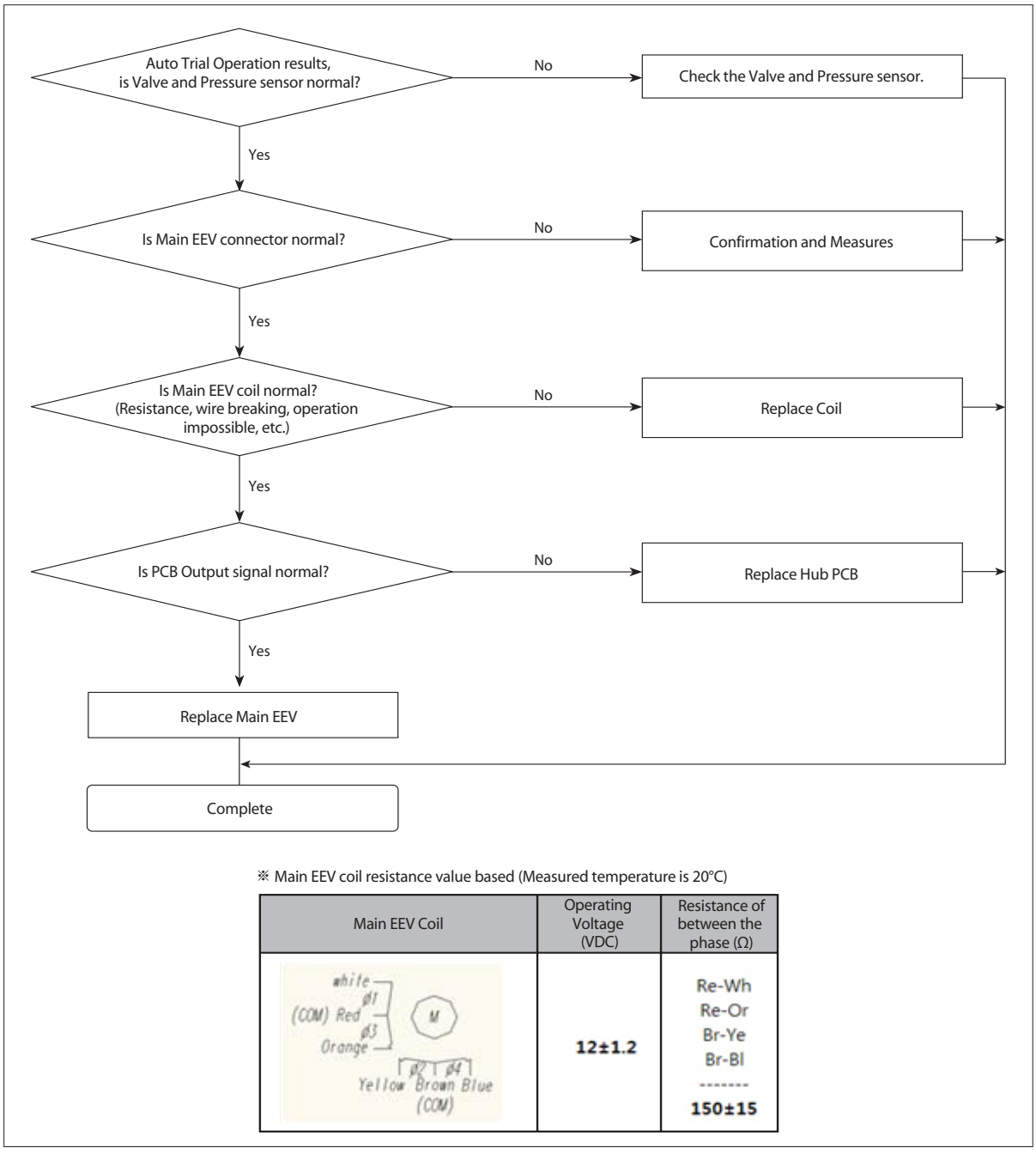
10) Main EEV

■ 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-Bl ------- 150±15

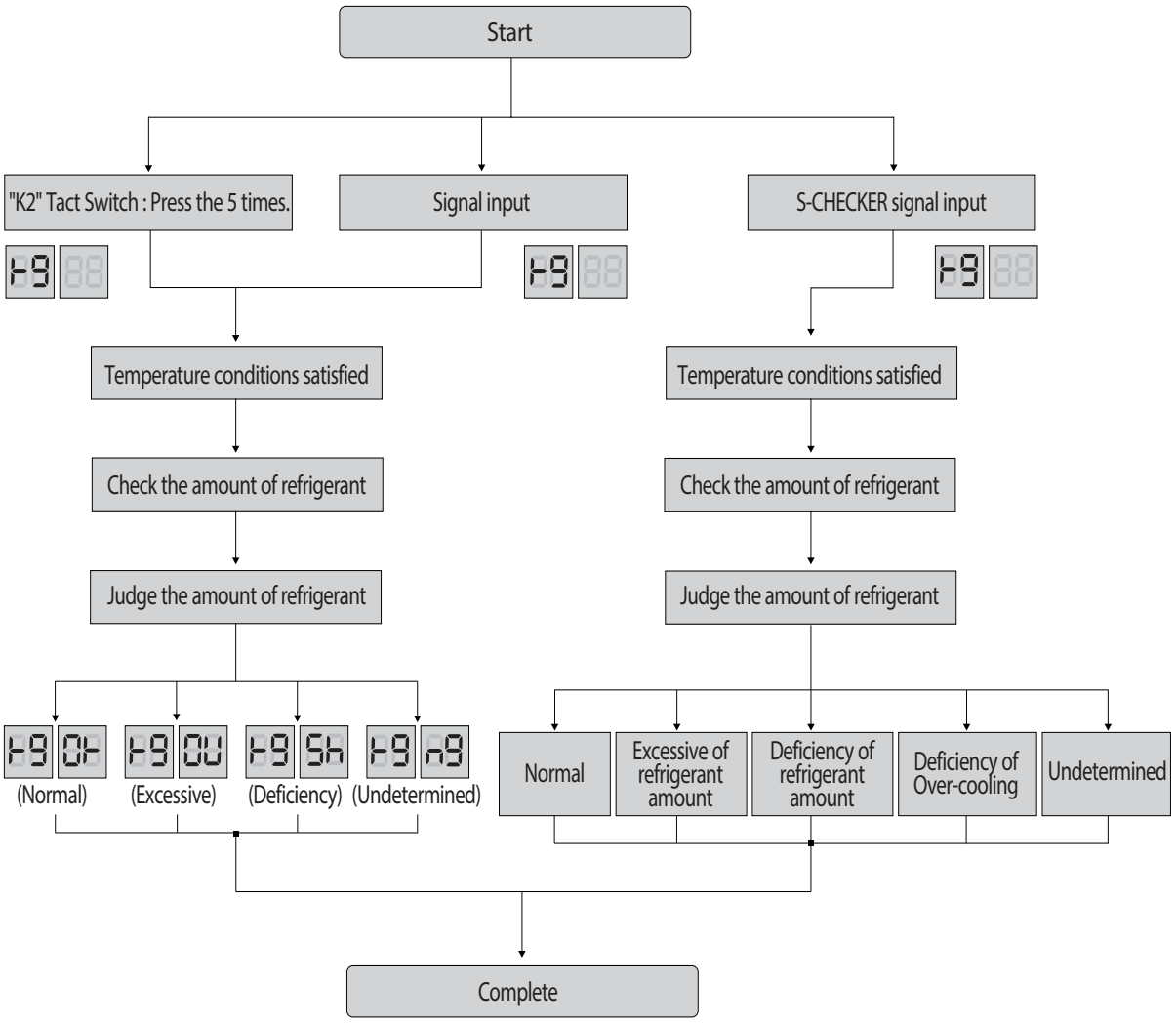
9-1-4 Auto Trial Operation Error Code

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]

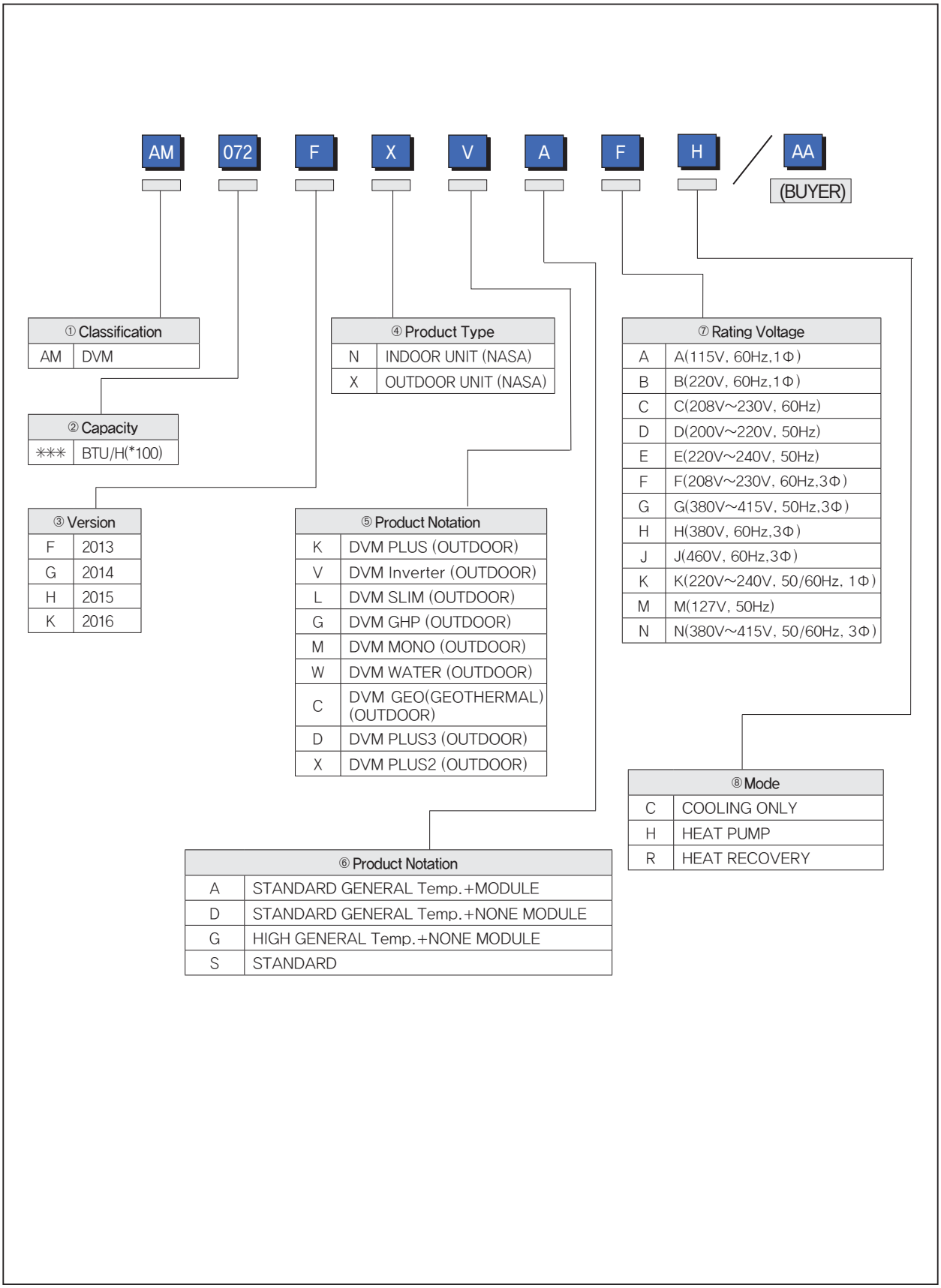
- If escape the warranty temperatures, can not get the accurate results.
  - Indoor : 68~86 ˚F
  - Outdoor : 41~109.4 ˚F
- If operation cycle is not stable, Checking the amount of refrigerant can be forced to shut down.
- If did not operation for a long time, or when running the heating operation, the 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.

10. Reference Sheet

10-1 Nomenclature



① Classification	
AM	DVM

② Capacity	
***	BTU/H(*100)

③ Version	
F	2013
G	2014
H	2015
K	2016

④ Product Type	
N	INDOOR UNIT (NASA)
X	OUTDOOR UNIT (NASA)

⑤ Product Notation	
K	DVM PLUS (OUTDOOR)
V	DVM Inverter (OUTDOOR)
L	DVM SLIM (OUTDOOR)
G	DVM GHP (OUTDOOR)
M	DVM MONO (OUTDOOR)
W	DVM WATER (OUTDOOR)
C	DVM GEO(GEOTHERMAL) (OUTDOOR)
D	DVM PLUS3 (OUTDOOR)
X	DVM PLUS2 (OUTDOOR)

⑥ Product Notation	
A	STANDARD GENERAL Temp.+MODULE
D	STANDARD GENERAL Temp.+NONE MODULE
G	HIGH GENERAL Temp.+NONE MODULE
S	STANDARD

⑦ Rating Voltage	
A	A(115V, 60Hz,1Φ)
B	B(220V, 60Hz,1Φ)
C	C(208V~230V, 60Hz)
D	D(200V~220V, 50Hz)
E	E(220V~240V, 50Hz)
F	F(208V~230V, 60Hz,3Φ)
G	G(380V~415V, 50Hz,3Φ)
H	H(380V, 60Hz,3Φ)
J	J(460V, 60Hz,3Φ)
K	K(220V~240V, 50/60Hz, 1Φ)
M	M(127V, 50Hz)
N	N(380V~415V, 50/60Hz, 3Φ)

⑧ Mode	
C	COOLING ONLY
H	HEAT PUMP
R	HEAT RECOVERY

SAMSUNG

GSPN (GLOBAL SERVICE PARTNER NETWORK)

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