SAMSUNG

ECO HEATING SYSTEM

TDM PLUS

OUTDOOR UNIT	HYDRO UNIT
Model : AE044MXTPEH	AE090MNYDEH
AE066MXTPEH	AE090MNYDGH
AE090MXTPEH	AE160MNYDEH
AE090MXTPGH	AE160MNYDGH
AE120MXTPEH	
AE120MXTPGH	
AE160MXTPEH	
AE160MXTPGH	

SERVICE Manual

ECO HEATING SYSTEM

CONTENTS

Contents

Contents

1. Precautions

1-1 Precautions for the Service

- **Use the standard parts when replacing the electric parts.**
  – Confirm the model name, rated voltage, rated current of the electric parts.

- **When repairing the equipment, connection of the harness parts must be firm and solid.**
  – A loose connection may cause noise or other malfunction.

- **When assembling and disassembling the equipment while it is laid down, lay it on soft cloth.**
  – Otherwise it may scratch the back of the exterior of the product.

- **Remove dust or dirt completely from the housing block, wiring block and service parts during repair.**
  – This helps prevent the danger of fire caused by tracking or short circuit.

- **Fasten the valve caps of service valves and charging valves of outdoor unit as much as possible using adjustable wrenches.**

- **Check the status of the components' assembly after repair service.**
  – The status must be the same as before the repair service.

1-2 Precautions related to static electricity and PL

- **The PCB power supply block is susceptible to static electricity. Therefore, care must be taken during repair or measuring while the power is on.**
  – Wear insulation gloves for PCB repair or measuring.

- **Check whether the installation location is at least two meters away from other electronic products such as TV, video, or audio.**
  – Otherwise, the video quality might be degraded or noise might be generated.

- **Do not let end users repair the products themselves.**
  – Unauthorized disassembly might cause electric shock or fire.

1-3 Precautions for the Safety

- **Do not pull any electric wires and do not touch an auxiliary power switch with a wet hand.**
  – There is a danger of electric shock or fire.
- **In case any wire or power plug has been damaged, replace it to eliminate any possible danger.**
- **Do not bend the power cord by force and do not put any heavy object on the power cord.**
  – There is a danger of electric shock or fire.
- **Do not use multi socket.**
  – There is a danger of electric shock or fire.
- **Ground the product if necessary.**
  – Be sure to ground the product if there is any danger of electric leakage due to water or moisture.
- **Be sure to turn off the auxiliary power switch or pull out the power plug during replacement or repair of electric parts.**
  – There is a danger of electric shock.
- **The installation must be done by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.**
  – Installation by an unqualified person may cause a water leakage, electric shock or fire and so on.
- **The electric work must be done by service agent or similarly qualified persons according to national wiring regulations and use only rated cable.**
  – If the capacity of the power cable is insufficient or electric work is not properly completed, electric shock or fire may occur.
- **Use only rated parts and tools.**
  – If you don't use the rated parts and tools, it can cause trouble with the air conditioner and bring about injury.
- **If any gas or impurities except R410A refrigerant come into the refrigerant pipe, serious problem may occur and it may cause injury.**
- **Leak test must be done using only Nitrogen(NO_2)gas.**

- R410A refrigerant is used for EHS.
  – When using R410A, moisture or foreign substances may affect to the capacity and reliability of the product. Safety precautions must be taken when installing the refrigerant pipe.
  – The design pressure of the unit is 4.1MPa. Select appropriate material and thickness according to the regulations.
  – R410A is a quasi-azeotrope of two refrigerants.
  Make sure to charge liquid one when adding refrigerant.
  If you charge gaseous refrigerant, it may affect the capacity and reliability of the product as a result of change formation of the refrigerant.

1-4 Precautions for handling a system containing refrigerants

All system containing refrigerants shall be removed under regional regulations prior to the disposal to prevent the potential health and environmental consequences.

- **Harmful for human body**
  – When emitted liquid refrigerant contacts human body, contacted area may get frostbite, blister or become numb.
  If refrigerant leaks in airtight area, lack of oxygen may cause suffocation. When refrigerant is heated, it may generate harmful gas.
- **Precautions for handling container**
  – Do not apply shock or heat to the refrigerant container.

1-5 Precautions for the brazing

- **Clear any dangerous or inflammable materials in surrounding environment.**
- **Make sure to empty the remaining refrigerant in the product or pipe before brazing.**
  – Brazing with the refrigerant still remaining in the product or pipe may cause poor result and generate harmful gas. Furthermore, pressure of the refrigerant may increase and cause damage to the leaking part. This may lead harmful refrigerant and oil to spurt out which can be dangerous for service personnel.
- **Use nitrogen gas to get rid of the oxide forming during brazing.**
  – Using other type of gas may cause damage to the product or the exterior.

1-6 Precautions for charging refrigerants

- **Add quantity of the refrigerant using a scale and perform a test operation with S-net.**
  – Product performance may decrease if you add excessive amount of refrigerant.
- **Do not charge refrigerants while heating the container up.**
  – The container may get damaged by the heat and result in explosions.
- **Do not operate the product without pressure switch(for product protection) and sensor.**
  – If there are any internal blockage, high refrigerant pressure increase may damage the product or exterior.

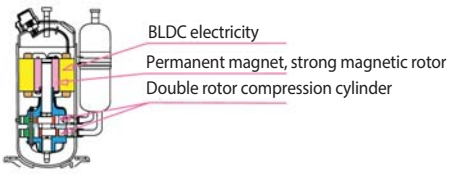
2. General Overview

2-1 Features of the System

POWER SAVING **EHS(Eco Heating System)** considers the trend in air conditioner use. It optimizes the energy efficiency of loads ranging from partial to full. It achieves an excellent energy effect for the users of the air conditioner.

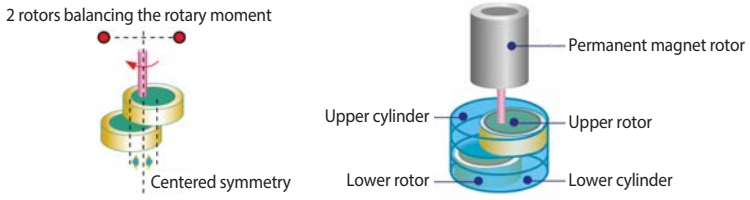
Samsung patented compressor

Samsung has been researching and developing compressors since the 70's.
It has developed power saving compressors for more than thirty years.
The **EHS(Eco Heating System)** compressor adopts a double-rotor BLDC compressor with permanent magnets made by Samsung. Electricity for the compressor rotor is obtained from a neodium-iron-boron permanent magnetic material (boron magnet can attract iron material weighing 1000 times its own weight.) It strengthens the rotary moment of the compressor to maximize the entire efficiency of the compressor.




Nd-Fe-B Neodium-Iron-Boron magnet

SAMSUNG's double-rotor compressor has the upper and lower rotors designed symmetrically.
The double rotor in symmetry can remove vibrations caused by the eccentric design of the cylinder.



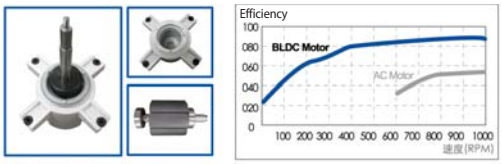
High efficiency heat exchanger

EHS(Eco Heating System) uses new multiple-teeth screw pipes with a diameter of 8 mm to improve the heat exchangeability of the pipe by **30.8%**.

The water-friendly aluminum foil in the heat exchanger uses the G-fin patent design to improve the efficiency of heat exchange by **13%**.

DC fan electricity

The **EHS(Eco Heating System)** outdoor machine uses DC fan electricity. The rotational speed of electricity is 100 RPM to 1050 RPM with step-free control. The electrical efficiency is improved by about **33%** compared to AC electricity.



2-1-1 Key features of the EHS(TDM PLUS)

Quick Heating by TDM Technology

Floor heating is well known as the optimal heating option for indoor thermal comfort.
However, it takes 4~8 hours to heat up the room after it is turned on. Samsung EHS TDM technology quickens that process by blowing hot air along with floor heating to warm up the room.

☐ **Integrated Heating & Cooling system**

Plate Heat exchanger is a integral part in heating & cooling system. For user's convenience, PHE is integrated into the system. This concept will help space saving and lower costs for pipe line reduction.

☐ **Running Costs-Reduction of Up to 33.5%**

Samsung EHS, known for its world class efficiency (12kW floor heating system with 4.63), can reduce 33.5% of your running costs as compared to a gas boiler.

Price and Space Reduction of Up to 50%

With an all-in-one outdoor unit capable of both air-to-water and air-to-air functions, Samsung EHS saves you in terms of the low initial purchase price & installation fee as well as the space needed for an extra outdoor unit.

☐ **High Performance at Low Temperature**

Samsung EHS is made up of an inverter compressor optimally operated according to the outdoor temperature, offering heating performance of 90% at -10°C and reliable frost protection at -25°C.

☐ **Heat pump operating range of DHW : -25 ~ 35 °C**

At the temperature -25 °C ~ -20 °C, operation is available but capacity cannot be guaranteed.

2-1-2 Changes in comparison to basic model

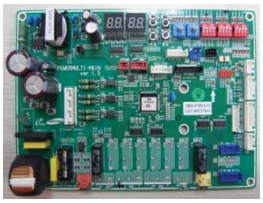
■ AE044/066MXTP**

Changed part	Changed item and feature	RD060/070/080PHX**	AE044/066MXTP**
Inverter PBA	Change Main PBA - Non-NASA → NASA		
Sub-display PBA	Sub-display PBA - Non-NASA → NASA		
EMI PBA	Change EMI PBA - Improves EMI characteristic.		-
Reactor	-		

■ AE090MXTP**

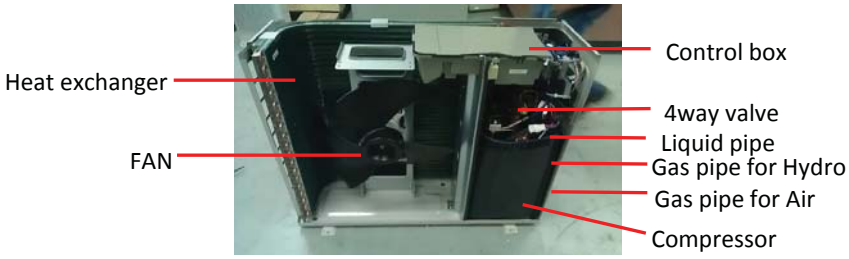
Changed part	Changed item and feature	RD060/070/080PHX**	AE090MXTPE*	AE090MXTPG*
Main PBA	Change Main PBA - Non-NASA → NASA			
Sub-display PBA / Inverter PBA	Inverter PBA - Non-NASA → NASA			
EMI PBA	Change EMI PBA - Improves EMI characteristic.			
Reactor	-			

■ **AE120/160MXTP****

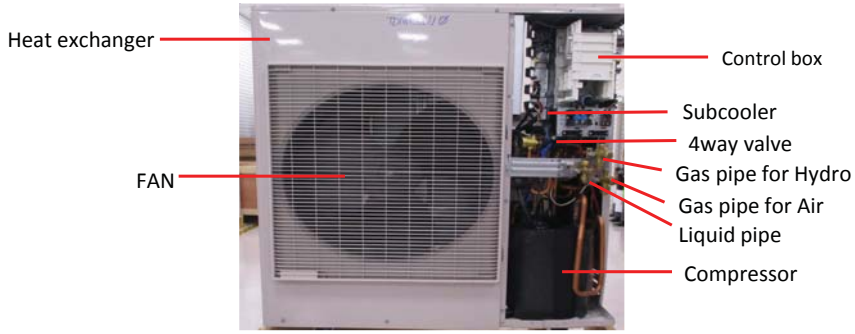
Changed part	Changed item and feature	RD060/070/080PHX**	AE120/160MXTPE*	AE120/160MXTPG*
Main PBA	Change Main PBA - Non-NASA → NASA			
Inverter PBA	Sub-display PBA - Non-NASA → NASA			
EMI PBA	Change EMI PBA - Improves EMI characteristic.			
Reactor	-			

2-1-3 Structure of product

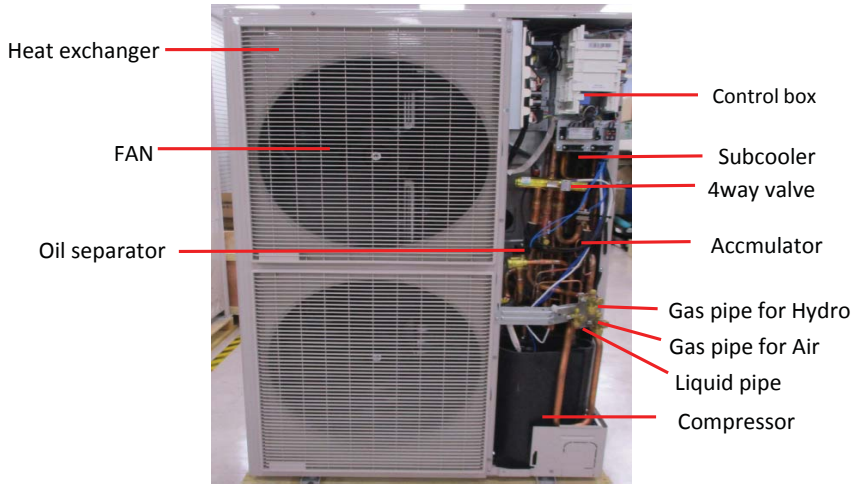
AE044/066MXTP**



AE090MXTP**



AE120/160MXTP**



2-2 Model names of Indoor/Outdoor Unit

2-2-1 Indoor Unit

Model	Capacity (kW)						
	2.2	2.8	3.6	5.6	7.1	9.0	16.0
Hydro unit							
Slim duct							
MSP duct							
RAC(Not include EEV)							
Console							

1. Make sure to use an indoor unit that is compatible with EHS TDM PLUS.
2. Indoor units can be connected within the range indicated in following table.
3. If the total capacity of the connected indoor units exceeds the indicated maximum capacity, cooling and heating capacity of the indoor unit may decrease.
4. Total capacity of the connected indoor units can be allowed from 50% to 100% of the total outdoor unit capacity.
   0.5 x Σ (Outdoor unit capacity) ≤ Total capacity of the connected indoor unit ≤ 1.0 x Σ (Outdoor unit capacity)
5. You can connect maximum 7 indoor units to the outdoor unit.
   Maximum quantity of connectable indoor unit is set to 7 since outdoor unit only support up to 7 communication address. Indoor unit address can be assigned from 0~7.

2-3 Combination and Connection Ratio limitation

Outdoor unit	Cooling capacity (kW)	Maximum allowable connections for indoor units (Not including Hydro-A2W)	Total capacity of connected indoor units (kW)
AE044MXTPEH	4.4	2	2.2~4.4
AE066MXTPEH	6.6	3	3.3~6.6
AE090MXTPEH	9	4	4.5~9.0
AE120MXTPEH	12	5	6.0~12.0
AE160MXTPEH	16	7	8.0~16.0
AE090MXTPGH	9	4	4.5~9.0
AE120MXTPGH	12	5	6.0~12.0
AE160MXTPGH	16	7	8.0~16.0

- Available for max 7 indoor units.
- When considering the system capacity of allowable indoor units, follow the table above.

2-4 Components and Feature

Model	kW	Compressor (Inverter Rotary)	Fan motor	Electronic Expansion Valve	High Pressure Sensor	Low Pressure Sensor	High Pressure Switch	Check valves	Solenoid valves
AE044MXTPEH	4.4	1	1 x 95W	1	1	1	-	-	2
AE066MXTPEH	6.6	1	1 x 95W	1	1	1	-	-	2
AE090MXTP*H	9.0	1	1 x 125W	2	1	1	1	1	2
AE120MXTP*H	12.0	1	2 x 125W	2	1	1	1	1	2
AE160MXTP*H	16.0	1	2 x 125W	2	1	1	1	1	2

2-5 Product Specifications

2-5-1 Outdoor Unit

Type					EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)	EHS TDM PLUS(OUTDOOR UNIT)
Model Name					**AE044MXTPEH/EU**	**AE066MXTPEH/EU**	**AE090MXTPEH/EU**	**AE090MXTPGH/EU**	**AE120MXTPEH/EU**	**AE120MXTPGH/EU**	**AE160MXTPEH/EU**	**AE160MXTPGH/EU**
System	Mode			-	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)
	A2W Condition #1. (A7/W35) *1	Capacity	Heating	W	4,400	6,600	9,000	9,000	12,000	12,000	16,000	16,000
				Btu/h	15,000	22,500	30,700	30,700	40,900	40,900	54,600	54,600
			Cooling	W	5,100	6,700	8,000	8,000	12,000	12,000	14,500	14,500
				Btu/h	17,400	22,900	27,300	27,300	40,900	40,900	49,500	49,500
		Power Input	Heating	W	930	1,470	2,120	2,120	2,720	2,720	3,950	3,950
			Cooling		1,030	1,480	1,850	1,860	2,900	2,900	3,840	3,840
		COP (Heating)		W/W	4.73	4.49	4.25	4.25	4.41	4.41	4.05	4.05
		EER (Cooling)		W/W	4.95	4.53	4.32	4.30	4.14	4.14	3.78	3.78
	A2W Condition #2. (A7/W35) *2	Capacity	Heating	W	4,000	6,100	8,000	8,300	11,200	11,200	15,000	15,000
				Btu/h	13,600	20,800	27,300	28,300	38,200	38,200	51,200	51,200
			Cooling	W	3,500	4,500	5,600	5,700	8,600	8,600	10,300	10,300
				Btu/h	11,900	15,400	19,100	19,400	29,300	29,300	35,100	35,100
		Power Input	Heating	W	1,160	1,830	2,380	2,500	3,300	3,300	4,710	4,710
			Cooling		1,030	1,420	1,790	1,750	2,790	2,790	3,590	3,590
		COP	Heating	W/W	3.45	3.33	3.36	3.32	3.39	3.39	3.18	3.18
		EER	Cooling	W/W	3.40	3.17	3.13	3.26	3.08	3.08	2.87	2.87
	A2/W35 *3	Capacity	Heating	W	4,000	5,800	7,700	7,700	11,000	11,000	13,700	13,700
		COP		W/W	3.54	3.31	3.47	3.47	3.41	3.41	3.19	3.19
	A-7/W35 *3	Capacity	Heating	W	3,900	5,700	7,400	7,400	10,600	10,600	14,000	14,000
		COP		W/W	2.81	2.79	2.79	2.79	2.97	2.97	2.73	2.73
	Field Wiring	MCA		A	18.0	20.0	22.0	10.0	28.0	10.0	32.0	12.0
		MFA		A	25.0	25.0	27.5	16.1	35.0	16.1	40.0	16.1
	Water Connections	Water Flow Rate	Min/Std/Max	LPM	7.0/12.7/42.0	7.0/19.0/42.0	7.0/26.0/42.0	7.0/26.0/42.0	12.0/34.6/58.0	12.0/34.6/58.0	12.0/46.2/58.0	12.0/46.2/58.0
	Refrigerant	Piping Connections	Liquid pipe	Φ, mm (inch)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)
			Gas pipe(A2W)	Φ, mm (inch)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)
			Gas pipe(A2A)	Φ, mm (inch)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)	15.88 (5/8)
		Piping length (ODU-IDU)	Max.[Equiv.]	m	30	30	30	30	70	70	70	70
		Level difference (IDU-IDU)	Max.	m	20	20	20	20	30	30	30	30
		Chargeless Length		m	10	10	10	10	10	10	10	10
		Type		-	R410A	R410A	R410A	R410A	R410A	R410A	R410A	R410A
		Factory Charging		kg	2.6	2.6	2.4	2.4	3.5	3.5	3.5	3.5
		Control Method		-	EEV	EEV	EEV	EEV	EEV	EEV	EEV	EEV
Outdoor Unit	Power Supply			Φ, #, V, Hz	1,2,220-240,50	1,2,220-240,50	1,2,220-240,50	3,4,380-415,50	1,2,220-240,50	3,4,380-415,50	1,2,220-240,50	3,4,380-415,50
	Compressor	Type		-	Rotary Comp	Rotary Comp	Rotary Comp	Rotary Comp	Rotary Comp	Rotary Comp	Rotary Comp	Rotary Comp
	Fan	Type		-	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan	Propeller Fan
		Discharge direction			Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal	Horizontal
		Air Flow Rate		m³/min	45	47	67	67	103	103	123	123
		Quantity		EA	1	1	1	1	2	2	2	2
	Sound	Sound Pressure	Heating	dB(A)	47	48	51	51	52	52	55	55
			Cooling	dB(A)	46	47	50	50	51	51	54	54
		Sound Power		dB(A)	65	67	69	69	70	70	73	73
	External Dimension	Net Weight		kg	61	61	74	76	107	107	107	107
		Shipping Weight		kg	64.5	64.5	82	84	115	115	115	115
		Net Dimensions (WxHxD)		mm	880 x 793 x 310	880 x 793 x 310	940 x 998 x 330	940 x 998 x 330	940 x 1,420 x 330	940 x 1,420 x 330	940 x 1,420 x 330	940 x 1,420 x 330
		Shipping Dimensions (WxHxD)		mm	1,023 x 911 x 413	1,023 x 911 x 413	995 x 1,178 x 426	995 x 1,178 x 426	995 x 1,598 x 426	995 x 1,598 x 426	995 x 1,598 x 426	995 x 1,598 x 426
	Operating Temp. Range	A2W	Heating	℃	-25~35	-25~35	-25~35	-25~35	-25~35	-25~35	-25~35	-25~35
			Cooling	℃	10~46	10~46	10~46	10~46	10~46	10~46	10~46	10~46
			D.Hot Water	℃	-25~43	-25~43	-25~43	-25~43	-25~43	-25~43	-25~43	-25~43
		A2A	Heating	℃	-25~24	-25~24	-25~24	-25~24	-25~24	-25~24	-25~24	-25~24
			Cooling	℃	10~46	10~46	10~46	10~46	10~46	10~46	10~46	10~46

NOTE
* Specifications may be subject to change without prior notice.
*1) A2W Condition #1 : (Heating) Water In/Out 30 ℃/35 ℃, Outdoor Air 7 ℃ [DB]/6 ℃ [WB]; (Cooling) Water In/Out 23 ℃/18 ℃, Outdoor Air 35 ℃ [DB].
*2) A2W Condition #2 : (Heating) Water In/Out 40 ℃/45 ℃, Outdoor Air 7 ℃ [DB]/6 ℃ [WB]; (Cooling) Water In/Out 12 ℃/7 ℃, Outdoor Air 35 ℃ [DB].
3) A2W Condition : (A2W35) Water In/Out -/35 ℃, Outdoor Air 2 ℃ [DB]/1 ℃ [WB]; (A-7/W35) Water In/Out -/35 ℃, Outdoor Air -7 ℃ [DB]/-(Peak Capacity)
4) Select wire size based on the value of MCA
5) Sound pressure level is obtained in an anechoic room.
- Sound pressure level is a relative value, depending on the distance and acoustic environment.
- Sound pressure level may differ depending on operation condition.
- dBA = A-weighted sound pressure level
- Reference acoustic pressure 0 dB = 20uPa

6) Sound power level is an absolute value that a sound source generates.
- dBA = A-weighted sound power level
- Reference power : 1pW
- Measured according to ISO 3741

7) These products contain R410A (GWP=2,088) which is fluorinated greenhouse gas.

2-5 Product Specifications (cont.)

2-5-2 Hydro Unit

Type				EHS TDM PLUS (HYDRO UNIT)	EHS TDM PLUS (HYDRO UNIT)	EHS TDM PLUS (HYDRO UNIT)	EHS TDM PLUS (HYDRO UNIT)
Model Name				**AE090MNYDEH/EU**	**AE090MNYDGH/EU**	**AE160MNYDEH/EU**	**AE160MNYDGH/EU**
Mode			-	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)	Heat Pump (A2W)
Power Supply			Φ, #, V, Hz	1,2,220-240,50	3,4,380-415,50	1,2,220-240,50	3,4,380-415,50
Capacity	Heating		W	4,400~9,000	9,000	12,000~16,000	12,000~16,000
			Btu/h	15,000~30,700	30,700	40,900~54,600	40,900~54,600
	Cooling		W	5,100~8,000	8,000	12,000~14,500	12,000~14,500
			Btu/h	17,400~27,300	27,300	40,900~49,500	40,900~49,500
Water Connections	Water Flow Rate	Min/Std/Max	LPM	7/-/42	7/-/42	12/-/58	12/-/58
	Water Pressure	Max.	bar	Max 3.0	Max 3.0	Max 3.0	Max 3.0
	Water Pipe	Inlet	Φ, inch	BSPP 1+1/4"	BSPP 1+1/4"	BSPP 1+1/4"	BSPP 1+1/4"
		Outlet	Φ, inch	BSPP 1+1/4"	BSPP 1+1/4"	BSPP 1+1/4"	BSPP 1+1/4"
	Leaving Water Temperature	Heating	°C	15~55 (H/P : 25~55)	15~55 (H/P : 25~55)	15~55 (H/P : 25~55)	15~55 (H/P : 25~55)
		Cooling	°C	5~25	5~25	5~25	5~25
Ref. piping Connections	Liquid pipe		Φ, mm (inch)	6.35 (1/4")	6.35 (1/4")	9.52 (3/8")	9.52 (3/8")
	Gas pipe		Φ, mm (inch)	15.88 (5/8")	15.88 (5/8")	15.88 (5/8")	15.88 (5/8")
Water Pump	Type		-	Centrifurugal (UPM3 25-7.5)	Centrifurugal (UPM3 25-7.5)	Centrifurugal (Stratos 25 1-9)	Centrifurugal (Stratos 25 1-9)
	Motor Input		W	60	60	90	90
	Number of Unit		EA	1	1	1	1
Flow Switch	Type		-	Magnetic, Decreasing	Magnetic, Decreasing	Magnetic, Decreasing	Magnetic, Decreasing
	Min. flow rates		LPM	7 ± 1.5	7 ± 1.5	12 ± 1.5	12 ± 1.5
Electric Expantion Vavle			-	EDM Φ3.2	EDM Φ3.2	EDM Φ4.0	EDM Φ4.0
Electric Heater			W	4,000	6,000	6,000	6,000
Expansion Vessel			Liter	8	8	8	8
Pressure Relief Valve			bar	2.9	2.9	2.9	2.9
Air Purge Valve			Φ, inch	BSPP male 3/8"	BSPP male 3/8"	BSPP male 3/8"	BSPP male 3/8"
Service Valve			Φ, inch	BSPP male 1 1/4"	BSPP male 1 1/4"	BSPP male 1 1/4"	BSPP male 1 1/4"
Sound	Sound Pressure	Heating	dB(A)	31	31	38	38
		Cooling	dB(A)	31	31	38	38
	Sound Power		dB	48	48	55	55
External Dimension	Net Weight		kg	45.5	46.5	46.5	46.5
	Shipping Weight		kg	55.0	56.0	56.0	56.0
	Net Dimensions (WxHxD)		mm	510 x 850 x 315	510 x 850 x 315	510 x 850 x 315	510 x 850 x 315
	Shipping Dimensions (WxHxD)		mm	564 x 1,024 x 412	564 x 1,024 x 412	564 x 1,024 x 412	564 x 1,024 x 412

NOTE
* Specifications may be subject to change without prior notice.

2-5-3 Option code of Hydro Unit

Capa.	Model name NASA 신규	Set in Factory
9.0kW	AE090MNYDEH/EU	0 1 3 9 0 0 1 0 0 0 0 0 2 0 0 0 0 0 3 2 0 0 0 0
16.0kW	AE160MNYDEH/EU	0 1 3 9 0 0 1 0 0 0 0 0 2 0 0 0 0 0 3 2 0 0 0 0
9.0kW	AE090MNYDGH/EU	0 1 3 9 0 0 1 1 0 0 0 0 2 0 0 0 0 0 3 2 0 0 0 0
16.0kW	AE160MNYDGH/EU	0 1 3 9 0 0 1 1 0 0 0 0 2 0 0 0 0 0 3 2 0 0 0 0

Capa.	Model name NASA 신규	Install Code
9.0kW	AE090MNYDEH/EU	0 2 0 0 1 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
16.0kW	AE160MNYDEH/EU	0 2 0 0 1 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
9.0kW	AE090MNYDGH/EU	0 2 0 0 1 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
16.0kW	AE160MNYDGH/EU	0 2 0 0 1 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0

Capa.	Model name NASA 신규	Cycle Code
9.0kW	AE090MNYDEH/EU	0 3 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
16.0kW	AE160MNYDEH/EU	0 3 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
9.0kW	AE090MNYDGH/EU	0 3 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
16.0kW	AE160MNYDGH/EU	0 3 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0

Capa.	Model name NASA 신규	Install Code2
9.0kW	AE090MNYDEH/EU	0 5 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
16.0kW	AE160MNYDEH/EU	0 5 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
9.0kW	AE090MNYDGH/EU	0 5 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0
16.0kW	AE160MNYDGH/EU	0 5 0 0 0 0 - 1 0 0 0 0 0 - 2 0 0 0 0 0 - 3 0 0 0 0 0

2-6 Accessory and Option Specifications

2-6-1 Controller

Classification	Product	Model	Image	Remark	Using
Centralized Control System	DMS 2.5	MIM-D01AN			DVM, CAC, EHS
	On/off Controller	MCM-A202DN			DVM, CAC, EHS
	Touch Centralized Controller	MCM-A300N			DVM, CAC, EHS
Individual Control System	Wired Remote Controller	MWR-WW00N			DVM , EHS
	Wired Remote Controller	MWR-WE10N			DVM, CAC, EHS
	Wireless Remote Controller	MR-EH00			
Installation /Test run Solution	S-Converter	MIM-C02N			DVM, CAC, EHS
	S-NET Pro2	-	-		DVM, CAC, EHS
Others	External Room Sensor	MRW-TA			DVM, CAC, EHS
	Wi-Fi Kit	MIM-H03N			DVM, CAC, EHS

2-6-2 Piping

Product	Image	Model	Remark
Y-Joint		MXJ-YA1509M	15.0 kW and below
EEV KIT		MEV-E24SA	1 Indoor
		MEV-E32SA	
		MXD-E24K132A	2 Indoor
		MXD-E24K200A	
		MXD-E32K200A	
		MXD-E24K232A	3 Indoor
		MXD-E24K300A	
		MXD-E32K224A	
		MXD-E32K300A	

2-6 Accessory and Option Specifications (cont.)

2-6-3 Indoor

Product	Image	Model	Remark
External room sensor		MRW-TA	Cassette, Wall-mount, Ceiling, Duct, Console
Drain Pump		MDP-M075SGU1D	MSP Duct (9.0 / 11.2 kW)
		MDP-M075SGU3D	MSP Duct (5.6 / 7.1 kW)
		MDP-E075SEE3D	Silm Duct (2.0~14.0 kW)
		MDP-G075SP	Duct S (External, All Capacities)
		MDP-G075SQ	Duct S (Internal, 3.5 kW~14kW)

3. Disassembly and Reassembly

3-1 Necessary Tools

Refrigerant pipe installation

Refrigerant pipe work

- The length of refrigerant pipe should be as short as possible and the height difference between an indoor and outdoor unit should be minimized.
- Piping work must be done within allowable piping length, height difference, and the allowable length after branching.
- The pressure of the R-410A is high. Use only certified refrigerant pipe and follow the installation method.
- After installing the pipes, calculate the total length of the pipe to check if additional refrigerant is needed. When you need to charge the additional refrigerant, make sure to use R-410A refrigerant.
- Use clean refrigerant pipe and there shouldn't be any harmful ion, oxide, dust, iron content or moisture inside pipe.
- Use tools and accessories that fit on R-410A only.

<table>
<tr><th>Tool</th><th colspan="2">Installation process/purpose</th><th>Compatibility with conventional tool</th></tr>
<tr><td>Pipe cutter</td><td rowspan="5">Refrigerant pipe installation</td><td>Pipe cutting</td><td rowspan="2">Compatible</td></tr>
<tr><td>Flaring tool</td><td>Pipe flaring</td></tr>
<tr><td>Refrigerant machine oil</td><td>Apply refrigerant oil on flared part</td><td>Exclusive ether oil, ester oil, alkali benzene oil or synthetic oil</td></tr>
<tr><td>Torque wrench</td><td>Connect flare nut with pipe</td><td rowspan="4">Compatible</td></tr>
<tr><td>Pipe bender</td><td>Pipe bending</td></tr>
<tr><td>Nitrogen gas</td><td rowspan="2">Air tightness test</td><td>Prevent oxidation within the pipe</td></tr>
<tr><td>Welder</td><td>Pipe welding</td></tr>
<tr><td>Manifold gage</td><td rowspan="2">Air tightness test ~ additional refrigerant charging</td><td rowspan="2">Vacuuming, charging refrigerant and checking operation</td><td>Need exclusive one to prevent mixture of R-22 refrigerant oil use and also the measurement is not available due to high pressure</td></tr>
<tr><td>Refrigerant charging hose</td><td>Need exclusive one since there is risk of refrigerant leakage or inflow of impurities</td></tr>
<tr><td>Vacuum pump</td><td colspan="2">Pipe drying</td><td>Compatible (Use products which contain the check valve to prevent the oil from flowing backward into the outdoor unit.)
Use the one that can be vacuumed up to -100.7kpa(5Torr).</td></tr>
<tr><td>Scale for refrigerant charging</td><td colspan="2">Refrigerant charging</td><td>Compatible</td></tr>
<tr><td>Gas leak detector</td><td colspan="2">Gas leak test</td><td>Need exclusive one. (Ones used for R-134a is compatible)</td></tr>
<tr><td>Flare nut</td><td colspan="3">Must use the flare nut equipped with the product.
Refrigerant leakage may occur when the conventional flare nut for R-22 is used.</td></tr>
</table>

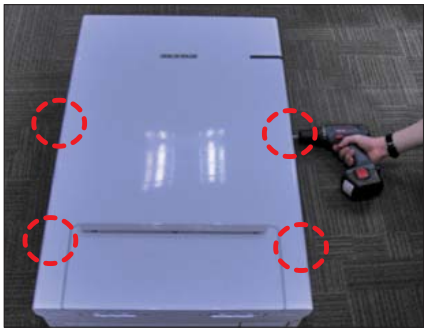
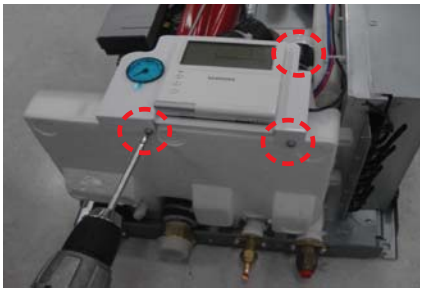
■ Hand Tool sets

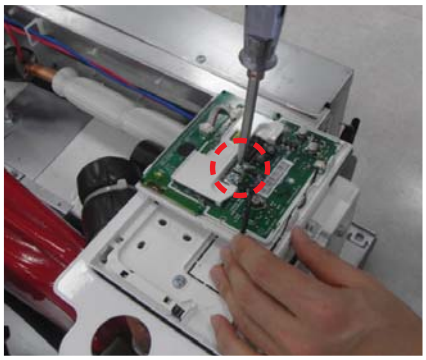
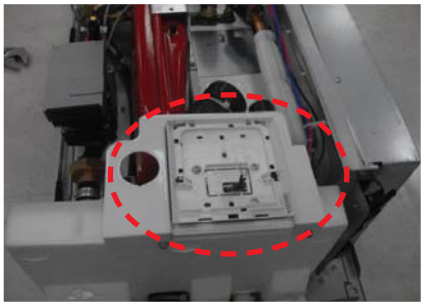
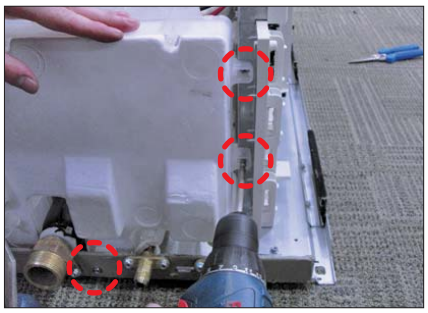
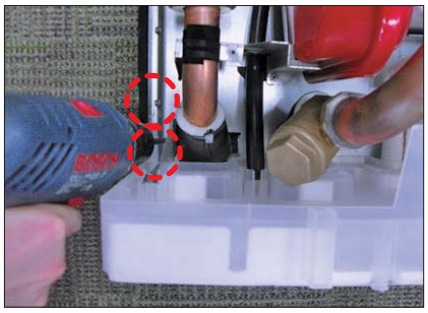
Item	Remark
+Screw Driver	
Adjustable wrench	
–Screw Driver	
Nipper	
Electric Motion Driver	
L-Wrench	
Torque Lench	
Latchet Lench	

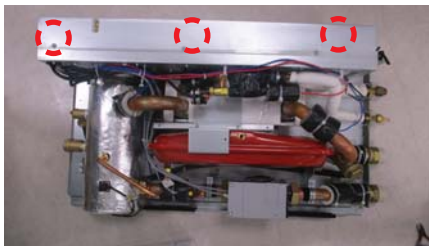
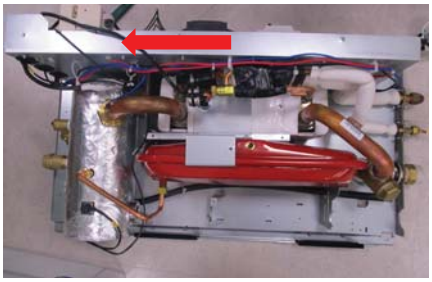
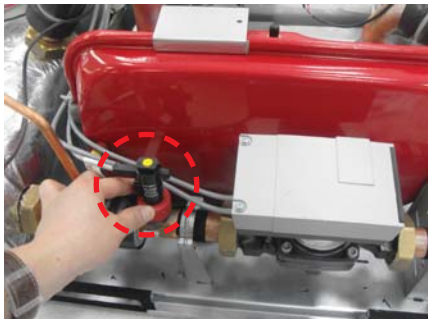
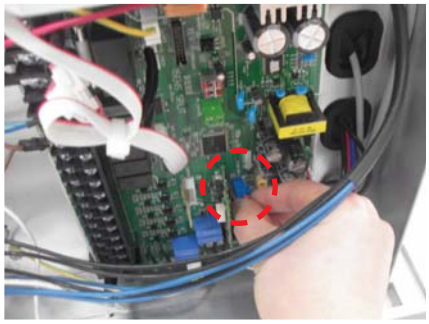
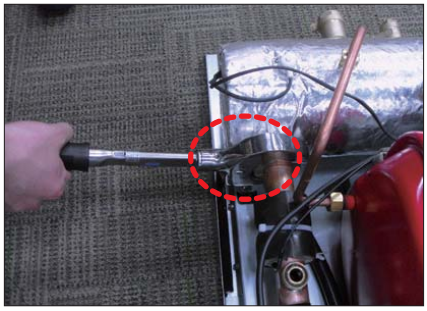
3-2-1 Hydro Unit

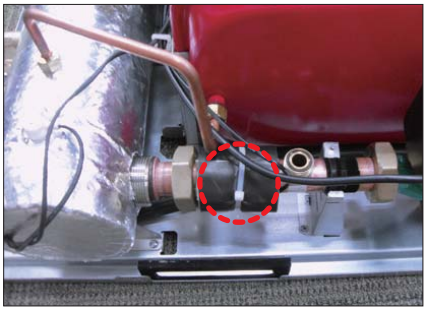
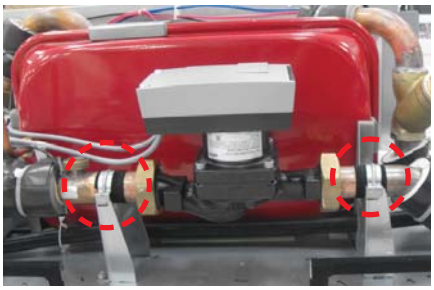
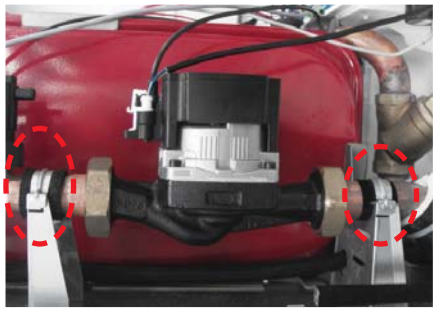
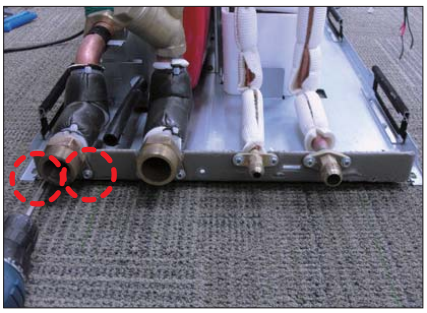
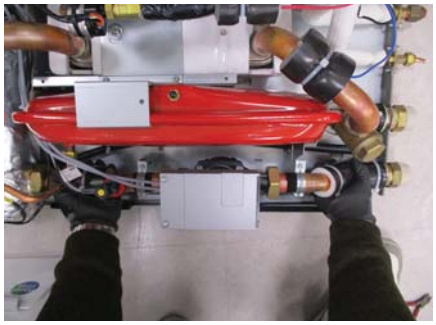
■ AE160MNYD✳/AE090MNYD✳

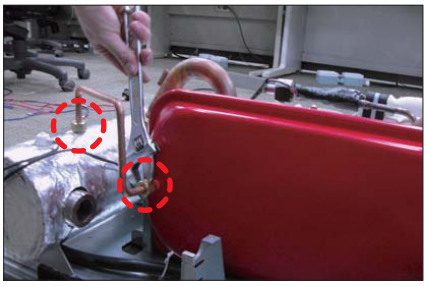
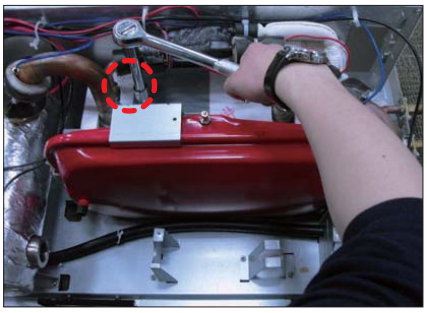
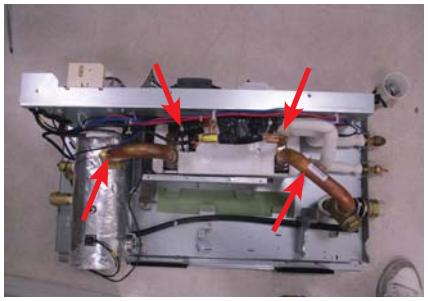
Be sure that the power switch is in the OFF and the power source cord shall be unplugged prior to disassembly and reassembly works.

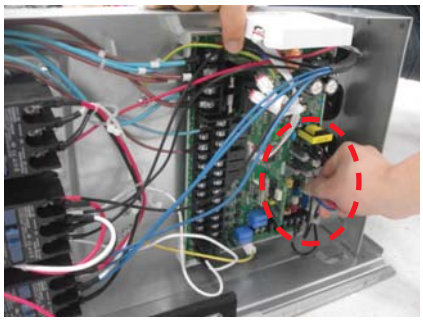
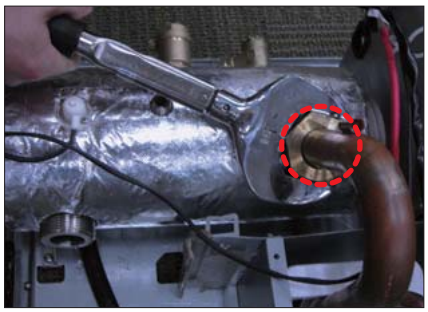
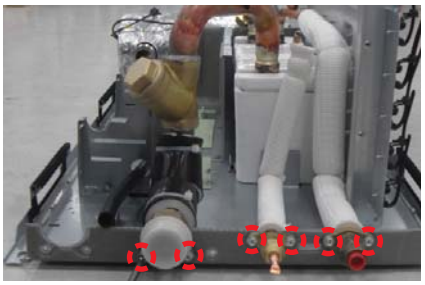
No	Parts	Procedure	Remark
1	Panel	1) Remove 4 cover screws from the Hydro Unit. (Use + Screw Driver)	
2	Controller & Manometer	1) Remove 3 screws from it. (Use + Screw Driver)	
		2) Remove pressure sensor by adjustable wrench. (Use adjustable wrench-230kgf·cm)	
		3) Pull the manometer out.	
		4) Push the 2 hooks of cover.	
		5) Pull the bottom of remocon body up.	

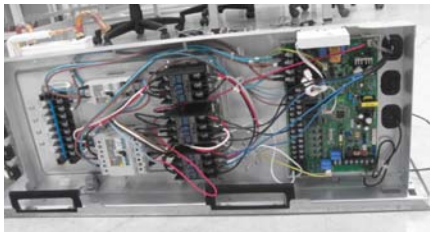
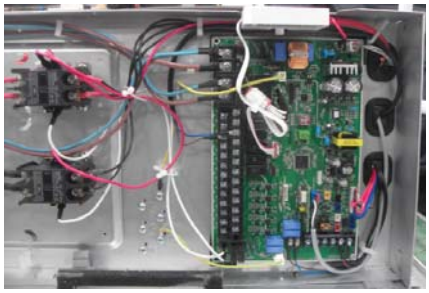
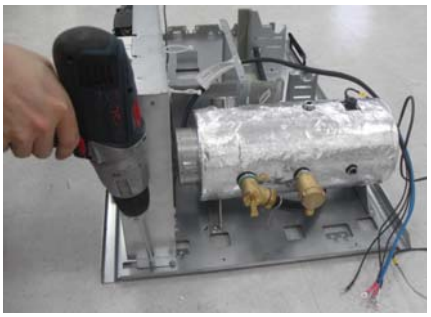
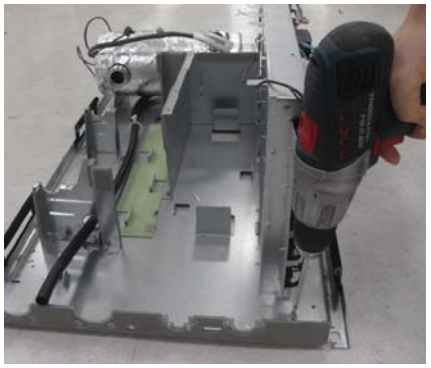
No	Parts	Procedure	Remark
		5) Remove the connector from the PCB board.	
		6) Remove the upper case of the controller.	
			
		7) Remove 5 screws. Set a side the drain pan and hydro unit.	

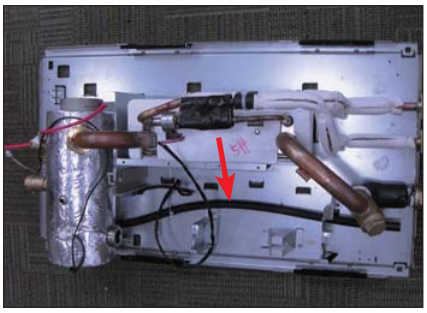
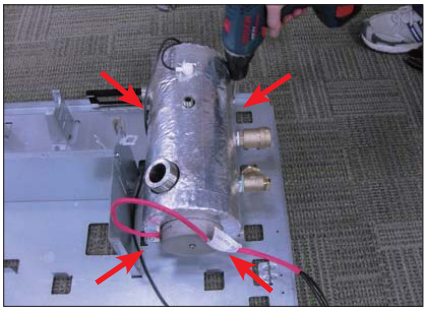
No	Parts	Procedure	Remark
3	Water Pump	1) Remove 4 screws. (Use + Screw Driver)	
		2) Remove the cabi-control top.	
		3) Remove the flow switch and connector.	 
		4) Remove a pipe from the backup Heater. (Use adjustable wrench-380kgf·cm) ⚠ Use the Torque Wrench when you assemble it.	

No	Parts	Procedure	Remark
		5) After removing insulation material, remove the Thermostat.	
		6) Remove 2 screws. (Use + Screw Driver)	
			
		7) Remove 2 screws. (Use + Screw Driver)	
		8) Pull the water pump & pipes up, out.	

No	Parts	Procedure	Remark
4	Expansion Vessle	1) Remove the tube of the expansion vessel and the backup heater by adjustable wrench. (Use adjustable wrench-150kgf·cm) ⚠ Use the Torque Wrench when you assemble it.	
		2) Remove 2 screws. (Use + Screw Driver)	
		3) After removing the nut. Pull the bracket out.	
		4) Pull the expansion vessel up, out.	
5	Plate Heat Exchanger	1) Remove 4 insulations.	

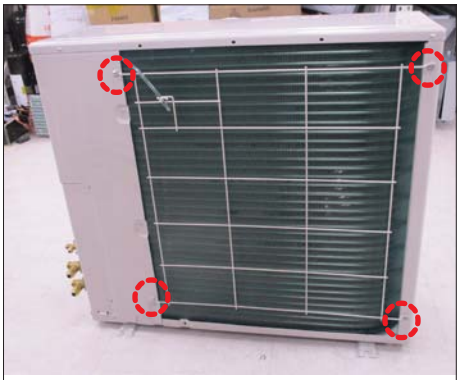
No	Parts	Procedure	Remark
		2) Remove 4 Thermostats.	
		3) Remove the Thermostat connector on the PCB of the Control box.	
		4) Remove the pipe from the Backup Heater. (Use adjustable wrench-380kgf·cm) ⚠ Use the Torque Wrench when you assemble it.	
		5) Remove 6 screws. (Use + Screw Driver)	
		6) Pull the PHE out of the unit.	

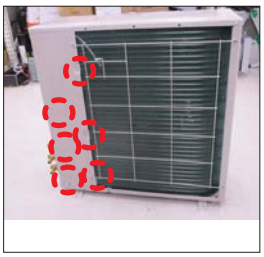
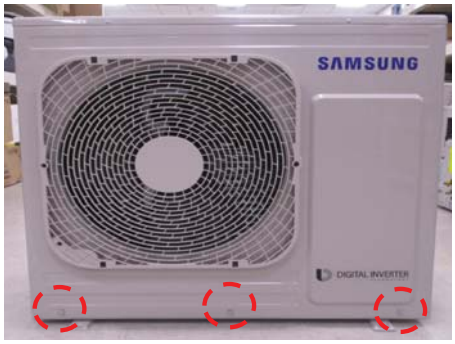
No	Parts	Procedure	Remark
6	Control Box	1) Remoce Thermostats and connectors	 3 Phase (AE✳✳✳MNYDGH)  1 Phase (AE✳✳✳MNYDEH)
		2) Remove 3 screws. (Use + Screw Driver)	 
		3) Pull the cabi-control bottom out by pushing as indicated diretion.	

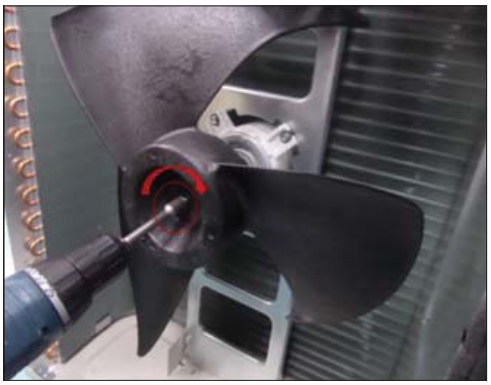
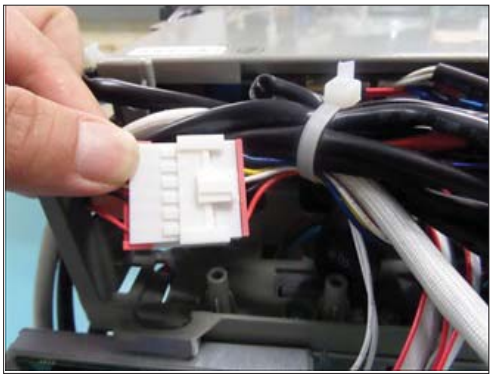
No	Parts	Procedure	Remark
7	Backup Heater	1) Remove the Drain Hose.	
		2) After removing 4 screws, set a side the backup heater and the unit. (Use + Screw Driver)	

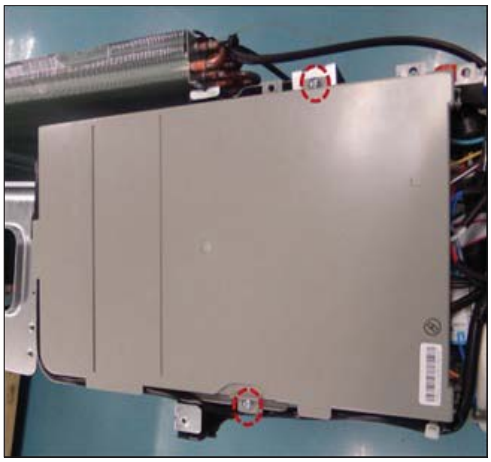
3-2-2 Outdoor Unit

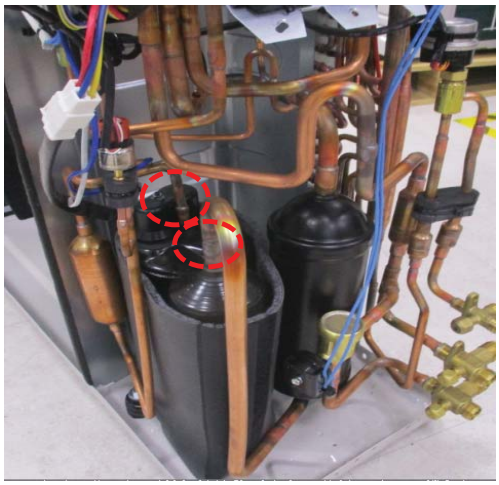
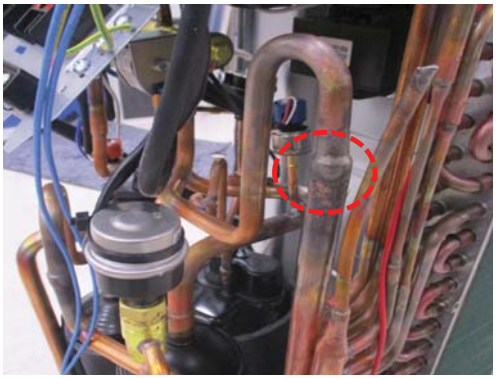
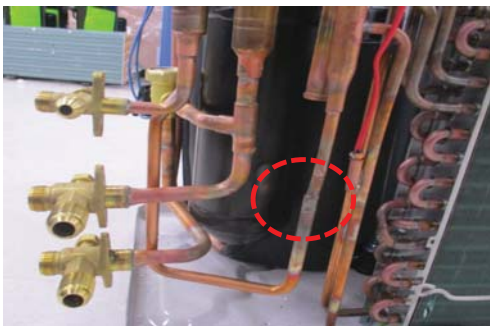
■ AE044/066MXTP✳

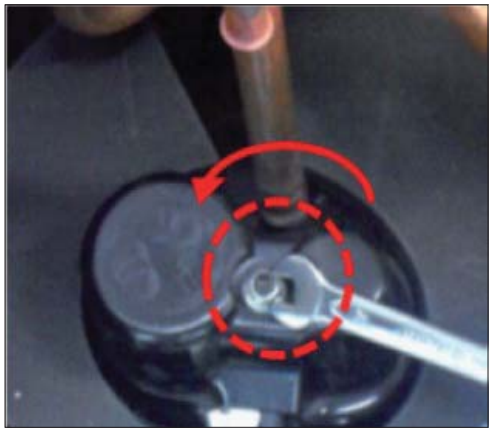
No	Parts	Procedure	Remark
1	CABI TOP	⚠ You must turn off the power before disassembling. 1) Unscrew and remove the ten screws on each side of the CABI TOP. (Use '+' type screw driver)	
2	ASSY COVER CONTROL	1) Unscrew and remove the one screw on the ASSY COVER CONTROL. (Use '+' type screw driver)	
3	GUARD COND	1) Pull the sensor from Guard Cond.	
		2) Unscrew and remove the four screws on the GUARD COND. (Use '+'type screw driver)	

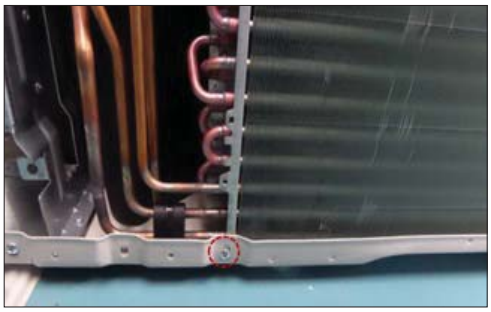
No	Parts	Procedure	Remark
4	CABI SIDE RH	1) Unscrew and remove the eleven screws on each side of the CABI BACK RH. (Use '+' type screw driver)	 
		2) Pull the sensor from the CABI SIDE RH.	
5	CABI FRONT	1) Unscrew and remove the 9 screws on the CABI FRONT. (Use '+' type screw driver)	 

No	Parts	Procedure	Remark
6	FAN	1) Turn the one nut as shown in the picture and remove it. (Use adjustable wrench)	
7	MOTOR	1) Remove the fan. 2) Unscrew and remove the four motor screws. (Use '+' type screw driver) 3) Disconnect the motor wire from the Ass'y Control Out.	 
8	BRACKET	1) Unscrew and remove the two screws on the BRACKET MOTOR. (Use '+' type screw driver)	

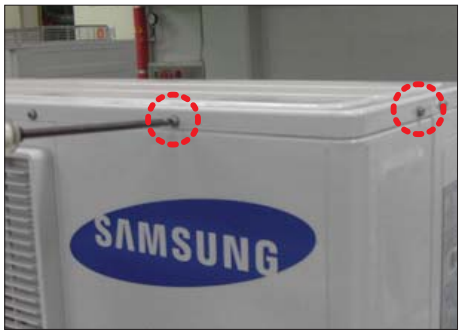
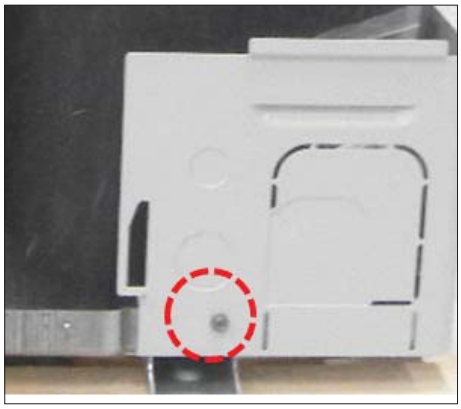
No	Parts	Procedure	Remark
9	CONTROL OUT	1) Disconnect the six connectors from the ASSY CONTROL OUT.	
		2) Unscrew and remove the two screws on the CONTROL OUT. (Use '+' type screw driver)	
		3) Separate the ASSY CONTROL OUT	

No	Parts	Procedure	Remark
10	ASSY-VALVE 4WAY	1) Purge the coolant first. 2) Separate the pipe from the Entrance/Exit using a welder. ⚠ When removing the compressor,heat exchanger and pipe, purge the completely and remove the pipe with a welding flame.	  

No	Parts	Procedure	Remark
13	COMPRESSOR	1) Separate the COMPRESSOR FELT SOUND.	
		2) Unscrew and remove the nut on the COVER TERMINAL. (Use adjustable wrench)	
		3) Separate the compressor wire.	
		4) Separate the COMPRESSOR FELT SOUND.	

No	Parts	Procedure	Remark
		5) As shown in the picture, unscrew and bottom. (Use Adjustable Wrench)	
14	ASSY COND OUT	1) Unscrew and remove the four screws as shown in the picture. (Use '+' type screw driver)	  

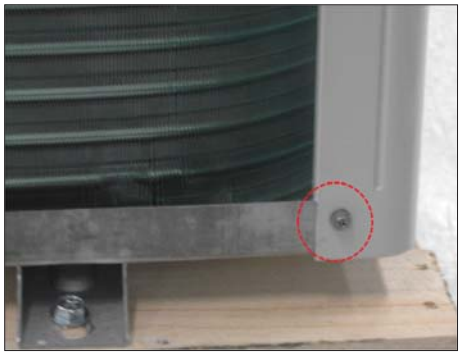
■ AE090MXTP✳

No	Parts	Procedure	Remark
1	CABI FRONT RH	⚠ You must turn off the power before disassembling. 1) Unscrew and remove the three screws on the CABI FRONT RH. (Use '+' type screw driver)	 
2	CABI TOP	1) Unscrew and remove the nine screws on each side of the CABI TOP. (Use '+' type screw driver)	
3	CABI INSTALL FRONT	1) Unscrew and remove the screw on the CABI INSTALL FRONT. (Use '+' type screw driver)	

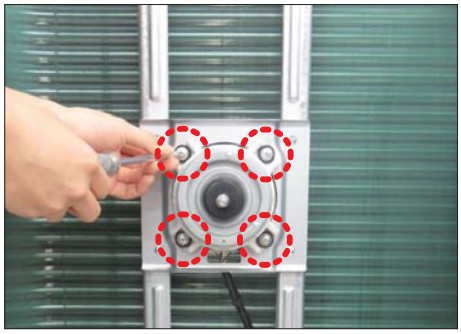
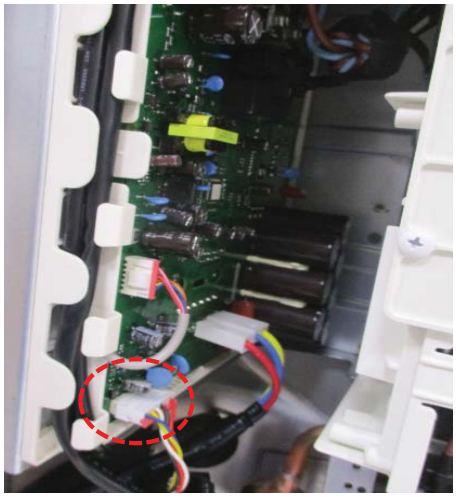
No	Parts	Procedure	Remark
4	GUARD COND	1) Pull the sensor from Guard Cond.	
		2) Unscrew and remove the four screws on the GUARD COND. (Use '+' type screw driver)	

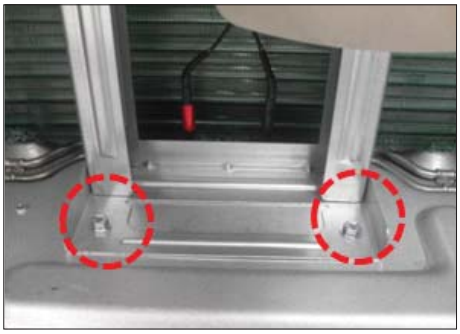
No	Parts	Procedure	Remark
5	CABI BACK RH	1) Pull the sensor from the CABI BACK RH.	
		2) Unscrew and remove the nine screws on each side the CABI BACK RH. (Use '+' type screw driver)	
			

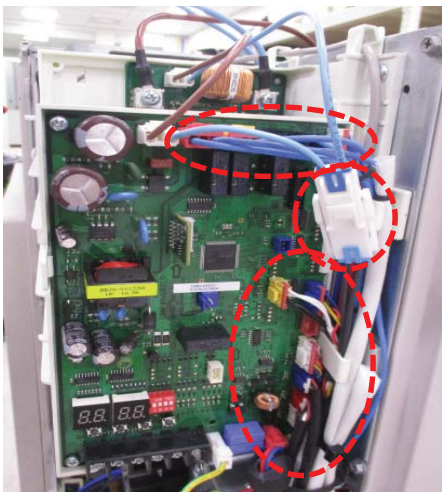
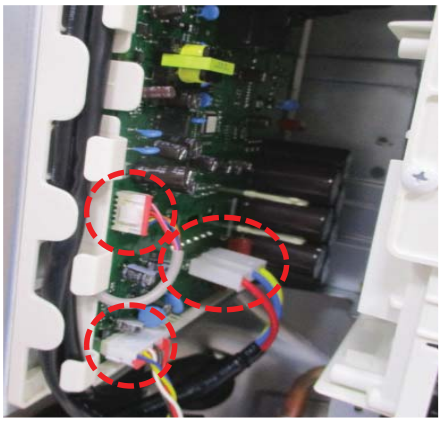
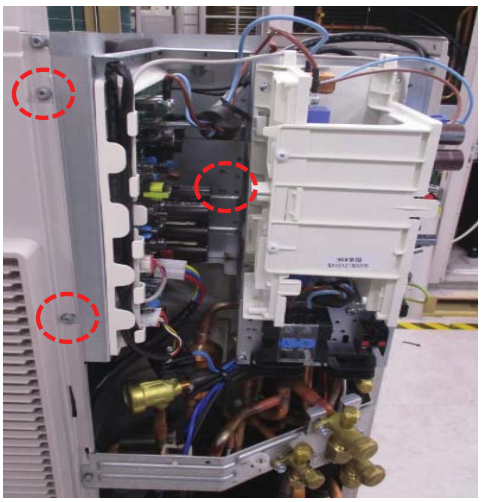
No	Parts	Procedure	Remark
			
6	CABI INSTALL BACK	1) Unscrew and remove the 8 screws on the CABI FRONT LF. (Use '+' type screw driver)	

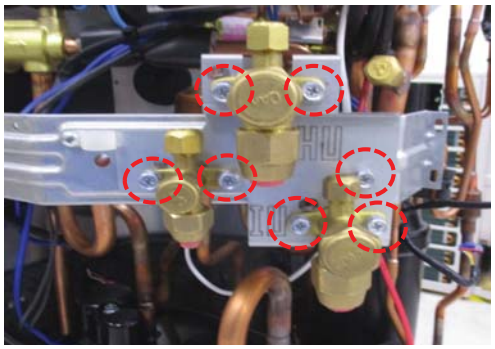
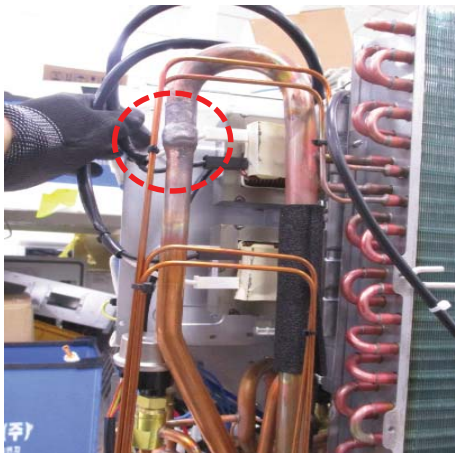
No	Parts	Procedure	Remark
			 

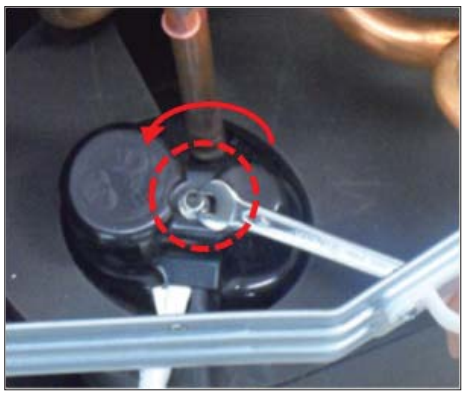
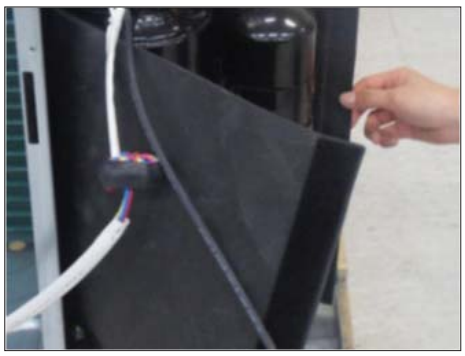
No	Parts	Procedure	Remark
7	FAN	1) Turn the two nuts as shown in the picture and remove them. (Use adjustable wrench)	

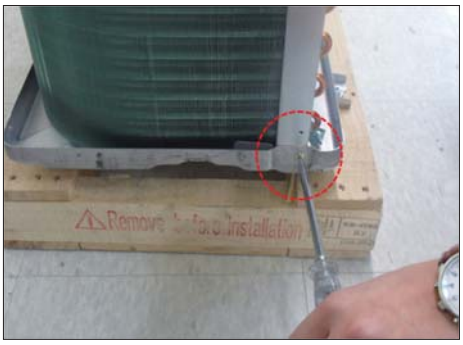
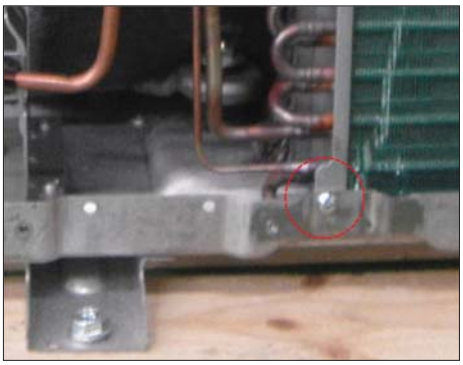
No	Parts	Procedure	Remark
8	MOTOR	1) Remove the fan. 2) Unscrew and remove the eight motor screws. (Use '+' type screw driver)	
		3) Disconnect the motor wire from the Ass'y Control Out.	

No	Parts	Procedure	Remark
9	BRACKET MOTOR	1) Unscrew and remove the two screws on the BRACKET MOTOR. (Use '+'type screw driver)	

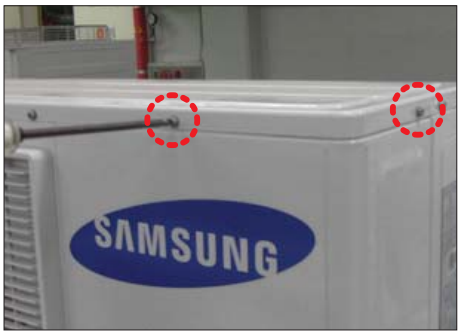
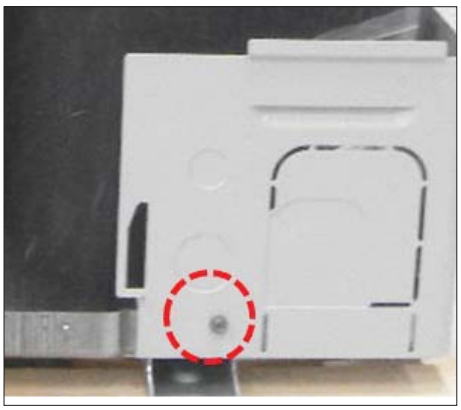
No	Parts	Procedure	Remark
10	CONTROL OUT	1) Disconnect the six connectors form the ASSY Control OUT	 
		2) Unscrew and remove the three screws on the CONTROL OUT. (Use '+' type screw driver) 3) Separate the ASSY CONTROL OUT.	

No	Parts	Procedure	Remark
11	ASSY 4WAY VALVE	1) Purge the coolant first. 2) Unscrew and remove the four screws on the SERVICE VALVE. (Use '+' type screw driver)	
		3) Separate the pipe from the Entrance/Exit using a welder.	
		⚠ When removing the compressor, heat exchanger and pipe, purge the completely and remove the pipe with a welding flame.	 

No	Parts	Procedure	Remark
12	COMPRESSOR	1) Unscrew and remove the nut on the COVER TERMINAL. (Use adjustable wrench)	
		2) Separate the compressor wire.	
		3) Separate the COMPRESSOR FELT SOUND.	
		4) As shown in the picture, unscrew and bottom. (Use Adjustable Wrench)	 

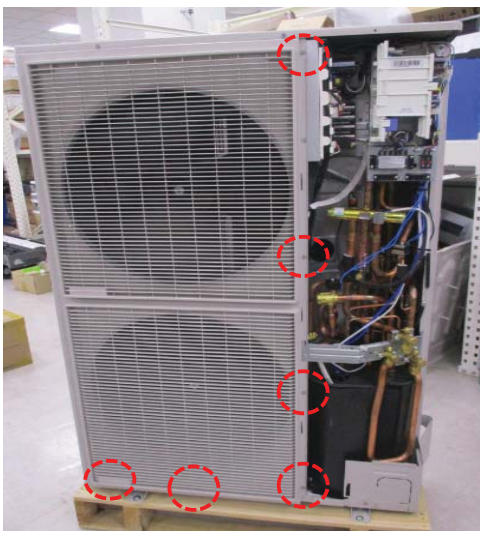
No	Parts	Procedure	Remark
13	ASSY COND OUT	1) Unscrew remove the two screws on each side of the ASSY COND OUT. (Use '+' type screw driver)	 

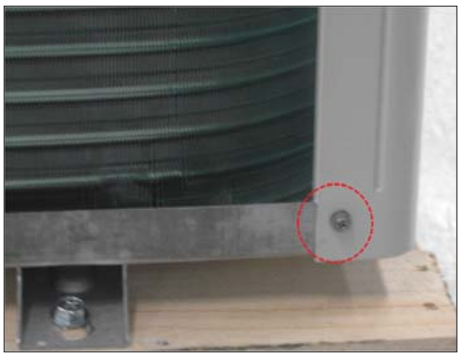
■ AE120/160MXTP✳

No	Parts	Procedure	Remark
1	CABI FRONT RH	⚠ You must turn off the power before disassembling. 1) Unscrew and remove the three screws on the CABI FRONT RH. (Use '+' type screw driver)	 
2	CABI TOP	1) Unscrew and remove the nine screws on each side of the CABI TOP. (Use '+' type screw driver)	
3	CABI INSTALL FRONT	1) Unscrew and remove the screw on the CABI INSTALL FRONT. (Use '+' type screw driver)	

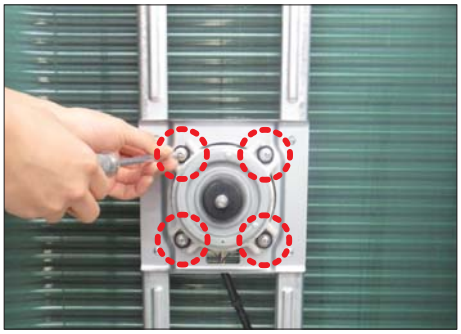
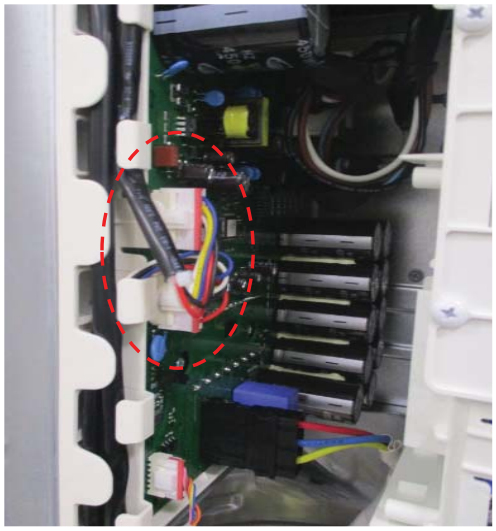
No	Parts	Procedure	Remark
4	GUARD COND	1) Pull the sensor from Guard Cond.	
		2) Unscrew and remove the four screws on the GUARD COND. (Use '+' type screw driver)	

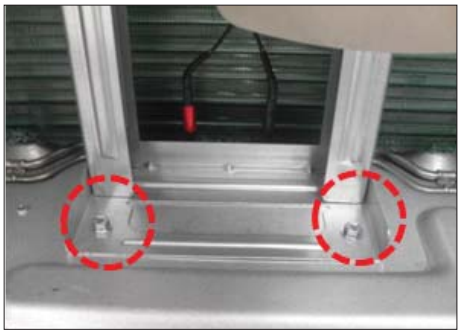
No	Parts	Procedure	Remark
5	CABI BACK RH	1) Pull the sensor from the CABI BACK RH.	
		2) Unscrew and remove the nine screws on each side the CABI BACK RH. (Use '+' type screw driver)	 

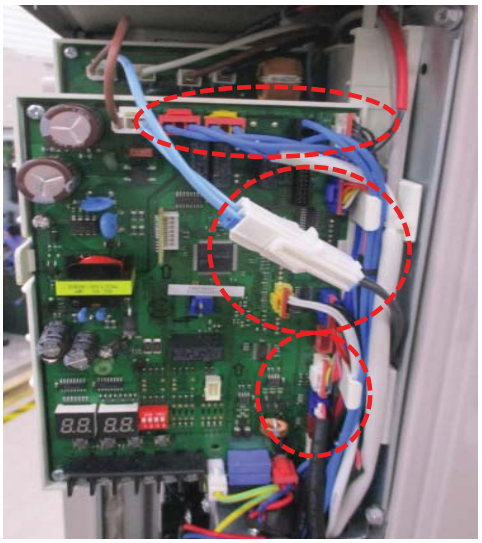
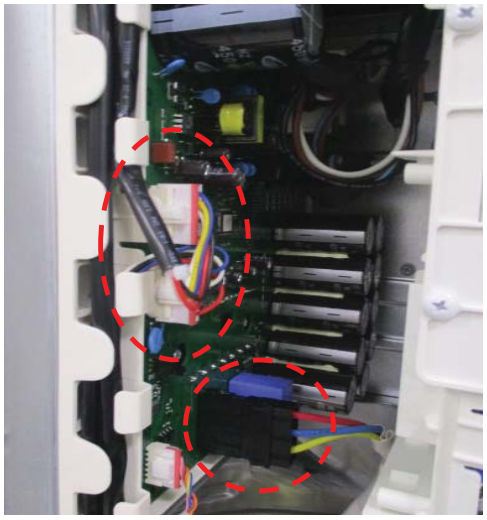
No	Parts	Procedure	Remark
			
6	CABI INSTALL BACK	1) Unscrew and remove the 8 screws on the CABI FRONT LF. (Use '+' type screw driver)	

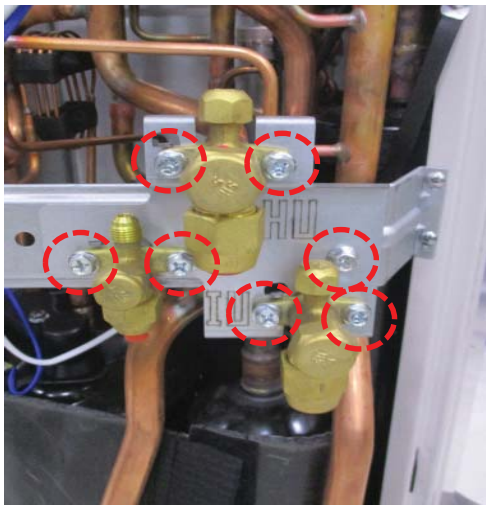
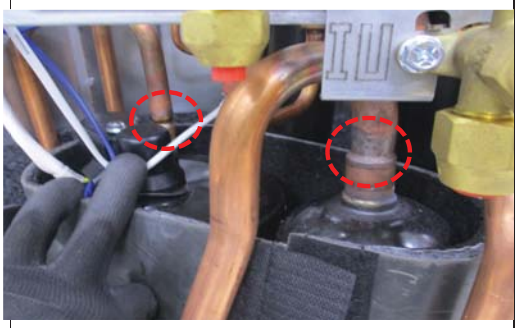
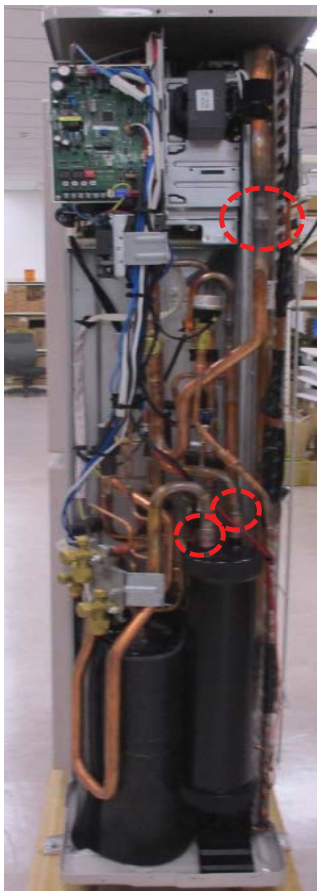
No	Parts	Procedure	Remark
			 

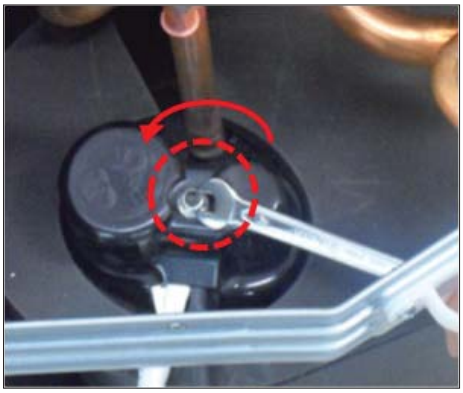
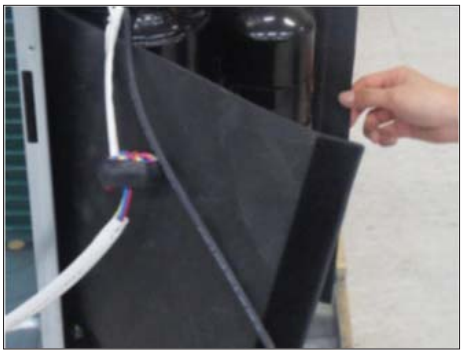
No	Parts	Procedure	Remark
7	FAN	1) Turn the two nuts as shown in the picture and remove them. (Use adjustable wrench)	

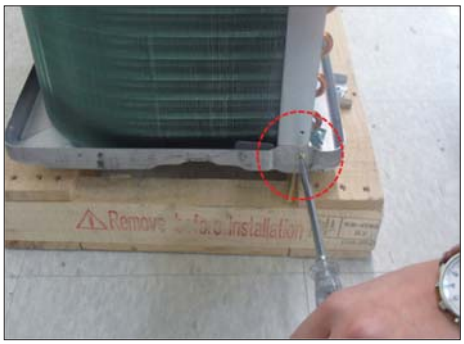
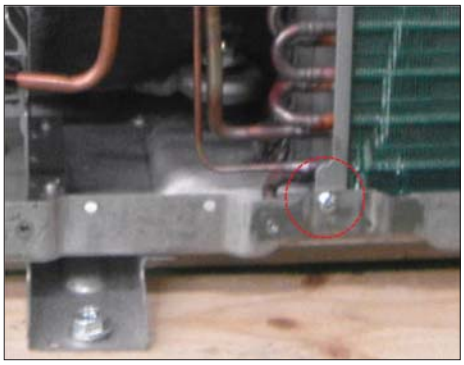
No	Parts	Procedure	Remark
8	MOTOR	1) Remove the fan. 2) Unscrew and remove the eight motor screws. (Use '+' type screw driver)	
		3) Disconnect the motor wire from the Ass'y Control Out.	

No	Parts	Procedure	Remark
9	BRACKET MOTOR	1) Unscrew and remove the two screws on the BRACKET MOTOR. (Use '+'type screw driver)	

No	Parts	Procedure	Remark
10	CONTROL OUT	1) Disconnect the six connectors form the ASSY Control OUT 2) Unscrew and remove the three screws on the CONTROL OUT. (Use '+' type screw driver) 3) Separate the ASSY CONTROL OUT.	 

No	Parts	Procedure	Remark
11	ASSY 4WAY VALVE	1) Purge the coolant first. 2) Unscrew and remove the four screws on the SERVICE VALVE. (Use '+' type screw driver) 3) Separate the pipe from the Entrance/Exit using a welder. ⚠ When removing the compressor, heat exchanger and pipe, purge the completely and remove the pipe with a welding flame.	  

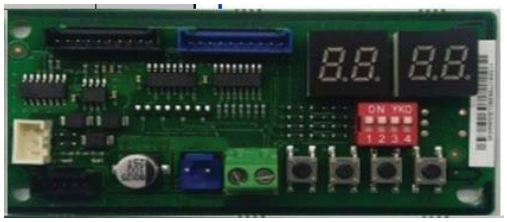
No	Parts	Procedure	Remark
12	COMPRESSOR	1) Unscrew and remove the nut on the COVER TERMINAL. (Use adjustable wrench)	
		2) Separate the compressor wire.	
		3) Separate the COMPRESSOR FELT SOUND.	
		4) As shown in the picture, unscrew and bottom. (Use Adjustable Wrench)	 

No	Parts	Procedure	Remark
13	ASSY COND OUT	1) Unscrew remove the two screws on each side of the ASSY COND OUT. (Use '+' type screw driver)	 

4. Troubleshooting

4-1 Error Display

<AE090/120/160MXTP✳✳>

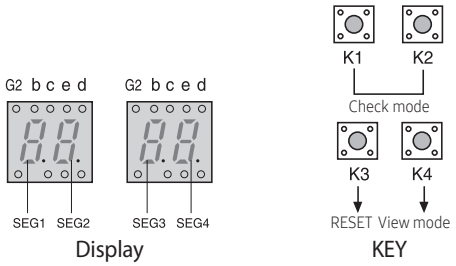


< AE044/066MXTP✳✳>

4-2 Service Operation

4-2-1 Special Operation

Key Function of the Outdoor Unit PBA



Function of KEY

Number of pressing	K1 (Heating)	K2 (Cooling)
1	Adding refrigerant in heating mode (H 1)	Adding refrigerant in cooling mode (H 5)
2	Test operation for heating (H 2)	Test operation for cooling (H 6)
3	Heating Pump out operation (H 3)	Cooling Pump down operation (H 7)
4	Vacuum(All)(t 4) (H 4)	Inverter Check(H 8)
5	End of key operation	End of key operation

- Adding refrigerant (H 1, H 5) :
  The operation for charging additional refrigerant
- Test operation (H 2, H 6) :
  Checking the indoor and outdoor unit operation
- Recovery of refrigerant (H 7) :
  Operation for collecting refrigerants from pipes and indoor units to the outdoor unit when moving or repairing works are required.
- Refrigerant release (H 3) :
  Operation for releasing the refrigerant on the outdoor unit to the indoor unit pipes.

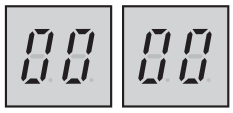
Function of K4

K4 (Press and hold to enter the setting) → K4 press (Number of press)	Displayed content	Display on segment		
0 time	Main Micon version	Version (ex. 0912)		
1 time	Inverter Micom version	Version (ex. 0912)		
2 time	EEPROM version	Version (ex. 0912)		
3 time	Automatically assigned address of the units	SEG1	SEG2	SEG3,4
		Indoor unit:"A"	Indoor unit:"0"	Address (ex:05)
4 time	Manually assigned address of the units	SEG1	SEG2	SEG3,4
		Indoor unit: "A"	Indoor unit: "0"	Address (ex:01)

Number of presses (K4)	Description	Display segment			
		SEG 1	SEG 2	SEG 3	SEG 4
0	Communication status	10s digit of Tx	1s digit of Tx	10s digit of Rx	1s digit of Rx
1	Current frequency	1	100s digit	10s digit	1s digit
2	High pressure	2	10s digit	1s digit	First decimal
3	Low pressure	3	10s digit	1s digit	First decimal
4	Outdoor air temperature	4	+ / -	10s digit	1s digit
5	Discharge Temperature	5	100s digit	10s digit	1s digit
6	Cond temperature	6	+ / -	10s digit	1s digit
7	Current	7	10s digit	1s digit	First decimal
8	Fan RPM	8	1000s digit	100s digit	10s digit
9	Main EEV	9	1000s digit	100s digit	10s digit
10	EVI EEV	A	100s digit	10s digit	1s digit
11	IPM temperature	B	100s digit	10s digit	1s digit
12	Inverter pump frequency of hydro unit	C	100s digit	10s digit	1s digit
13	Inlet water temperature	D	10s digit	1s digit	First decimal
14	Outlet water temperature	E	10s digit	1s digit	First decimal
15	Number of connected indoor units	F	0	10s digit	1s digit

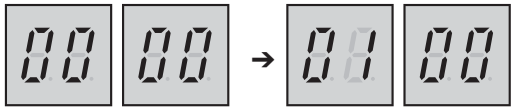
Setting the option

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

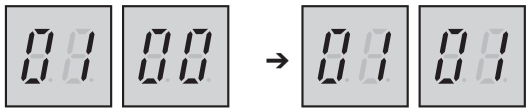


   – Seg 1 and Seg 2 will display the number for selected option.
   – Seg 3 and Seg 4 will display the number for set value of the selected option.

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. (Refer to pages 71~73 for the Seg number of the function for each 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.

⚠ CAUTION

- 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.

Optional item	Input unit	SEG1	SEG2	SEG3	SEG4	Remarks
Cooling capacity correction	Main	0	0	0	0	7 to 9
				0	1	5 to 7
				0	2	9 to 11
				0	3	10 to 12
Heating capacity correction	Main	0	1	0	0	Standard high-pressure target [Default]
				0	1	High-pressure target : standard-0.2MPa
				0	2	High-pressure target : standard-0.1MPa
				0	3	High-pressure target : standard+0.1MPa
Current restriction option	Individual	0	2	0	0	All electric current [Default]
				0	1	All electric current I_Down_OP1
				0	2	All electric current I_Down_OP2
				0	3	All electric current I_Down_OP3
Defrost temperature correction	Main	0	3	0	0	Defrost temperature constant (α) = MID
				0	1	Defrost temperature constant (α) = MID
				0	2	Defrost temperature constant (α) = LOW1
				0	3	Defrost temperature constant (α) = LOW2
Channel address	Main	0	4	A	U	Automatic address setting
				00 to 15		Automatic address setting
						0 to 15

4-2-2 TDM PLUS EEPROM Code Tabel

No.	Model Name	Inverter PBA	EEPROM CODE
1	AE044MXTPEH	DB92-03544C	DB82-03865A
2	AE066MXTPEH	DB92-03544C	DB82-03866A
3	AE090MXTPEH	DB92-03686C	DB82-03867A
4	AE090MXTPGH	DB92-03688A	DB82-03868A
5	AE120MXTPEH	DB92-03687A	DB82-03869A
6	AE120MXTPGH	DB92-03688A	DB82-03870A
7	AE160MXTPEH	DB92-03687A	DB82-03871A
8	AE160MXTPGH	DB92-03688A	DB82-03872A

4-2-3 Wired remote controller error code

- Press the Test button to see the error code.

► Error code related indoor unit

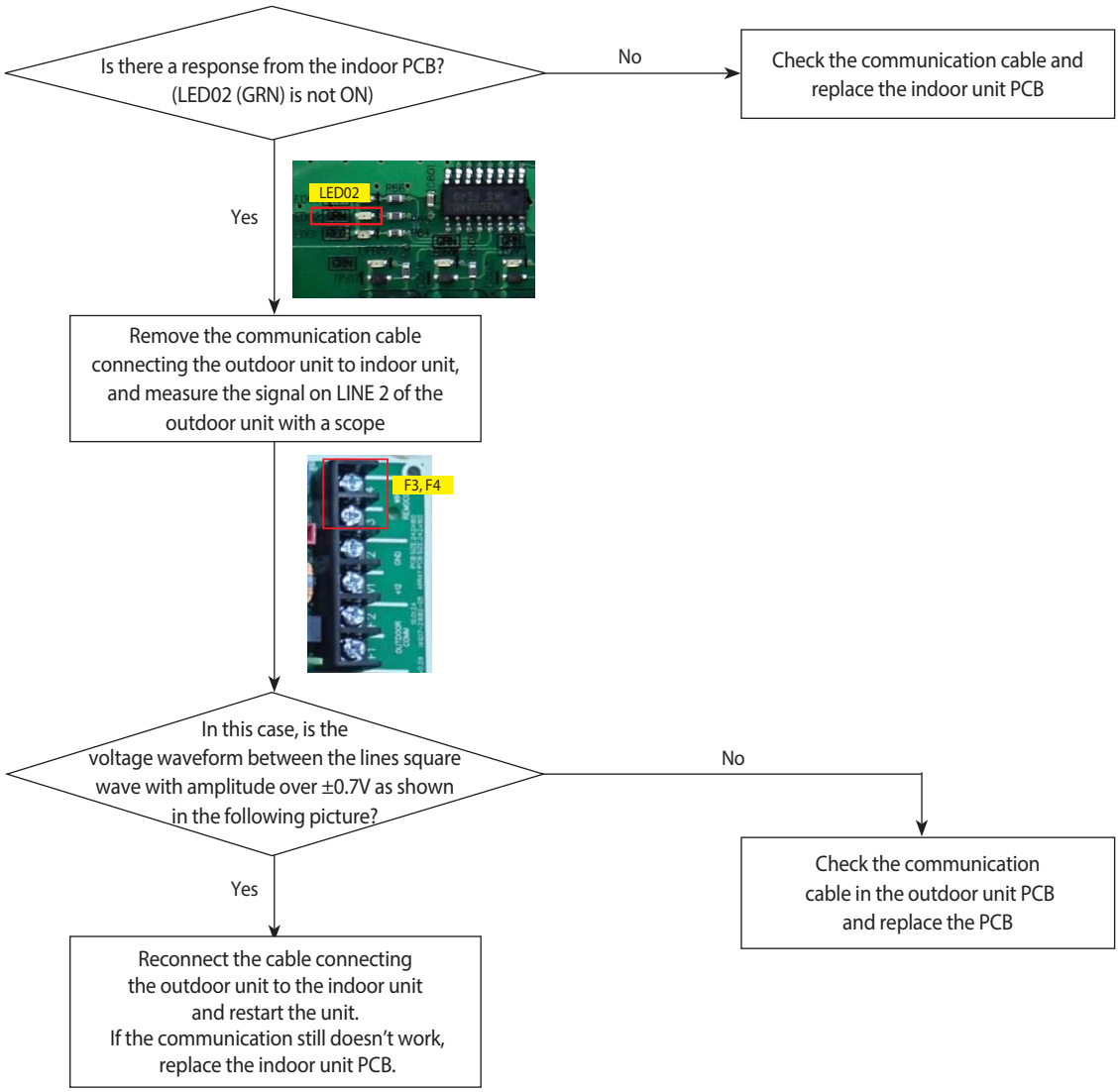
CODE	Explanation
E-101	Indoor unit communication error. Indoor unit can not receive any data from outdoor unit.
E-108	Error due to repeated address setting (When 2 or more devices have same address within the network)
E-109	Incomplete communication error of indoor unit address
E-121	Error on indoor temperature 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-151	Error due to opened EEV of indoor unit (2nd detection)
E-152	Error due to closed EEV of indoor unit (2nd detection)
E-162	EEPROM error of MICOM (Physical problem of parts/circuit)
E-198	Error due to disconnected thermal fuse of indoor unit
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-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-246	COND OUT sensor is detached
E-251	Error on discharge temperature sensor of compressor 1 (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-320	OLP sensor error
E-403	Detection of outdoor freezing when Comp stop
E-404	Protection of outdoor overload when Comp stop
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-419	Outdoor EEV open error
E-425	Phase reversal or phase failure (3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input
E-438	EVI (ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI (ESC) EEV
E-439	Error due to refrigerant leakage
E-440	Heating mode restriction due to high air temperature In case of DVM water, Heating mode restriction due to high water temperature
E-441	Cooling mode restriction due to low air temperature In case of DVM water, Heating mode restriction due to low water temperature
E-442	Refrigerant charing restriction in heating mode when air temperature is over 15 °C
E-443	Operation prohibited due to low pressure
E-458	Outdoor fan 1 error
E-461	Error due to operation failure of inverter compressor 1
E-462	Compressor stop due to full current control or error due to low current on CT2
E-463	OLP over heat and comp stop

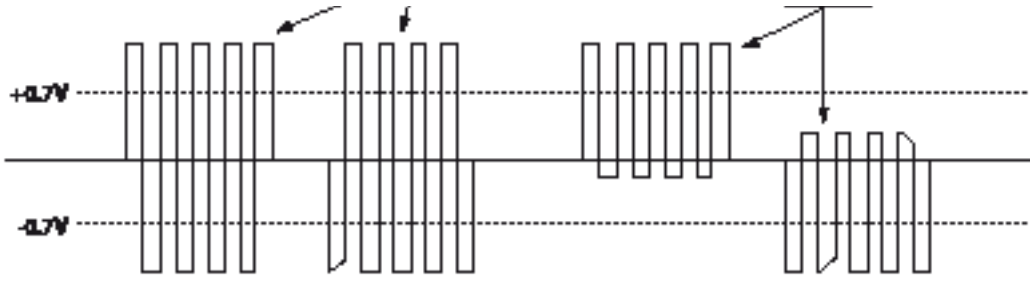
► Error code related to the Communications / Settings / HW

CODE	Explanation
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 Inverter 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-470	Outdoor EEPROM data checksum error
E-471	Error due to the INV1 Data Flash
E-475	Outdoor fan 2 error
E-484	PFC overload error
E-485	Error due to input current of inverter 1
E-500	Error due to overheat caused by contact failure on IPM of Inverter PBA1
E-554	Gas leak error
E-590	Inverter EEPROM loading error
E-601	Communication error between the Hydro Unit and wired remote controller
E-604	Communication tracking error between the Hydro Unit and wired remote controller
E-653	Wired remote controller temp sensor SHORT or OPEN
E-654	Memory(EEPROM) Read Write error(Wired remote controller data error)
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	Water inlet (PHE) temp sensor error (Short/Open)
E-902	Water outlet (PHE) temp sensor error (Short/Open)
E-904	Water tank temp sensor error (Short/Open)
E-906	Refrigerant gas inlet temp sensor error (Short/Open)
E-911	Flow switch open error
E-912	Flow switch close error
E-914	Thermostat wrong connection error
E-916	Mixing valve temp sensor error (Short/Open)

4-3-1 Communication error after finishing Tracking

Indoor unit display	E604
Symptom	Communication error between the indoor and outdoor unit for two minutes
Failure	Communication error between the indoor unit and outdoor unit



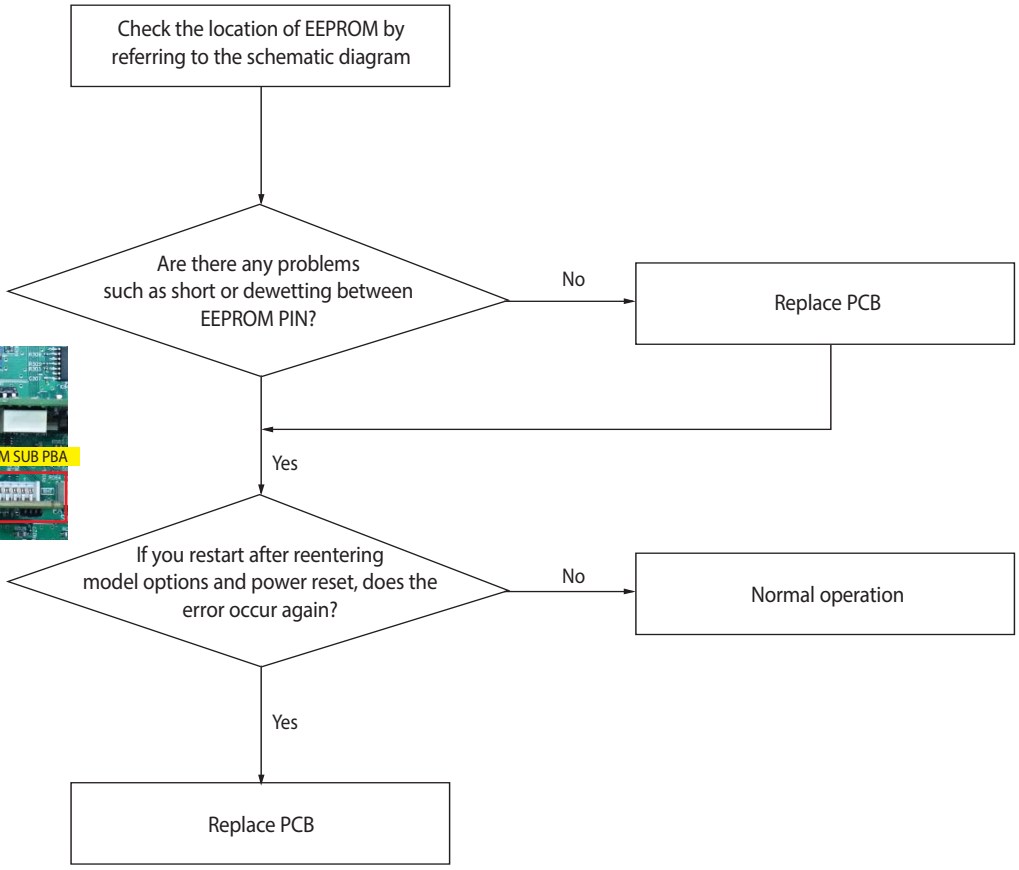


4-4 Hydro Unit

4-4-1 EEPROM error

Outdoor unit display	E 162
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Communication failure between EEPROM and MICOM
Cause of problem	• PCB replacement due to defective EEPROM

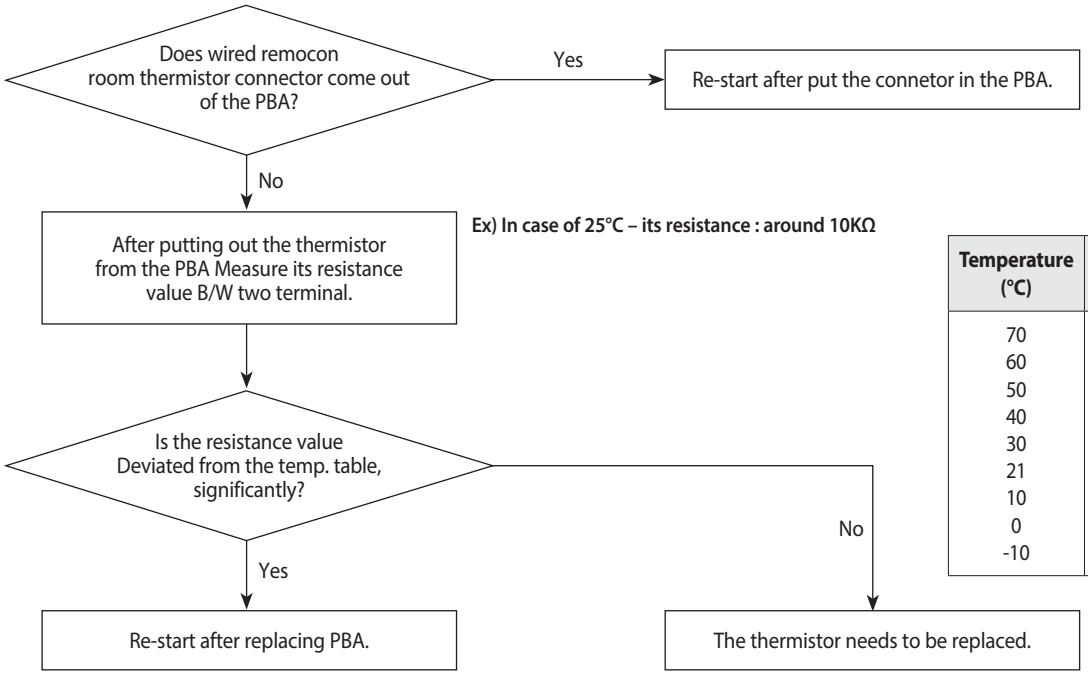
1. How to check



4-4-2 E653 : Error due to abnormal data of Wired remote controller thermistor value

Outdoor unit display	E653 ↔ A xxx(x x x : The address of the error occurred indoor unit)
Wired remocon display	E653
Criteria	• Refer to how to determine below
Cause of problem	• Wired remocon room thermistor has a defective OPEN/SHORT

1. How to check



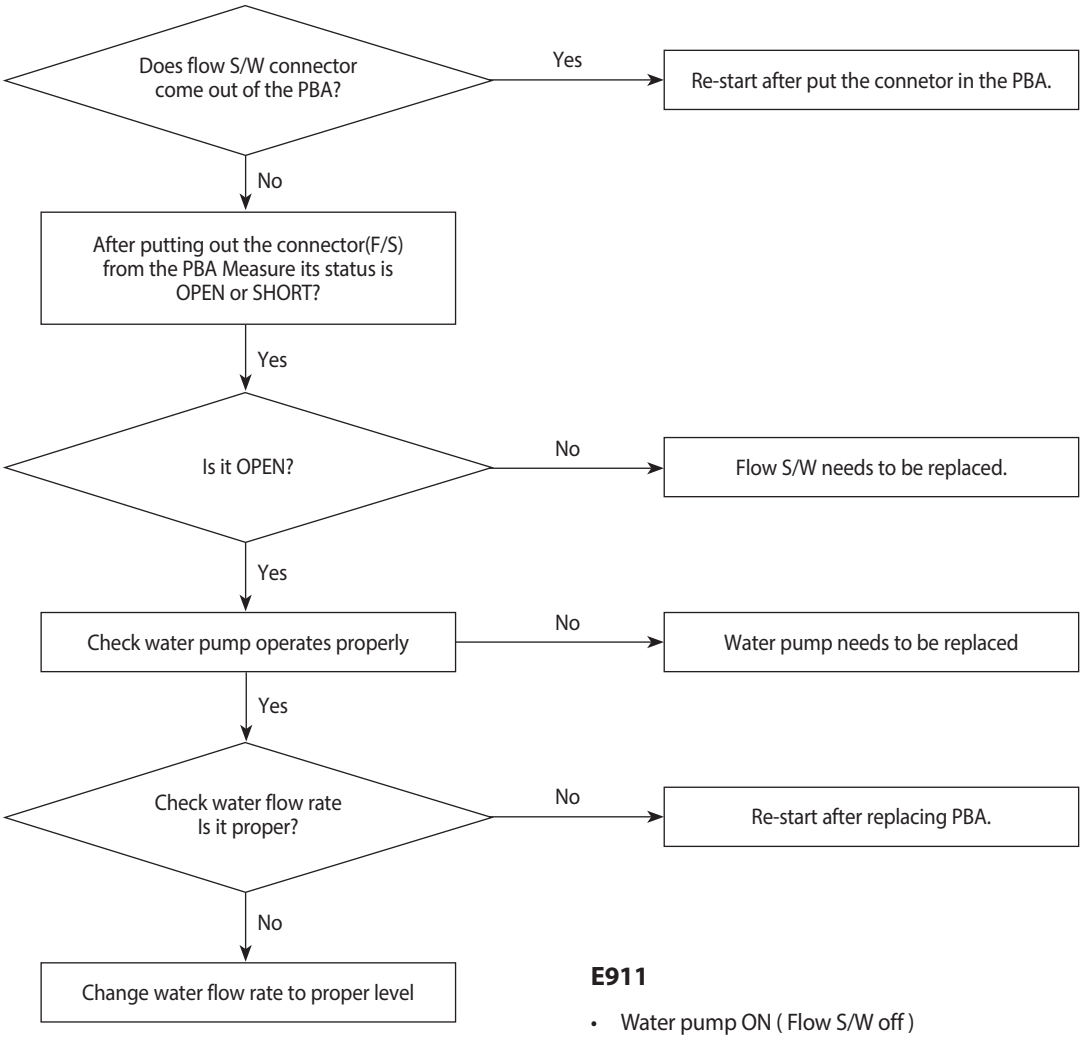
Ex) In case of 25°C – its resistance : around 10KΩ

Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-4-3 Water pump & flow switch OFF

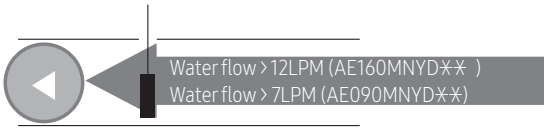
Wired remocon display	E911
Criteria	• Refer to how to determine below
Cause of problem	• Flow S/W OFF in 30 sec during water pump signal is ON(Starting) • Flow S/W OFF in 15 sec during water pump signal is ON (After starting)

1. How to check

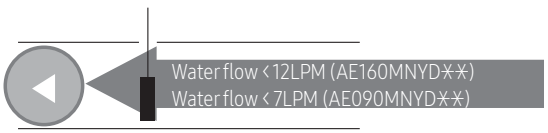


E911

- Water pump ON (Flow S/W off)



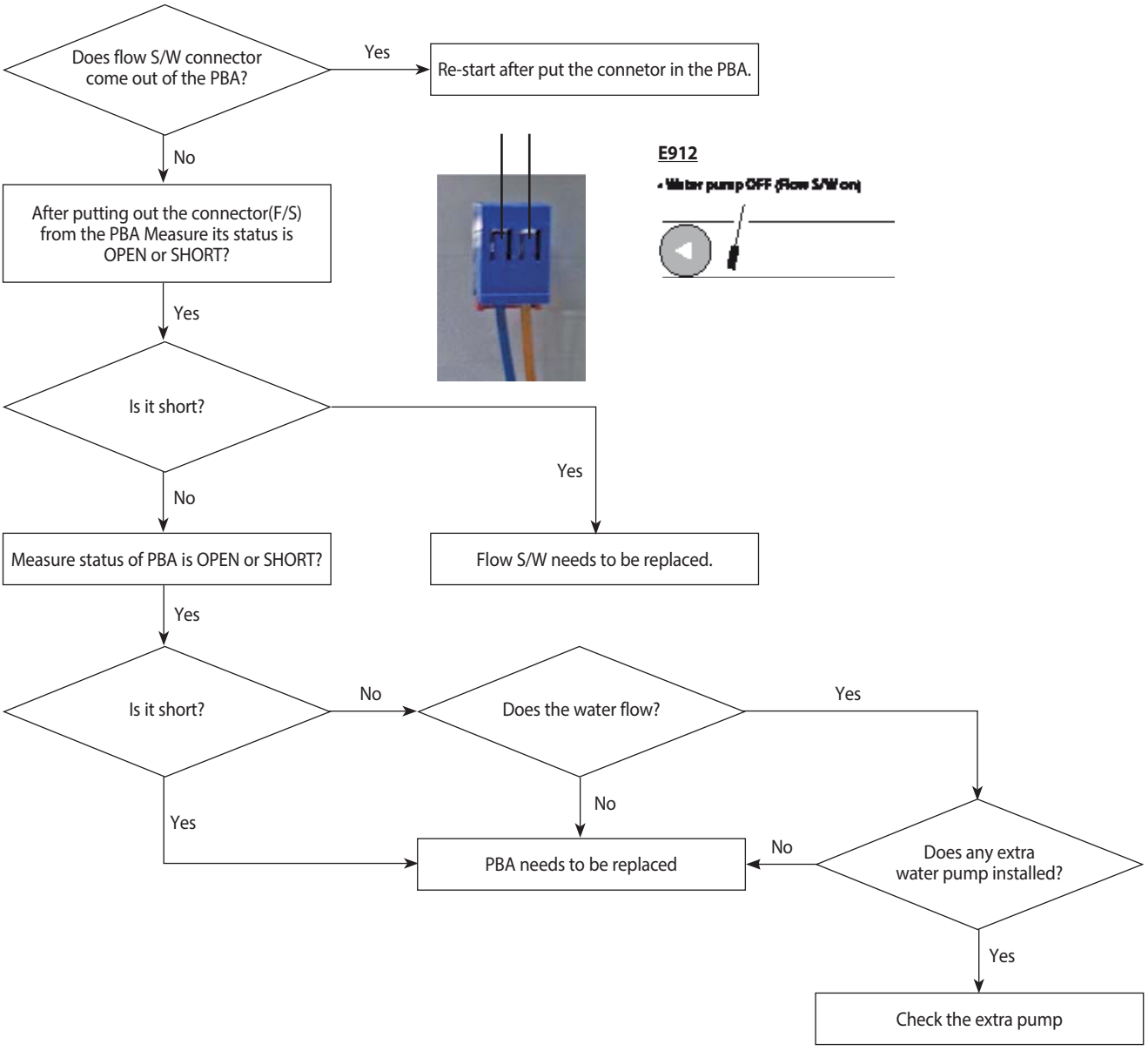
- Water pump ON (Flow S/W off) : NOT enough water flow



4-4-4 Water pump & flow switch ON

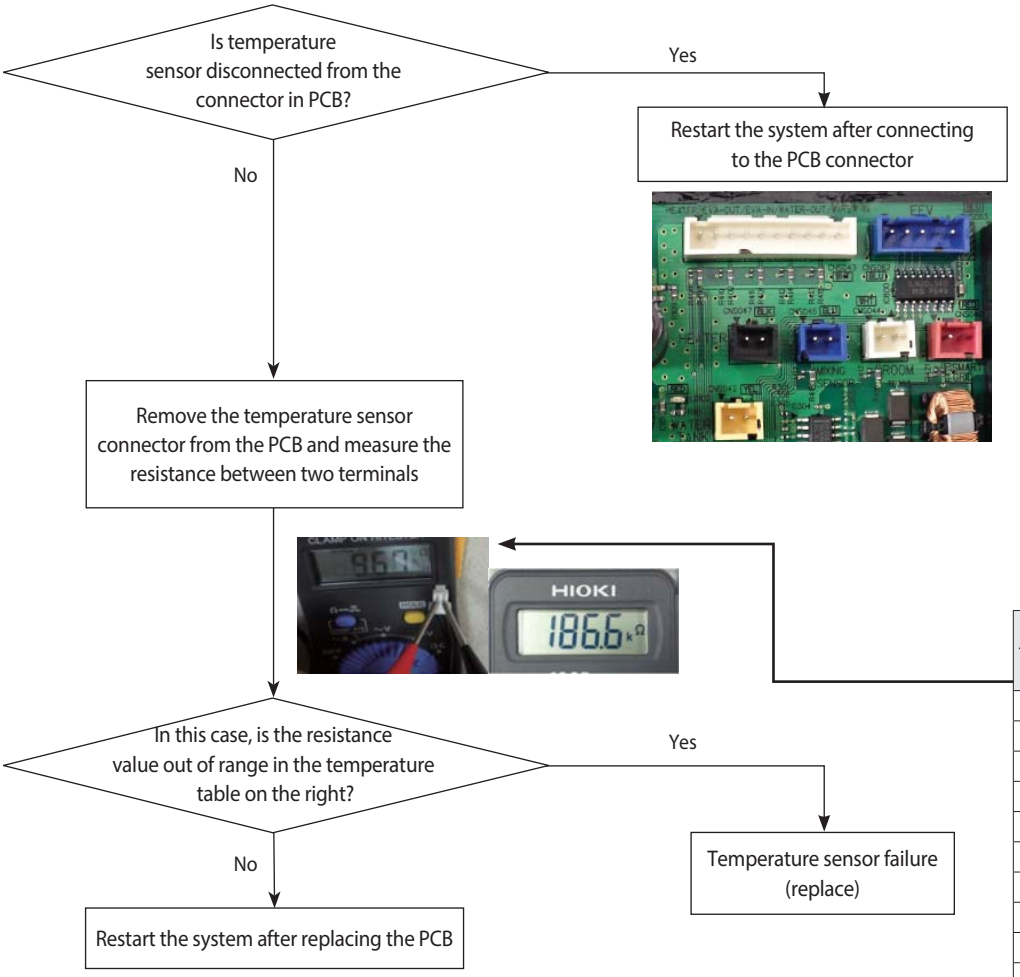
Wired remocon display	E912
Criteria	• Refer to how to determine below
Cause of problem	• Flow S/W ON in 10minutes during water pump signal is OFF.

1. How to check



4-4-5 Hydro unit temperature sensor(open/short)

Error Mode	E121,E122,E123, E901, E902, E903, E904, E906, E916
Symptom	In case of open or short circuit of indoor temperature sensor
Failure	Short or leakage of the corresponding sensor



<204 Type>

Current temperature (°C)	Resistance (kΩ)
60	59.16
55	69.44
50	81.92
45	96.95
40	115.4
35	137.8
30	165.7
25	200
20	242.5
15	295.4
10	362.4

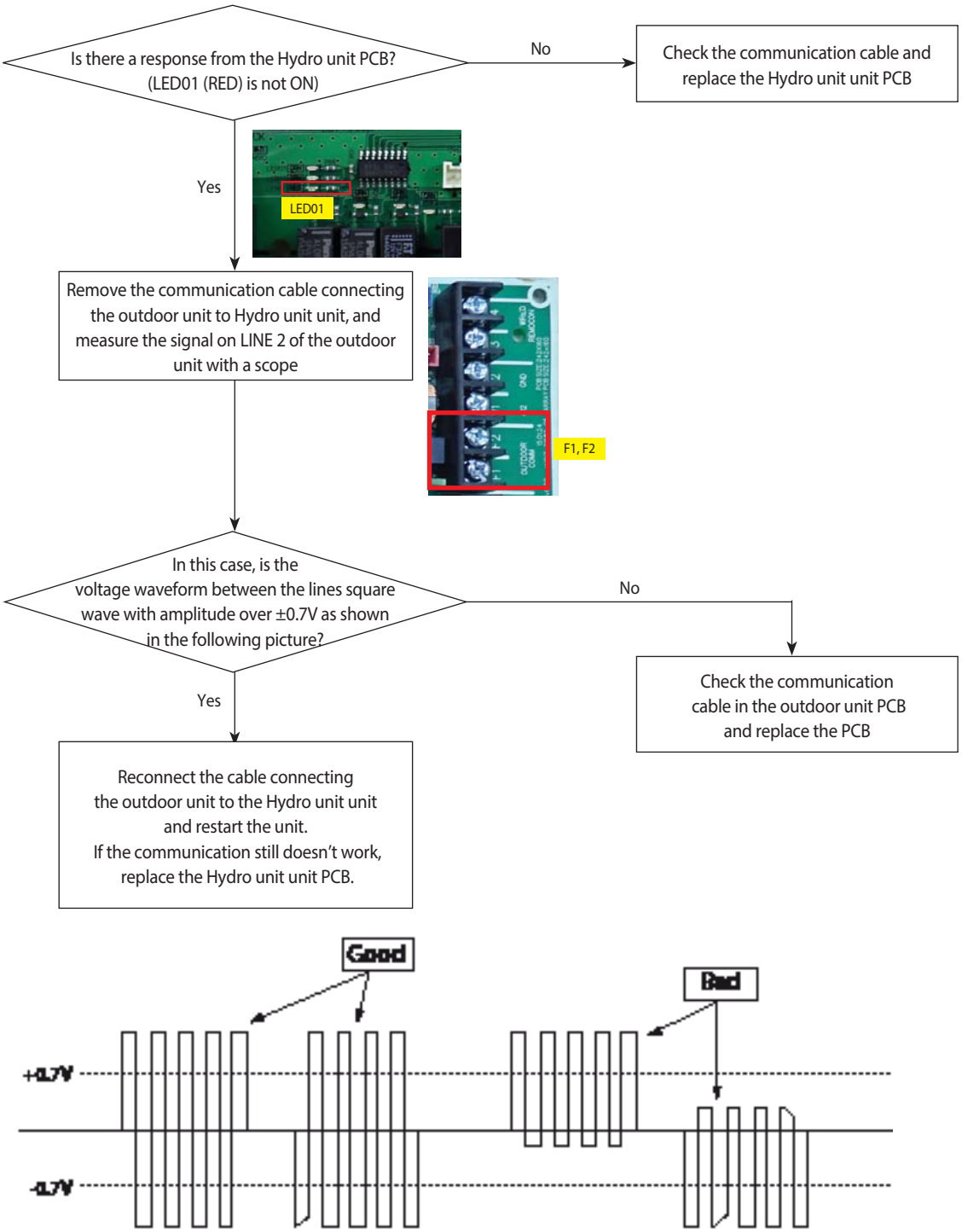
<103 Type>

Current temperature (°C)	Resistance (kΩ)
60	3.03
55	3.59
50	4.17
45	4.93
40	5.84
35	6.95
30	8.32
25	10
20	12.08
15	14.68
10	17.94

Error Mode	Sensor Type
E121,E122,E123, E901,E902,E903, E906,E916	103
E904	204

4-5-6 Communication error after finishing Tracking(Hydro unit)

Error Mode	E201, E202
Symptom	Communication error between the Hydro unit and outdoor unit for two minutes
Failure	Communication error between the Hydro unit unit and outdoor unit



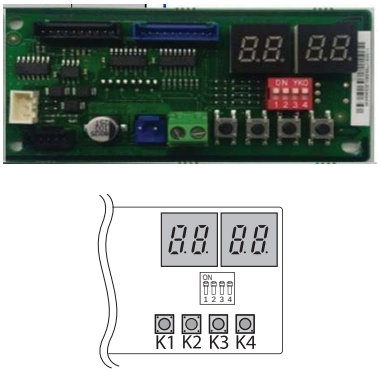
4-5 Items to check before diagnostics

4-5-1 Test run mode and view mode

■ Display Option Key

KEY	KEY operation	7-segment display
K1	Press once : Heating test run	"H" "1" "BLANK" "BLANK"
	Press twice : Defrost test run	"H" "3" "BLANK" "BLANK"
	Press 3times : Finishing test mode	-
K2	Press once : Cooling test run (Heating Only : skip)	"H" "2" "BLANK" "BLANK"
	Press twice : Output signal test run	"H" "4" "BLANK" "BLANK"
	Press 3 times : Finishing test mode	-
K3	Reset	-
K4	View mode	Refer to View mode display

AE090~160JXED✳H



AE040~060JXED✳H

■ VIEW mode display

Number of press	Display contents	Display				Units
		Segment 1	Segment 2	Segment 3	Segment 4	
0	Communication State	10s digit of Tx	1s digit of Tx	10s digit of Rx	1s digit of Rx	-
1	Order frequency	1	100s digit	10s digit	1s digit	Hz
2	Current frequency	2	100s digit	10s digit	1s digit	Hz
3	Pump output	3	100s digit	10s digit	1s digit	%
4	Outdoor air sensor	4	+/-	10s digit	1s digit	℃
5	Discharge sensor	5	100s digit	10s digit	1s digit	℃
6	Eva in sensor (MONO)	6	+/-	10s digit	1s digit	℃
7	Inlet water sensor (MONO)	7	+/-	10s digit	1s digit	℃
8	Outlet water sensor (MONO)	8	+/-	10s digit	1s digit	℃
9	Cond sensor	9	+/-	10s digit	1s digit	℃
10	Current	A	10s digit	1s digit	First decimal	A
11	Fan RPM	B	1000s digit	100s digit	10s digit	rpm
12	Target discharge temperature	C	100s digit	10s digit	1s digit	℃
13	EEV	D	1000s digit	100s digit	10s digit	step
14	Protective control	E	0 : Cooling 1 : Heating	Protective control 0 : No protective control 1 : Freezing 2 : Defrosting 3 : Over-load 4 : Discharge 5 : Total current	Frequency status 0 : Normal 1 : Hold 2 : Down 3 : Up_limit 4 : Down_limit	-
15	IPM temp.	F	+/-	10s digit	1s digit	℃
long-1	Main Micom version	Year(Dec)	Month(Hex)	Day(two digit)	Day(One digit)	-
long-1 and 1	Inverter Micom version	Year(Hex)	Month(Hex)	Day(two digit)	Day(One digit)	-
long-1 and 2	EEPROM version	Year(Hex)	Month(Hex)	Day(two digit)	Day(One digit)	-

4-5-2 Troubleshooting for outdoor unit

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

No.	LED Display			Displayed PCB Assy	Meaning	Remarks	Error Code
	Red	Green	Yellow				
-	●	◉	○	MAIN/INVERTER	Normal operation (MAIN : Indoor ↔ Outdoor : Green ON) (INVERTER : MAIN PCB↔ INVERTER PCB : Green ON)		-
1	●	◉	○	MAIN	Hydro unit quantity is mismatched.	Check Hydro unit quantity setting in outdoor	E201
2	●	●	○	MAIN/INVERTER	Abnormal state, no communication between Indoor and Outdoor Main PCB	Check electrical connection and setting	E202
	▯	○	○				
4	●	●	◉	MAIN/INVERTER	1min. Time out of communcation error(Main↔ Inverter)	Check electrical connection and setting	E203
5	●	◉	○	MAIN	Outdoor temp sensor error	Check Outdoor sensor Open/Short	E221
6	●	◉	○	MAIN	Cond. temp sensor error	Check Cond. sensor Open/Short	E231
7	●	◉	○	MAIN	Discharge temp sensor error	Check Discharge sensor Open/Short	E251
8	●	◉	○	MAIN	OLP Sensor Error	Check OLP sensor Open/Short	E320
9	●	◉	○	MAIN	Detection of Outdoor Freezing when Comp. Stop	Check Outdoor Cond.	E403
10	●	◉	○	MAIN	Protection of Outdoor Overload when Comp. Stop	Check Comp. when it start	E404
11	●	◉	○	MAIN	Discharge temperature of a compressor in an outdoor unit is overheated.		E416
12	●	◉	○	MAIN	Outdoor EEV Open error	Check EEV	E419
13	●	◉	○	MAIN	Miss wiring error at 3Phase power source line (Only 3Phase Model)	Check Power Line-R,S,T,N	E425
14	●	◉	○	MAIN	Gas leakage error (Stop state)	Check Gas leak	E439
15	●	◉	○	MAIN	Heating operation is not available since the outdoor air temperature is over 35°C.	Heating	E440
					16	Cooling	E441
16	●	◉	○	MAIN	Gas leakage error (Before operating)	Check Gas leak	E443
17	○	○	●	MAIN/INVERTER	Outdoor unit BLDC Fan 1 or Fan 2 error	FAN1 error	E458
						19	E475
18	○	◉	○	MAIN/INVERTER	Comp. Starting error		E461
19	●	◉	○	MAIN	Primary Current Trip error		E462
20	●	◉	○	MAIN	Over current trip / PFC over current error	Check OLP sensor	E463
21	◉	○	○	MAIN/INVERTER	IPM(IGBT Module) Over Current(O.C)		E464
22	○	●	◉	MAIN/INVERTER	Comp. Over load error		E465
23	◉	●	○	MAIN/INVERTER	DC-Link voltage under/over error	Check AC Power or DC_Link voltage	E466

○ Off ◉ Blink ● On

4-5-2 Troubleshooting for outdoor unit(con.)

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

No.	LED Display			Displayed PCB Assy	Meaning	Remarks	Error Code
	Red	Green	Yellow				
24	●	○	●	MAIN/INVERTER	Comp. wire missing error	Check Comp. wire	E467
25	●	◉	◉	MAIN/INVERTER	Current sensor error	Check Outdoor Inverter PBA	E468
26	●	◉	○	MAIN	DC-Ling voltage Sensor error	Check Input voltage	E469
27	●	◉	○	MAIN	EEPROM read/write error	Check EEPROM	E470
28	●	◉	○	MAIN	Outdoor EEPROM error	Check Outdoor EEPROM date	E471
29	◉	◉	○	MAIN/INVERTER	IPM(IGBT Module) or PFCM Temperature sensor Error	Check Outdoor Inverter PBA	E474
30	●	◉	●	MAIN/INVERTER	PFC Overload Error	Check Outdoor Inverter PBA	E484
31	●	◉	○	MAIN	Input current sensor error		E485
32	◉	◉	○	MAIN/INVERTER	IPM is over heated.	Check Outdoor Inverter PBA	E500
33	●	◉	○	MAIN	GAS Leak error	Check indoor and outdoor unit model	E554
34	●	◉	○	MAIN	Water inlet temperature sensor error	Check Water inlet sensor	E901
35	●	◉	○	MAIN	Water outlet temperature sensor error	Check Water outlet sensor	E903
36	●	◉	○	MAIN	Refriqerant gas inlet temperature sensor error	Check Gas inlet sensor	E906
37	●	◉	○	MAIN	Mixing Valve Outlet temperature sensor error	Check Mixing Valve Outlet sensor	E916

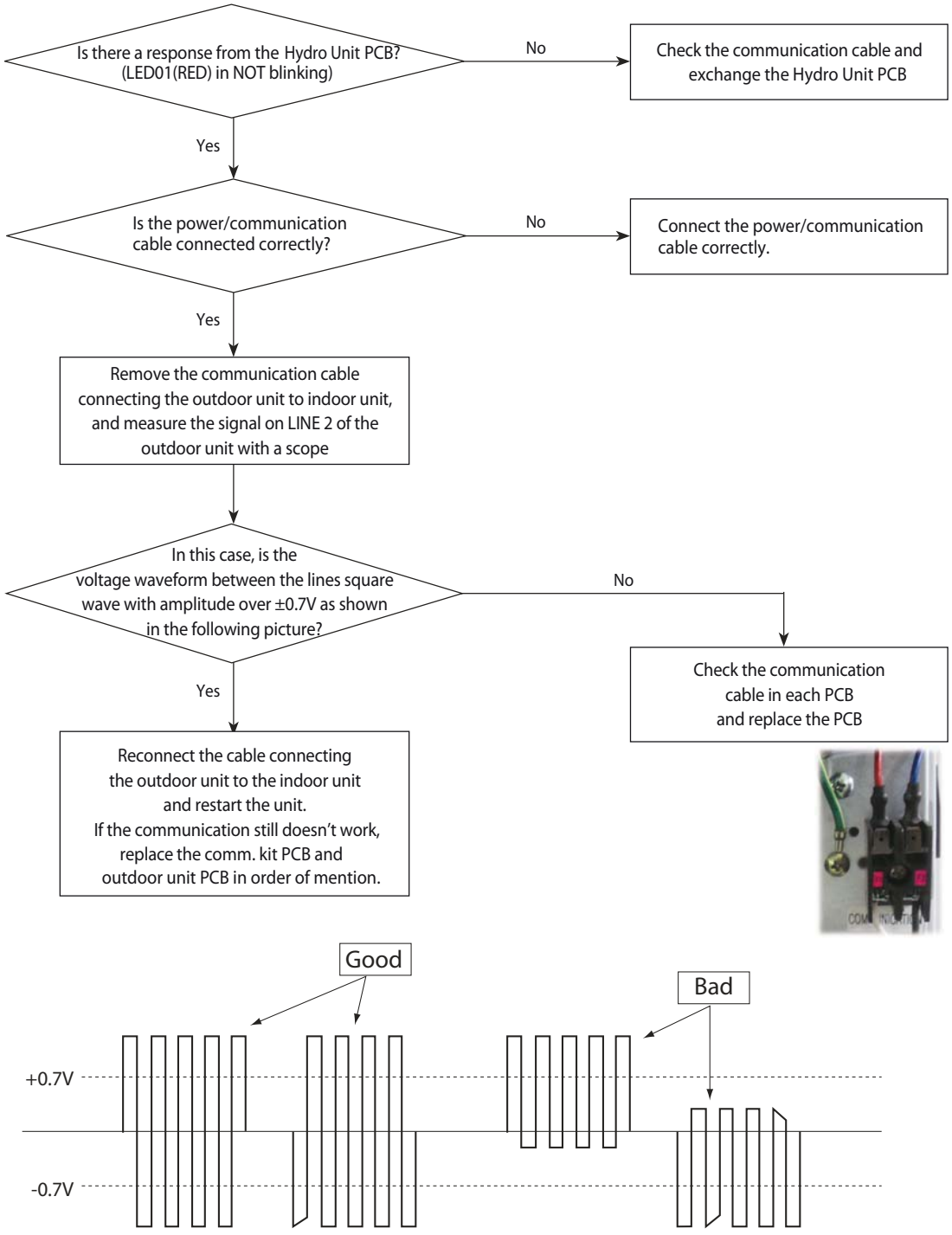
○ Off ◉ Blink ● On

4-6 Troubleshooting by symptoms

4-6-1 Communication error after finishing tracking (E202)

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

2. Check procedure

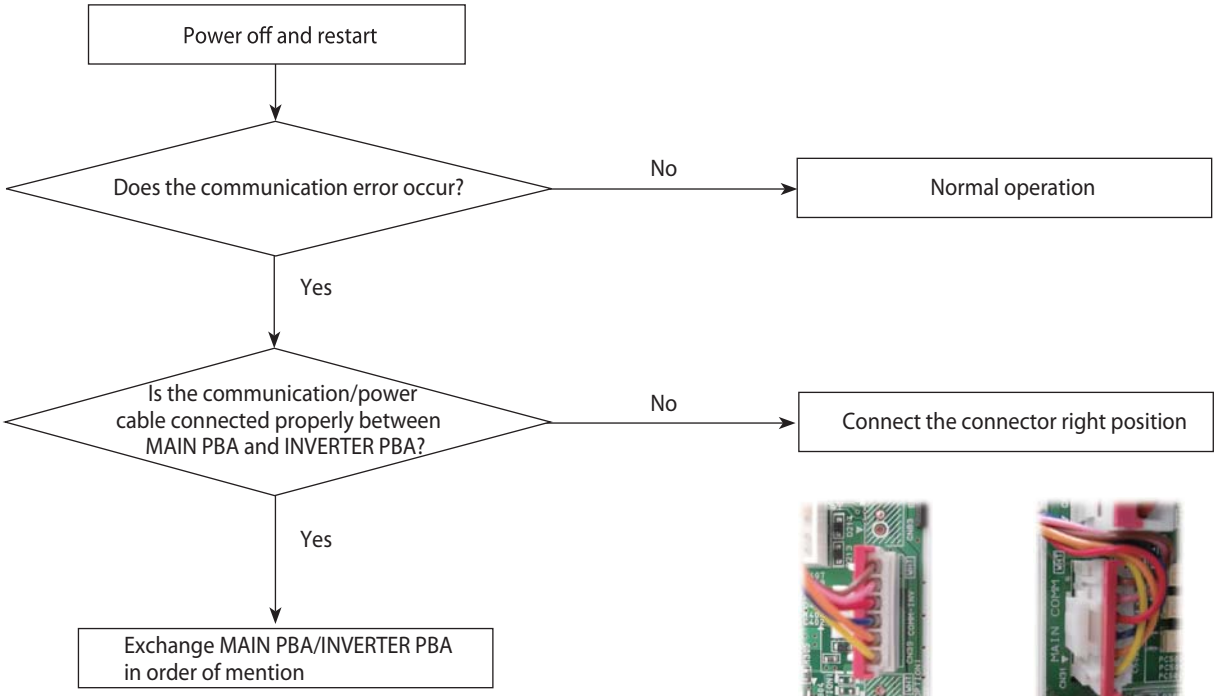


cf.) If there is no oscillo scope, it can be replaced multimeter instead of osillo scope.
If measured voltage is floating value from 0.1V to 4.5V, then it means that the PCB is normal.

4-6-2 Time out (1min.) of communication error between MAIN PBA and INV. PBA (E203)

1. Check items
   1) Is the communication cable connected properly between MAIN PBA and INVERTER PBA?
   2) Is the power cable connected correctly?

2. Check procedure



<CN305 in MAIN PBA >

<CN31 in INVERTER PBA>

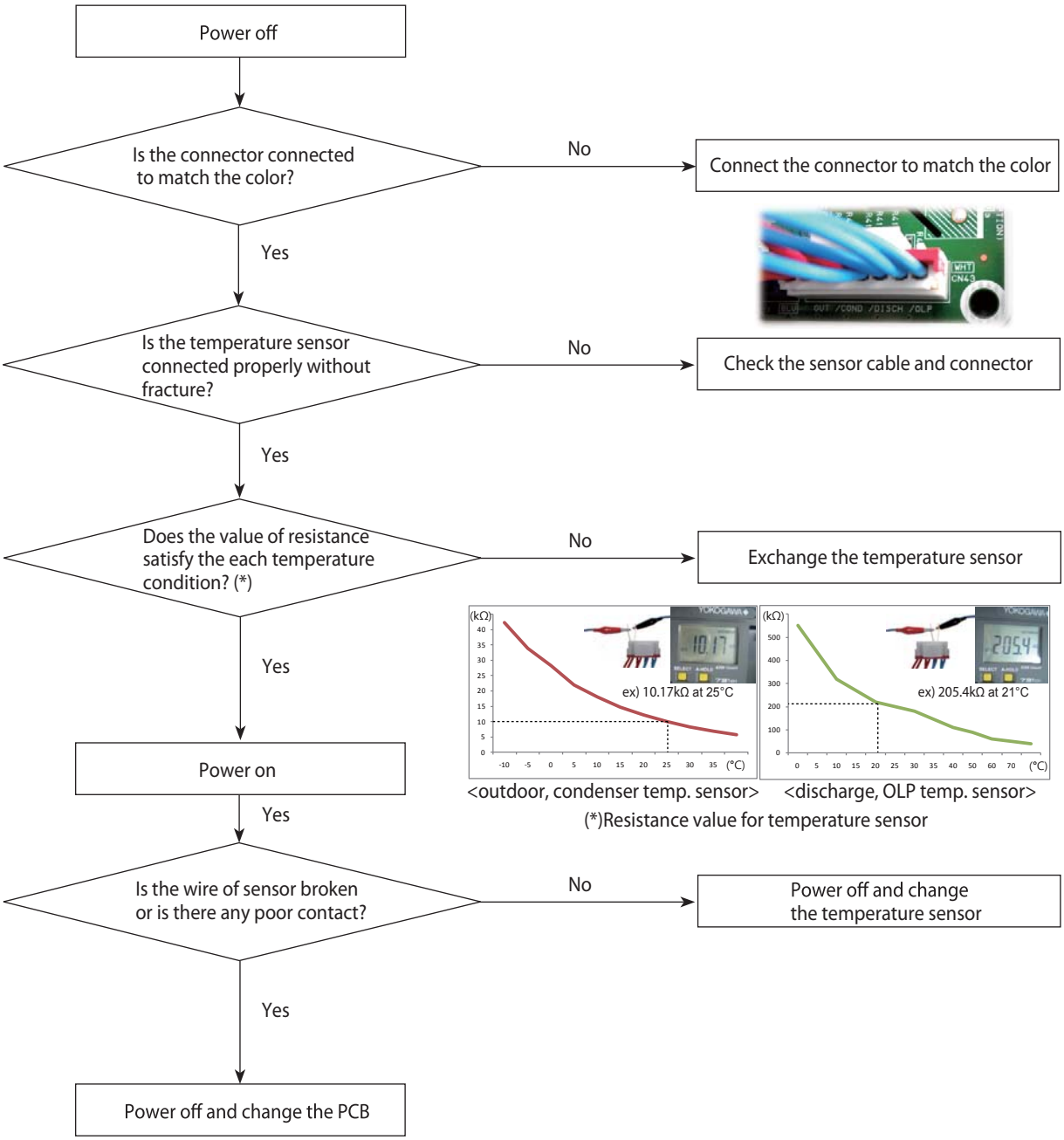
4-6-3 Temperature sensor error (E221, E231, E251, E320)

<Error code for each temperature sensor>

	Pin no.	Temp. sensor	Error code
CN43 in MAIN PBA	1,2	Outdoor	E221
	3,4	Condenser	E231
	5,6	Discharge	E251
	7,8	OLP	E320

1. Check items
   1) Is the sensor connected correctly (CN403 in MAIN PBA)?
   2) Is the postion of sensor correct?
   3) Does the value of resistance satisfy the each temperature condition?

2. Check procedure



<outdoor, condenser temp. sensor> <discharge, OLP temp. sensor>

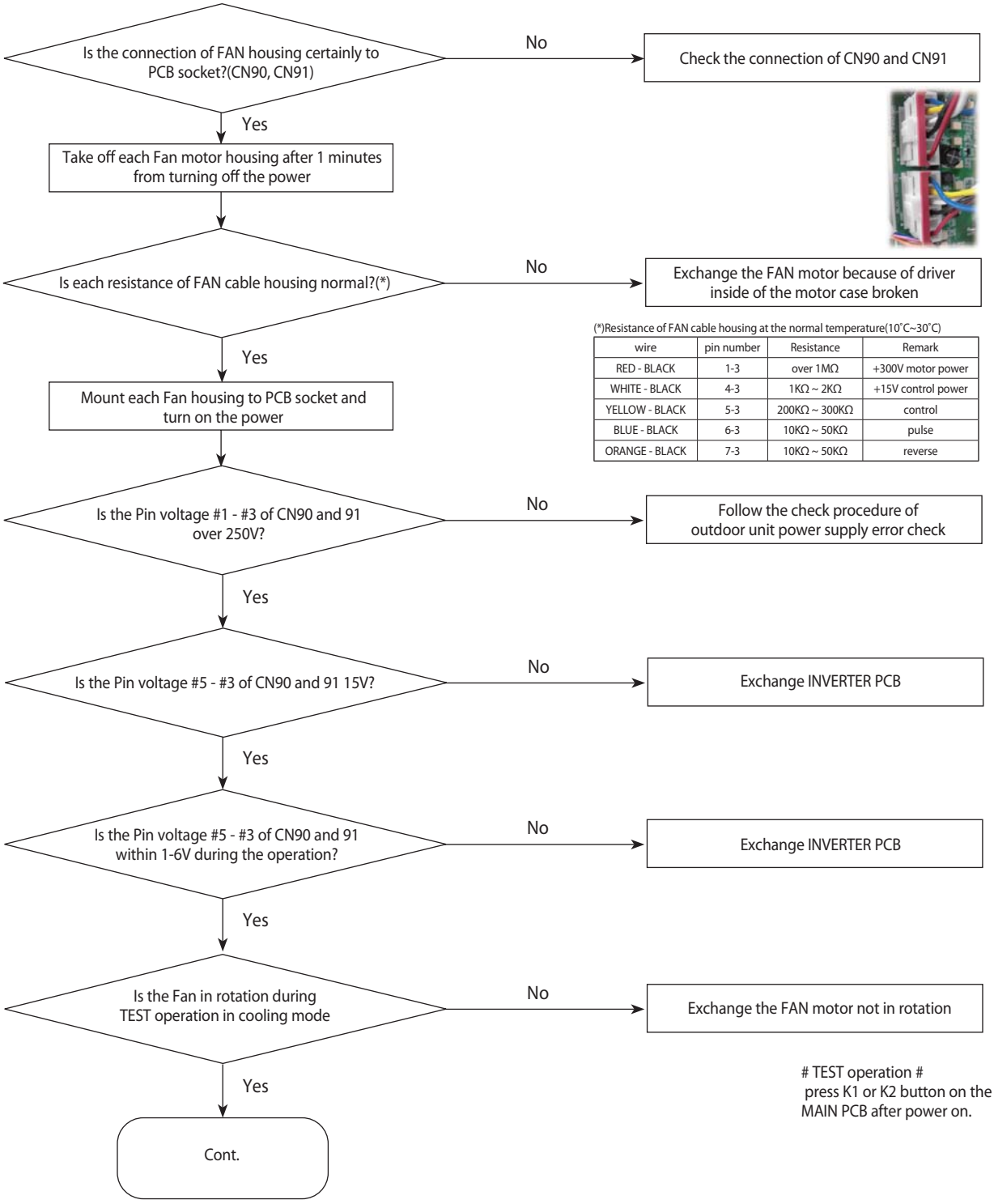
(*)Resistance value for temperature sensor

4-6-4 Fan error (E458, E475)

FAN 1 error(E458), FAN 2 error(E475)

1. Check items
   1) Are the input power voltage and power connection correct?
   2) Is the motor wire connected to the outdoor PCB correctly?
   3) Is there no obstacle at the surrounding of motor and propeller?
   4) Does the driver in the motor case broken?

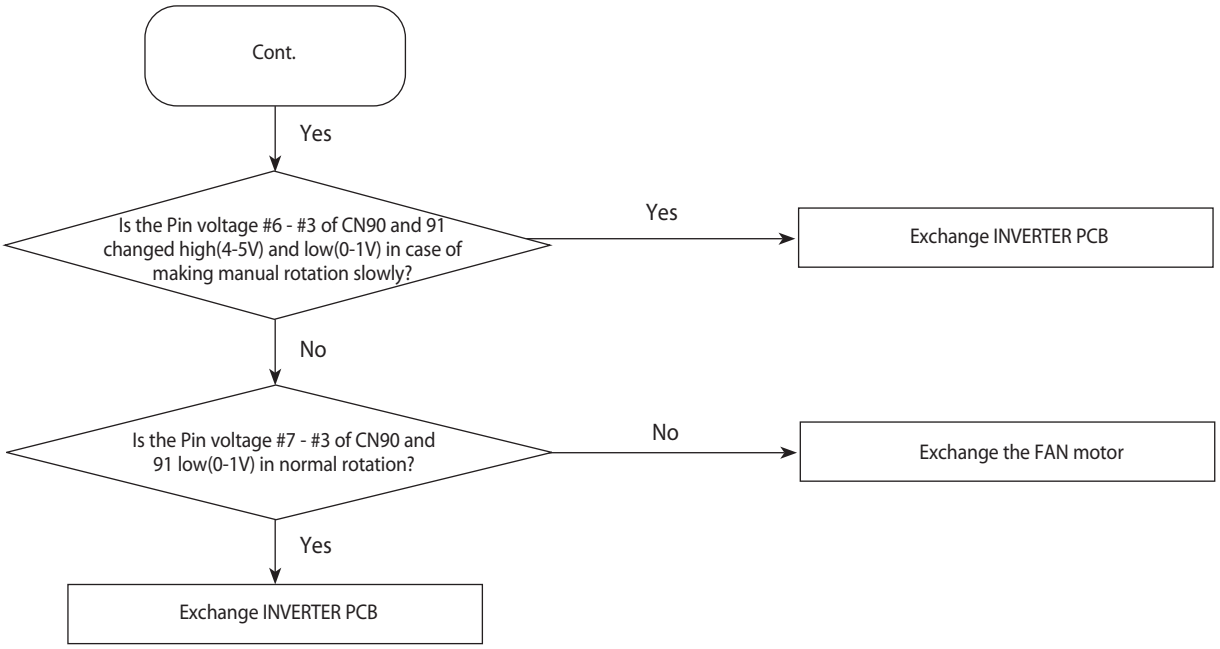
2. Check procedure



(*)Resistance of FAN cable housing at the normal temperature(10˚C~30˚C)

wire	pin number	Resistance	Remark
RED - BLACK	1-3	over 1MΩ	+300V motor power
WHITE - BLACK	4-3	1KΩ ~ 2KΩ	+15V control power
YELLOW - BLACK	5-3	200KΩ ~ 300KΩ	control
BLUE - BLACK	6-3	10KΩ ~ 50KΩ	pulse
ORANGE - BLACK	7-3	10KΩ ~ 50KΩ	reverse

Fan error (E458, E475) (cont.)

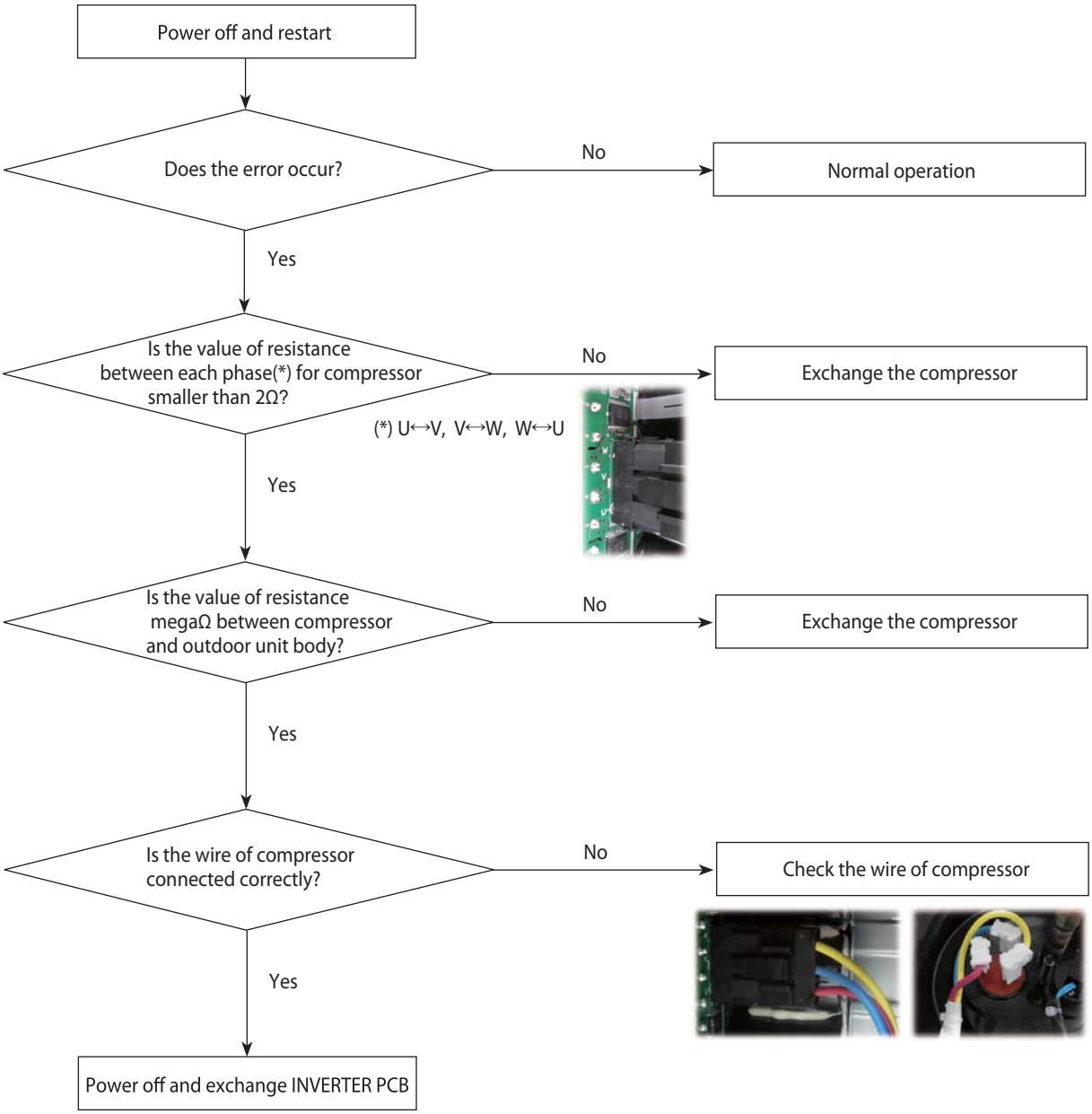


4-6-5 Compressor error (E461, E467)

Compressor starting error(E461), Compressor wire missing error(E467)

1. Check items
   1) Is the power connected properly?
   2) Is the connector of compressor connected correctly?
   3) Is the resistance normal between each phase for compressor ?

2. Check procedure

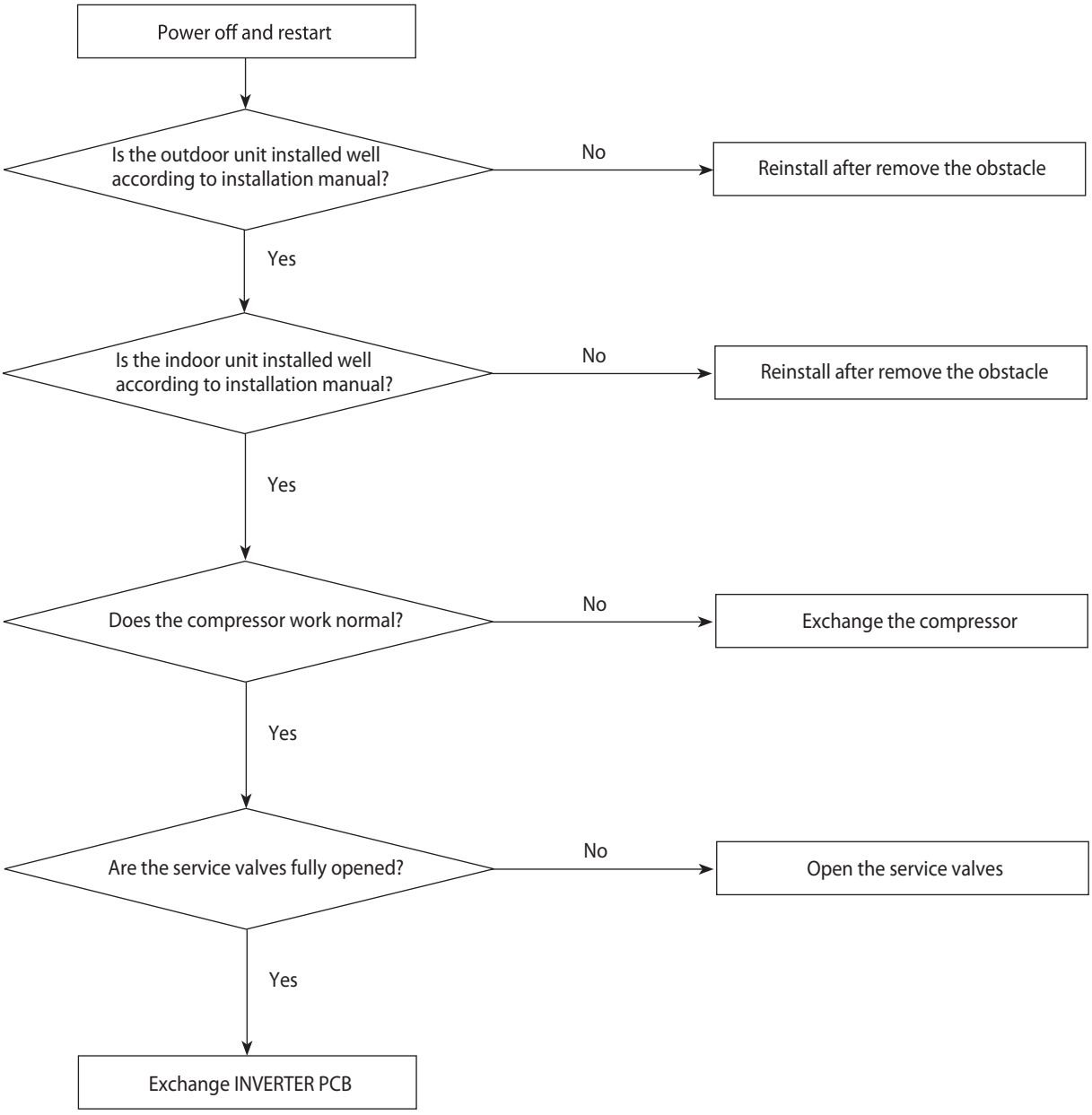


4-6-6 Current trip error (E462, E463)

Primary current trip error(E462), Over current trip / PFC over current error(E463)

1. Check items
   1) Is the voltage of power suitable?
   2) Is refrigerant charged?
   3) Does the fan of outdoor unit work normally?
   4) Is there any obstacle around indoor and outdoor unit?

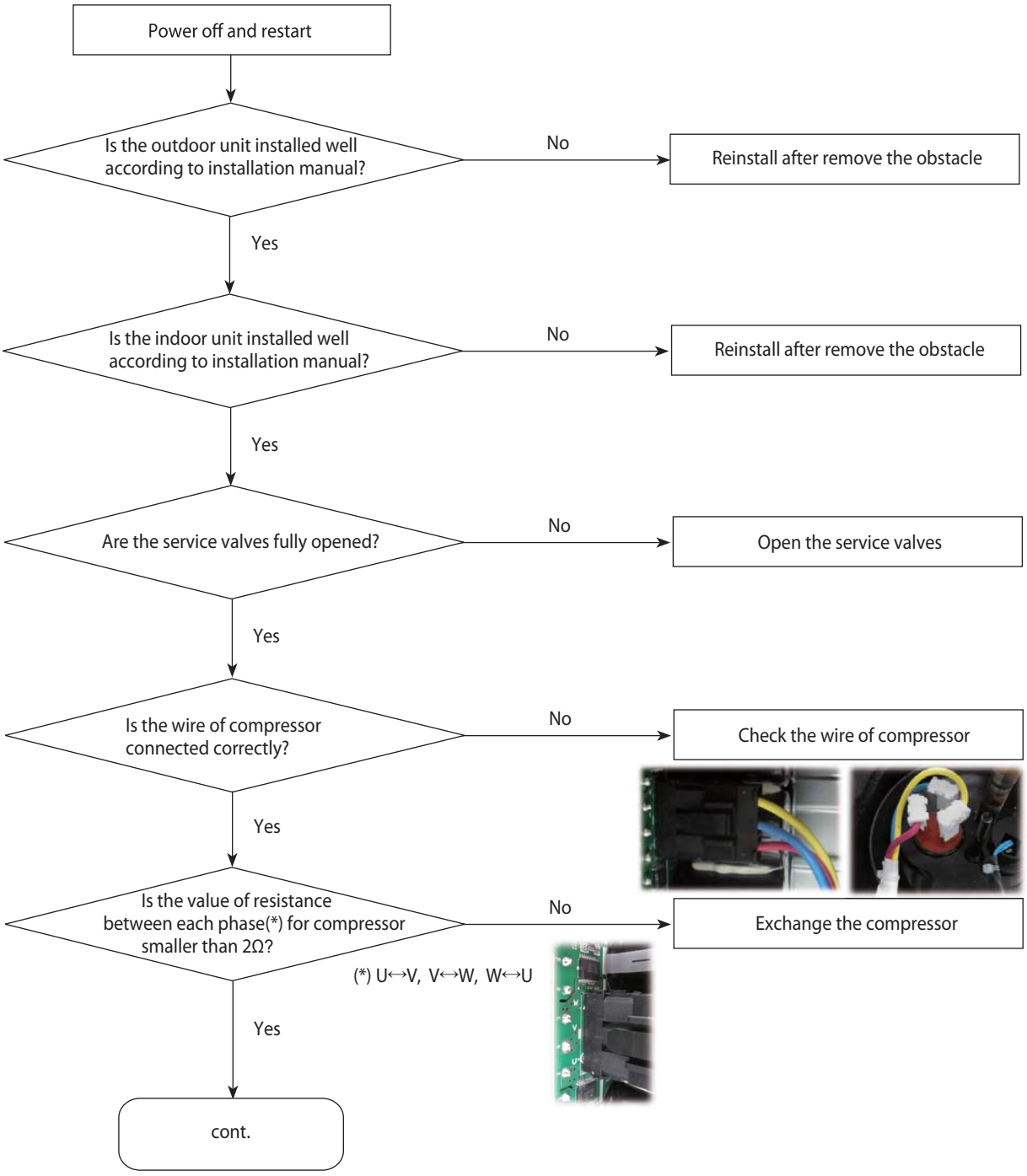
2. Check procedure

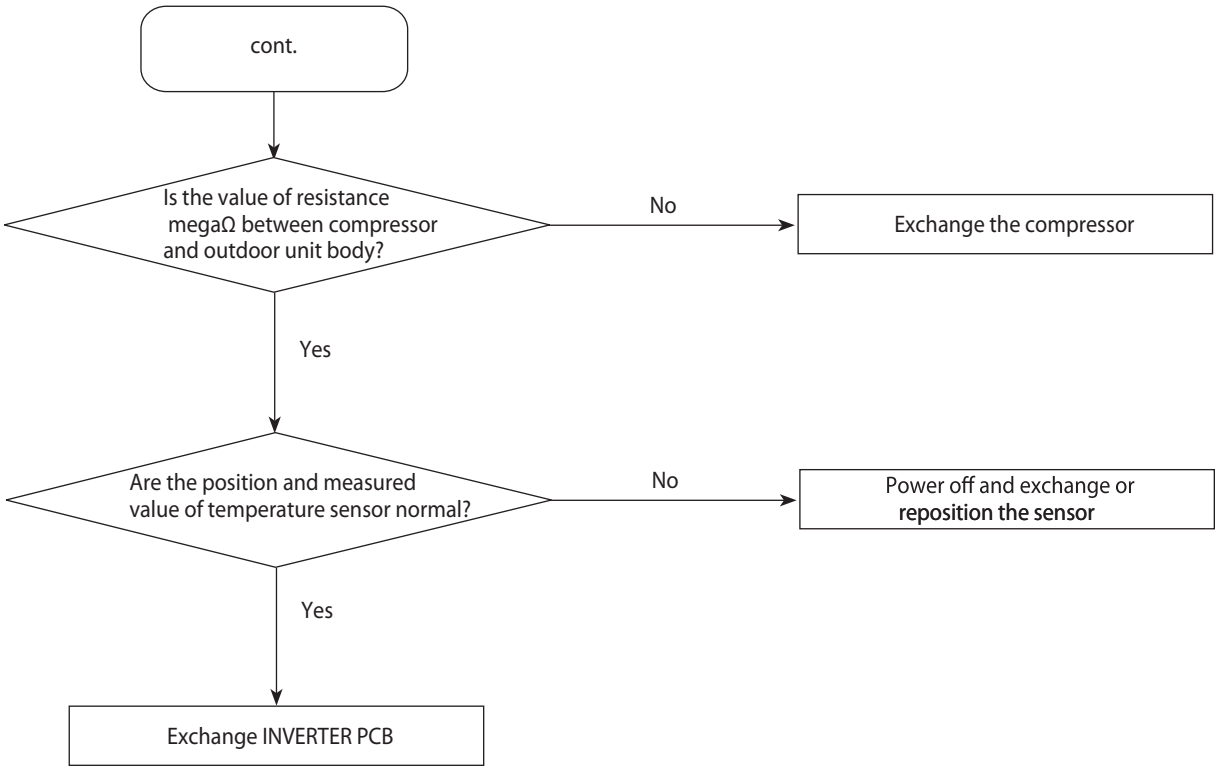


4-6-7 IPM(IGBT module) over current error (E464)

1. Check items
   1) Is refrigerant charged?
   2) Does the compressor work normally?
   3) Is the connection of compressor correctly?
   4) Is there any obstacle around indoor and outdoor unit?

2. Check procedure

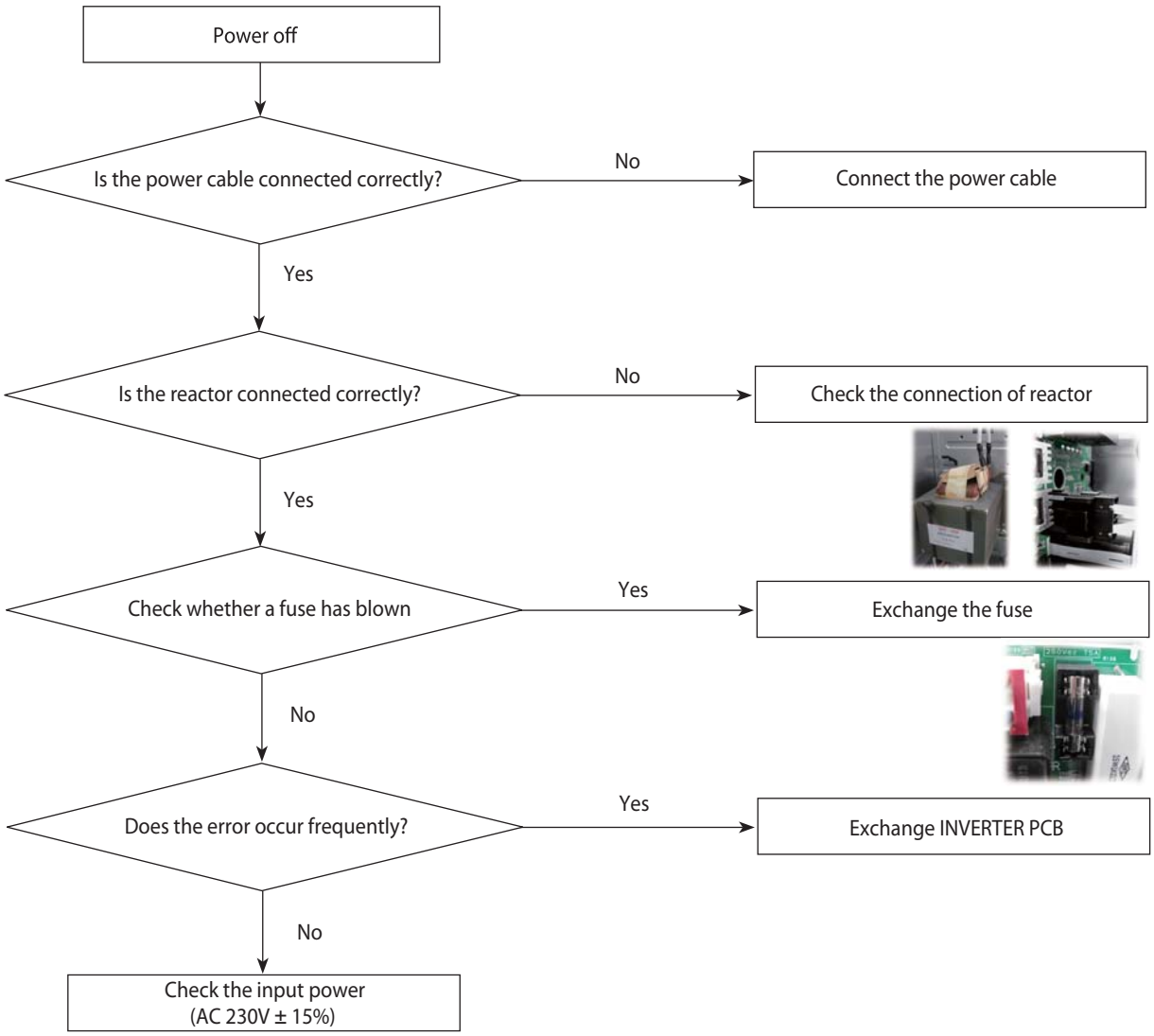



cont.
Is the value of resistance megaΩ between compressor and outdoor unit body?
No
Exchange the compressor
Yes
Are the position and measured value of temperature sensor normal?
No
Power off and exchange or reposition the sensor
Yes
Exchange INVERTER PCB

4-6-8 DC-link voltage under/over error (E466)

1. Check items
   1) Is the input power normal?
   2) Is the AC power connected correctly?

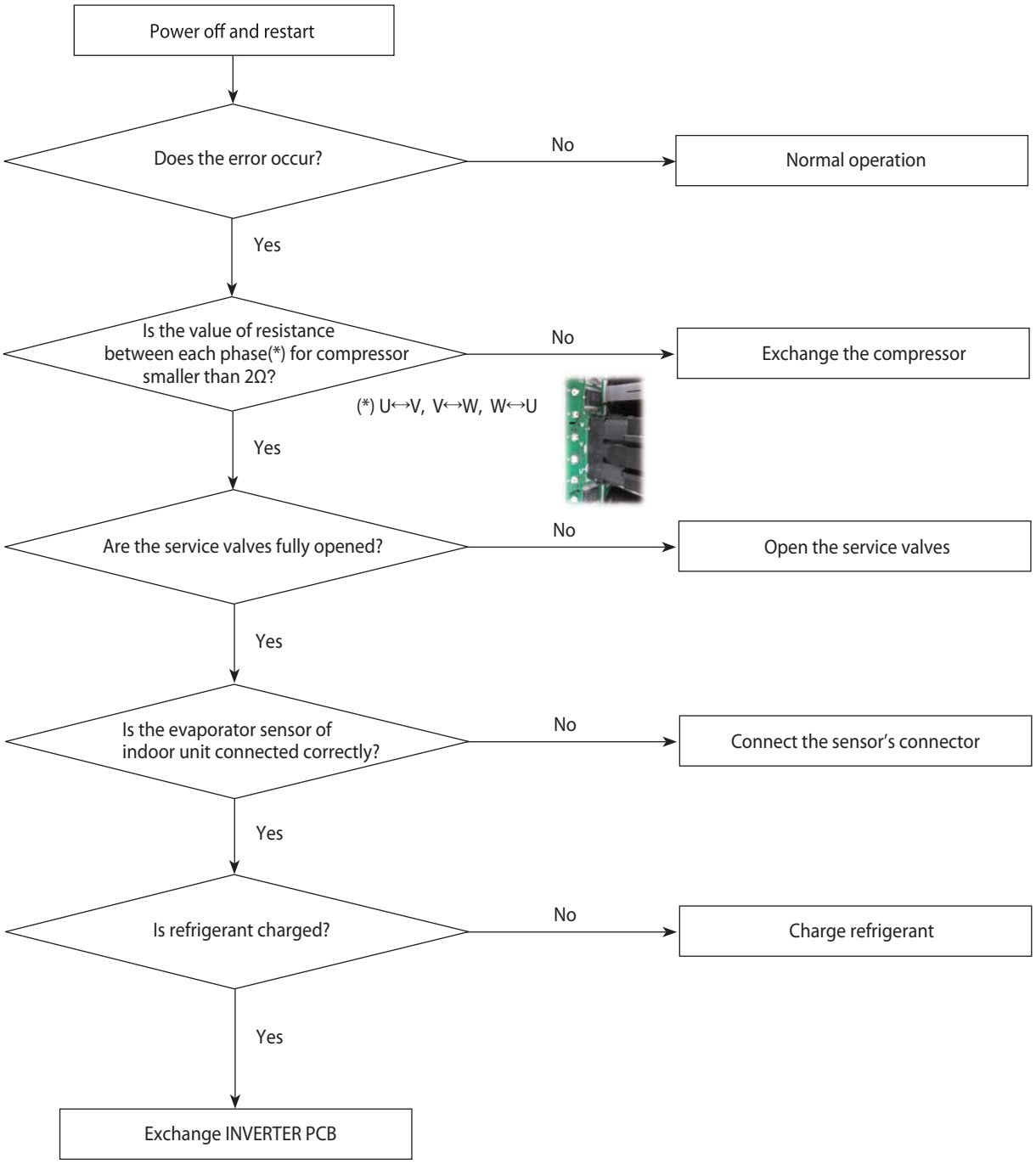
2. Check procedure



4-6-9 GAS leak error(E554)

1. Check items
   1) Is refrigerant charged?
   2) Is the evaporator sensor of indoor unit connected correctly?

2. Check procedure

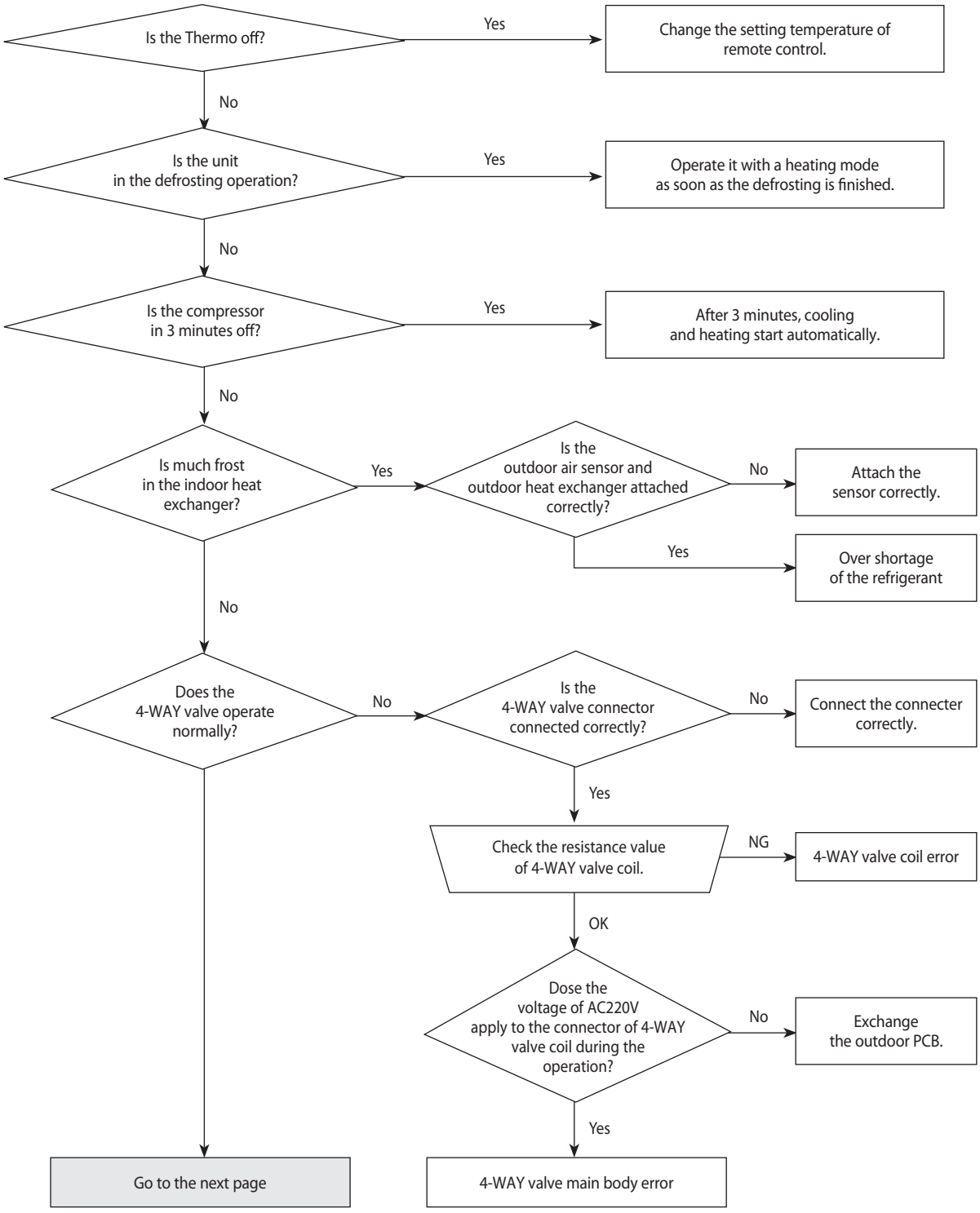


4-6-10 The other errors

Error code	Meaning	Troubleshooting
E177	Emergency stop	Indoor unit (Hydro Unit) orders emergency stop. Check the indoor unit (Hydro Unit).
E201	Hydro Unit quantity is mismatched.	Hydro Unit quantity must be matched with outdoor unit 1 by 1. Check the Hydro Unit quantity. It must be 1EA.
E403	Detection of outdoor freezing when compressor stops.	Outdoor unit (Condenser) froze. Check condenser.
E404	Protection of outdoor overload when compressor stops.	Compressor is overloaded. Please check same as E461 and check compressor when it starts.
E416	Discharge temperature of a compressor in an outdoor unit is overheated.	Discharge temperature is overheated.
E440	Heating operation is not available since the	Check the outdoor temperature.
E441	Cooling operation is not available since the outdoor air temperature is lower than -15°C.	
E465	Compressor over load error	Compressor is overloaded. Please check same as E461 and check compressor when it starts.
E468	Current sensor error	Exchange INVERTER PBA.
E471	Outdoor EEPROM error	EEPROM date is wrong. Exchange EEPROM or MAIN PBA. This error don't occur in EMF 150-AM)
E474	IPM(IGBT Module) or PFCM temperature sensor error	Exchange INVERTER PBA.
E484	PFC overload error	Check reactor located in control plate. If reactor is normal, exchange INVERTER PBA.
E500	IPM is over heated.	Check INVERTER PBA's temperature. Power off and cool down INVERTER PBA, and then restart the outdoor unit.
E556	Capacity mismatching between indoor and outdoor.	EEPROM data is wrong. Exchange EEPROM or MAIN PBA
E557	Option code miss matching among the indoors(only for DPM)	Option setting data is wrong. (This error don't occur in EMF 150-AM)

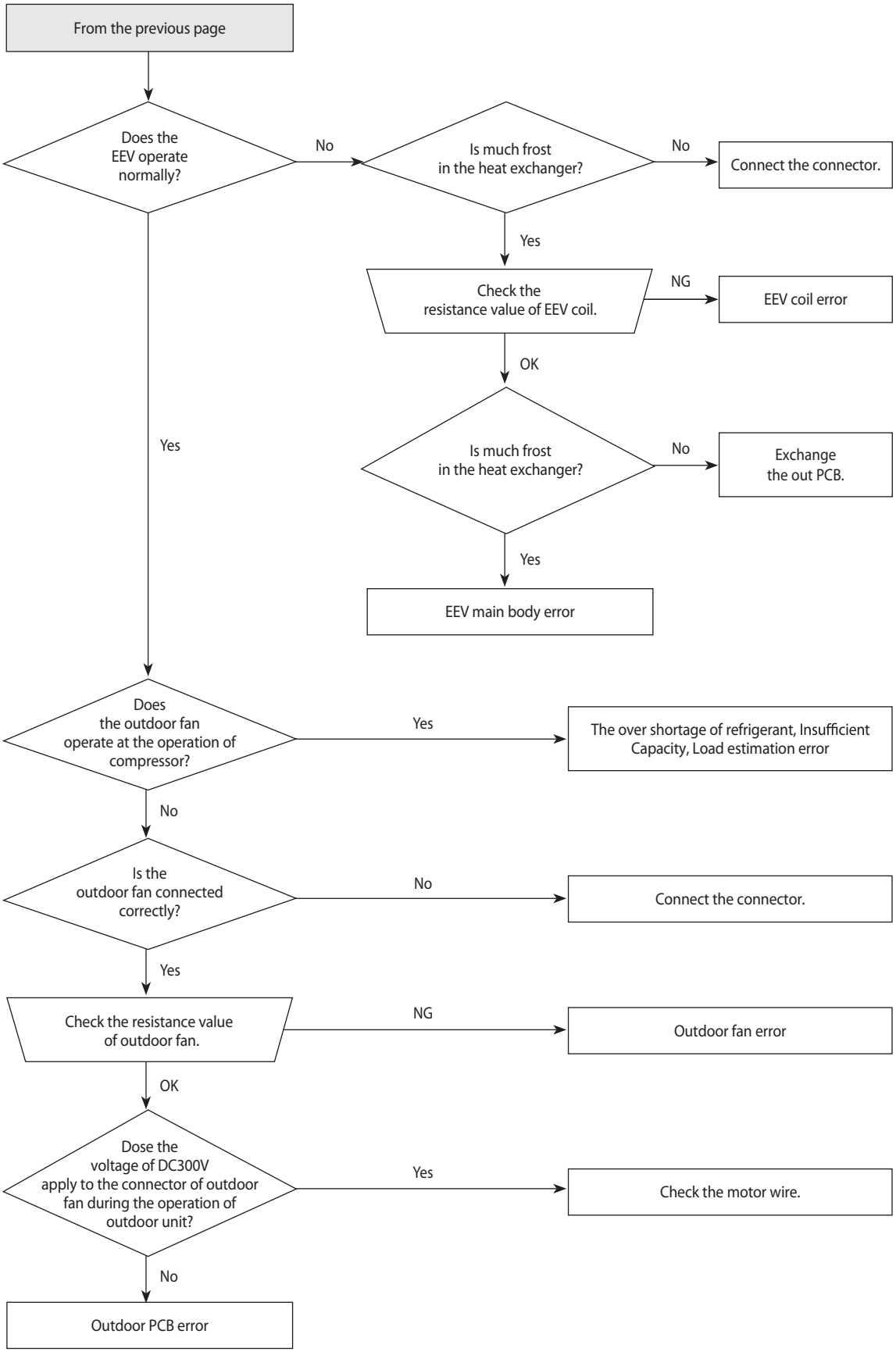
4-6-11 In case of heating at the cooling mode or cooling at the heating mode

1. Troubleshooting procedure



* Normal resistance value of 4 way valve coil : 1.5±0.15kΩ (at 20℃)

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

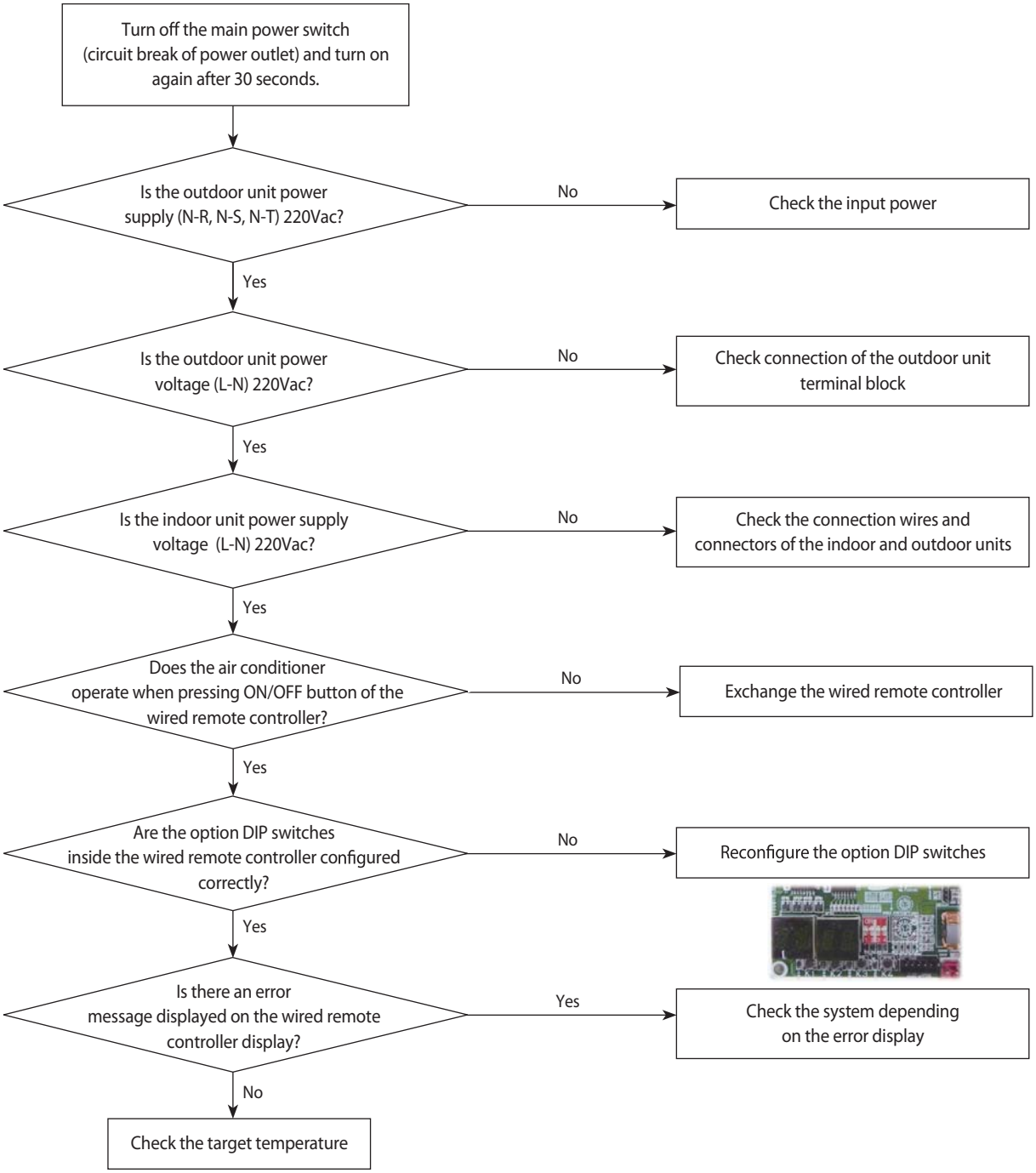


* Normal resistance value of EEV valve coil(Red-Black or Yellow-Orange) : 92±8Ω (at 20℃)

4-6-12 Outdoor unit is not powered on – Initial diagnosis

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

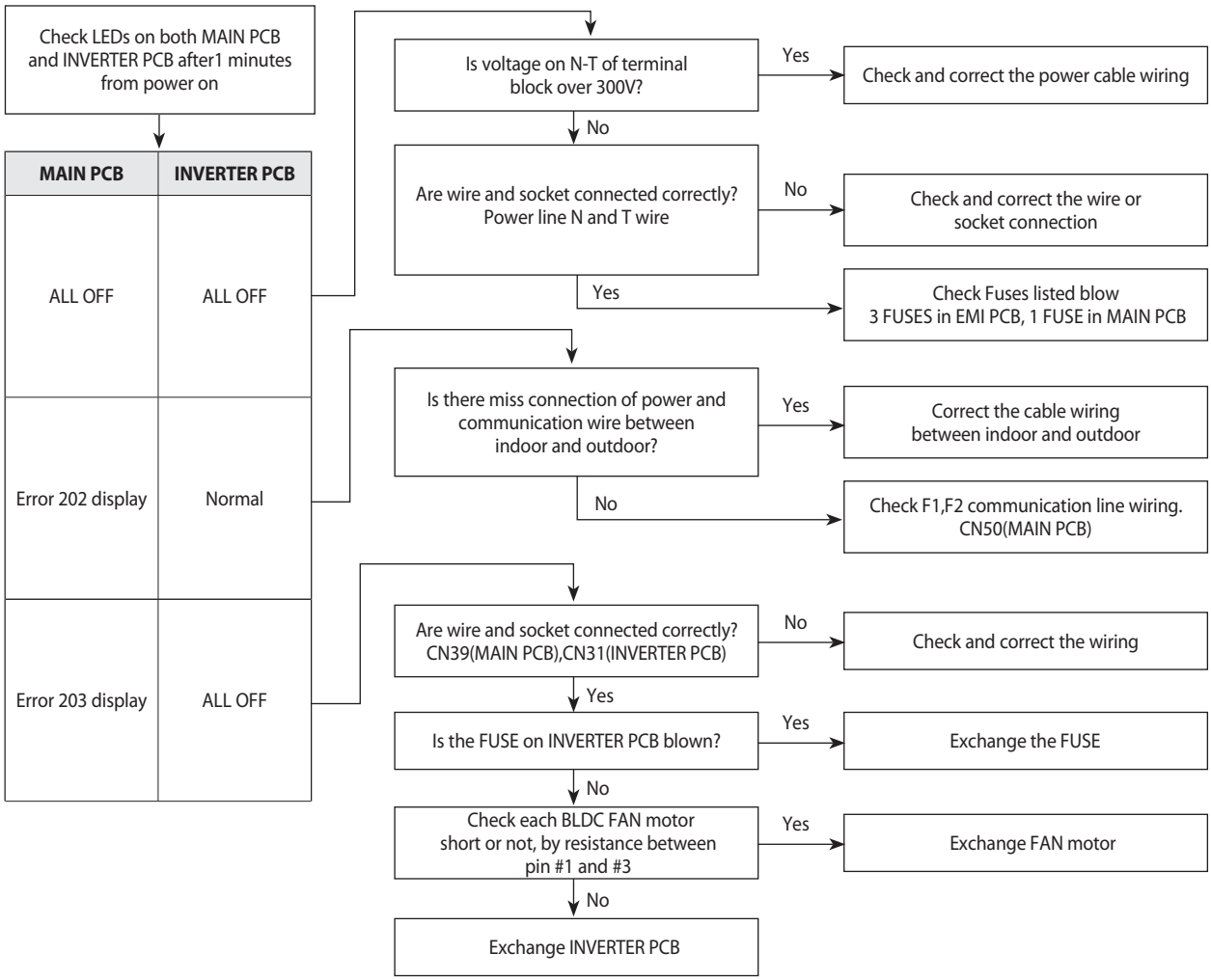
2. Check procedure



4-6-13 Outdoor unit power supply error

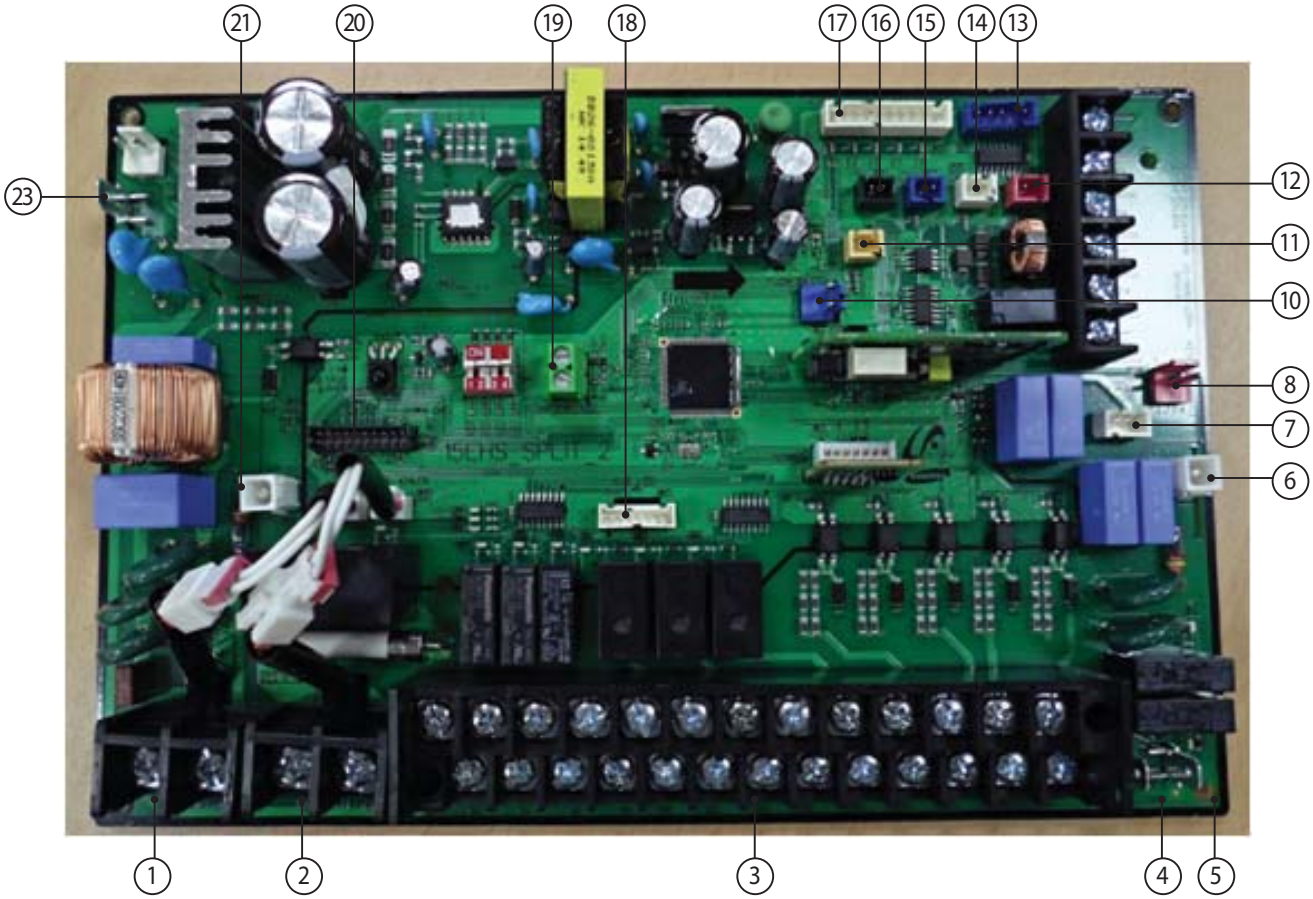
1. Checklist:
   1) Are the input power voltage and power connection correct?
   2) Is there any Fuse Short of the indoor or outdoor unit?
   3) Is any LED lit on both MAIN PCB and INVERTER PCB?
   4) Are Reactor wires of the outdoor unit connected correctly?

2. Troubleshooting procedure



5. PCB Diagram

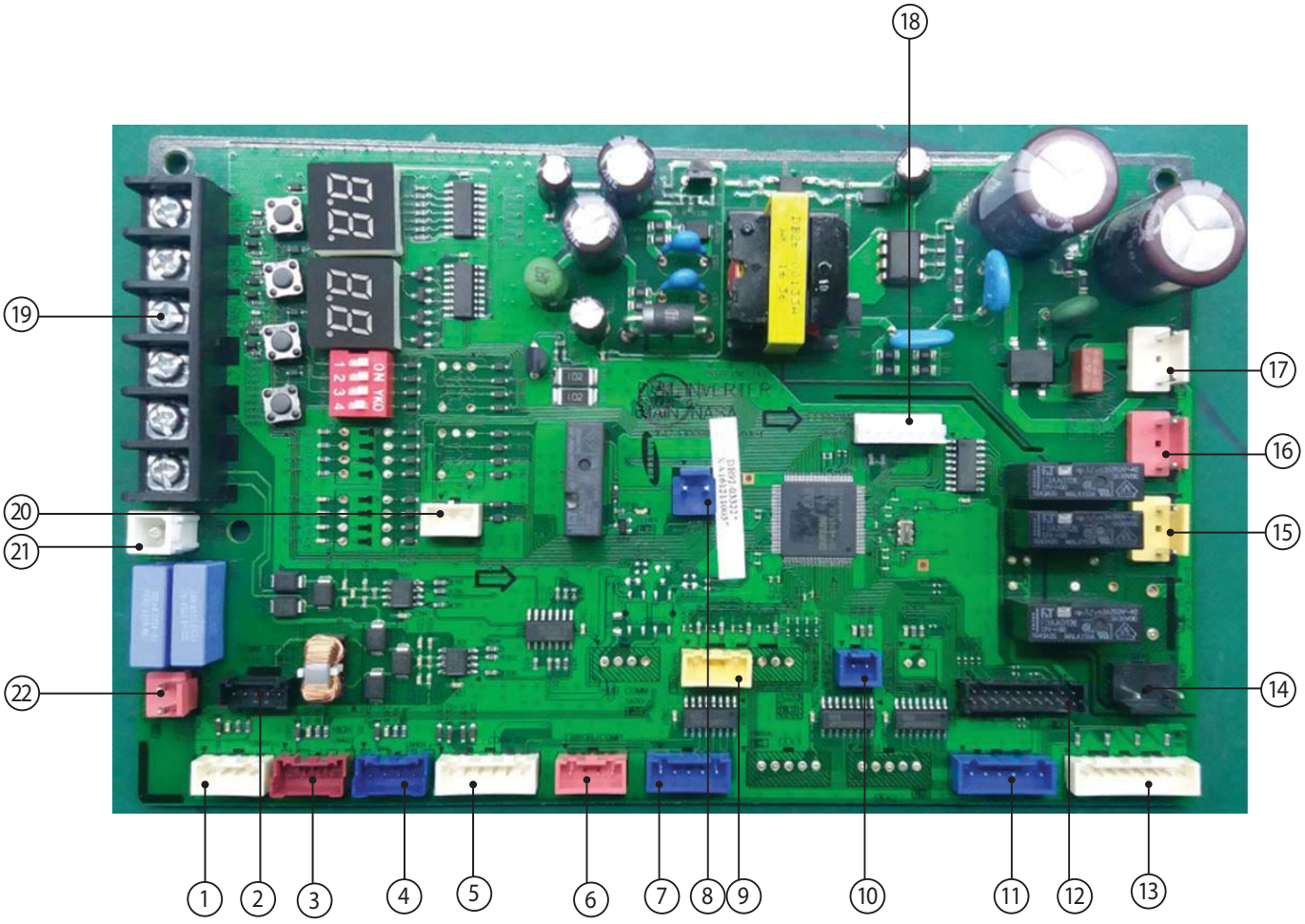
5-1 Hydro unit



No.	Local	Function	Description
1	TB-A	MAIN POWER	DAPC 3013-2P BLK
2	TB-A1	BOOST HEATER	DAPC 3013-2P BLK
3	TB-B	EXTERNAL CONTROL	BR-1000C2-26P BLK
4	CNP001	MC2-A	YTR250
5	CNP002	MC1-A	YTR250
6	CN303	EARTH	YDW236-01 WHT
7	CNS1	WATER PUMP SIG/GND	SMW250-03 WHT
8	CNS304	WIRED REMOCON F3/F4	YW396-02V RED
9	TB-C	F1-F2/DC12V-GND/F3-F4	DAPC 2009-6P BLK
10	CNS041	FLOW SWITCH	YW396-02V BLU
11	CNS042	WATER TANK	SMW250-02 YEL
12	CNS046	SMART GRID	SMW250-02 RED
13	CNS063	EEV	SMW250-06 BLU
14	CNS044	ROOM	SMW250-02 WHT
15	CNS045	MIXING SENSOR	SMW250-02 BLU
16	CNS047	HEATER	SMW250-02 BLK
17	CNS043	HEATER/EVA-OUT/EVA-IN/WATER-OUT/WATER-IN	SMW250-10 WHT
18	CNS201	SUB_LED	SMW200-07 WHT
19	CNS2	FR_CONTROL	AKZ350 GRN
20	CNS301	DOWNLOAD	YDW200-20 BLK
21	CN101	EARTH	YDW236-01 WHT
22	CNP401	B/UP HEATER_N	YW396-02V WHT
23	CNP003	MC2-B	YTR250

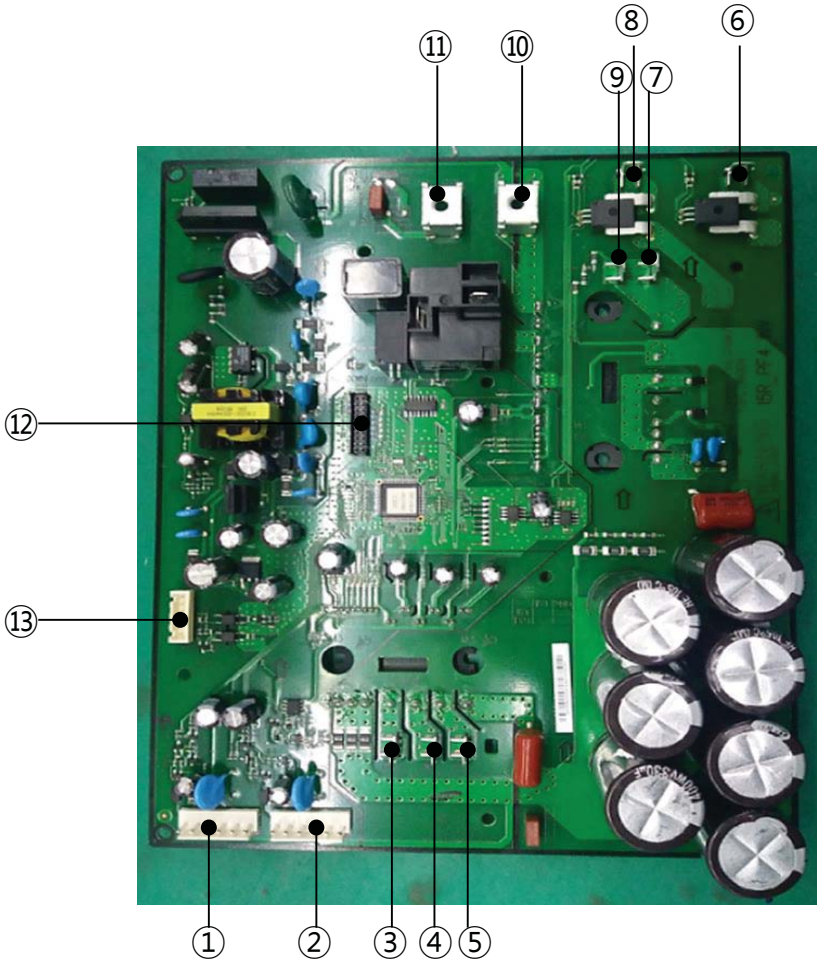
MAIN PCB

(AE090/120/140/160MXTPEH/EU , AE090/120/140/160MXTPGH/EU)



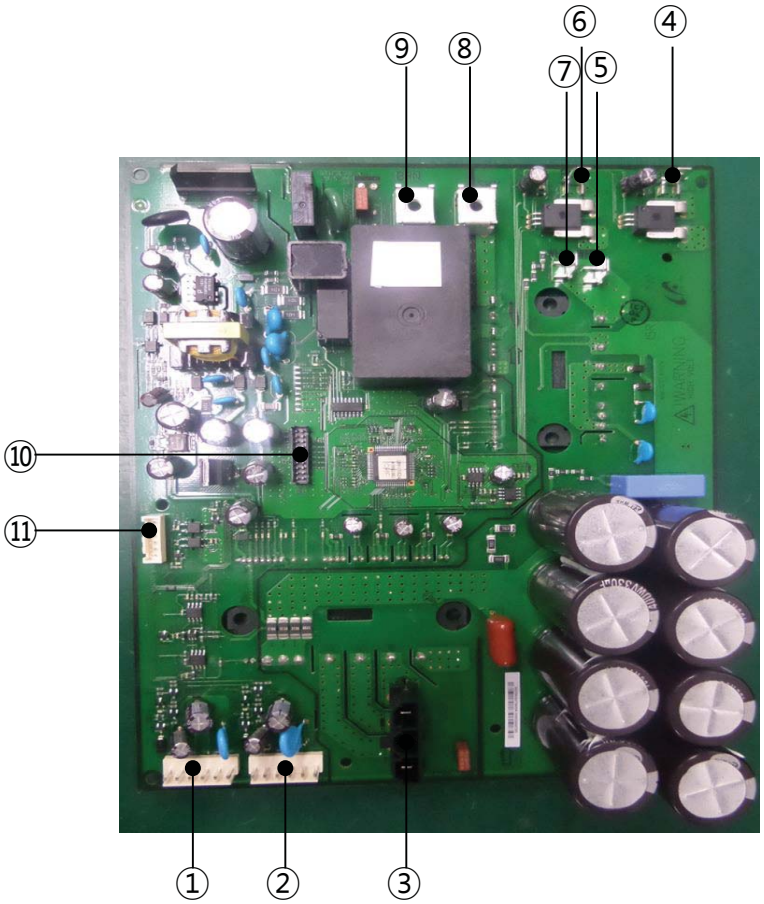
No.	Local	Function	Description
1	CN405	MID PRESSURE SENSOR	SMW250-04 WHT
2	CN302	COMM-OPTION	SMW200-05 BLK
3	CN402	HIGH PRESSURE SENSOR	B04B-XARK-1 RED
4	CN401	LOW PRESSURE SENSOR	B04B-XARK-1 BLU
5	CN305	COMM INV	SMW250-06 WHT
6	CN801	ERROR/COMP CHECK	SMW250-04 RED
7	CN805	EEV4	SMW250-05 BLU
8	CN12	DC12V	YW396-02V BLU
9	CN406	SUCTION/D_TUBE	SMW250-04 YEL
10	CN001	EXTERNAL CTRL	SMW250-02 BLU
11	CN802	EEV1	SMW250-06 BLU
12	CN306	DOWNLOAD	YDW200-20 BLK
13	CN403	OUT/COND/DISCHARGE/OLP	SMW250-08 WHT
14	CN704	A2A VALVE	YW396-03AV BLK
15	CN702	4WAY VALVE	YW396-03AV YEL
16	CN701	HOTGAS	YW396-03AV RED
17	CN101	AC POWER	YW396-03AV WHT
18	CN806	EEPROM	B7P-MQ WHT
19	CN304	DRED	DAPC-2009-6P BLK
20	CN501	MODE SELECTOR	SMW250-03 WHT
21	CN103	EARTH	YDW236-01 WHT
22	CN303	COMM-INDOOR	YW396-02V RED

INVERTER PCB
(AE090MXTPEH/EU)



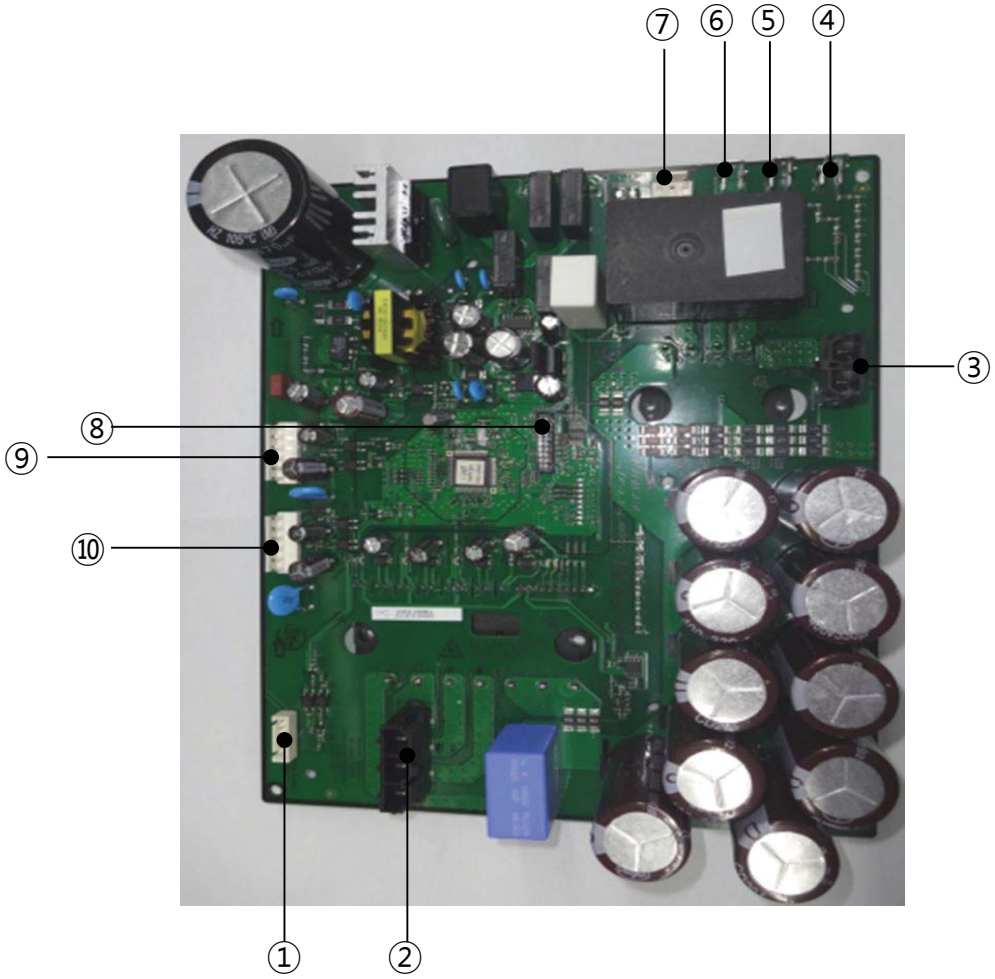
No.	Local	Function	Description
1	CN901	FAN1	YW396-06V WHT
2	CN911	FAN2	YW396-06V WHT
3	CN401	COMP U	YTR250
4	CN402	COMP V	YTR250
5	CN403	COMP W	YTR250
6	REACTOR_A2	REACTOR_A2	YTR250
7	REACTOR_A1	REACTOR_A1	YTR250
8	REACTOR_B2	REACTOR_B2	YTR250
9	REACTOR_B1	REACTOR_B1	YTR250
10	N_	AC POWER	OT-048
11	L_	AC POWER	OT-048
12	CN551	DOWNLOAD	YDW200-20 BLK
13	CN351	COMM-MAIN	SMW250-06 WHT

INVERTER PCB
(AE120/160MXTPEH/EU)



No.	Local	Function	Description
1	CN901	FAN1	YW396-06V WHT
2	CN911	FAN2	YW396-06V WHT
3	CN401	COMP	42819-3213 BLK
4	REACTOR_A2	REACTOR_A2	YTR250
5	REACTOR_A1	REACTOR_A1	YTR250
6	REACTOR_B2	REACTOR_B2	YTR250
7	REACTOR_B1	REACTOR_B1	YTR250
8	N_	AC POWER	OT-048
9	L_	AC POWER	OT-048
10	CN551	DOWNLOAD	YDW200-20 BLK
11	CN351	COMM-MAIN	SMW250-06 WHT

INVERTER PCB
(AE090/120/160MXTPGH/EU)

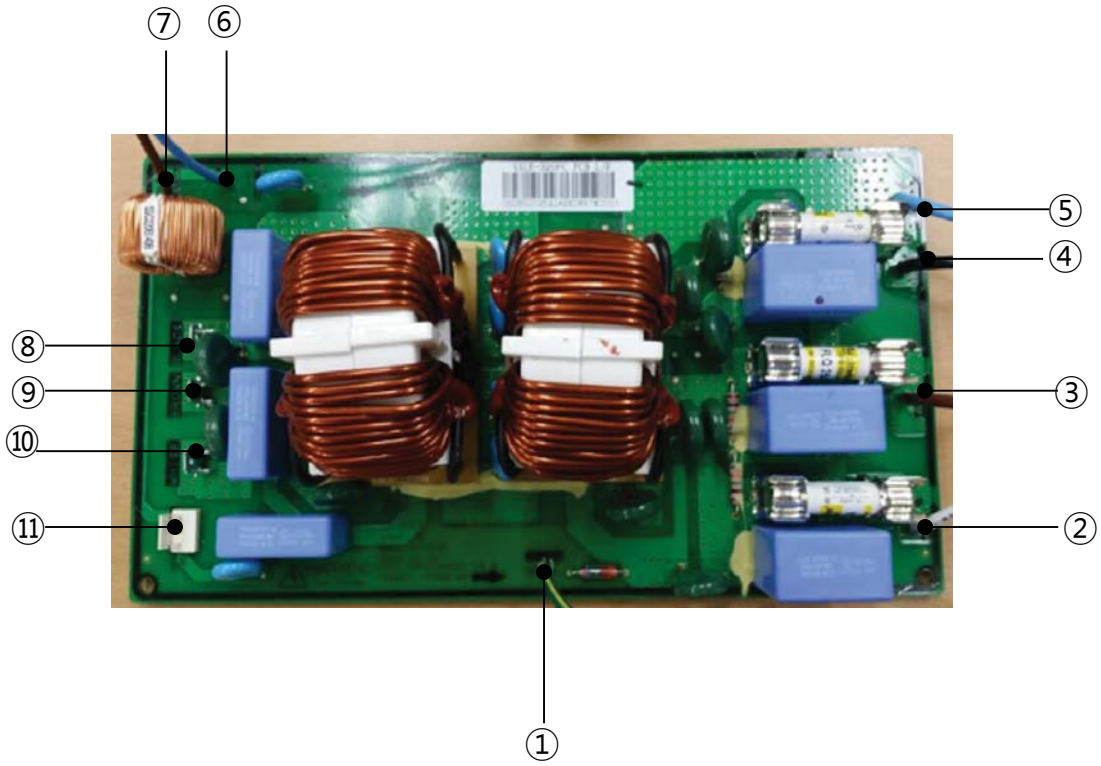


No.	Local	Function	Description
1	CN351	COMM-MAIN	SMW250-06 WHT
2	CN400	COMP	42819-3213 BLK
3	CN101	REACTOR	HLW1005-02 BLK
4	CN102	R-IN	YTR250
5	CN103	S-IN	YTR250
6	CN104	T-IN	YTR250
7	CN150	AC POWER	YW396-03AV WHT
8	CN551	DOWNLOAD	YDW200-20 BLK
9	CN901	FAN2	YW396-06V WHT
10	CN900	FAN1	YW396-06V WHT

EMI PCB
(AE090/120/160MXTPEH/EU)

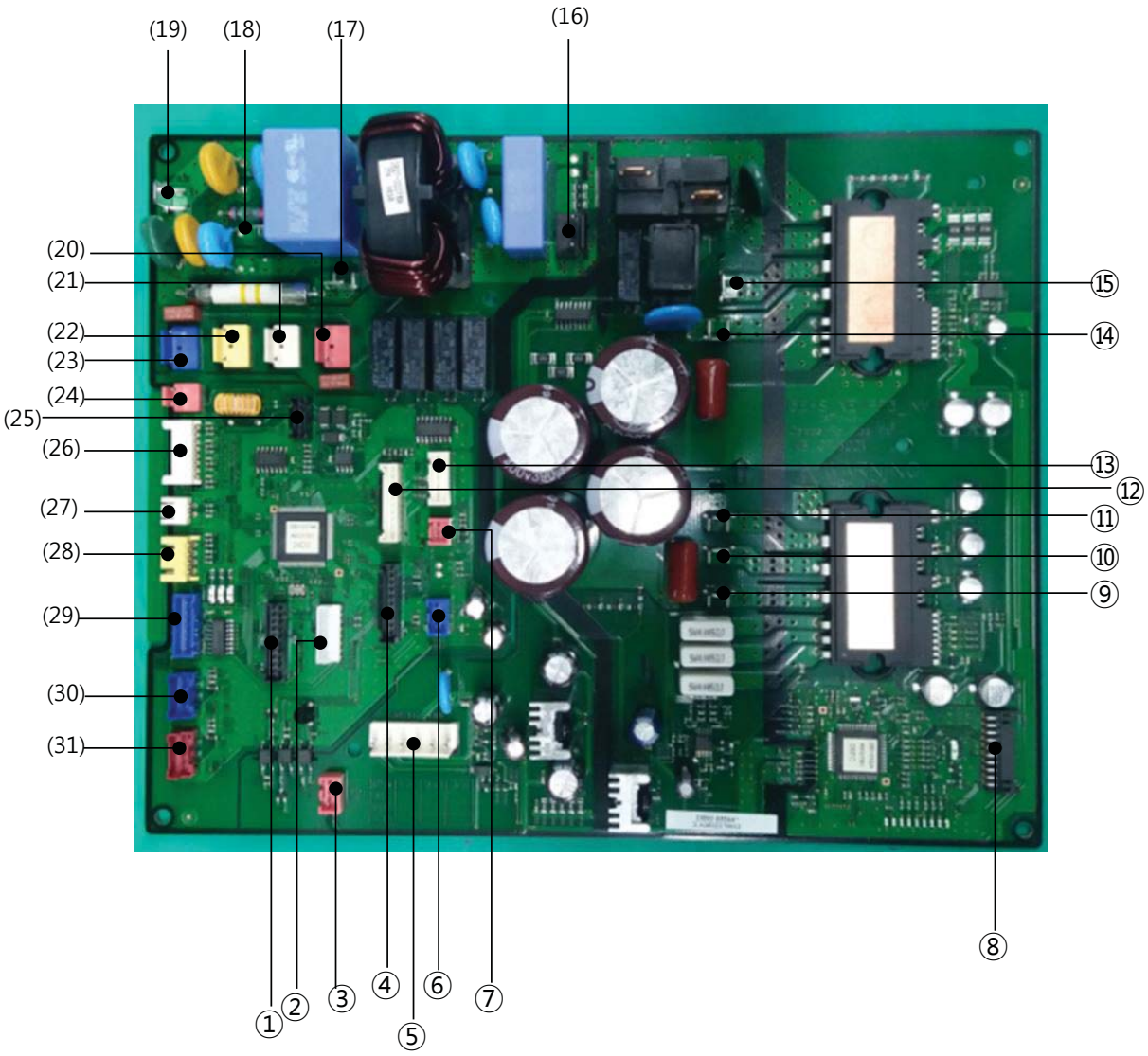
No.	Local	Function	Description
1	L1	AC POWER	OT-048
2	EARTH	EARTH	YEL/GRN WIRE
3	L	AC POWER	BRN WIRE
4	N	AC POWER	SKY/BLU WIRE
5	N1	AC POWER	OT-048
6	CN01	AC POWER	YW396-03AV WHT

EMI PCB
(AE090/120/160MXTPGH/EU)



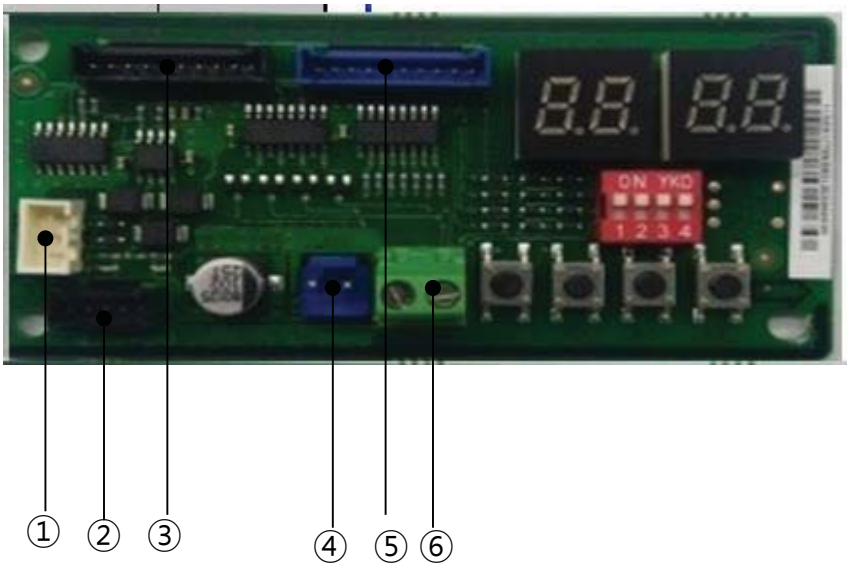
No.	Local	Function	Description
1	EARTH	EARTH	YEL/GRN WIRE
2	R-IN	R-IN	WHT WIRE
3	S-IN	S-IN	BRN WIRE
4	T-IN	T-IN	BLK WIRE
5	N-IN	N-IN	SKY/BLU WIRE
6	N-INV	N-INV	SKY/BLU WIRE
7	T-INV	T-INV	BRN WIRE
8	T-OUT	T-OUT	YTR250
9	S-OUT	S-OUT	YTR250
10	R-OUT	R-OUT	YTR250
11	CN01	AC POWER	YW396-03AV WHT

INVERTER PCB
(AE044/060MXTPEH/EU)



No.	Local	Function	Description
1	CN201	DOWNLOAD	YDW200-20 BLK
2	CN202	EEPROM	B7P-MQ WHT
3	CN153	SMPS DC15V	SMW250-03 RED
4	CN207	SUB PBA	SMW200-10 BLK
5	CN901	BLDC MOTOR	YW396-06V WHT
6	CN152	SMPS DC12V	SMW250-03 BLU
7	CN246	QUIET_SW	SMW250-02 RED
8	CN551	DOWNLOAD-INV	YDAW200-20 BLK
9	CN401	COMP U	YTR250
10	CN402	COMP V	YTR250
11	CN403	COMP W	YTR250
12	CN206	SUB PBA	SMW200-10 WHT
13	CN204	DRED	SMW250-05 WHT
14	CN051	REACTOR	YTR250
15	CN052	REACTOR	YTR250
16	CN150	SMPS POWER	YW396-03AV BLK
17	CN002	AC POWER	YTR250
18	CN003	EARTH	GP881205
19	CN001	AC POWER	YTR250
20	CN241	HOTGAS	YW396-03AV RED
21	CN030	4WAY	YW396-03AV WHT
22	CN243	A2A VALVE	YW396-03AV YEL
23	CN242	BASE HEATER	YW396-03AV BLU
24	CN301	COMM	YW396-02V RED
25	CN205	SUB PBA	SMW200-05 BLK
26	CN251	OUT/DISCHARGE/COND/OLP	SMAW200-08 WHT
27	CN245	SUCTION	SMAW250-02 WHT
28	CN252	WATER	SMAW250-04 YEL
29	CN702	EEV	SMW250-06 BLU
30	CN801	LOW PRESSURE SENSOR	B04B-XAEK-1 BLU
31	CN809	HIGH PRESSURE SENSOR	B04B-XARK-1 RED

SUB-DISPLAY PCB
(AE044/060MXTPEH/EU)

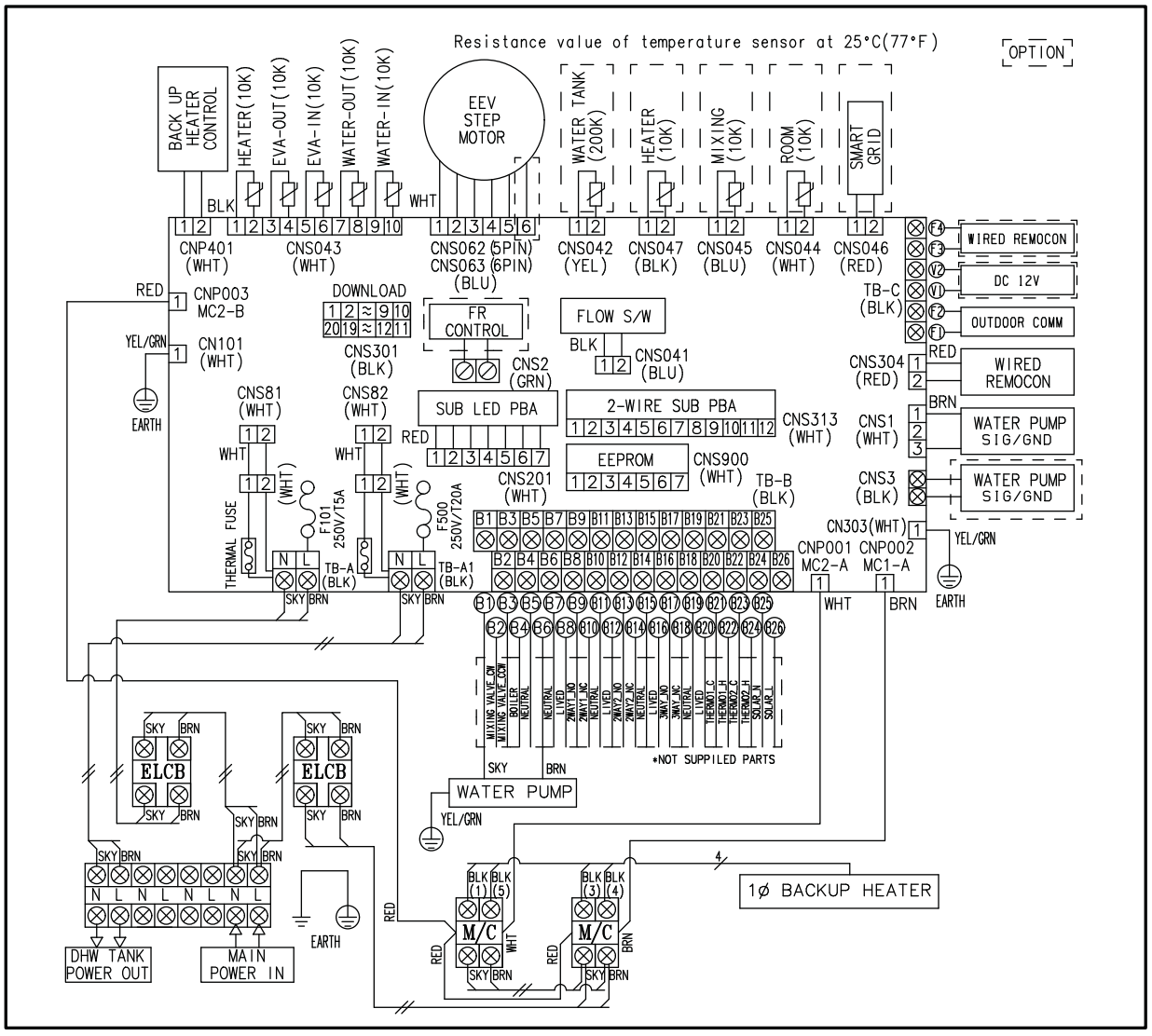


No.	Local	Function	Description
1	OPT1	MODE SELECTOR	SMW250-03 WHT
2	CN518	DC POWER	SMW200-05 BLK
3	CN502	MAIN-SUB SIGNAL	SMW200-10 BLK
4	CN511	DC12V	YW396-02V BLU
5	CN501	MAIN-SUB SIGNAL	SMW200-10 BLU
6	CN01	SOLUTION_COMM	AKZ350 GRN

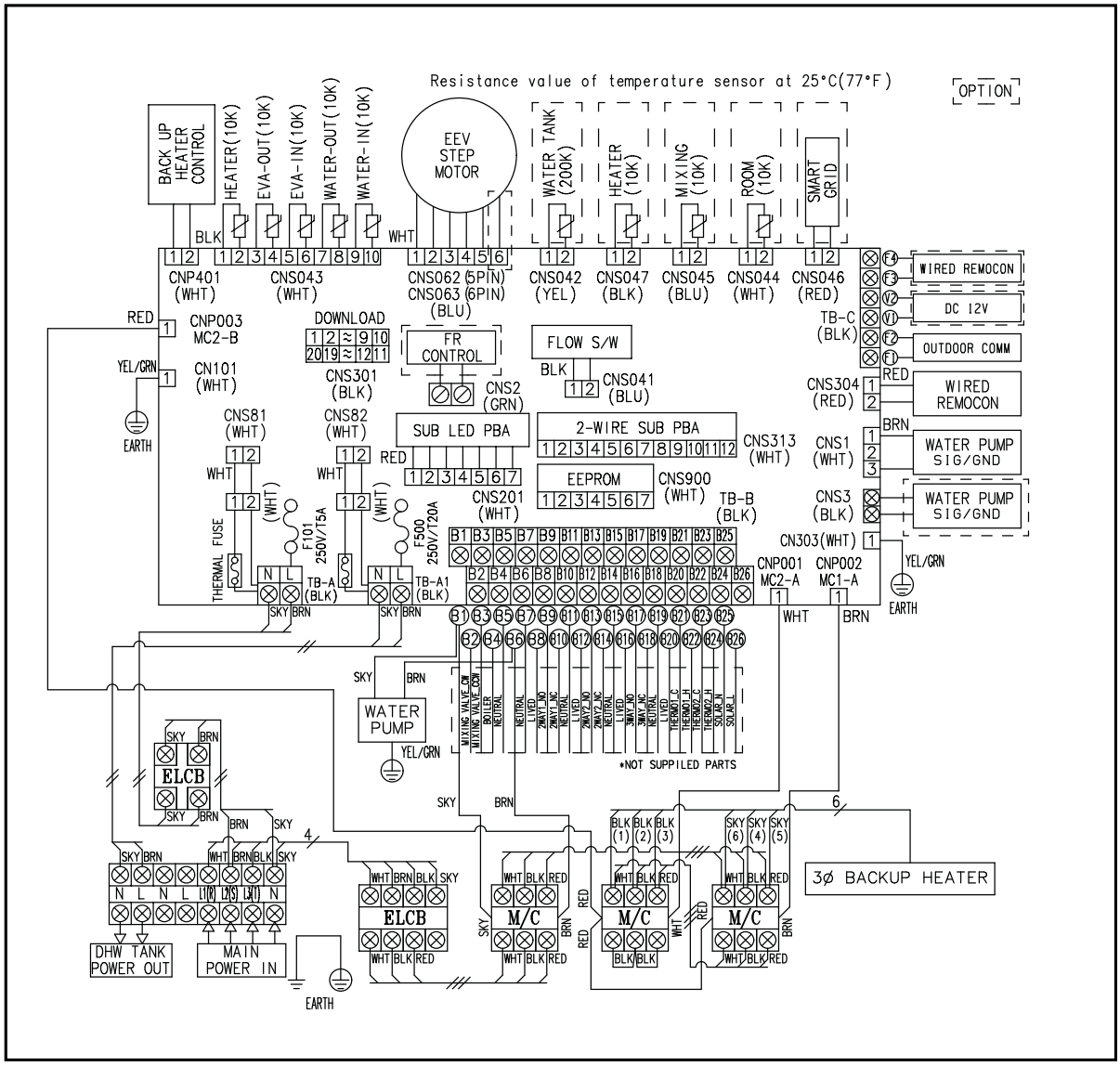
6. Wiring Diagram

6-1 Hydro unit

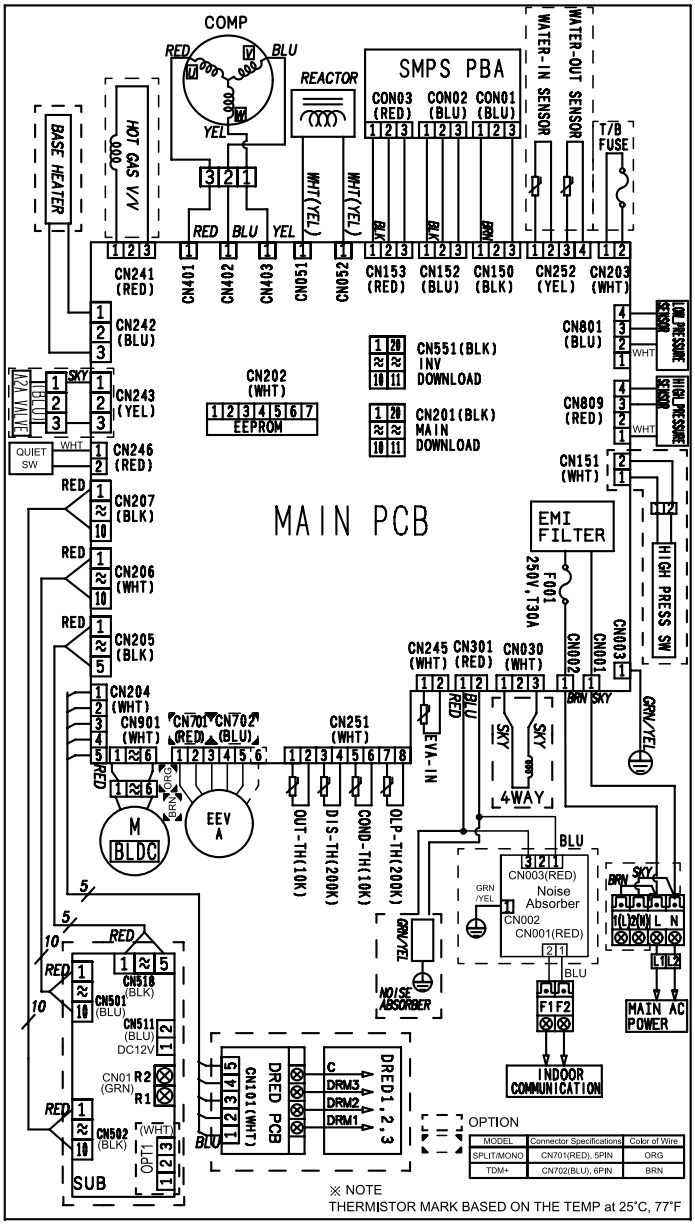
6-1-1 1Phase Model



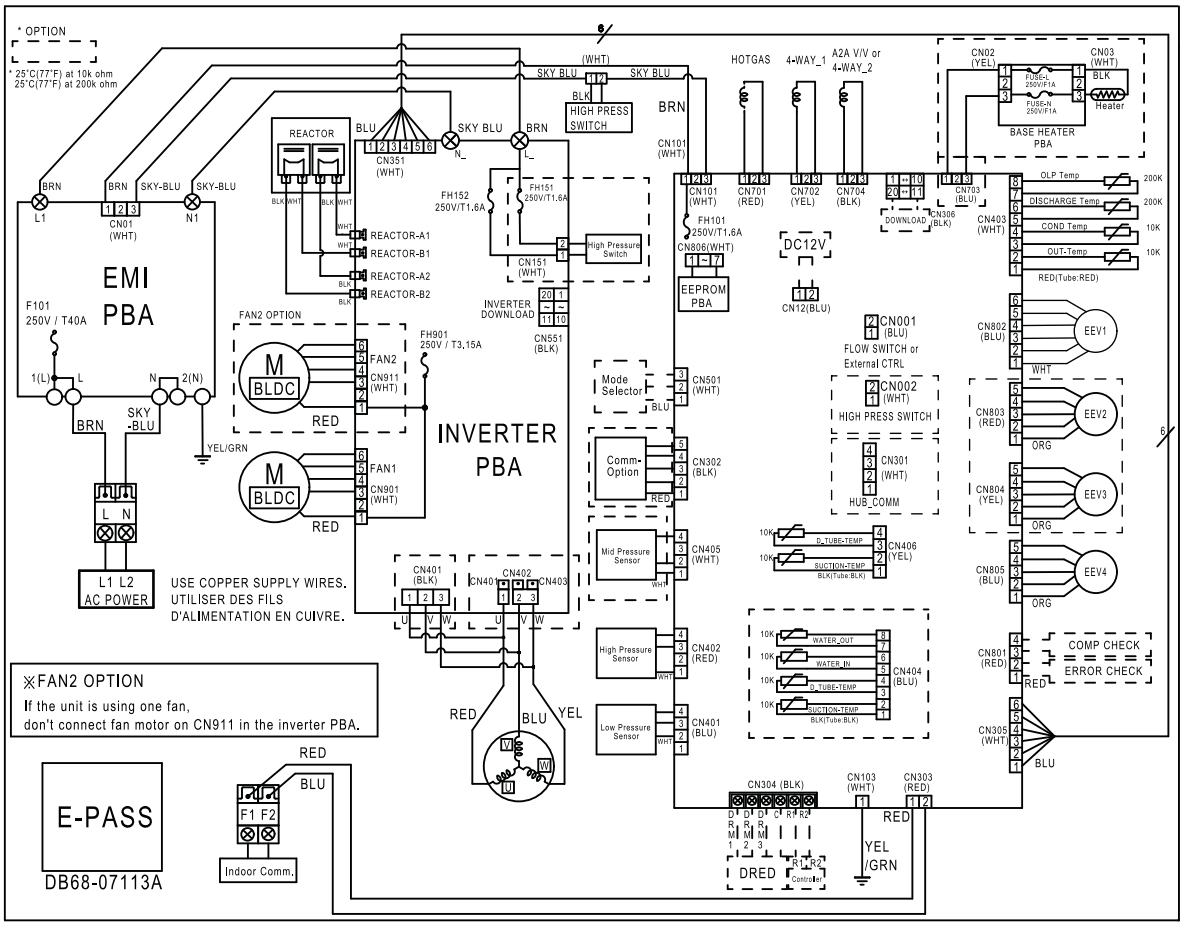
6-1-2 3Phase Model



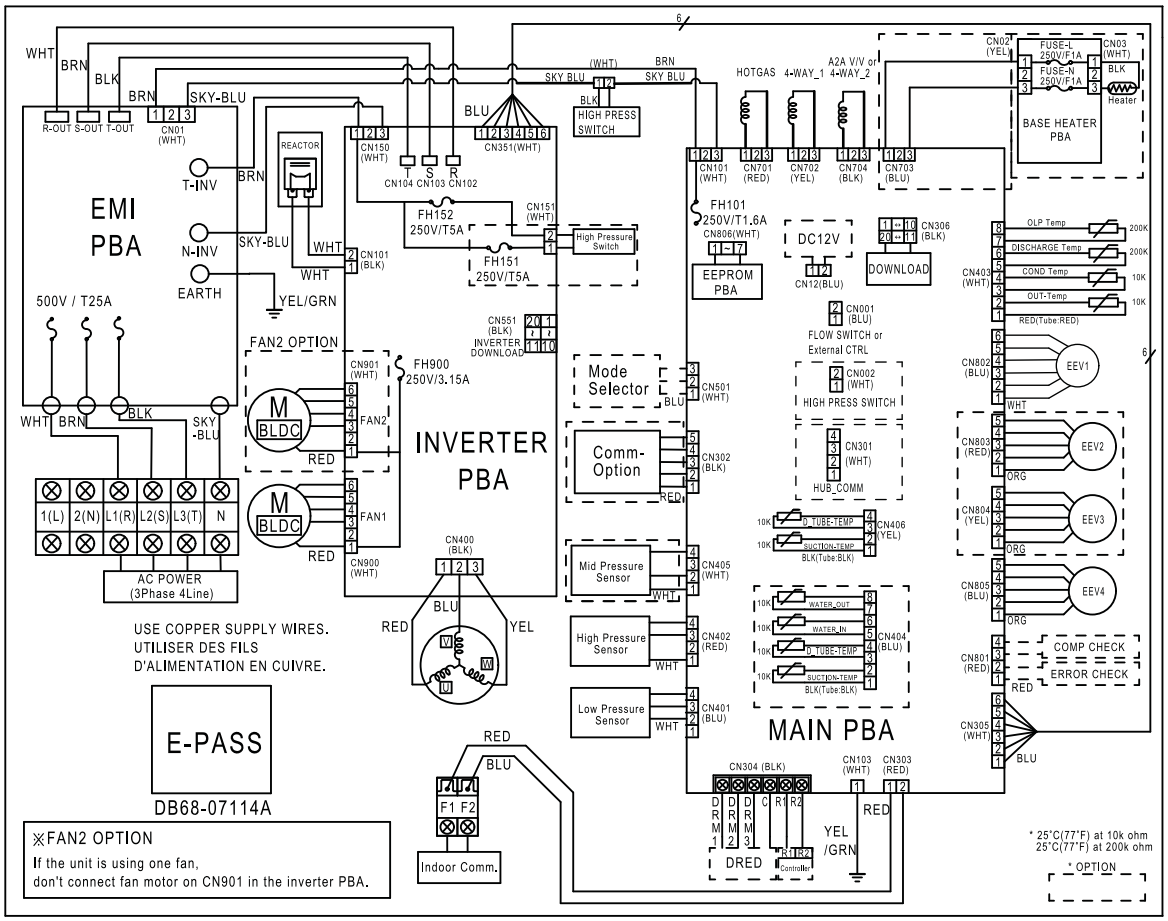
1Phase (AE044/066MXTPEH)



1Phase (AE090/120/160MXTPEH)



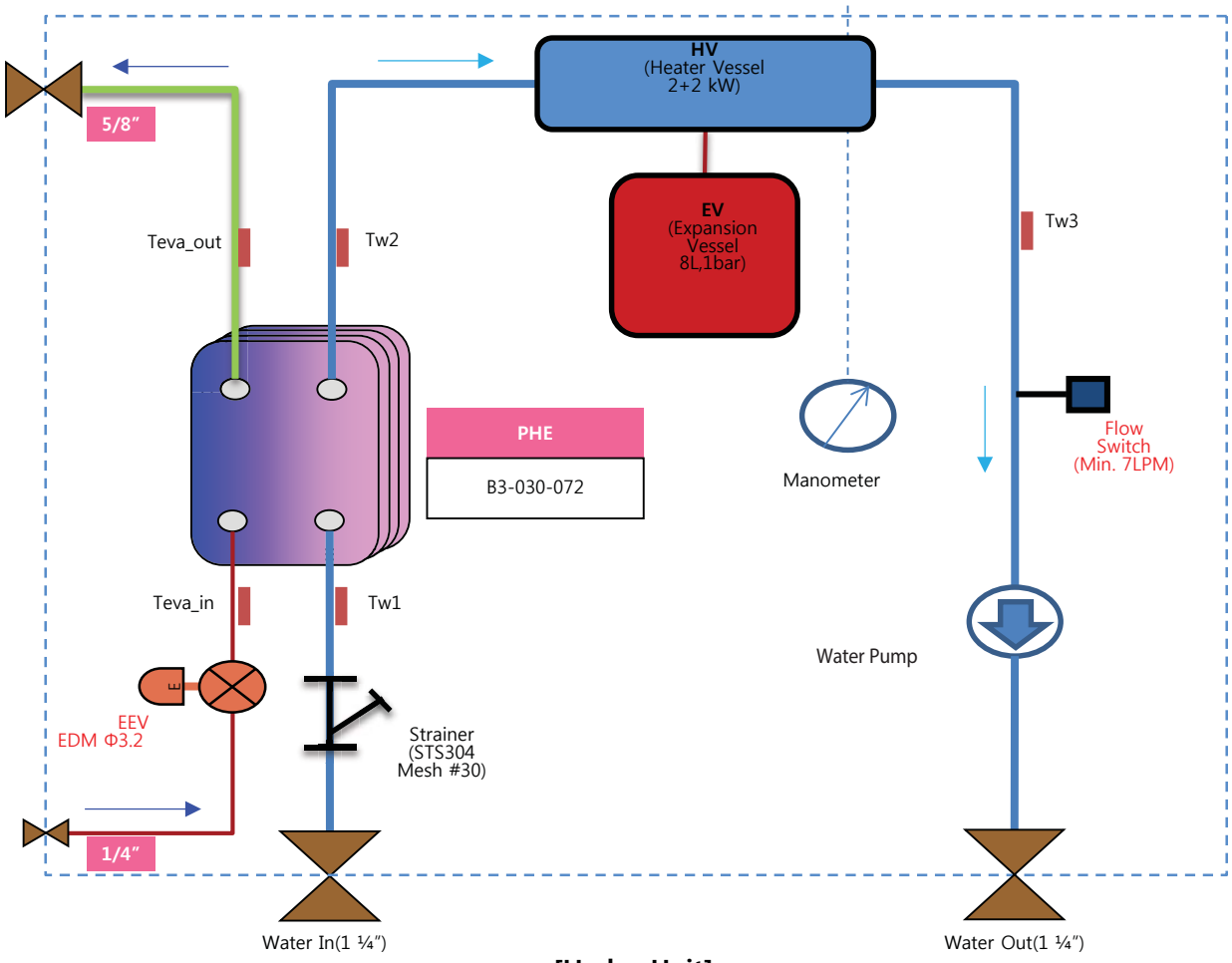
3Phase (AE090/120/160MXTPGH)



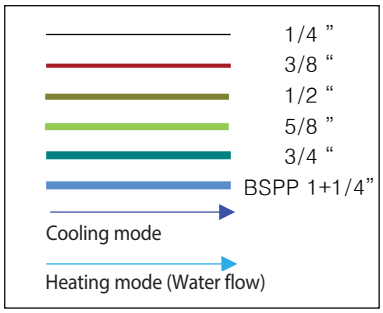
7. Piping Diagram

7-1 Piping Diagram

AE090MNYP**

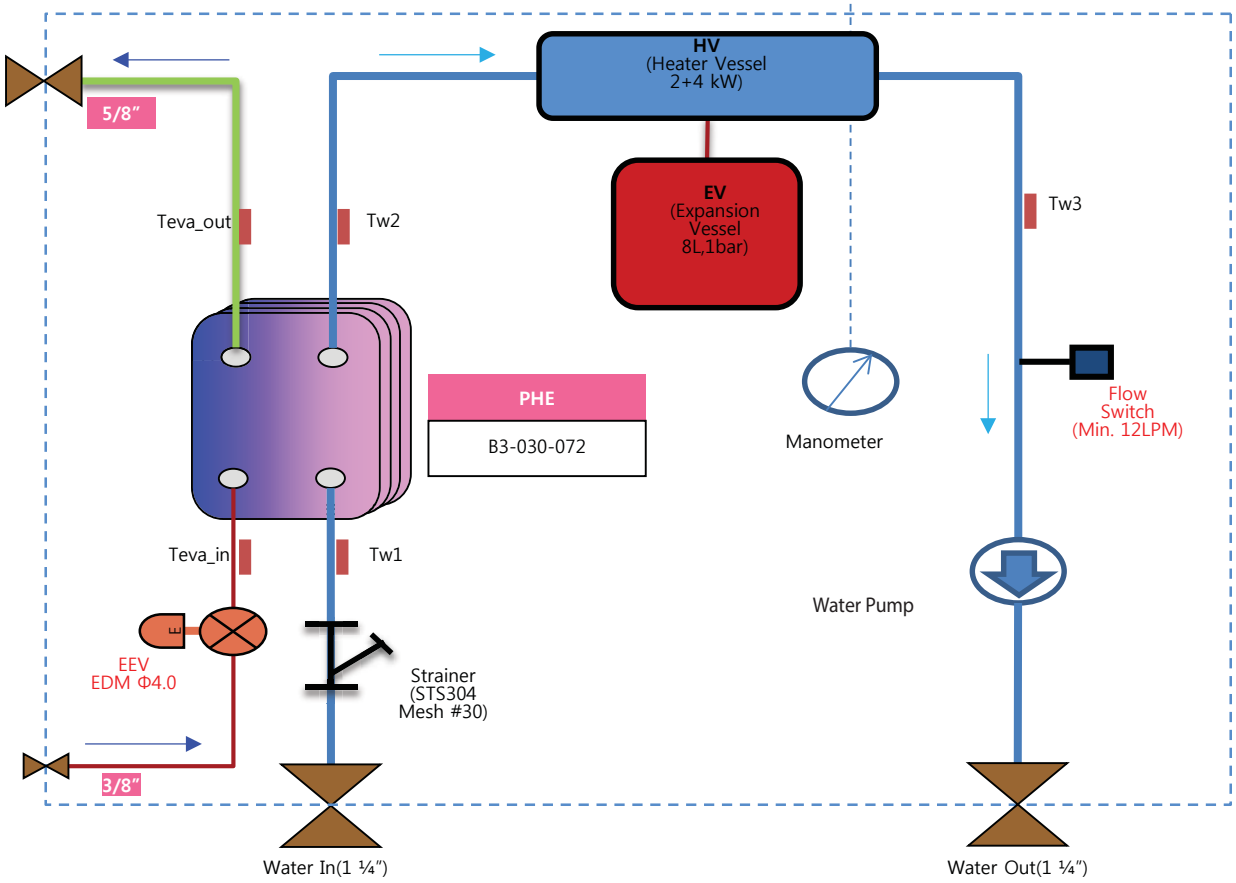


[Hydro Unit]

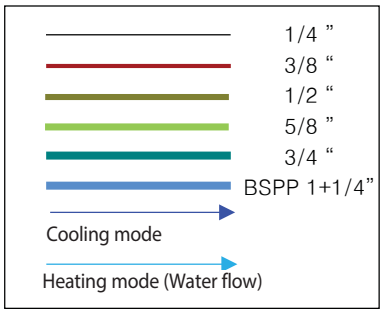


7-1 Piping Diagram (cont.)

AE160MNYP**

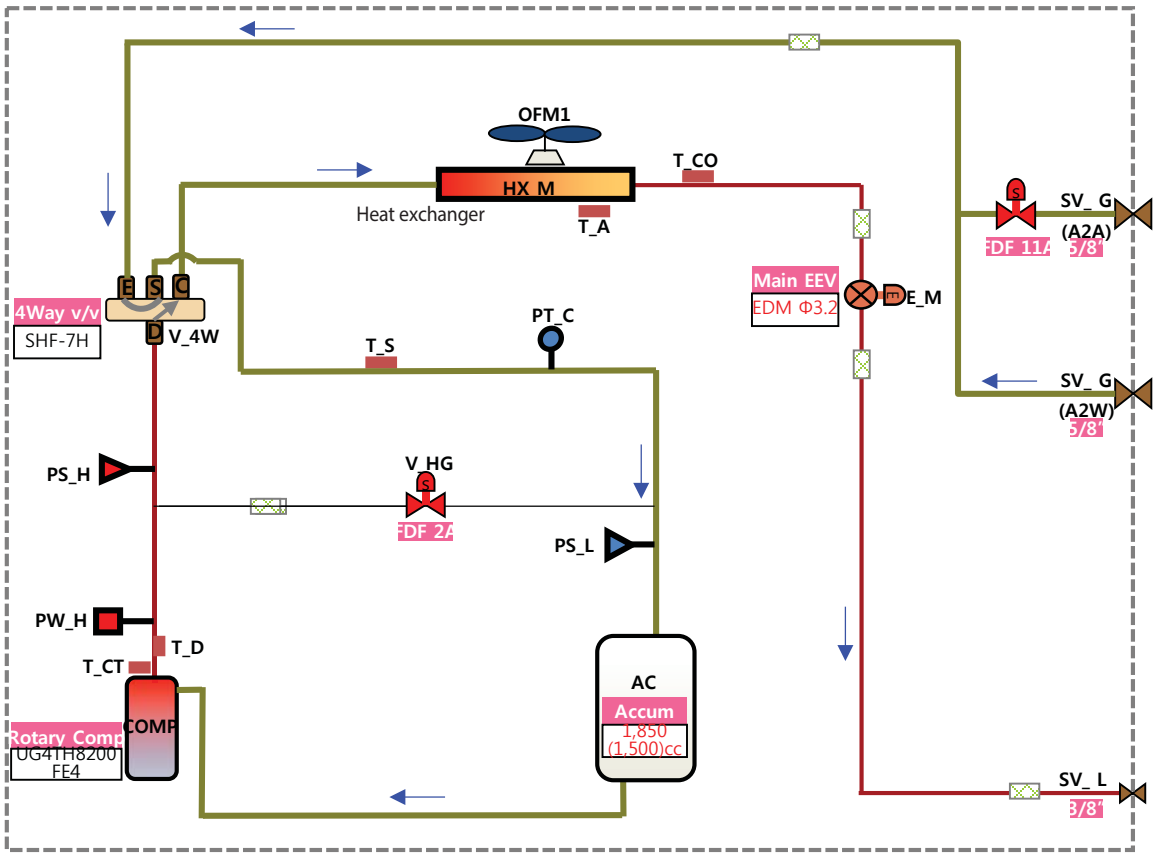


[Hydro Unit]

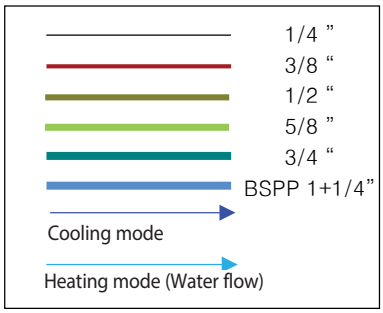


7-1 Piping Diagram (cont.)

AE040/066MXTP**

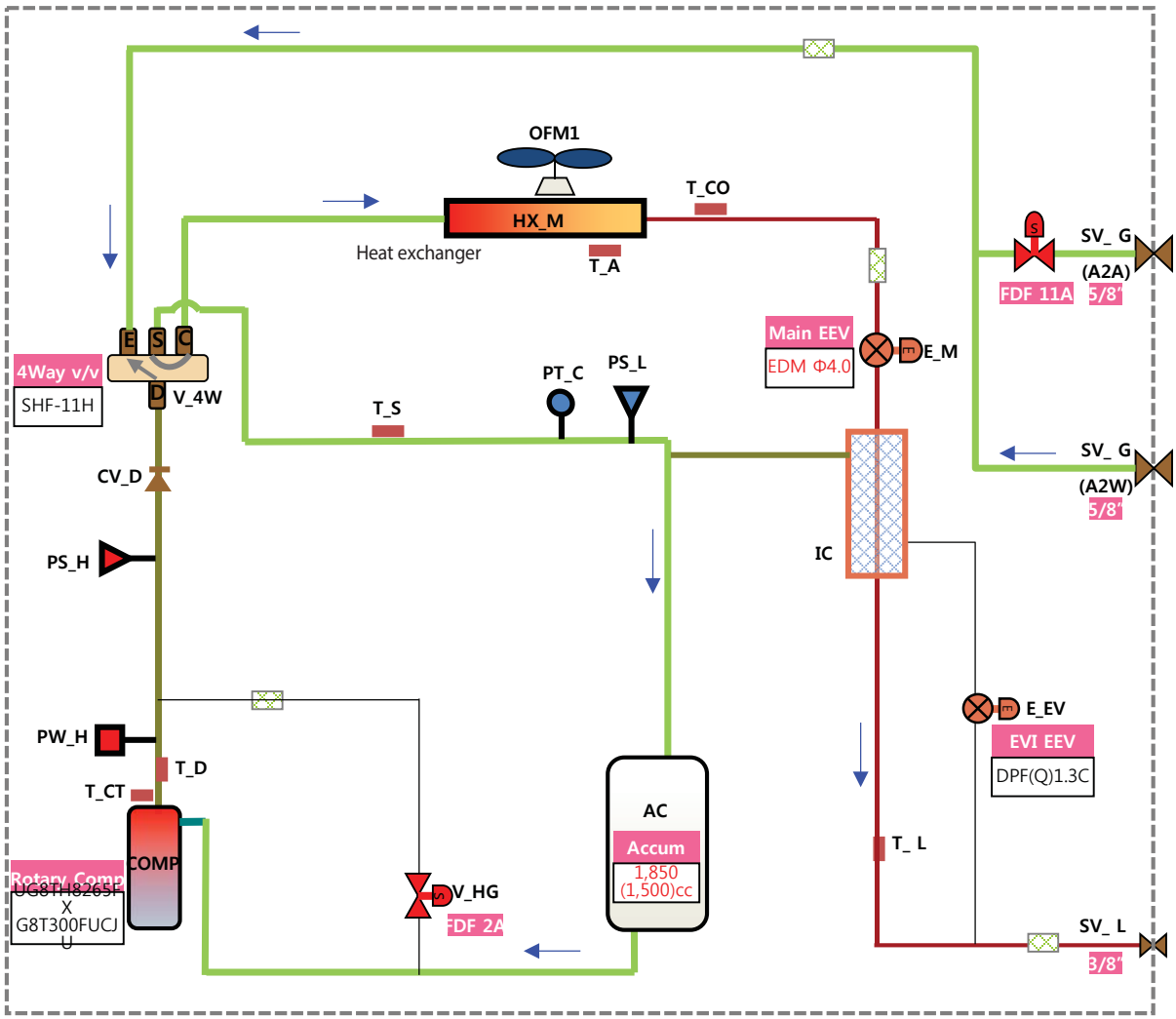


[Outdoor Unit]

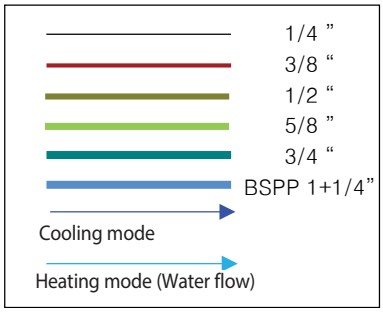


7-1 Piping Diagram (cont.)

AE090MXTP**

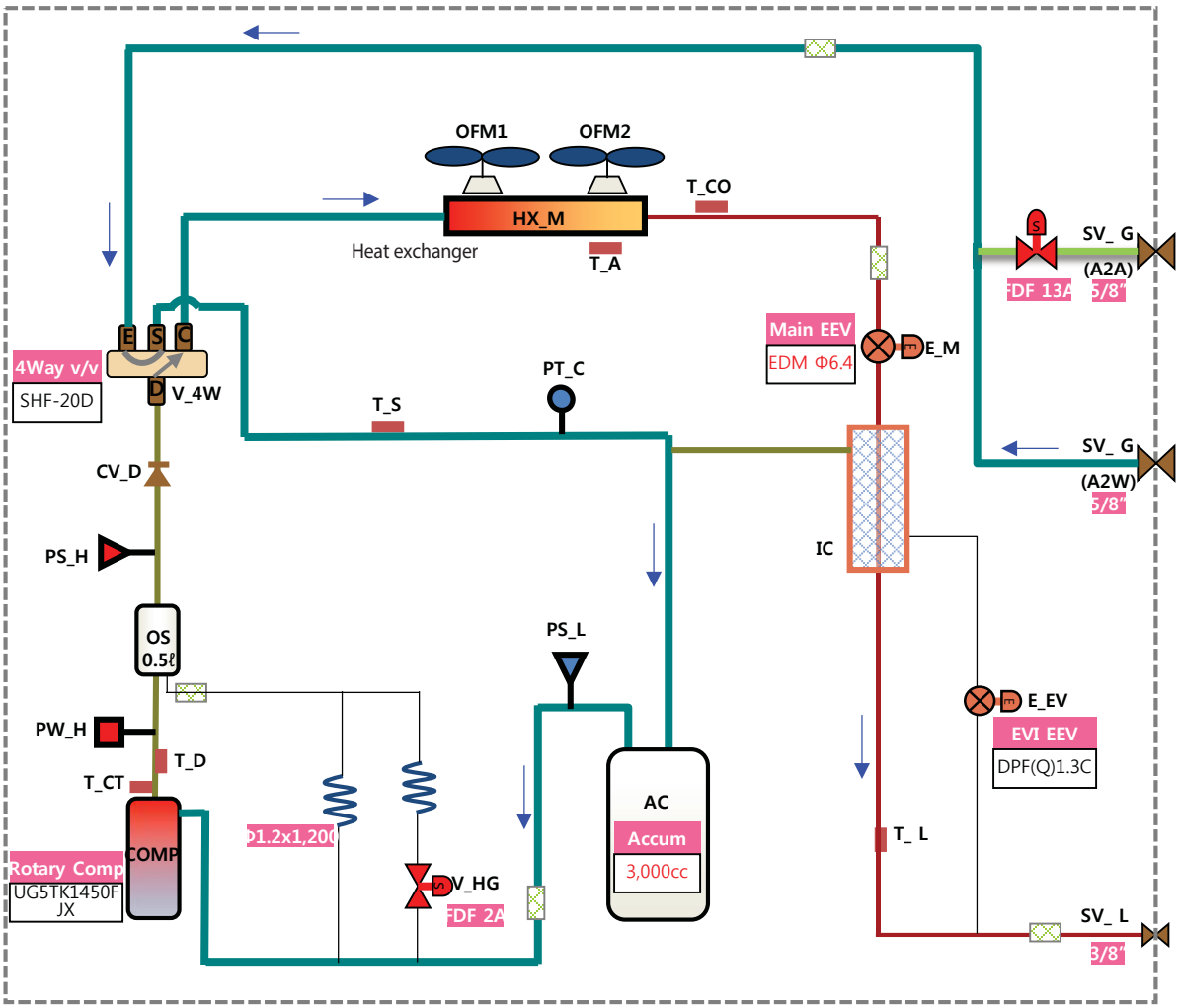


[Outdoor Unit]

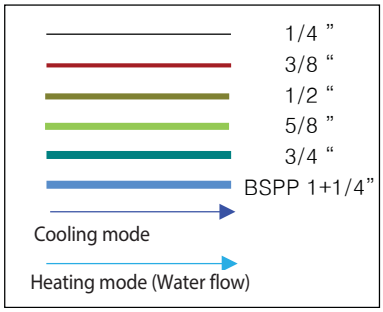


7-1 Piping Diagram (cont.)

AE120/160MXTP**



[Outdoor Unit]

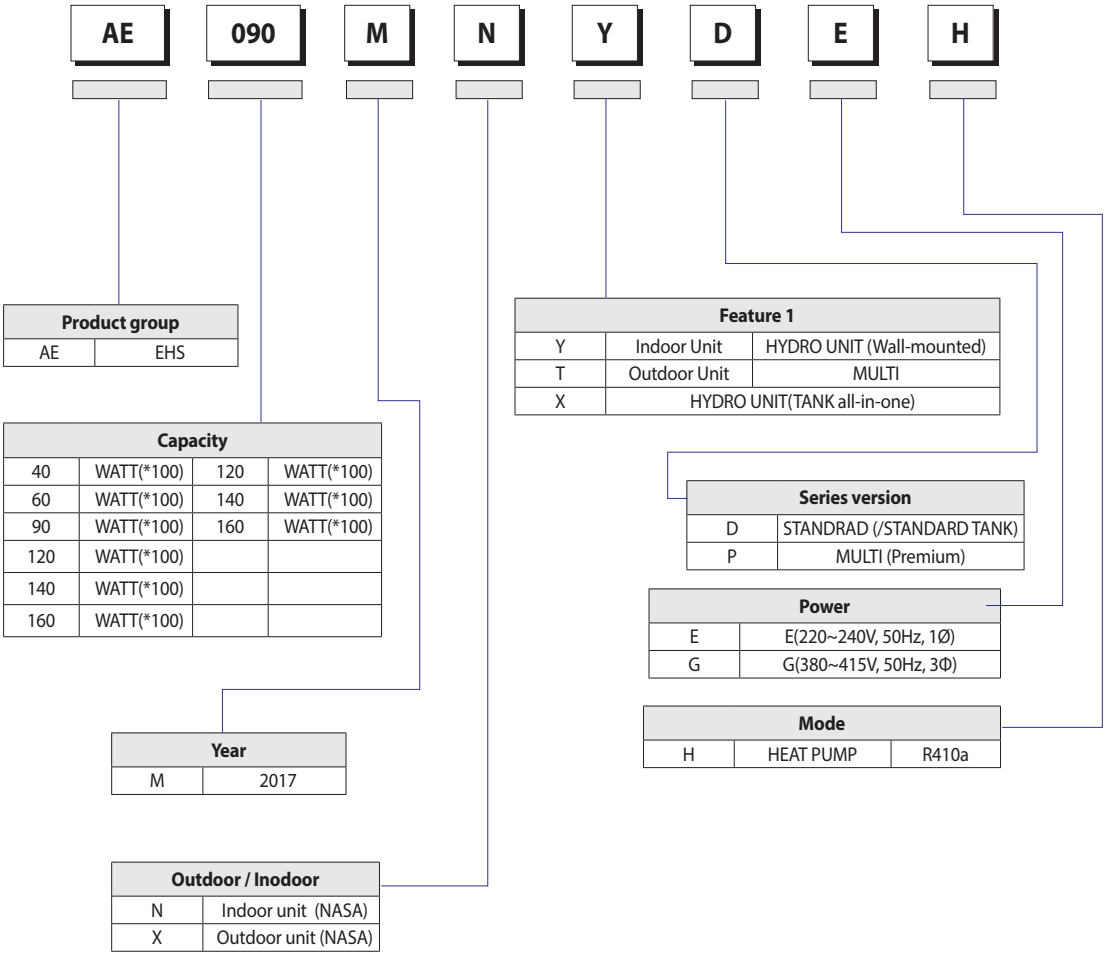


8. Reference Sheet

8-1 Index for Model Name

8-1-1 Outdoor Unit / Hydro Unit

Model Code



Product group	
AE	EHS

Capacity			
40	WATT(*100)	120	WATT(*100)
60	WATT(*100)	140	WATT(*100)
90	WATT(*100)	160	WATT(*100)
120	WATT(*100)		
140	WATT(*100)		
160	WATT(*100)		

Year	
M	2017

Outdoor / Inodoor	
N	Indoor unit (NASA)
X	Outdoor unit (NASA)

Feature 1		
Y	Indoor Unit	HYDRO UNIT (Wall-mounted)
T	Outdoor Unit	MULTI
X	HYDRO UNIT(TANK all-in-one)	

Series version	
D	STANDRAD (/STANDARD TANK)
P	MULTI (Premium)

Power	
E	E(220~240V, 50Hz, 1Ø)
G	G(380~415V, 50Hz, 3Φ)

Mode		
H	HEAT PUMP	R410a

SAMSUNG ELECTRONICS

GSPN(Global Service Partner Network)

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

Printed in China.
Code No. AC-07002A_0