SAMSUNG

SYSTEM AIR CONDITIONER

OUTDOOR UNIT

DVM S ECO BIG

AM100KXMDGH/EU
AM120KXMDGH/EU
AM140KXMDGH/EU
AM100KXMDGH/TL
AM120KXMDGH/TL
AM140KXMDGH/TL
AM080KXMFGH/ID
AM100KXMFGH/ID
AM080KXMDFH/TC
AM100KXMDFH/TC
AM120KXMDFH/TC
AM100KXMDHH/TC
AM120KXMDHH/TC
AM140KXMDHH/TC
AM100KXMDGH/TK
AM120KXMDGH/TK
AM140KXMDGH/TK
AM080KXMFHH/MG
AM100KXMFHH/MG

SERVICE Manual

AIR CONDITIONER

CONTENTS

Contents

Contents

1. Precautions

1-1 Precautions for the Service

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

1-2 Precautions for the Static Electricity and PL

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

1-3 Precautions for the Safety

- **Do not pull or touch the power plug or the subsidiary power switch with wet hands.**
  – This may result in electric shock or fire.
- **If the power line or the power plug is damaged, then it must be changed since this is a hazard.**
- **Do not bend the wire too much or position it so that it can be damaged by a heavy object on top.**
  – This may result in electric shock or fire.
- **The use of multiple electric outlets should be prohibited.**
  – This may result in electric shock or fire.
- **Ground the connection if it is necessary.**
  – The connection must be grounded if there is any risk of electrical short due to water or moisture.
- **Unplug the power or turn off the subsidiary power switch when changing or repairing electrical parts.**
  – Doing so will prevent electric shock.
  – Although the power is off, Inverter PBA and Fan PBA are dangerous because they are charged with high DC voltage.
  – Changing, checking and touching PBA are dangerous because of high DC voltage. So, please turn off the power and wait for discharging DC voltage. (To discharging DC voltage naturally, wait for more than 15 minutes.)
- **Explain to workers that the battery for the remote control needs to be separated for storage purposes when the product will not be used for a long time.**
  – This can cause a problem for the remote control since battery fluid may trickle out.

1-4 Precautions for Handling Refrigerant for Air Conditioner

Environmental Cautions: Air pollution due to gas release

- **Safety Cautions**
  If liquid gas is released, then body parts that come into contact with it may experience frostbite/blister/numbness.
  If a large amount of gas is released, then suffocation may occur due to lack of oxygen. If the released gas is heated, then noxious gas may be produced by combustion.
- **Container Handling Cautions**
  Do not subject container to physical shock or overheating. (Flowage is possible while moving within the regulated pressure.)

1-5 Precautions for Welding the Air Conditioner Pipe

- **Dangerous or flammable objects around the pipe must be removed before the welding.**
- **If the refrigerant is kept inside the product or the pipe, then remove the refrigerant prior to welding.**
  If the welding is carried out while the refrigerant is kept inside, the welding cannot be properly performed. This will also produce noxious gas that is a health hazard. This leakage will also explode with the refrigerant and oil due to an increase in the refrigerant pressure, posing a danger to workers.
- **Please remove the oxide produced inside the pipe during the welding with nitrogen gas.**
  Using another gas may cause harm to the product or others.

1-6 Precautions for Additional Supplement of Air Conditioner Refrigerant

- **Precisely calculate the refrigerant by using a scale and S-net, and proceed with the test operation.**
  Excessive supplement can cause harm to the product since it can cause an inflow of the liquid refrigerant into the compressor.
- **Do not heat the refrigerant container for a forced injection.**
  This may cause harm to the product or others since the refrigerant container may burst.
- **Do not operate the product after removing the product safety pressure switch and sensor.**
  If the product is blocked inside, then this may cause harm to the product or others due to the excess pressure increase of the refrigerant gas.

1-7 Other Precautions

- **There should be no leakage of the pipes after installation. When withdrawing the refrigerant, the compressor should be stopped before removing the connecting pipe.**
  If the compressor is operating while the refrigerant pipe is not correctly connected and the service valve is opened, then air and other substances can enter the pipe. The interior of the refrigerant cycle may then build up excessive high pressure resulting in explosion and damage.

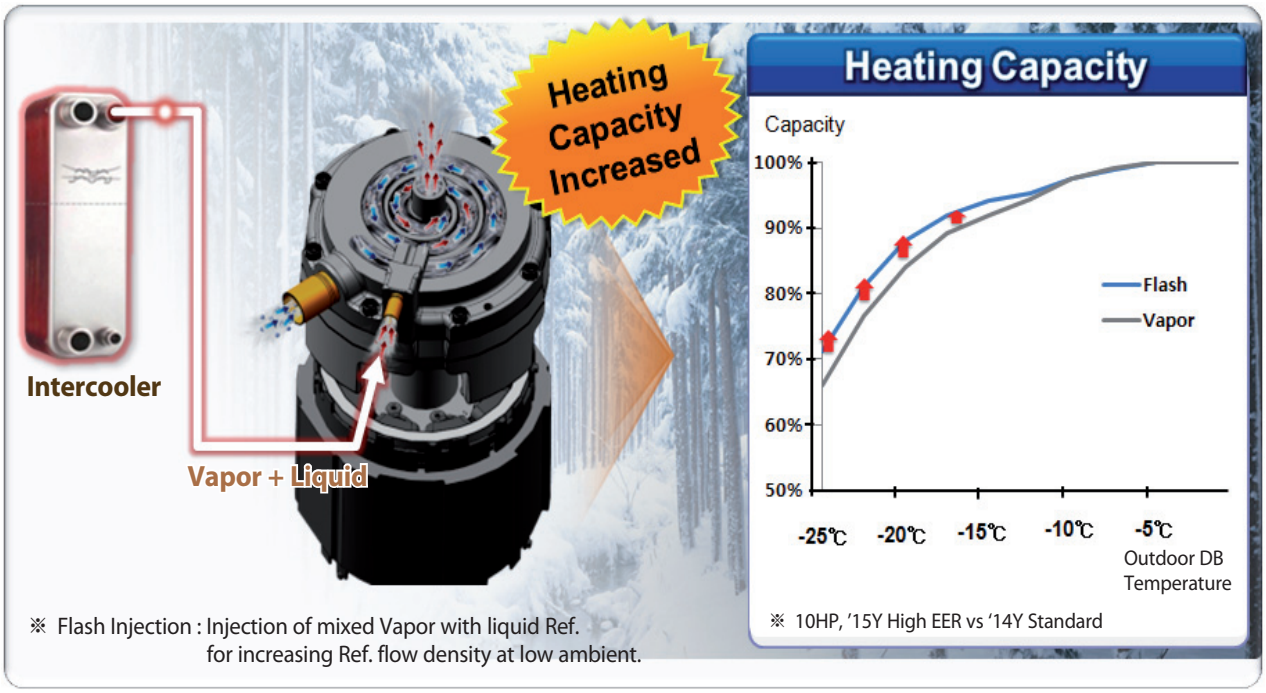
2. Product Specifications

2-1 The Feature of Product

2-1-1 Feature

■ Heating Capacity 7%p up – Advantage of New Flash Injection Technology

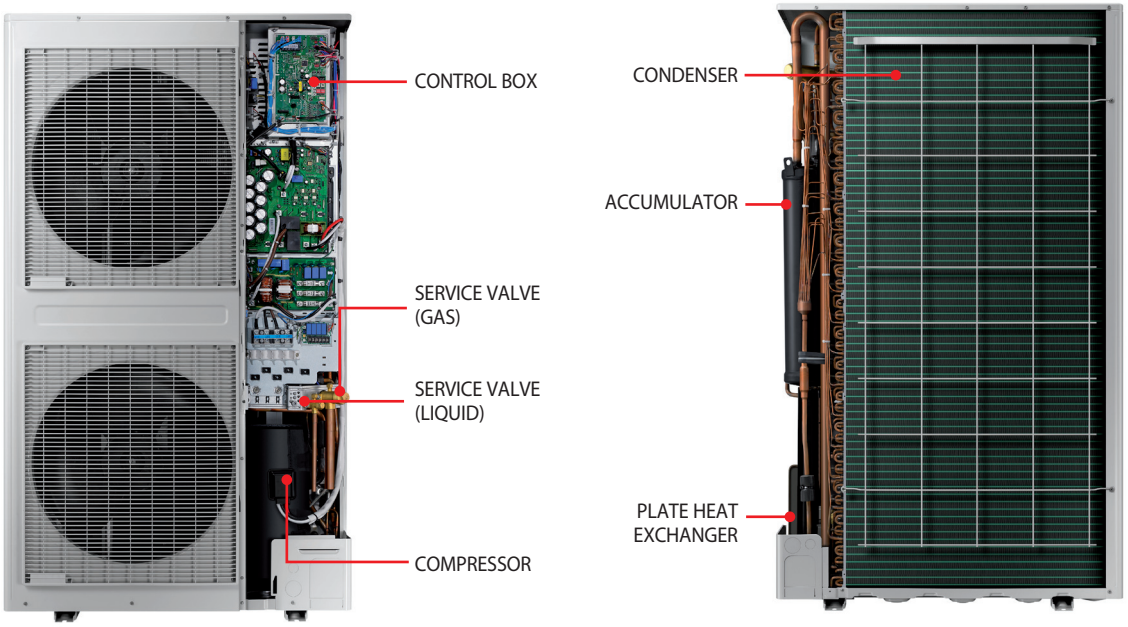
Increase Ref. flow by 32%, extend heating operation range at -25℃ , thanks to Flash Injection technology, extended compressor reliability range and control compression ratio.

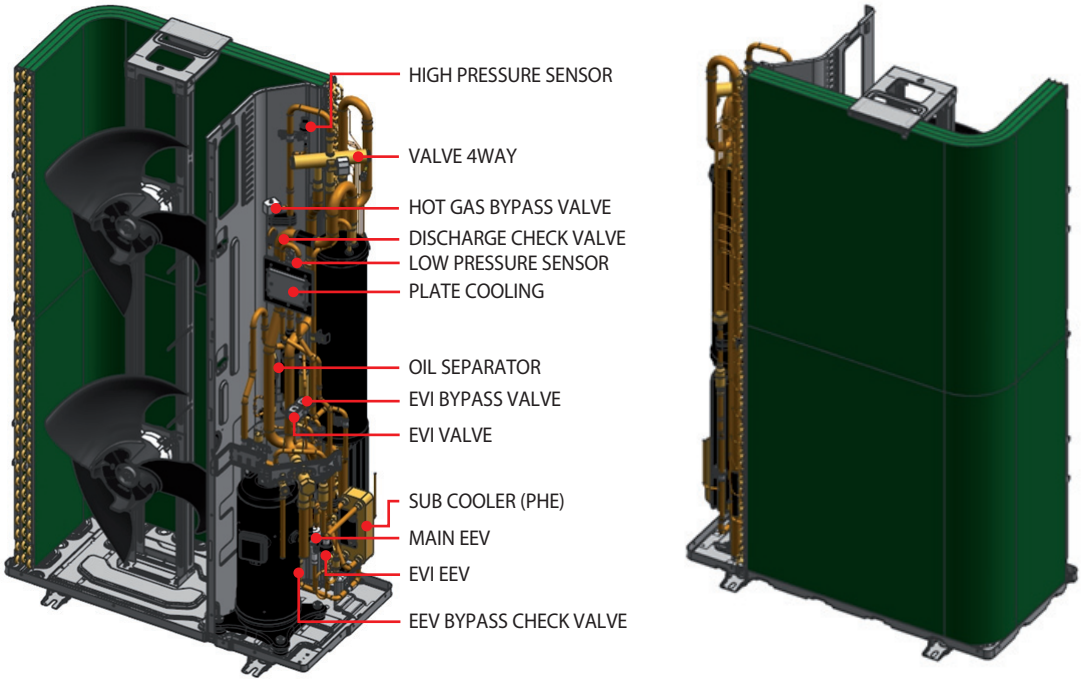


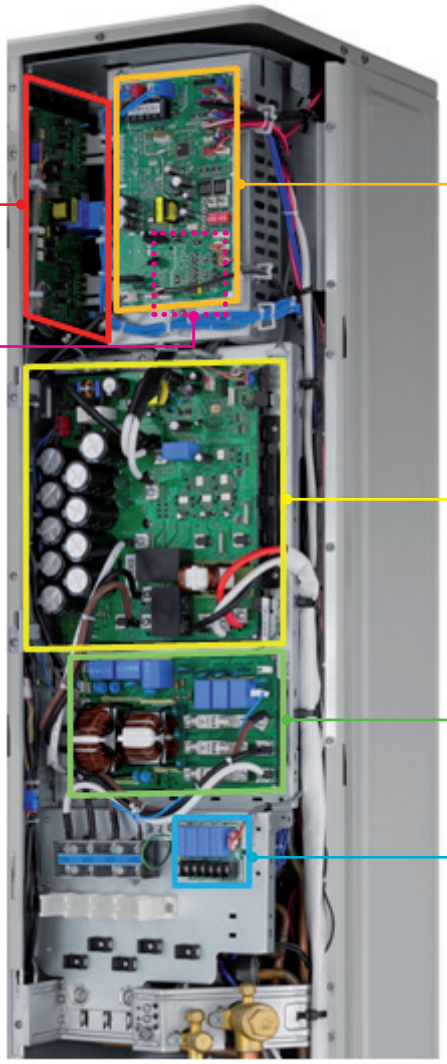
※ Flash Injection : Injection of mixed Vapor with liquid Ref. for increasing Ref. flow density at low ambient.

2-1-2 Structure of product

DVM S ECO BIG






FAN PBA
REACTOR
MAIN PBA
INVERTER PBA
EMI PBA
COMMUNICATION PBA

2-2 Product Specifications

2-2-1 Outdoor Unit

Type						
Model				**AM100KXMDGH/EU**	**AM120KXMDGH/EU**	**AM140KXMDGH/EU**
Power Supply			Φ, #, V, Hz	3,4,380-415,50	3,4,380-415,50	3,4,380-415,50
Mode			-	HEAT PUMP	HEAT PUMP	HEAT PUMP
Performance	HP		HP	10	12	14
	Capacity (Nominal)	Cooling	kW	28	33.5	40
			Btu/h	95,500	114,300	136,500
		Cooling @46°C	kW	Not applicable	Not applicable	Not applicable
			Btu/h	Not applicable	Not applicable	Not applicable
		Heating	kW	31.5	37.5	45
			Btu/h	107,500	128,000	153,500
Power	Power Input	Cooling	kW	7.29	8.77	10.59
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		6.74	7.83	9.88
	Current Input	Cooling	A	11.51	13.74	16.48
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		10.58	12.23	15.55
	MCA		A	21.5	23.5	32
	MFA (MOP)		A	30	30	40
COP	Nominal Cooling		W/W	3.84	3.82	3.78
	Nominal Cooling @46°C		W/W	Not applicable	Not applicable	Not applicable
	Nominal Heating		W/W	4.67	4.79	4.55
Efficiency	IPLV		W/W	Not applicable	Not applicable	Not applicable
Compressor	Type		-	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter
	Output		kW × n	5.18 x 1	6.39 x 1	6.76 x 1
	Model Name		-	DS-GB052FAVB	DS-GB066FAVB	DS-GB070FAVA
	Oil	Type	-	PVE	PVE	PVE
		Comp Charge	cc	1100	1100	1100
		Line Charge	cc	1200	1200	1200
Fan	Type		-	Propeller	Propeller	Propeller
	Output × n		W	244*2	244*2	244*2
	Air Flow Rate [C/H]		CMM	165 / 177	166 / 190	180 / 201
Piping Connections	Liquid Pipe		Φ, mm	9.52	12.7	12.7
			Φ, inch	3/8"	1/2"	1/2"
	Gas Pipe		Φ, mm	22.22	28.58	28.58
			Φ, inch	7/8"	1+1/8"	1+1/8"
	Installation	Max. Length	m	160	160	160
	Limitation	Max. Height	m	50	50	50
Refrigerant	Type		-	R410A	R410A	R410A
	Factory Charging		kg	3.7	4.3	4.8
External Dimension	Net Weight		kg	145	155	162
	Shipping Weight		kg	158	168	175
	Net Dimensions (W×H×D)		mm	940x1630x460	940x1630x460	940x1630x460
	Shipping Dimensions (W×H×D)		mm	1020x1820x575	1020x1820x575	1020x1820x575
Operating Temp. Range	Cooling		°C	-5 ~ 52	-5 ~ 52	-5 ~ 52
	Heating		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24

1) Nominal cooling capacities are based on;
   - Indoor temperature : 27°C DB, 19°C WB
   - Outdoor temperature : 35°C DB, 24°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m
2) Nominal heating capacities are based on;
   - Indoor temperature : 20°C DB, 15°C WB
   - Outdoor temperature : 7°C DB, 6°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m

Outdoor Unit

Type						
Model				**AM100KXMDHH/TC**	**AM120KXMDHH/TC**	**AM140KXMDHH/TC**
Power Supply			Φ, #, V, Hz	3,4,380,60	3,4,380,60	3,4,380,60
Mode			-	HEAT PUMP	HEAT PUMP	HEAT PUMP
Performance	HP		HP	10	12	14
	Capacity (Nominal)	Cooling	kW	28	33.5	40
			Btu/h	95,500	114,300	136,500
		Cooling @46°C	kW	Not applicable	Not applicable	Not applicable
			Btu/h	Not applicable	Not applicable	Not applicable
		Heating	kW	31.5	37.5	45
			Btu/h	107,500	128,000	153,500
Power	Power Input	Cooling	kW	7.00	8.38	10.00
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		6.17	7.50	9.57
	Current Input	Cooling	A	11.51	13.74	16.48
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		10.38	12.23	15.55
	MCA		A	21.5	23.5	32
	MFA (MOP)		A	25	30	40
COP	Nominal Cooling		W/W	4.00	4.00	4.00
	Nominal Cooling @46°C		W/W	Not applicable	Not applicable	Not applicable
	Nominal Heating		W/W	5.10	5.00	4.70
Efficiency	IPLV		W/W	Not applicable	Not applicable	Not applicable
Compressor	Type		-	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter
	Output		kW × n	5.18 x 1	6.39 x 1	6.76 x 1
	Model Name		-	DS-GB052FAVB	DS-GB066FAVB	DS-GB070FAVA
	Oil	Type	-	PVE	PVE	PVE
		Comp Charge	cc	1100	1100	1100
		Line Charge	cc	1200	1200	1200
Fan	Type		-	Propeller	Propeller	Propeller
	Output × n		W	244*2	244*2	244*2
	Air Flow Rate [C/H]		CMM	165 / 177	166 / 190	180 / 201
Piping Connections	Liquid Pipe		Φ, mm	9.52	12.7	12.7
			Φ, inch	3/8"	1/2"	1/2"
	Gas Pipe		Φ, mm	22.22	28.58	28.58
			Φ, inch	7/8"	1+1/8"	1+1/8"
	Installation	Max. Length	m	160	160	160
	Limitation	Max. Height	m	50	50	50
Refrigerant	Type		-	R410A	R410A	R410A
	Factory Charging		kg	3.7	4.3	4.8
External Dimension	Net Weight		kg	145	155	162
	Shipping Weight		kg	158	168	175
	Net Dimensions (W×H×D)		mm	940x1630x460	940x1630x460	940x1630x460
	Shipping Dimensions (W×H×D)		mm	1020x1820x575	1020x1820x575	1020x1820x575
Operating Temp. Range	Cooling		°C	-5 ~ 52	-5 ~ 52	-5 ~ 52
	Heating		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24

1) Nominal cooling capacities are based on;
   - Indoor temperature : 27°C DB, 19°C WB
   - Outdoor temperature : 35°C DB, 24°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m
2) Nominal heating capacities are based on;
   - Indoor temperature : 20°C DB, 15°C WB
   - Outdoor temperature : 7°C DB, 6°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m

Outdoor Unit

Type						
Model				**AM100KXMDGH/TL**	**AM120KXMDGH/TL**	**AM140KXMDGH/TL**
Power Supply			Φ, #, V, Hz	3,4,380-415,50	3,4,380-415,50	3,4,380-415,50
Mode			-	HEAT PUMP	HEAT PUMP	HEAT PUMP
Performance	HP		HP	10	12	14
	Capacity (Nominal)	Cooling	kW	28	33.5	40
			Btu/h	95,500	114,300	136,500
		Cooling @46°C	kW	Not applicable	Not applicable	Not applicable
			Btu/h	Not applicable	Not applicable	Not applicable
		Heating	kW	31.5	37.5	45
			Btu/h	107,500	128,000	153,500
Power	Power Input	Cooling	kW	7.00	8.38	10.00
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		6.17	7.50	9.57
	Current Input	Cooling	A	11.51	13.74	16.48
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		10.38	12.23	15.55
	MCA		A	21.5	23.5	32
	MFA (MOP)		A	30	30	40
COP	Nominal Cooling		W/W	4.00	4.00	4.00
	Nominal Cooling @46°C		W/W	Not applicable	Not applicable	Not applicable
	Nominal Heating		W/W	5.10	5.00	4.70
Efficiency	IPLV		W/W	Not applicable	Not applicable	Not applicable
Compressor	Type		-	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter
	Output		kW × n	5.18 x 1	6.39 x 1	6.76 x 1
	Model Name		-	DS-GB052FAVB	DS-GB066FAVB	DS-GB070FAVA
	Oil	Type	-	PVE	PVE	PVE
		Comp Charge	cc	1100	1100	1100
		Line Charge	cc	1200	1200	1200
Fan	Type		-	Propeller	Propeller	Propeller
	Output × n		W	244*2	244*2	244*2
	Air Flow Rate [C/H]		CMM	165 / 177	166 / 190	180 / 201
Piping Connections	Liquid Pipe		Φ, mm	9.52	12.7	12.7
			Φ, inch	3/8"	1/2"	1/2"
	Gas Pipe		Φ, mm	22.22	28.58	28.58
			Φ, inch	7/8"	1+1/8"	1+1/8"
	Installation	Max. Length	m	160	160	160
	Limitation	Max. Height	m	50	50	50
Refrigerant	Type		-	R410A	R410A	R410A
	Factory Charging		kg	3.7	4.3	4.8
External Dimension	Net Weight		kg	145	155	162
	Shipping Weight		kg	158	168	175
	Net Dimensions (W×H×D)		mm	940x1630x460	940x1630x460	940x1630x460
	Shipping Dimensions (W×H×D)		mm	1020x1820x575	1020x1820x575	1020x1820x575
Operating Temp. Range	Cooling		℃	-5 ~ 52	-5 ~ 52	-5 ~ 52
	Heating		℃	-25 ~ 24	-25 ~ 24	-25 ~ 24

1) Nominal cooling capacities are based on;
   - Indoor temperature : 27°C DB, 19°C WB
   - Outdoor temperature : 35°C DB, 24°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m
2) Nominal heating capacities are based on;
   - Indoor temperature : 20°C DB, 15°C WB
   - Outdoor temperature : 7°C DB, 6°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m

Outdoor Unit

Type						
Model				**AM100KXMDGH/TK**	**AM120KXMDGH/TK**	**AM140KXMDGH/TK**
Power Supply			Φ, #, V, Hz	3,4,380-415,50	3,4,380-415,50	3,4,380-415,50
Mode			-	HEAT PUMP	HEAT PUMP	HEAT PUMP
Performance	HP		HP	10	12	14
	Capacity (Nominal)	Cooling	kW	28	33.5	40
			Btu/h	95,500	114,300	136,500
		Cooling @46°C	kW	Not applicable	Not applicable	Not applicable
			Btu/h	Not applicable	Not applicable	Not applicable
		Heating	kW	31.5	37.5	45
			Btu/h	107,500	128,000	153,500
Power	Power Input	Cooling	kW	7.29	8.77	10.59
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		6.74	7.83	9.88
	Current Input	Cooling	A	11.51	13.74	16.48
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		10.58	12.23	15.55
	MCA		A	21.5	23.5	32
	MFA (MOP)		A	30	30	40
COP	Nominal Cooling		W/W	3.84	3.82	3.78
	Nominal Cooling @46°C		W/W	Not applicable	Not applicable	Not applicable
	Nominal Heating		W/W	4.67	4.79	4.55
Efficiency	IPLV		W/W	Not applicable	Not applicable	Not applicable
Compressor	Type		-	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter
	Output		kW × n	5.18 x 1	6.39 x 1	6.76 x 1
	Model Name		-	DS-GB052FAVB	DS-GB066FAVB	DS-GB070FAVA
	Oil	Type	-	PVE	PVE	PVE
		Comp Charge	cc	1100	1100	1100
		Line Charge	cc	1200	1200	1200
Fan	Type		-	Propeller	Propeller	Propeller
	Output × n		W	244*2	244*2	244*2
	Air Flow Rate [C/H]		CMM	165 / 177	166 / 190	180 / 201
Piping Connections	Liquid Pipe		Φ, mm	9.52	12.7	12.7
			Φ, inch	3/8"	1/2"	1/2"
	Gas Pipe		Φ, mm	22.22	28.58	28.58
			Φ, inch	7/8"	1+1/8"	1+1/8"
	Installation	Max. Length	m	160	160	160
	Limitation	Max. Height	m	50	50	50
Refrigerant	Type		-	R410A	R410A	R410A
	Factory Charging		kg	3.7	4.3	4.8
External Dimension	Net Weight		kg	145	155	162
	Shipping Weight		kg	158	168	175
	Net Dimensions (W×H×D)		mm	940x1630x460	940x1630x460	940x1630x460
	Shipping Dimensions (W×H×D)		mm	1020x1820x575	1020x1820x575	1020x1820x575
Operating Temp. Range	Cooling		°C	-5 ~ 52	-5 ~ 52	-5 ~ 52
	Heating		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24

1) Nominal cooling capacities are based on;
   - Indoor temperature : 27°C DB, 19°C WB
   - Outdoor temperature : 35°C DB, 24°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m
2) Nominal heating capacities are based on;
   - Indoor temperature : 20°C DB, 15°C WB
   - Outdoor temperature : 7°C DB, 6°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m

Outdoor Unit

Type							
Model				AM080KXMFGH/ID	AM100KXMFGH/ID	AM080KXMFHH/MG	AM100KXMFHH/MG
Power Supply			Φ, #, V, Hz	3,4,380-415,50	3,4,380-415,50	3,4,400,60	3,4,400,60
Mode			-	HEAT PUMP	HEAT PUMP	HEAT PUMP	HEAT PUMP
Performance	HP		HP	8	10	8	10
	Capacity (Nominal)	Cooling	kW	22.4	28.0	22.4	28.0
			Btu/h	76,400	95,500	76,400	95,500
		Cooling @46°C	kW	19.0	25.0	19.0	25.0
			Btu/h	64,800	85,300	64,800	85,300
		Heating	kW	25.2	31.5	25.2	31.5
			Btu/h	86,000	107,500	86,000	107,500
Power	Power Input	Cooling	kW	5.33	6.83	5.33	6.83
		Cooling @46°C		5.43	7.60	5.43	7.60
		Heating		5.59	7.14	5.59	7.14
	Current Input	Cooling	A	8.26	10.58	8.26	10.58
		Cooling @46°C		8.97	11.83	8.97	11.83
		Heating		8.93	11.44	8.93	11.44
	MCA		A	21.5	23.5	21.5	23.5
	MFA (MOP)		A	30	30	30	30
COP	Nominal Cooling		W/W	4.20	4.10	4.20	4.10
	Nominal Cooling @46°C		W/W	3.50	3.29	3.50	3.29
	Nominal Heating		W/W	4.51	4.41	4.51	4.41
Efficiency	IPLV		W/W	Not applicable	Not applicable	Not applicable	Not applicable
Compressor	Type		-	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter
	Output		kW × n	5.18 x 1	6.39 x 1	5.18 x 1	6.39 x 1
	Model Name		-	DS-GB052FAVB	DS-GB066FAVB	DS-GB052FAVB	DS-GB066FAVB
	Oil	Type	-	PVE	PVE	PVE	PVE
		Comp Charge	cc	1100	1100	1100	1100
		Line Charge	cc	1200	1200	1200	1200
Fan	Type		-	Propeller	Propeller	Propeller	Propeller
	Output × n		W	244*2	244*2	244*2	244*2
	Air Flow Rate [C/H]		CMM	190 / 190	190 / 190	190 / 190	190 / 190
Piping Connections	Liquid Pipe		Φ, mm	9.52	9.52	9.52	9.52
			Φ, inch	3/8"	3/8"	3/8"	3/8"
	Gas Pipe		Φ, mm	19.05	22.22	19.05	22.22
			Φ, inch	3/4"	7/8"	3/4"	7/8"
	Installation	Max. Length	m	160	160	160	160
	Limitation	Max. Height	m	50	50	50	50
Refrigerant	Type		-	R410A	R410A	R410A	R410A
	Factory Charging		kg	3.7	4.3	3.7	4.3
External Dimension	Net Weight		kg	145	155	145	155
	Shipping Weight		kg	158	168	158	168
	Net Dimensions (W×H×D)		mm	940x1630x460	940x1630x460	940x1630x460	940x1630x460
	Shipping Dimensions (W×H×D)		mm	1020x1820x575	1020x1820x575	1020x1820x575	1020x1820x575
Operating Temp. Range	Cooling		°C	-5 ~ 54	-5 ~ 54	-5 ~ 54	-5 ~ 54
	Heating		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24	-25 ~ 24

1) Nominal cooling capacities are based on;
   - Indoor temperature : 27°C DB, 19°C WB
   - Outdoor temperature : 35°C DB, 24°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m
2) Nominal heating capacities are based on;
   - Indoor temperature : 20°C DB, 15°C WB
   - Outdoor temperature : 7°C DB, 6°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m

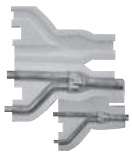
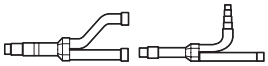
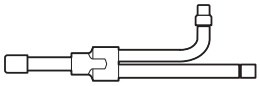
Outdoor Unit

Type						
Model				AM080KXMDFH/TC	AM100KXMDFH/TC	AM120KXMDFH/TC
Power Supply			Φ, #, V, Hz	3,3,208-230,60	3,3,208-230,60	3,3,208-230,60
Mode			-	HEAT PUMP	HEAT PUMP	HEAT PUMP
Performance	HP		HP	8	10	12
	Capacity (Nominal)	Cooling	kW	22.4	28	33.6
			Btu/h	76,400	95,500	114,600
		Cooling @46°C	kW	Not applicable	Not applicable	Not applicable
			Btu/h	Not applicable	Not applicable	Not applicable
		Heating	kW	25.2	31.5	37.8
			Btu/h	86,000	107,500	129,000
Power	Power Input	Cooling	kW	5.33	6.83	8.84
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		5.59	7.14	9.22
	Current Input	Cooling	A	15	19.3	25
		Cooling @46°C		Not applicable	Not applicable	Not applicable
		Heating		15.80	20.10	26.00
	MCA		A	25.0	34.0	35.0
	MFA (MOP)		A	40	50	50
COP	Nominal Cooling		W/W	4.20	4.10	3.80
	Nominal Cooling @46°C		W/W	Not applicable	Not applicable	Not applicable
	Nominal Heating		W/W	4.51	4.41	4.10
Efficiency	IPLV		W/W	Not applicable	Not applicable	Not applicable
Compressor	Type		-	Samsung Scroll Inverter	Samsung Scroll Inverter	Samsung Scroll Inverter
	Output		kW × n	5.18 x 1	6.45 x 1	6.45 x 1
	Model Name		-	DS-GB052FBV+	DS4GJ066EV+	DS4GJ066EV+
	Oil	Type	-	PVE	PVE	PVE
		Comp Charge	cc	1100	1100	1100
		Line Charge	cc	1200	1200	1200
Fan	Type		-	Propeller	Propeller	Propeller
	Output × n		W	183*2	183*2	183*2
	Air Flow Rate [C/H]		CMM	190	199	201
Piping Connections	Liquid Pipe		Φ, mm	9.52	9.52	12.7
			Φ, inch	3/8"	3/8"	1/2"
	Gas Pipe		Φ, mm	19.05	22.22	28.58
			Φ, inch	3/4"	7/8"	1+1/8"
	Installation	Max. Length	m	160	160	160
	Limitation	Max. Height	m	50	50	50
Refrigerant	Type		-	R410A	R410A	R410A
	Factory Charging		kg	3.7	3.7	4.8
External Dimension	Net Weight		kg	145	152	162
	Shipping Weight		kg	158	165	175
	Net Dimensions (W×H×D)		mm	940x1,630x460	940x1,630x460	940x1,630x460
	Shipping Dimensions (W×H×D)		mm	1020x1820x575	1020x1820x575	1020x1820x575
Operating Temp. Range	Cooling		°C	-5 ~ 50	-5 ~ 50	-5 ~ 50
	Heating		°C	-25 ~ 24	-25 ~ 24	-25 ~ 24

1) Nominal cooling capacities are based on;
   - Indoor temperature : 27°C DB, 19°C WB
   - Outdoor temperature : 35°C DB, 24°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m
2) Nominal heating capacities are based on;
   - Indoor temperature : 20°C DB, 15°C WB
   - Outdoor temperature : 7°C DB, 6°C WB, Equivalent refrigerant piping : 7.5m, Level differences : 0m

2-3 Accessory and Option Specifications

2-3-1 Accessories

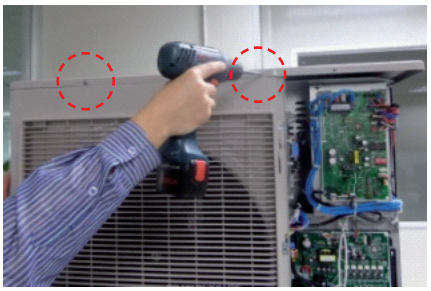
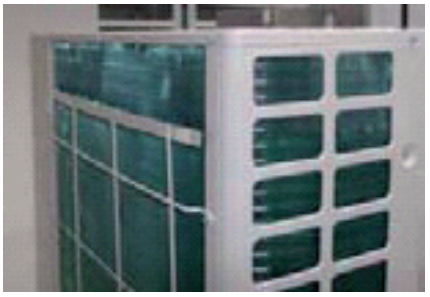
Picture	Classification	Model Name	Remark
	Y-Joint	MXJ-YA1509M	15.0 kW and below
		MXJ-YA2512M	Over 15.0 kW~40.0 kW and below
		MXJ-YA2812M	Over 40.0 kW~45.0 kW and below
		MXJ-YA2815M	Over 45.0 kW~70.3 kW and below
		MXJ-YA3419M	Over 70.3 kW~98.4 kW and below
		MXJ-YA4119M	Over 98.4 kW~135.2 kW and below
		MXJ-YA4422M	Over 135.2 kW
	Y-Joint (Only H/R)	MXJ-YA1500M	22.4 kW and below
		MXJ-YA2500M	Over 22.4 kW~70.3 kW and below
		MXJ-YA3100M	Over 70.3 kW~135.2 kW and below
		MXJ-YA3800M	Over 135.2 kW
	Distribution header	MXJ-HA2512M	45.0 kW and below (for 4 rooms)
		MXJ-HA3115M	70.3 kW and below (for 8 rooms)
		MXJ-HA3819M	Over 70.3 kW ~ 135.2 kW and below (for 8 rooms)
	Y-Joint -Outdoor Unit	MXJ-TA3419M	135.2 kW and below
		MXJ-TA4122M	Over 140.2 kW
	Y-Joint (Only H/R)-Outdoor Unit	MXJ-TA3100M	135.2 kW and below
		MXJ-TA3800M	Over 140.2 kW
	EEV KIT (1 Room)	MEV-E24SA	Applty to products without EEV (Wall mount & Ceiling)
		MEV-E32SA	
	EEV KIT (2 Room)	MXD-E24K132A	
		MXD-E24K200A	
		MXD-E32K200A	
		MXD-E24K232A	
	EEV KIT (3 Room)	MXD-E24K132A	
		MXD-E24K300A	
		MXD-E32K224A	
		MXD-E32K300A	

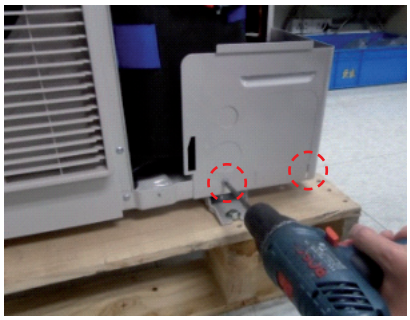
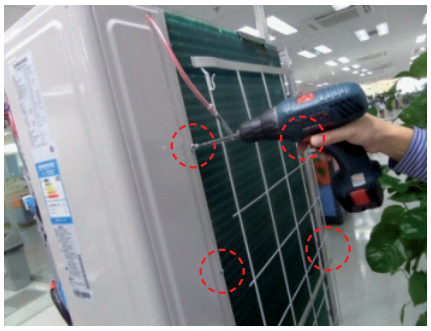
3. Disassembly and Reassembly

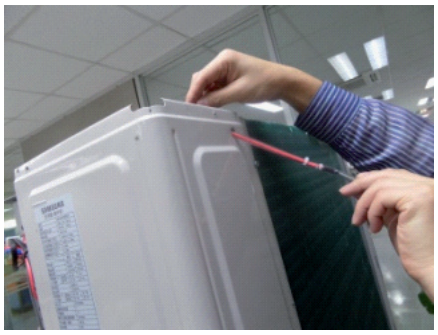
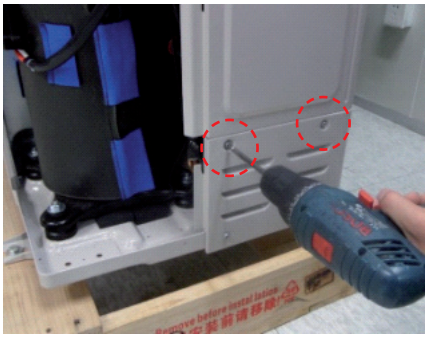
3-1 Necessary Tools

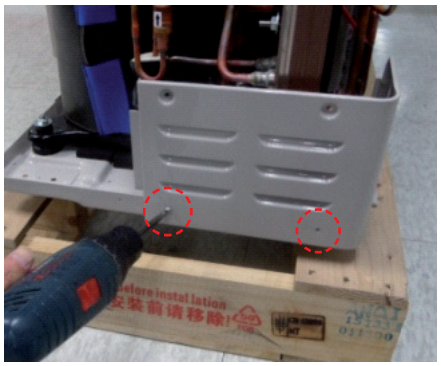
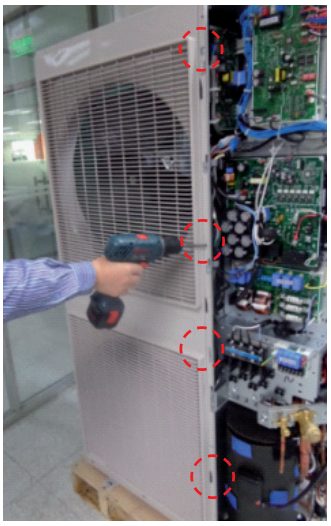
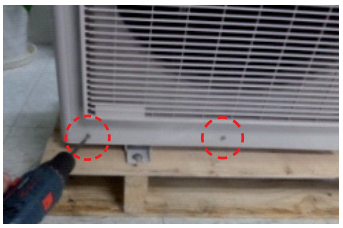
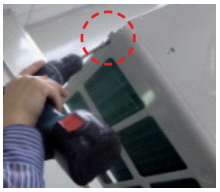
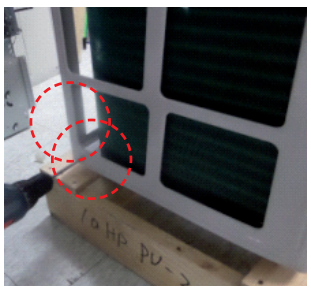
Item	Remark
+SCREW DRIVER	
MONKEY SPANNER	
-SCREW DRIVER	
NIPPER	
ELECTRIC MOTION DRIVER	
L-WRENCH	

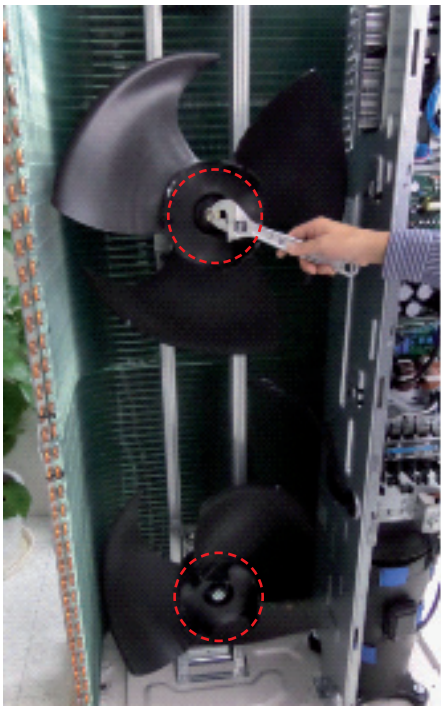
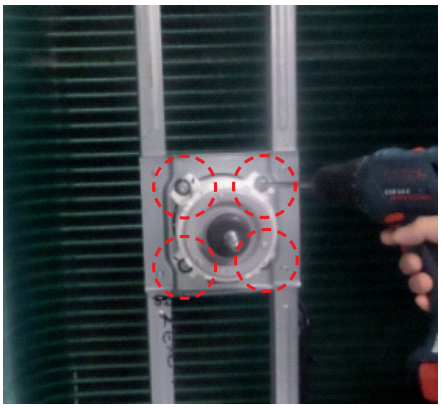
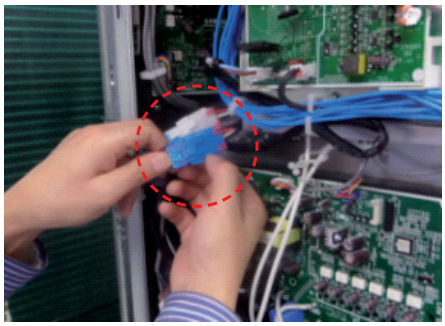
3-2 Disassembly and Reassembly

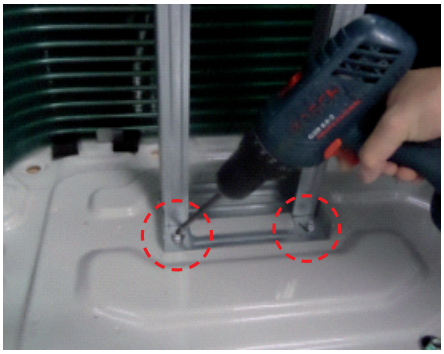
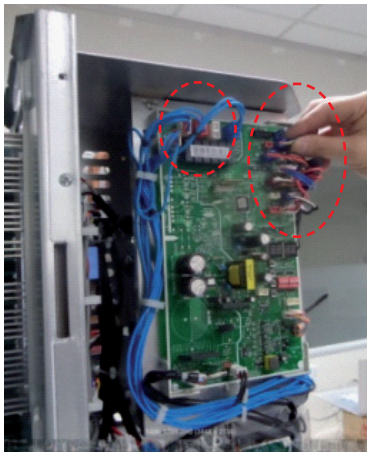
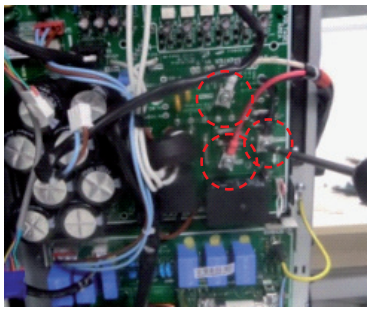
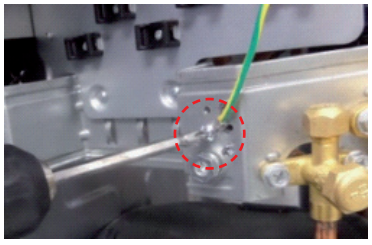
No.	Parts	Procedure	Remark
1	CABINET FRONT RIGHT	⚠ Warning:Make sure the power is disconnected before work 1) Remove 3 screws. (use "+" screw driver or electric motion driver)	  
2	CABINET TOP	2) Remove 8 screws around cabi top. (use "+" screw driver or electric motion driver)	 

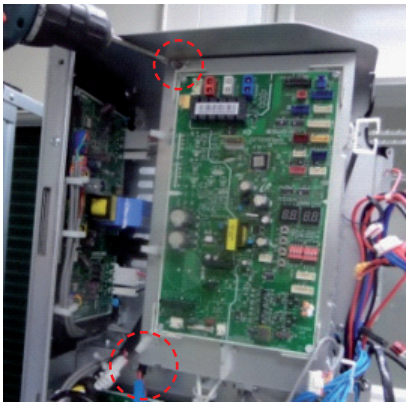
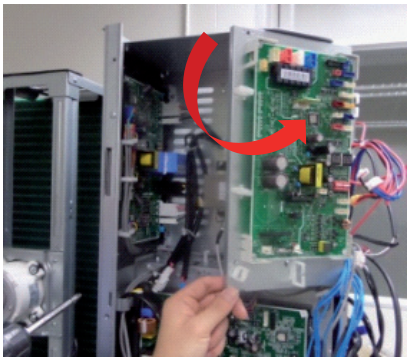
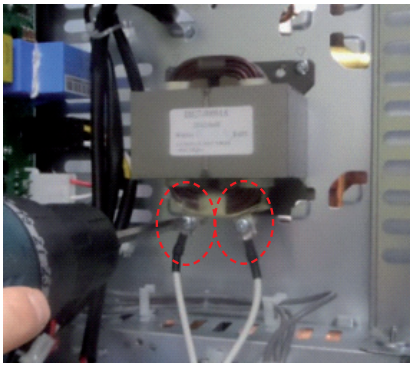
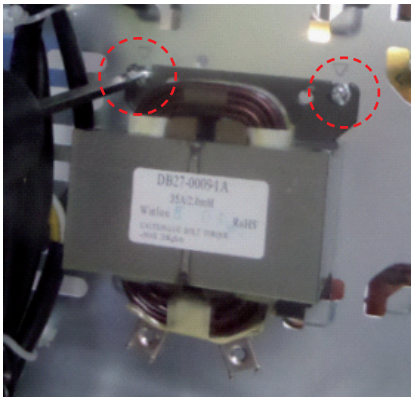
No.	Parts	Procedure	Remark
3	CABINET FRONT INSTALL	1) Remove 2 screws (use "+" screw driver or electric motion driver) and lift up to take off.	
4	GUARD COND	1) Take off the sensor.	
		2) Remove 4 screws. (use "+" screw driver or electric motion driver)	

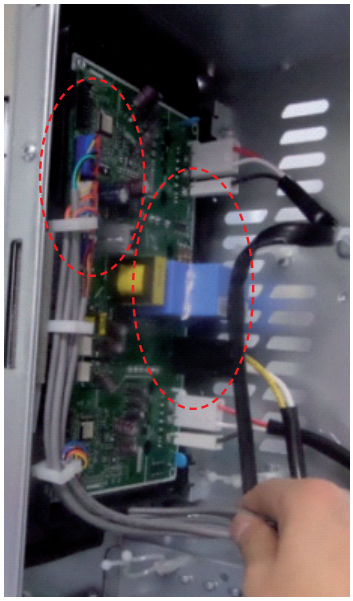
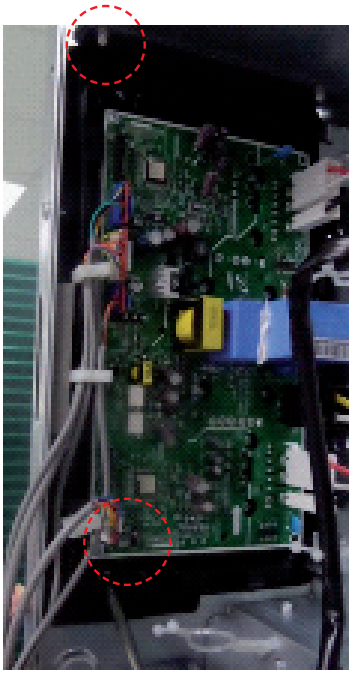
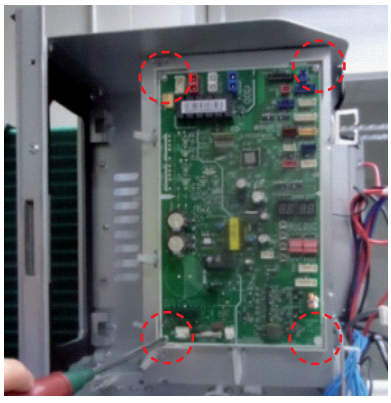
No.	Parts	Procedure	Remark
5	CABI BACK RIGEHT	1) Take out the sensor wire through the holeon cabinet.	
		2) Remove 13 screws. (use ""+"" screw driver or electric motion driver)	
			
			

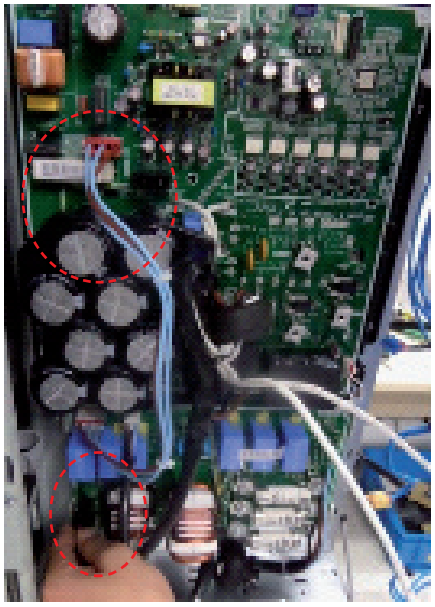
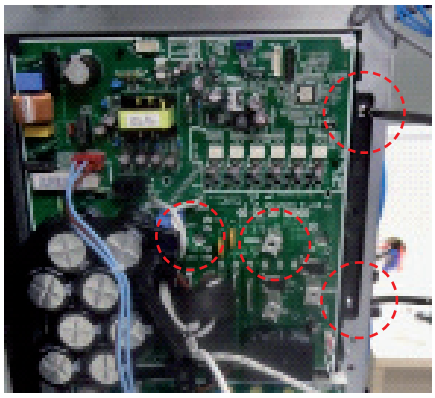
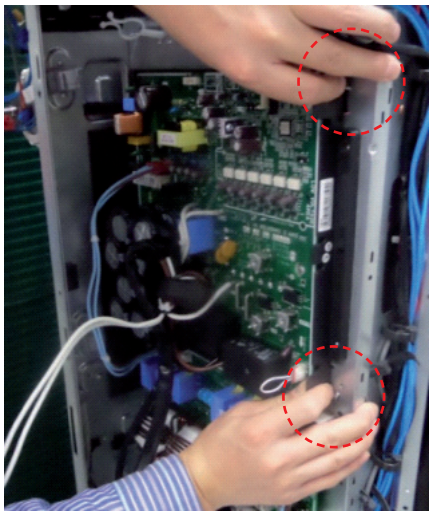
No.	Parts	Procedure	Remark
6	CABINET BACK INSTALL	1) Remove 2 scrwe. (using "+" screw driver or electric motion driver)	
7	CABI FRONT LF	1) Remove 10 screws. (using "+" screw driver or electric motion driver)	    

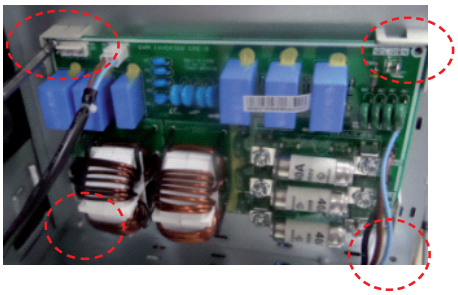
No.	Parts	Procedure	Remark
8	FAN PROPELLER	1) Remove nut,take out the fan. (using wrench turn clockwise)	
9	MOTOR	1) Remove 4 screws,take off the motor. (using "+"screw driver or electric motion driver)	
		2) Pull out the connector on main pcb board.	

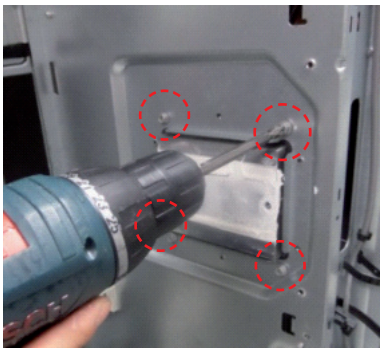
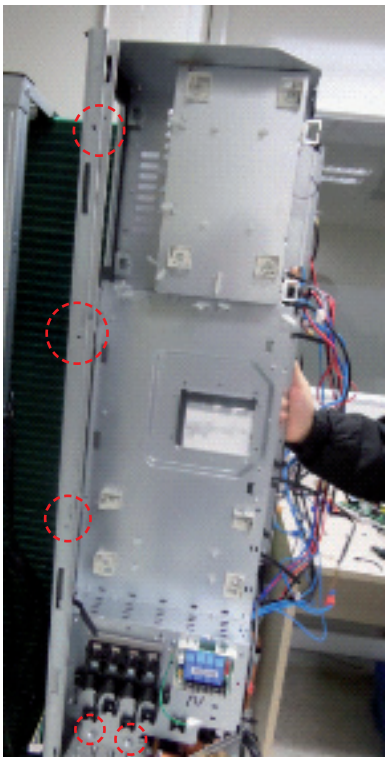
No.	Parts	Procedure	Remark
10	BRACKET MOTOR	1) Remove 2 screws on the base. (using "+" screwdriver or electric motion driver)	
11	CONTROL BOX	1) Pull out all the connector on the pcb board. ⚠ Warning : Make sure the power is disconnected before work	
		2) Remove the screw that fix comp power wire. (using "+" screw driver or electric motion driver)	
		3) Remove the screw that fix comp power wire. (using "+" screw driver or electric motion driver)	

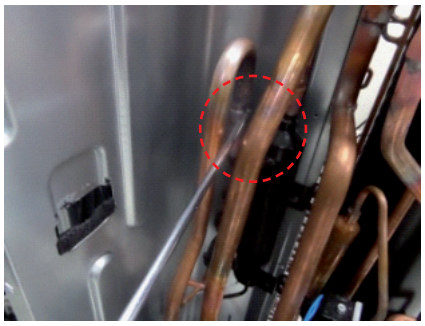
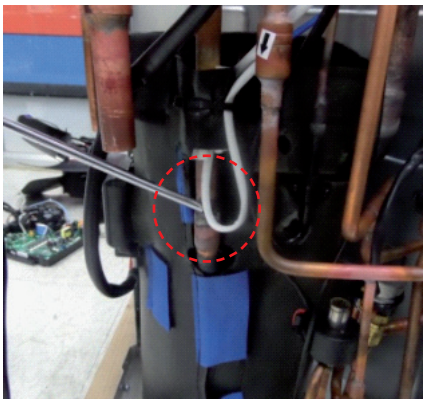
No.	Parts	Procedure	Remark
11	CONTROL BOX	4) Remove PBA of control box. a) Remove 2 screws that fix plate cover control box,and revolve open it. (using "+" screwdriver or electric motion driver)	
			
		b) Remove 2 screws that fix reactor wire. (using "+" screwdriver or electric motion driver)	
		c) Remove 2 screws that fix reactor and pull up it. (using "+" screwdriver or electric motion driver)	

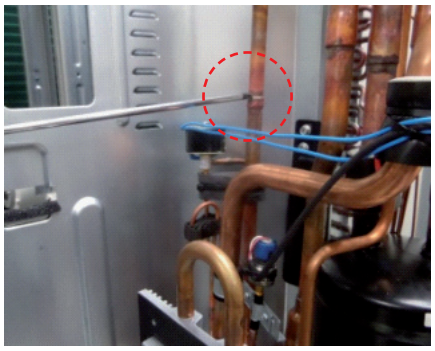
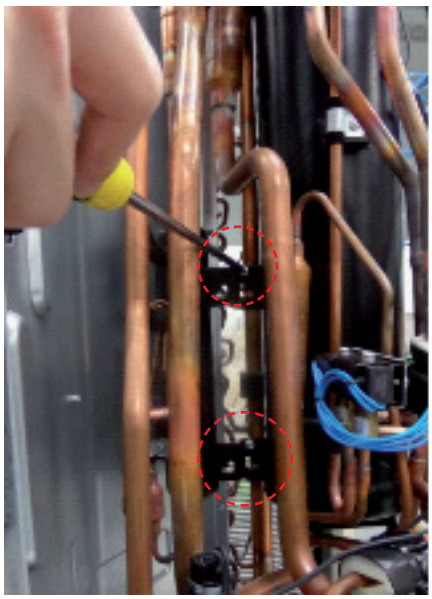
No.	Parts	Procedure	Remark
11	CONTROL BOX	d) pull out the connector wire that's on fan motor diver PBA.	
		e) Remove 2 screws that fix PBA CASE,and pull out assy fan motor diver PBA,	
		d) Pull out the connector wire that's on MAIN PBA. e) Remove 4 screws that fix MAIN PBA,and pull out it.	

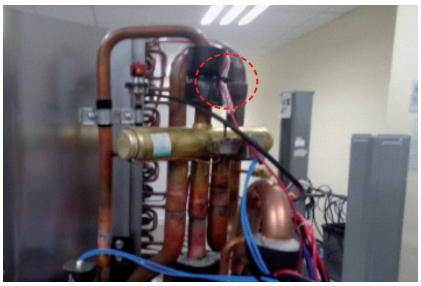
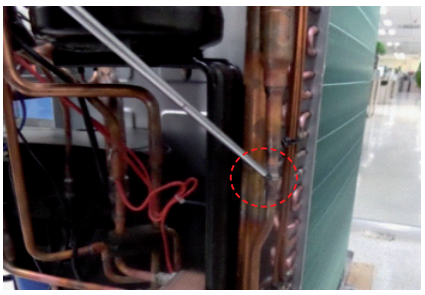
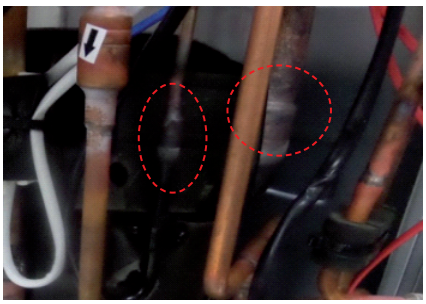
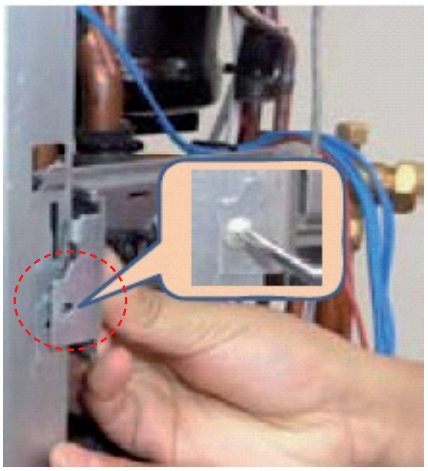
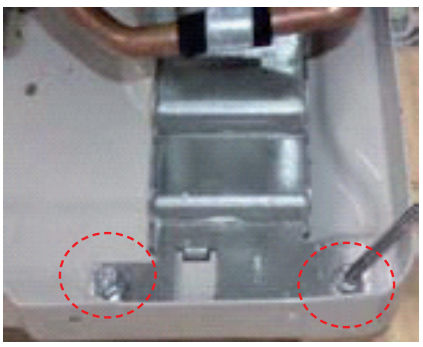
No.	Parts	Procedure	Remark
11	CONTROL BOX	f) pull out the connector wire that's on Inverter PBA.	
		g) Remove 2 screws that fixing IGBT with heatsink,and 2 screws that fixing PBA case;(using "+" screwdriver or electric motion driver)	
		h) Band the handel of the case and take off the assy inverter PBA. (Reffer right pic) ⚠ Warning : Becareful when take off inverter pcb ;when reassemble should ensure the silicon grease thin and even.	

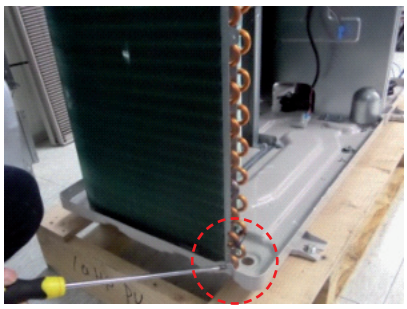
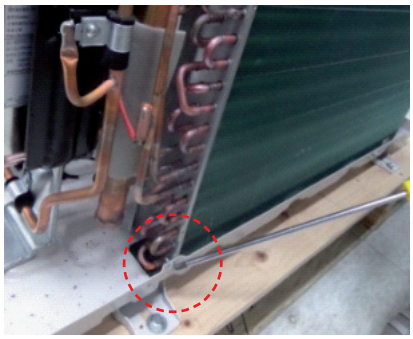
No.	Parts	Procedure	Remark
11	CONTROL BOX	i) Pull out the connector wire that's on EMI PBA.	
		j) Remove 4 screws that fix EMI PBA,and pull out it. (using "+" screwdriver or electric motion driver)	

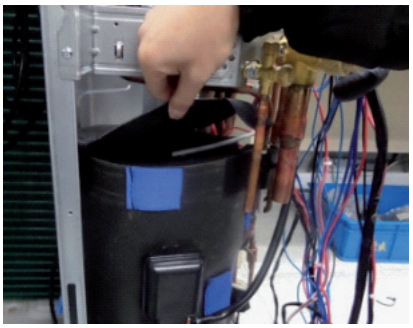
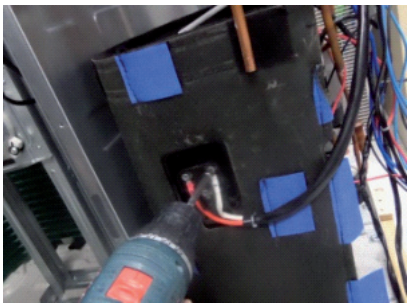
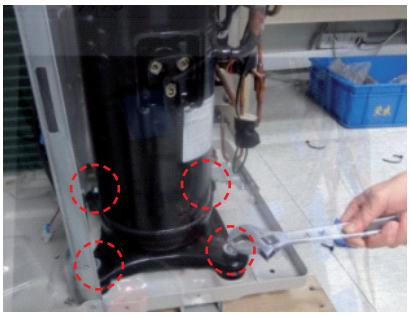
No.	Parts	Procedure	Remark
11	CONTROL BOX	5) Remove 6 screws that fixing heat sink with control case.	
		6) Remove 5 screws that fixing control box with partition and bracket valve. 7) Then you can take off the whole control box.	

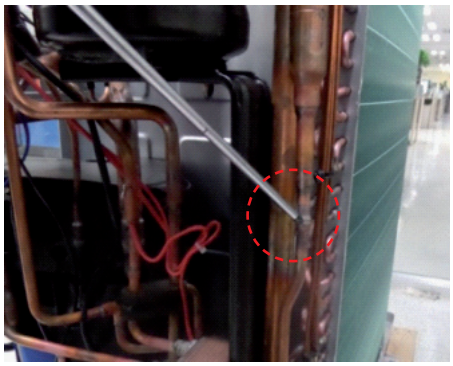
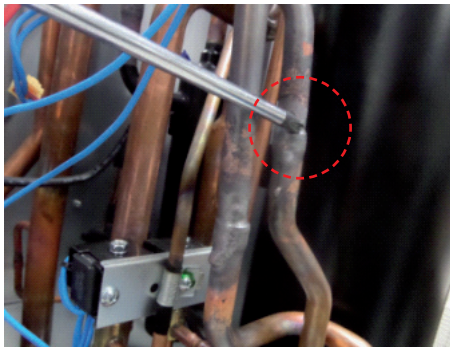
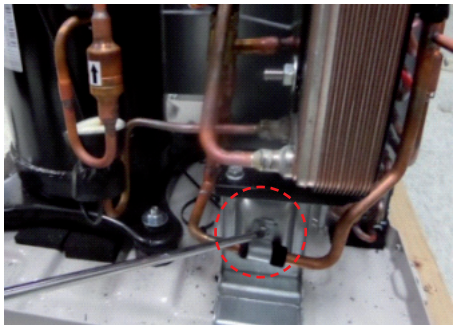
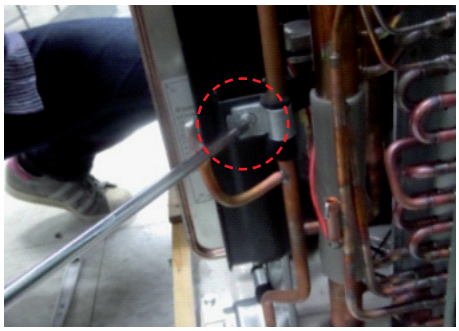
No.	Parts	Procedure	Remark
12	PLATE COOLING	1) Purge the Coolant first. 2) Separate 2 weld points on plate cooling by using a welder. ⚠ Warning : When removing the compressor,Heat Exchanger, and Pipe, purge the Coolant inside the Compressor completely and remove the pipe with a welding flame.	
13	TUBE DISCHARGE	1) Separate 2 weld points by using a welder. (Tube discharge to oil separator&compressor)	 

No.	Parts	Procedure	Remark
14	ASSY TUBE-OIL SEPARATOR	1) Separate 2 weld points by using a welder . (1. Oil separator to 4way valve tube. 2.Oil tube to suction tube.)	 
		2) Remove 2 screws that fix oil separator on accumulator.	

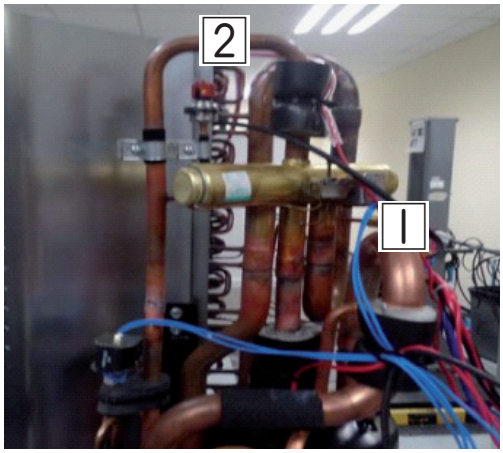
No.	Parts	Procedure	Remark
15	ASSY TUBE-4WAY VALVE	1) Separate 2 weld points by using a welder. (4way valve to Assy cond)	 
		2) Separate 2 weld points by using a welder (1.scution tube to comperessor. 2.tube vapor to comperessor.)	
		3) Remove 3 screws refer to the picture. - After ewmove screw on bracket valve, need to pall up it from patition	 

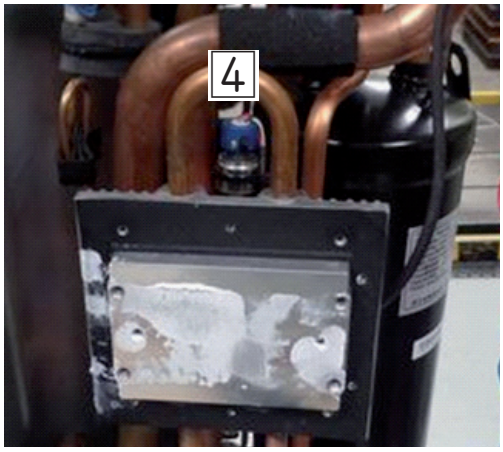
No.	Parts	Procedure	Remark
16	ASSY COND	1) Remove 1 screw that fix partition. Remove 2 screws that fix cond. (Using "+" screwdriver or electric motion driver.)	  

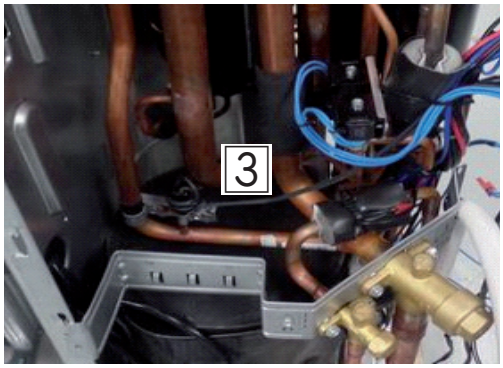
No.	Parts	Procedure	Remark
17	COMPERESSOR	1) Remove felt top and felt side from comp-eressor.	 
		2) Open cover power of comp,remove power wire. (using "+" screwdriver or electric motion driver)	
		3) Remove 3 screws on front of comp and 1 screw back of comp.	

No.	Parts	Procedure	Remark
18	ASSY TUBE-EEV	1) Separate 1 weld points by using a welder. (EEV tube to cond)	
		2) Separate 1 weld points by using a welder. (EEV tube to tube plate cooling)	
		3) Remove 2 screws fix assy eev tube on bracket accumulator. Pull out assy tube-EEV.	 

■ Position of the sensor and Valve



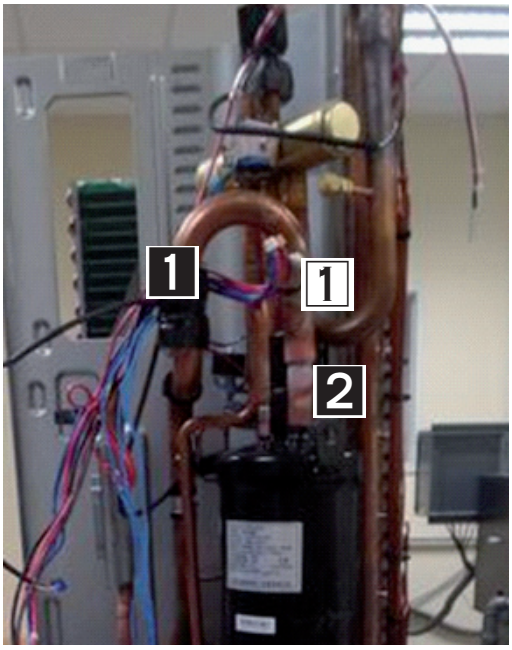




VALVE & SENSOR

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

■ Position of the sensor and Valve

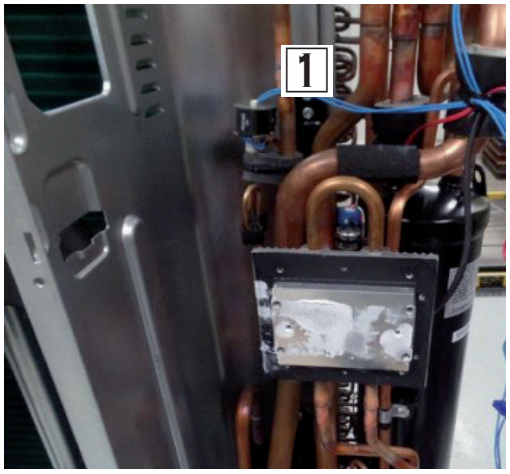


VALVE & SENSOR

No	Valve & Sensor
1	ACCUM IN SENSOR

INSULATION

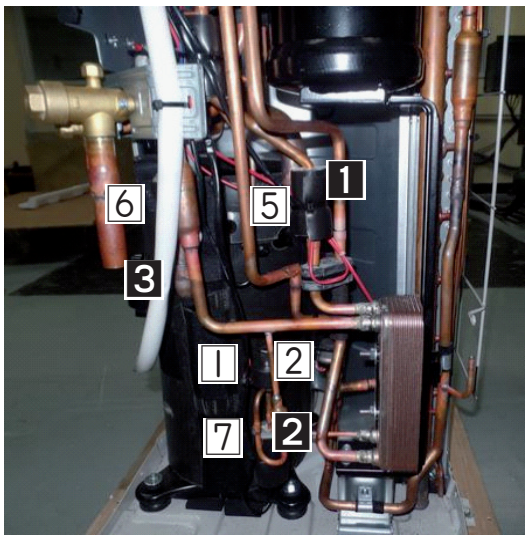
No	INSU CODE
1	DB62-08752F
2	DB62-08752F



VALVE & SENSOR

No	Valve & Sensor
1	HOT GAS VALVE

■ Position of the sensor and Valve

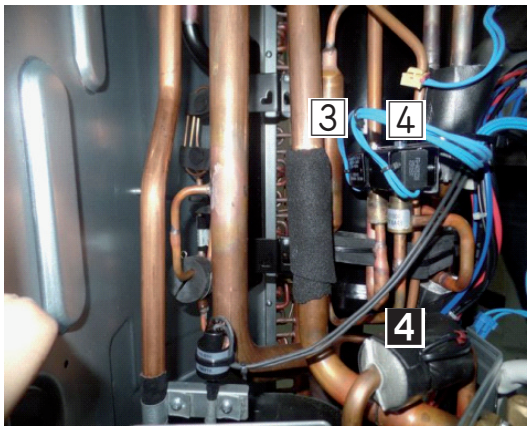


VALVE & SENSOR

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

INSULATION

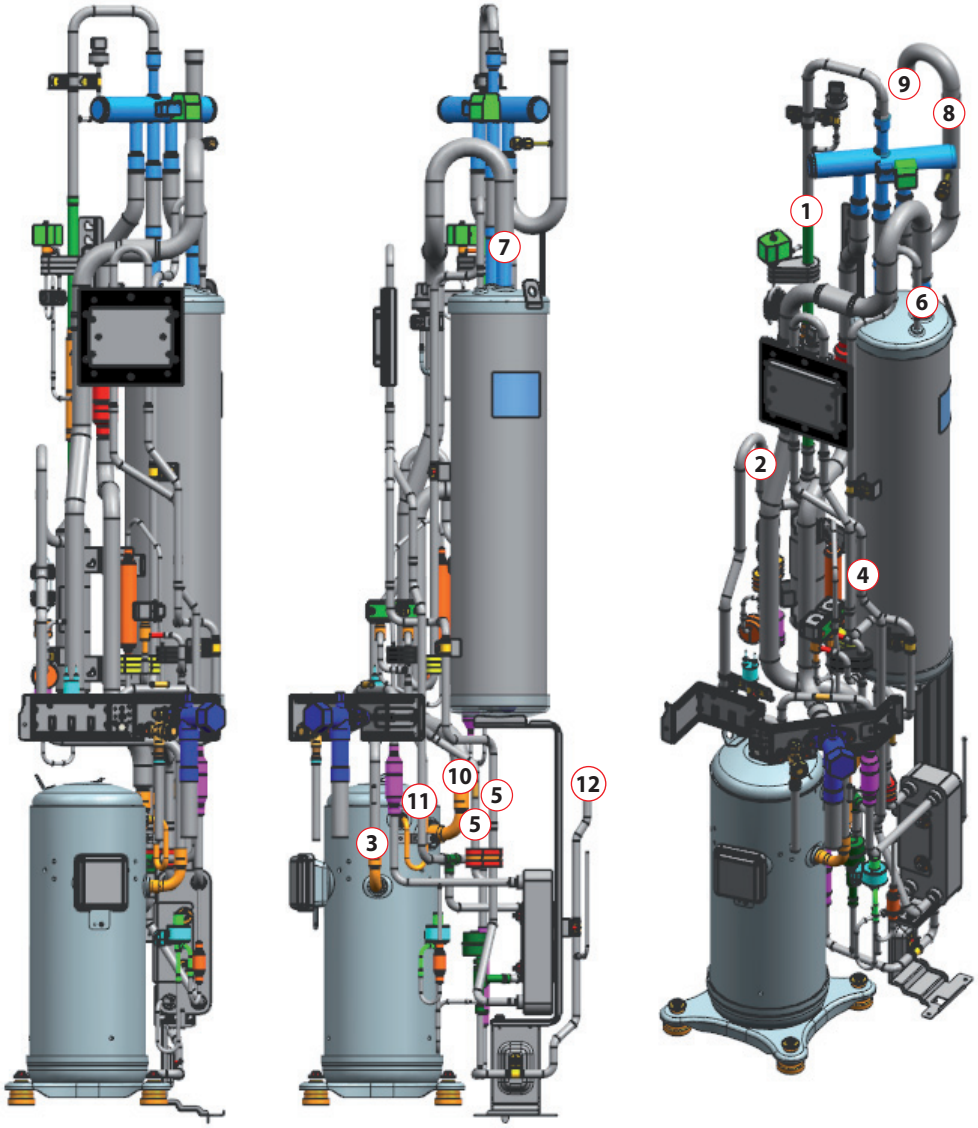
No	INSU CODE
1	DB62-08752D
2	DB62-08752A
3	DB62-08752B
4	DB62-08752D



INSULATION

No	INSU CODE
1	DB62-08752D
2	DB62-08752A
3	DB62-08752B
4	DB62-08752D

■ Pipe Welding Posltion



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

3-3 Precaution when replace the compressor

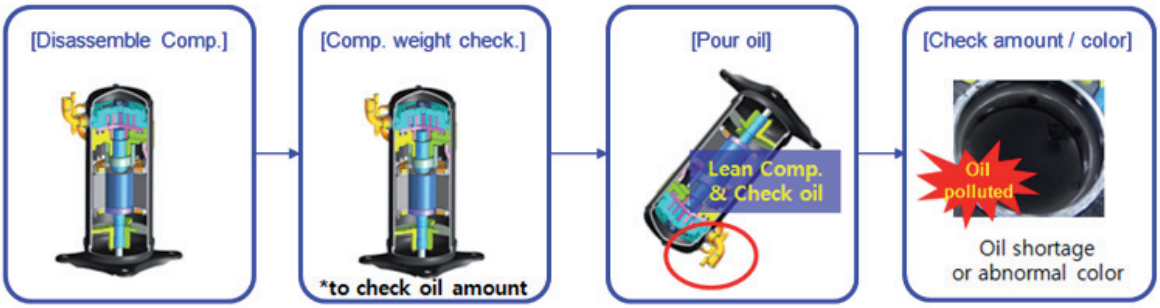
■ Compressor replacement procedure

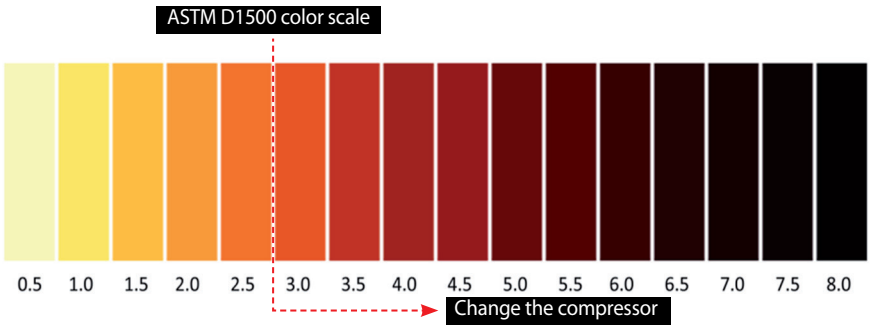
STEP	Replacement procedure for 1 Compressor unit
1	Close all service valves.
2	Execute a vacuum mode by pushing 4 times outdoor unit main PCB K1 switch to open all EEV and valves.
3	Refrigerant recovery need to use the recovery unit. ※ When there is no recovery unit, refer to below guides. 1) If the refrigerant discharge operation performs, remaining amount of refrigerant inside the outdoor unit is about 1.5kg ordinary. In winter days, the outside temperature is low and there can be more remaining refrigerants. 2) Refer to the refrigerant quantity of factory charging printed on the outdoor label. 3) Can get help while deciding the additional refrigerant charging quantity by using the refrigerant quantity decision function of S-Checker.
4	Turn off the power using circuit-breakers that is connected to the outdoor unit.
5	Remove the broken compressor ※ Confirm all refrigerant was released from outdoor unit by manifold gauge, before using welder to remove the compressor
6	Measure the weight of broken compressor.
7	Check the color of used oils from broken compressor.
8	Decide how much of oil should be added to the outdoor unit.
9	Replace a new compressor and add additional oil to the outdoor unit.
10	Turn on the power and execute vacuum mode again.
11	Leakage test by nitrogen gas and release all nitrogen gas from outdoor unit and evacuate again.
12	Add an additional refrigerant to the system which was decided step 3.
13	Open the service valve and choose Auto Trial Operation through pushing K1 switch in outdoor main PCB and hold 1 time.

■ How to change the compressor

1) Oil color decision

- Exchange all compressor in the system if the oil color is same or worse than 3.





2) Decide additional amount of oil

Decide amount of oil to be added after compressor replacement.
Otherwise new compressor will be broken continuously by bad lubricating cycle.

※ Amount oil amount(kg)= Weight(kg) of replaced part - Weight(kg) of new part
※ Add 100cc of oil every 0.1kg difference
※ DVM S oil service code : DB81-02598A [1ℓ can]

1. Check the weight of broken compressor
   ※ GB052* : 31.7kg / GB066* : 35.5kg / GB070 : 36.8kg (including oil 1200cc)
   ※ If broken compressor is 0.8kg or more lighter than new one, Oil return line is blocked.
2. Check the weight of oil lubricating part(Assy. accumulator, Assy. oil separator)

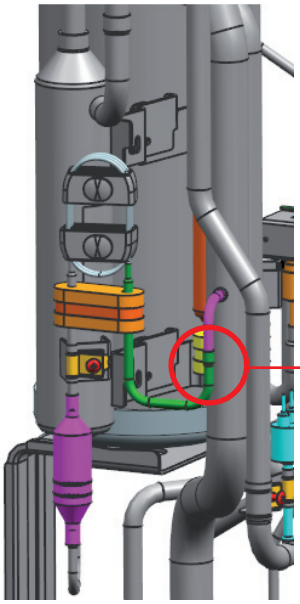
■ Check point after remove the compressor

1) How to check the Oil separator blockage

If there is little oil in accumulator, oil may stay in Oil separator.

Check brazing point

1. Blowing by nitrogen gas
2. Cut and see



Cut & Nitrogen gas blowing

* Brazing point check

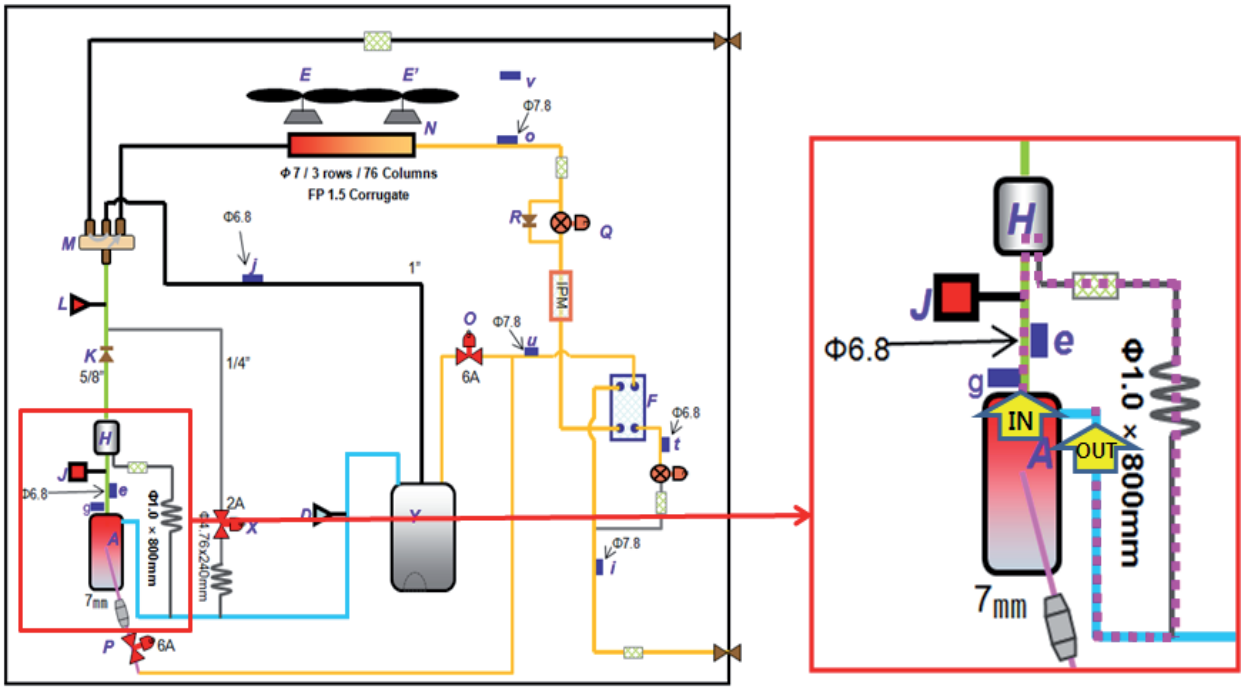
Ex) blocked by brazing substance.

■ How to check the Oil separator blockage

- Nitrogen gas blowing to Discharge line

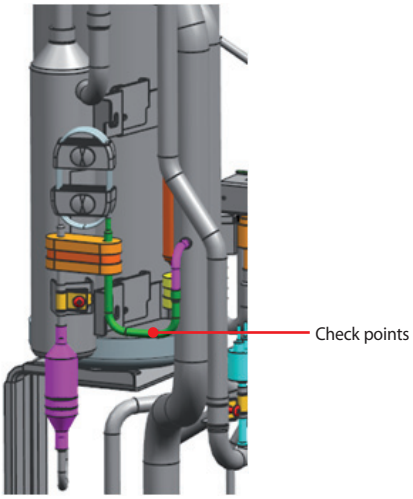
  OK : Nitrogen gas come out from suction line
  NG : No gas come out from suction line

* Some solenoid valve or 4way valve may have leak.
So even though the result was ok, check the temperature of oil separator return line again after replace the compressor.



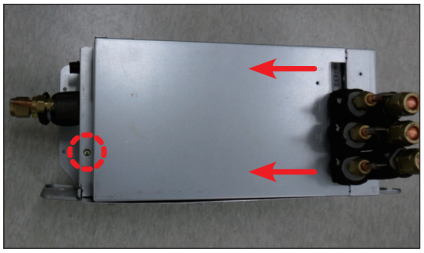
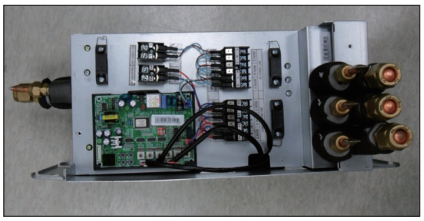
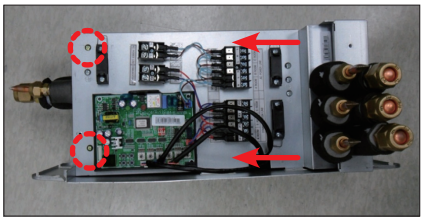
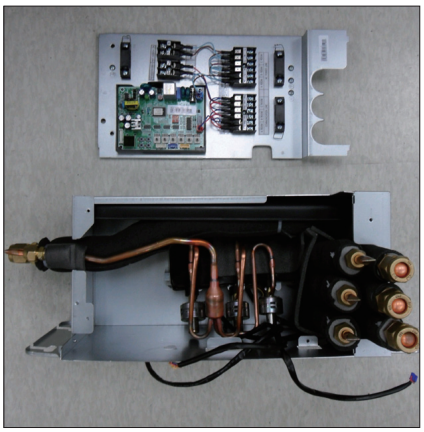
1) Test run to check oil separator (high pressure side)

▶ Normal : Check point temp. ≒ Saturated T_Pd
▶ Abnormal : Check point temp. ≒ surrounding temp.
* Check point : Oil out line of oil separator.



Address	10,06,00	10,06,01
Serial Number	-	-
Operation Mode	Test	Test
Operation Status	Heat	Heat
Error Code	g11	g11
Capacity	22HP	22HP
Target Frequency1	58	61
Order Frequency1	58	61
Current Frequency1	58	61
Target Frequency2	61	64
Order Frequency2	61	64
Current Frequency2	61	64
High Pressure	23.6	24.6
Saturated T-Pd	40°C	42°C
Low Pressure	5.4	5
Saturated T_Ps	-7°C	-9°C
Discharge1	53.1°C	68°C
Discharge2	53.5°C	62.7°C

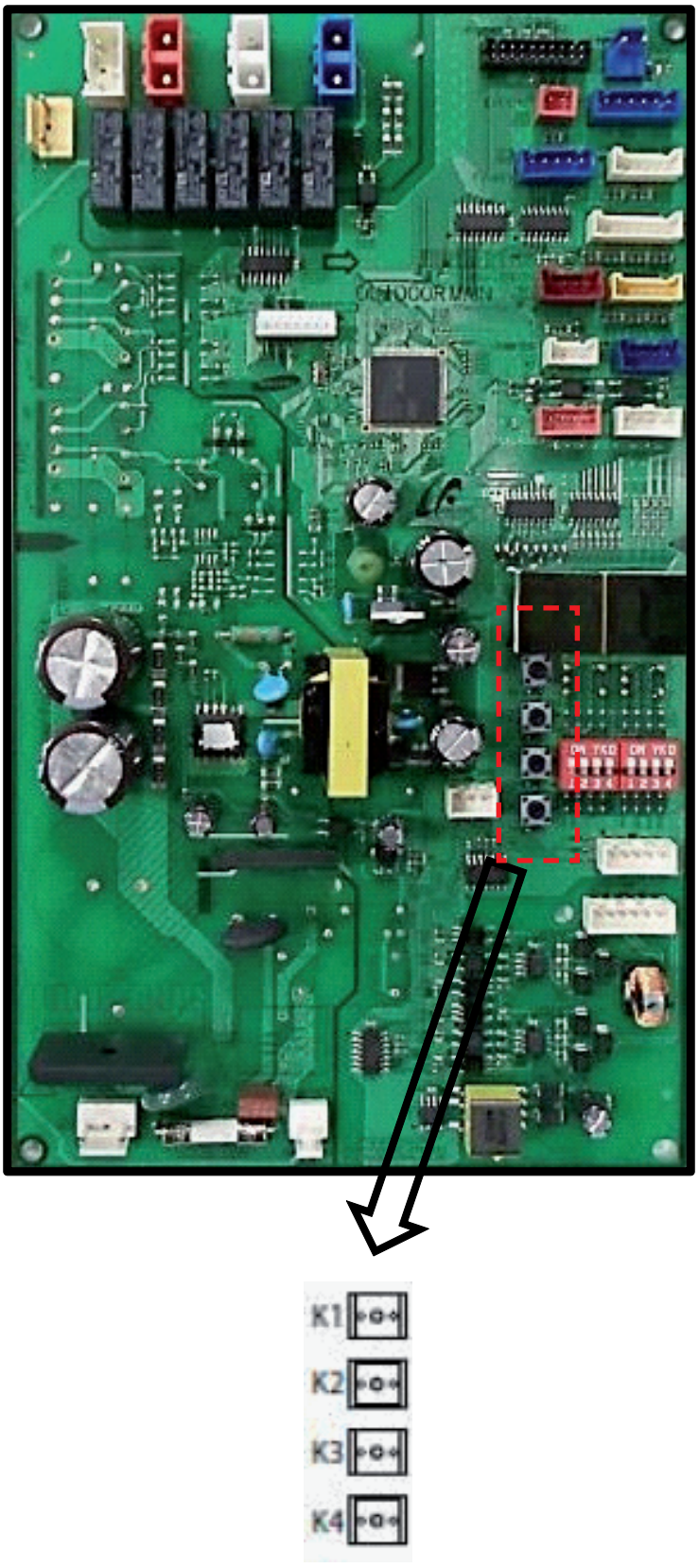
3-4 EEV KIT

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

4. Troubleshooting

4-1. Service Operation

4-1-1 Special Operation



■ K1 button function

K1 Control	KEY operation	Display on segment
Press and hold 1 time	Auto trial operation	"K""K""BLANK""BLANK"

K1 (Number of press)	KEY operation	Display on segment
1 time	Refrigerant charging in Heating mode (Note 1)	"K""1""BLANK""BLANK"
2 times	Trial operation in Heating mode (Note 1)	"K""2""BLANK""BLANK"
3 times	Pump out in Heating mode (Note 1)	"K""3""BLANK""1"
4 times	Vacuuming	"K""4""BLANK""1"
5 times	End Key operation	-

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

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

■ K2 button function

K2 (Number of press)	KEY operation	Display on segment
1 time	Refrigerant charging in cooling mode	"K""5""BLANK""BLANK"
2 times	Trial operation in cooling mode	"K""6""BLANK""BLANK"
3 times	Pump down in cooling mode	"K""7""BLANK""BLANK"
4 times	Automatic setting of operation mode (Cooling/Heating) for trial operation	"K""8""BLANK""BLANK"
5 times	Checking the amount of refrigerant	"K""9" XX
(Display of last two digits may differ depending on the progress)	End Key operation	-
6 times	Discharge mode of DC link voltage	"K""A""BLANK""BLANK"
7 times	Forced defrost operation (Note 1)	"K""B""BLANK""BLANK"
8 times	Forced oil collection	"K""C""BLANK""BLANK"
9 times	Inverter compressor check	"K""D""BLANK""BLANK"
10 times	Fan 1 check	"K""E""BLANK""BLANK"
11 times	Fan 2 check	"K""F""BLANK""BLANK
12 times	End key operation	-

■ K3 button function

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

■ K4 button function

K4 (Number of press) Press and hold the K4 for 2 seconds to enter the setting	Displayed content	Display on segment		
		Page 1	Page 2	
1 time	Main version	MAIN	Version (Ex. 1412)	
2 times	Inverter version	INV1	Version (Ex. 1412)	
3 times	Fan 1 version	FAN1	Version (Ex. 1412)	
4 times	Fan 2 version	FAN2	Version (Ex. 1412)	
5 times	EEP version	EEP	Version (Ex. 1412)	
6 times	Assigned address of the units	AUTO	SEG 1,2	SEG 3,4
			Indoor unit: “A" , "0"	Address (ex) 07)
7 times	Manually assigned address of the units	MANU	SEG 1,2	SEG 3,4
			Indoor unit: “A" , "0"	Address (ex) 15)

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

■ How to display integrated error code

- Meanings of first alphabetical character / number of error code.

Displayed alphabet	Explanation
E	When displaying Error 101~700.
P	When displaying Error 701~800.
C	Displays address of subordinate within the set C003 : INV1 PCB / C002 : FAN PCB.
U	When displaying outdoor unit address. Ex) U200: Outdoor unit 1, U201: Outdoor unit 2, U202: Outdoor unit 3, U203: Indoor unit 4.
A	When displaying indoor unit address. Ex) A000: Indoor unit address 0, A001: Indoor unit address 1, A002: Indoor unit address 2.

- Order of error display

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

■ Error code

No.	Code	Explanation
1	E-108	Error due to repeated address setting(when 2 or more devices has same address within the network).
2	E-121	Error on indoor temperature sensor of indoor unit(Short or Open).
3	E-122	Error on EVA IN sensor of indoor unit(Short or Open).
4	E-123	Error on EVA OUT sensor of indoor unit(Short or Open).
5	E-128	EVA IN temperature sensor of indoor unit is detached from EVA IN pipe.
6	E-129	EVA OUT temperature sensor of indoor unit is detached from EVA OUT pipe.
7	E-149	Error due to AHU MASTER indoor unit sensor setting.
8	E-151	Error due to opened EEV of indoor unit(2nd detection).
9	E-152	Error due to closed EEV of indoor unit(2nd detection).
10	E-153	Error on oat switch of indoor unit(2nd detection).
11	E-154	RPM feedback error of indoor unit.
12	E-162	EEPROM error of MICOM(Physical problem of parts/circuit).
13	E-163	Indoor unit's remote controller option input is incorrect or missing, Outdoor unit EEPROM data error.
14	E-198	Error due to disconnected thermal fuse of indoor unit (Temperature increase of the terminal block).
15	E-201	Communication error between indoor and outdoor unit (Installation number setting error repeated indoor unit address, indoor unit communication cable error).
16	E-202	Communication error between indoor and outdoor unit(Communication error on all indoor unit, outdoor unit communication cable error).

No.	Code	Explanation
17	E-205	Communication error on all PBA within the outdoor unit C-Box, communication cable error.
18	E-206	E206-C002 : Fan PBA communication error.
19	E-221	Error on outdoor temperature sensor of outdoor unit (Short or open).
20	E-231	Error on COND OUT temperature sensor of main outdoor unit (Short or open).
21	E-241	COND OUT sensor in detached.
22	E-251	Error on discharge temperature sensor of compressor 1 (Short or open).
23	E-262	Discharge temperature sensor of compressor 1 is detached from the sensor holder on the pipe.
24	E-266	Top sensor of compressor 1 is detached.
25	E-269	Suction temperature sensor is detached from the sensor holder on the pipe.
26	E-276	Error on Top sensor of compressor 1(Short or open).
27	E-291	Refrigerant leakage or error on high pressure sensor(Short or open).
28	E-296	Refrigerant leakage or error on low pressure sensor(Short or open).
29	E-308	Error on suction temperature sensor(Short or open).
30	E-311	Error on temperature sensor of double layer pipe/liquid pipe(sub heat exchanger)(Short or open).
31	E-321	Error on EVI(ESC) IN temperature sensor(Short or open).
32	E-322	Error on EVI(ESC) OUT temperature sensor(Short or open).
33	E-346	Error due to operation failure of Fan2.
34	E-347	Motor wire of Fan2 is not connected.
35	E-348	Lock error on Fan2 of outdoor unit.
36	E-353	Error due to overheated motor of outdoor unit's Fan2.
37	E-355	Error due to overheated IPM of Fan2.
38	E-378	Error due to overcurrent of Fan2.
39	E-383	Error due to special overcurrent of Fan2.
40	E-386	Over-voltage/low-voltage error of Fan2.
41	E-387	Hall IC connection error of Fan2.
42	E-389	V-limit error on Fan2 of compressor.
43	E-391	Error due to Data Flash of Fan2.
44	E-393	Output current sensor error of Fan2.
45	E-396	DC voltage sensor error of Fan2.
46	E-399	Heat sink temperature sensor error of Fan2.
47	E-407	Compressor operation stop due to high pressure protection control.
48	E-410	Compressor operation stop due to low pressure protection control or refrigerant leakage.
49	E-416	Compressor operation stop due to discharge temperature protection control.
50	E-425	Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N),connection error on 3 phase input.
51	E-428	Compressor operation stop due to abnormal compression ratio.
52	E-438	EVI(ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI(ESC) EEV.
53	E-439	Error due to refrigerant leakage.
54	E-440	Heating mode restriction due to high air temperature.
55	E-441	Cooling mode restriction due to low air temperature.
56	E-442	Refrigerant charging restriction in heating mode when air temperature is over 15°C.
57	E-443	Operation prohibited due to low pressure.
58	E-445	CCH is detached.

No.	Code	Explanation
59	E-446	Error due to operation failure of Fan1.
60	E-447	Motor wire of Fan1 is not connected.
61	E-448	Lock error on Fan1 of outdoor unit.
62	E-452	Error due to ZCP detection circuit problem or power failure.
63	E-453	Error due to overheated motor of outdoor unit's Fan1.
64	E-454	Error due to fan1 PRM.
65	E-455	Error due to overheated IPM of Fan1.
66	E-461	Error due to operation failure of inverter compressor 1.
67	E-462	Compressor stop due to full current control.
68	E-464	Error due to over-current of inverter compressor 1.
69	E-465	V-limit error of inverter compressor 1.
70	E-466	Error due to over voltage / low voltage of inverter PBA 1.
71	E-467	Error due to unconnected wire of compressor 1.
72	E-468	Output current sensor error of inverter PBA 1.
73	E-469	DC voltage sensor error of inverter PBA 1.
74	E-471	INV1 data ash error.
75	E-474	Heat sink temperature sensor error of inverter PBA 1.
76	E-475	Error due to fan2 PRM.
77	E-478	Error due to overcurrent of Fan1.
78	E-483	Error due to special overcurrent of Fan1.
79	E-485	Error due to input current of inverter 1.
80	E-486	Over-voltage/low-voltage error of Fan1.
81	E-487	Hall IC connection error of Fan1.
82	E-489	V-limit error on Fan1 of compressor.
83	E-491	Error due to Data Flash of Fan1.
84	E-493	Output current sensor error of Fan1.
85	E-496	DC voltage sensor error of Fan1.
86	E-499	Heat sink temperature sensor error of Fan1.
87	E-500	Error due to overheat caused by contact failure on IPM of inverter PBA 1.
88	E-503	Error due to alert the user to check if the service valve is closed
89	E-505	Error due to self diagnosis of high pressure sensor.
90	E-506	Error due to self diagnosis of low pressure sensor.
91	E-560	Outdoor unit's option switch setting error(Using E2P option of other models or emergency operation for compressor malfunction option setting was enabled on all compressors of corresponding outdoor unit).
92	E-563	Error due to module installation of indoor unit with old version(Micom version needs to be checked).
93	E-573	Error due to using single type outdoor unit in a module installation.
94	E(P)-702	Error due to closed EEV of indoor unit(1st detection).
95	E(P)-703	Error due to opened EEV of indoor unit(1st detection).
96	UP	Trial operation uncompleted(Unprepared).

■ Refrigerant charging operation

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

	Cooling	Heating
Method of entry	Press the K2 tact switch 1 time 	Press the K1 tact switch 1 time 
Compressor	Starting frequency (Mild Start frequency) operation	
Indoor unit	Whole operation (The set temperature=3°C)	Whole operation (The set temperature=40°C)
Outdoor fan and valves	Normally control conduct	
Operation time	60 minutes	
Etc.	During the filling operation does not enter the special operation, such as oil recovery, defrost.	

■ Trial Operation

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

	Cooling	Heating
Method of entry	Press the K2 tact switch 2 times 	Press the K1 tact switch 2 times 
Compressor	Normal operation, but the maximum frequency limit (differ by model)	
Indoor unit	Whole operation (The set temperature=3°C)	Whole operation (The set temperature=40°C)
Outdoor fan and valves	Normally control conduct	
Operation time	Min : 60 minutes, Max : 10 hours	
Etc.	Exceed the maximum operating time at stops and waits. Protection and control, self-diagnosis is performed.	

■ Heating pump out

- Operation for the repair of the Individual outdoor unit, the outdoor unit refrigerant emissions to the indoor part.
- Liquid pipe service valve and the gas pipe service valve operation, the operator manually need to close.
- Observe low pressure using View Mode of K4 button if compressor operate.
- If low pressure goes down below about 0.2 MPaG : Immediately lock the gas side service valve, Pump Out operation is shut down.
- If operation of low pressure goes down below 0.1 MPaG : Will be stopped automatically for the protection of the compressor.

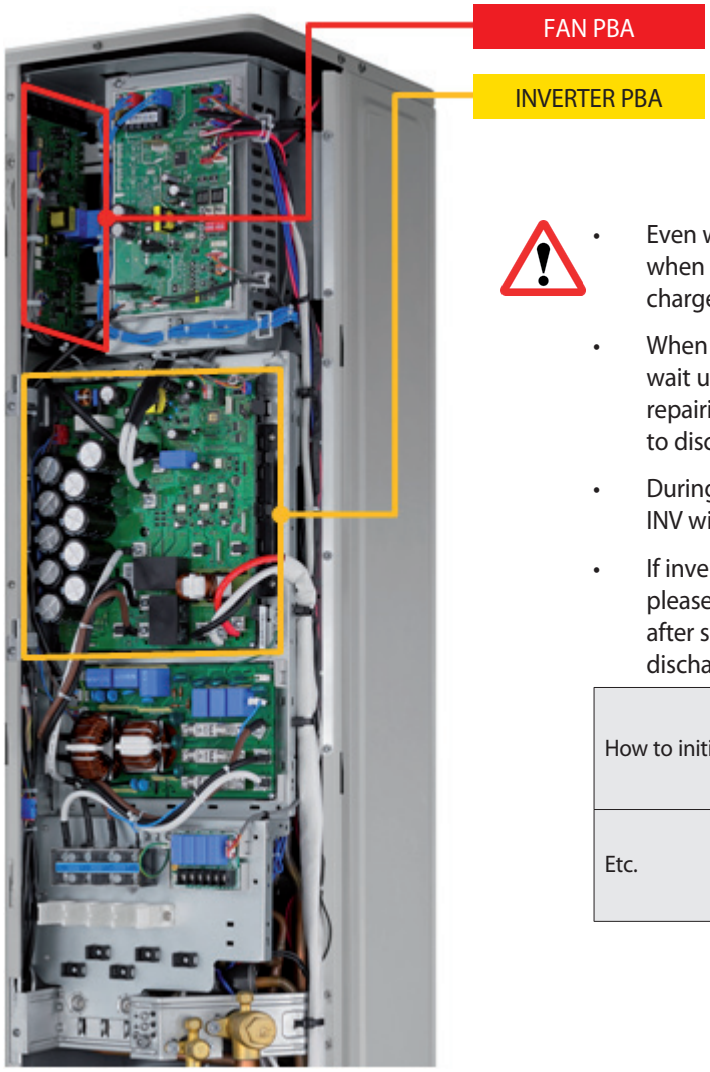
How to initiate	Press the K1 tact switch 3 times 
Compressor	60Hz
Indoor unit	Whole operation (The set temperature=40°C)
4Way valve	ON (Heating mode)
Outdoor fan	Maximum air flow
Main EEV	Operation side : 700 Step (Stop side : 0 step)
Maximum operation time	10 minutes
Protection control	Conduct the discharge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

■ Pump down in cooling mode

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

How to initiate	Press the K2 tact switch 3 times 
Compressor	60Hz
Indoor unit	Whole operation (The set temperature=40°C)
4Way valve	OFF (Cooling mode)
Outdoor fan	Maximum air flow
Main EEV	2000 Step
Maximum operation time	30 minutes
Etc.	Does not conduct the operation of the special operation, and protection control. Pressure and temperature is outside normal limits : Operation is shut down after gas pipe manually closed.

■ Discharge mode of DC link voltage



- Even when the outdoor unit power is off, it is dangerous when you come in contact with inverter PCB since it is charged with high DC voltage.
- When replacing / repairing the PCB, cut-off the power and wait until the DC voltage is discharged before replacing / repairing them. (Wait for more than 15 minutes to allow it to discharge naturally.)
- During "Discharge mode of DC link voltage", voltage of INV will be displayed.
- If inverter error is occurred (E464/364, E461/361, etc.), please wait more than 15 minutes until self-discharging after shutting off the power because it can not enter a discharge mode.

How to initiate	Press the K2 tact switch 3 times. 
Etc.	Discharge is complete, the power of the Inverter PCB is being blocked, communication function is blocked, E206 will occur.

■ Forced defrost operation

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

Method of Entry	Press the K2 tact switch 7 times. 
Start pattern	Heating trial operation pattern.
Defrost start	Defrost start : It is after 10 minutes which safety start finishes.
Defrost off	The same condition of the general defrost operation.
Etc.	The outdoor unit will stop as a normal pattern after the defrost operation is stopped.

■ Forced oil collection

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

Method of Entry	Press the K2 tact switch 8 times. 
Start pattern	Outdoor temperature is more than 10°C : cooling auto trial operation. Outdoor temperature is less than or equal to 10°C : heating auto trial operation.
Oil recovery start	Oil recovery start : It is after 10 minutes which safety start finishes.
Etc.	The outdoor unit will stop as a normal pattern after oil recovery operation for ten minutes.

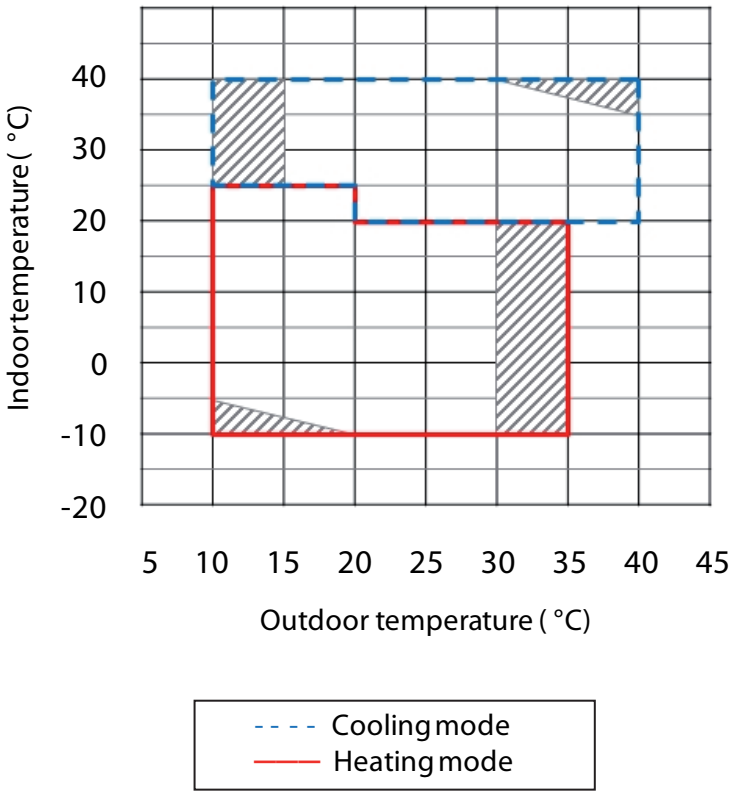
■ Checklist before auto trial operation

1. Check the power cable and communication cable of the indoor and outdoor unit.
2. Supply power to the outdoor unit 6 hours before trial operation to pre-heat the crank case heater.
3. Before supplying the power, use a voltmeter and phase tester to check the voltage and the phase.
   (Crankcase heater to be heated sufficiently.)
   R, S, T, N terminal: check if the voltage is within 380 - 415 V between wires (R - S, S - T, T - R) and 200 - 240 V between phases (R-N, S-N, T-N).
4. When the power is supplied, outdoor unit will execute tracking to check the indoor unit connection and other optional functions.
5. Write down the installation report on the service history report paper attached on the front part of the control box.

> **CAUTION** Supply power to the outdoor unit 6 hours before auto trial operation to pre-heat the crank case heater.

6. Guaranteed range of auto trial operation.
   - For precise judgment, you must perform auto trial operation in below indoor/outdoor temperature condition.

■ Checklist before auto trial operation



■ Checklist before auto trial operation

- In Auto trial operation, product will automatically select either cooling or heating mode and operate in selected mode.
- AM✳✳✳FXM✳✳C (Cooling Only) models operate only cooling mode in Auto trial operation.
  (Cooling only models don't operate Auto trial operation in case of outdoor temperature below -5℃ or indoor temperature below 5℃)
- In the temperature range marked with slashed pattern, system protection control may trigger during operation.
  (If the system protection control is enabled, it can be hard to get the precise judgment after the auto trial operation.)
- When the temperature is outside of guaranteed range, accuracy of judgment on auto trial operation may decrease near boarder line area.

■ Auto trial operation

1. If the Auto Trial Operation is not completed, normal operation will be prohibited.
   - When the auto trial operation is not completed, UP (Unprepared) will appear on the segment after the communication check and restrict compressor from operating. (UP Mode will be cleared automatically when auto trial mode is completed.)
   - Auto trial operation may take 20 minutes to maximum 2 hours depending on the operation status.
   - During auto trial operation, noise can be generated due to valve inspection.
     (Check the product if abnormal noise occurs continuously)

2. When error occurs during auto trial operation, check the error code and take appropriate
   - Refer to next page when E503 error occurs.
   - Refer to service manual if you need inspection or when other errors occur.

3. When auto trial operation ends, use S-NET pro or S-CHECKER to issue a result report.
   - Refer to service manual for further actions if you have any items with "inspection required" sign on the result report.
   - After taking appropriate measure for the items with "inspection required" sign, run the auto trial operation again.

4. Check the following items by running trial operation (cooling/heating).
   - Check if cooling/heating operation performs normally.
   - Individual indoor unit control: Check for air flow direction and fan speed.
   - Check for abnormal operation noise from the indoor and outdoor unit.
   - Check for proper draining from the indoor unit during cooling operation.
   - Use S-NET pro to check the detail operation status.

5. Explain to the user how to use the air conditioner according to the user's manual.

6. Hand over the installation manual to the customer so they can keep it with them.

How to initiate	Press and hold the K1 tact switch 1 time. 
Etc.	Make sure to close the outdoor unit cabinet during operation. If you operate the unit with the front cabinet open, it may cause damage to the product.

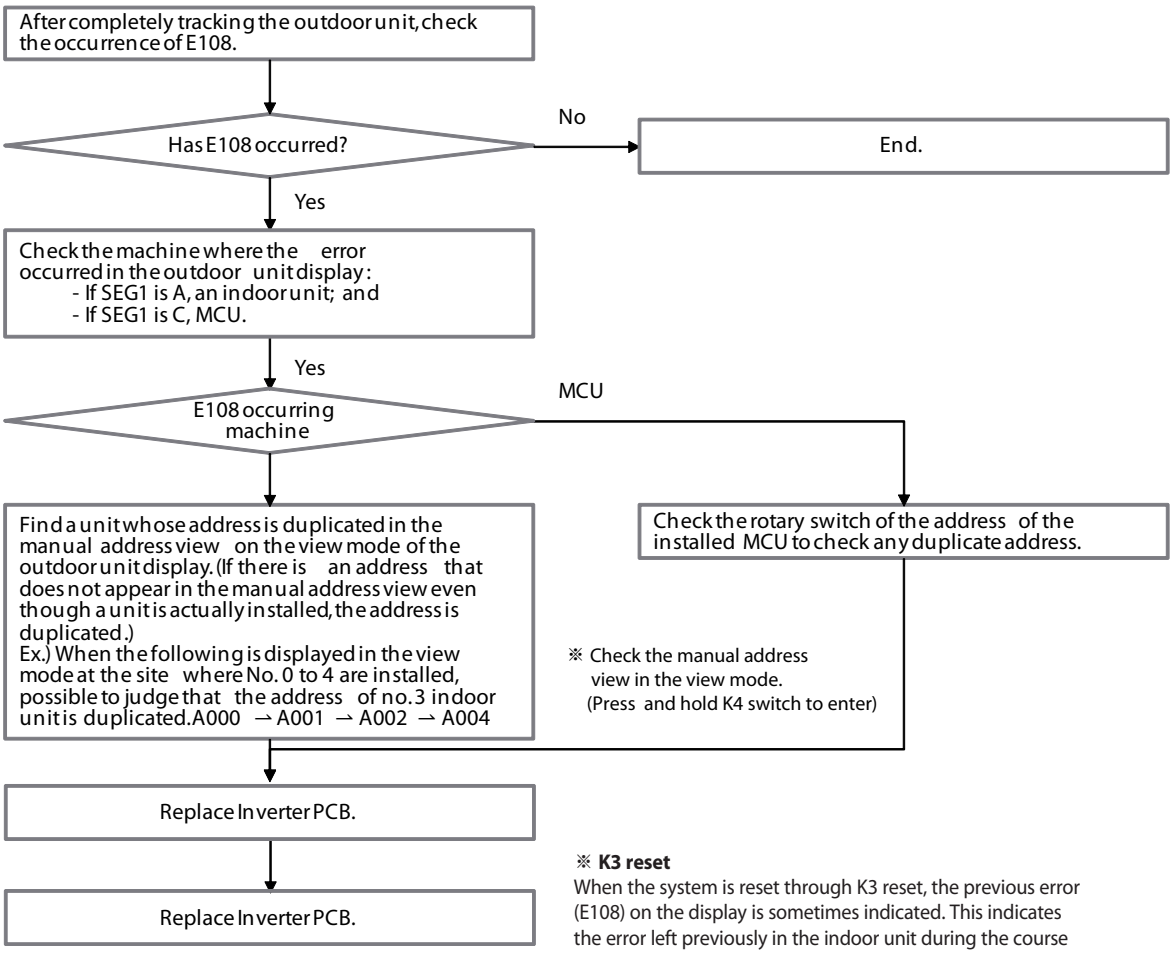
4-1-2 DVM S Eco Model EEPROM Code Table

No.	Model Name	EEP Code
1	AM100KXMDGH	DB82-03361A
2	AM120KXMDGH	DB82-03362A
3	AM140KXMDGH	DB82-03363A

4-2 Appropriate Measures for Different Symptom

■ Error due to repeated address setting (when 2 or more devices has same address within the network). (E-108)

Outdoor unit Display	**E-108**
Indoor unit Display	Operation: × / Defrost: × / Timer: ◑ / Fan: ◑ / Filter / EMI: × ※ ● : ON ◑: Flash ×: OFF
Judgement Method	• Refer the next page.
Cause of problem	• Indoor unit and MCU address duplication.



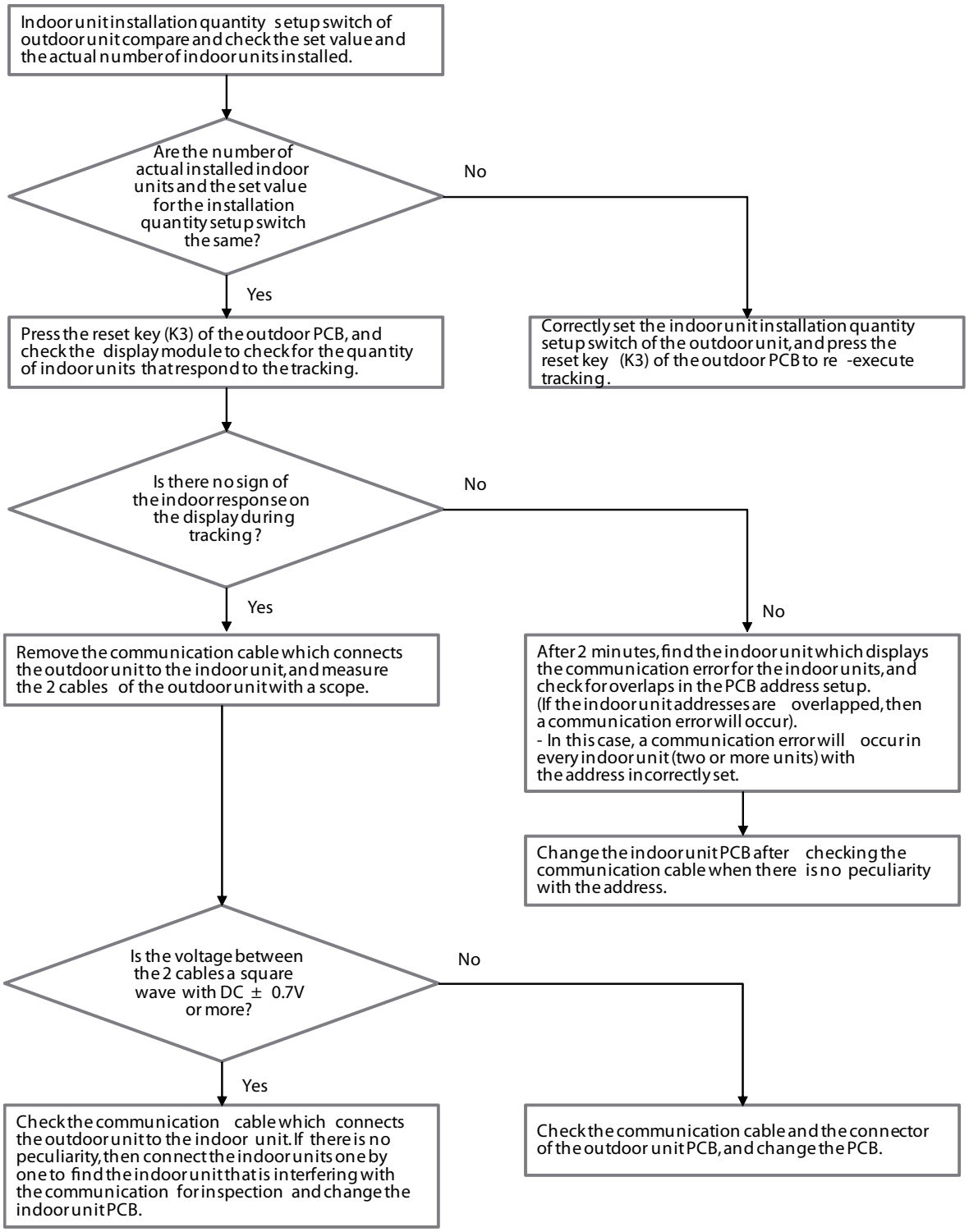
※ **K3 reset**
When the system is reset through K3 reset, the previous error (E108) on the display is sometimes indicated. This indicates the error left previously in the indoor unit during the course of performing resetting and addressing the whole system after the outdoor unit is reset. When addressing is completed, the error indication disappears (up to 5 minutes required).

※ **Whole system power reset**
- To solve the problem through the power reset after the address is reset the power reset of individual units is meaningless and the power of the whole system must be reset.

■ Communication error between indoor and outdoor unit (E-201) (Installation number setting error repeated indoor unit address, indoor unit communication cable error.) (cont.)

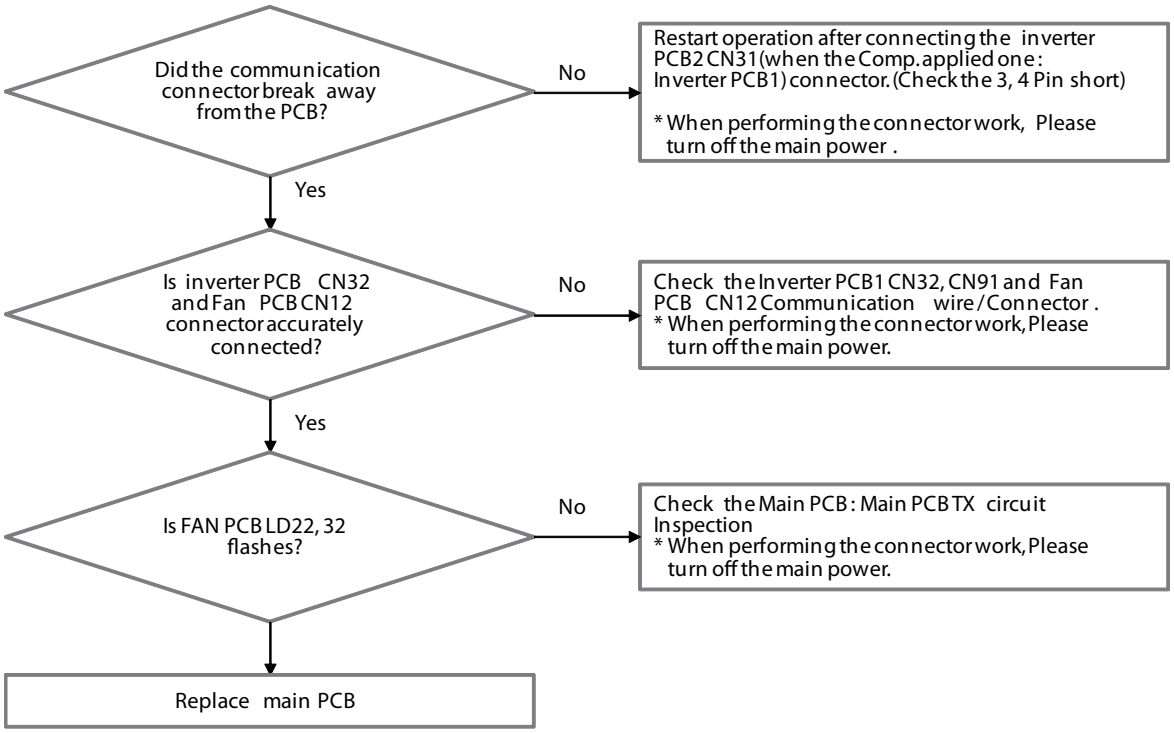
<table>
<tr><td>Outdoor unit Display</td><td>E-201</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Communication error between indoor and outdoor units.</td></tr>
<tr><td>Cause of problem</td><td>• Refer the next page.</td></tr>
</table>

■ Communication error between indoor and outdoor unit (E-201)



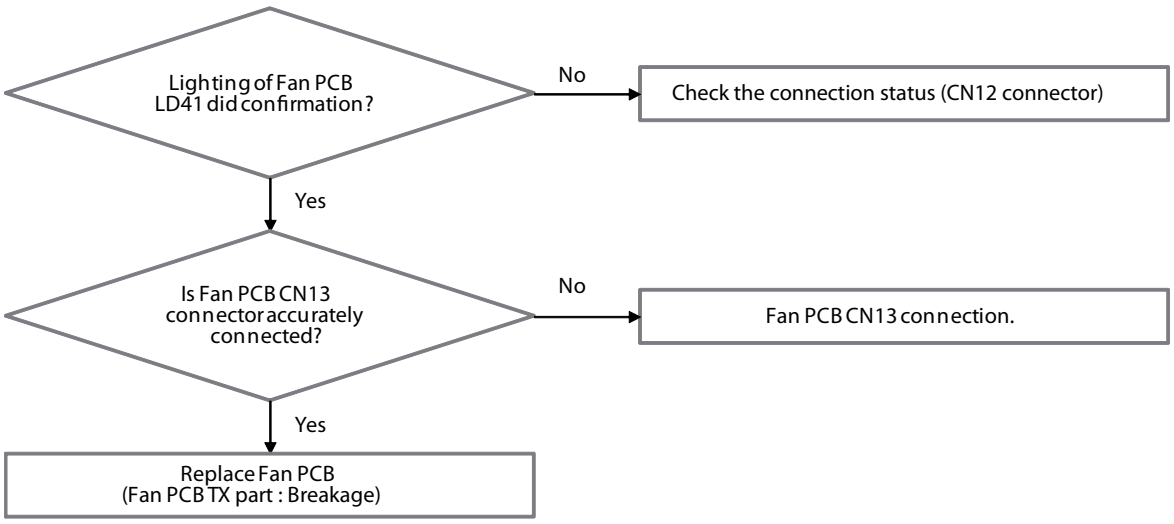
■ Communication error on all PBA within the outdoor unit C-Box, communication cable error. (E-205)

<table>
<tr><td>Outdoor unit Display</td><td>E-205</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Communication error between the C-Box PCB.</td></tr>
<tr><td>Cause of problem</td><td>• Communication wire inside the C-Box is unconnected.
• Main PCB defective.</td></tr>
</table>



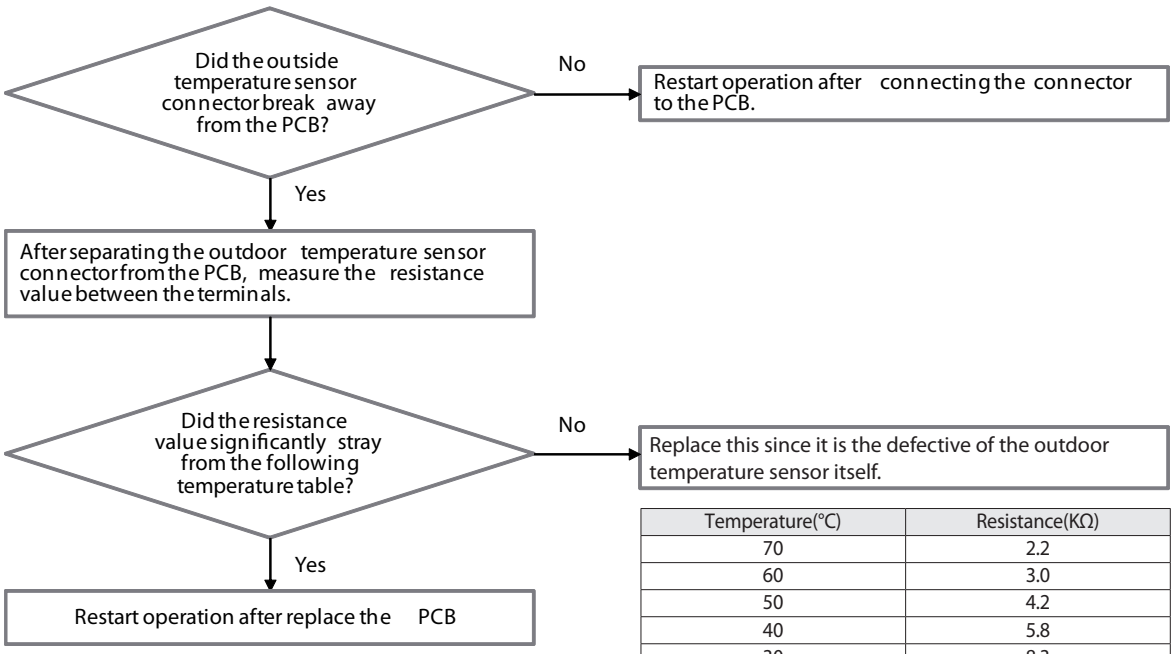
■ Communication error on all PBA within the outdoor unit C-Box, communication cable error. (E-206)

<table>
<tr><td>Outdoor unit Display</td><td>E-206</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• PCB does not respond to the Main PCB call.</td></tr>
<tr><td>Cause of problem</td><td>• C-Box internal Inverter PCB, Fan PCB, Hub PCB defective.</td></tr>
</table>



■ Error on outdoor temperature sensor of outdoor unit (Short or open). (E-221)

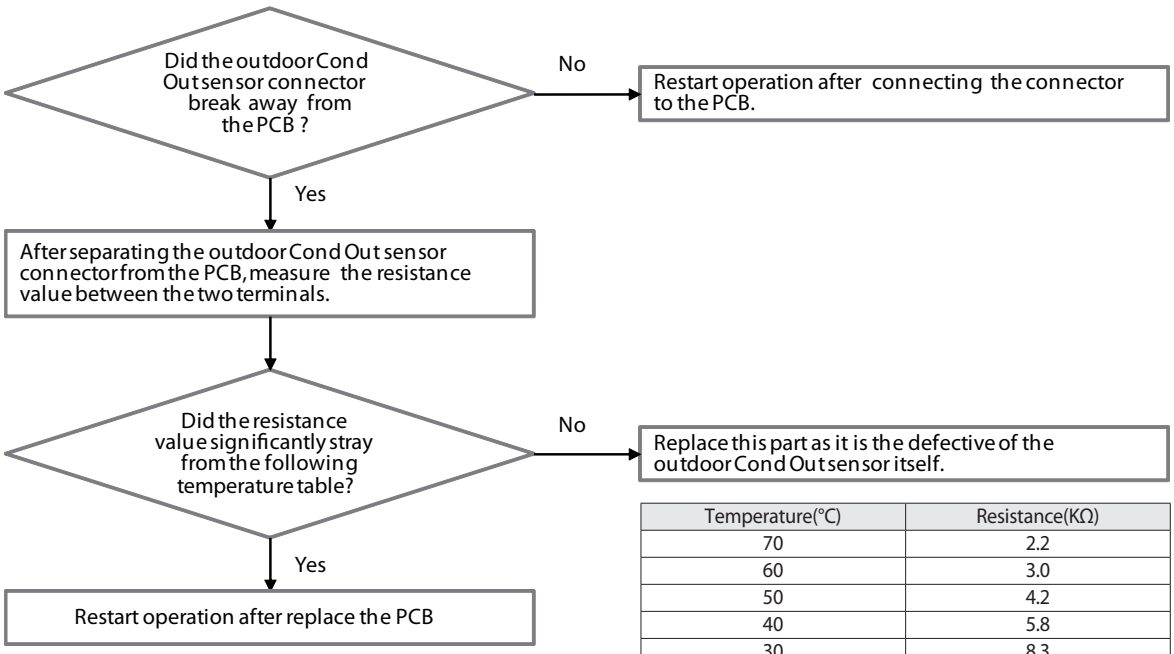
<table>
<tr><td>Outdoor unit Display</td><td>E-221</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Outdoor temperature sensor Short/Open is defective.</td></tr>
</table>



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

■ Error on COND OUT temperature sensor of main outdoor unit (Short or open). (E-231)

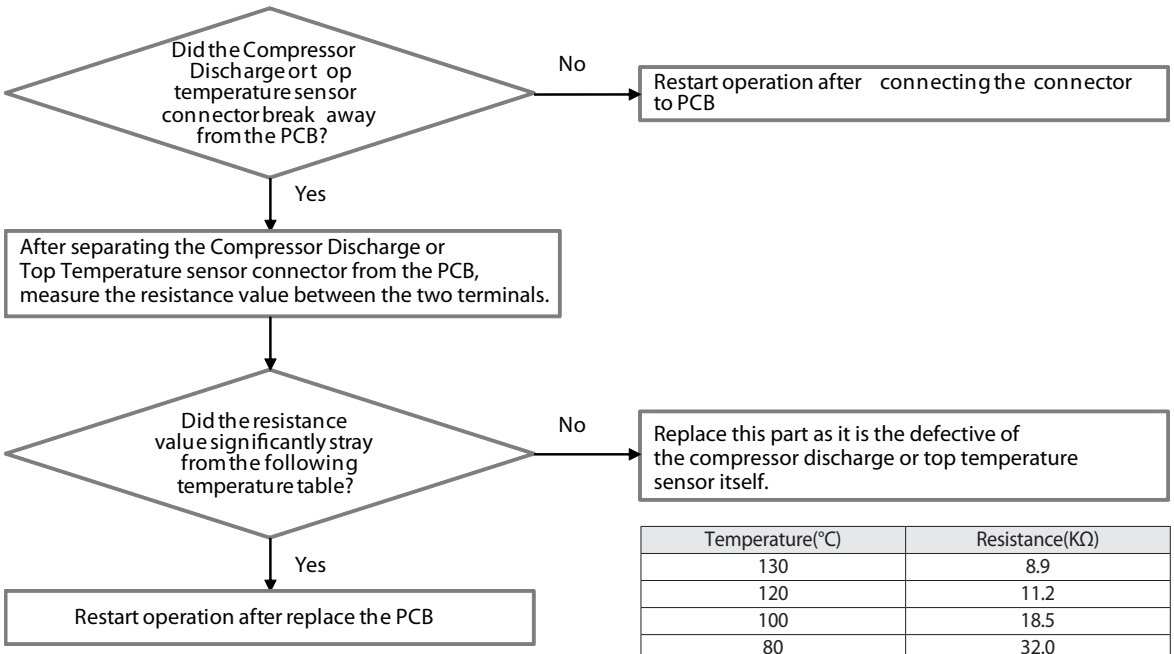
<table>
<tr><td>Outdoor unit Display</td><td>E-231</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



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

■ Error on discharge temperature sensor of compressor 1 (Short or open). (E-251)

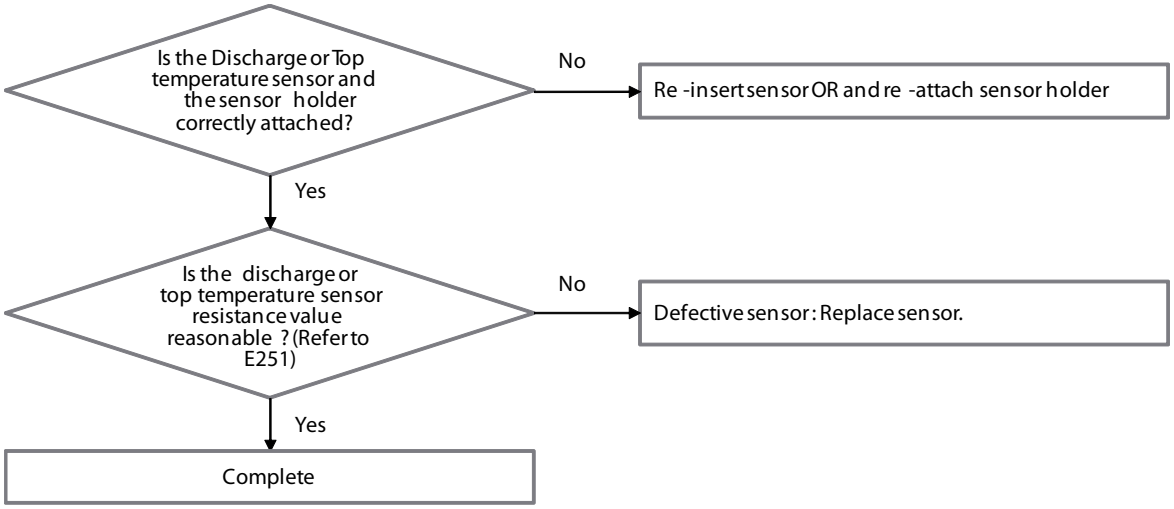
<table>
<tr><td>Outdoor unit Display</td><td>E-251</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Compressor Discharge or Top Temperature sensor defective. (Open/Short)</td></tr>
</table>



Temperature(℃)	Resistance(KΩ)
130	8.9
120	11.2
100	18.5
80	32.0
60	59.0
25	200
20	242
10	362
0	553

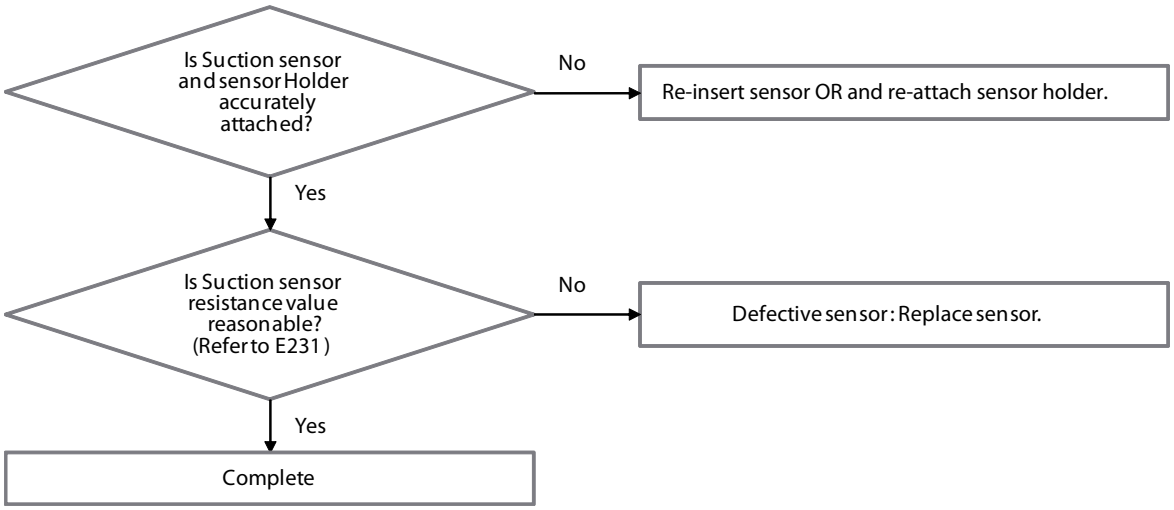
■ Discharge temperature sensor of compressor 1 is detached from the sensor holder on the pipe. (E-262) / Top sensor of compressor 1 is detached (E-266)

<table>
<tr><td>Outdoor unit Display</td><td>E-262 / E-266</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>1) Relevant compressor frequency of 60Hz or higher.
2) Suction temperature > Low pressure saturation temperature +10℃
3) Relevant discharge or Top temperature < High pressure saturation temperature
4) In case of keep 30 minutes in state that satisfy all above conditions (1, 2, 3).</td></tr>
<tr><td>Cause of problem</td><td>• Compressor discharge or Top temperature sensor breakaway and defective / Starting badness of compressor</td></tr>
</table>



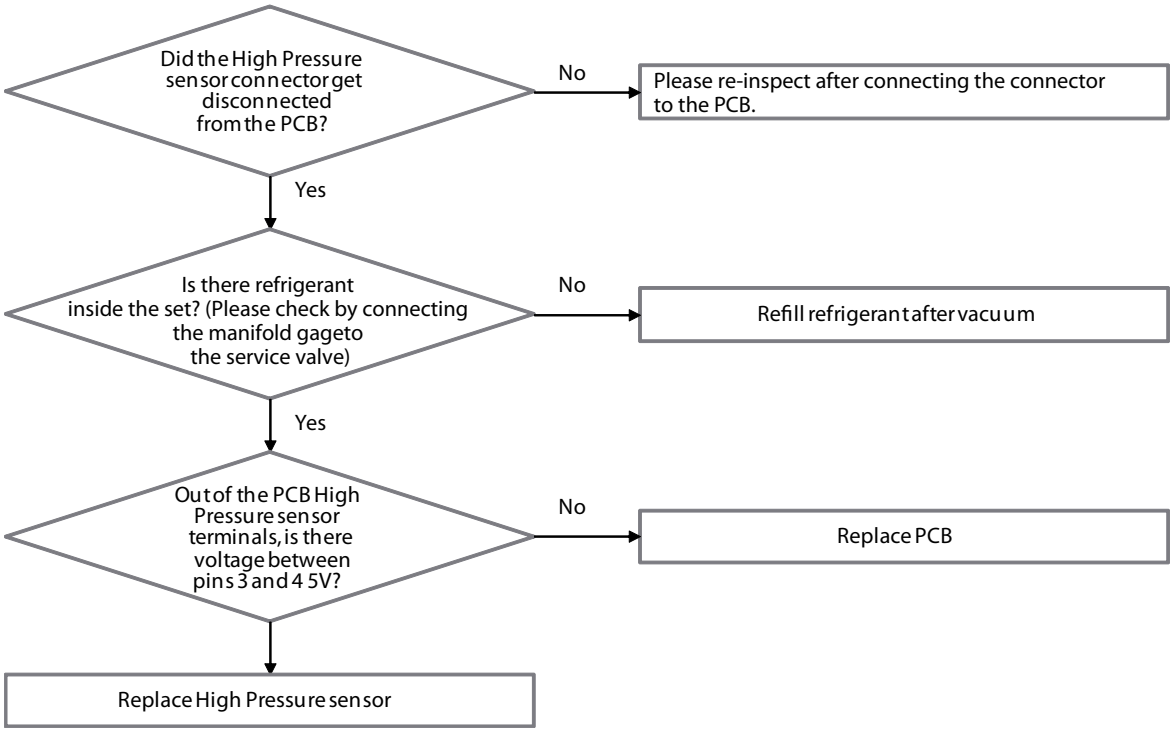
■ Suction temperature sensor is detached from the sensor holder on the pipe. (E-269)

<table>
<tr><td>Outdoor unit Display</td><td>E-269</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Judgment Method : Difference of suction temperature of compressor starting verge and suction temperature that is on present operation : If less than 2 ℃ for 30 minutes to keep.(Judgment at heating operation only)</td></tr>
<tr><td>Cause of problem</td><td>• Suction temperature sensor breakaway / defective.</td></tr>
</table>



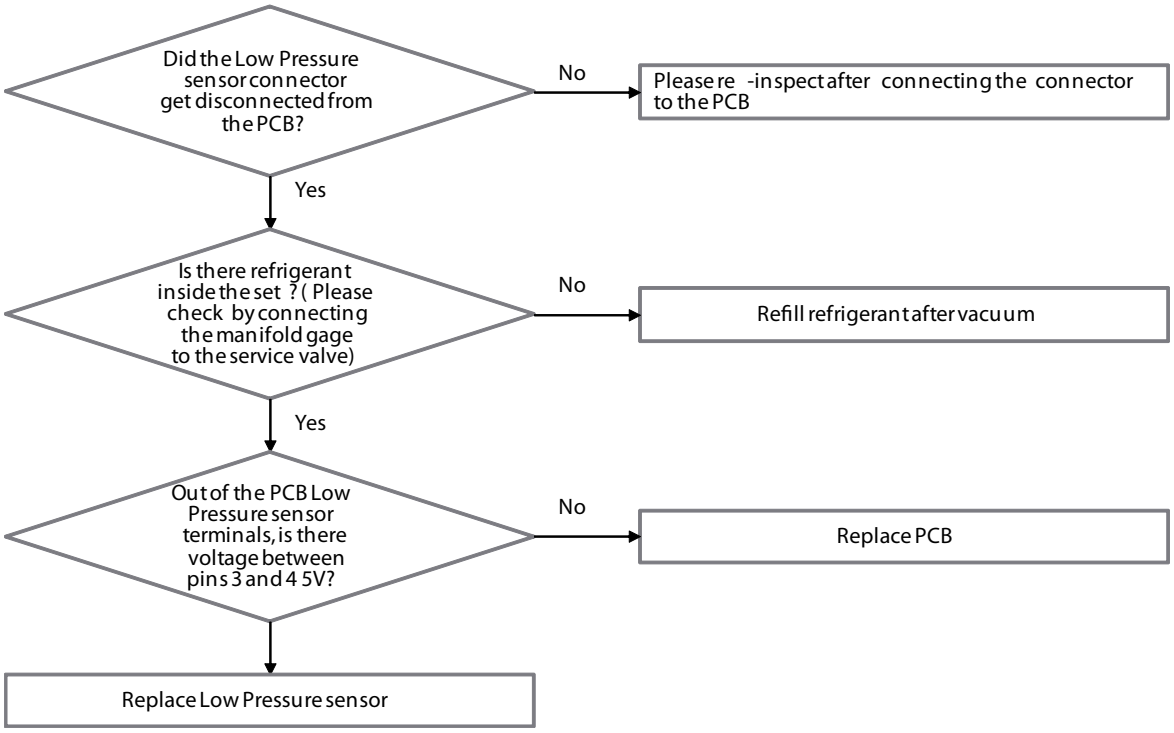
■ Refrigerant leakage or error on high pressure sensor (Short or open). (E-291)

<table>
<tr><td>Outdoor unit Display</td><td>E-291</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



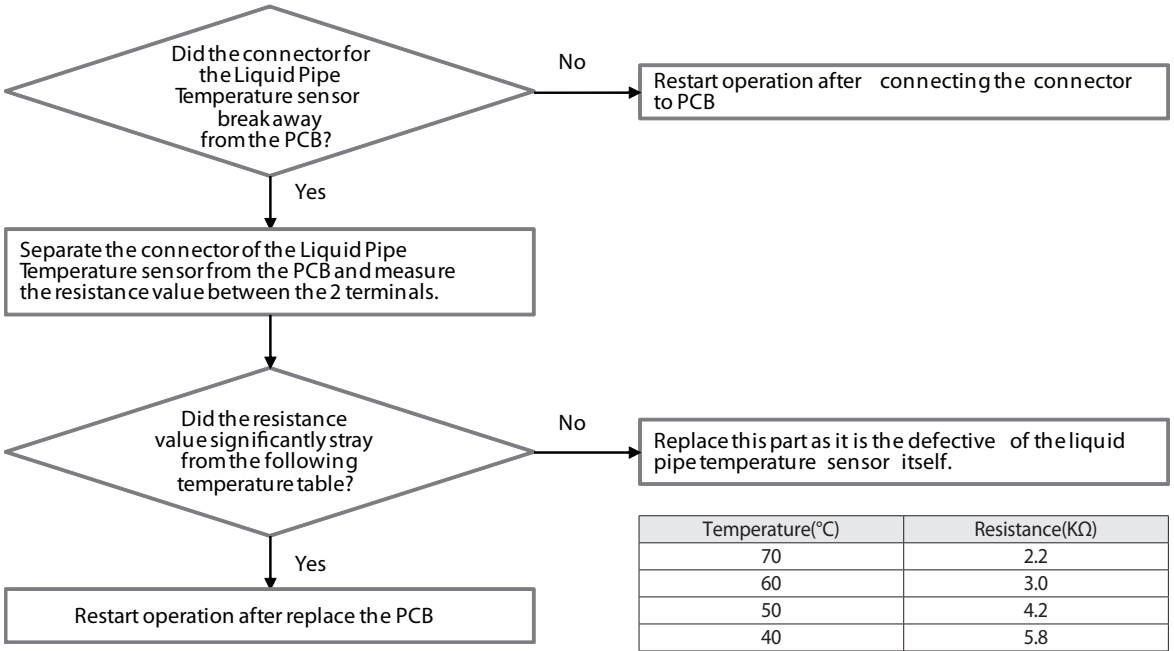
■ Refrigerant leakage or error on low pressure sensor (Short or open). (E-296)

<table>
<tr><td>Outdoor unit Display</td><td>E-296</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



■ Error on suction temperature sensor (Short or open). (E-308)

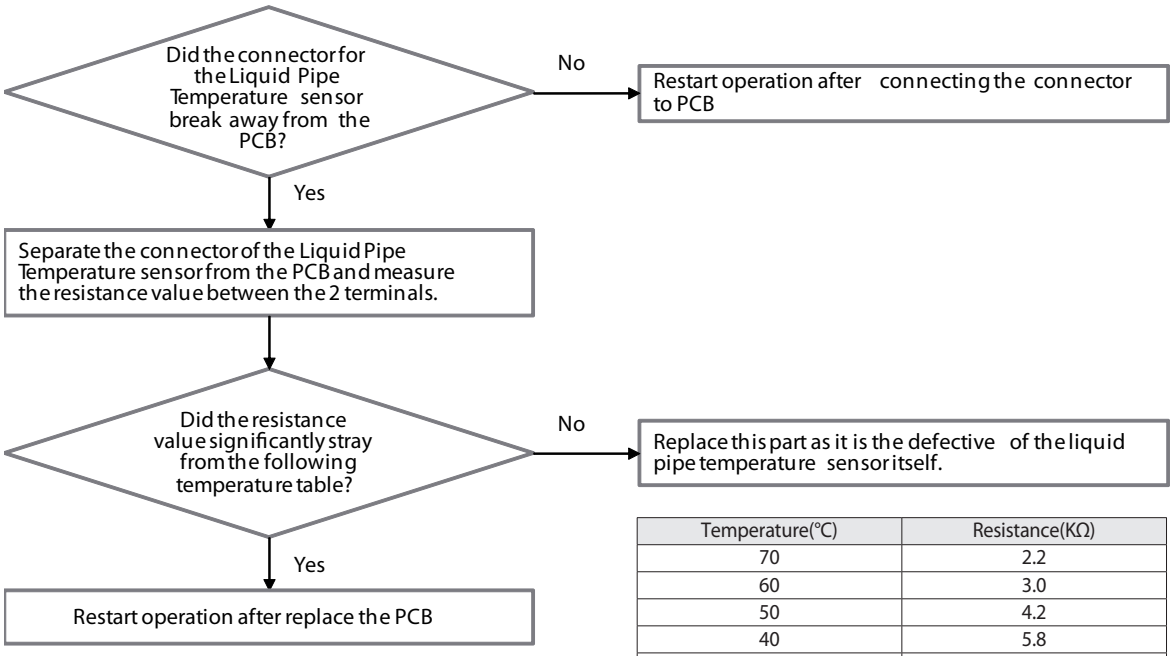
<table>
<tr><td>Outdoor unit Display</td><td>E-308</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



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

■ Error on temperature sensor of double layer pipe/liquid pipe(sub heat exchanger) (Short or open). (E-311)

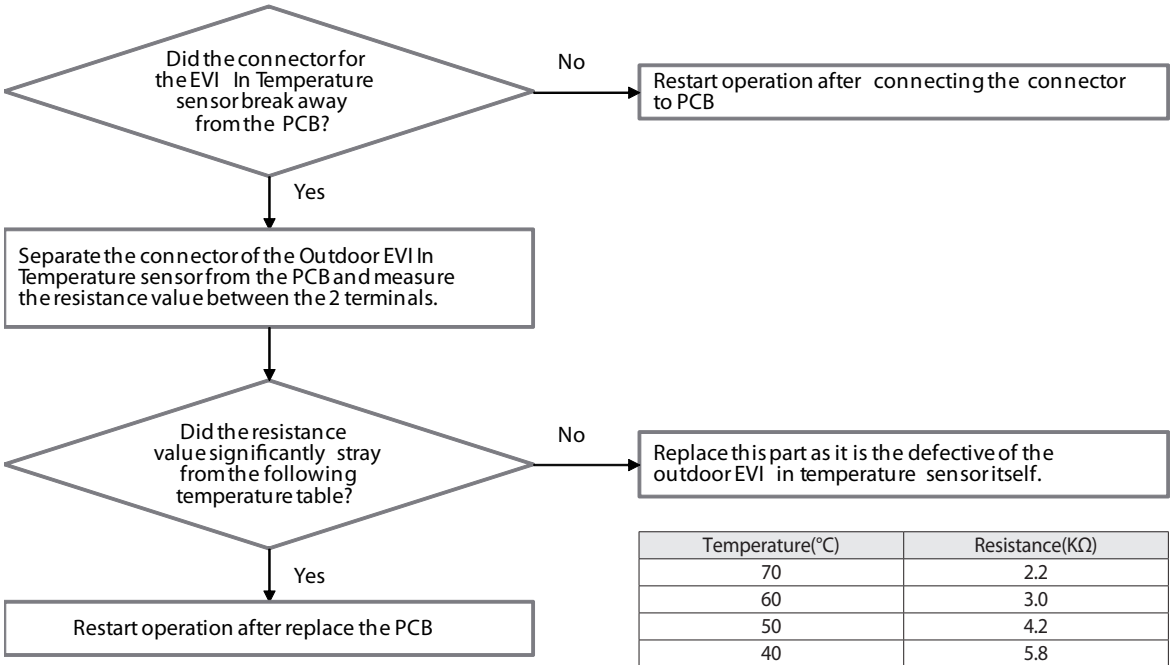
Outdoor unit Display	E-311
Indoor unit Display	Duct, Cassette (1 / 2Way), Console, Ceiling Operation: ◑ / Defrost: × / Timer: × / Fan: ◑ / Filter / MPI: × Cassette (4Way / Mini 4Way) Operation: ◑ / Defrost: × / Timer: ◑ / Filter: × Duct, Cassette (1/2 Way), Console, Ceiling Operation: ◑ / Timer: × / Turbo: × / 24℃: ◑ / 27℃: × ※ ●: ON ◑: Flash ×: OFF
Judgement Method	• Refer the next page
Cause of problem	• Disconnection or breakdown of relevant sensor.



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

■ Error on EVI (ESC) IN temperature sensor (Short or open). (E-321)

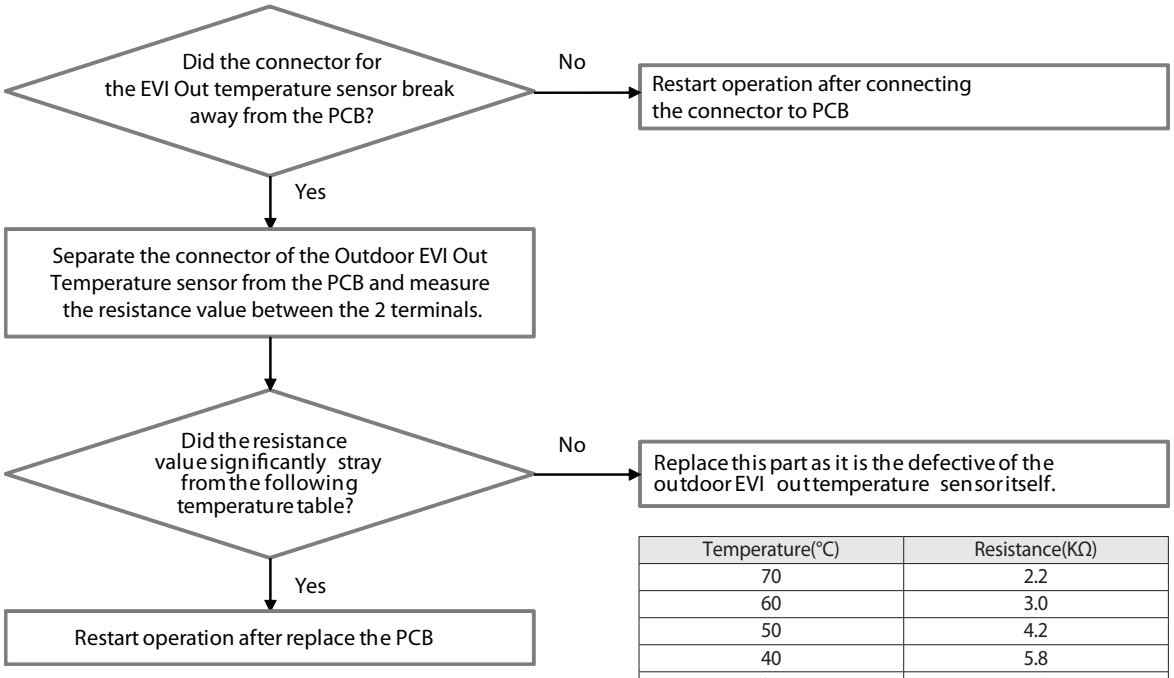
<table>
<tr><td>Outdoor unit Display</td><td>E-321</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



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

■ Error on EVI (ESC) OUT temperature sensor(Short or open). (E-322)

<table>
<tr><td>Outdoor unit Display</td><td>E-322</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>◑</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>◑</td><td>×</td><td>×</td><td>◑</td><td>×</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Disconnection or breakdown of relevant sensor.</td></tr>
</table>



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

■ Error due to operation failure of Fan2 (E-346) / Error due to operation failure of Fan1 (E-446) (cont.)

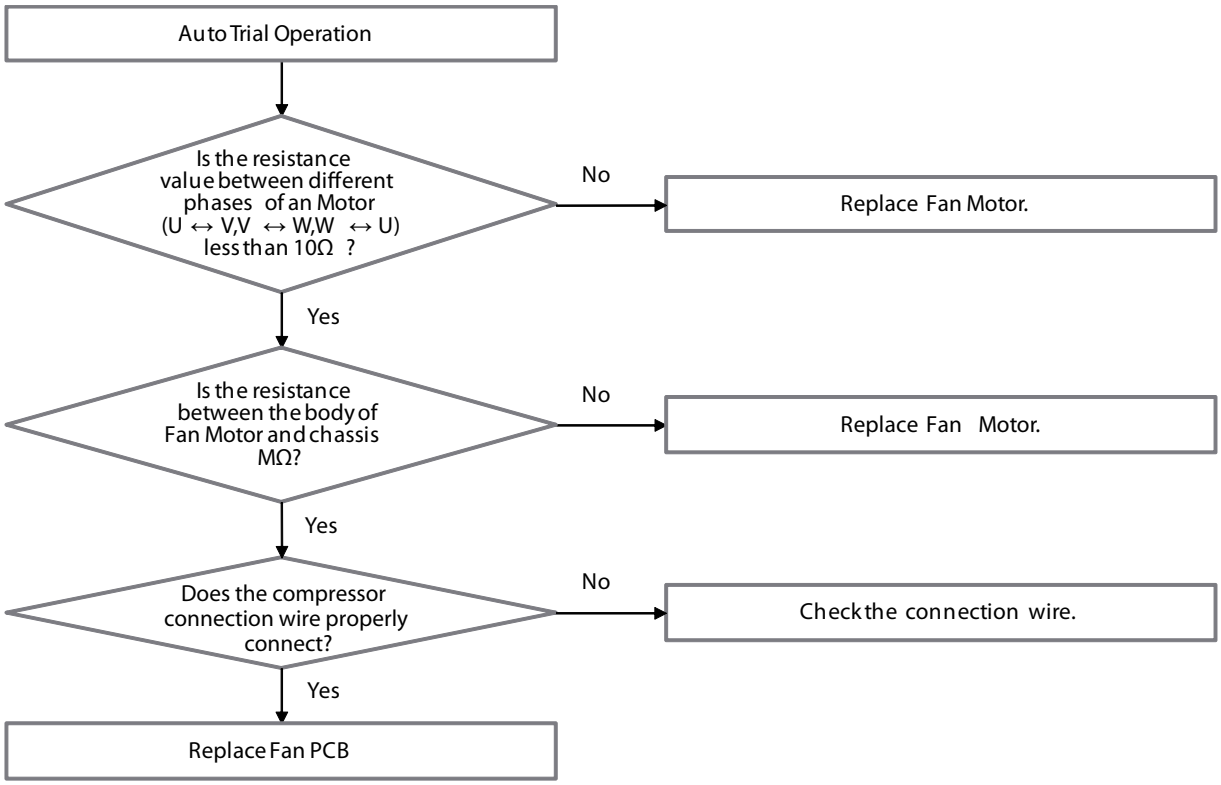
Outdoor unit Display	**E-346 / E-446**
Judgement Method	• Startup, and then if the speed increase is not normally. • Detected by H/W or S/W.
Cause of problem	• Compressor connection error. • Defective Compressor. • Defective PCB.

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

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

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

■ Error due to operation failure of Fan2 (E-346) / Error due to operation failure of Fan1 (E-446)

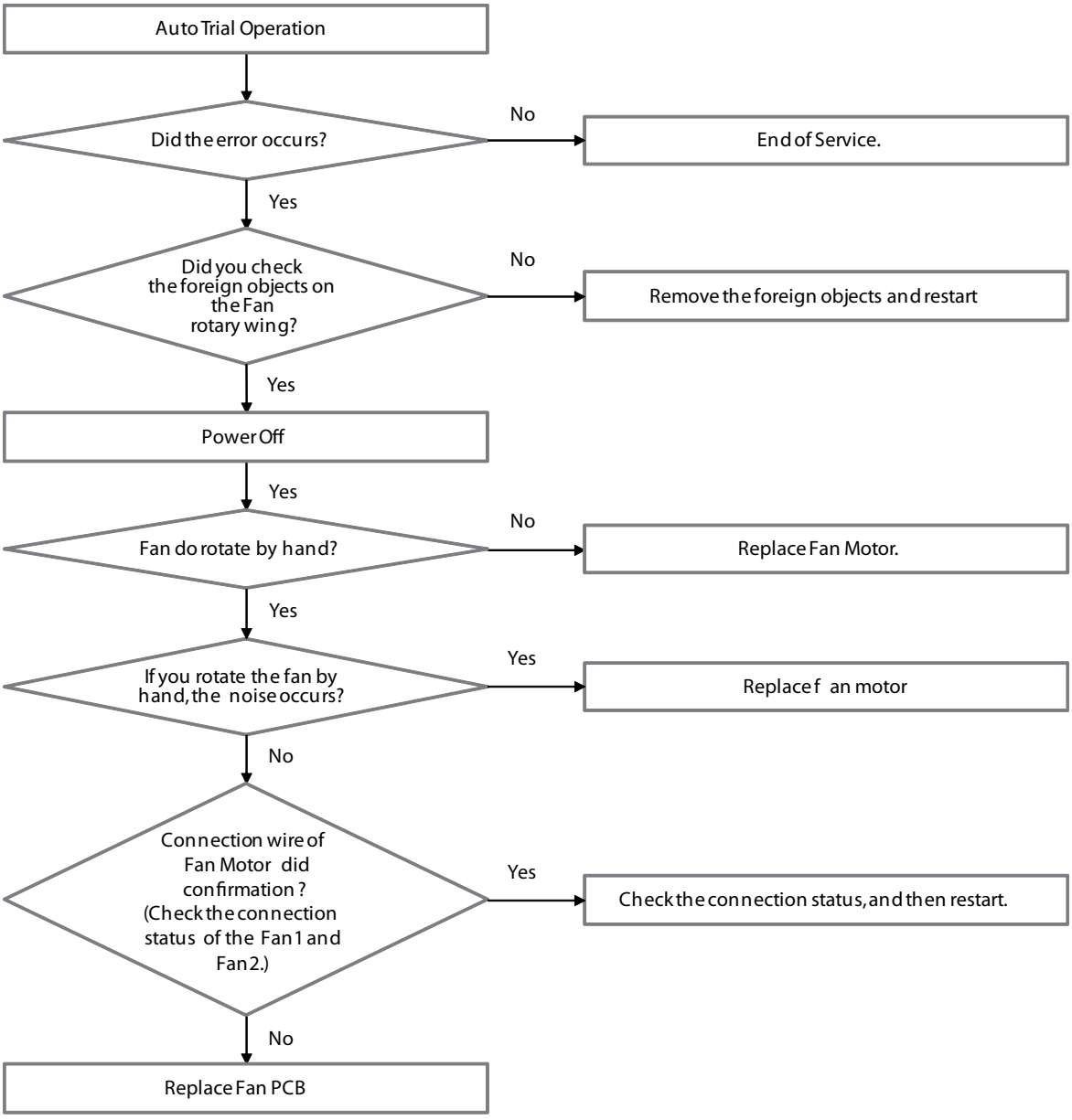


■ Motor wire of Fan2 is not connected. (E-347)

<table>
<tr><td>Outdoor unit Display</td><td>E-347</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>×</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• If there is no problem after checking the connection status between fan motor and PBA, replace the PBA.</td></tr>
</table>

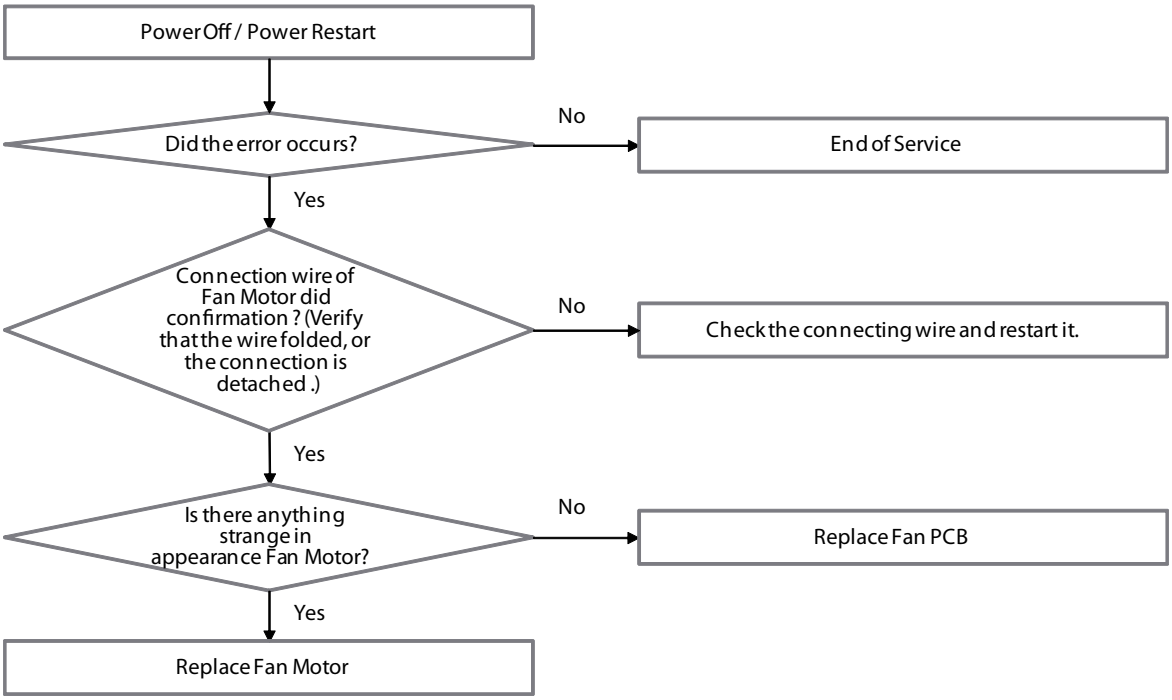
■ Lock error on Fan2 of outdoor unit. (E-348) / Lock error on Fan1 of outdoor unit. (E-448)

Outdoor unit Display	**E-348 / E-448**
Judgement Method	• Is checked symptoms by phase current of Fan Motor.
Cause of problem	• Fan Motor connection error. • Defective Fan • Defective PCB



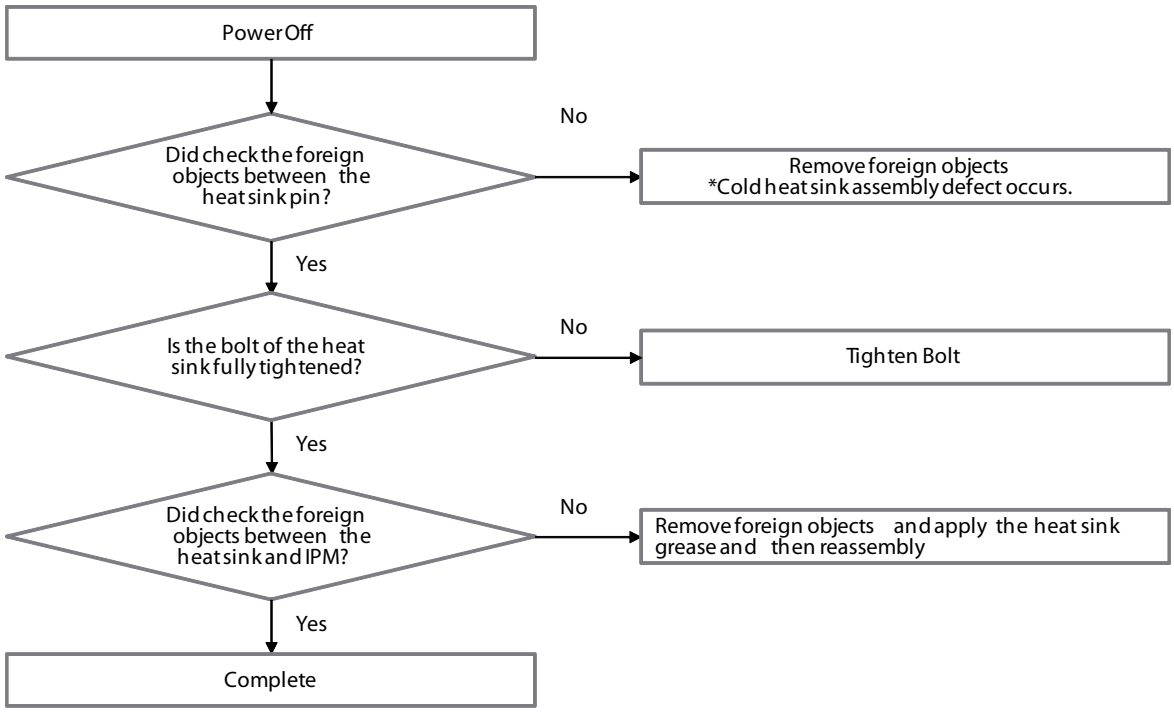
■ Error due to overheated motor of outdoor unit's Fan2 (E-353) / Error due to overheated motor of outdoor unit's Fan1. (E-453

Outdoor unit Display	**E-353 / E-453**
Judgement Method	• Overheating due to the internal sensor of the Fan Motor.
Cause of problem	• Defective connection wire • Defective Fan Motor • Defective PCB • Defective installation conditions



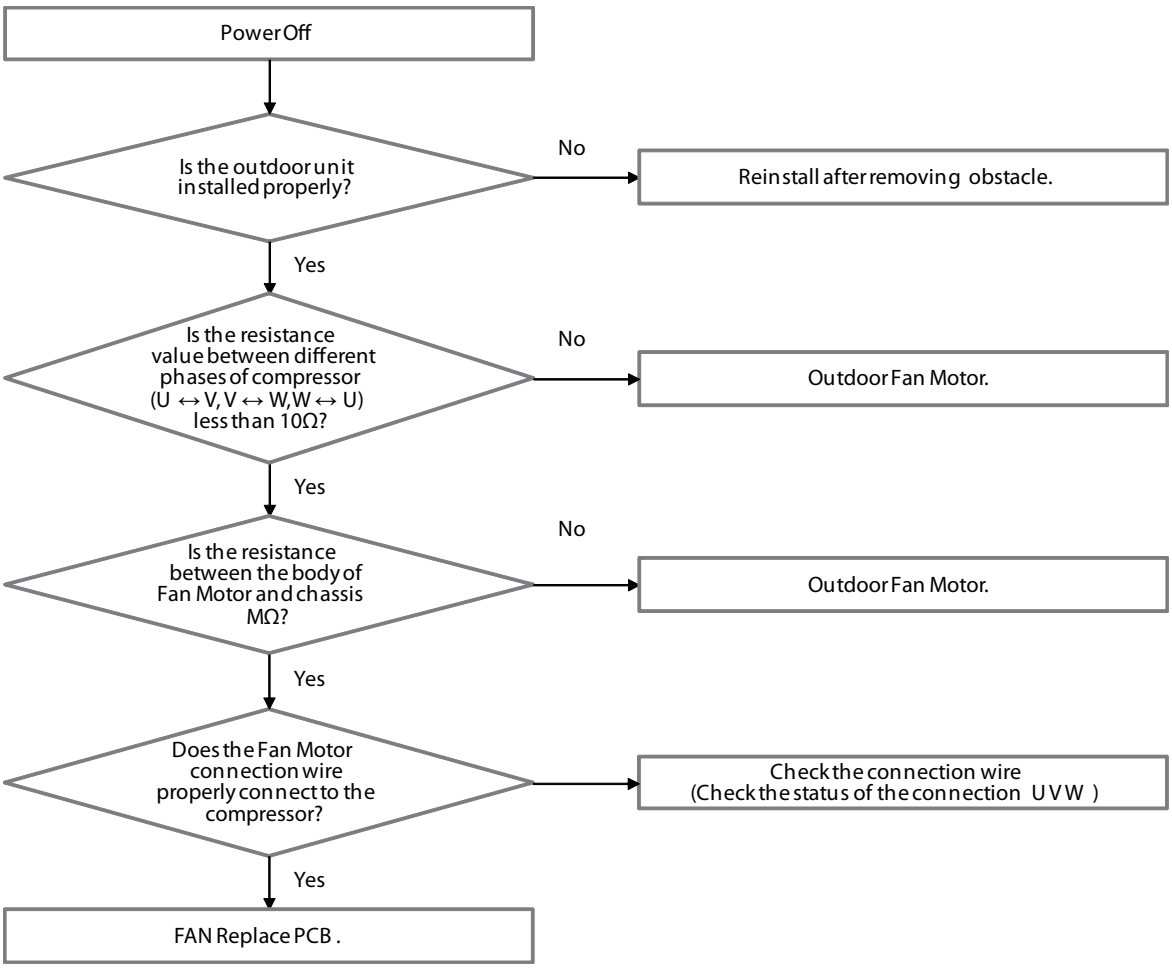
■ Error due to overheated IPM of Fan2. (E-355) / Error due to overheated IPM of Fan1. (E-455)

Outdoor unit Display	**E-355 / E-455**
Judgement Method	• IPM internal temperature more than 85°C
Cause of problem	• Heat sink and IPM assembly defective. • Defective heat sink cooling.



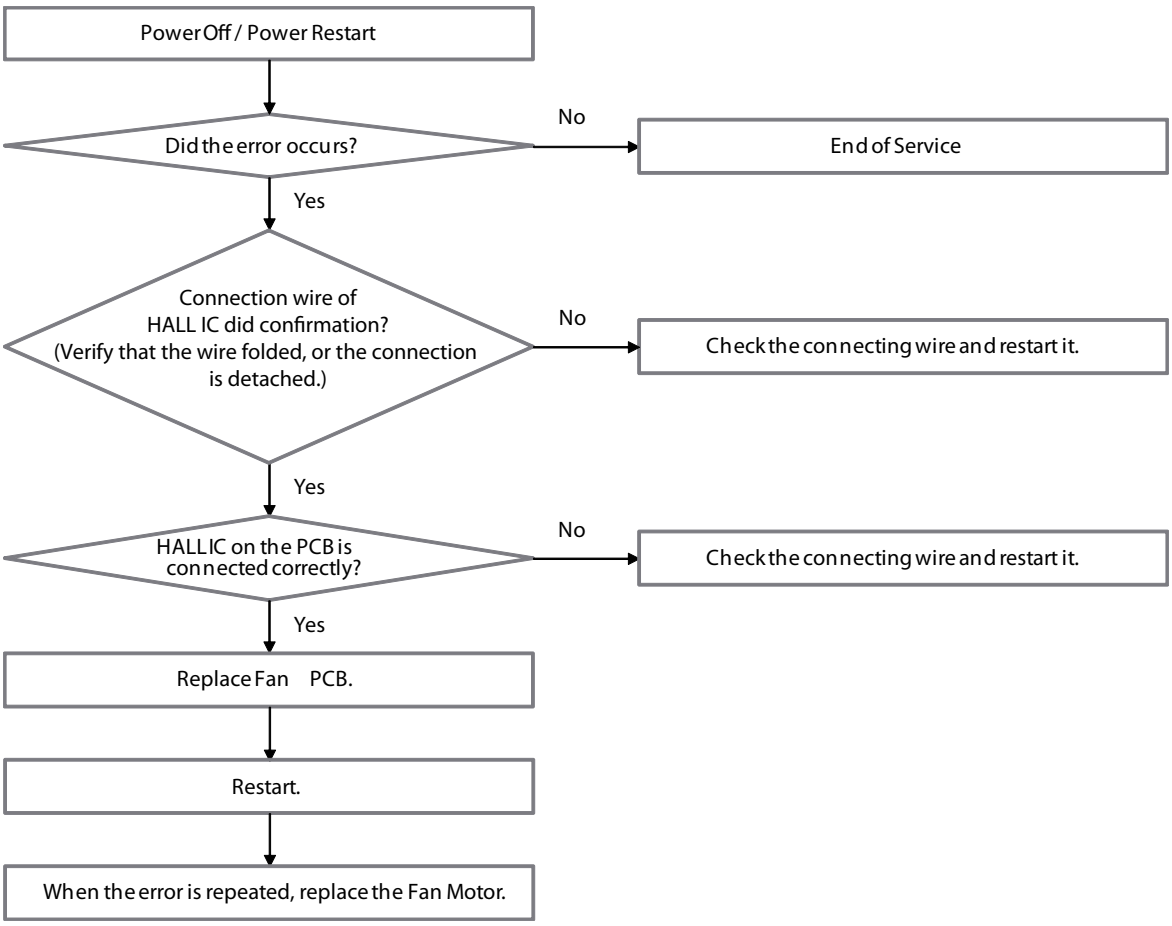
■ Error due to overcurrent of Fan2. (E-378) / V-limit error on Fan2 of compressor. (E-389) / Error due to overcurrent of Fan1. (E-478) / V-limit error on Fan1 of compressor. (E-489)

Outdoor unit Display	**E-378 / E-389 / E-478 / E-489**
Judgement Method	• Occurs when overcurrent flows in the IPM. • Detected by H/W or S/W
Cause of problem	• Installation defective • Connection wire error • Comp. defective • Motor defective • PCB defective



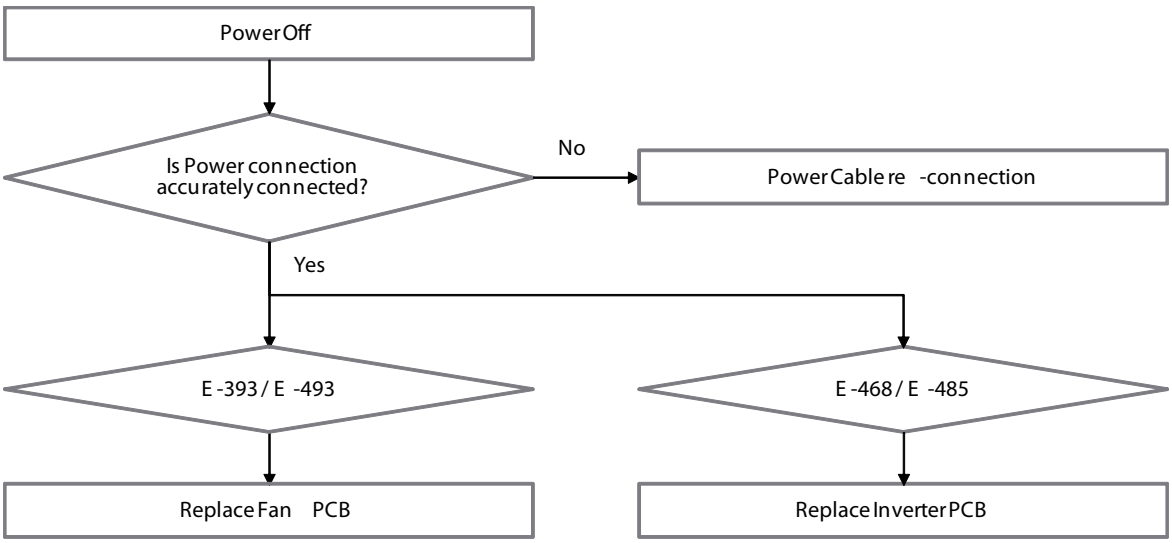
■ Hall IC connection error of Fan2 (E387) / Hall IC connection error of Fan1. (E487)

Outdoor unit Display	**E-387 / E-487**
Judgement Method	• IFan rotation defective or vibration and noise of the defective operation. • IHall IC there is no signal input.
Cause of problem	• IConnection status error. • IHall IC wire disconnection. • IDefective circuit parts and defective manufacturing. • IFan Motor defective.



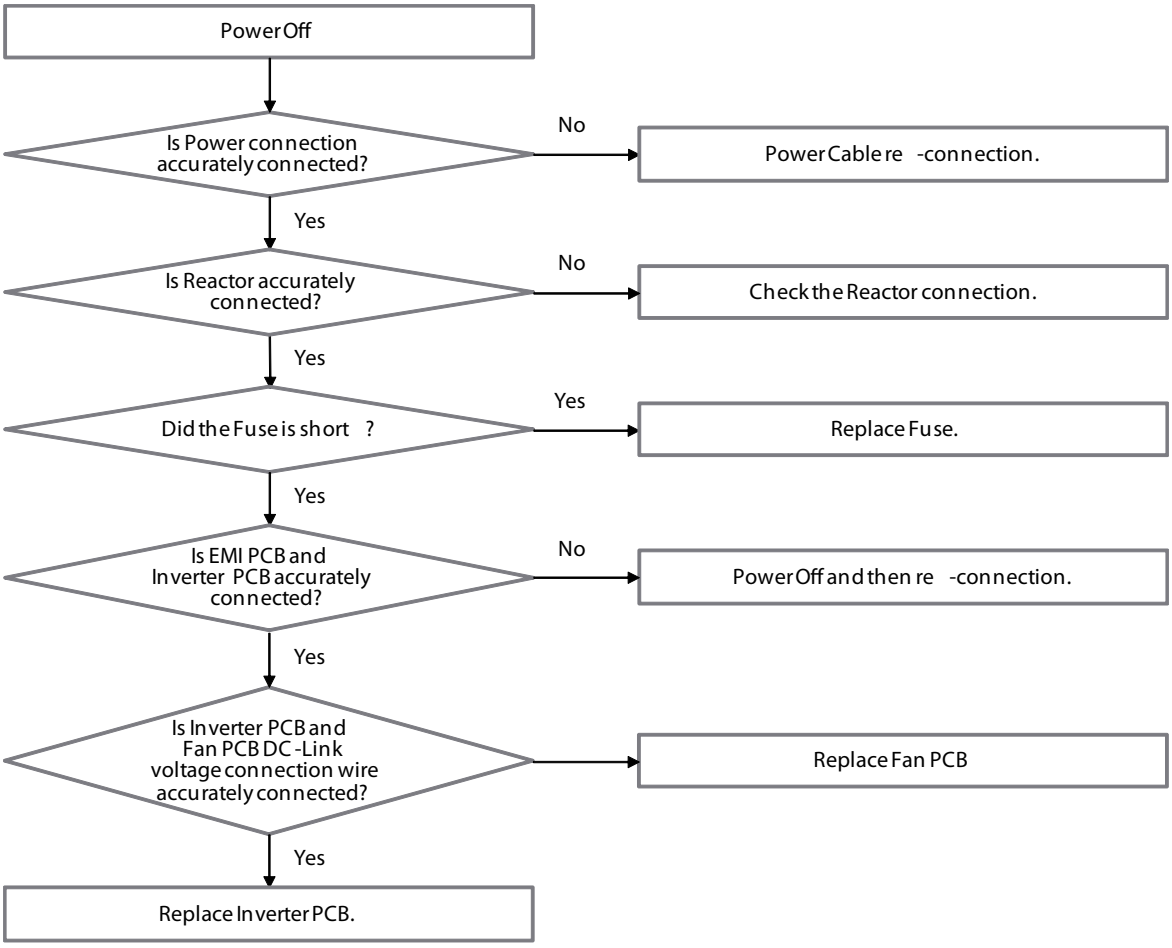
■ Output current sensor error of Fan2. (E-393) / Output current sensor error of inverter PBA 1. (E-468) / Error due to input current of inverter 1. (E-485) / Output current sensor error of Fan1. (E-493)

Outdoor unit Display	**E-378 / E-389 / E-478 / E-489**
Judgement Method	• Sensor Output detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than
Cause of problem	• Input voltage defective • PCB voltage sensing circuit defective



■ DC voltage sensor error of Fan2. (E-396) / DC voltage sensor error of inverter PBA 1. (E-469) / DC voltage sensor error of Fan1. (E-496)

Outdoor unit Display	**E-396 / E-469 / E-496**
Judgement Method	• DC voltage detection : Judged as an error if the detected value is more than 2.8V or 0.2V less than
Cause of problem	• Input voltage defective • AC Power wiring error • Momentary Overvoltage / Low voltage occurs • PCB voltage sensing circuit defective



■ Heat sink temperature sensor error of Fan2. (E-399)

<table>
<tr><td>Outdoor unit Display</td><td>E-399</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>×</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page</td></tr>
<tr><td>Cause of problem</td><td>• Replace FAN PBA.</td></tr>
</table>

■ Compressor operation stop due to high pressure protection control. (E-407)

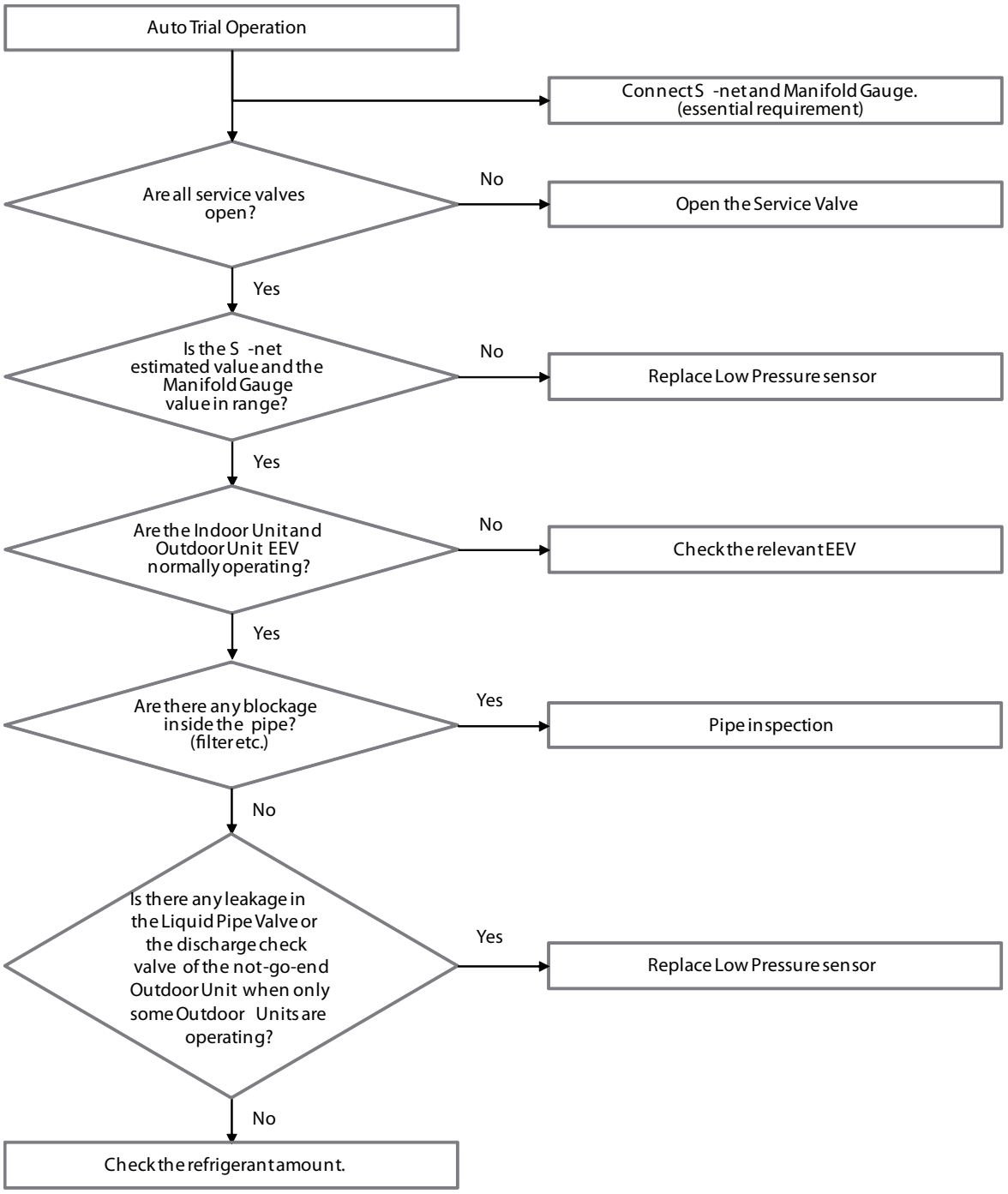
<table>
<tr><td>Outdoor unit Display</td><td>E-407</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><th colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Fan</th><th>Filter / MPI</th></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="4">Cassette (4Way / Mini 4Way)</th></tr>
<tr><th>Operation</th><th>Defrost</th><th>Timer</th><th>Filter</th></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><th colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</th></tr>
<tr><th>Operation</th><th>Timer</th><th>Turbo</th><th>24℃</th><th>27℃</th></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Value of the high pressure sensor is detected at 40kg/cm^2 or more..</td></tr>
<tr><td>Cause of problem</td><td>Cooling Operation
• Outdoor unit fan motor problem (constrained, defective)
• Motor driver defective or wire is cut
• Outdoor heat exchanger is contaminated.
• Service valve locked/Fill refrigerant

Heating Operation
• Outdoor unit fan motor problem (constrained, defective)
• Motor driver defective or wire is cut
• Service valve locked/Excessive refrigerant</td></tr>
</table>

■ Compressor operation stop due to low pressure protection control or refrigerant leakage. (E-410) (cont.)

<table>
<tr><td>Outdoor unit Display</td><td>E-410</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>×</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Judgment Method : Inspection when the value of low pressure sensor is 1.8kg / cm2, or less for air conditioning and 0.8kg /cm^2 for heating.</td></tr>
<tr><td>Cause of problem</td><td>• Refrigerant shortage
• Electronic expansion valve blocked
• Service valve blocked
• Low pressure sensor defective
• Leakage of compressor discharge check valve of not-go-end outdoor unit
• Error may be found when used in temperature range outside the conditions of use (Operating outside temperature at -20℃ or less for heating and operating outside temperature at -5℃ or less for Cooling)</td></tr>
</table>

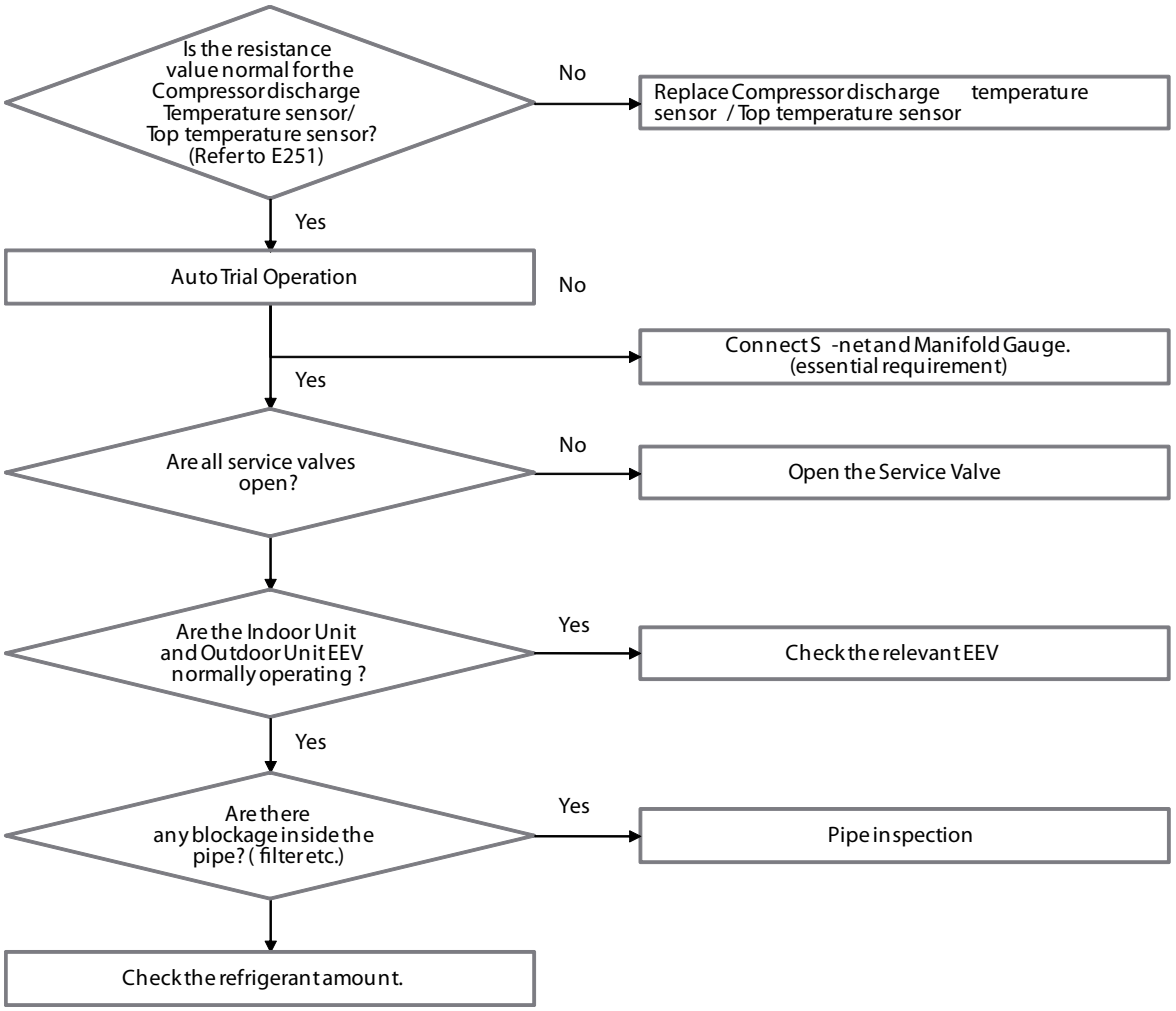
■ Compressor operation stop due to low pressure protection control or refrigerant leakage. (E-410)



■ Compressor operation stop due to discharge temperature protection control. (E-416) (cont.)

<table>
<tr><td>Outdoor unit Display</td><td>E-416</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Judgment Method : Inspection when the value of low pressure sensor is 1.8kg / cm2, or less for air conditioning and 0.8kg /cm^2 for heating.</td></tr>
<tr><td>Cause of problem</td><td>• Refrigerant shortage
• Electronic expansion valve is blocked.
• Service valve blocked
• Defective discharge temperature sensor
• TOP temperature sensor defective
• Blocked pipe and defective
• Leakage of compressor discharge check valve of not-go-end outdoor unit</td></tr>
</table>

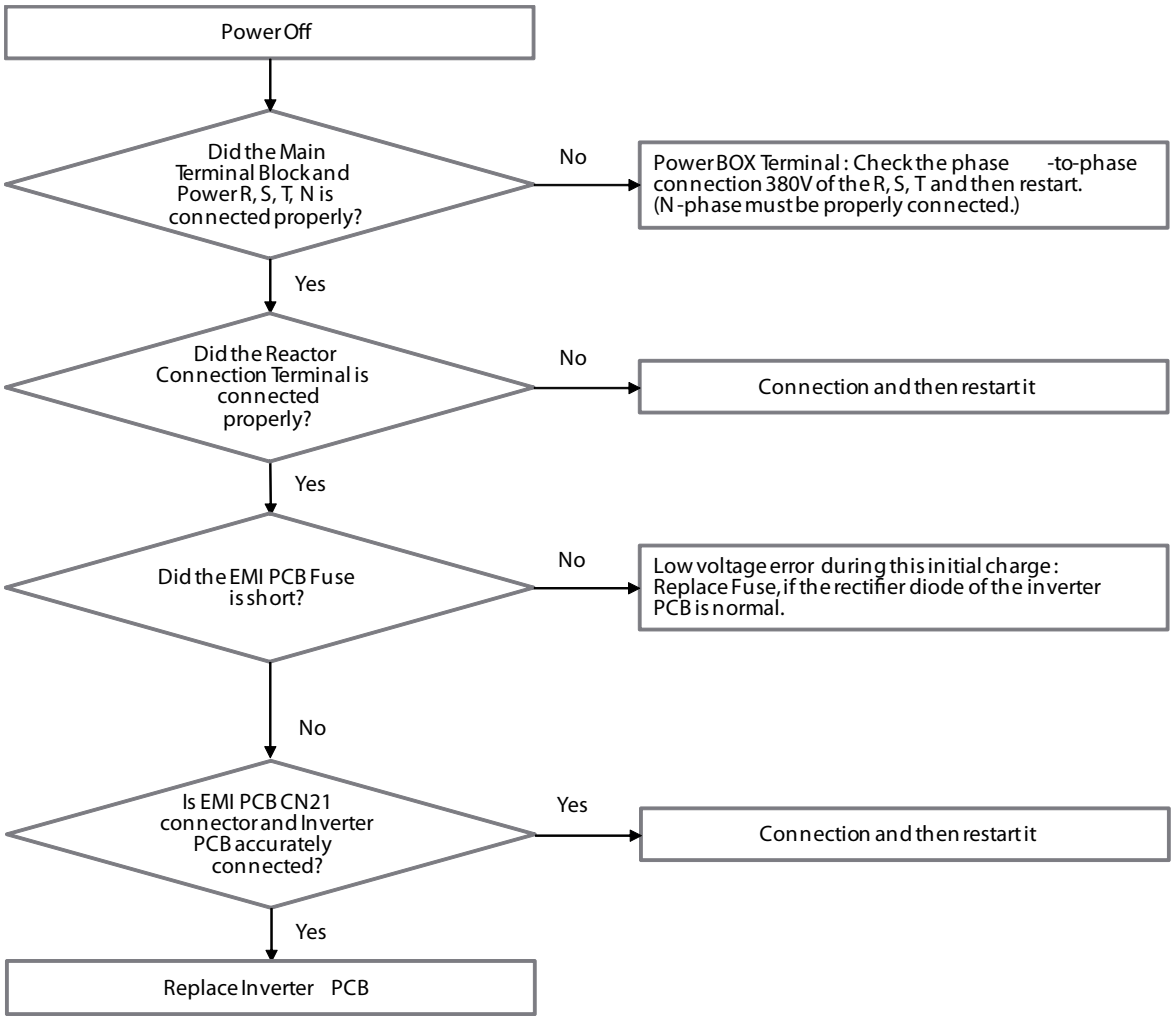
■ Compressor operation stop due to discharge temperature protection control. (E-416)



■ Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-425) (cont.)

<table>
<tr><td>Outdoor unit Display</td><td>E-425</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• When turn on the power and check the status of the power from the inverter. If the phase does not connect the power(no phase) : E425 or E466 (E366) is displayed (Air conditioner to maintain the normal state.)
• However) N-phase must be properly connected.</td></tr>
<tr><td>Cause of problem</td><td>• Check the input wiring
• EMI Fuse short.</td></tr>
</table>

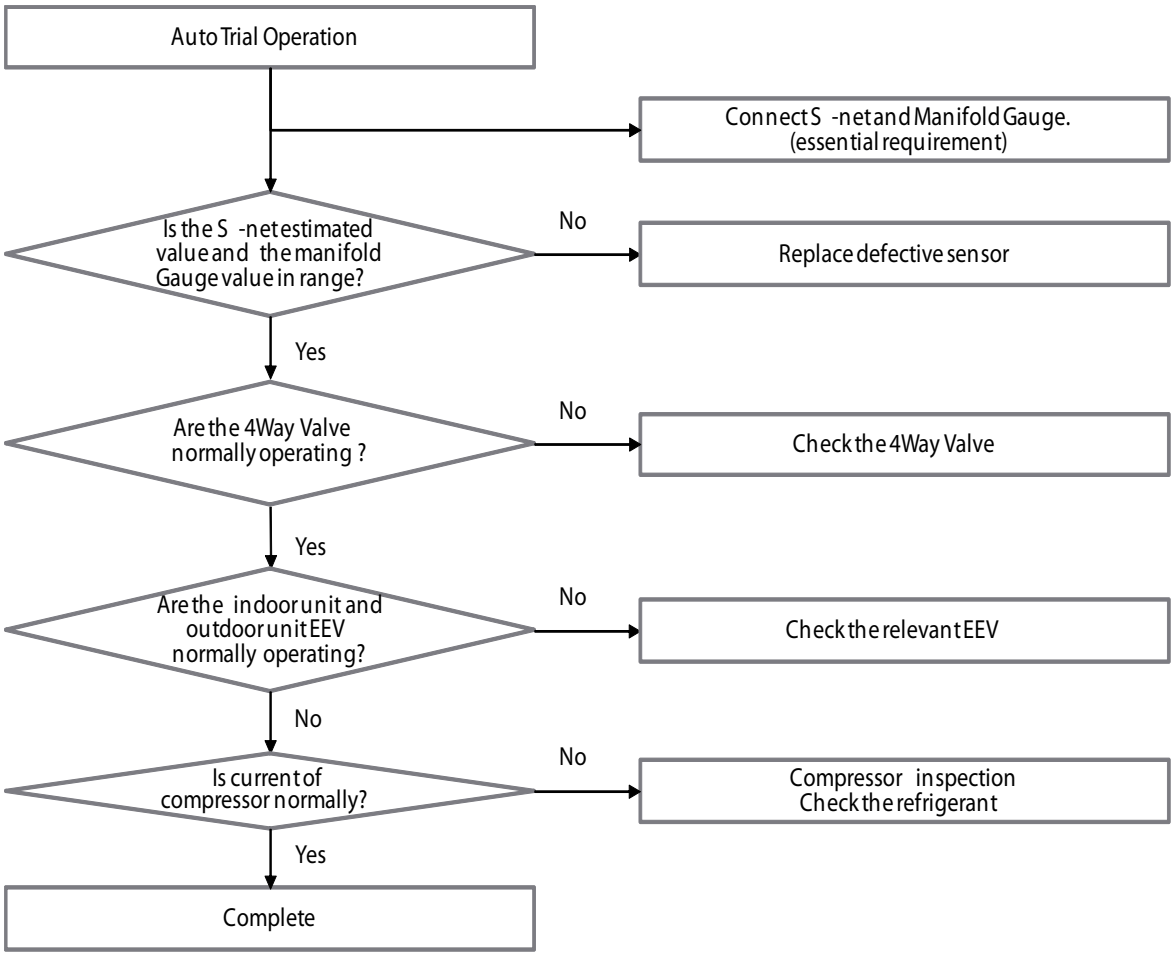
■ Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-425)



■ Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-428) (cont.)

<table>
<tr><td>Outdoor unit Display</td><td>E-428</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Compression ratio [(High pressure+1.03)/(Low pressure+1.03)] less than 1.5 and lasts for 10 minutes or more
• Differential pressure (high pressure - low pressure) less than 0.4 MPa.G and lasts for 10 minutes or more</td></tr>
<tr><td>Cause of problem</td><td>• Indoor and Outdoor EEV breakdown
• 4Way Valve breakdown
• High and Low pressure sensor defective
• Refrigerant shortage</td></tr>
</table>

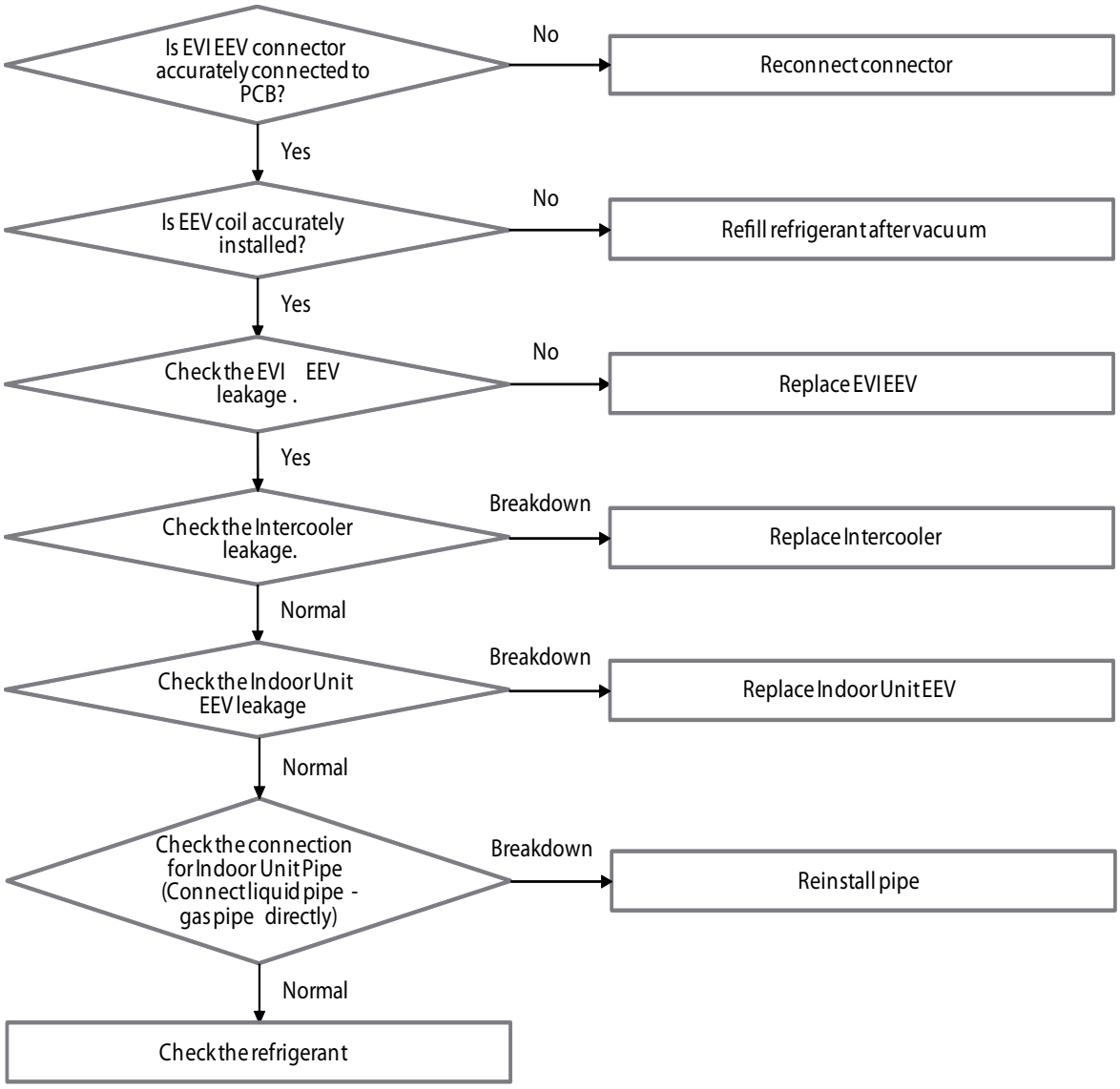
■ Phase reversal or phase failure(3Ø outdoor unit wiring, R-S-T-N), connection error on 3 phase input. (E-428)



■ EVI (ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI (ESC) EEV. (E-438) (cont.)

<table>
<tr><td>Outdoor unit Display</td><td>E-438</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• DSH <10 ℃, EVI Out-in <= 0℃ & frequency> 65Hz 40 minutes maintaining</td></tr>
<tr><td>Cause of problem</td><td>• EVI EEV and Intercooler leakage, excessive refrigerant amount, Outdoor Check Valve inserted opposite.
• Indoor Unit EEV leakage, direct connection between Indoor Liquid Pipe and the Gas Pipe.</td></tr>
</table>

■ EVI (ESC) EEV leakage or internal leakage of intercooler or incorrect connector insertion of EVI (ESC) EEV. (E-438)

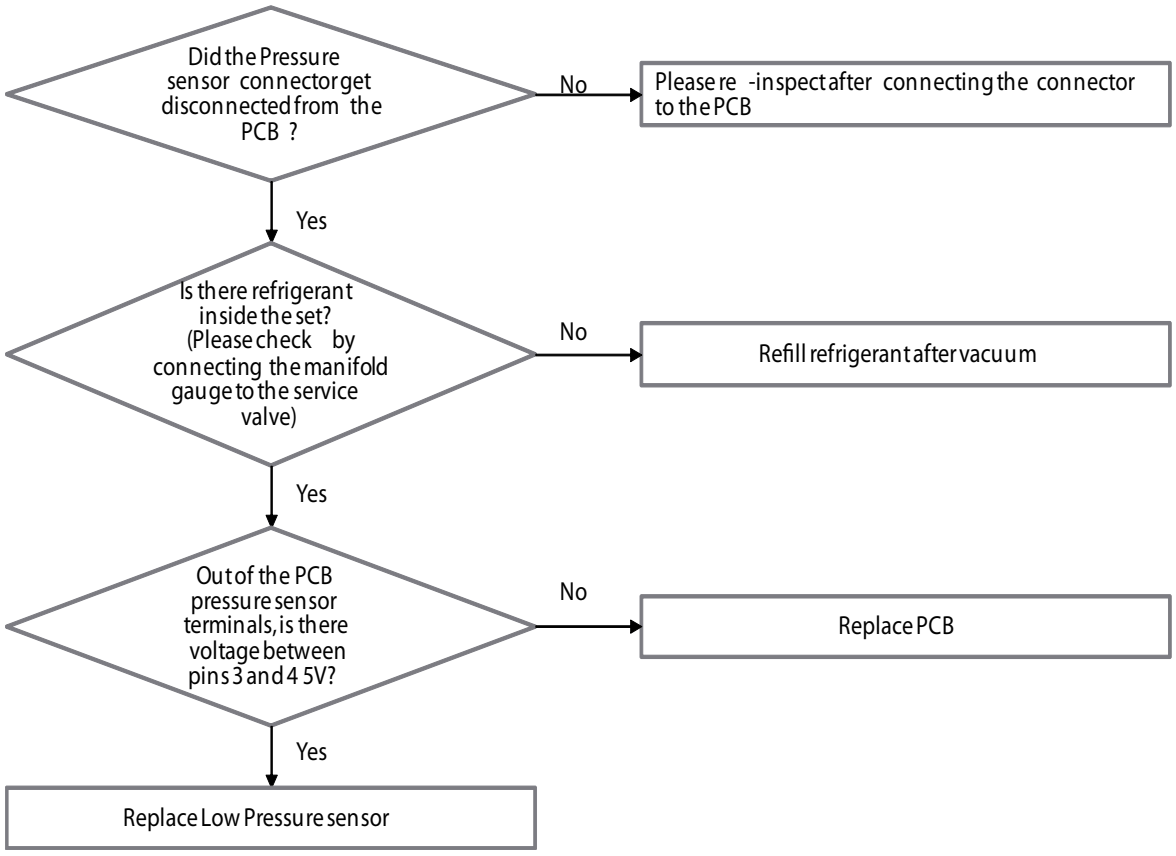


■ Error due to refrigerant leakage. (E-439) / Operation prohibited due to low pressure. (E-443)

Outdoor unit Display	**E-439 / E-443**
Judgement Method	• Before starting : Before compressor starting after system halt 2 minutes (High & low pressure sensor Open / Short error occurs and 1kg/cm2 or less) When start : When the high pressure sensor value(cooling 3.1kg/ cm2 , heating 2.2kg/ cm2) is detection continuously for 3 seconds
Cause of problem	• Refrigerant leakage and shortage • Disconnection or breakdown of high & low pressure sensor

Pressure sensor Open/Short error determination method

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



■ Heating mode restriction due to high air temperature. (E-440) / Operation prohibited due to low pressure. (E-441)

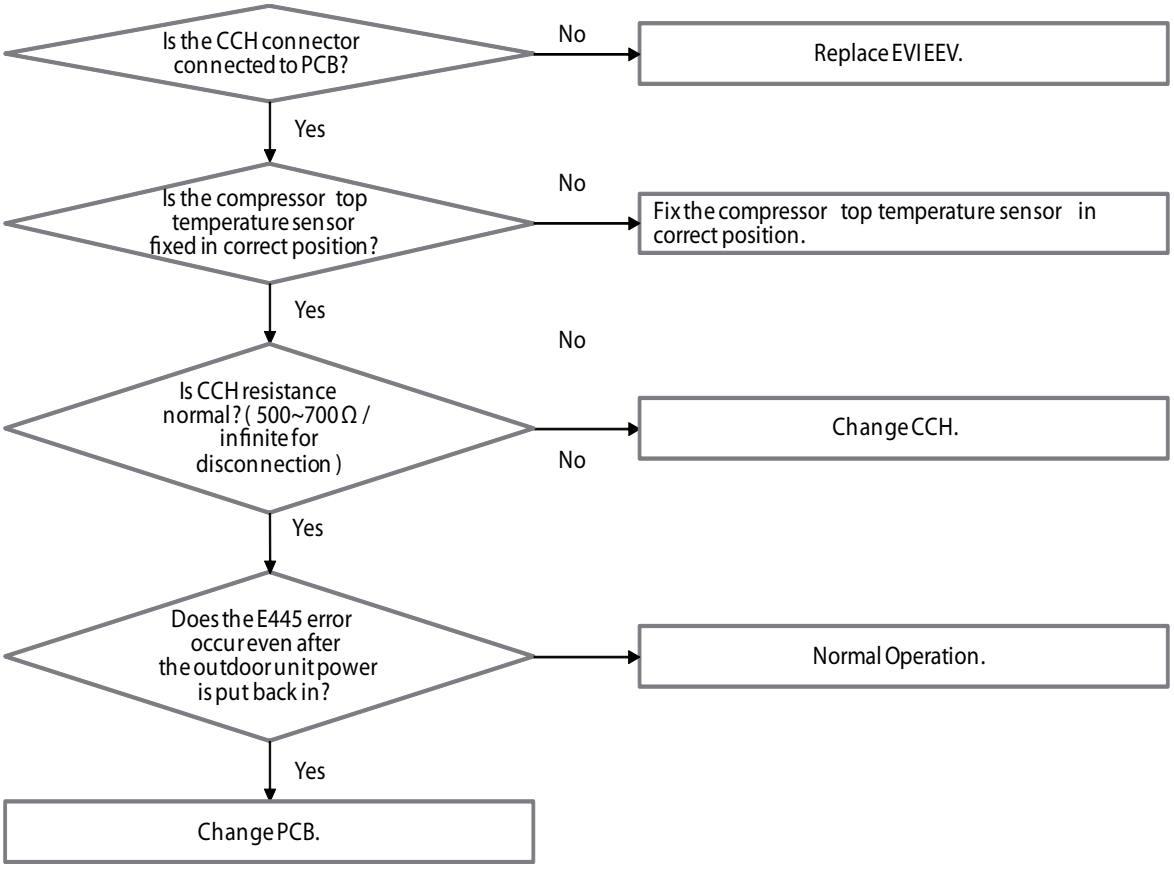
<table>
<tr><td>Outdoor unit Display</td><td>E-440 / E-441</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Heating operation : When the outdoor temperature is more than 30 ℃
• Cooling operation : When the outdoor temperature is less than -15 ℃</td></tr>
<tr><td>Cause of problem</td><td>• System protection operation status (Is not breakdown)</td></tr>
</table>

■ Refrigerant charging restriction in heating mode when air temperature is over 15°C. (E-442)

<table>
<tr><td>Outdoor unit Display</td><td>E-442</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• When the heating refrigerant change : If the outdoor temperature is more than 15℃.</td></tr>
<tr><td>Cause of problem</td><td>• System protection operation status (Is not breakdown)</td></tr>
</table>

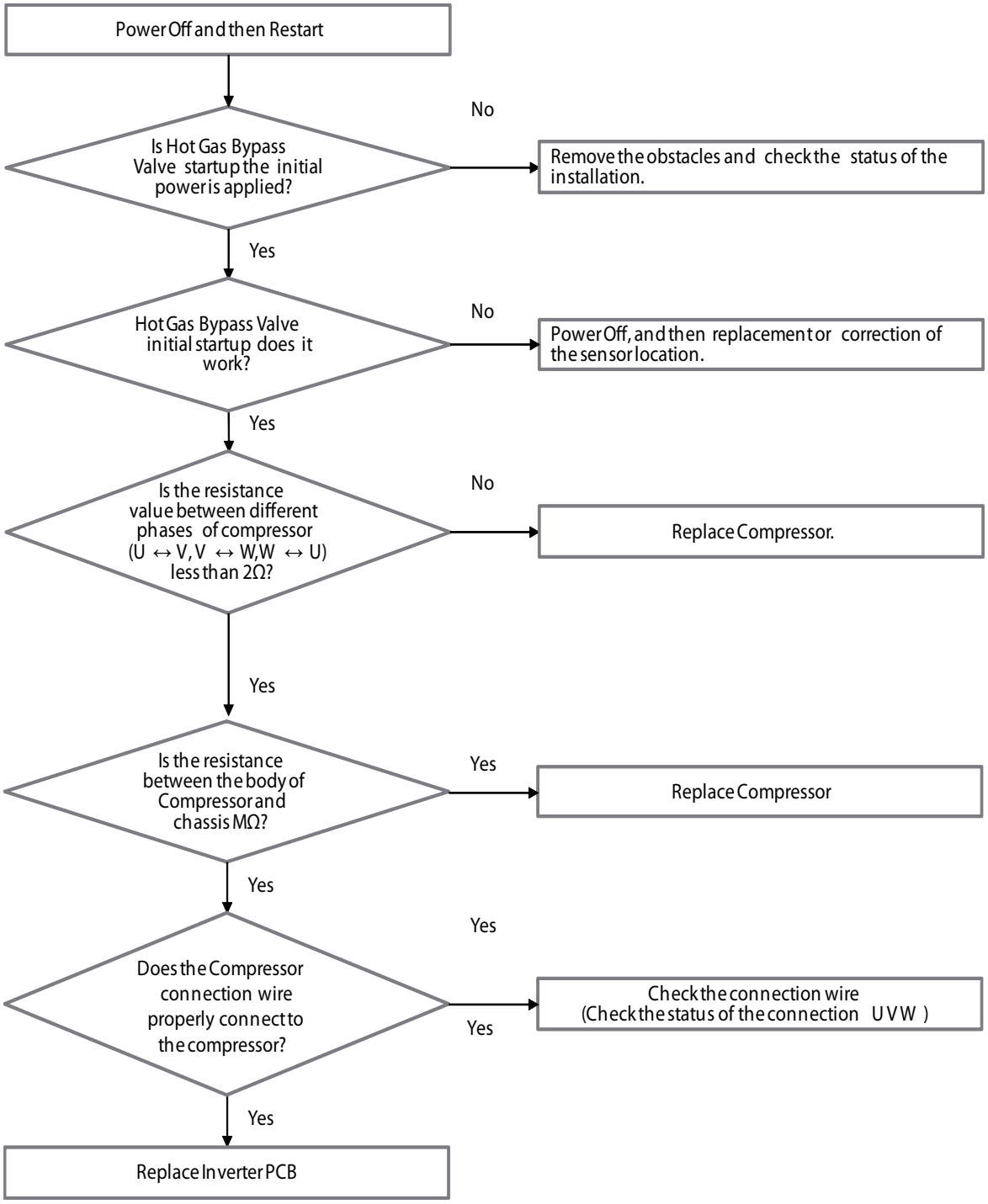
■ CCH is detached. (E-445))

<table>
<tr><td>Outdoor unit Display</td><td>E-445</td></tr>
<tr><td>Indoor unit Display</td><td>
<table>
<tr><td colspan="5">Duct, Cassette (1 / 2Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Fan</td><td>Filter / MPI</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="4">Cassette (4Way / Mini 4Way)</td></tr>
<tr><td>Operation</td><td>Defrost</td><td>Timer</td><td>Filter</td></tr>
<tr><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
<table>
<tr><td colspan="5">Duct, Cassette (1/2 Way), Console, Ceiling</td></tr>
<tr><td>Operation</td><td>Timer</td><td>Turbo</td><td>24℃</td><td>27℃</td></tr>
<tr><td>×</td><td>×</td><td>◑</td><td>◑</td><td>◑</td></tr>
</table>
※ ● : ON ◑: Flash ×: OFF
</td></tr>
<tr><td>Judgement Method</td><td>• Refer the next page.</td></tr>
<tr><td>Cause of problem</td><td>• CCH Connector PCB is not connected / Compressor Top sensor breakaway / Own problem of CCH</td></tr>
</table>



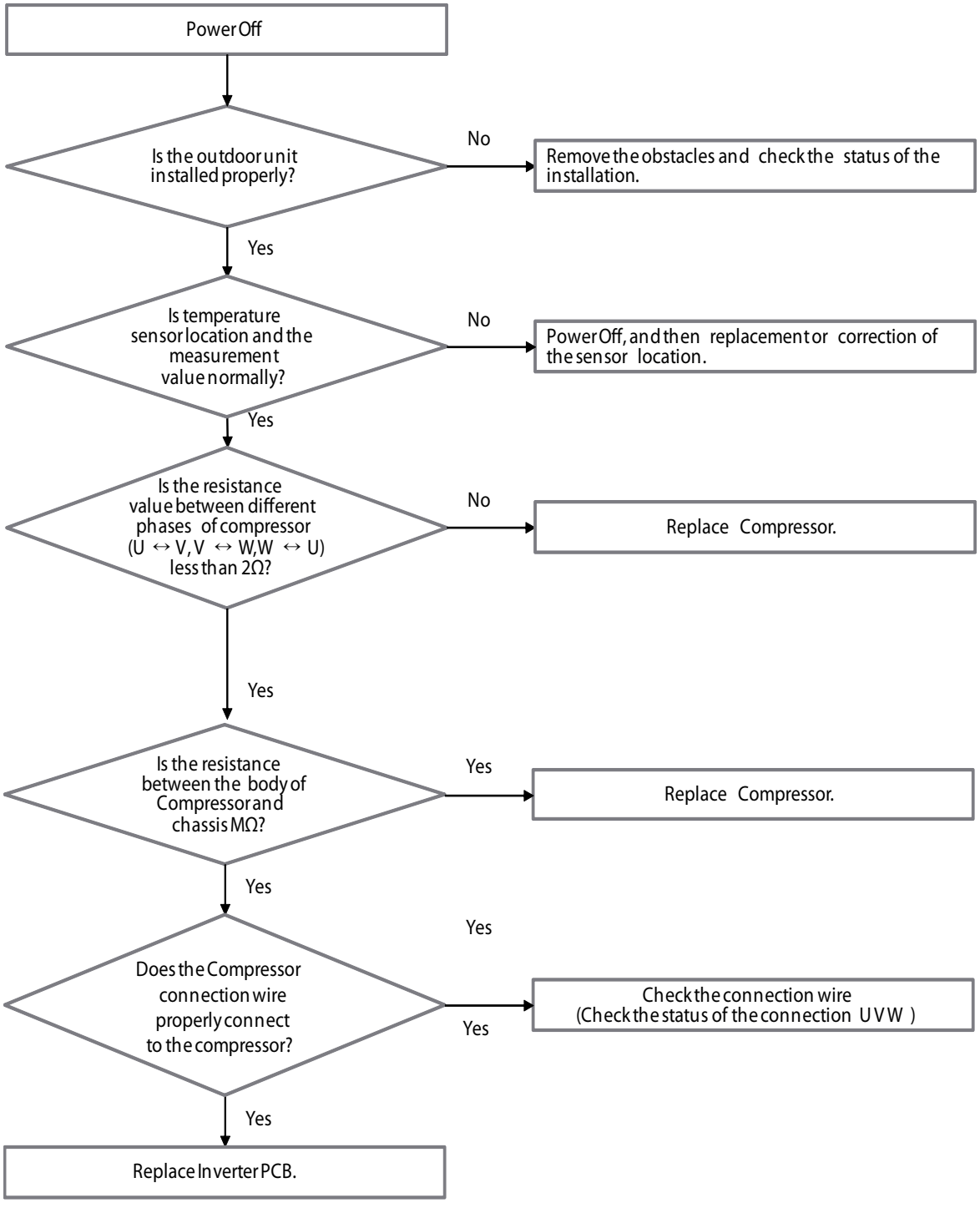
■ Error due to operation failure of inverter compressor 1. (E-461)

Outdoor unit Display	**E-461**
Judgement Method	• Startup, and then if the speed increase is not normally. • Detected by H/W or S/W.
Cause of problem	• Compressor connection error. • Defective Compressor. • Defective PCB.



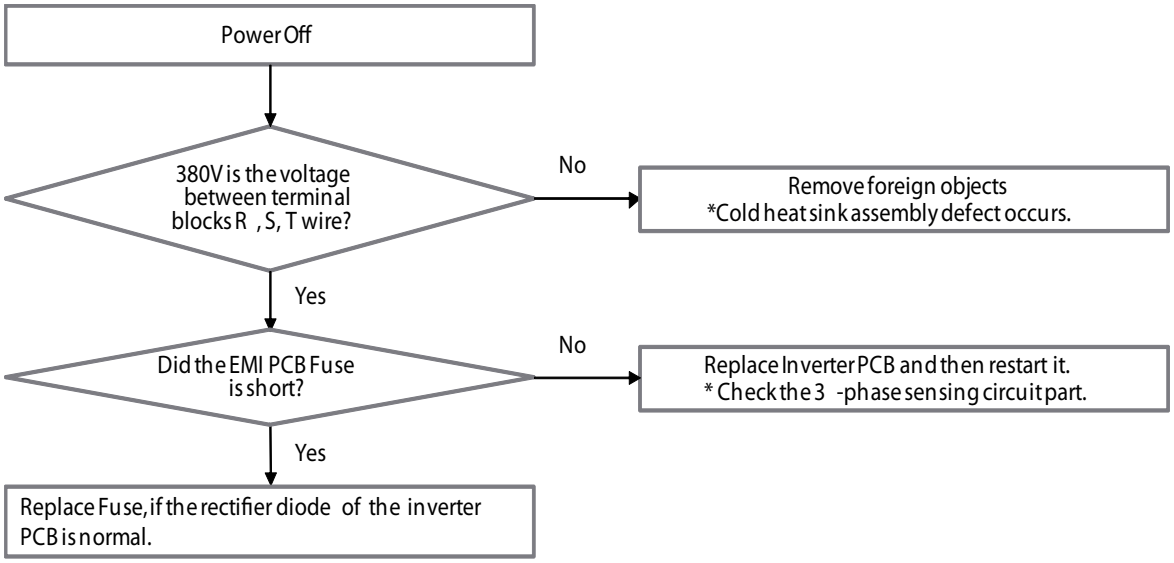
■ Error due to operation failure of inverter compressor 1. (E-464)

Outdoor unit Display	**E-464 / E-465**
Judgement Method	• Will occur if the overcurrent flowing in the IPM. • Detected by H/W or S/W.
Cause of problem	• Installation defective. • Connection wire error. • Comp. defective. • Motor defective. • PCB defective.



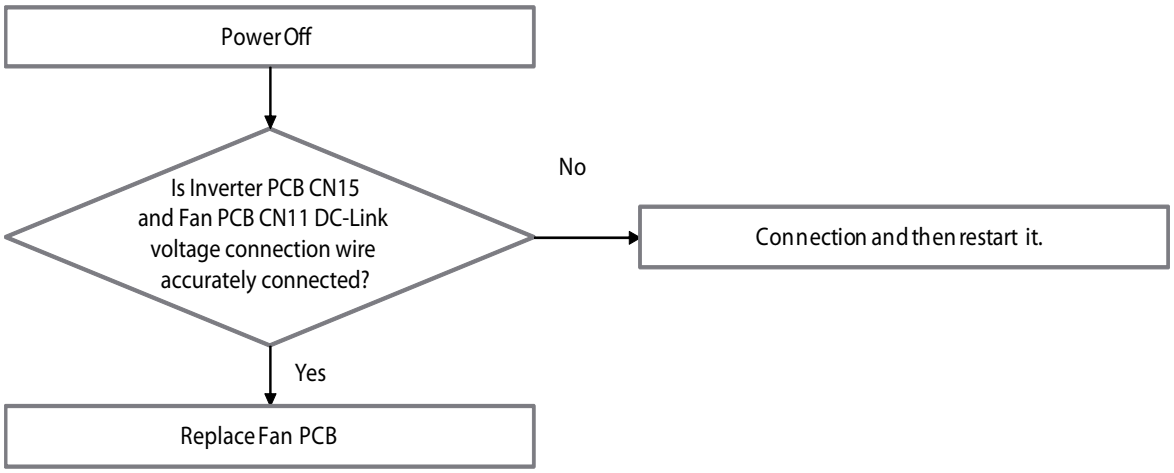
■ Error due to over voltage / low voltage of inverter PBA 1. (E-466)

Outdoor unit Display	**E-466**
Judgement Method	• N-phase wiring error and EMI Fuse short. • DC-Link Overvoltage / Low voltage occurs.
Cause of problem	• Check the input wiring • EMI Fuse short



■ Over-voltage/low-voltage error of Fan1. (E-486)

Outdoor unit Display	**E-486**
Judgement Method	• N-phase wiring error and EMI Fuse short. • DC-Link Overvoltage / Low voltage occurs.
Cause of problem	• Check the input wiring • EMI Fuse short

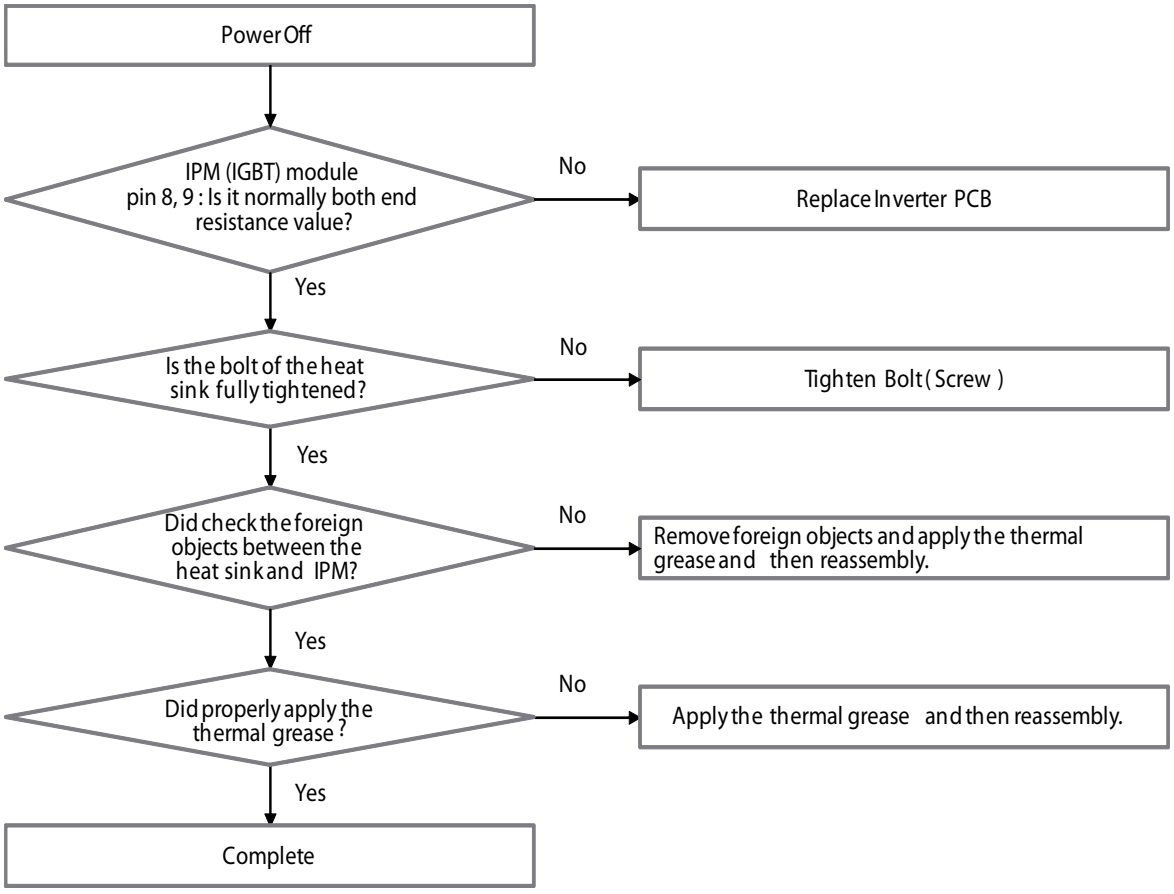


■ Error due to overheat caused by contact failure on IPM of inverter PBA 1. (E-500)

Outdoor unit Display	**E-500**
Judgement Method	• IGBT module internal temperature : 105°C more than
Cause of problem	• Cooling Pin and the IGBT junction part assembly defective. • Refrigerant cooling heat sink and refrigerant piping assembly defective. • Assembled bolt defective.

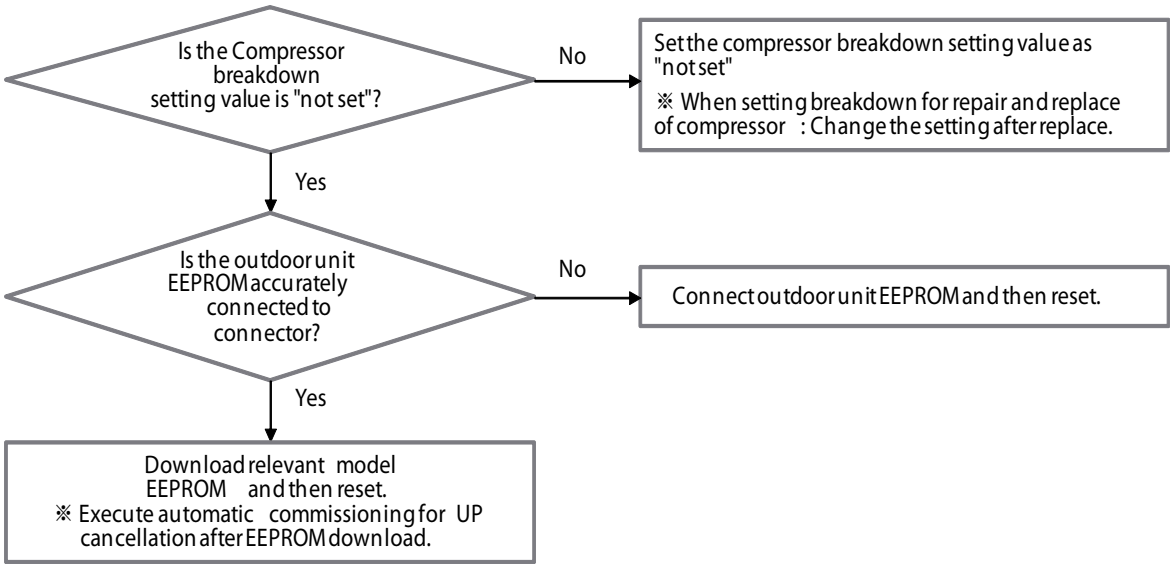
Both end resistance values of IGBT module pin(8, 9 pin)

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



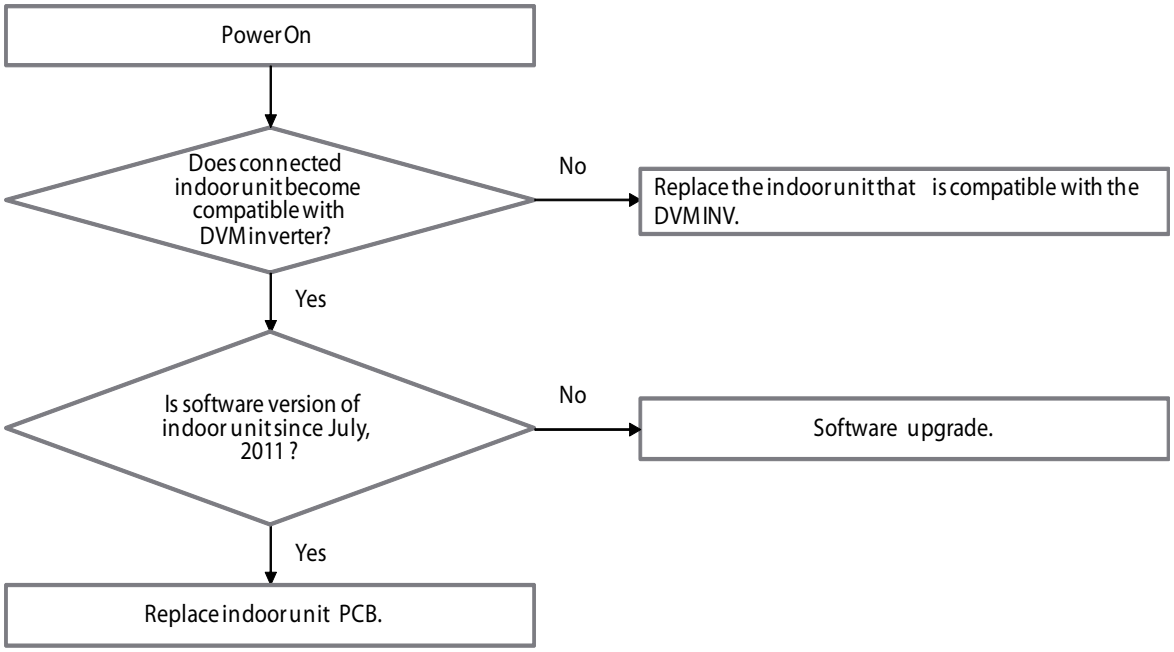
■ Outdoor unit's option switch setting error (Using E2P option of other models or emergency operation for compressor malfunction option setting was enabled on all compressors of corresponding outdoor unit). (E-560)

Outdoor unit Display	**E-560**
Judgement Method	• Refer the next page.
Cause of problem	• Option setting error of outdoor unit. (E2P option use of other model or set of the relevant outdoor unit, compressor breakdown)



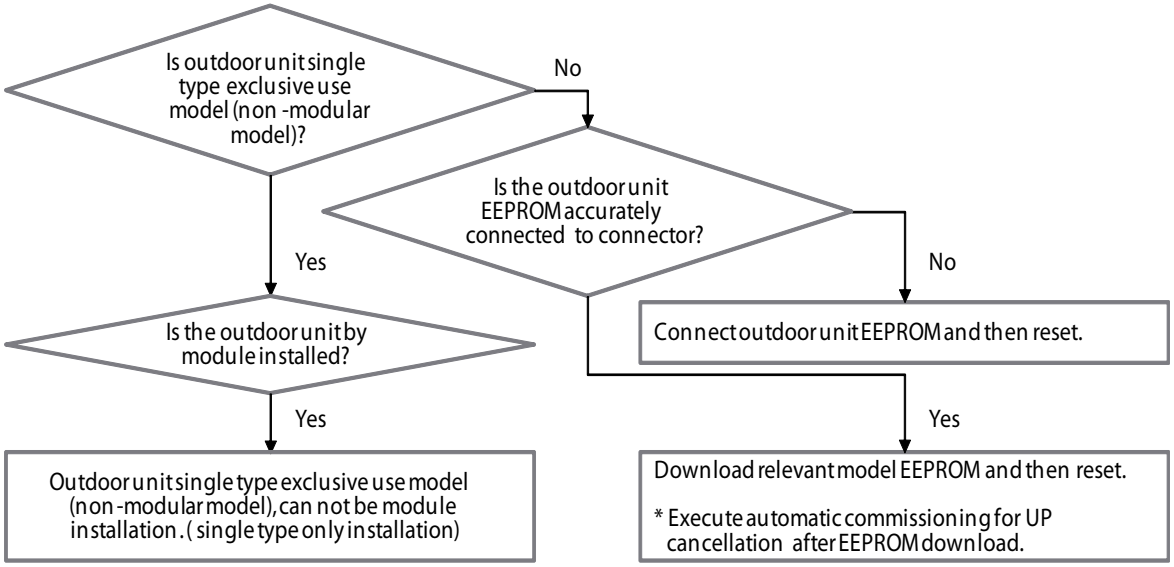
■ Outdoor unit's option switch setting error (Using E2P option of other models or emergency operation for compressor malfunction option setting was enabled on all compressors of corresponding outdoor unit). (E-563)

Outdoor unit Display	**E-563**
Judgement Method	• Prior to July 2011, if the software version of the indoor unit. • If indoor unit which do not compatible with DVM inverter is connected.
Cause of problem	• Check the software version of the indoor unit. • Check the indoor unit is compatible with the DVM.



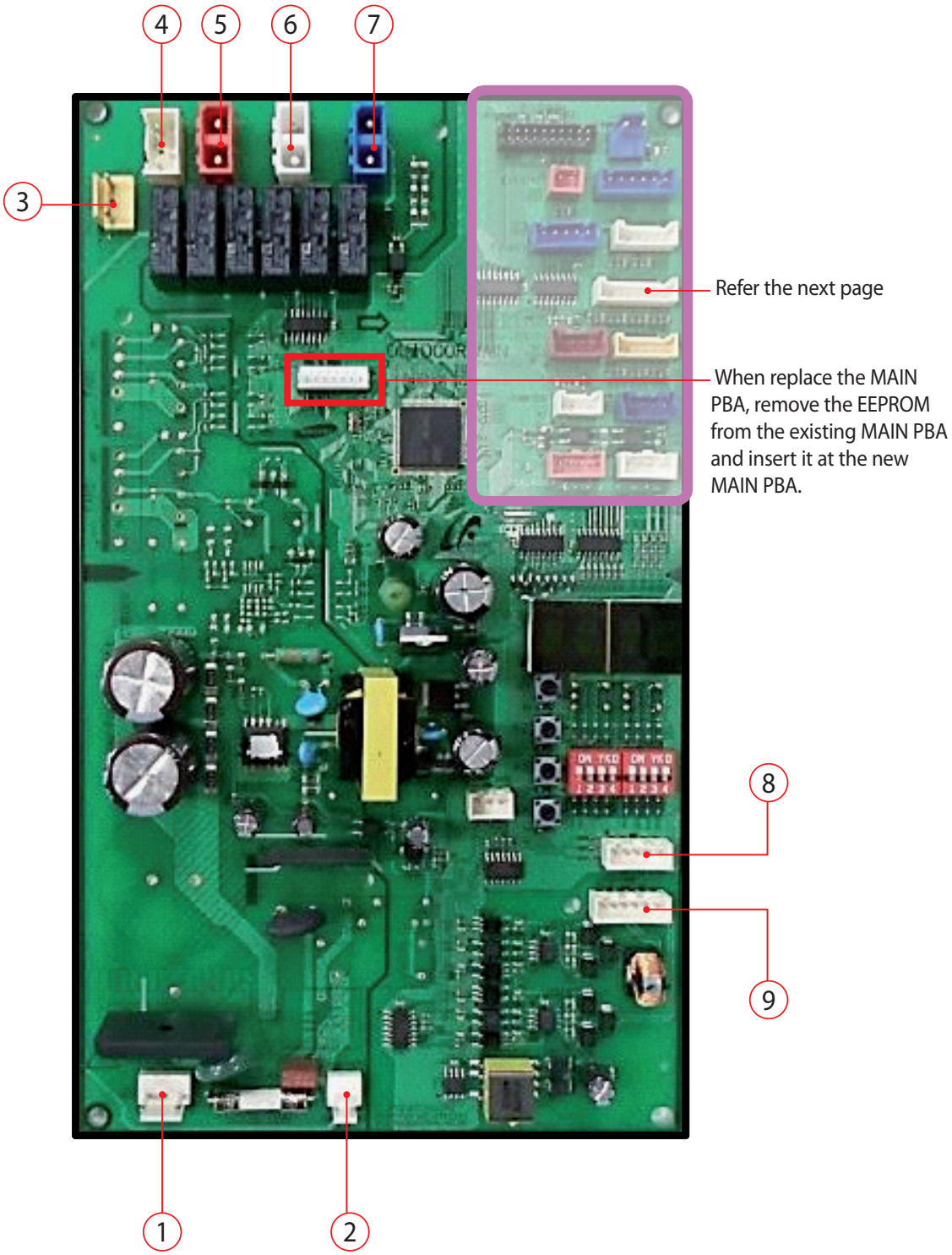
■ Error due to using single type outdoor unit in a module installation. (E-573)

Outdoor unit Display	**E-573**
Judgement Method	• Refer the next page.
Cause of problem	• Using single type outdoor unit (non-modular model) in a module installation.



5. PCB Diagram and Parts List

5-1 MAIN (cont.)

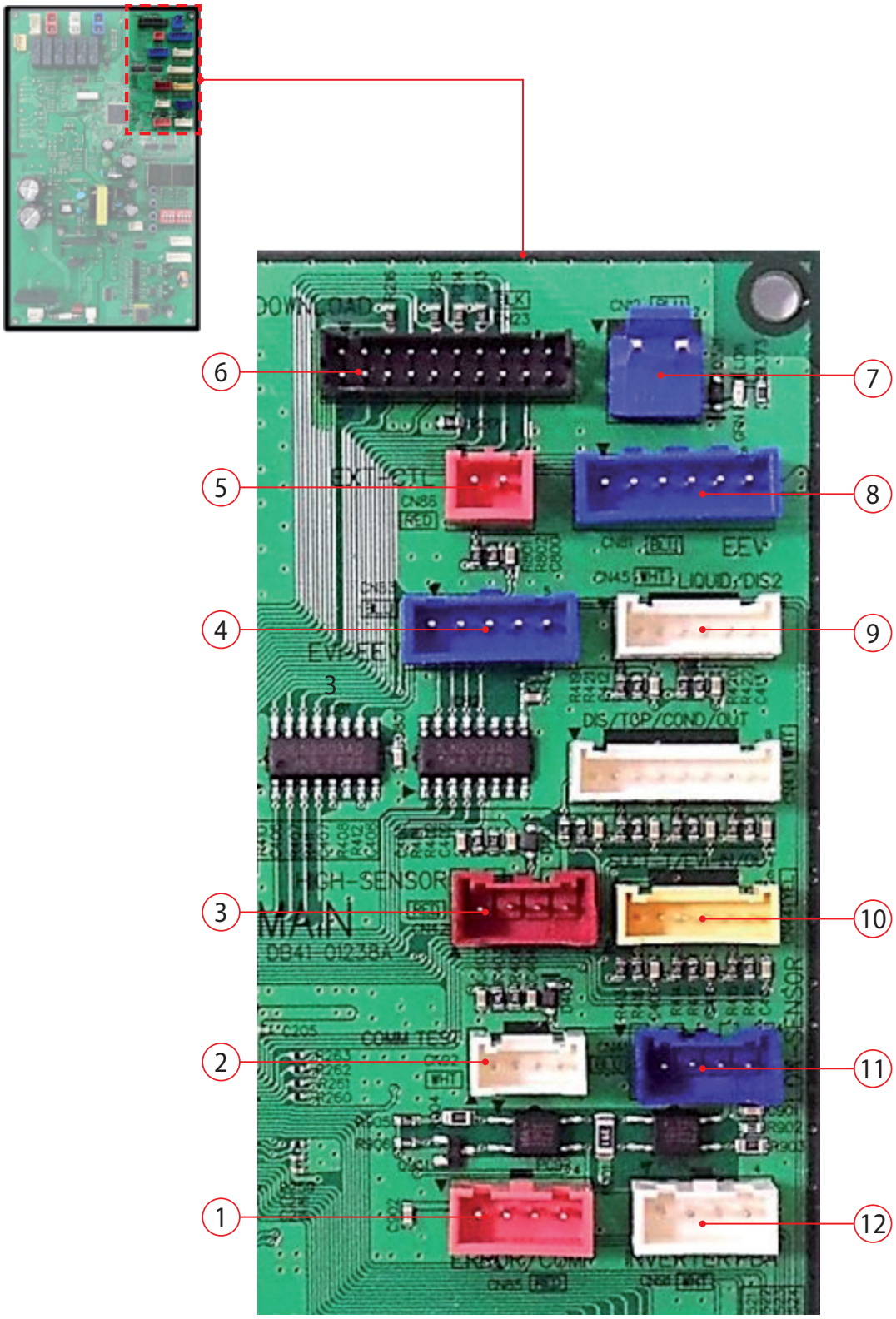


MAIN (cont.)

No.	Description	
1	**CN70-AC POWER**	
	1	LIVE
	2	-
	3	NEUTRAL
2	**CN71-HIGH PRESSURE S/W**	
	1	S/W
	2	S/W
3	**CN708-4WAY VALVE**	
	1	Valve
	2	-
	3	NEUTRAL
4	**CN703-EVI BYPASS 1**	
	1	LIVE
	2	-
	3	NEUTRAL

No.	Description	
5	**CN704-HOT GAS BYPASS 1**	
	1	NEUTRAL
	2	LIVE
6	**CN714-CCH 1 OUT**	
	1	NEUTRAL
	2	LIVE
7	**CN701-EVI VALVE 1**	
	1	NEUTRAL
	2	LIVE
8	**CN901-DRED**	
	1	DRED1
	2	DRED2
	3	DRED3
	4	GND
	5	VCC

No.	Description	
9	**CN55-COMM PBA**	
	1	F1
	2	F2
	3	OF1
	4	OF2
	5	R1
	6	R2


6
7
5
8
4
9
3
10
2
11
1
12
EXT-CTL
EEV
LIQUID/DIS2
DIS/TCP/COND/OUT
HIGH-SENSOR
MAIN
SENSOR

MAIN (cont.)

No.	Description	
1	**CN85-STATUS CHECK**	
	1	12V
	2	ERROR CHECK
	3	12V
	4	COMP CHECK
2	**CN92-COMM TEST**	
	1	VCC
	2	RXD INVERTER
	3	INV COMM
	4	GND
3	**CN42-HIGH PRESS SENSOR**	
	1	HIGH PRESS SENSOR
	2	-
	3	GND
	4	5V
4	**CN83-EVI-EEV**	
	1	EEV SIGNAL 1
	2	EEV SIGNAL 2
	3	EEV SIGNAL 3
	4	EEV SIGNAL 4
	5	12V

No.	Description	
5	**CN86-EXT-CTL**	
	1	EXTERNAL CONTROL SIGNAL
	2	GND

No.	Description	
6	**CN23-DOWNLOAD**	
	1	RXD IN
	2	TXD IN
	3	nTRST
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	8	TRACE CLK
	9	GND
	10	VCC
	11	VCC
	12	MODE 0
	13	RESET
	14	TRACE 3
	15	F SCLK
	16	F SDAT
	17	GND
	18	TRACE 2
	19	TRACE 1
	20	TRACE 0

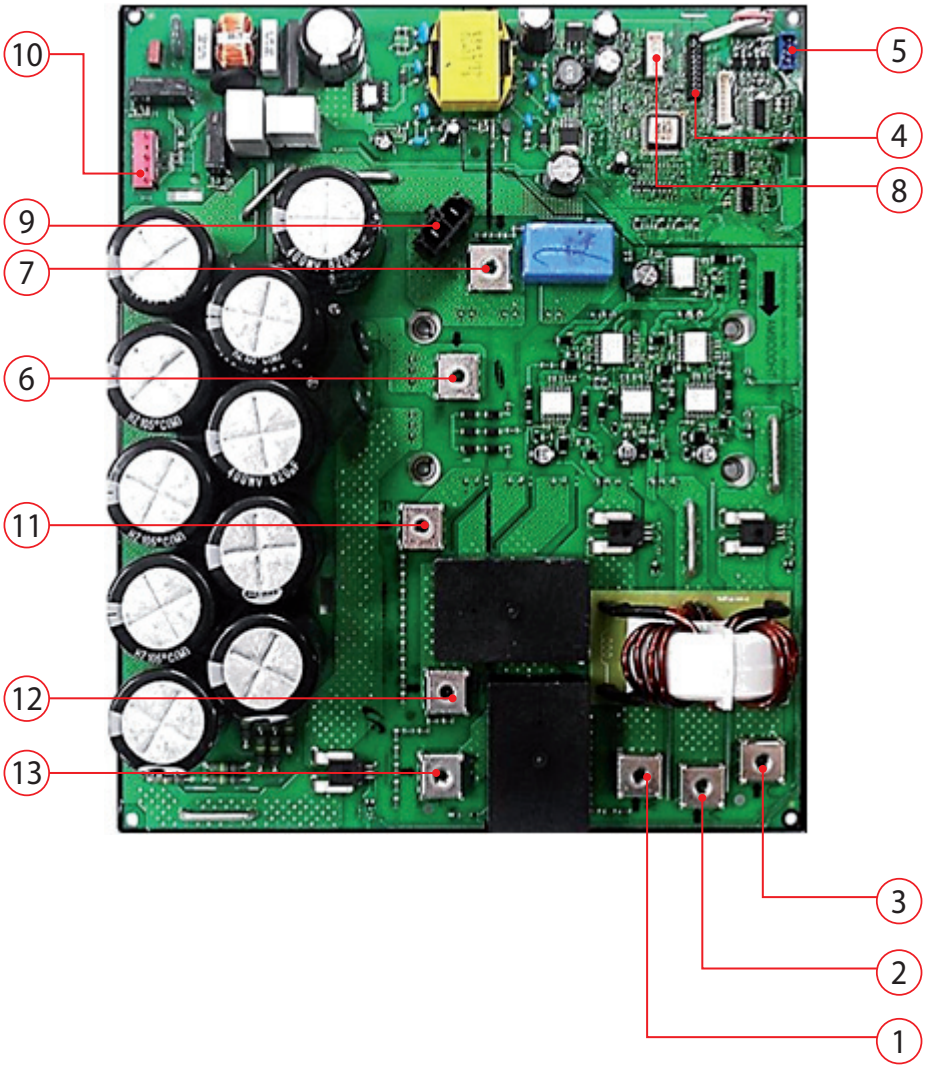
No.	Description	
7	**CN12-TRANSMITTER DC POWER 12V**	
	1	12V
	2	GND
8	**CN81-EEV**	
	1	EEV1 SIGNAL 1
	2	EEV1 SIGNAL 2
	3	EEV1 SIGNAL 3
	4	EEV1 SIGNAL 4
	5	12V
	6	12V
9	**CN45-LIQUID SENSOR**	
	1	LIQUID SENSOR
	2	GND
	3	DISCHARGE SENSOR 2
	4	GND
	5	-
	6	-

No.	Description	
10	**CN43-DIS, TOP, COND, AMBIENT SENSOR**	
	1	DISCHARGE SENSOR
	2	GND
	3	TOP SENSOR
	4	GND
	5	COND OUT SENSOR
	6	GND
	7	AMBIENT SENSOR
	8	GND
11	**CN44-SUCTION, EVI-IN, OUT SENSOR**	
	1	SUCTION SENSOR
	2	GND
	3	EVI IN SENSOR
	4	GND
	5	EVI OUT SENSOR
	6	GND

No.	Description	
12	**CN41-LOW PRESSURE SENSOR**	
	1	-
	2	LOW PRESS SENSOR
	3	GND
	4	VCC
13	**CN91 – INV COMM**	
	1	12V
	2	INV-SMPS
	3	COMM-OUT
	4	GND

5-2 Inverter

■ **MODEL : AM✳✳✳KXMDGH✳, AM✳✳✳KXMDHH✳, AM✳✳✳KXMFGH✳, AM✳✳✳KXMFHH✳**



Inverter (cont.)

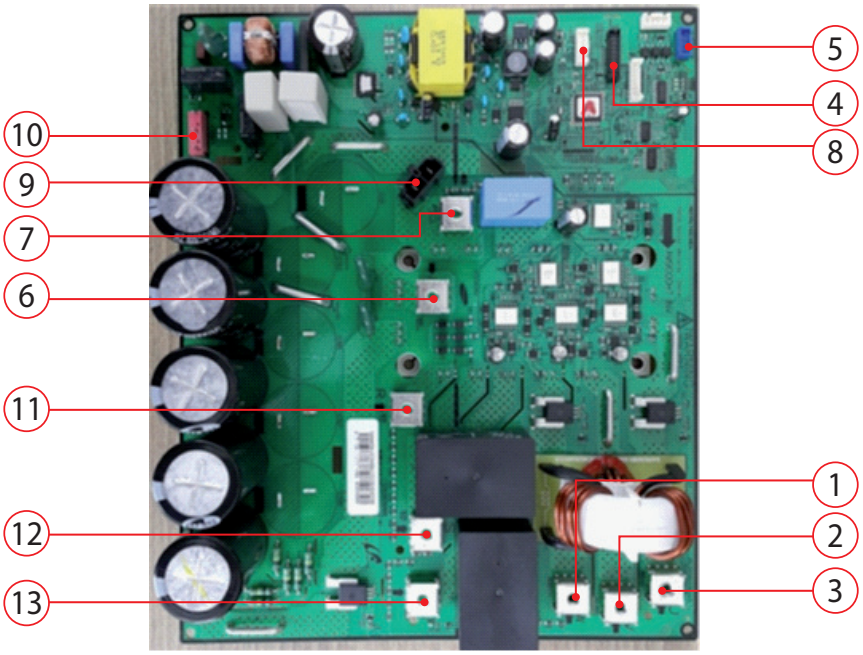
■ MODEL : AM✳✳✳KXMDGH✳, AM✳✳✳KXMDHH✳, AM✳✳✳KXMFGH✳, AM✳✳✳KXMFHH✳

No.	Description	
1	**W-COMP W**	
	1	COMP W
2	**U-COMP U**	
	1	COMP U
3	V-COMP V	
	1	COMP V
4	**CN22-DOWNLOAD**	
	1	RX-DOWN
	2	TX-DOWN
	3	BOOT
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	9	GND
	10	VCC
	11 - 20	Not use

No.	Description	
5	**CN32-MAIN COMM**	
	1	12 V-MAIN
	2	IN-SMPS-RELAY
	3	COMM-IN
	4	GND-MAIN
6	**CN702 - REACTOR1**	
	1	REACTOR1
7	**CN701 - REACTOR2**	
	1	REACTOR2
8	**CN91 - FAN DC**	
	1	18 V
	2	GND
	3	5 V-FAN
	4	AD-SELECT
9	**CN15 - FAN DC LINK**	
	1	DC 540 V
	2	GND

No.	Description	
10	**CN13 - AC POWER**	
	1	AC LIVE
	2	AC NEUTRAL
	3	AC NEUTRAL
11	**R - INPUT R PHASE**	
	1	R PHASE
12	**S - INPUT S PHASE**	
	1	S PHASE
13	**T - INPUT T PHASE**	
	1	T PHASE

■ MODEL : AM✳✳✳KXMDFH✳

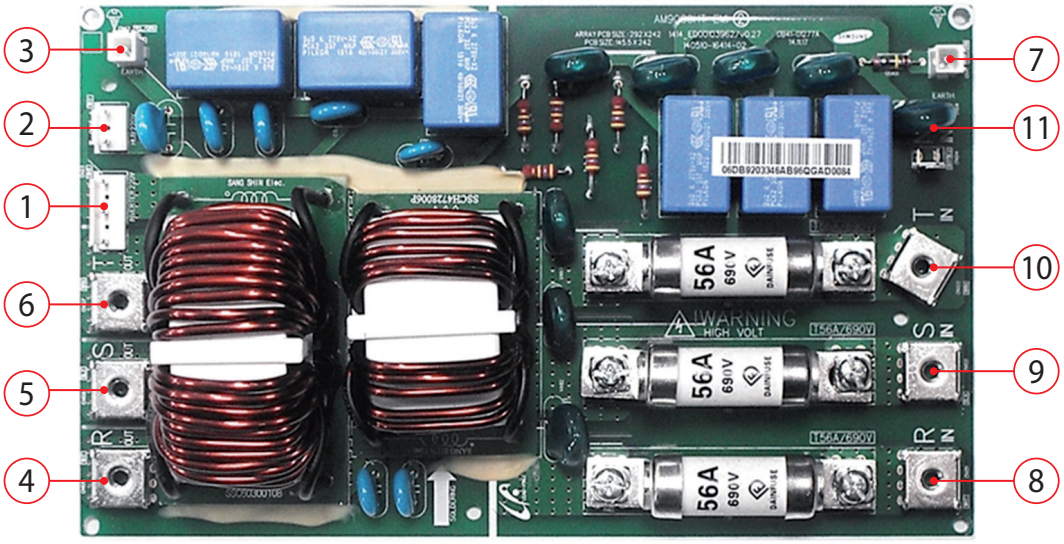


No.	Description	
1	**W-COMP W**	
	1	COMP W
2	**U-COMP U**	
	1	COMP U
3	**V-COMP V**	
	1	COMP V
4	**CN22-DOWNLOAD**	
	1	RX-DOWN
	2	TX-DOWN
	3	BOOT
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	9	GND
	10	VCC
	11 - 20	Not use
5	**CN32-MAIN COMM**	
	1	12 V-MAIN
	2	IN-SMPS-RELAY
	3	COMM-IN
	4	GND-MAIN

No.	Description	
6	**CN702 - REACTOR1**	
	1	REACTOR1
7	**CN701 - REACTOR2**	
	1	REACTOR2
8	**CN91 - FAN DC**	
	1	18 V
	2	GND
	3	5 V-FAN
	4	AD-SELECT
9	**CN15 - FAN DC LINK**	
	1	DC 540 V
	2	GND
10	**CN13 - AC POWER**	
	1	AC LIVE
	2	AC NEUTRAL
	3	AC NEUTRAL
11	**R - INPUT R PHASE**	
	1	R PHASE
12	**S - INPUT S PHASE**	
	1	S PHASE
13	**T - INPUT T PHASE**	
	1	T PHASE

5-3 EMI

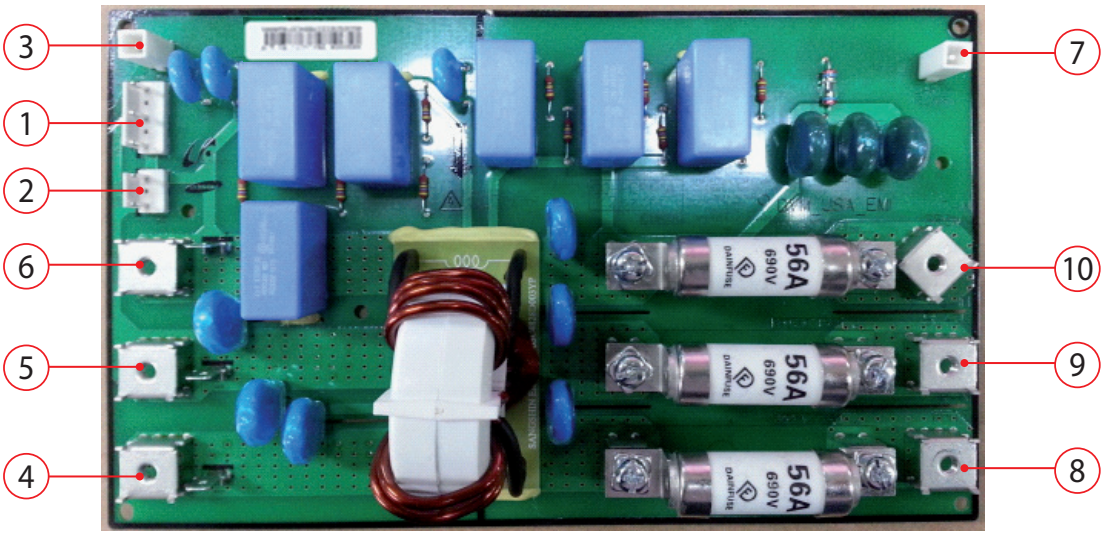
■ **MODEL : AM✳✳✳KXMDGH✳, AM✳✳✳KXMDHH✳, AM✳✳✳KXMFGH✳, AM✳✳✳KXMFHH✳**



No.	Description	
1	**CN23-INVERTER 220 V**	
	1	AC LIVE
	2	-
	3	AC NEUTRAL
	4	-
	5	AC NEUTRAL
2	**CNCN108-HUB 220 V**	
	1	AC LIVE
	2	-
	3	-
3	**CN42-EARTH**	
	1	EARTH (PE)
4	**CN105-R OUT**	
	1	R-OUT
5	**CN106-S OUT**	
	1	S-OUT
6	**CN107-T OUT**	
	1	T-OUT

No.	Description	
7	**CN41-EARTH**	
	1	EARTH (PE)
8	**CN101-R IN**	
	1	R-IN
9	**CN102-S IN**	
	1	S-IN
10	**CN103-T IN**	
	1	T-IN
11	**CN104-N IN**	
	1	N-IN

■ MODEL : AM✳✳✳KXMDFH✳

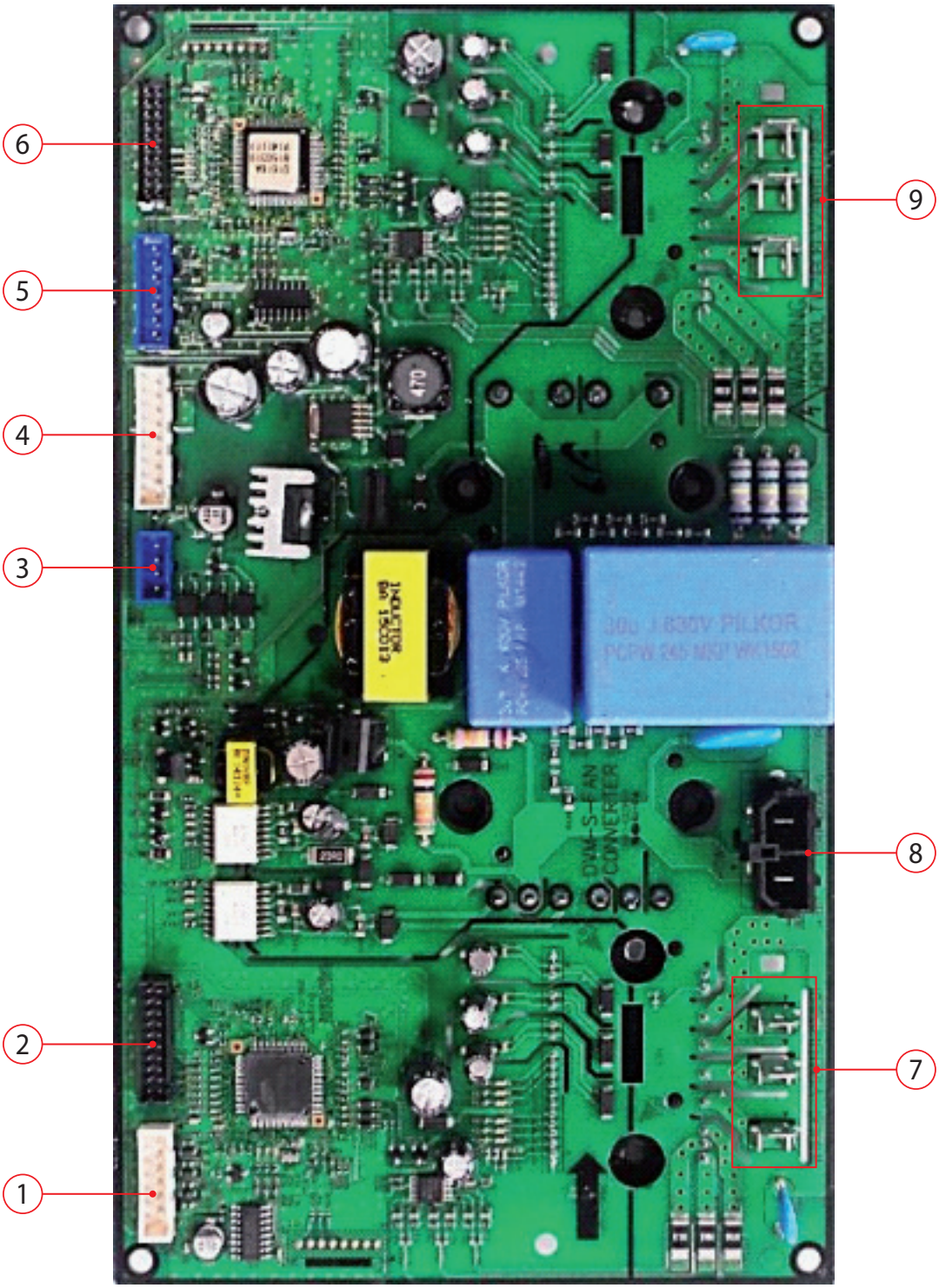


No.	Description	
1	**CN23-INVERTER 220 V**	
	1	AC LIVE
	2	-
	3	AC NEUTRAL
	4	-
	5	AC NEUTRAL
2	**CNCN108-HUB 220 V**	
	1	AC LIVE
	2	-
	3	-
3	**CN42-EARTH**	
	1	EARTH (PE)
4	**CN105-R OUT**	
	1	R-OUT
5	**CN106-S OUT**	
	1	S-OUT
6	**CN107-T OUT**	
	1	T-OUT

No.	Description	
7	**CN41-EARTH**	
	1	EARTH (PE)
8	**CN101-R IN**	
	1	R-IN
9	**CN102-S IN**	
	1	S-IN
10	**CN103-T IN**	
	1	T-IN

5-4 Fan

■ **MODEL : AM✳✳✳KXMDGH✳, AM✳✳✳KXMDHH✳, AM✳✳✳KXMFGH✳, AM✳✳✳KXMFHH✳**



Fan (cont.)

■ MODEL : AM✳✳✳KXMDGH✳, AM✳✳✳KXMDHH✳, AM✳✳✳KXMFGH✳, AM✳✳✳KXMFHH✳

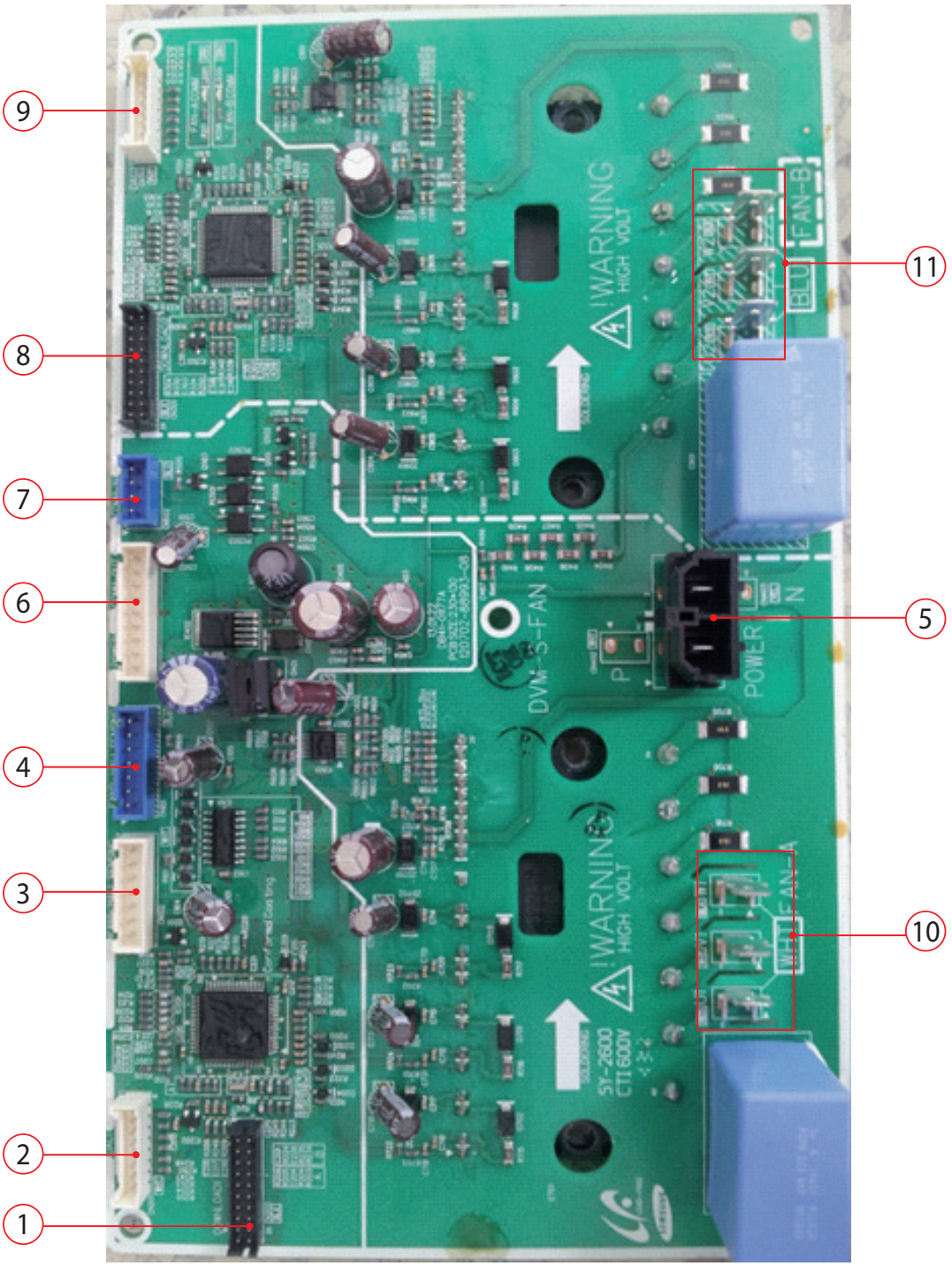
No.	Description	
1	**CN102-FAN1 HALL SENSING**	
	1	HALL-U
	2	5 V
	3	HALL-V
	4	GND
	5	HALL-W
	6	MOTOR-TEMP
	7	GND
2	**CN202-DOWNLOAD1**	
	1	RX-DEBUG
	2	TX-DEBUG
	3	BOOT
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	9	GND
	10	5 V

No.	Description	
3	**CN502-COMMUNICATION**	
	1	12 V-MAIN
	2	INV SMPS RELAY-MAIN
	3	COMM-MAIN
	4	GND-MAIN
4	**CN501-COMMUNICATION**	
	1	18 V-INV
	2	GND-MAIN
	4	GND-MAIN
	6	12 V-INV
	7	INV SMPS RELAY-INV
	8	COMM-INV
	9	GND-INV
5	**CN101-FAN2 HALL SENSING**	
	1	HALL - U
	2	5 V
	3	HALL - V
	4	GND
	5	HALL - W
	6	MOTOR - TEMP
	7	GND

No.	Description	
6	**CN301-DOWNLOAD2**	
	1	RX-DEBUG
	2	TX-DEBUG
	3	BOOT
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	9	GND
	10	5 V
7	**U1-V1-W1**	
	1	FAN1-U
	2	FAN1-V
	3	FAN1-W
8	**CN401-POWER**	
	1	DC 540 V
	2	GND
9	**U2-V2-W2**	
	1	FAN2-U
	2	FAN2-V
	3	FAN2-W

Fan (cont.)

■ MODEL : AM✳✳✳KXMDFH✳



Fan (cont.)

■ MODEL : AM✳✳✳KXMDFH✳

No.	Description	
1	**CN202-DOWNLOAD1**	
	1	RX-DEBUG1
	2	TX-DEBUG1
	3	BOOT
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	9	GND
	10	5 V
2	**CN201- FAN1 DAC**	
	1	5V
	2	VIEWER1_DAC1
	3	VIEWER2_DAC1
	4	VIEWER3_DAC1
	5	DATA_DAC1
	6	CS_DAC1
	7	CLK_DAC1
	8	GND

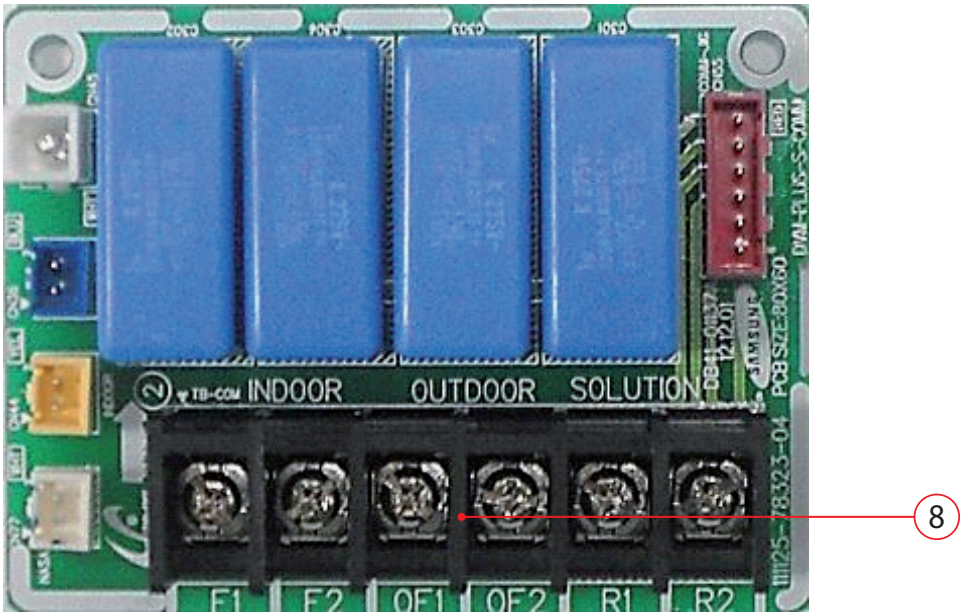
No.	Description	
3	**CN102-FAN1 HALL SENSING**	
	1	HALL - U
	2	5 V
	3	HALL - V
	4	GND
	5	HALL - W
	6	MOTOR - TEMP
	7	GND
4	**CN101- FAN2 HALL SENSING**	
	1	HALL - U
	2	5 V
	3	HALL - V
	4	GND
	5	HALL - W
	6	MOTOR - TEMP
	7	GND
5	**CN401- DC HIGH VOLTAGE**	
	1	DC HIGH VOLTAGE P
	2	DC HIGH VOLTAGE N

No.	Description	
6	**CN501- HUB DC/COMM OUT**	
	1	18V
	2	GND
	4	GND
	6	DC 12V-A
	7	INV SMPS RELAY SIGNAL
	8	12V COMM SIGNAL OUT
	7	AGND
7	**CN502- HUB COMM IN**	
	1	DC 12V-A
	2	INV SMPS RELAY SIGNAL
	3	12V COMM SIGNAL IN
	4	AGND

No.	Description	
8	**CN301-DOWNLOAD2**	
	1	RX-DEBUG2
	2	TX-DEBUG2
	3	BOOT
	4	TDO
	5	TCK
	6	TDI
	7	TMS
	9	GND
	10	5 V
9	**CN302- FAN2 DAC**	
	1	5V
	2	VIEWER1_DAC2
	3	VIEWER2_DAC2
	4	VIEWER3_DAC2
	5	DATA_DAC2
	6	CS_DAC2
	7	CLK_DAC2
	8	GND

No.	Description	
10	**U1-V1-W1**	
	1	FAN1-U
	2	FAN1-V
	3	FAN1-W
11	**U2-V2-W2**	
	1	FAN2-U
	2	FAN2-V
	3	FAN2-W

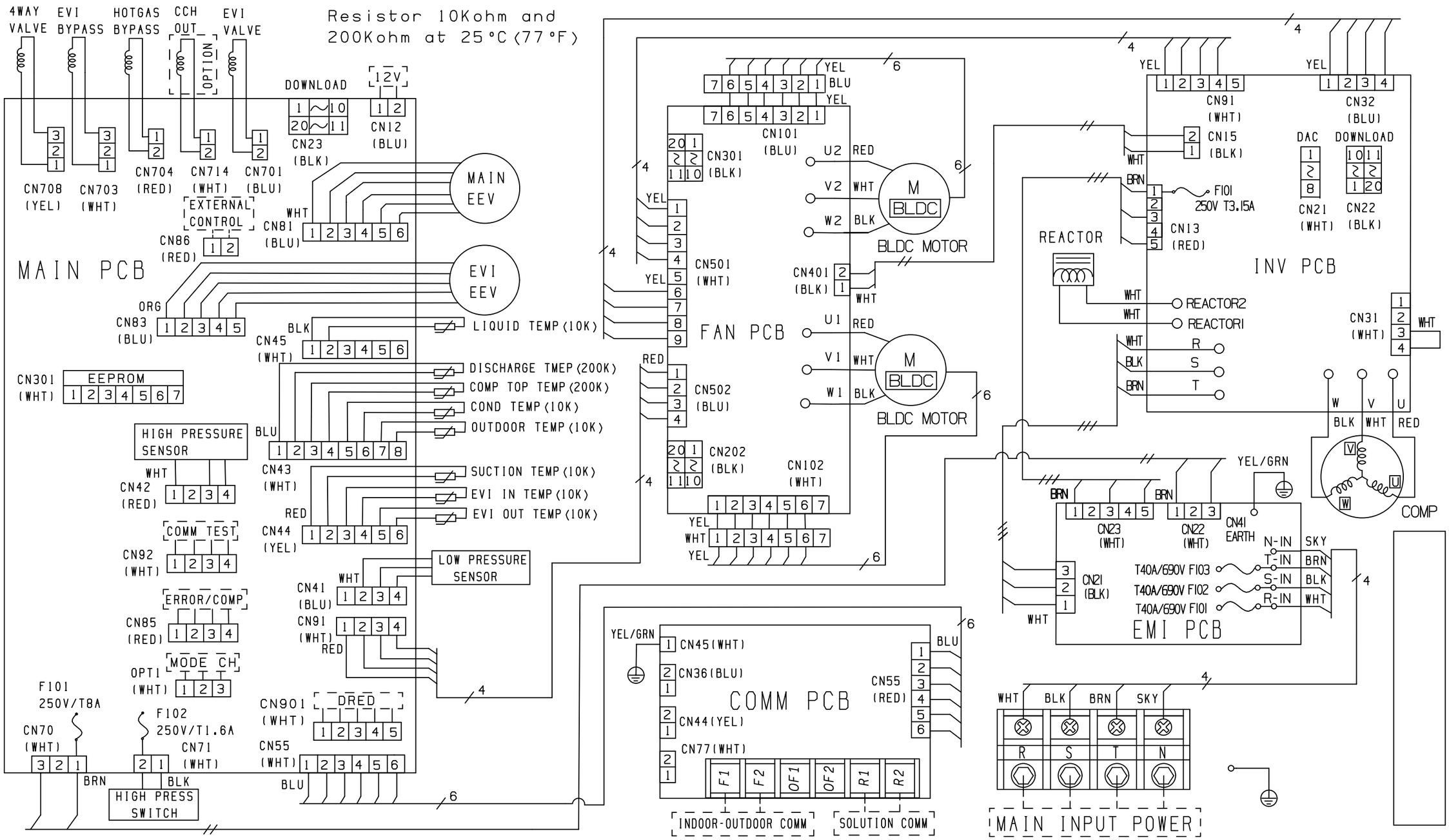
5-5 Communication



No.	Description	
1	**TB-COMM**	
	1	F1
	2	F2
	3	OF1
	4	OF2
	5	R1
	6	R2

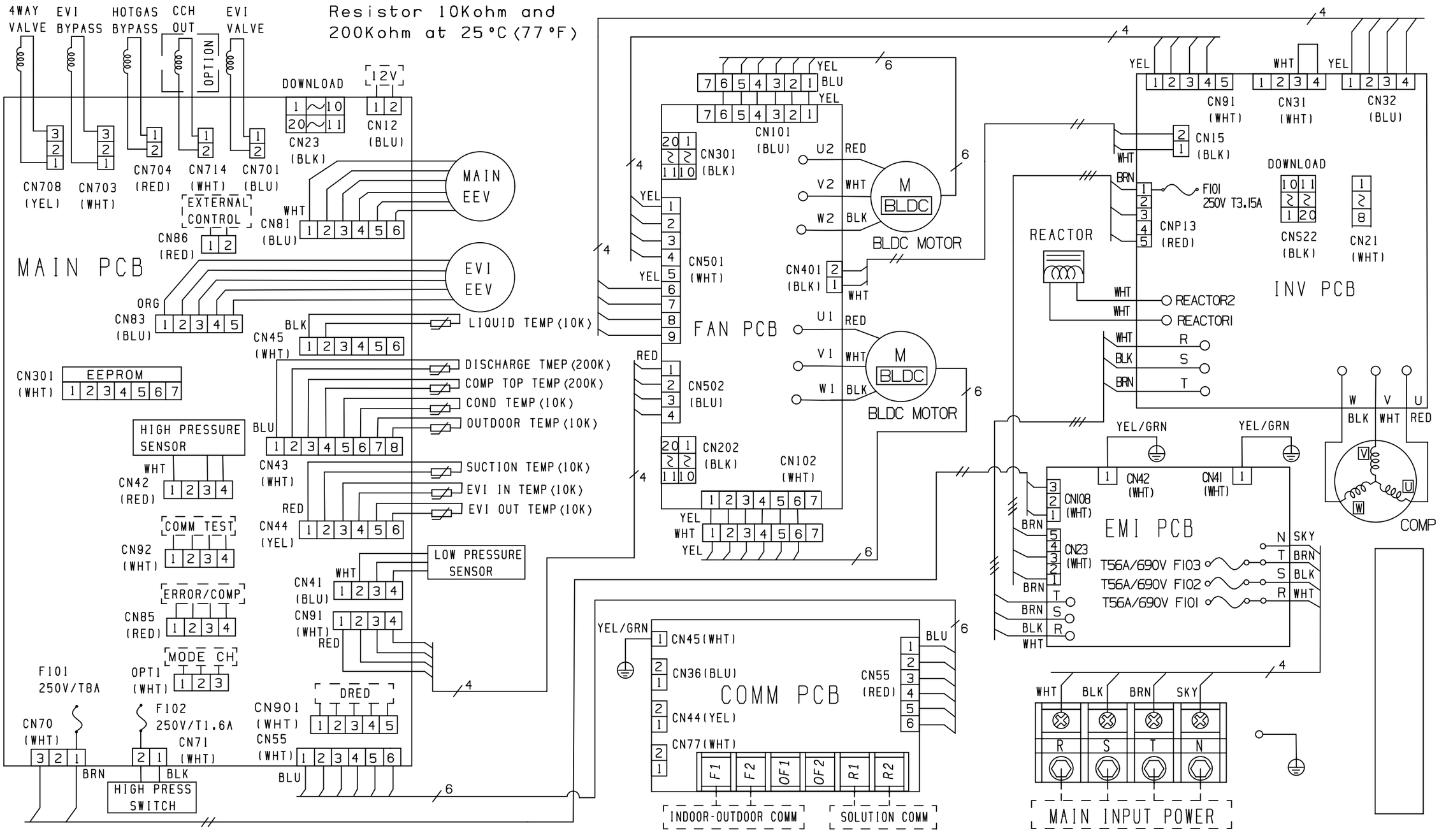
6. Wiring Diagram

6-1 AM100/120KXMDGH✳, AM100/120KXMDHH✳, AM080/100KXMFGH✳, AM080/100KXMFHH✳

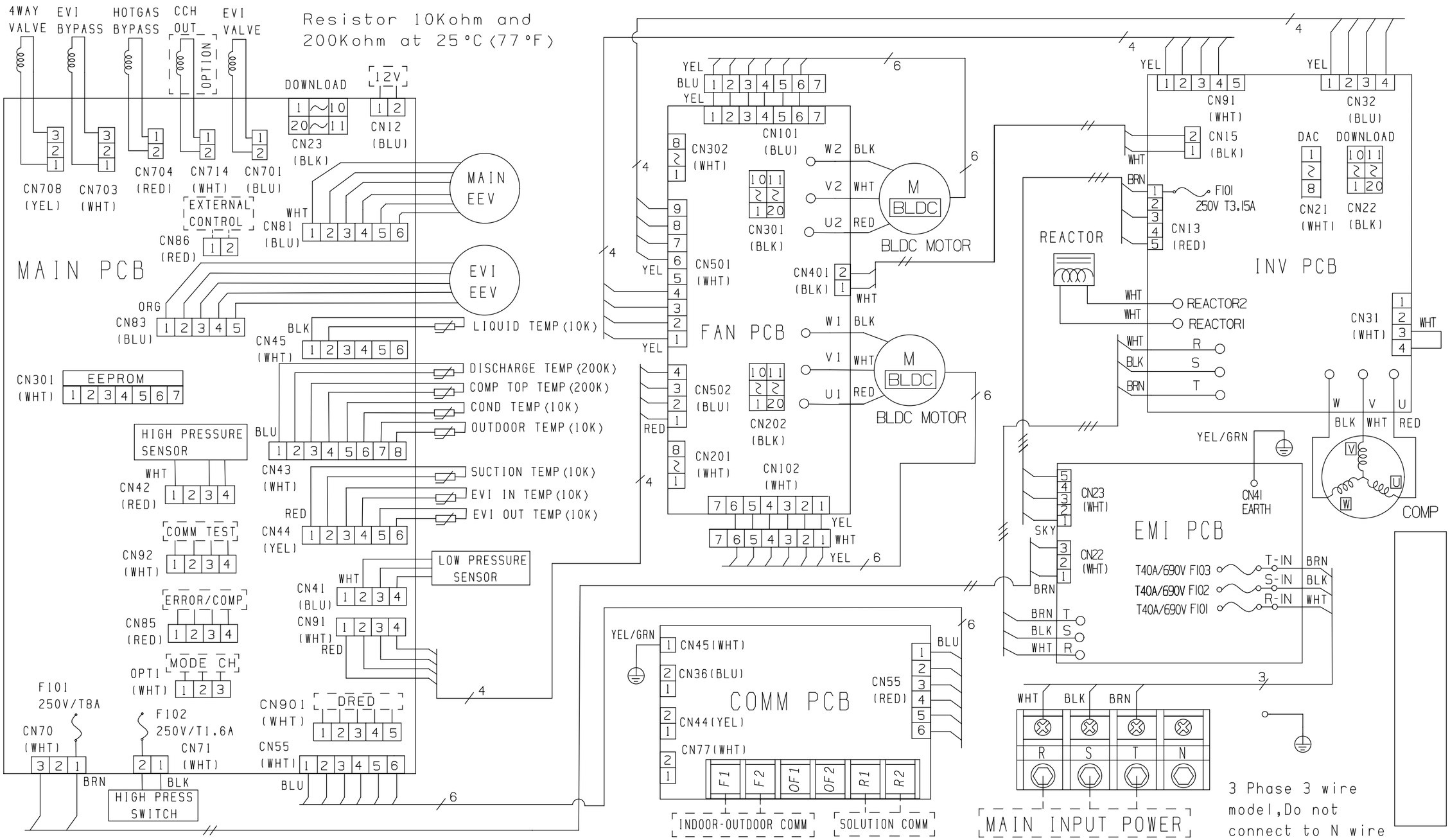


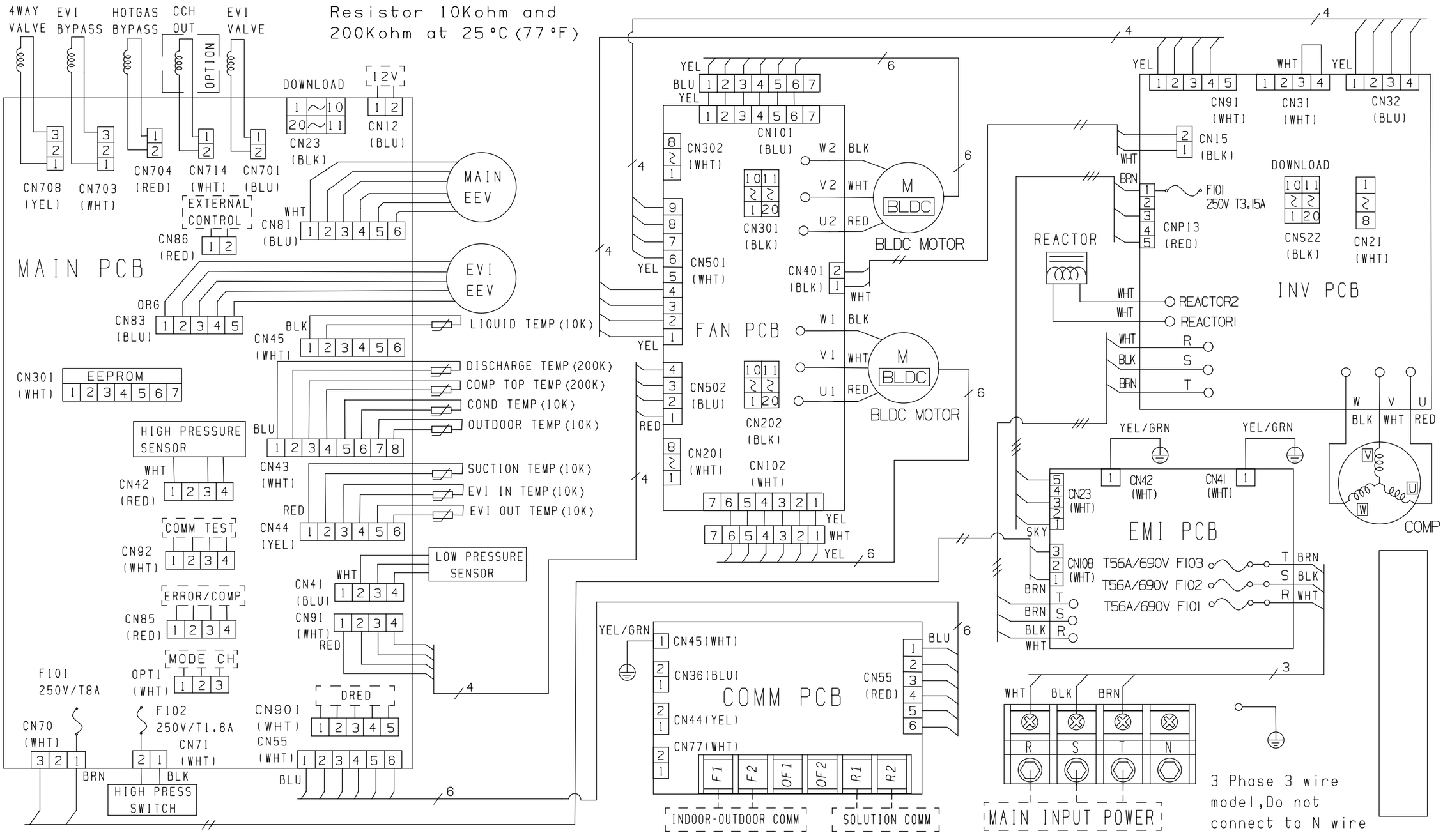
Wiring Diagram

6-2 AM140KXMDGH✳, AM140KXMDHH✳



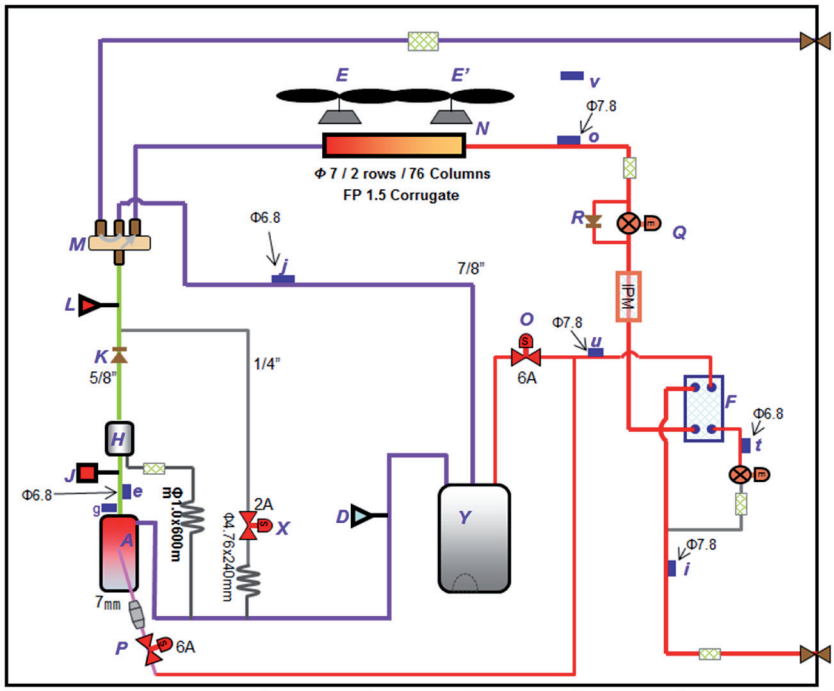
6-3 AM080KXMDFH✳





7. Cycle Diagram

7-1 AM100KXMDGH✳, AM100KXMDHH✳, AM080KXMFGH✳, AM080KXMFHH✳, AM080KXMDFH✳

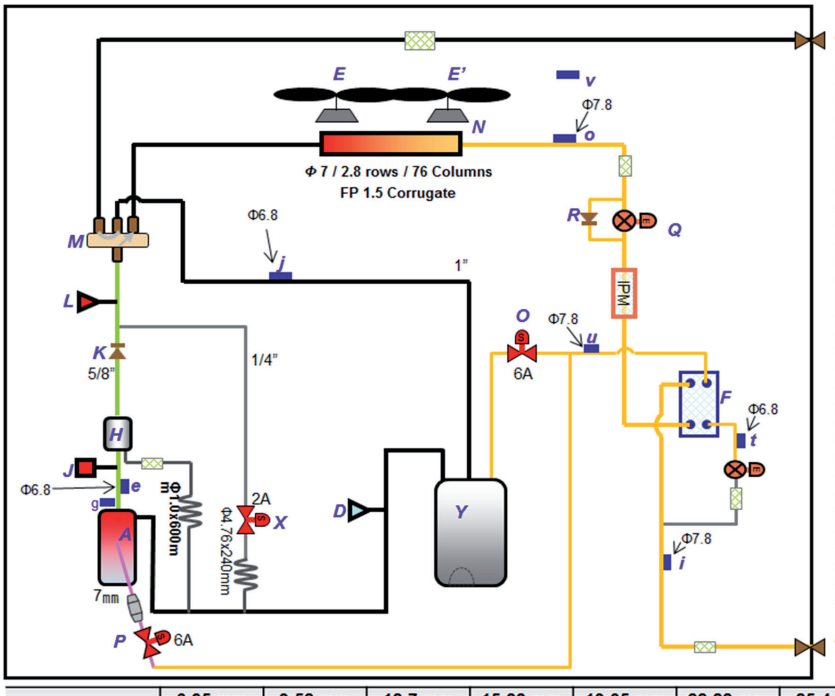


	Name	Spec.
A	Inverter compressor	52 Frame
B	-	-
D	Low pressure sensor	NSK-BD020D-252
E, E'	Outdoor fan motor	Φ 520 × 2EA 244W × 2EA
F	Sub cooler	ACH16-14 Sheets
H	Oil separator	0.5 ℓ
J	High pressure switch	SHP3-03 2045E
K	Discharge check valve	SAC507S
L	High pressure sensor	NSK- BD050D-254
M	4Way valve	10HP
N	Outdoor heat exchanger	Φ 7 Wide 2 Rows 76 Columns
O	EVI bypass valve	FDF6A
P	EVI valve	FDF6A
Q	Main EEV	DPF(O) 6.4C
R	EEV bypass check valve	SAC506S
S	EVI EEV	DPF(Q) 1.65C
X	Hot gas bypass	FDF2A
Y	Accumulator	8 ℓ
Z	-	-
e	Discharge sensor	204
g	Comp top sensor	204
i	Liquid tube sensor	103
j	Suction sensor	103
o	Cond out sensor	103
t	Sub cooler in sensor	103
u	Sub cooler out sensor	103
v	Ambient air sensor	103

Outer diameter	6.35 mm (1/4")	9.52 mm (3/8")	12.7 mm (1/2")	15.88 mm (5/8")	19.05 mm (3/4")	22.22 mm (7/8")	25.4 mm (1")	28.58 mm (9/8")
Classification								

7 mm

7-2 AM120KXMDGH✳, AM120KXMDHH✳, AM100KXMFGH✳, AM100KXMFHH✳, AM100KXMDFH✳

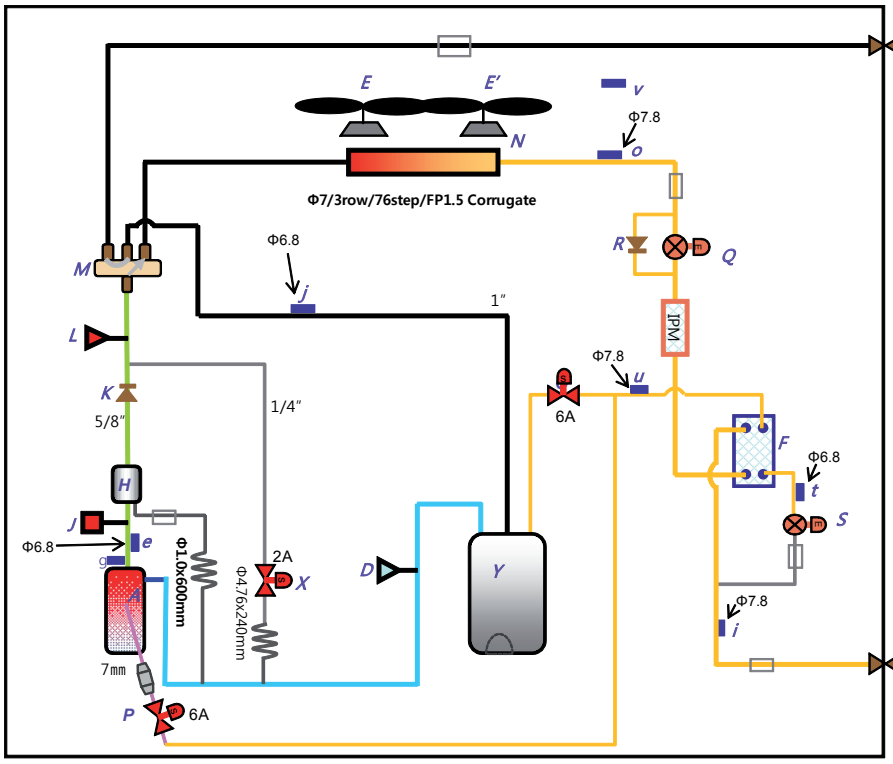


	Name	Spec.
A	Inverter compressor	66 Frame
B	-	-
D	Low pressure sensor	NSK-BD020D-252
E, E'	Outdoor fan motor	Φ 520 × 2EA 244W × 2EA
F	Sub cooler	ACH16-14 Sheets
H	Oil separator	0.5 ℓ
J	High pressure switch	SHP3-03 2045E
K	Discharge check valve	SAC507S
L	High pressure sensor	NSK- BD050D-254
M	4Way valve	10HP
N	Outdoor heat exchanger	Φ 7 Wide 2.8 Rows 76 Columns
O	EVI bypass valve	FDF6A
P	EVI valve	FDF6A
Q	Main EEV	DPF(O) 6.4C
R	EEV bypass check valve	SAC506S
S	EVI EEV	DPF(Q) 1.65C
X	Hot gas bypass	FDF2A
Y	Accumulator	8 ℓ
Z	-	-
e	Discharge sensor	204
g	Comp top sensor	204
i	Liquid tube sensor	103
j	Suction sensor	103
o	Cond out sensor	103
t	Sub cooler in sensor	103
u	Sub cooler out sensor	103
v	Ambient air sensor	103

Outer diameter	6.35 mm (1/4")	9.52 mm (3/8")	12.7 mm (1/2")	15.88 mm (5/8")	19.05 mm (3/4")	22.22 mm (7/8")	25.4 mm (1")	28.58 mm (9/8")
Classification								

7 mm

7-3 AM120KXMDFH✳

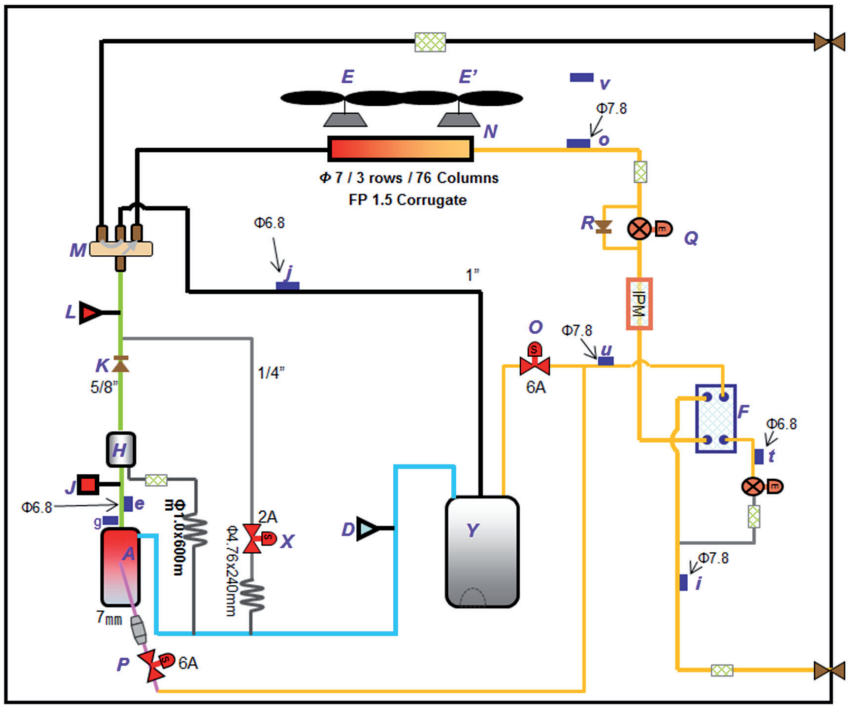


	Name	Spec.
A	Inverter compressor	66 Frame
B	-	-
D	Low pressure sensor	NSK-BD020D-252
E,E'	Outdoor fan motor	Φ520 x 2EA 183W x 2EA
F	Sub cooler	ACH16-14 Sheets
H	Oil separator	0.5ℓ
J	High pressure swith	SHP3-03 2045E
K	Disc. check v/v	SAC507S
L	H/P Sensor	NSK- BD050D-254
M	4Way V/V	10HP
N	OD HX	Φ7W,3*76
O	EVI bypass V/V	FDF6A
P	EVI V/V	FDF6A
Q	Main EEV	DPF(O) 6.4C
R	EEV bp check v/v	SAC506S
S	EVI EEV	DPF(Q) 1.65C
X	Hot gas bypass	FDF2A
Y	Accum	8ℓ
Z	-	-
e	Disc. sensor	204
g	Comp Top sensor	204
i	Liquid tube sensor	103
j	Suction sensor	103
o	Cond out sensor	103
t	SC in sensor	103
u	SC out sensor	103
v	Ambient air sensor	103

직경(외경)	6.35(1/4")	9.52(3/8")	12.7 (1/2")	15.88 (5/8")	19.05 (3/4")	22.22 (7/8")	25.4 (1")	28.58 (9/8")
배관구분								

직경(외경)	7㎜
배관구분	

7-4 AM140KXMDGH✳, AM140KXMDHH✳



	Name	Spec.
A	Inverter compressor	70 Frame
B	-	-
D	Low pressure sensor	NSK-BD020D-252
E, E'	Outdoor fan motor	Φ 520 × 2EA 244W × 2EA
F	Sub cooler	ACH16-14 Sheets
H	Oil separator	0.5 ℓ
J	High pressure switch	SHP3-03 2045E
K	Discharge check valve	SAC507S
L	High pressure sensor	NSK-BD050D-254
M	4Way valve	10HP
N	Outdoor heat exchanger	Φ 7 Wide 3 Rows 76 Columns
O	EVI bypass valve	FDF6A
P	EVI valve	FDF6A
Q	Main EEV	DPF(O) 6.4C
R	EEV bypass check valve	SAC506S
S	EVI EEV	DPF(Q) 1.65C
X	Hot gas bypass	FDF2A
Y	Accumulator	8 ℓ
Z	-	-
e	Discharge sensor	204
g	Comp top sensor	204
i	Liquid tube sensor	103
j	Suction sensor	103
o	Cond out sensor	103
t	Sub cooler in sensor	103
u	Sub cooler out sensor	103
v	Ambient air sensor	103

Outer diameter	6.35 mm (1/4")	9.52 mm (3/8")	12.7 mm (1/2")	15.88 mm (5/8")	19.05 mm (3/4")	22.22 mm (7/8")	25.4 mm (1")	28.58 mm (9/8")
Classification								

7 mm

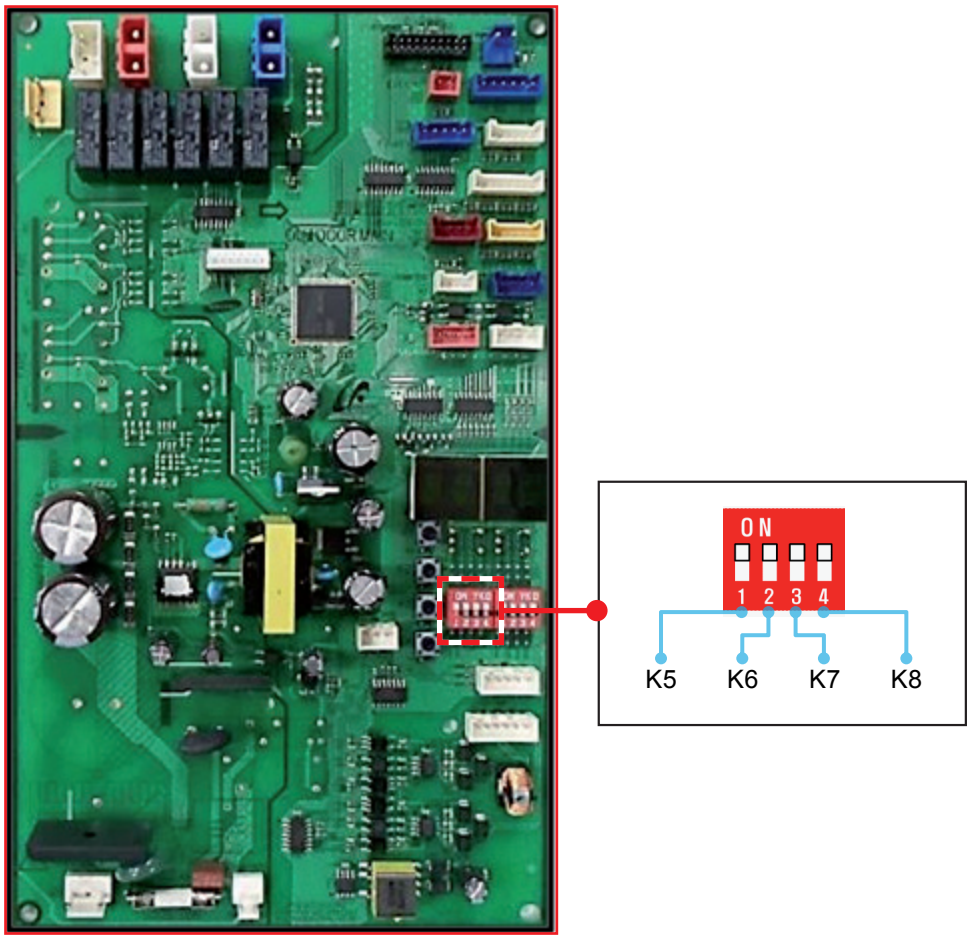
7-5 Cycle Component Function Explanation

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

8. Key Options

8-1 Outdoor unit option switch settings

■ Setting outdoor unit key function

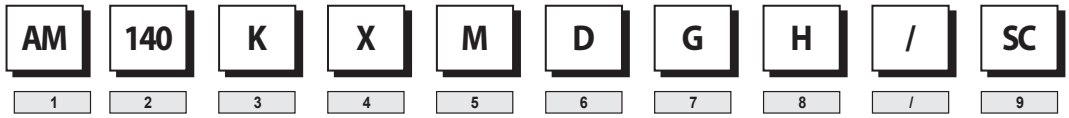


Switch	Setting		Function	Remarks
SW53	K5	On	-	Not applicable
		Off	-	
	K6	On	Enable maximum capacity restriction for cooling operation	Restrict excessive capacity increase when operating indoor units with small capacity
		Off	Disable maximum capacity restriction for cooling operation	-
	K7	On	-	Not applicable
		Off	-	
	K8	On	-	Not applicable
		Off	-	

9. Reference Sheet

9-1 Model code index

Outdoor unit



No.	Division	Description	
1	Product Type	AM	DVM
2	Capacity	140	14 HP [120 : 12 HP / 100 : 10 HP / 080 : 8 HP]
3	Year of development	K	2016 [J : 2015 / L : 2017]
4	Classification	X	Outdoor unit (NASA) [N : Indoor unit (NASA) / S : Set (NASA)]
5	Model division	M	DVM MINI
6	Model grade	D	Standard + General temp. + Non module
		F	Standard + Tropical + Non module
7	Power	G	380 ~ 415 V, 50 Hz, 3 Phase
		H	380 V, 60 Hz, 3 Phase
8	Mode	H	Heat pump (R410a)
9	Buyer	SC	CHINA
		EU	EUROPE
		TC	PHILIPPINES
		TL	INDIA
		TK	TURKEY
		ID	MIDDLE EAST
		MG	SAUDI ARABIA

SAMSUNG