

# SAMSUNG

## SYSTEM AIR CONDITIONER

### OUTDOOR UNIT

AM040KXMDEH/EU  
AM050KXMDEH/EU  
AM040KXMDEH/TK  
AM050KXMDEH/TK  
AM040KXMDCH/AZ  
AM050KXMDCH/AZ

# ***SERVICE*** Manual

### AIR CONDITIONER



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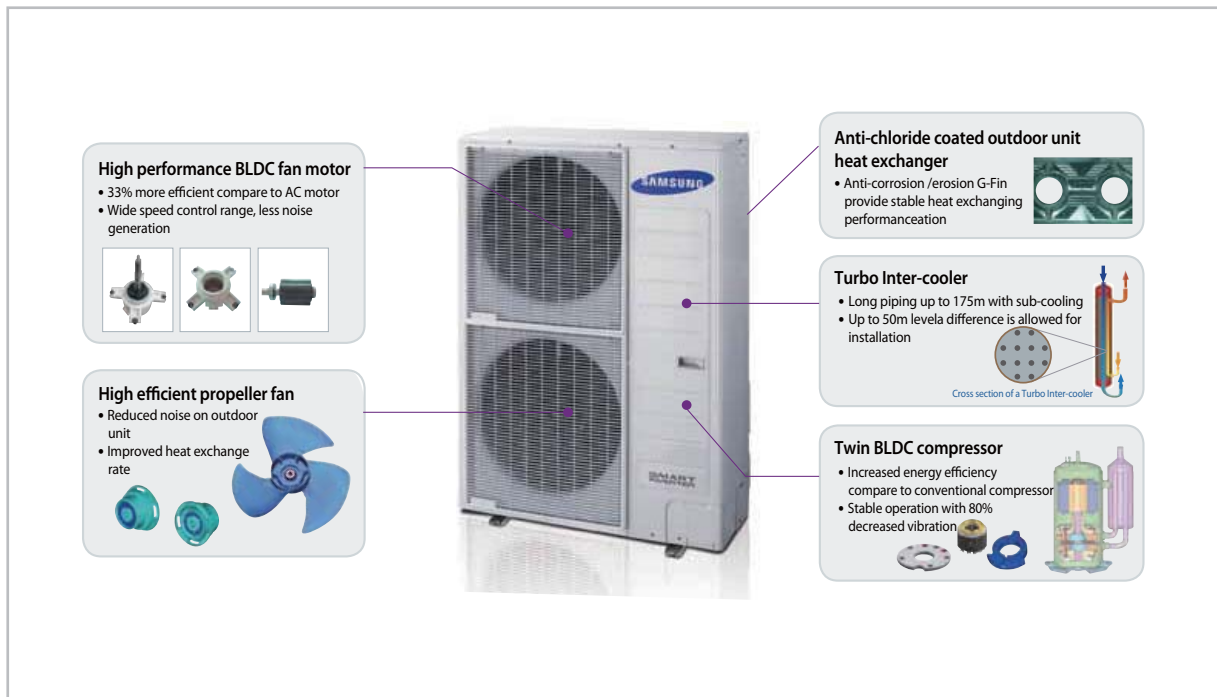
Refer to the service manual in the GSPN(see the rear cover) for the more information.

# 1. Precautions

## 1-1. The Feature of Product

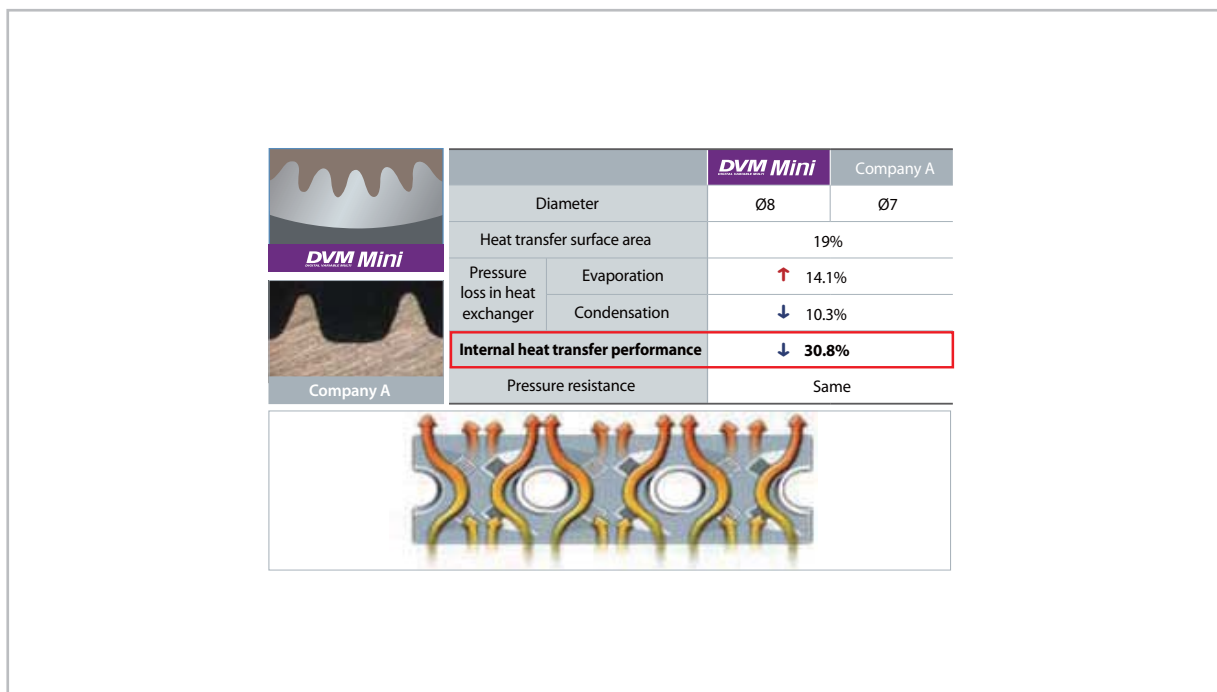
### 1-1-1 Feature

#### ■ Structure of outdoor unit



#### ■ High efficient heat exchanger

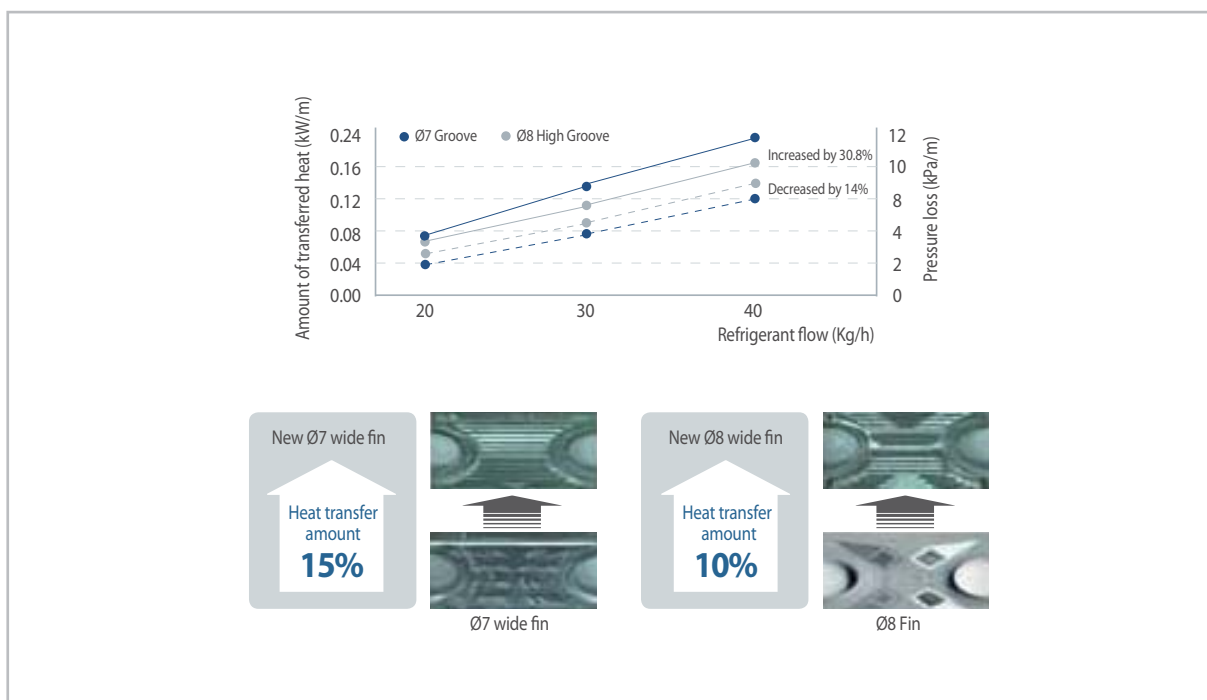
High efficient G-Fin & epoxy acrylic coating has increased heat transfer and hydrophilicity on heat exchanger.



### 1-1-1 Feature (cont.)

#### ■ Application of wide fin

High efficient heat exchanger has been applied, therefore it delays the onset of frost formation and increased heat transfer efficiency.



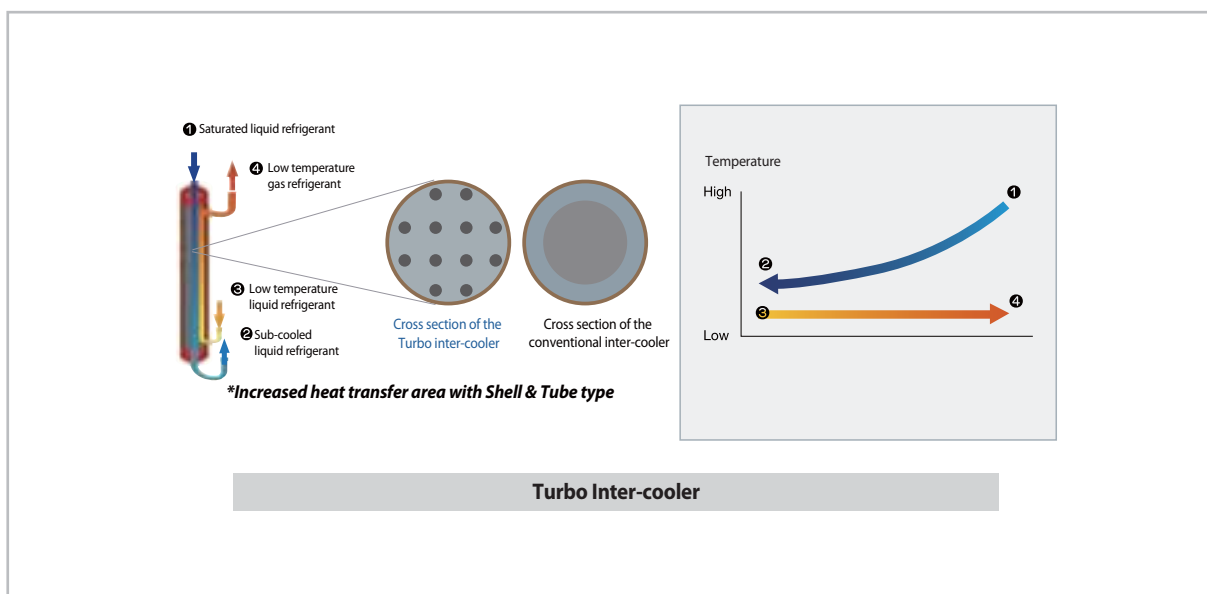
#### ■ Optimized cooling/heating and increased system efficiency! Liquid EEV & Turbo Inter-cooler

##### • Liquid EEV for increased efficiency of the system

Through Liquid EEV, controlling of valve opening has become more efficient and it achieved optimized system efficiency and minimized noise from the refrigerant in the indoor unit.

##### • Turbo Inter-cooler

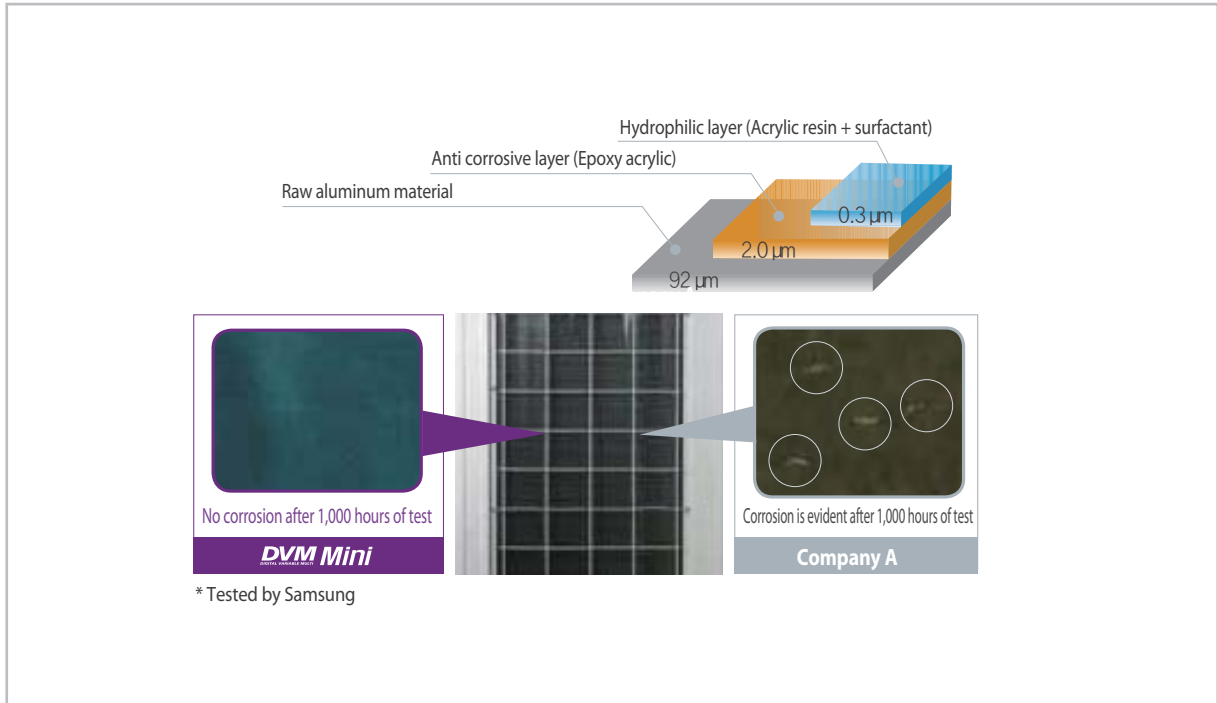
High performing shell & tube type heat exchanger has been applied to secure cooling/heating efficiency. It has secured enough subcooling to acquire reliability on long piping and it also increased cooling/heating efficiency.



### 1-1-1 Feature (cont.)

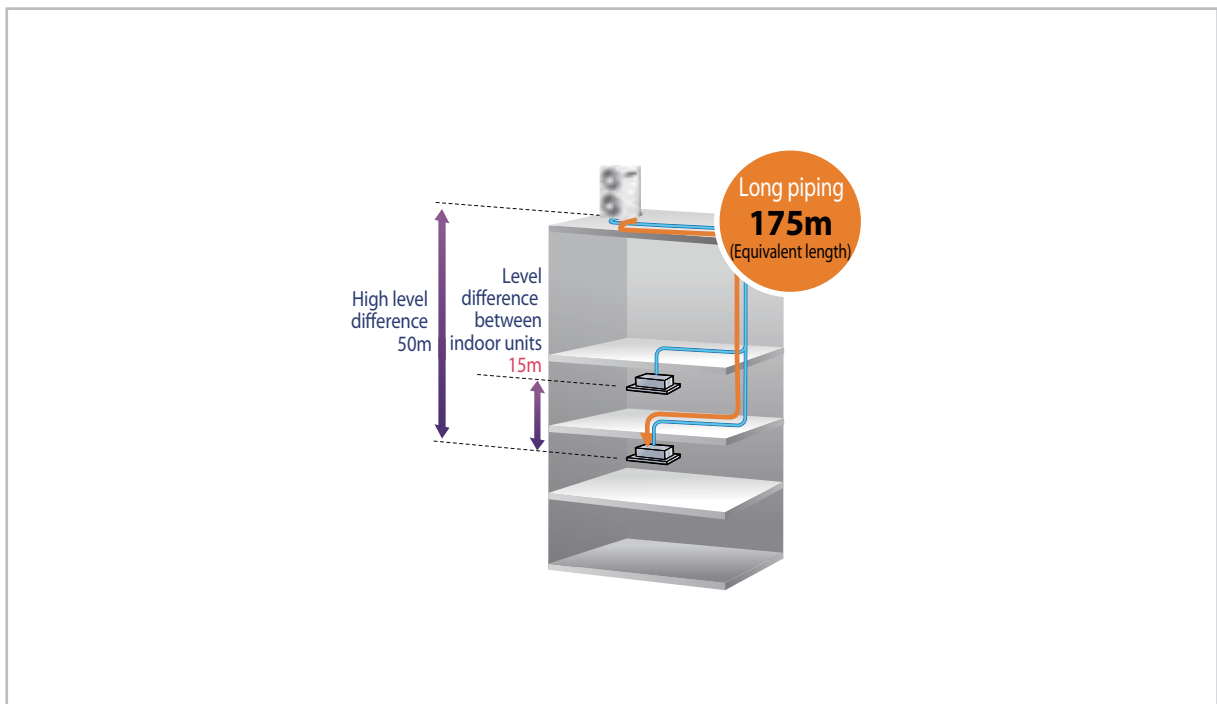
#### ■ Reinforced corrosion resistance on the heat exchanger

To prevent corrosion of the products which is installed in saline area, corrosion resistance has been reinforced.



#### ■ Long piping/High level difference technology

Longest piping length is allowed up to 175m (equivalent length) and Maximum 50m of level difference is allowed for more flexible installation.

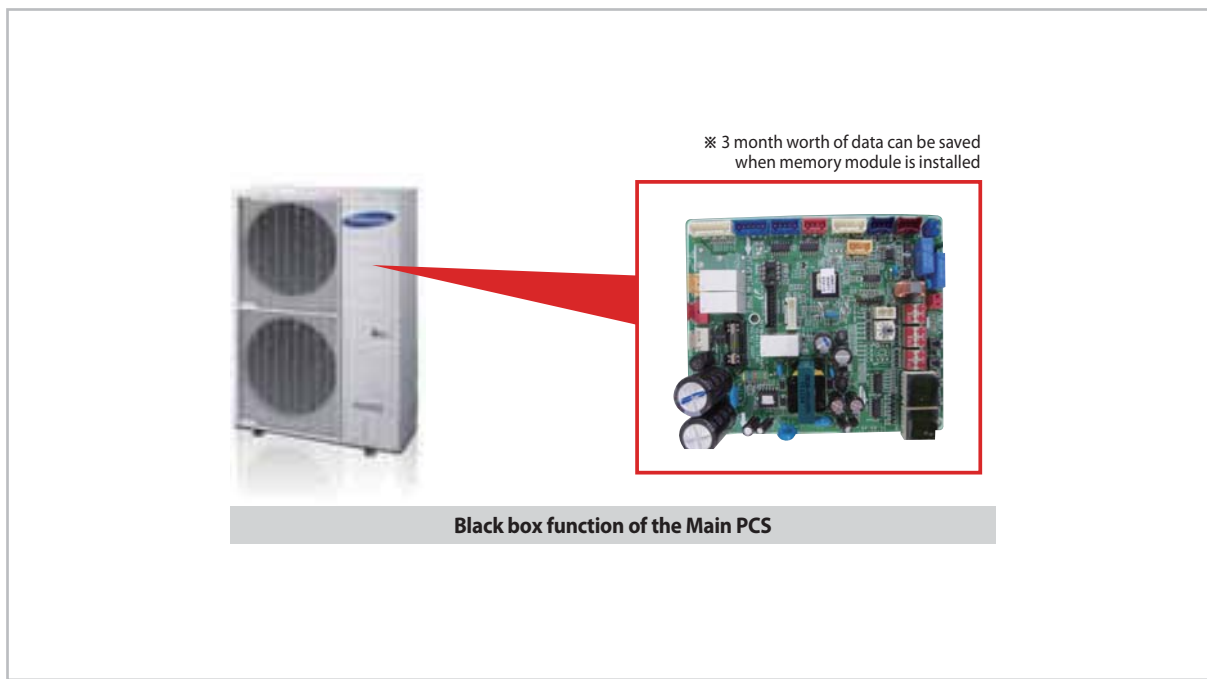


### 1-1-1 Feature (cont.)

#### ■ Memory module

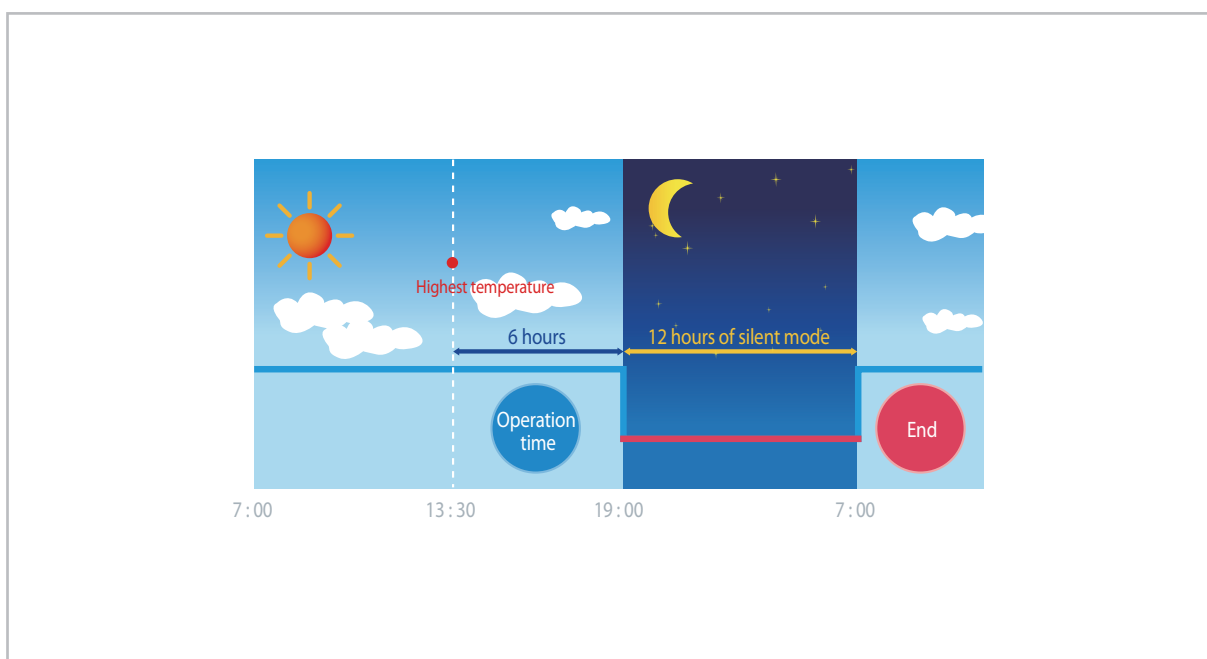
- Achieves world-class efficiency with hyper compressor that applies double compression technology

If outdoor unit malfunction occurs, diagnose and repair of the problem will be much quicker with the last 3 minutes worth of a data saved before the malfunction. (With the extra memory module, 3 months worth of a data can be saved.)



#### ■ Silent operation at nighttime

- When outdoor unit needs to operate more silently during nighttime, silent mode can be set from the outdoor unit option mode.
- Silent mode can be adjusted in 3 levels depending on the level of noise.



### 1-1-1 Feature (cont.)

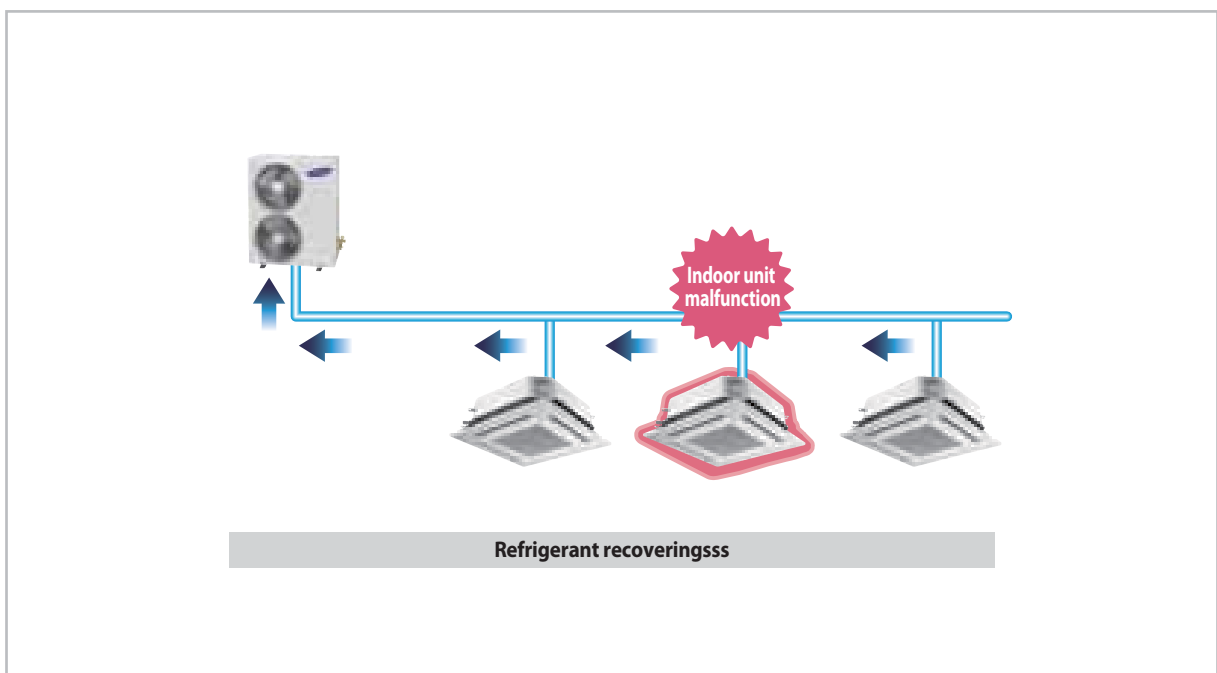
#### ■ Reduced size and light weight

Compare to conventional models, size and weight of the product has been decreased while its performance is more or so the same. Weight of the product is now 76kg, which is 44% lighter than conventional model, which makes moving and installing much easier.



#### ■ Refrigerant pump-down

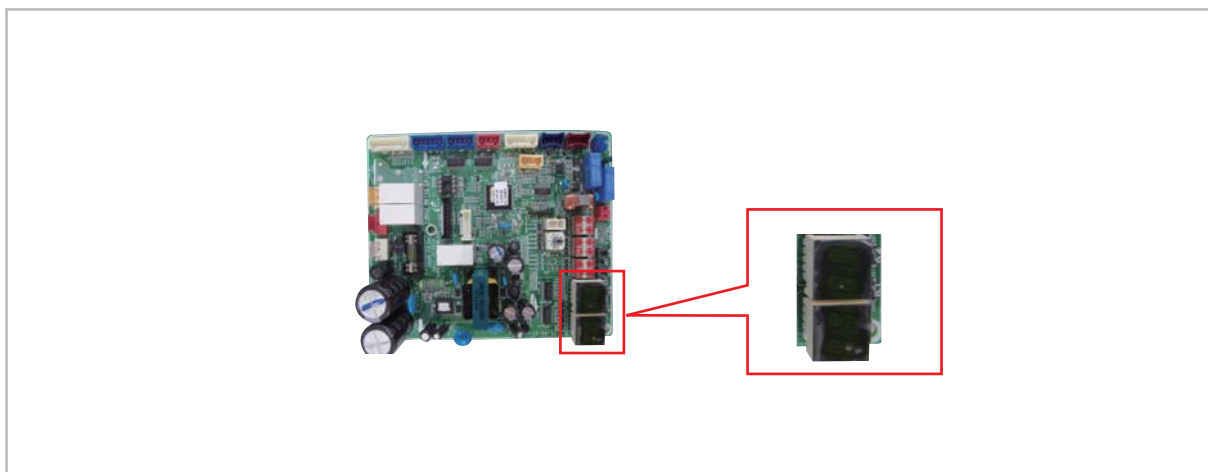
If you need to move/replace the outdoor unit or when there are problems on indoor units or on the pipes, outdoor unit will recover refrigerant remaining on the pipes.



### 1-1-1 Feature (cont.)

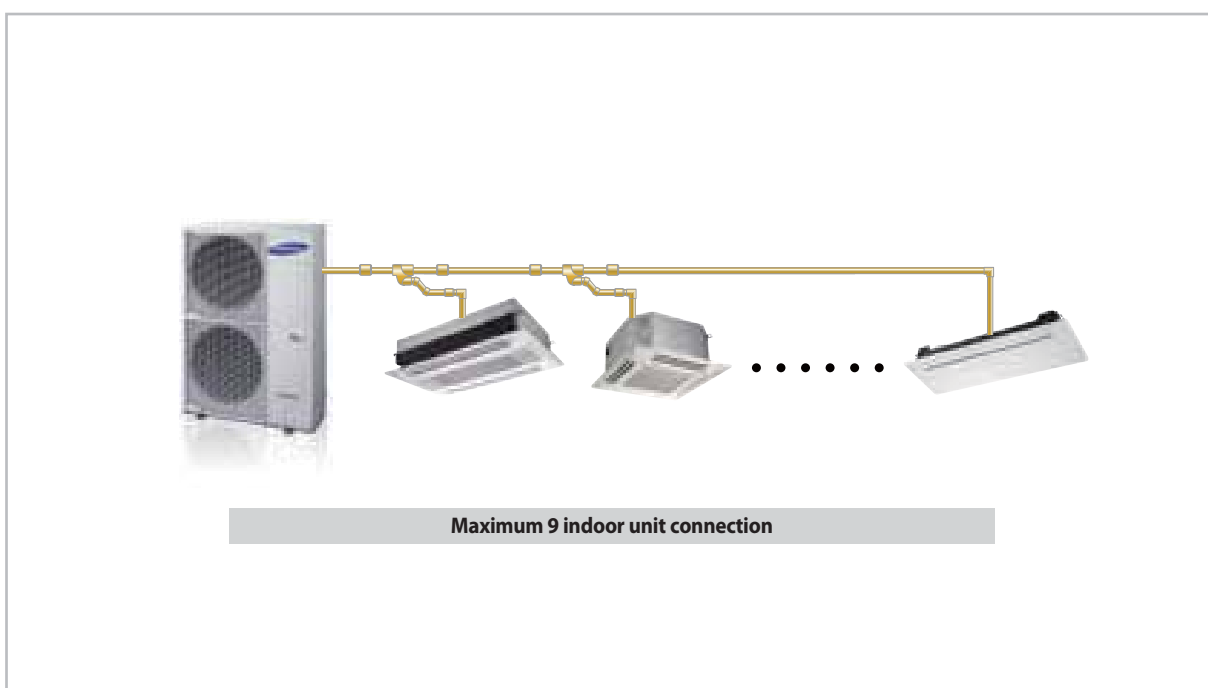
#### ■ System check through View mode

- Through the window on outdoor unit PCB display, you can check the main system data during operation.
- Shortened maintaining and inspection
- Displaying 15 main data including high pressure of system
  - Outdoor temperature
  - Discharge temperature of the compressor
  - Condensing temperature
- Using the DIP switch on the outdoor unit PCB, you can limit the running current of the system



#### ■ Maximum 9 indoor unit connection

You may connect up to 9 indoor units on a single outdoor unit. It will allow more powerful and flexible air conditioning system and you can select refrigerant pipe length, or number of indoor units depending on the needs for office, commercial and residential places.



### 1-1-1 Feature (cont.)

#### ■ Convenient product installation


Service valve is not exposed to keep the neat appearance and pipe can be connected in 4 different directions which provide flexible installation and maintenance services.





## 2. Product Specifications


### 1-2. Product Specifications

Type					
Performance		kW		12.1	14.0
		HP		4	5
Model				AM040KXMDCH/AZ	AM050KXMDCH/AZ
Power Supply(Φ/V/Hz)				1, 208~230V, 60Hz	1, 208~230V, 60Hz
Division				Cooling and heating	Cooling and heating
Performance	Cooling		kW	12.1	14.0
			Kcal/h	41,287	47,770
	Heating		kW	12.1	14.0
			Kcal/h	41,287	47,770
Power	Operating current	Cooling	A	17.5	19.5
		Heating	A	14.0	16.5
	Power consumption	Cooling	kW	3.6	4.0
		Heating	kW	2.9	3.4
Power	Type		-	UG5T450FUEJX	UG5T450FUEJX
	Piston		cc/REV	43.0	43.0
	Output		W	-	-
	Lubricant	Type	-	POE	POE
		Charging	cc	1,700	1,700
Refrigerant	Type		-	R410	R410
	Factory Charging		kg	2.0	2.5
Fan	Type		-	Propeller Fan	Propeller Fan
	Output		W	125.0	125.0
	Airflow rate		CMM	64	70
Pipe	Piping connections	Liquid	Φ,mm	9.52	9.52
		Gas	Φ,mm	15.88	15.88
Cable	Main Power (Below/about 20m)		mm <sup>2</sup>	4(H07RN)	4(H07RN)
	Communication		mm <sup>2</sup>	VCTF0.75~1.5(2P)	VCTF0.75~1.5(2P)
Product size	Net weight		kg	940 x 998 x 330	940 x 998 x 330
	Shipping Weight		kg	1009 x 1124 x 419	1009 x 1124 x 419
	Net dimension(WxHxD)		mm	79.0	83.5
	Shipping dimension(WxHxD)		mm	84.5	89.0
Operating Temp. Range	Cooling		℃	-5.0 ~ 48.0	-5.0 ~ 48.0
	Heating		℃	-20.0 ~ 24.0	-20.0 ~ 24.0

#### 1. Regular Heating/Cooling Capacity

- Cooling Capacity: Figures obtained under the conditions of indoor 27°C DB/19.5°C WB, outdoor 35°C DB, pipe length 7.5m, level difference 0m
- Heating Capacity: Figures obtained under the conditions of indoor 20°C DB, outdoor 7°C DB, pipe length 7.5m, level difference 0m

- The regular heating capacity is based on the outdoor temperature of 7°C. When the outdoor temperature drops below 0°C, the heating capacity may drop as well due to the temperature.

Type					
Performance		kW		12.1	14.0
		HP		4	5
Model				AM040KXMDEH*	AM050KXMDEH*
Power Supply(Φ/V/Hz)				1, 220~240V, 50Hz	1, 220~240V, 50Hz
Division				Cooling and heating	Cooling and heating
Performance	Cooling		kW	12.1	14.0
			Kcal/h	41,287	47,770
	Heating		kW	12.1	14.0
			Kcal/h	41,287	47,770
	-10°C Heating		kW		
Power	Operating current	Cooling	A	17.5	19.5
		Heating	A	14.0	16.5
	Power consumption	Cooling	kW	3.6	4.0
		Heating	kW	2.9	3.4
Power	Type		-	UG5T450FUEJX	UG5T450FUEJX
	Piston		cc/REV	43.0	43.0
	Output		W	-	-
	Lubricant	Type	-	POE	POE
		Charging	cc	1,700	1,700
Refrigerant	Type		-	R410	R410
	Factory Charging		kg	2.0	2.5
Fan	Type		-	Propeller Fan	Propeller Fan
	Output		W	125.0	125.0
	Airflow rate		CMM	64	70
Pipe	Piping connections	Liquid	Φ,mm	9.52	9.52
		Gas	Φ,mm	15.88	15.88
Cable	Main Power (Below/about 20m)		mm <sup>2</sup>	4(H07RN)	4(H07RN)
	Communication		mm <sup>2</sup>	VCTF0.75~1.5(2P)	VCTF0.75~1.5(2P)
Product size	Net weight		kg	940 x 998 x 330	940 x 998 x 330
	Shipping Weight		kg	1009 x 1124 x 419	1009 x 1124 x 419
	Net dimension(WxHxD)		mm	79.0	83.5
	Shipping dimension(WxHxD)		mm	84.5	89.0
Operating Temp. Range	Cooling		℃	-5.0 ~ 48.0	-5.0 ~ 48.0
	Heating		℃	-20.0 ~ 24.0	-20.0 ~ 24.0

1. Regular Heating/Cooling Capacity







- Cooling Capacity: Figures obtained under the conditions of indoor 27°C DB/19.5°C WB, outdoor 35°C DB, pipe length 7.5m, level difference 0m

- Heating Capacity: Figures obtained under the conditions of indoor 20°C DB, outdoor 7°C DB, pipe length 7.5m, level difference 0m

2. The regular heating capacity is based on the outdoor temperature of 7°C. When the outdoor temperature drops below 0°C, the heating capacity may drop as well due to the temperature.

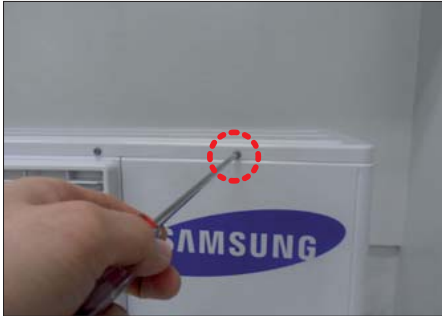

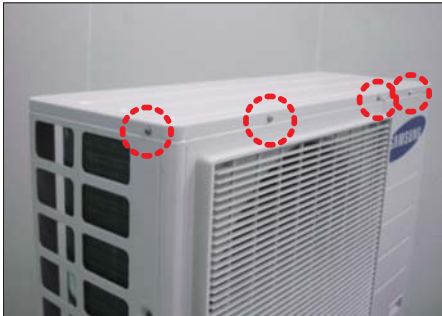


## 3. Disassembly and Reassembly


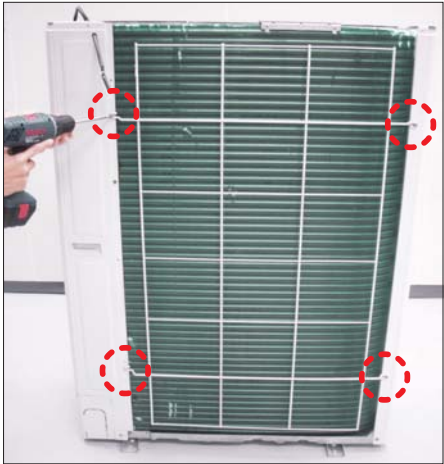

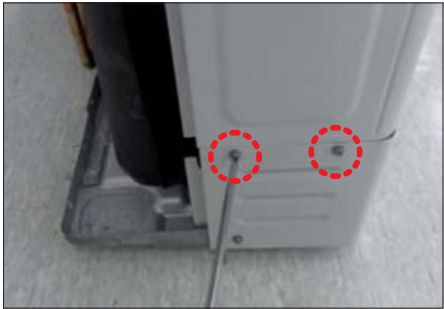
### 3-1. Necessary Tools

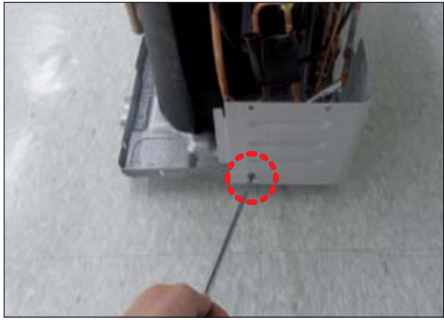
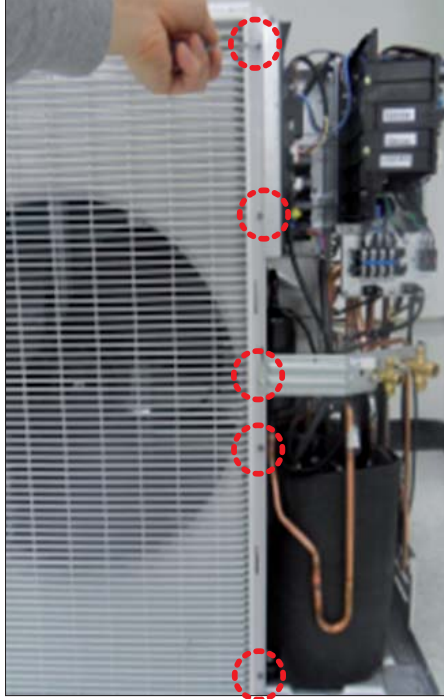
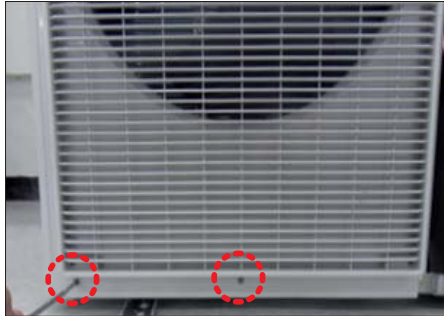
Item	Remark
+Screw Driver	
Monkey Spanner	
-Screw Driver	
Nipper	
Electric Motion Driver	
L-Wrench	

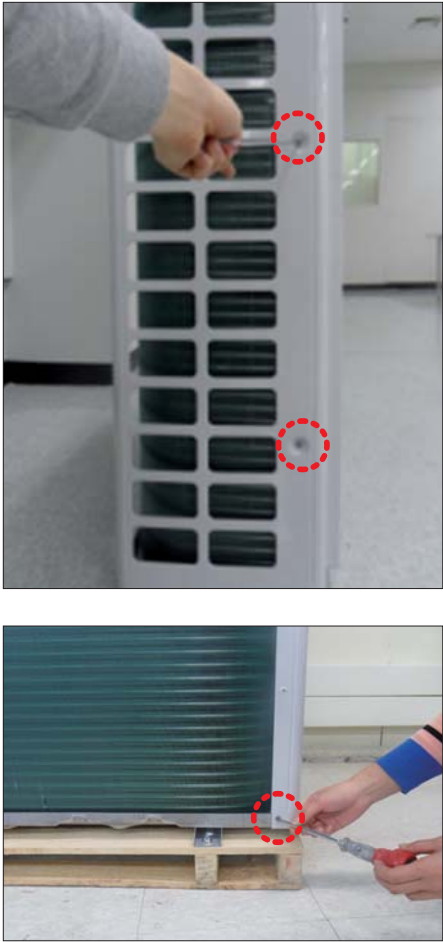

- Disassembly and reassembly of DVM MINI : Refer to the product of the same structure.  
This chapter, only the product which is not duplicated in the other products listed.

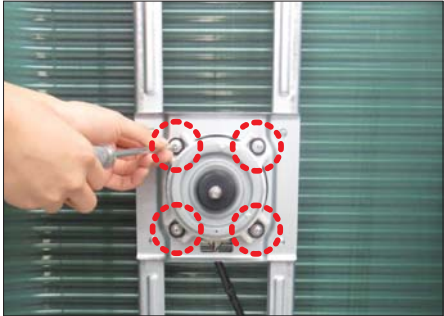
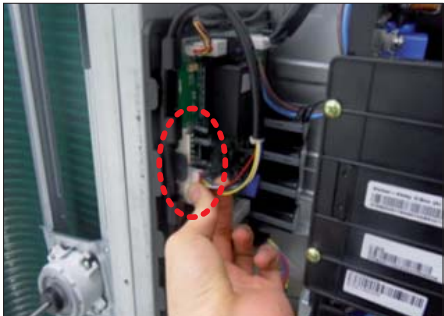

**3-2. AM040/050KXMDEH\*, AM040/050KXMDCH\***

No	Parts	Procedure	Remark
1	Cabi Front RH	<p><b>⚠ You must turn off the Power before disassembly.</b></p> <p>1) Remove the 2 mounting screw in the Cabinet Front RH and separate it. (Use + Screw Driver)</p>	 
2	Cabi Top	<p>1) Remove the 9 screws on each side of the Cabinet-Top and separate it. (Use +Screw Driver)</p>	 
3	Cabi-Install front part	<p>1) Remove the 1 screw in the Cabinet-Install Front part and separate it. (Use +Screw Driver)</p>	


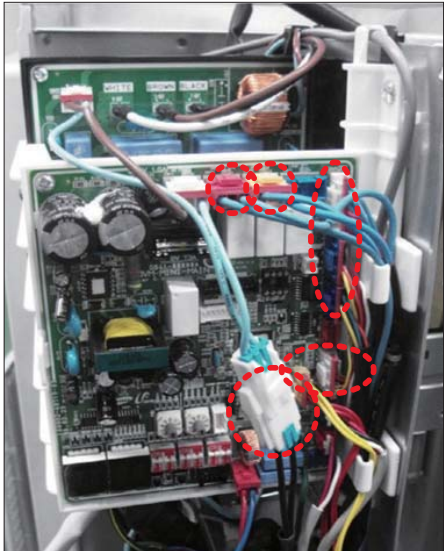
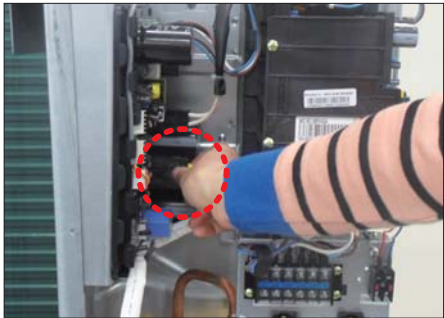
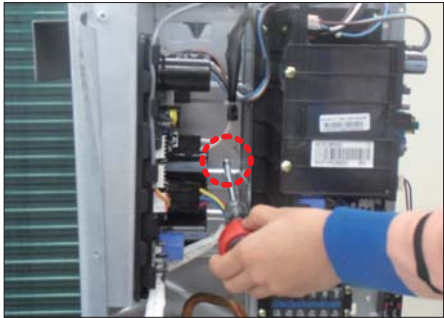
No	Parts	Procedure	Remark
4	Outdoor Unit Guard	<p>1) Pull the sensor from Outdoor Unit Guard.</p> <p>2) Remove the 4 screws in the Outdoor Unit Guard and separate it. (Use + Screw Driver)</p>	 
5	Cabi Back RH	<p>1) Remove the 4 screws on each side of the Cabinet Back RH and separate it. (Use + Screw Driver)</p>	 

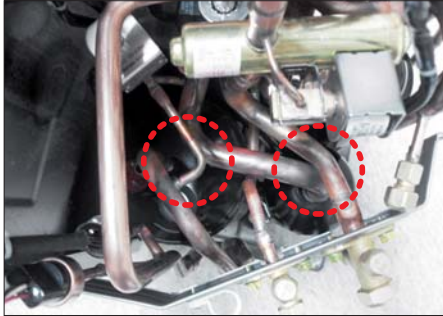

No	Parts	Procedure	Remark
6	Cabi-Install Back	1) Remove the 1 screw in the Cabinet-Install Back and separate it. (Use +Screw Driver)	
7	Cabi Front LF	1) Remove the 10 screws in the Cabinet-Front LF and separate it. (Use +Screw Driver)	 

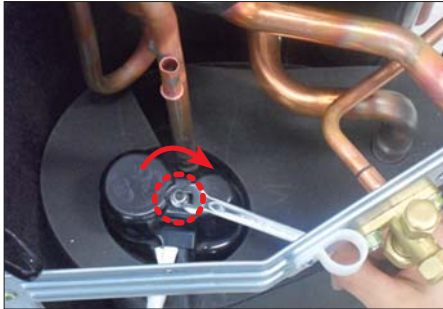




No	Parts	Procedure	Remark
			
8	Fan	<p>1) Turn 2 mounting nuts as shown in the picture and remove it. (Use L Wrench or Monkey Spanner or Socket Wrench)</p>	

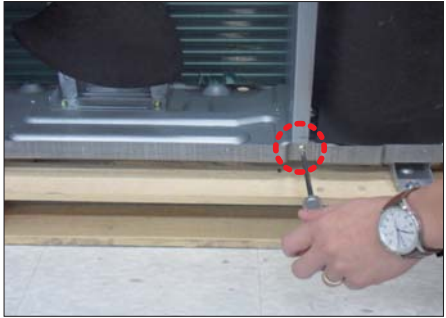
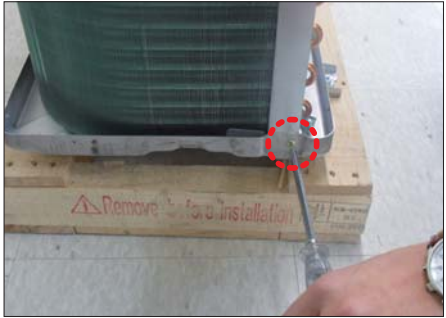
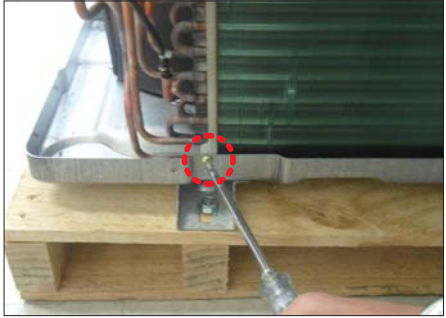
No	Parts	Procedure	Remark
9	Motor	<p>1) Separate the Fan Propeller.</p> <p>2) Remove the 8 Motor mounting screws and separate it. (Use +Screw Driver)</p> <p>3) Disconnect the Motor wire from Assy Control Out.</p> <p>⚠ Motor connection part : Can be different according to model.</p>	 
10	Bracket Motor	<p>1) Remove the 2 mounting screws in Bracket Motor and separate it. (Use + Screw Driver)</p>	



No	Parts	Procedure	Remark
11	Control Out	<p>1) Disconnect 4 Connectors from Assy Control Out.</p> <p> Number of connectors, that can be disconnected, may different depending on the model. (From 4~8)</p> <p>2) Remove the 1 mounting screw in Control Out and separate it. (Use + Screw Driver.)</p> <p>3) Separate the Assy Control Out.</p>	  

No	Parts	Procedure	Remark
12	ASS'Y TUBE VALVE	<p>1) Priority refrigerant remove.</p> <p>2) Using welding machine with picture 5 places of a pipe disjoint.</p> <p>⚠ When remove Compressor, Heat Exchanger, a pipe, remove perfectly refrigerant of Compressor inside first, and disjoint a pipe by welding machine.</p>	 

No	Parts	Procedure	Remark
13	Compressor	<p>1) Fixed 1 screw of cover end part remove. (Use Hexagonal Wrench or Monkey Spanner or Hexagonal Socket.)</p> <p>2) Remove the Compressor felt.</p> <p>3) Like picture, remove the 3 screws fixed on bottom and separate it. (Use Hexagonal Wrench or Monkey Spanner or Hexagonal Socket.)</p>	    

No	Parts	Procedure	Remark
14	Assy Cond Out	1) Remove the 3 screws that is fixing each side of Assy Cond Out and separate it. (Use +Screw Driver.)	  

## 4. Troubleshooting

### 4-1. Error Display



AM040/050KXMDCH\*, AM040/050KXMDCH\*



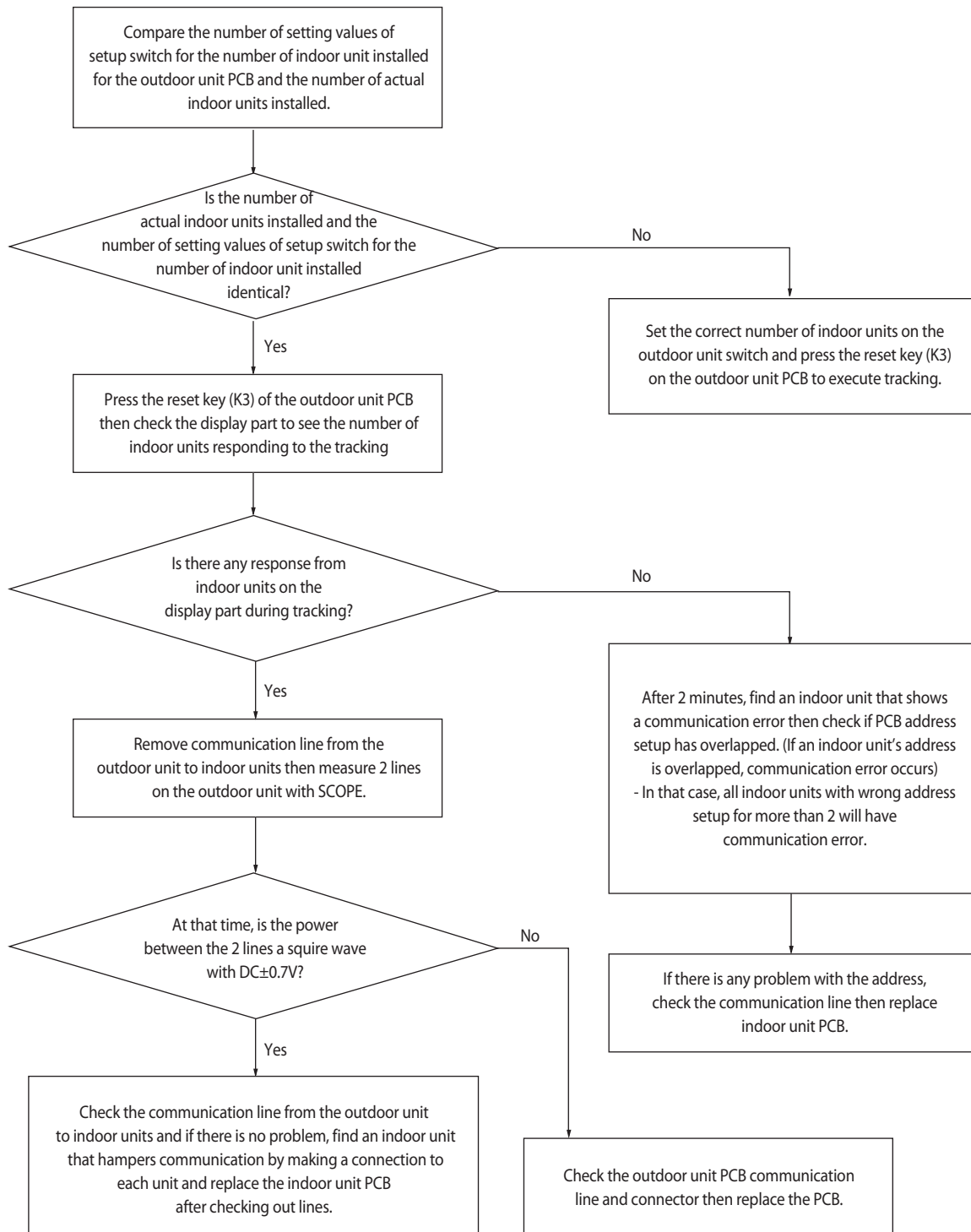
## 4-2. Error Code

No.	Code	Description
1	E201	Communication error between indoor and outdoor unit (Tracking failure or the setting quantity/address of indoor unit in outdoor unit's PCB differs from the quantity/address of installed indoor unit.)
2	E202	Communication error between indoor and outdoor unit. (All the indoor communication error, outdoor communication cable error.)
3	E203	Communication error between main and sub micom or communication error between main and sub outdoor units.
4	E221	Error on ambient temperature sensor of outdoor unit. (Open or Short)
5	E251	Error on discharge temperature sensor of compressor. (Open or Short)
6	E231	Error on Cond-out temperature sensor of outdoor unit. (Open or Short)
7	E286	Middle pressure sensor error (Open/Short)
8	E291	High pressure sensor error (Open/Short)
9	E296	Low pressure sensor error (Open/Short)
10	E308	Suction sensor error (Open/Short)
11	E311	Double tube sensor error (Open/Short)
12	E403	Antifreeze error
13	E407	Compressor stop by high pressure protection control
14	E410	Compressor stop by low pressure protection control
15	E416	Compressor stop by discharge temperature protection control
16	E419	EEV open error
17	E425	Reverse phase detection error
18	E438	EVI EEV open error
19	E439	Refrigerant leakage error (during stop status)
20	E440	Prohibition of heating operation when the ambient temperature is over 30°C
21	E441	Prohibition of cooling operation when the ambient temperature is below -15°C
22	E443	Refrigerant leakage error (during operation)
23	E449	Compressor stop by middle pressure protection control
24	E458	Outdoor fan 1 error
25	E460	Power or voltage in connection wire between indoor-outdoor unit
26	E461	Compressor starting error
27	E462	Total current protection control, compressor stops
28	E463	OLP temperature control, compressor stops
29	E464	IPM over current error
30	E465	Compressor overload error
31	E466	DC-Link voltage under/over error
32	E467	Compressor rotation error
33	E468	Current sensor error
34	E469	DC LINK voltage sensor error
35	E470	EEPROM read/write error
36	E471	EEPROM unmatching error
37	E474	Heat sink temperature error
38	E475	Outdoor fan 2 error
39	E484	PFC overload
40	E485	Input current sensor error
41	E500	Heat sink overheat
42	E554	Gas leak error

### 4-3. How to take measures for each symptom

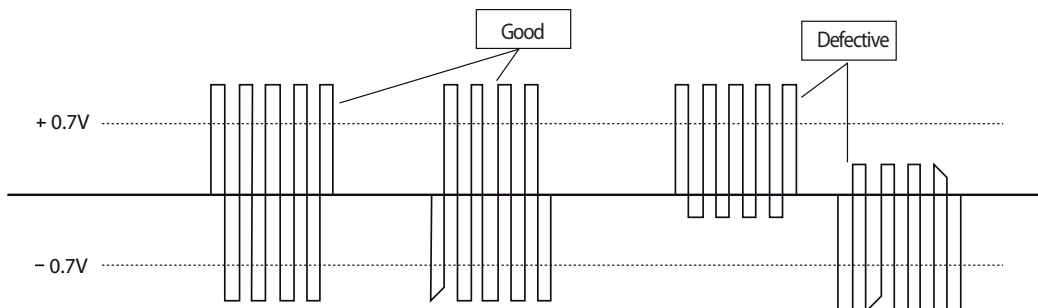
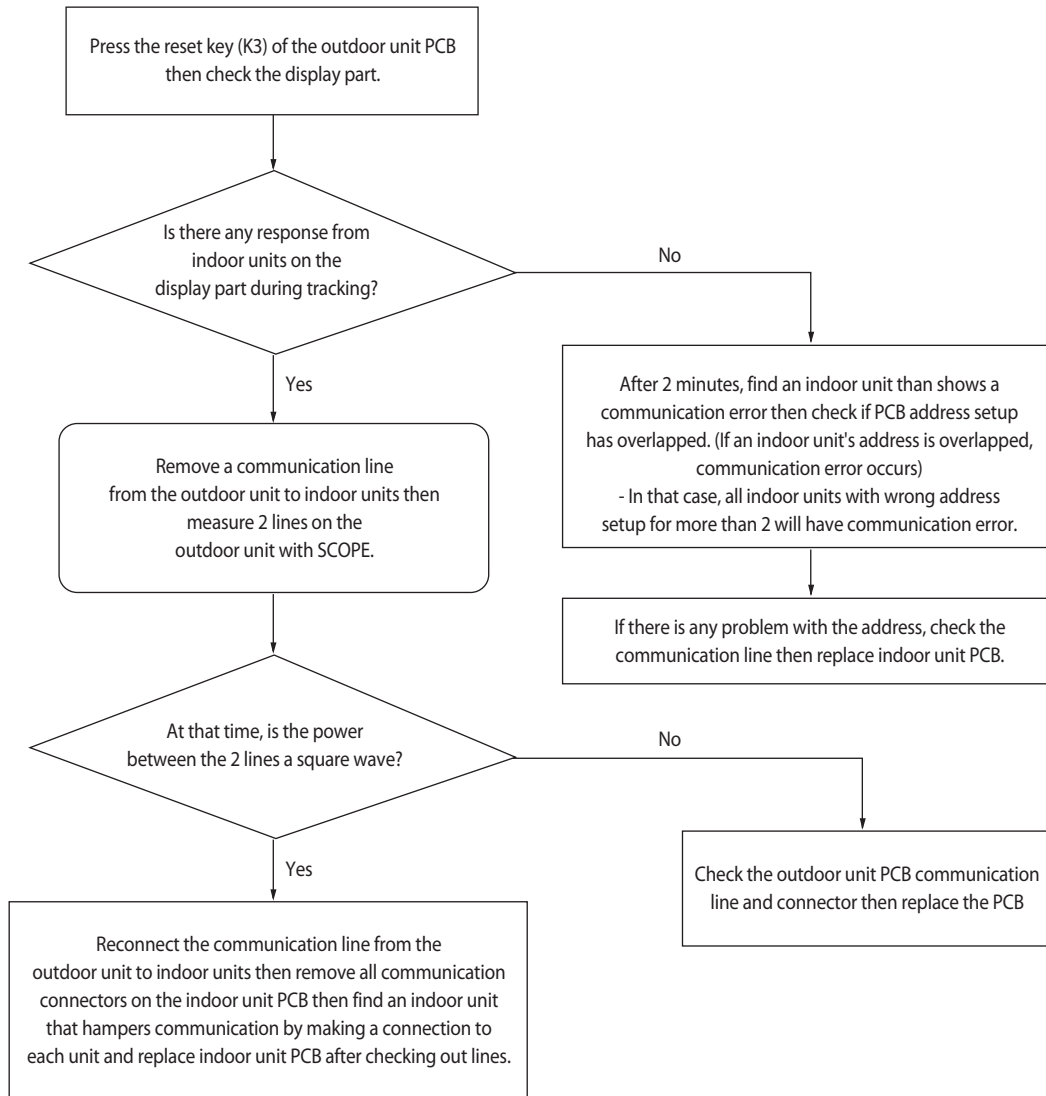
#### 4-3-1 Communication error between indoor and outdoor units during tracking (Error Code : E201)

##### 1. How to check



### 4-3-2 Communication error between indoor and outdoor units after completing tracking (Error Code : E202)

#### 1. How to check



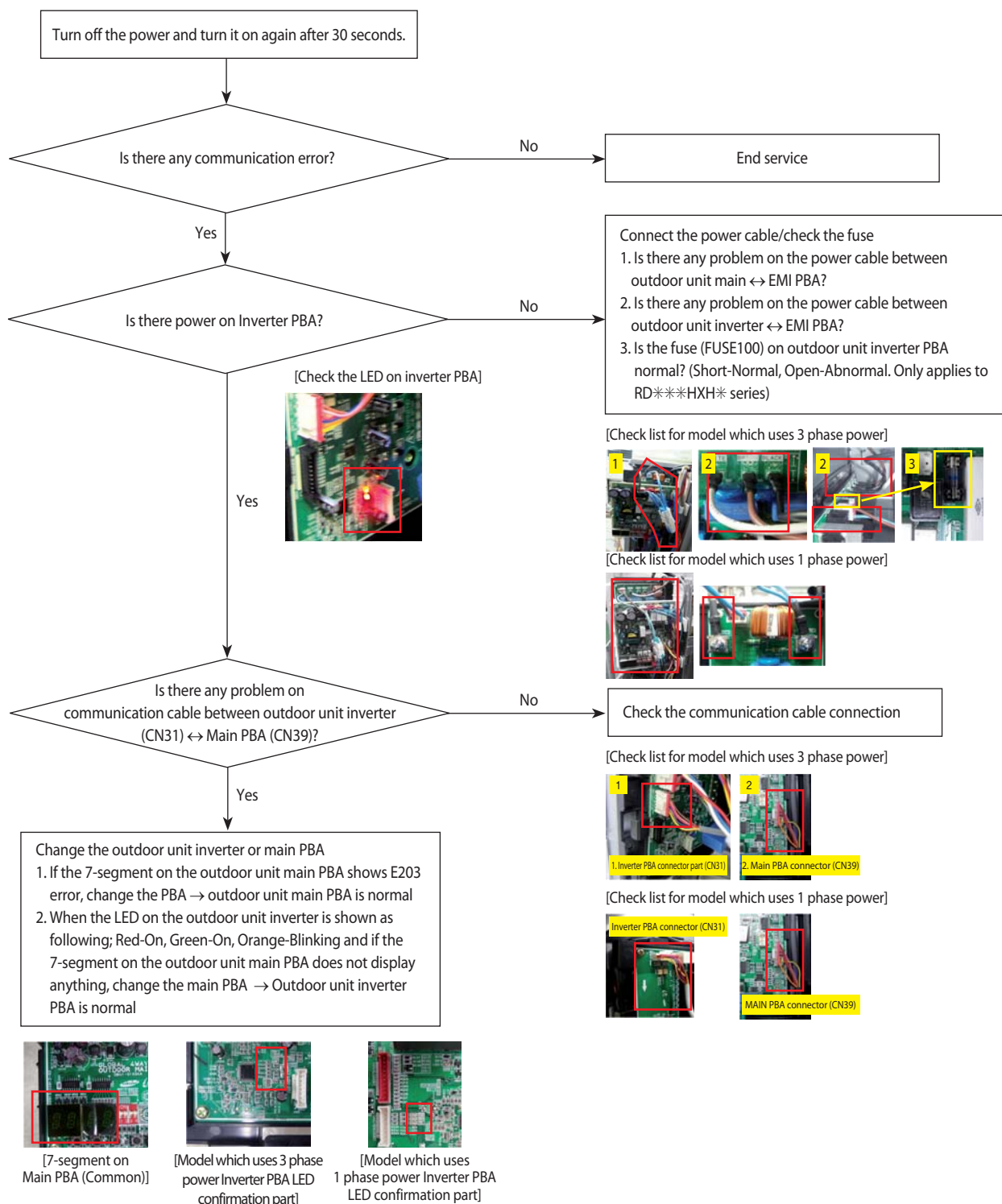


### 4-3-3 Communication error (1 minute) between Main MICOM of an Outdoor unit INV (Error Code : E203 )

#### 1. Check items

- 1) Is there power on outdoor unit inverter PBA?
- 2) Connect the power cable/check the fuse.
- 3) Is there any problem on communication cable between outdoor unit inverter (CN31) ↔ Main PBA (CN39)?
- 4) Check the communication cable connection.

#### 2. Check procedure



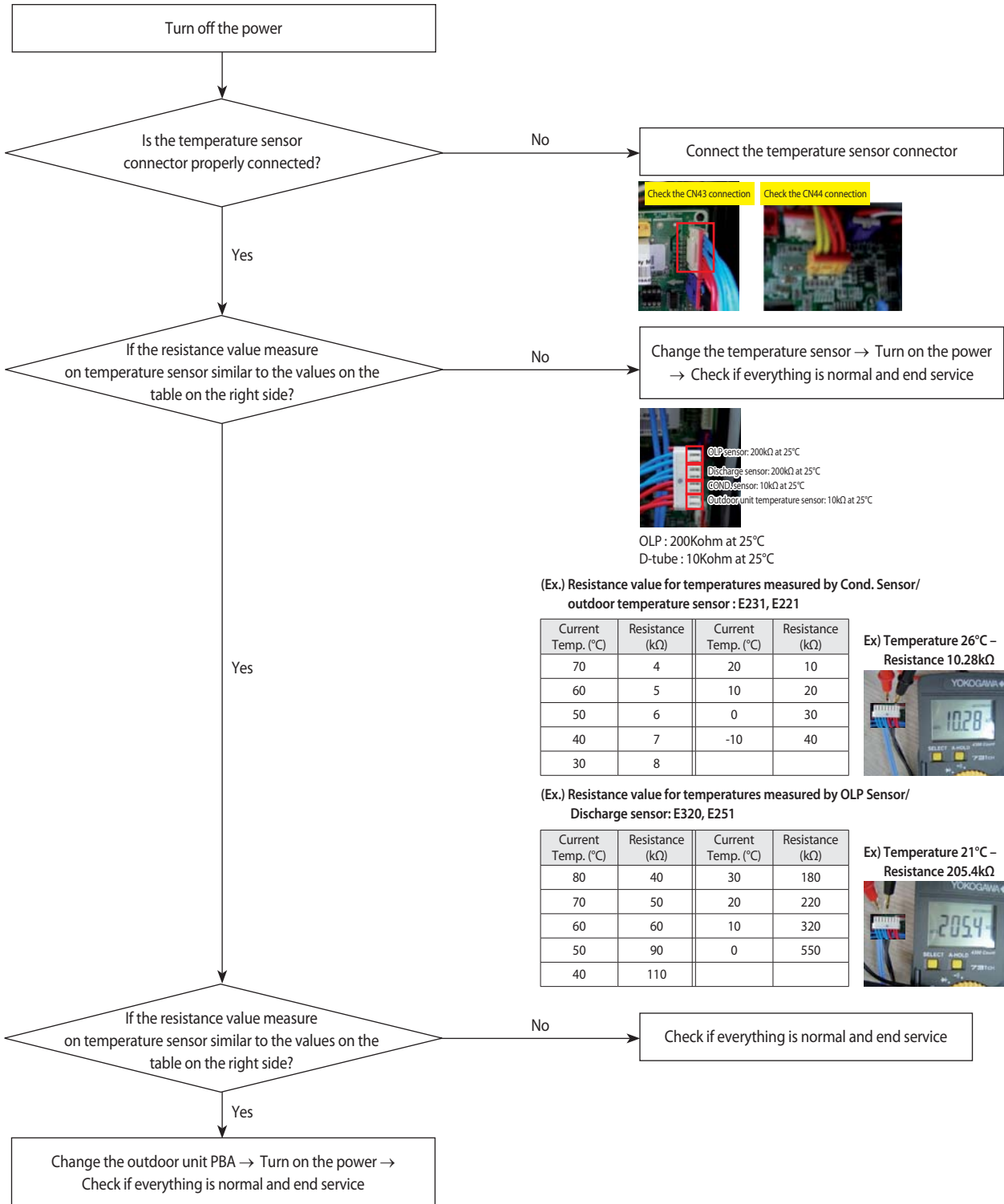
### 4-3-4 Outdoor temperature sensor error (Error Code : E221, E231, E251, E269)

1. Check items

- 1) Check the temperature sensor connector
- 2) Check the resistance value of outdoor temperature

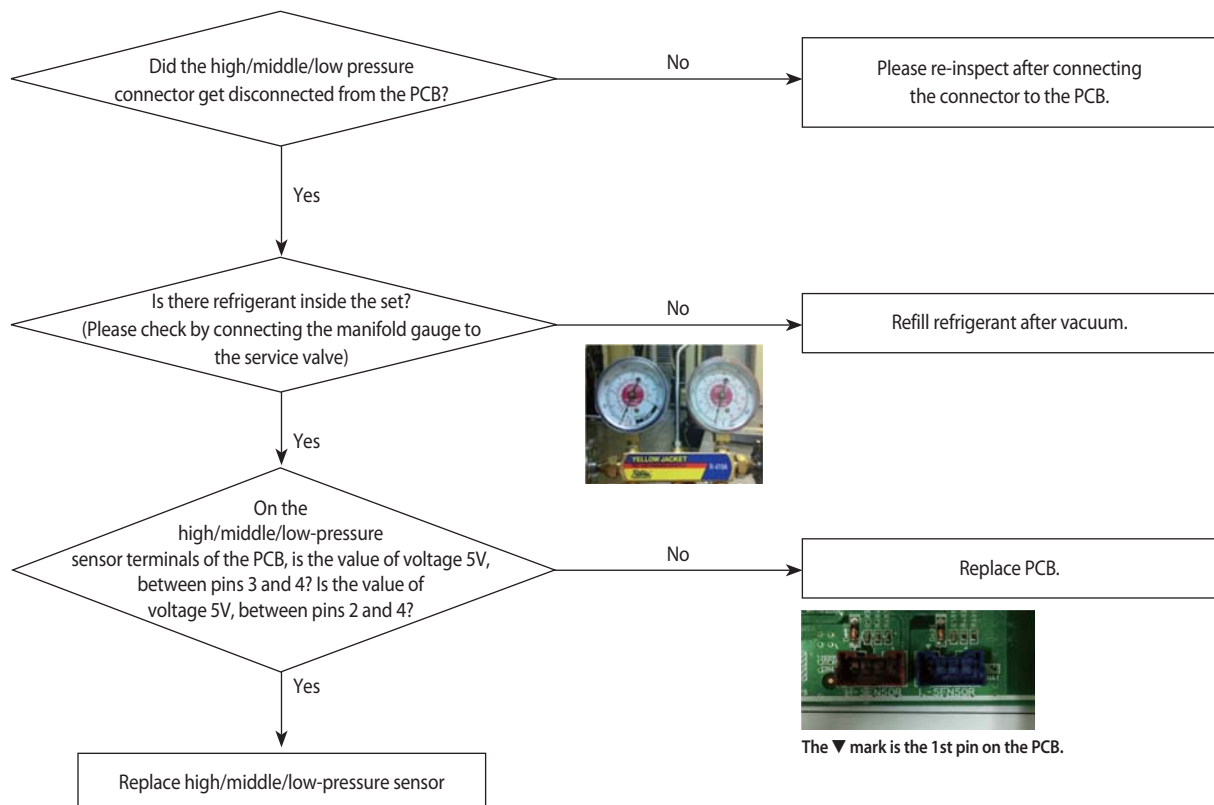
Error code	Error explanation	Error code	Error explanation
E221	Outdoor unit temperature sensor Error	E320	Indoor unit OLP sensor Error
E231	Outdoor unit COND.sensor Error	E308	Suction temperature sensor error
E251	Outdoor unit discharge sensor Error	E311	Double tube temperature sensor error

2. Check procedure



#### 4-3-5 High pressure temperature sensor error (Open/Short) (Error Code : E291) Low pressure temperature sensor error (Open/Short) (Error Code : E296) Middle pressure temperature sensor error (Open/Short) (Error Code : E286)

1. High/Middle/low pressure sensor OPEN/SHORT error determination method.
  - 1) Identifies from when power is supplied or 2 minutes after RESET, and only when set is stopped.
  - 2) An OPEN/SHORT error will occur if the input voltage standard exceeds 0.5V ~ 4.95V range.
2. How to check

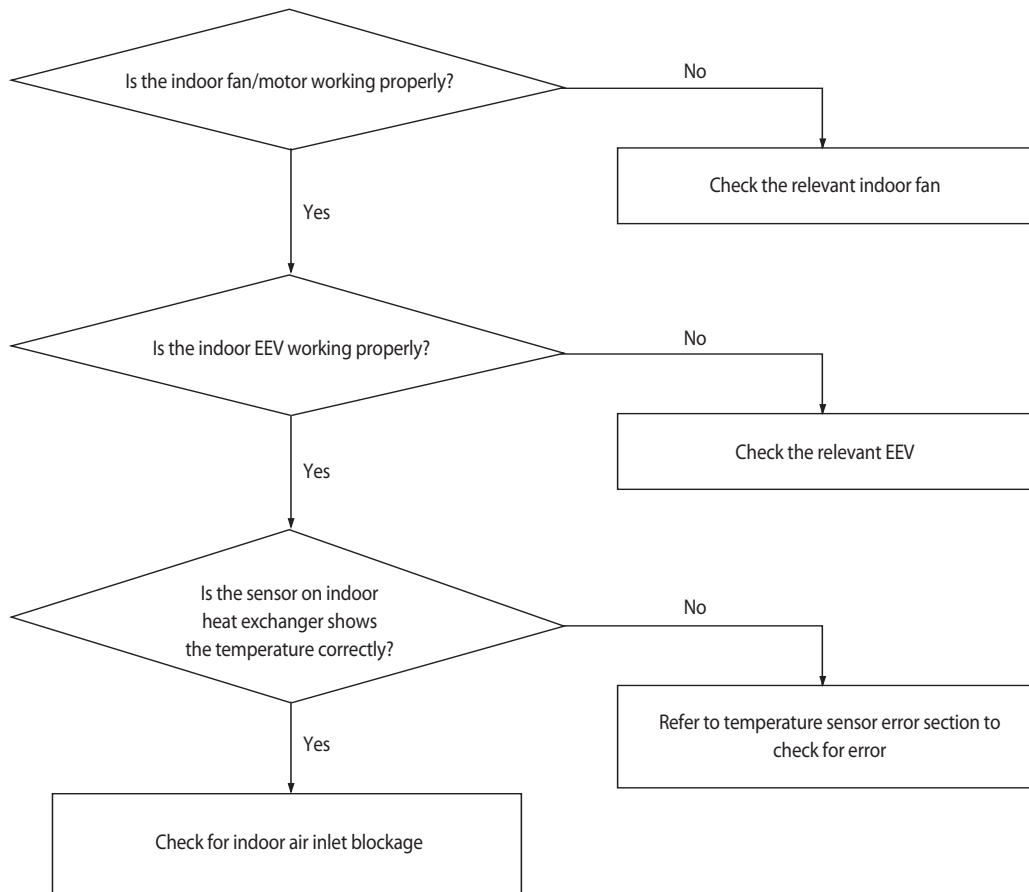


#### 4-3-6 Compressor down by antifreeze control (Error Code: E403)

##### 1. Check items

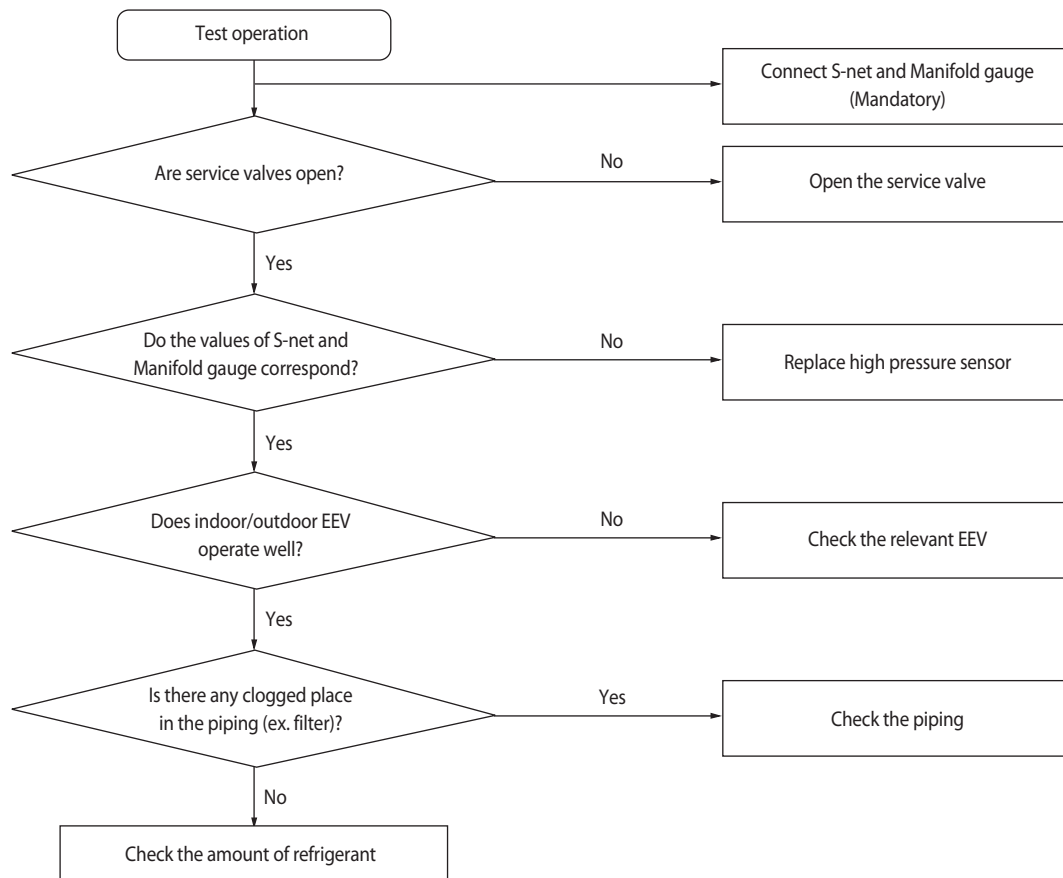
- 1) Check if the indoor fan/motor is working properly
- 2) Check if the indoor EEV is working properly
- 3) Check the indoor heat exchanger IN/OUT sensor
- 4) Check if the indoor air inlet blocked

##### 2. How to check



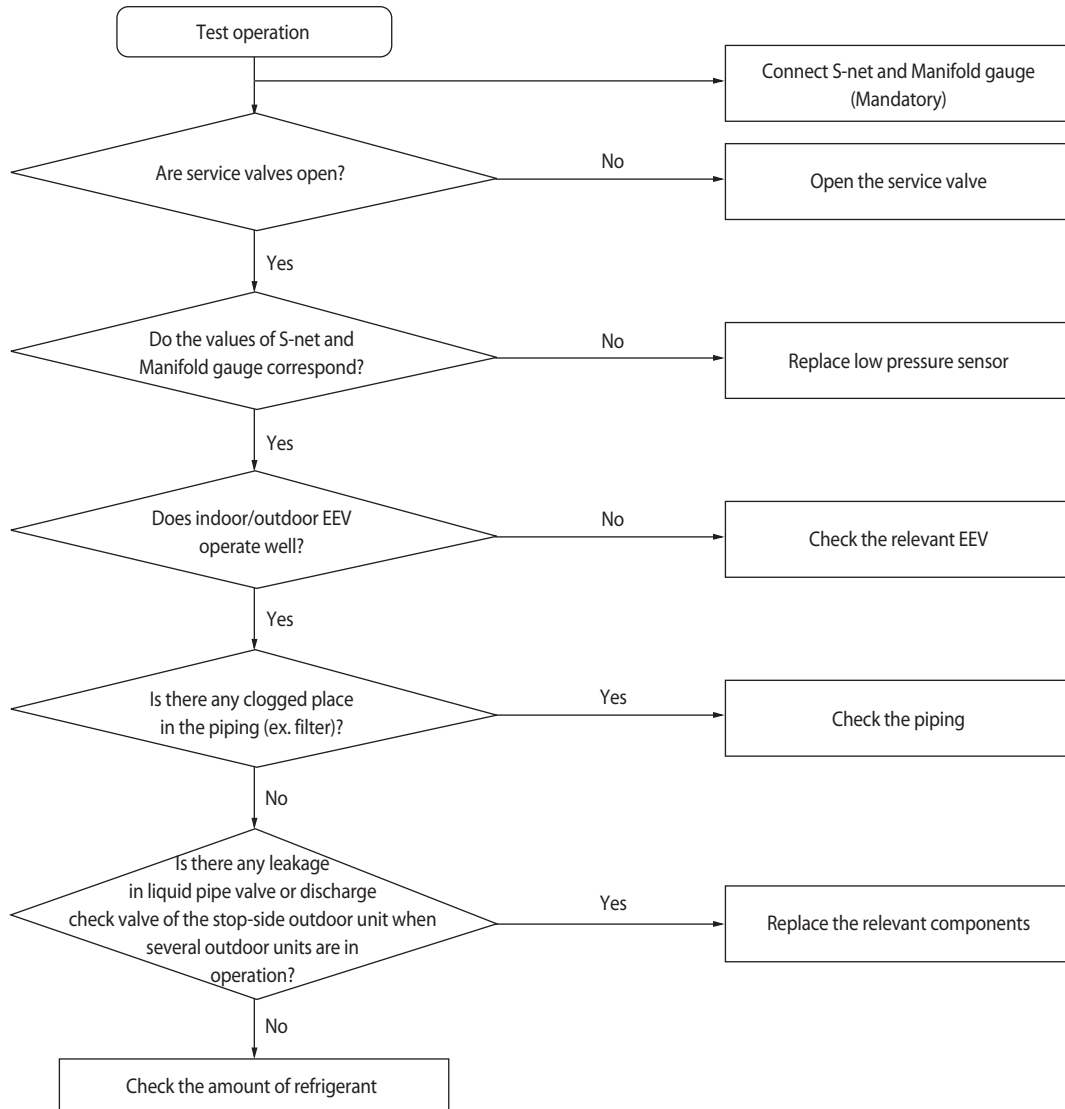
### 4-3-7 Comp. down due to a protective control of high pressure (Error Code : E407)

#### 1. How to check



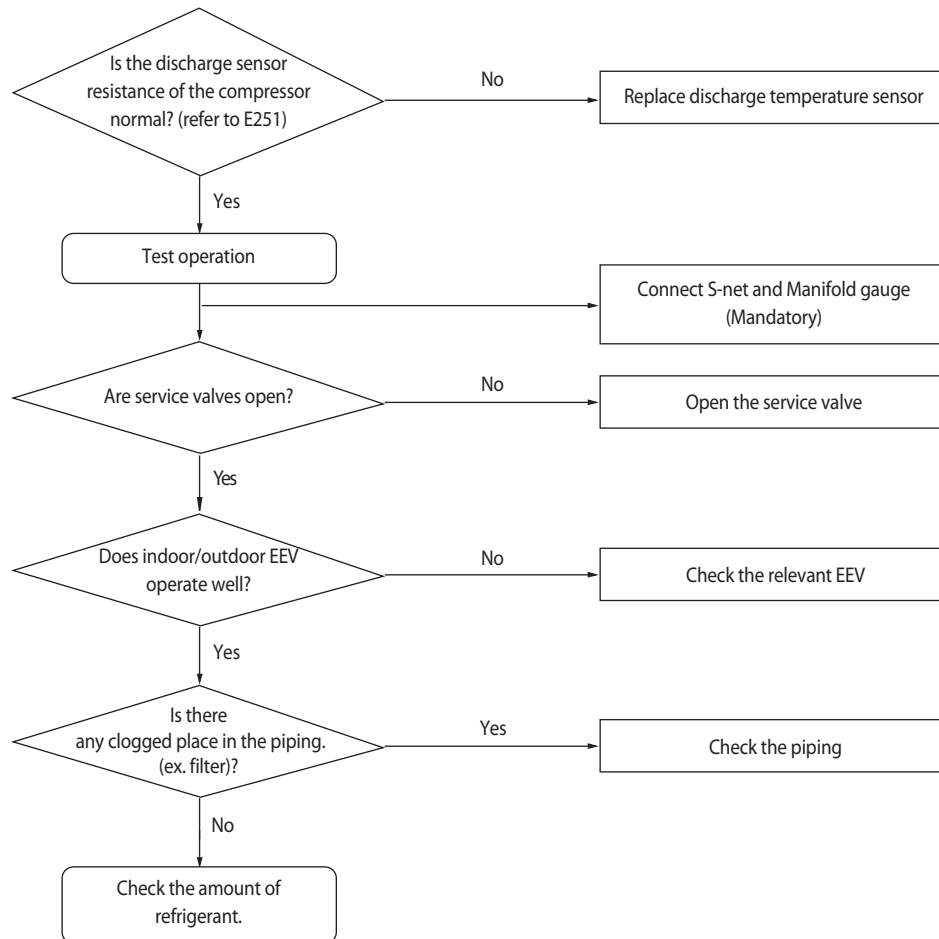
### 4-3-8 Comp. down due to a protective control of low pressure (Error Code : E410)

#### 1. How to check



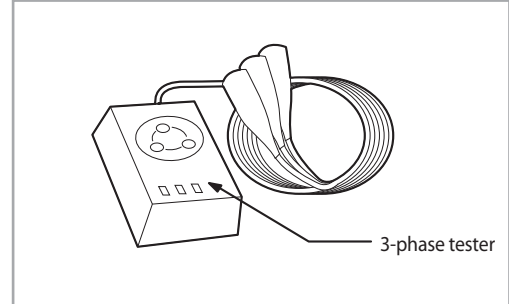
### 4-3-9 Comp. down due to a discharge temperature sensor of a compressor (Error Code : E416)

#### 1. How to check



#### 4-3-10 Reverse phase detection error (3Phase outdoor unit) (Error Code : E425)

1. When power is on, it checks the power status used for 3-phase power compressor.  
When the order of 3-phase L1(R) – L2(S) – L3(T) is changed (reversed) or there is a phase that does not receive power (phase fail), it will display [E425] and the air conditioner will stop operating.
  - 1) Check the voltage on L1(R) – L2(S) phase/ L1(R) – L3(T) phase/ L2(S) – L3(T) phase.
  - 2) When there is any terminal that does not have normal voltage, check the external power of the air conditioner and take appropriate measures.
  - 3) If 3-phase power is normal check the phase of the power line using 3-phase tester. If it shows reverse phase, please change the current power line connection.
  - 4) After completing above, press reset key (K3) then check the power again.



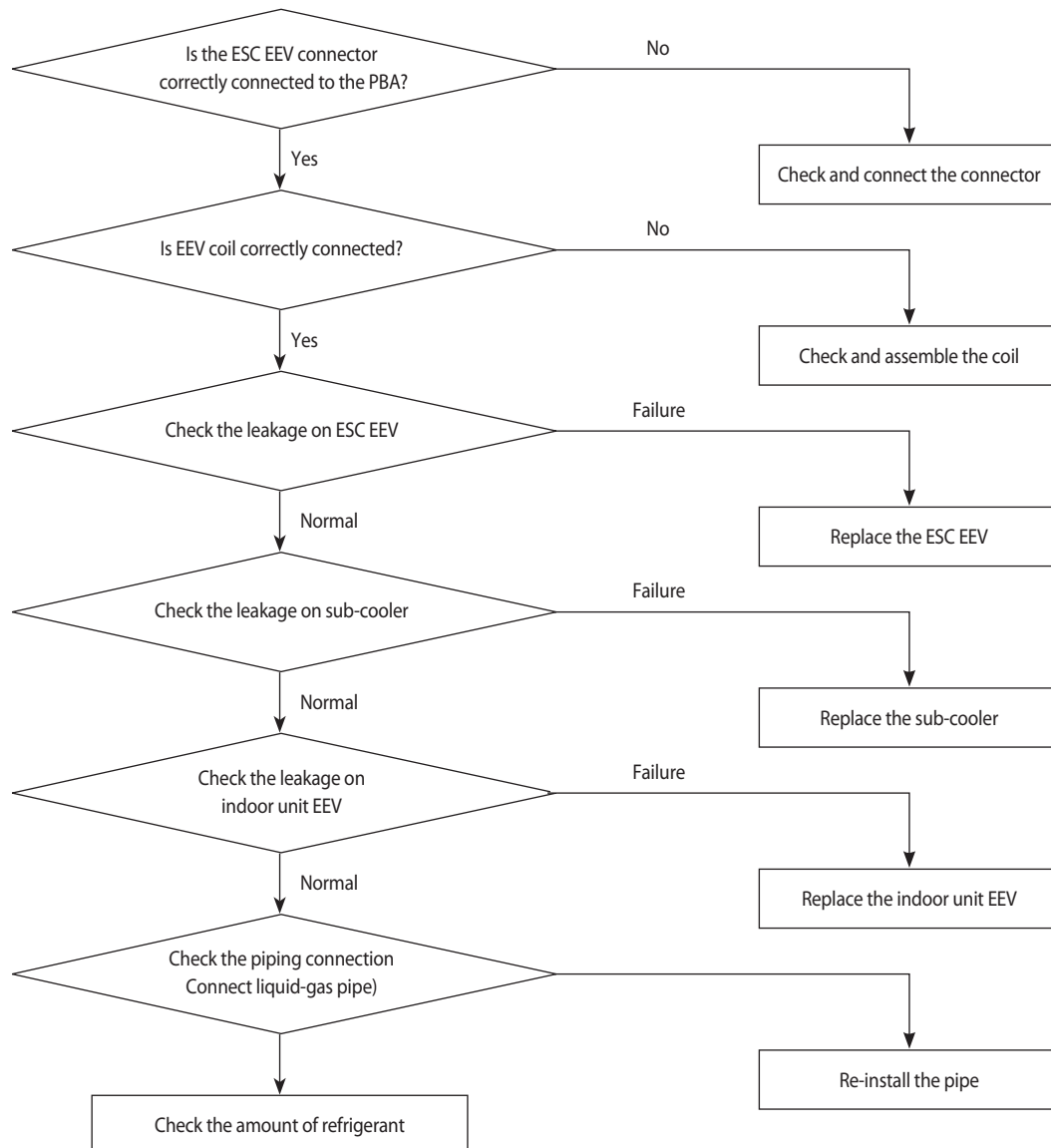


### 4-3-11 ESC EEV open error (Error Code : E438)

※ Indoor EEV leakage can be easily checked during the cooling operation of one room and during the ventilated operation of stationary side. (In case it is normal, the EVA In and Out temperatures for the ventilated side may rise.)

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

#### 1. How to check

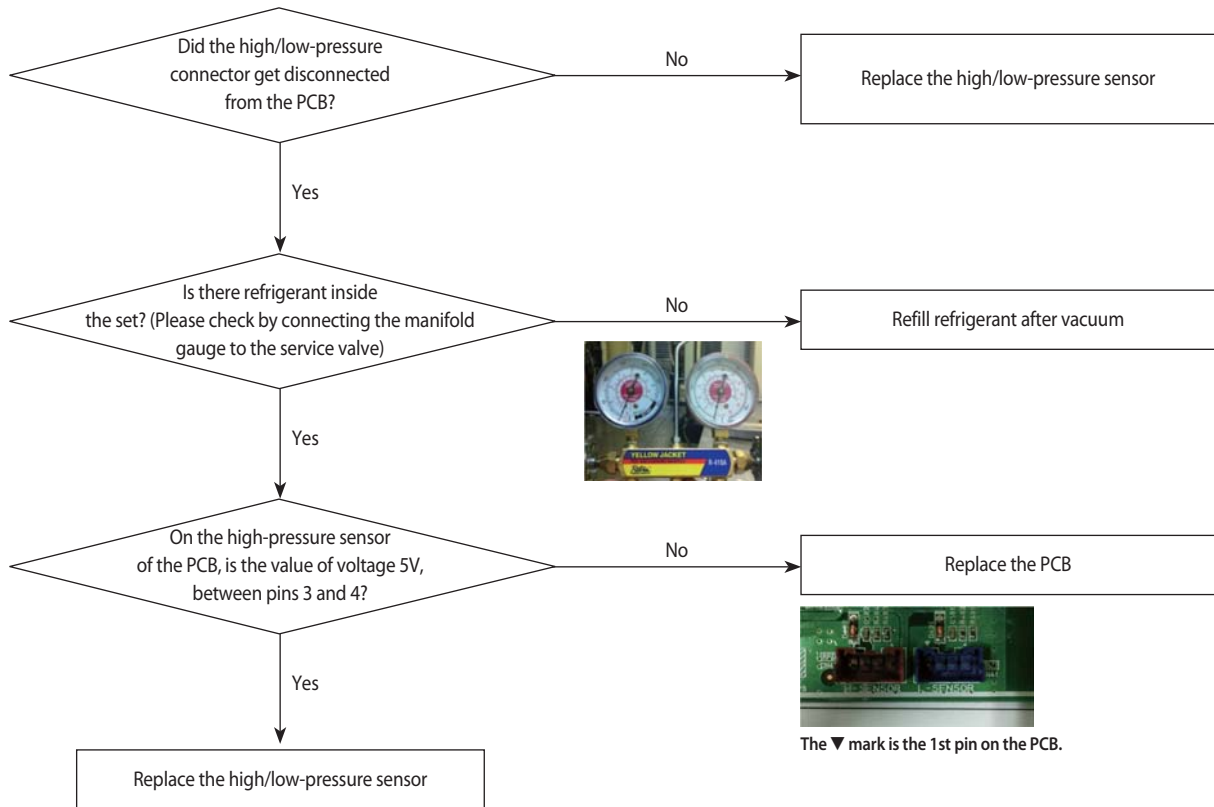


### 4-3-12 Refrigerant leakage error (Error Code : E439)

#### 1. Determining high/low-pressure sensor OPEN/SHORT error

- 1) Identifies from when power is supplied or 2 minutes after RESET, and only when set is stopped.
- 2) An E439 error will occur if the input voltage standard ranges of 0.5V ~ 4.95V of both the high- and low-pressure sensors are exceeded.
- 3) Will occur if the measured value of both high/low-pressure sensors is 1kgf/cm<sup>2</sup>G.

#### 2. How to check



### 4-3-13 Prohibition of the compressor operation due to outdoor temperature (Error Code : E440, 441)

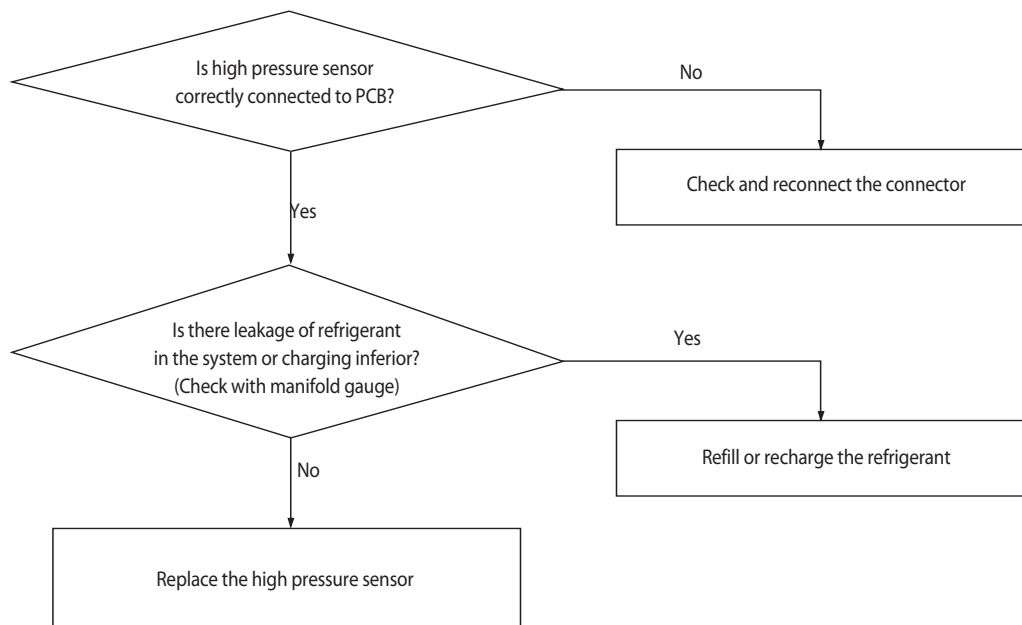
#### 1. How to check

The above error code is not caused by a product's problem but a function to protect the product by limiting the available temperature range so please refer to the usable temperature range in the product manual.

If the error code is displayed despite a condition that does not belong to any of the above diagnosis methods, read the temperature sensor value of the outdoor inlet air with View Mode or S-net, and if the actual outdoor temperature is different, please replace the temperature sensor.

### 3-14 Refrigerant leakage error (during operation) (Error Code : E443-RD040/050/060\*\*\*\*)

#### 1. How to check

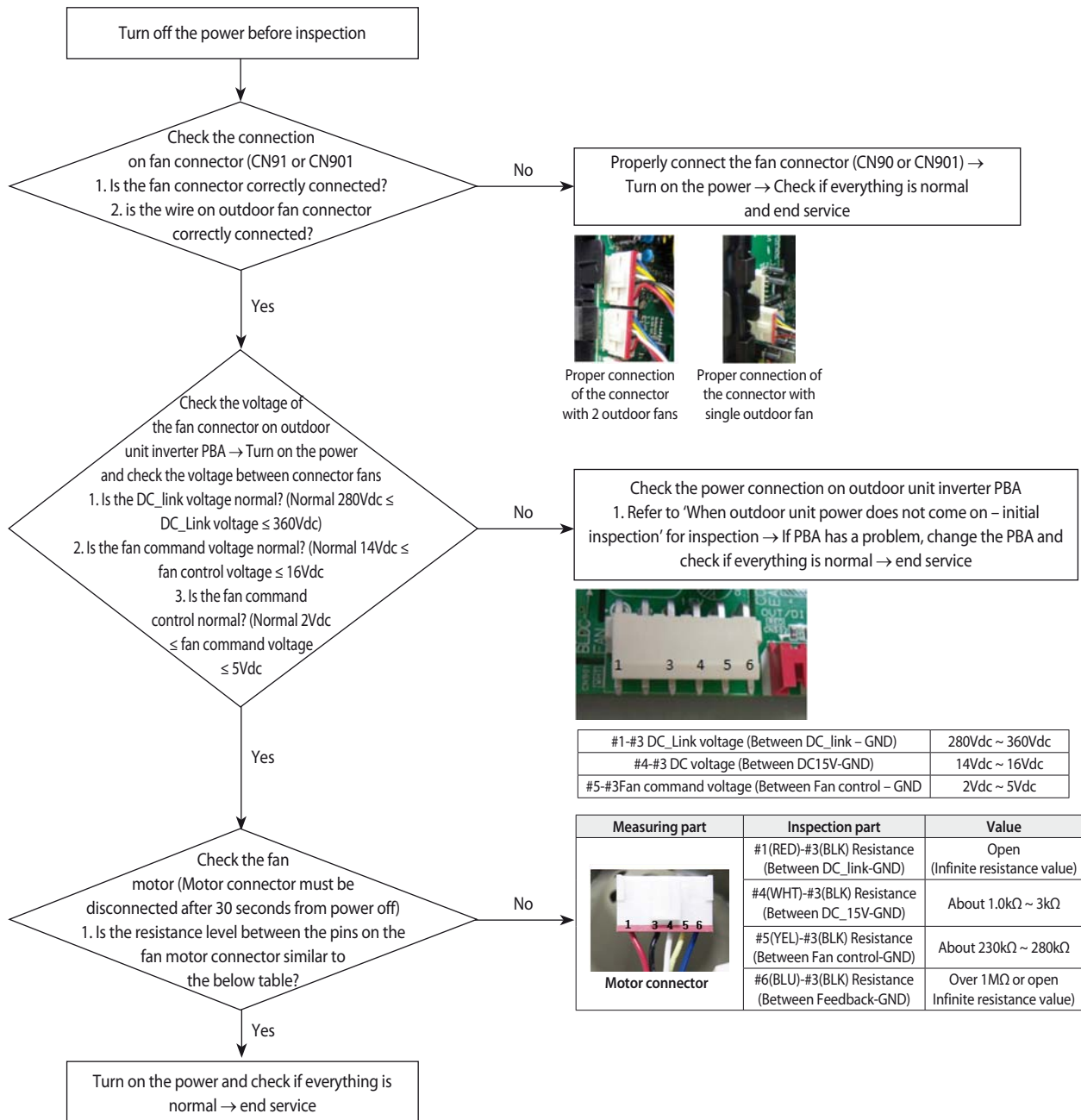


### 4-3-15 Outdoor unit fan error (Error Code : E458, 475)

#### 1. Check items

- 1) Check the connection of the fan connector (CN90, CN 91)
- 2) Check the voltage of the fan motor connector on outdoor unit inverter PBA
- 3) Check the power connection on outdoor unit inverter PBA
- 4) Check the fan motor (Motor connector must be disconnected after 30 seconds from power off)
- 5) For models with single fan, connector must be connected to CN90 (Fan2 error will not occur)

#### 2. Check procedure



\* When connecting/disconnecting the fan motor connector, you must wait for 30 seconds after turning off the power -> If not, motor or PBA can get damaged

\* You must check the inverter PBA or fan motor and replace them only when they have problem

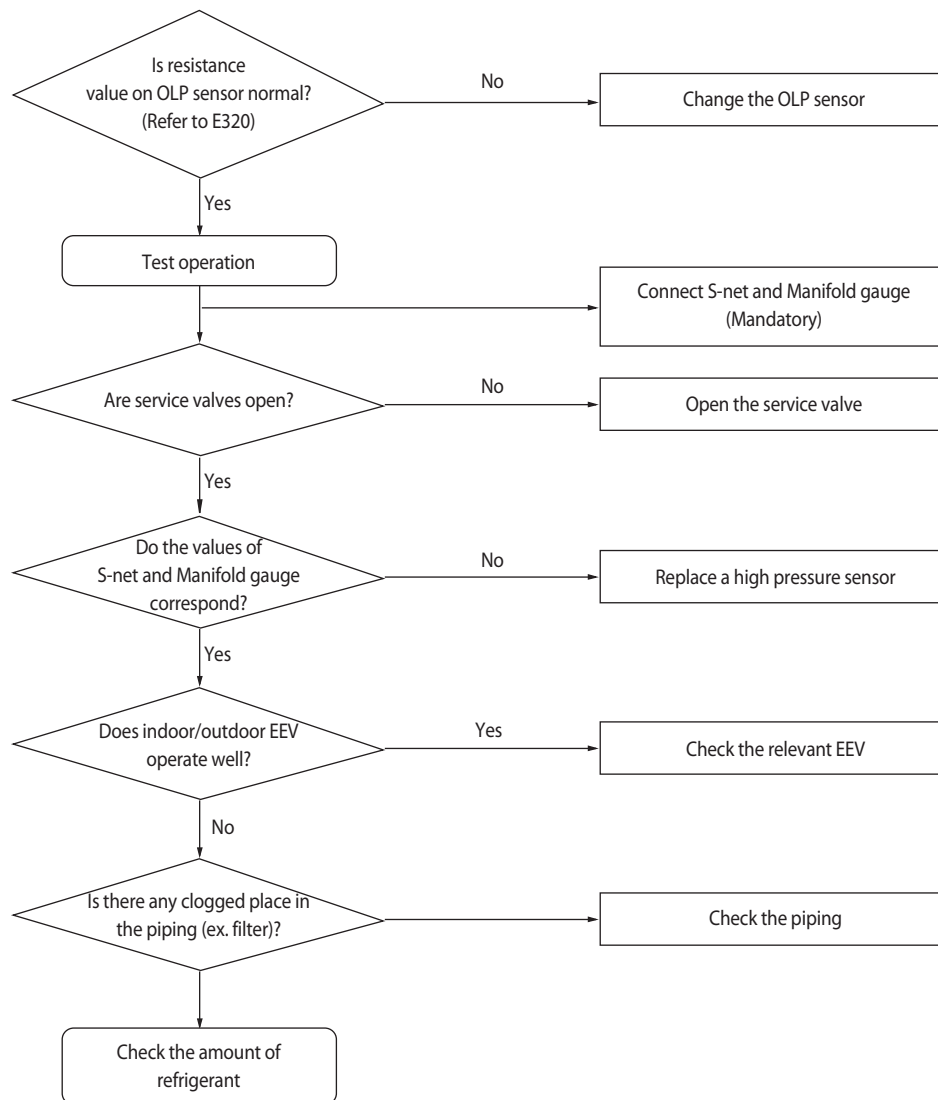
\* Do not change the outdoor unit PBA with fan motor problem

→ If the 7-segment on the outdoor unit main PBA shows error, there is no problem with outdoor unit main PBA

→ Control related problems can be solved by S/W update

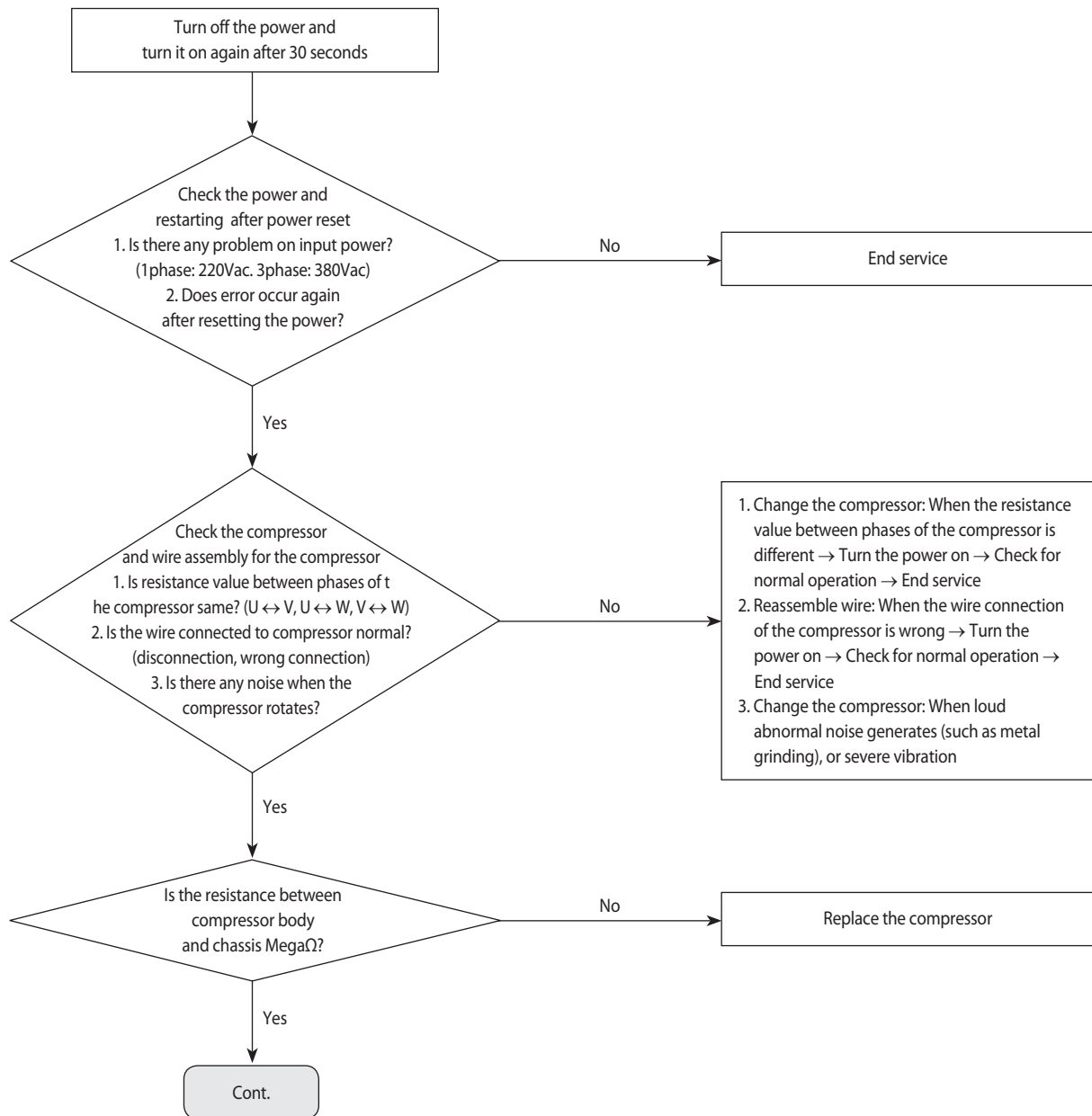
### 4-3-16 Comp. down due to OLP temperature control (Error Code : E463)

#### 1. How to check

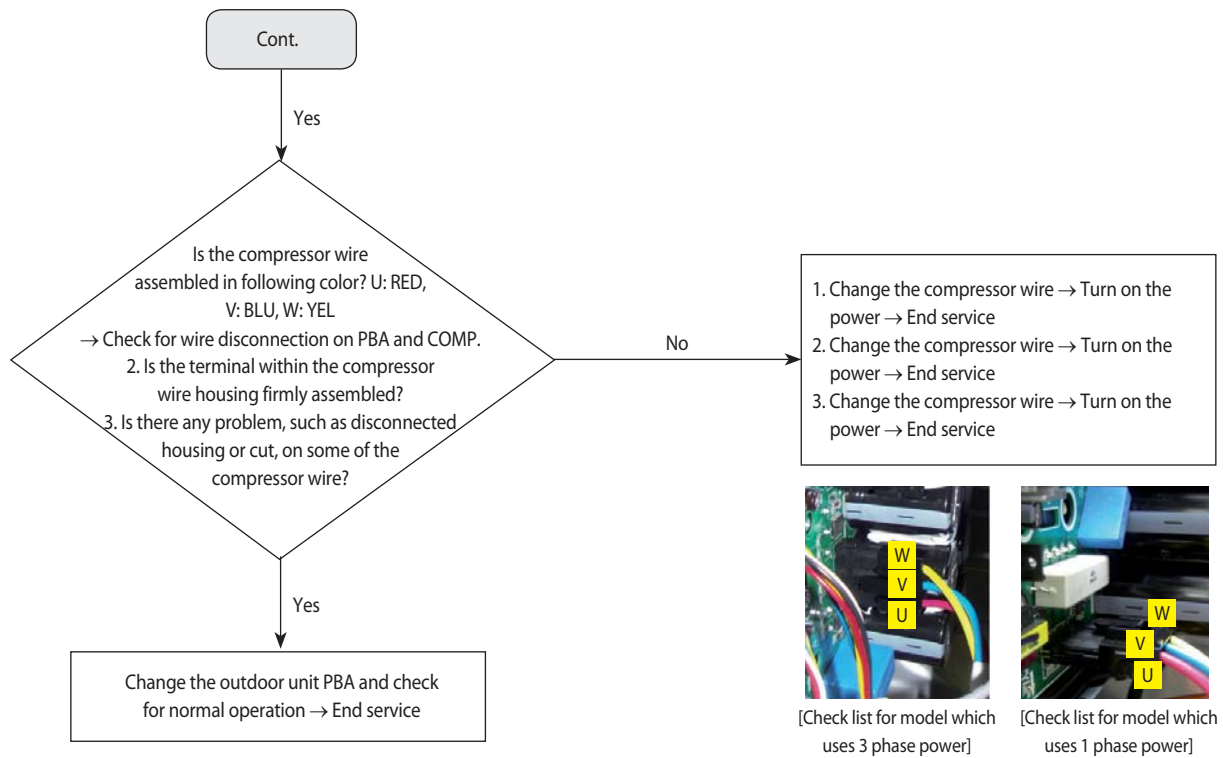


#### 4-3-17 Compressor starting/rotation error (Error Code : E461, E467)

1. Check items
  - 1) Check the power and restarting after power reset
  - 2) Check for compressor and compressor wire assembly
  - 3) Check for compressor wire problem
2. Check procedure



## Compressor starting/rotation error (Error Code : E461, E467) (cont.)



- \* Do not change the EMI/outdoor unit main/ Indoor unit main PBA when E461, E467 error occurs  
 → It is Compressor, inverter PBA related error, therefore it is not related to above PBA
- \* Make sure to check if service valve is open  
 → If the service valve is close, damage could occur due to pressure difference during operation

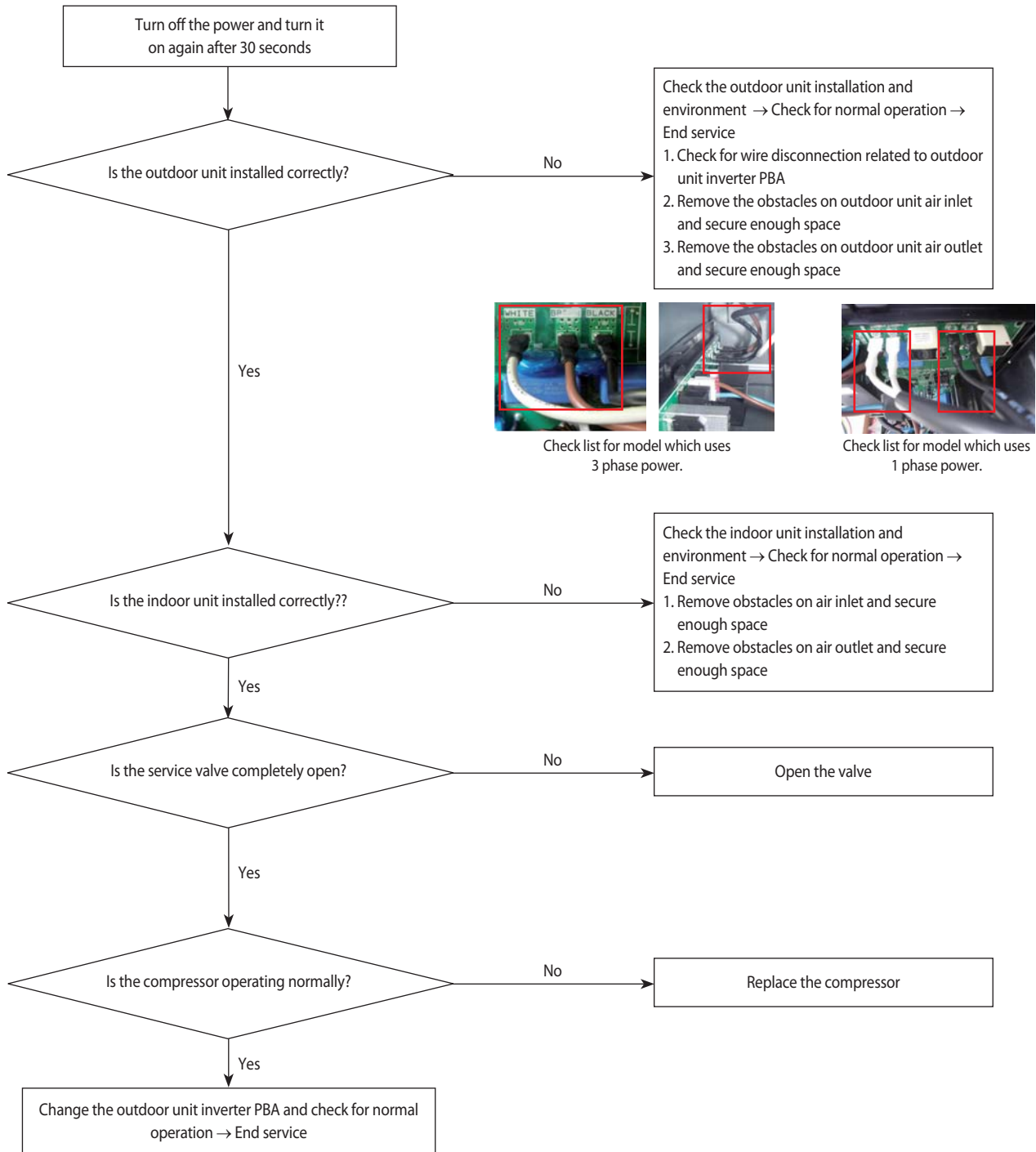
### 4-3-18 Electric current error / PFC over current error (Error Code : E462, E484)

1. Check items

- 1) Check the power and restarting after power reset
- 2) Check the outdoor unit installation and environments  
→ Check if the outdoor unit inverter PBA related wires are disconnected. Check the installation environment
- 3) Check for indoor unit installation environment
- 4) Check for open service valve

Error CODE	Error description	Related model
E462	Outdoor unit total current error	RD****HXG* series, RD*****XE*series
E484	Outdoor unit PFC overload error	RD*****XE*, RD060*****, RC072**** series only

2. Check procedure



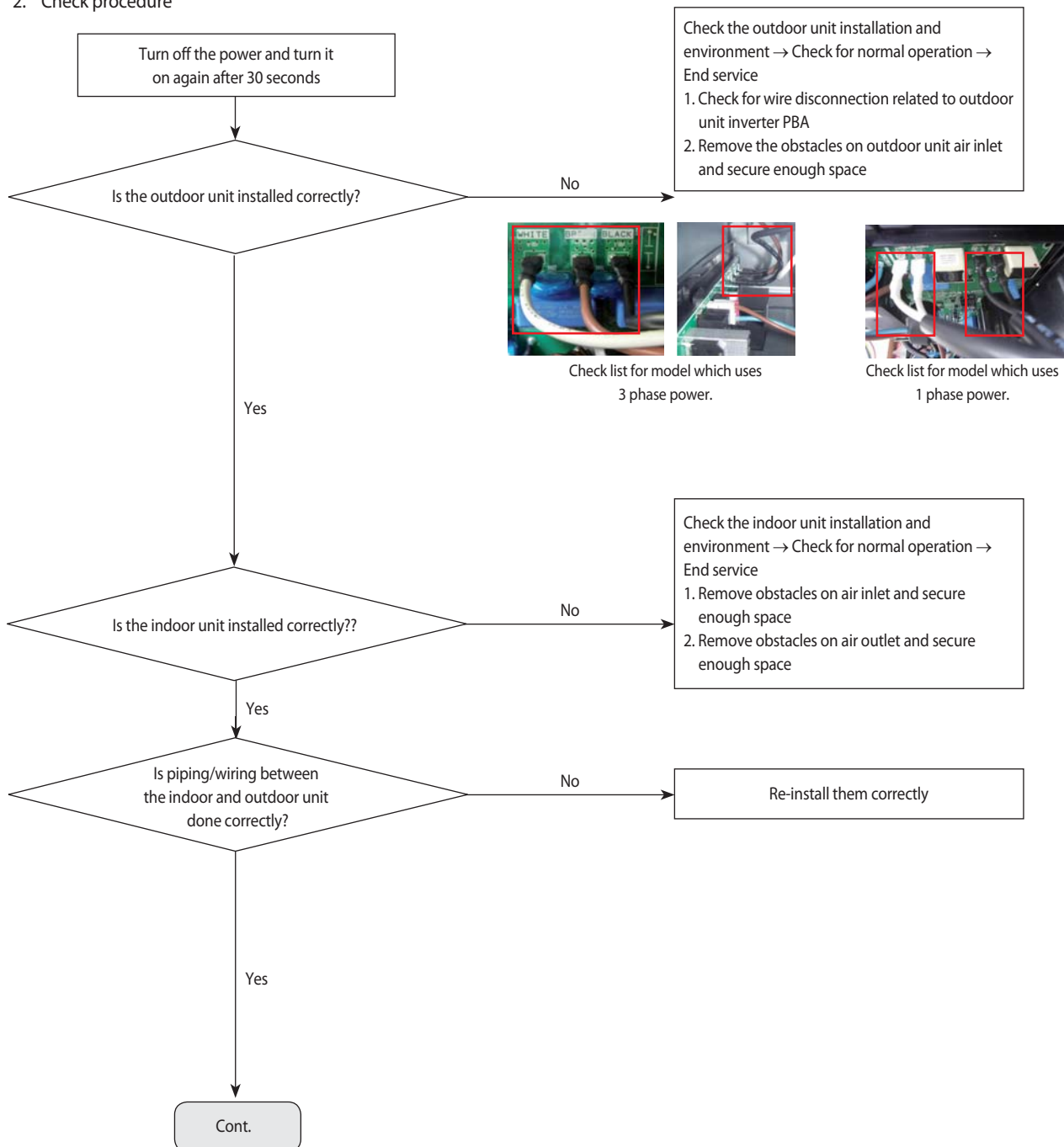


### 4-3-19 IPM over current error (Error Code : E464)

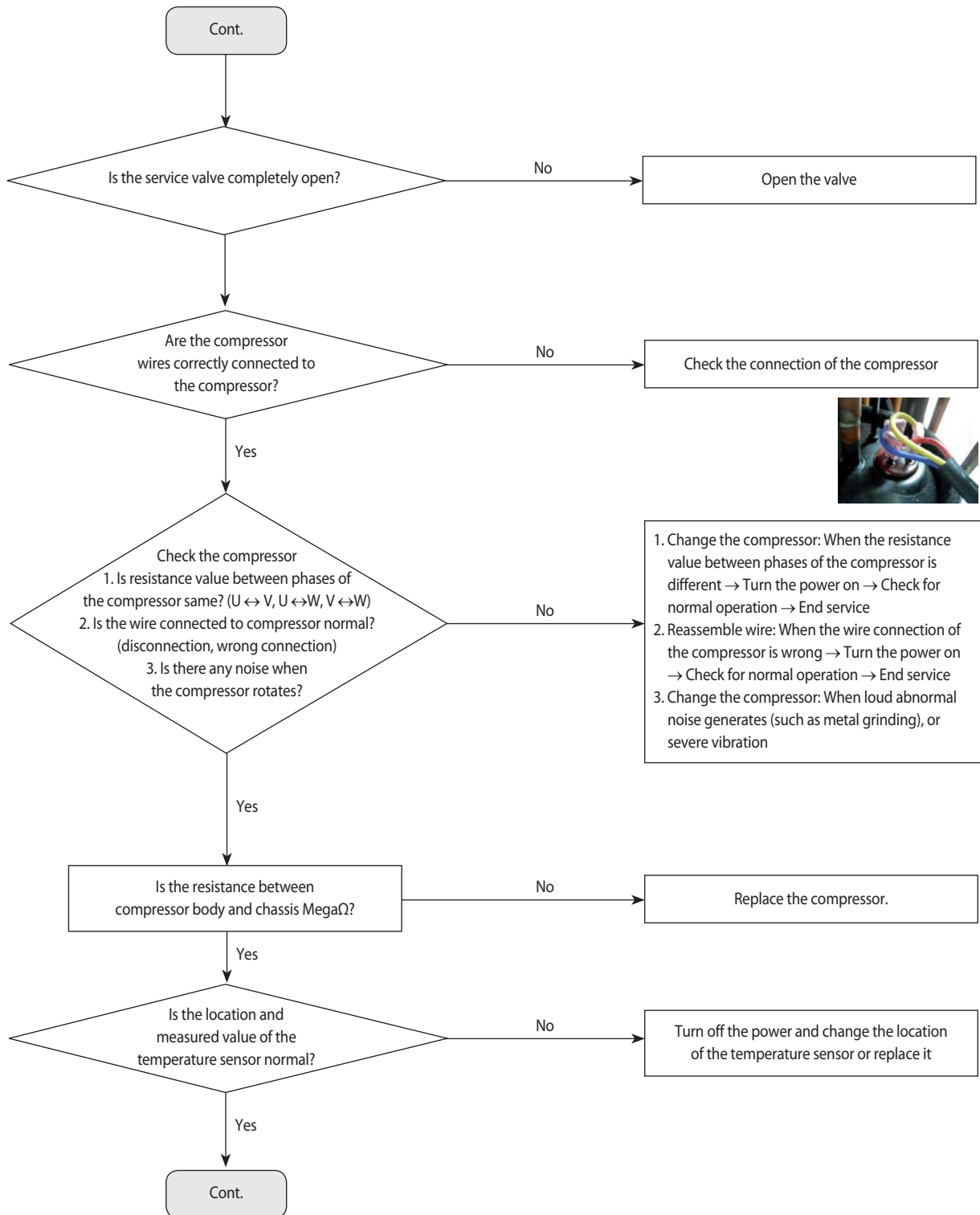
#### 1. Check items

- 1) Check the power and restarting after power reset
- 2) Check the outdoor unit installation and environments  
→ Check if the outdoor unit inverter PBA related wires are disconnected. Check the installation environment
- 3) Check for indoor unit installation environment
- 4) Check for open service valve
- 5) Check the assembly status of the compressor and compressor wire
- 6) Check the compressor wire

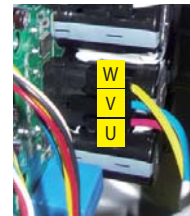
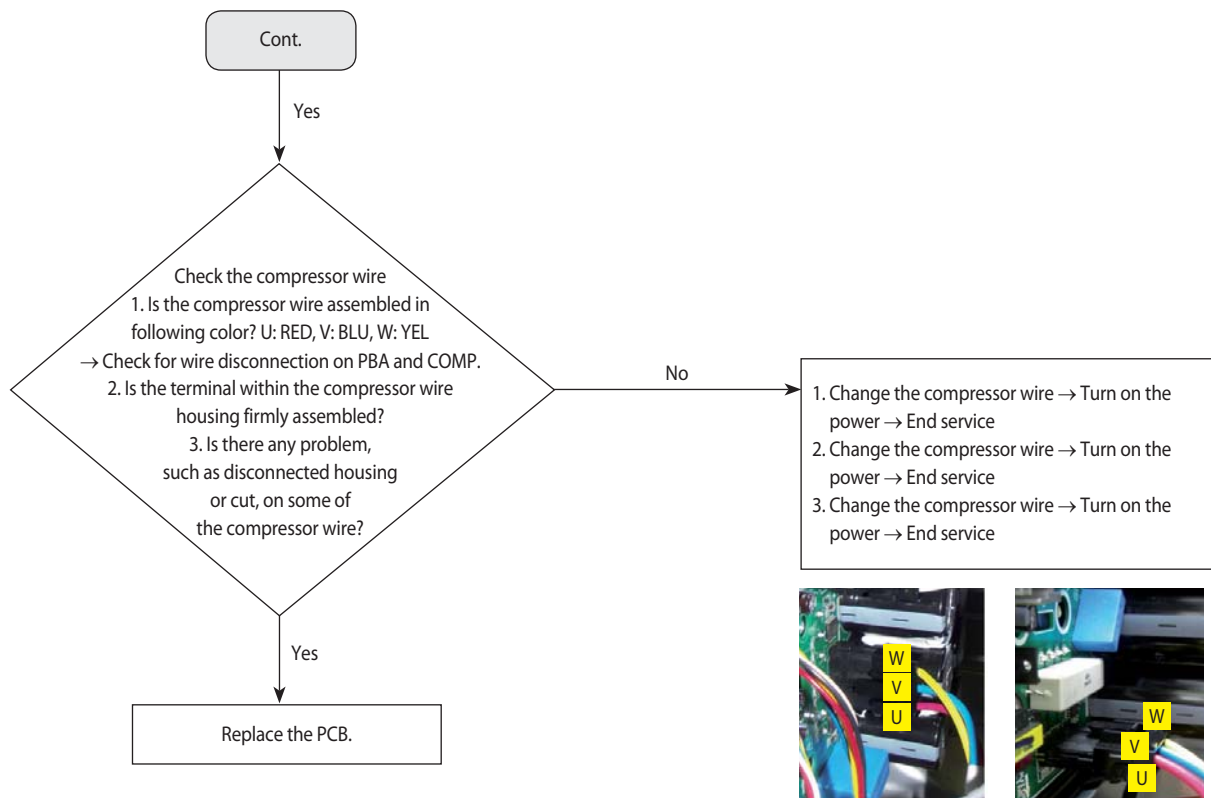
#### 2. Check procedure



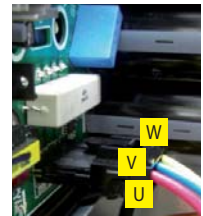
## IPM over current error (Error Code : E464) (cont.)



# IPM over current error (Error Code : E464) (cont.)



Check list for model which uses 3 phase power



Check list for model which uses 1 phase power

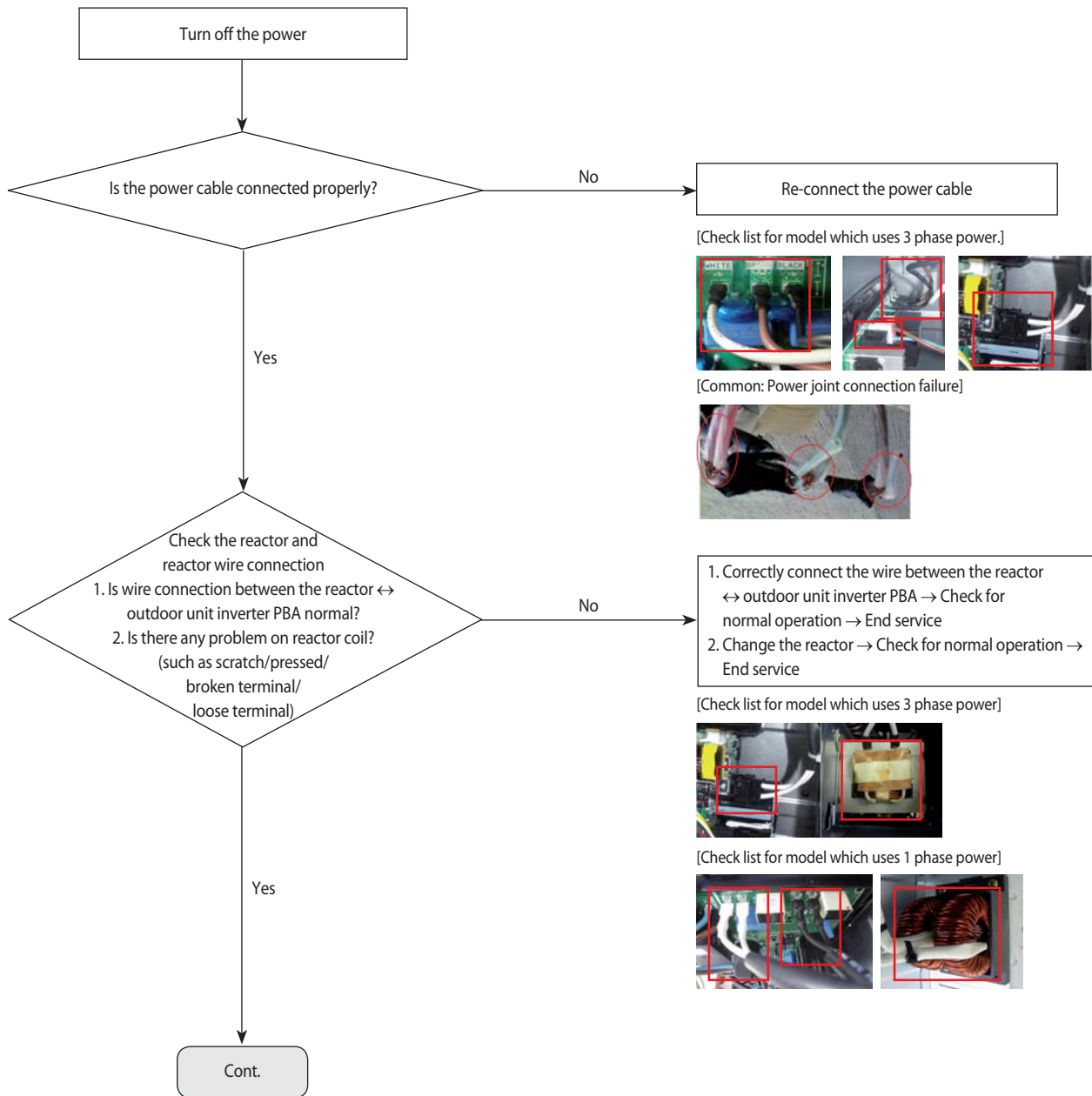
\* Do not change the EMI/outdoor unit main/ Indoor unit main PBA when E464 error occurs  
→ It is Compressor, inverter PBA related error, therefore it is not related to above PBA

## 4-3-20 Over/low voltage error of DC-Link (Error Code : E466)

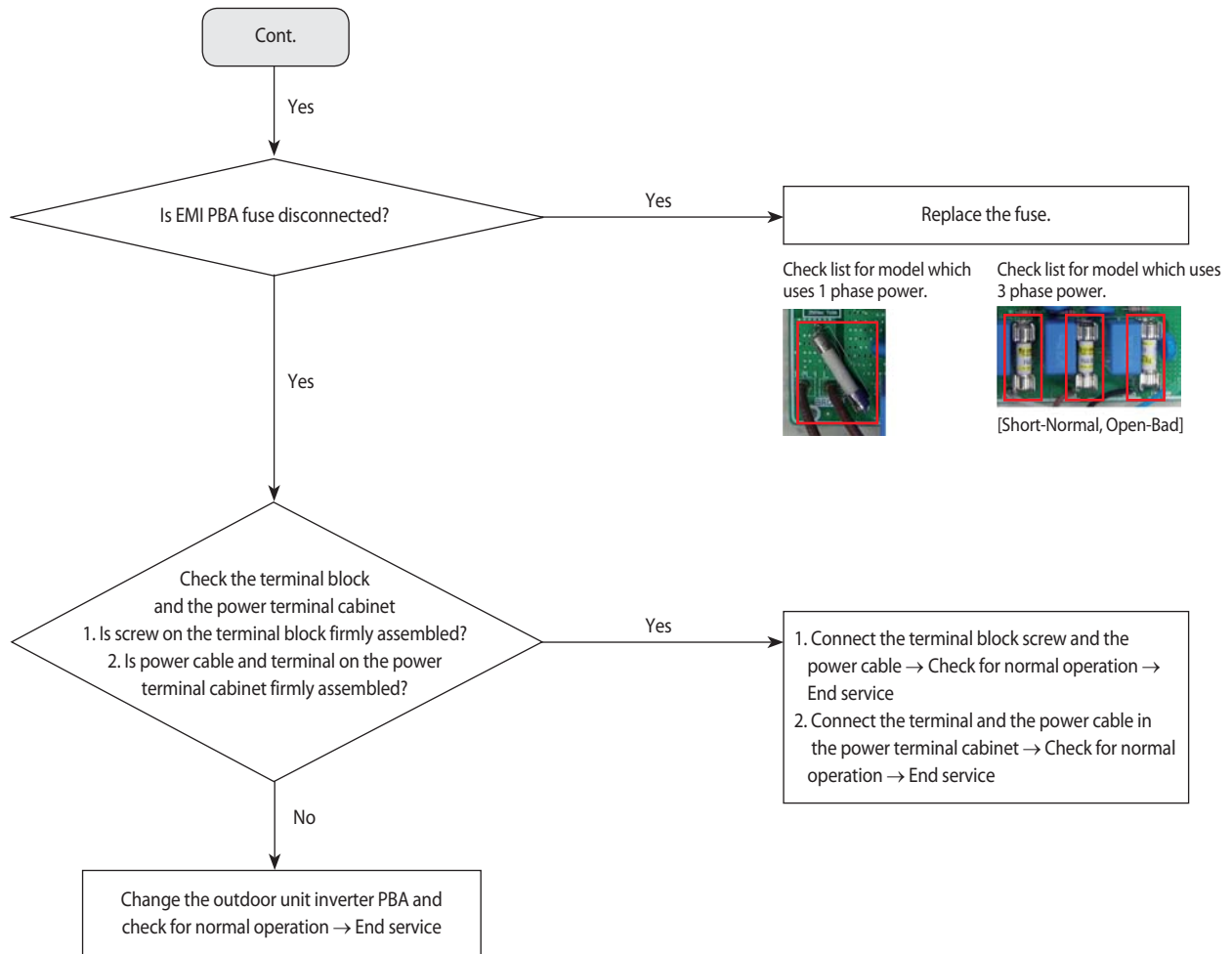
### 1. Check items

- 1) Check the power and restarting after power reset
  - Is there any problem with input power?
  - (1 Phase: 220Vac, 3 Phase: 380Vac)
  - Does error occur again during operation after power reset?
- 2) Check the power cable connection, and joint cable connection
- 3) Check the reactor and reactor wire
- 4) Check the fuse on the EMI PBA
- 5) Check the Terminal block, power terminal cabinet and the power wire assembly

### 2. Check procedure



# DC-Link voltage under/over error (Error Code : E466) (cont.)

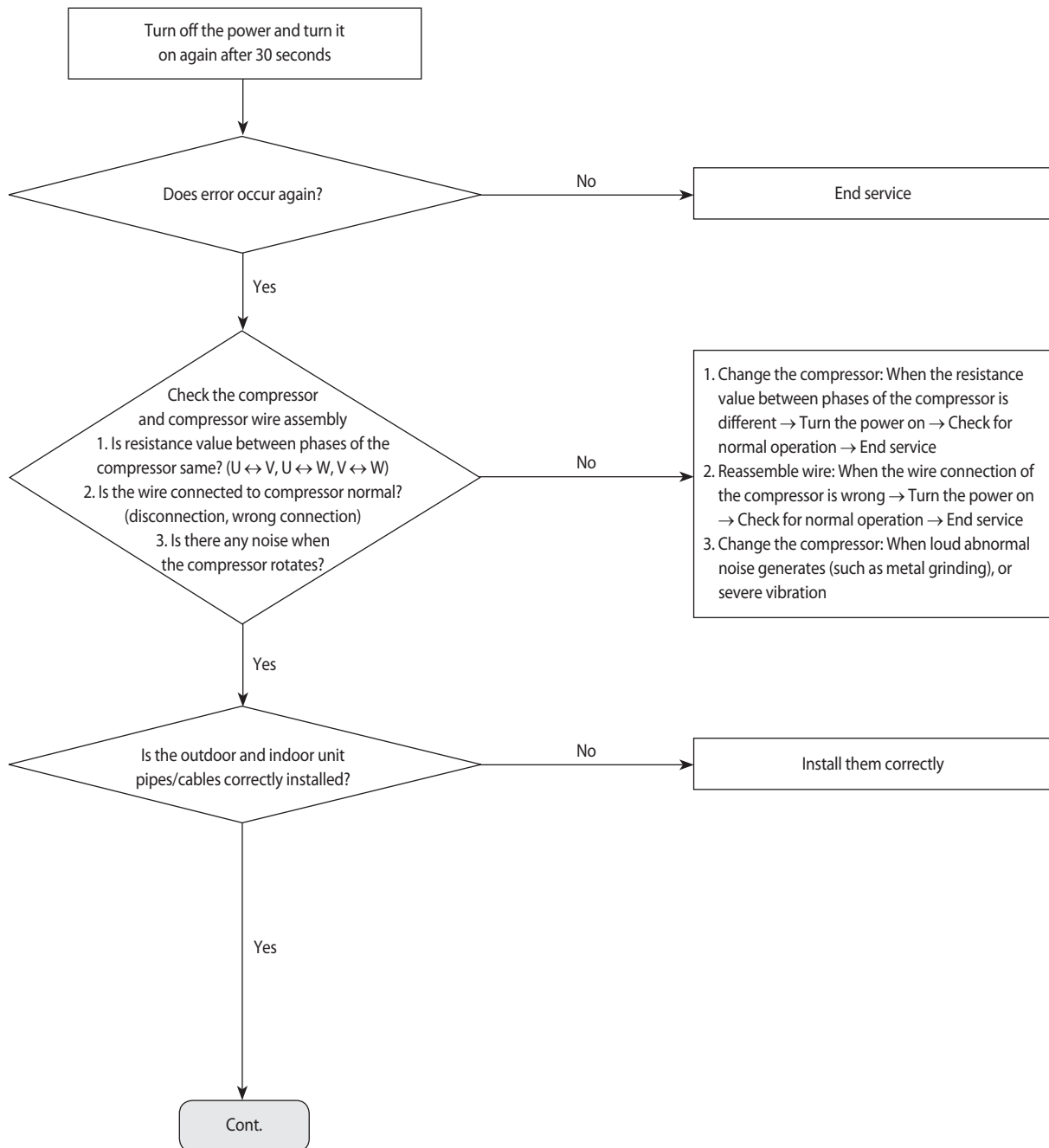


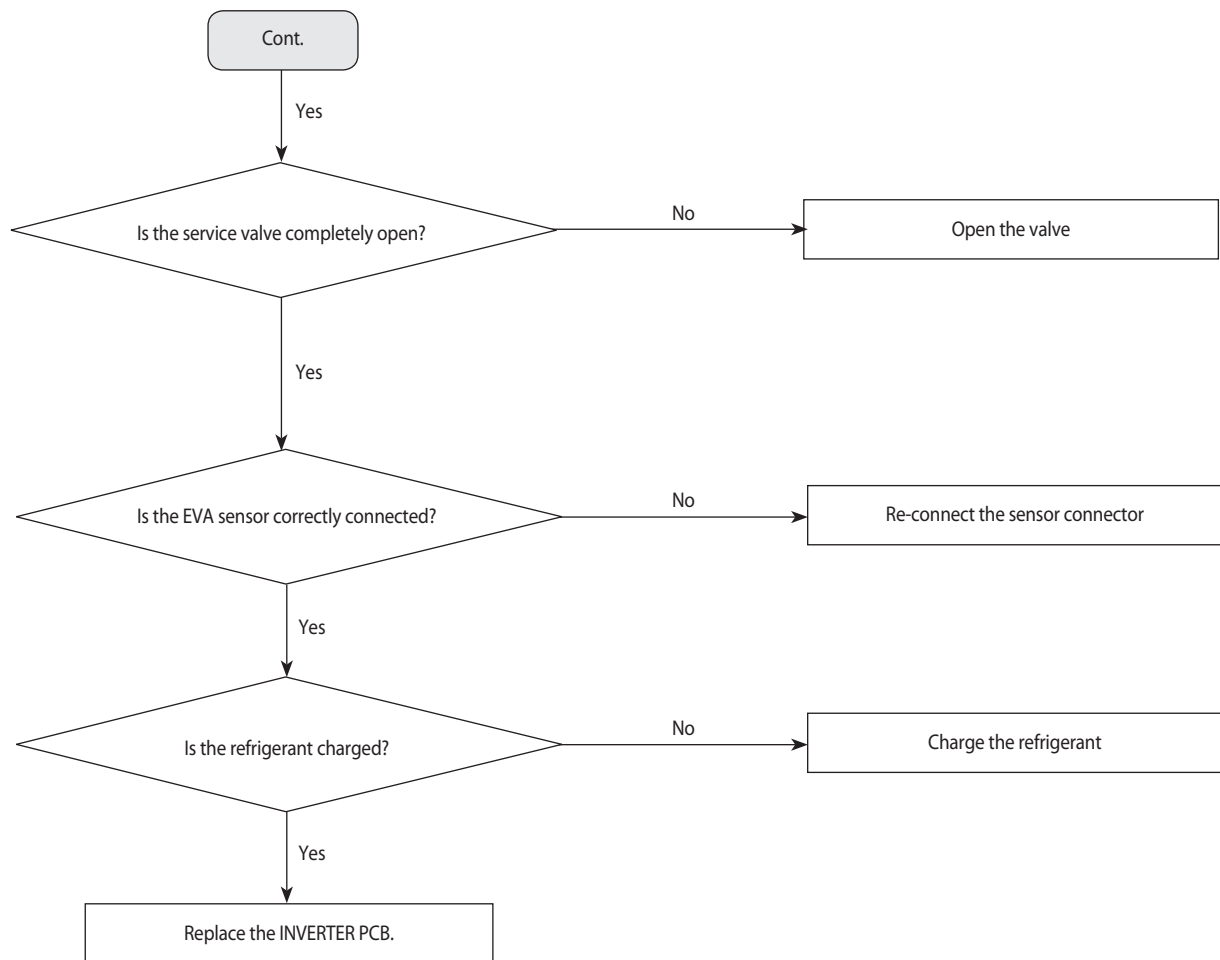
### 4-3-21 Gas leak error (Error Code : E554)

#### 1. Check items

- 1) Check the power and restarting after power reset
  - Is there any problem with input power?  
(1 Phase: 220Vac, 3 Phase: 380Vac)
  - Does error occur again during operation after power reset?
- 2) Check the compressor and compressor wire assembly
- 3) Check the outdoor unit installation and environments
  - Check if the outdoor unit inverter PBA related wires are disconnected. Check the installation environment
  - If there were multiple installation, check if the communication cable and the pipes are installed correctly.

#### 2. Check procedure



**Gas leak error (Error Code : E554) (cont.)**

## 4-3-22 Others

### 1. Compressor Vlimit error: E465

If the compressor operation is abnormal, change the compressor and check for normal operation

→ If the compressor operation is normal, check the assembly between heat sink plate and if there is no problem, change the inverter PBA

### 2. Current sensor error: E468

EEPROM Uploading at indoor main PBA, Check if PCB operation is normal

### 3. OTP error: E471

Error occurs when the EEPROM DATA in the outdoor unit main PBA and inverter PBA is different from each other. Check the model name and EEPROM code to use it

### 4. DC link voltage sensor error: E469

Error occurs when DC LINK value is not normal (DC LINK VOLTAGE: 280~320V)

Check the value of DC link when error occurs and check the reactor disconnection

### 5. Heat sink temperature error: E474, E500

Error occurs when heat sink of the inverter PBA exceeds rated range

Clean and remove any dust and other foreign substances on the outdoor unit and then check the connection between heat sink and inverter PBA

Make sure grease is applied properly and screw is firmly fixed

### 6. Input current sensor error: E485

Detect the input sensor while the set is in stop status to check if there's any problem

When error occurs, turn on/off the power for number of time and if same error occurs while the power is off, change the inverter PBA

### 7. EEPROM read/write error: E470

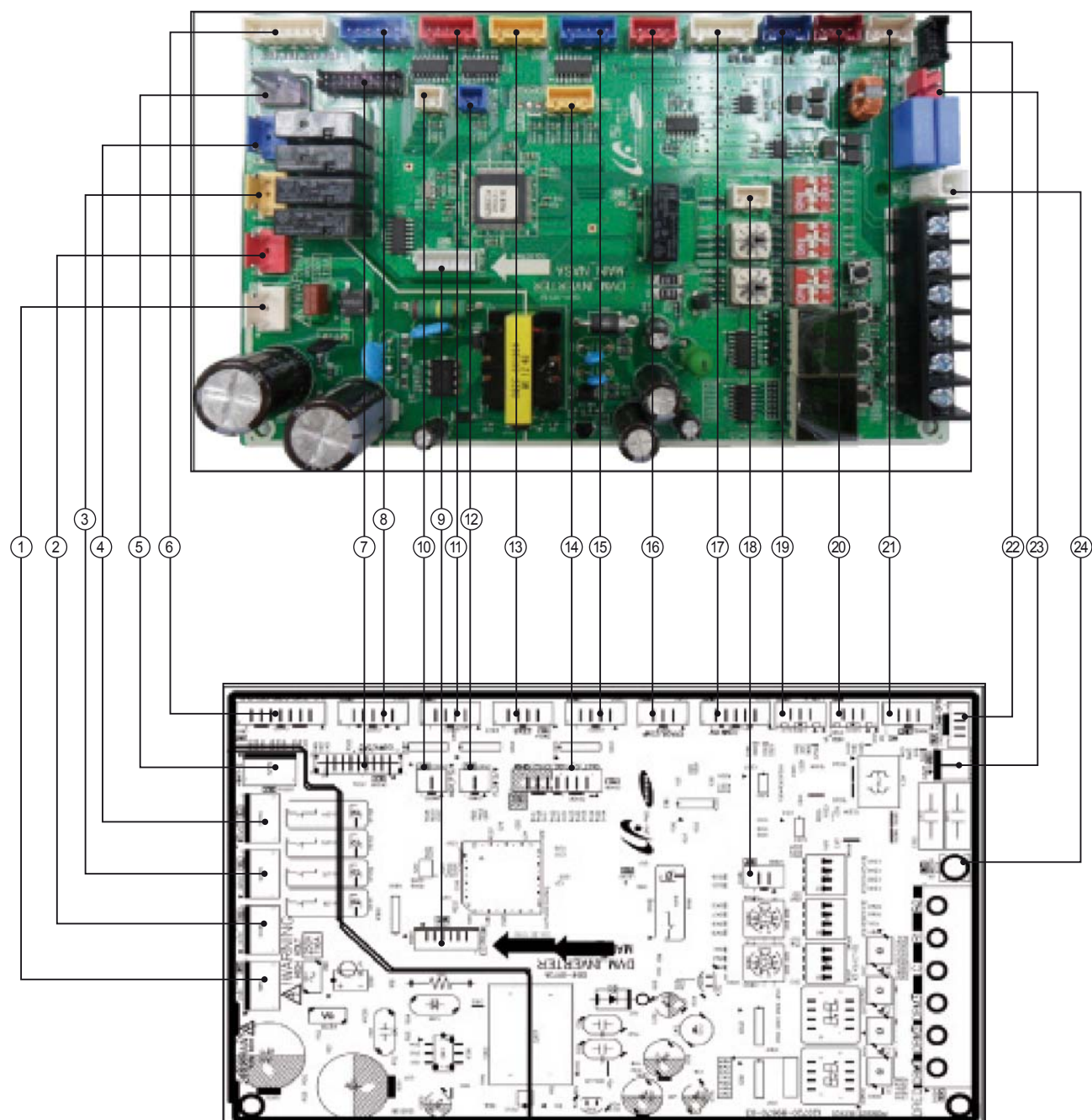
Error occurs when there is no EEPROM data in the set. Check the model name and insert EEPROM for corresponding model or load the EEPROM data.



## 5. PCB Diagram

### 5-1. Outdoor Unit PCB

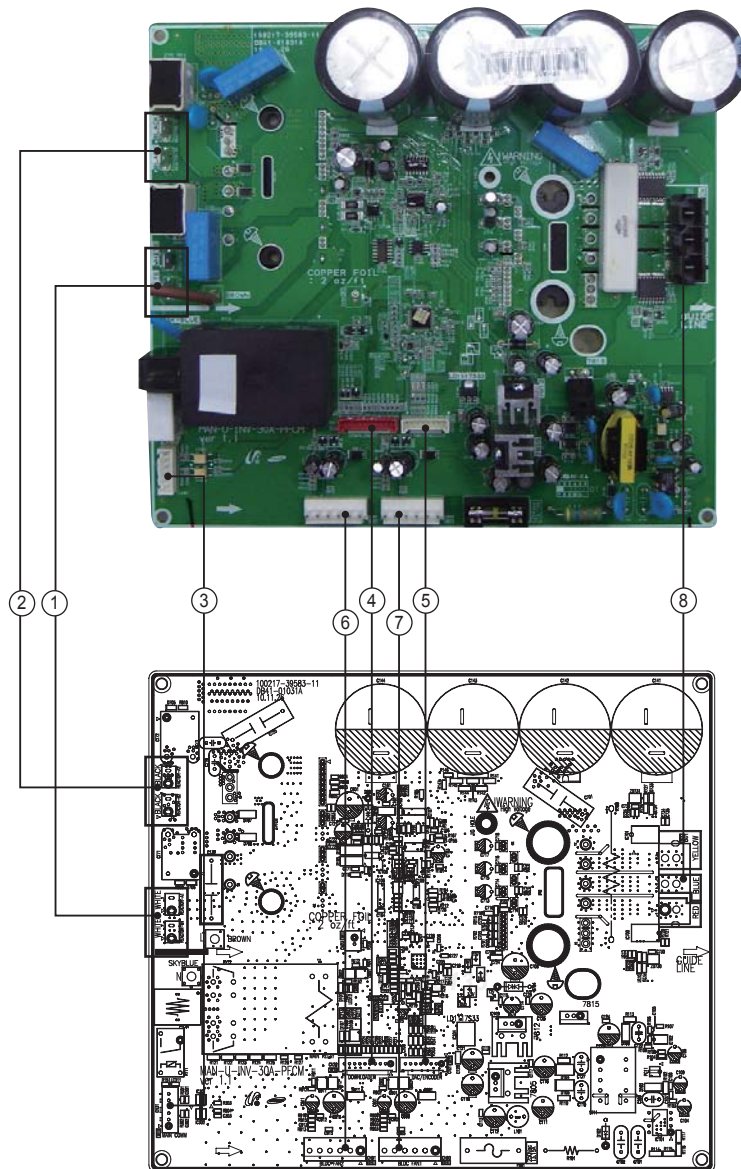
■ MAIN PCB : AM040/050KXMDEH\*, AM040/050KXMDCH\*



**MAIN PCB : AM040/050KXMDEH※, AM040/050KXMDCH※ (cont.)**

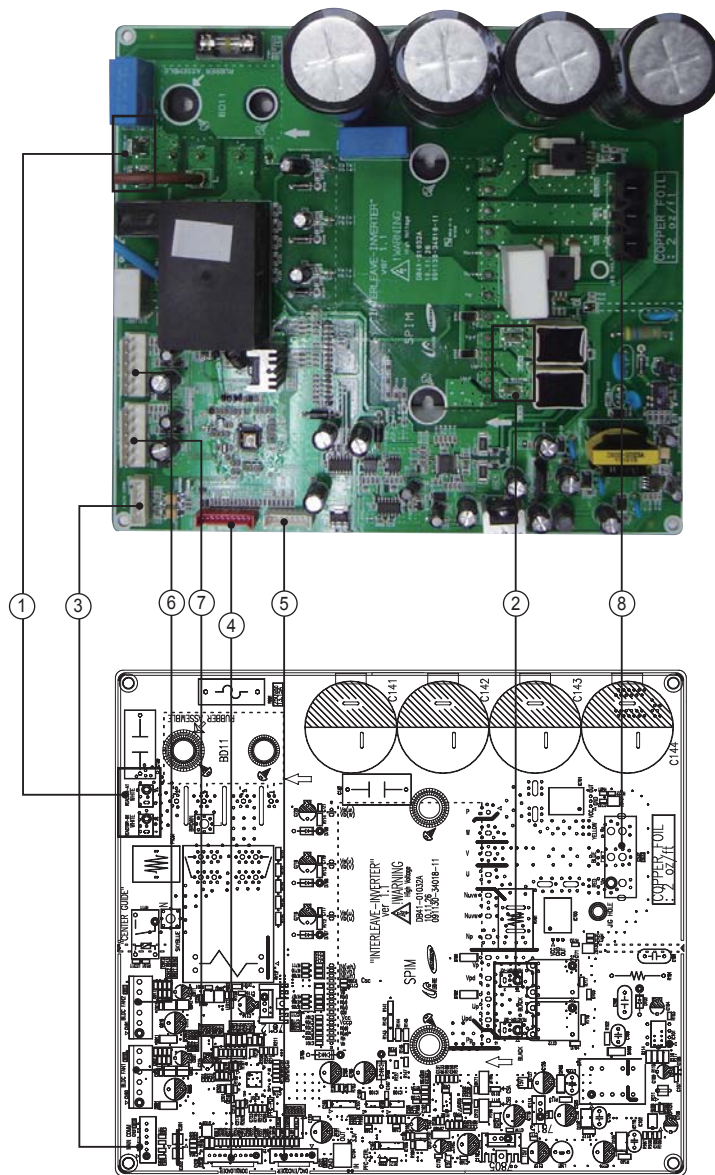
① <b>CN101-AC INPUT</b> #1~#3 : 220~240Vac	② <b>CN701-HOT GAS</b> #1~#3 : 220~240Vac	③ <b>CN702-4WAY VALVE 1</b> #1~#3 : 220~240Vac	④ <b>CN703-BASE HEATER</b> #1~#3 : 220~240Vac
⑤ <b>CN704-4WAY VALVE 2</b> #1~#3 : 220~240Vac	⑥ <b>CN403- TEMP SENSOR</b> #1 : OUT TEMP #2,4,6,8: GND #3 : COND TEMP #5 : DISCHARGE TEMP #7 : OLP SENSOR	⑦ <b>CN306-MICOM DOWNLOAD</b> #1~#10 : Micom down	⑧ <b>CN802-EEV 1</b> #1~4 : EEV signal #5,6 : DC 12V
⑨ <b>CN806-E2P MODULE</b>	⑩ <b>CN002-HIGH P S/W</b> #1 : INPUT #2 : GND	⑪ <b>CN803-EEV 2</b> #1~4 : EEV signal #5 : DC 12V	⑫ <b>CN001-Flow S/W</b> #1 : INPUT #2 : GND
⑬ <b>CN804-EEV 3</b> #1~4 : EEV signal #5 : DC 12V	⑭ <b>CN406-</b>	⑮ <b>CN805-EEV 4</b> #1~4 : EEV signal #5 : DC 12V	⑯ <b>CN801-EXTERNAL CONTROL OUT</b> #1,3 : DC 12V #2 : ERROR CHECK OUT #4 : COM CHK OUT
⑰ <b>CN305-COMM INV PBA</b>	⑱ <b>CN501-SELECT COOLING ONLY</b>	⑲ <b>CN401-LOW P SENSOR</b> #2 : INPUT #3 : GND #4 : VCC	⑳ <b>CN401-HIGH P SENSOR</b> #1 : INPUT #3 : GND #4 : VCC
㉑ <b>CN401-MID P SENSOR</b> #1 : INPUT #2 : GND #4 : VCC	㉒ <b>CN302-COMM SUB PBA</b>	㉓ <b>CN303-COM INDOOR UNIT</b>	㉔ <b>CN103-EARTH</b>

## ■ Inverter PCB : 1 Phase

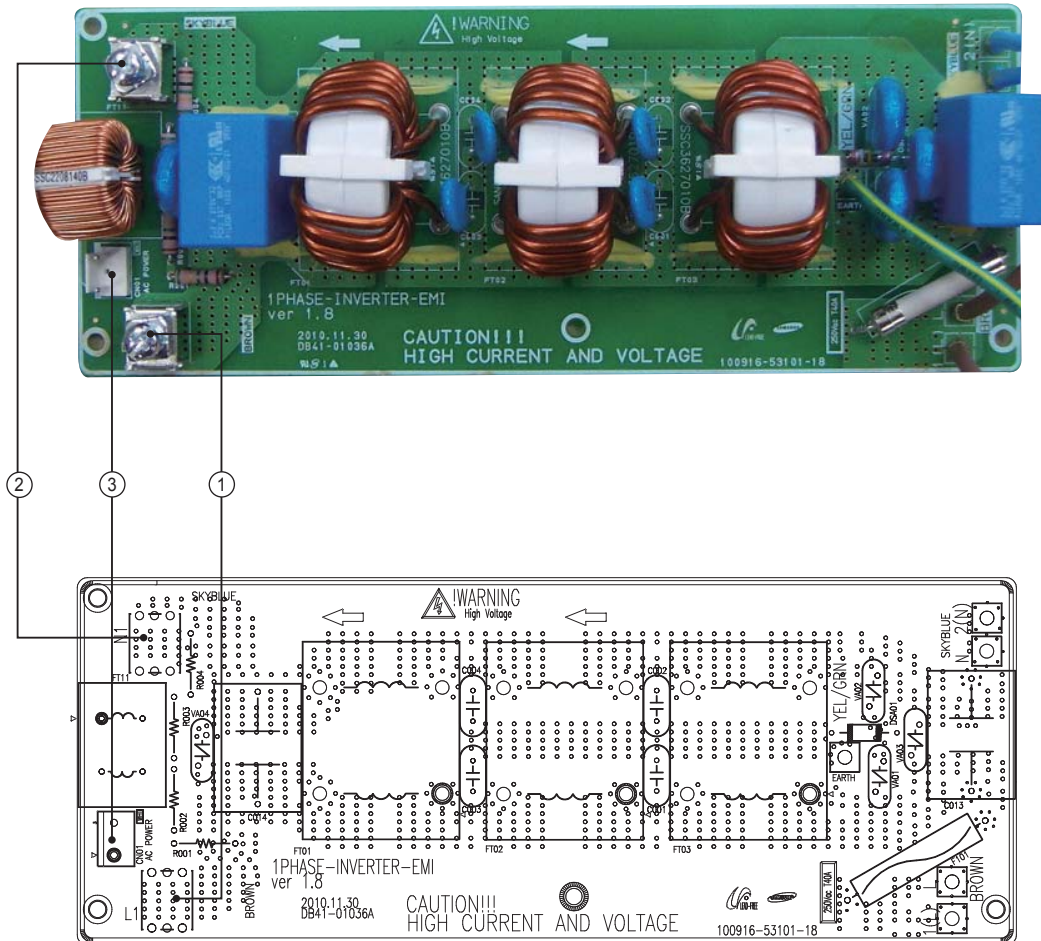


<b>① Reactor-A1/B1</b> #Reactor-A2 : WHT #Reactor-B2 : WHT	<b>② Reactor-A2/B2</b> #Reactor-A2 : BLK #Reactor-B2 : BLK	<b>③ CN31(2PIN/RED)-Communication</b> #1 : RXD, #2 : TXD #3 : GND, #4 : DC 5V #5 : DC 12V, #6 : INV. SMPS signal	<b>④ CN22-Down loader</b> #1 : RXD_ATARO, #2 : TXD_ATARO #3, #8 : N.C, #4~#7 : DATA signal #9 : GND, #10 : DC 5V
<b>⑤ CN21-DAC/ENCODER</b> (For S/W engineer debugging)	<b>⑥ CN91-FAN2</b> #1 : DC 360V #2 : N.C #3 : GND #4 : DC 15V #5 : FAN RPM #6 : FAN RPM feedback	<b>⑦ CN90-FAN1</b> #1 : DC 360V #2 : N.C #3 : GND #4 : DC 15V #5 : FAN RPM #6 : FAN RPM feedback	<b>⑧ CN71-COMP.</b> #1 : COMP. U-phase(RED) #2 : COMP. V-phase(BLU) #3 : COMP. U-phase(YEL)

■ Inverter PCB : 1 Phase II



# **EMI PCB: 1 Phase**



① L1-AC POWER L phase

L1 : BRN

② N1-AC POWER N phase

N1 : SKY-BLU

③ CN01-AC POWER

#1-#3 : AC 220~240V



[illegible]

## 7. KEY OPTION

### 7-1. Setting the Outdoor Unit Option Switch

	AM040/050KXMDEH*, AM040/050KXMDCH*
PBA shape	<p>Switch for setting the number of indoor unit connections</p> <p>7-SEGMENT (DISPLAY)</p> <p>DIP S/W (K5~K16)</p> <p>Terminal Block for Interface Module</p> <p>Please connect a wire here.</p>
Setting the number of indoor unit connections	<p>▪ Ex : When connecting 3 indoor units, please set SW02 to SW03.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>SW01</p> <p>In 10s</p> </div> <div style="text-align: center;"> <p>SW02</p> <p>In 1s</p> </div> </div>

### 7-2. Setting the Key Functions of Outdoor Unit

#### ■ AM040/050KXMDEH\*, AM040/050KXMDCH\*

Tact S/W	Heating Key Operation	Cooling Key Operation	Reset	View Mode
	K1	K2	K3	K4
	-	Select snowdrift protection	Select cooling target and evaporation temperature	Select cooling target and evaporation temperature
	K5	K6	K7	K8
Dip S/W	Silent night Option	Silent night Option	Select compensation of heating capacity	Select compensation of heating capacity
	K9	K10	K11	K12
	Pure current option	Pure current option	Defrosting compensation	Defrosting compensation
	K13	K14	K15	K16

## ■ AM\*\*\*\*\*M\*\*\* series

Tact S/W	# of Times	Item	SEG1	SEG2	SEG3	SEG4	Note
K1	One time of long press	Auto Commissioning & Management System					
K1	1time	Charge heating refrigerant					
	2times	Test heating operation					
	3times	Heating pump out					
	4times	Vacuum					
	5times	Finish					
K2	1time	Charge cooling refrigerant					
	2times	Test cooling operation					
	3times	Cooling pump down					
	4times	Test operation for checking refrigerant level					
	5times	Finish					
K3		Reset					

## ■ RD\*\*\*M\*\*\*\* series

Tact S/W	# of Times	Item	SEG1	SEG2	SEG3	SEG4	Note
K1	1time	Charge heating refrigerant					
	2times	Test operation of heating					
	3times	Heating pump out					
	4times	Vacuum					
	5times	Finish					
K2	1time	Charge cooling refrigerant					
	2times	Test operation of cooling					
	3times	Cooling pump down					
	4times	Finish					
K3		Reset					

## ■ K4 Display Order

K4	Display Details	Display Value (Ex.)		Meaning
		SEG1	SEG 2,3,4	
1time	Operating frequency of current compressor	1	0,4,2	42Hz
2times	Low pressure value (AM*****M*** series)	2	1,7,5	1.75Mpa
	Target frequency (RD***M**** series)		0,6,4	64Hz
3times	Outdoor temperature	3	1,5,8	15.8℃
4times	Discharge temperature of compressor	4	7,7,2	77.2℃
5times	OLP temperature	5	5,5,8	55.8℃
6times	COND temperature	6	3,1,7	31.7℃
7times	Double-pipe heat exchanger temperature	7	1,8,9	18.9℃
8times	High pressure value	8	2,1,0	2.10MPa
9times	Outdoor fan RPM	9	6,0,0	600 RPM
10times	ESC (EVI) EEV Operating Value	A	0,8,0	80 STEP
11times	MAIN EEV Operating Value	B	1,0,0	1000 STEP
12times	Current Value	C	1,0,0	10A
13times	Number of Indoor Unit Connections	D	0,0,7	7℃
14times	Number of Indoor Units Operating	E	0,0,4	4℃
15times	Total Capacity of Connected Indoor Units	F	1,4,5	14.5kcal/hr



Entry After Pressing K4 for 5 Seconds	Display Details	Display Value			Applicable Model
0time	Main MICOM Version	Version (ex. 0912)			RD***M**** series
1time	Inverter MICOM Version	Version (ex. 0912)			
2times	EEP ROM Version	Version (ex. 0912)			AM*****M**** series
3times	Auto-Designating Address of Indoor Unit	SEG1	SEG2	SEG3,4	
		Indoor unit: "A"	Indoor unit: "0"	Address (ex:05)	
4times	Auto-Designating Address of Indoor Unit	SEG1	SEG2	SEG3,4	
		Indoor unit: "A"	Indoor unit: "0"	Address (ex:01)	

► K5: Auto/Manual Address Setting [Applicable Only to RD\*\*\*M\*\*\*\* Model]

S/W	Function (Communication Tracking)
K5	
ON	Manually setting address of indoor unit (default)
OFF	Automatically setting address of indoor unit

► K6: Option for Snowdrift Protection Control [Common to All Models]

S/W	Function (Snowdrift Protection Control)
K6	
ON	No use of snowdrift protection control function (default)
OFF	Use of snowdrift protection control function

※ When the snowdrift protection control function is set to ON, the outdoor fan operates once for a minute every 30 minutes when the air conditioner is running under 5 °C.

► K7, K8: Setup Value Change Option for Cooling Target Evaporation Temperature [Common to All Models]

S/W		Function (Snowdrift Protection Control)
K7	K8	
ON	ON	7 ~ 9 °C (factory shipment setting)
ON	OFF	5 ~ 7 °C
OFF	ON	9 ~ 11 °C
OFF	OFF	10 ~ 12 °C

※ Please raise the setting values by improving performance while referring to the performance data of long-pipe cooling from the Technical Data Book.

※ In the case of short-piping, an unpleasant feeling can be felt from the low discharge air temperature of the indoor unit when the performance is raised arbitrarily. This is an option for compensating performance in case of long-piping installation. Please try not to use this function for other purposes.

► K9, K10: Silent night option. It is possible to run the unit quietly at nighttime by lowering the outdoor FAN RPM [common to all models]

S/W		Function (Snowdrift Protection Control)
K9	K10	
ON	ON	No use of silent night function (default)
ON	OFF	STEP - 1
OFF	ON	STEP - 2
OFF	OFF	STEP - 3

- K11, K12: Cooling Capacity Option → Use to adjust the cooling capacity. [Common to all models]

S/W		Function (Snowdrift Protection Control)
K11	K12	
ON	ON	No adjustment for target pressure (default)
ON	OFF	default - 2.0 kgf/cm <sup>2</sup>
OFF	ON	default - 1.0 kgf/cm <sup>2</sup>
OFF	OFF	default + 1.0 kgf/cm <sup>2</sup>

- ※ The cooling operation raises the frequency when the current pressure is lower than the target pressure, or in the opposite case, lowers the frequency. When the target pressure is high, the discharge air temperature of the indoor unit increases along with an increase in energy consumption.
- ※ It is recommended you keep the factory shipping settings. Please proceed with the adjustment when you wish to lower the energy consumption or the cooling is not satisfactory.  
As the target pressure decreases, the energy consumption and noise are reduced and also, the air discharge temperature of indoor unit decreases.

- K13, K14: Current Limiting Option → Use this function when you wish to adjust the current.

<Single-phase model>

S/W		Function		
K13	K14	4.0HP	5.0HP	5.0HP
ON	ON	Default	Default	Default
ON	OFF	Maximum current - 4(A)	Maximum current - 2(A)	Maximum current - 2(A)
OFF	ON	Maximum current - 6(A)	Maximum current - 4(A)	Maximum current - 4(A)
OFF	OFF	Maximum current - 8(A)	Maximum current - 6(A)	Maximum current - 6(A)

<3phase model>

S/W		Function		
K13	K14	3.5~4.0HP	5.0HP	5.0~7.5HP
ON	ON	Default	Default	Default
ON	OFF	Maximum current - 2(A)	Maximum current - 1(A)	Maximum current - 1(A)
OFF	ON	Maximum current - 3(A)	Maximum current - 2(A)	Maximum current - 2(A)
OFF	OFF	Maximum current - 4(A)	Maximum current - 3(A)	Maximum current - 3(A)

- K15, K16 : Defrost Option → 제상 진입 조건을 변경하고자 할 때 사용합니다.

S/W		Function
K15	K16	
ON	ON	MID
OFF	ON	LOW1
OFF	OFF	LOW2

- ※ The defrost function operates when the temperature difference between outdoor temperature and outdoor heat exchanger temperature is beyond a certain level.
- ※ The factory shipping setting is MID. The frost operating temperature gets lowered when changing the option to LOW.  
When lowering the temperature of defrosting operation, it has the advantage of lower operation time.  
However since it lengthens the operation time after being frozen, the cooling performance is lowered and therefore, the operation time increases.  
Use when you wish to adjust the option in the humid area where the defrost function is used quite frequently.
- ※ It is recommended you keep the factory shipping settings.

## 8. Auto Commissioning & Management System & Amount of Refrigerant Check Function [Applicable Only to AM\*\*\*\*\*M\*\*\* Series]

### 8-1. Overview of Auto Commissioning & Management System

#### 8-1-1. Overview of Auto Commissioning & Management System

##### 1) What is the Auto Commissioning & Management System?

The Auto Commissioning & Management System is an operation mode for providing a guideline to resolve possible problems more quickly and accurately in the field by checking the status of major DVM S ECO components. When the Auto Commissioning & Management System is running, it is not possible to enter into the normal mode, hence protecting the system from abnormal conditions ('UP' mode).

##### 2) Pre-inspection of Auto Commissioning & Management System

- (1) Check the power and communication cables of indoor/outdoor units.
- (2) Warm up the crank case heater sufficiently by applying power three hours before operating the Auto Commissioning & Management System.
- (3) Prior to applying power, try to check the voltage and phase by using voltmeter and phase tester.
  - R, S, T, N Terminals: Check 380V line-to-line (R-S, S-T, T-R), 220V phase-to-phase (R-N, S-N, T-N).
- (4) When applying power, the outdoor unit checks the connected indoor units and selected options.
- (5) Please make sure that the installation related details are recorded on the installation check card attached to the front side of control box.
  - ※ Warm up the crank case heater sufficiently by applying power three hours before operating the Auto Commissioning & Management System.

##### 3) How to Use the Auto Commissioning & Management System

- (1) Please try to use the KEY MODE for the operation of Auto Commissioning & Management System.

(※ Display :  ict Switch once.)

- When the Auto Commissioning & Management System is not completed, the UP (UnPrepared) message is displayed on the LED after communication check and the compressor is prohibited from running in normal operation.

(The UP mode is automatically cleared along with the termination of Auto Commissioning & Management System operation.)

- The Auto Commissioning & Management System operation runs for 20 to 40 minutes according to the operating conditions.

- When operating in the Auto Commissioning & Management System mode, a noise from valve checking may be generated.

(Please check the system if abnormal noise continues.)

- (2) When having an error while in the Auto Commissioning & Management System operation, try to take corrective action upon checking the error code shown on the product.

(After the Auto Commissioning & Management System is terminated, generate a result report by using the S-NET function.

- For the "Check Required" items on the result report, take action according to the service manual.

- After clearing all the "Check Required" items, please run the automated test operation again.

- (3) Please check the items below by using the normal (cooling) test operation.

- Check whether the cooling function works well.
- Each Indoor Unit Control: Check the wind direction and wind speed.
- Check whether there is any abnormal operation noise in the indoor and outdoor units.
- Check whether the drainage function of indoor unit is operating properly when cooling.
- Please check the details of operating status by using the S-NET function.

- (4) Explain to the user of air conditioner usage while referring to user's manual.

- (5) Present this installation guide to customer for keeping.

※ When the service is beyond the scope of warranty and boundary, just indicate the items as 'unidentified' in accordance with the operating conditions of installation and do not make any judgment.

#### 4) Items to Check for Auto Commissioning & Management System operation

The check items of DVM S ECO in the Auto Commissioning & Management System operation are as in the following.

- Indoor unit temperature sensor (indoor temperature of each indoor unit, EVA In/Out temperature sensor)
- Outdoor unit temperature sensor (outdoor temperature of each outdoor unit, Cond\_Out, high pressure sensor, low pressure sensor, intermediate pressure sensor, suction, liquid line temperature sensor)
- High pressure sensor, low pressure sensor and intermediate pressure sensor of outdoor unit
- Determine the operating current of outdoor unit compressor
- Determine the cycle state of outdoor unit
- Determine the ESC EEV operation of outdoor unit
- Determine the Main EEV operation of outdoor unit

#### 5) Warranty Scope of Auto Commissioning & Management System

The warranty scope of Auto Commissioning & Management System operation is in the outdoor temperature range of 10 ~ 40 °C. Beyond the warranty scope, the judgment accuracy of Auto Commissioning & Management System operation may be lowered.

- When running the Auto Commissioning & Management System below the outdoor temperature of 5 °C, the Auto Commissioning & Management System operation may be skipped.

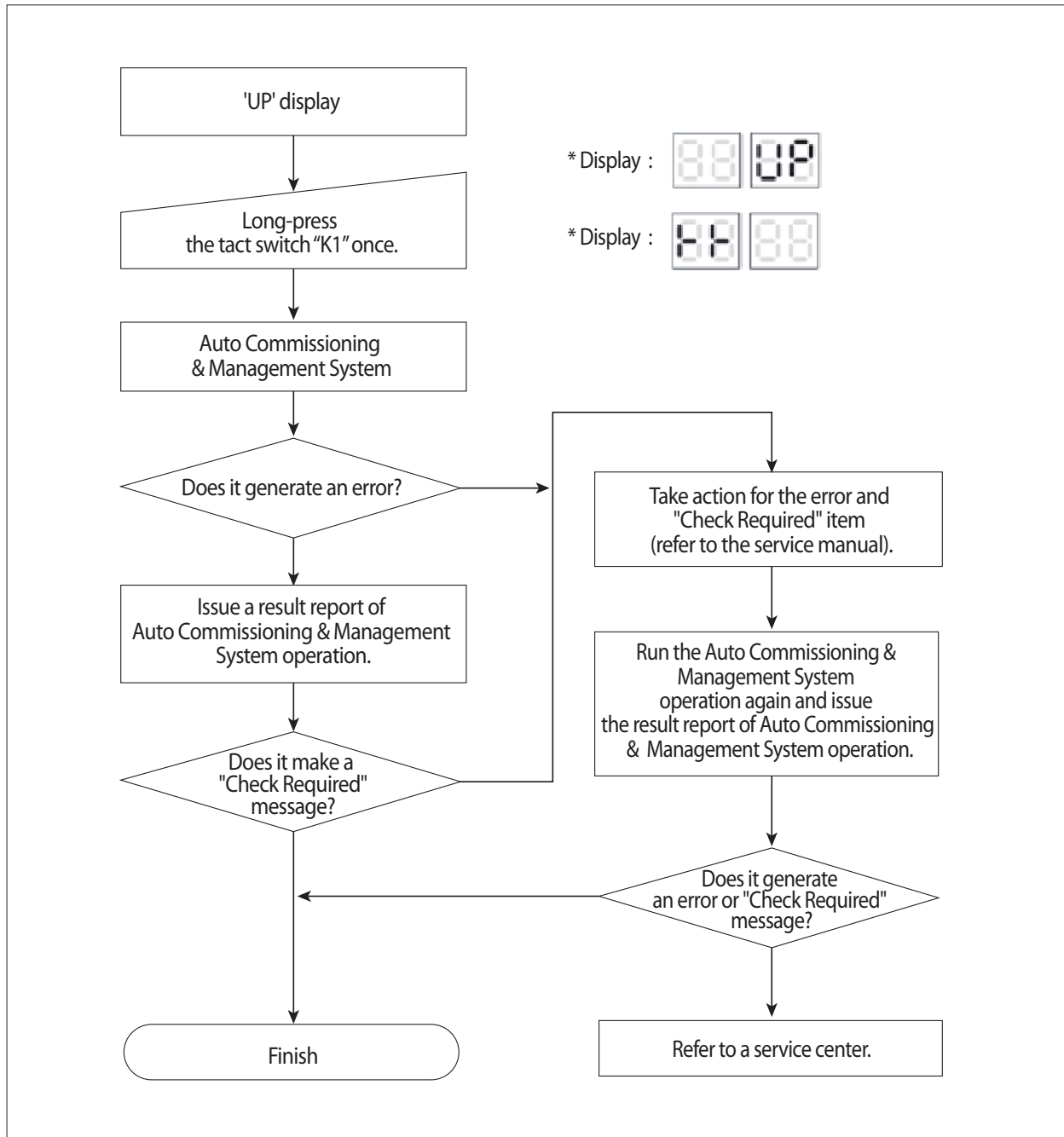
## 8-1-2. Auto Commissioning & Management System

### 1) Flow Chart of Pre-Inspection and Auto Commissioning & Management System operation

#### (1) Pre-Inspection

- Check the installation status of indoor and outdoor units such as piping, communication, power, and refrigerant level.

#### (2) Auto Commissioning & Management System operation



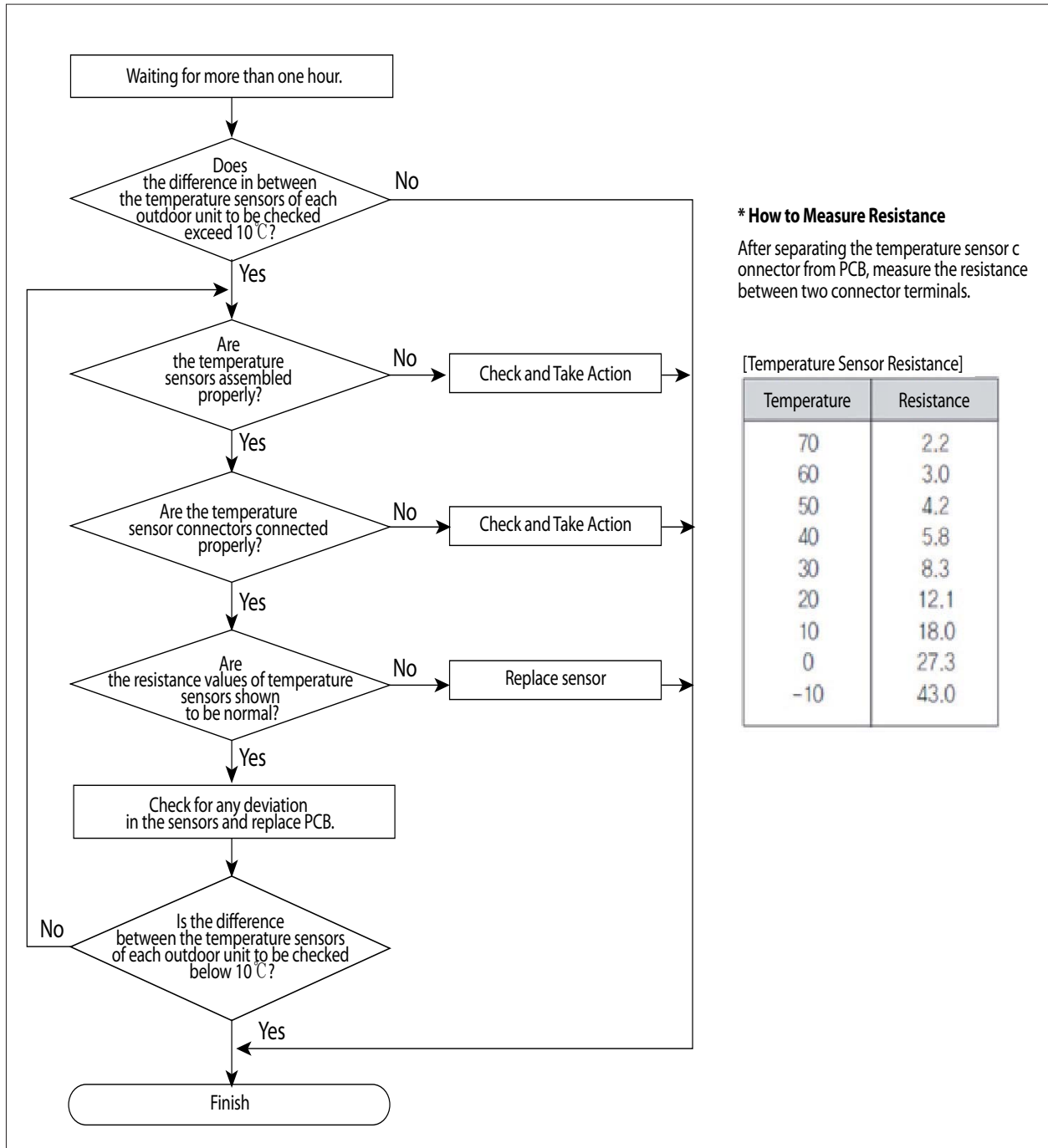
#### (3) Other Things to Note

- When problems occur from multiple components, it is difficult to make an accurate judgment.
- When there is no history of outdoor unit operation (including Auto Commissioning & Management System operation), please try to run the Auto Commissioning & Management System one hour after an Auto Commissioning & Management System operation. (At this time, please keep the vacuum mode for five minutes).
- After resolving the problem of "Check Required" item, please try to run the Auto Commissioning & Management System again.

### 8-1-3. Resolving the Problem of "Check Required"

#### 1) Temperature Sensor of Outdoor Unit

- Things to Check: Outdoor temperature of each outdoor unit, Cond\_Out, suction, and liquid line temperature sensor
- Error Code: None (showing "Check Required" on the result report)
- Determine the temperature sensor status of each installed outdoor unit before running the compressor.
- When having a "Check Required" message from the temperature sensor of outdoor unit, please check in the following order.

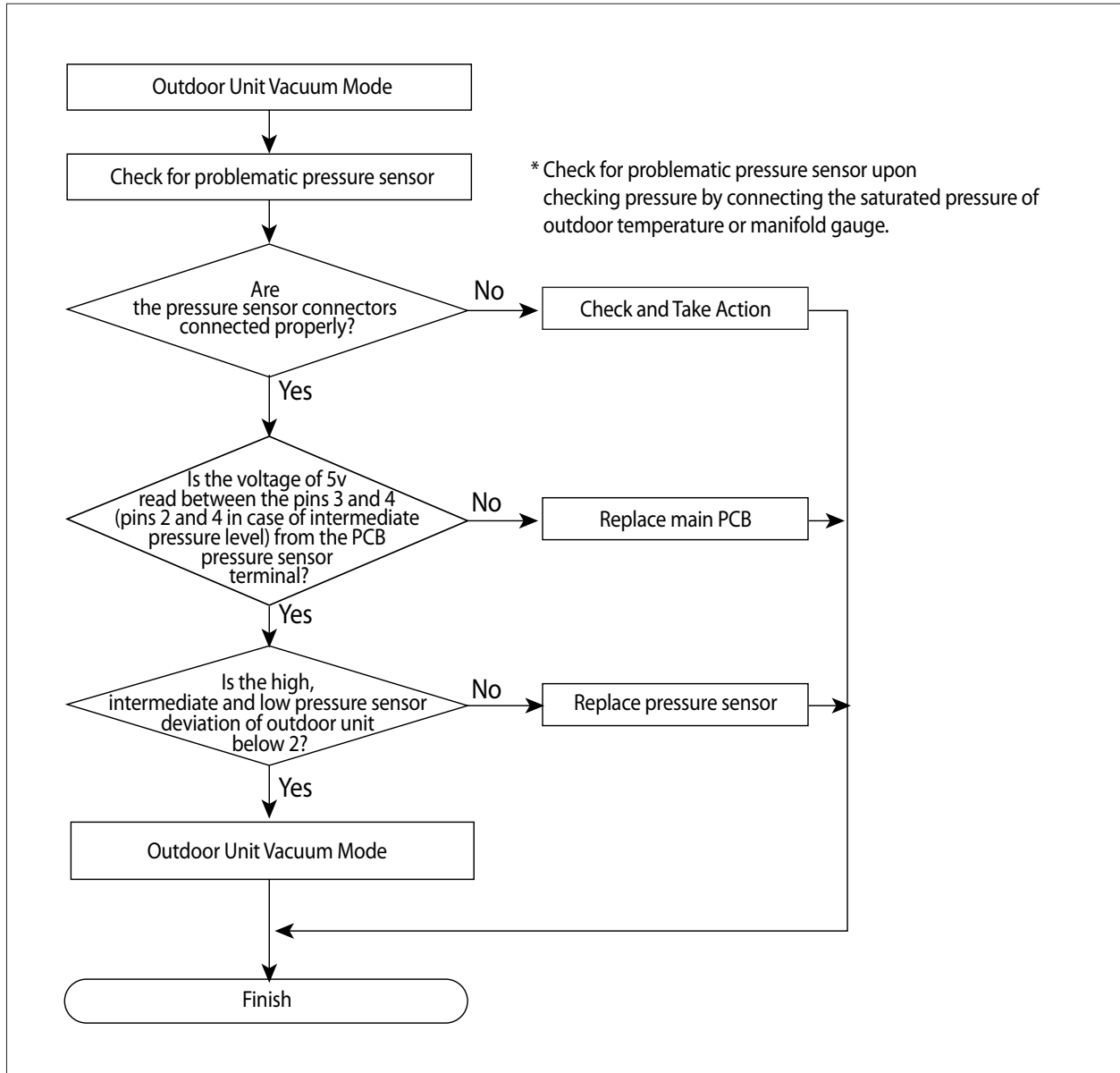


#### ⚠ [Note]

- When there is a history of outdoor unit operation (including Auto Commissioning & Management System operation), please try to run the Auto Commissioning & Management System one hour after the last stop time of system operation.

## 2) Pressure Sensor

- Things to Check: High/low pressure sensors of stand-alone outdoor unit
- Error Code: None (showing "Check Required" on the result report)
- Determine the pressure sensor status of stand-alone outdoor unit before running the compressor.
- When having a "Check Required" message from the pressure sensor of outdoor unit, please check in the following order.

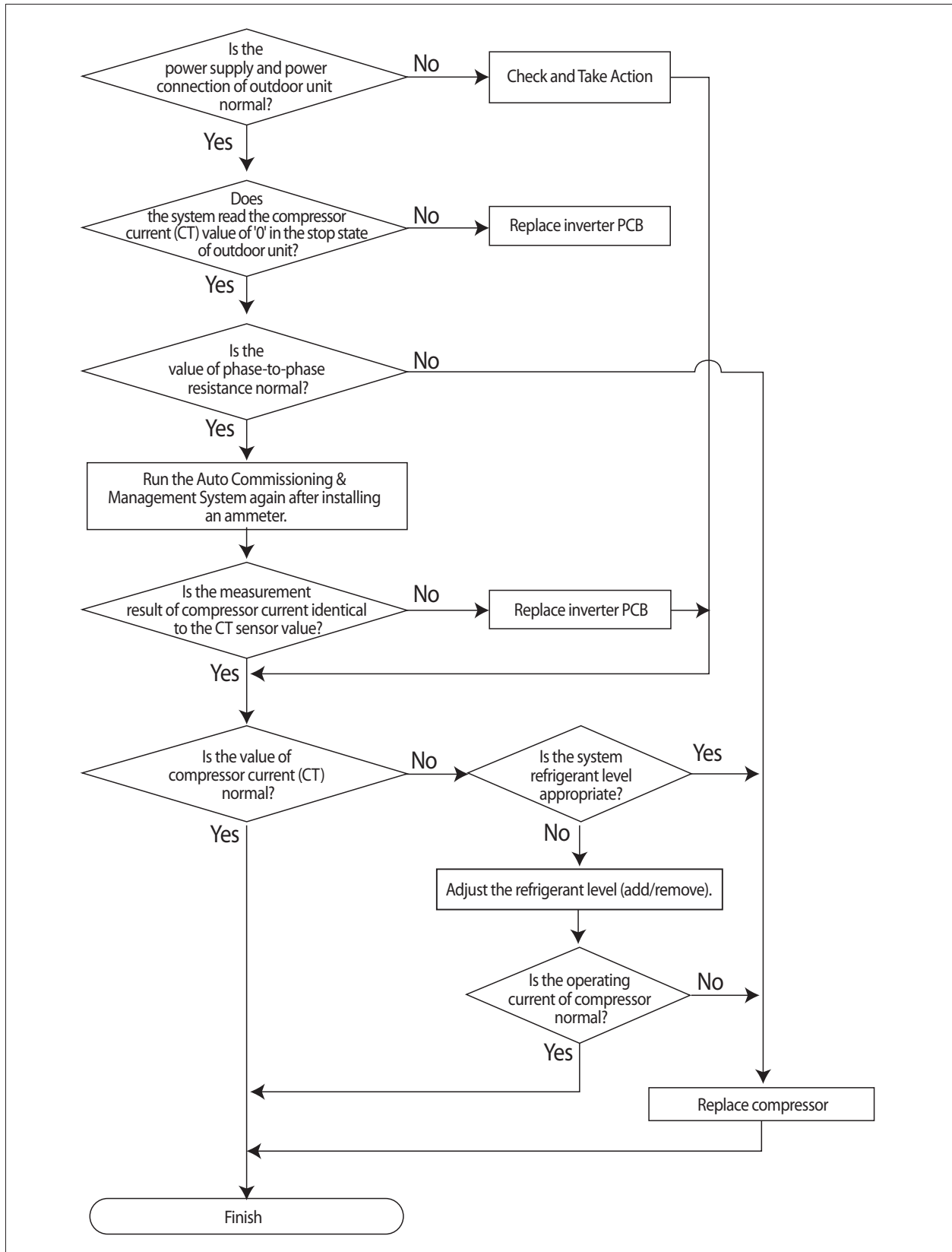


### [Note]

- When there is a history of outdoor unit operation (including Auto Commissioning & Management System operation), please try to maintain the vacuum mode for five minutes or more.

**3) Operational Problem of Compressor**

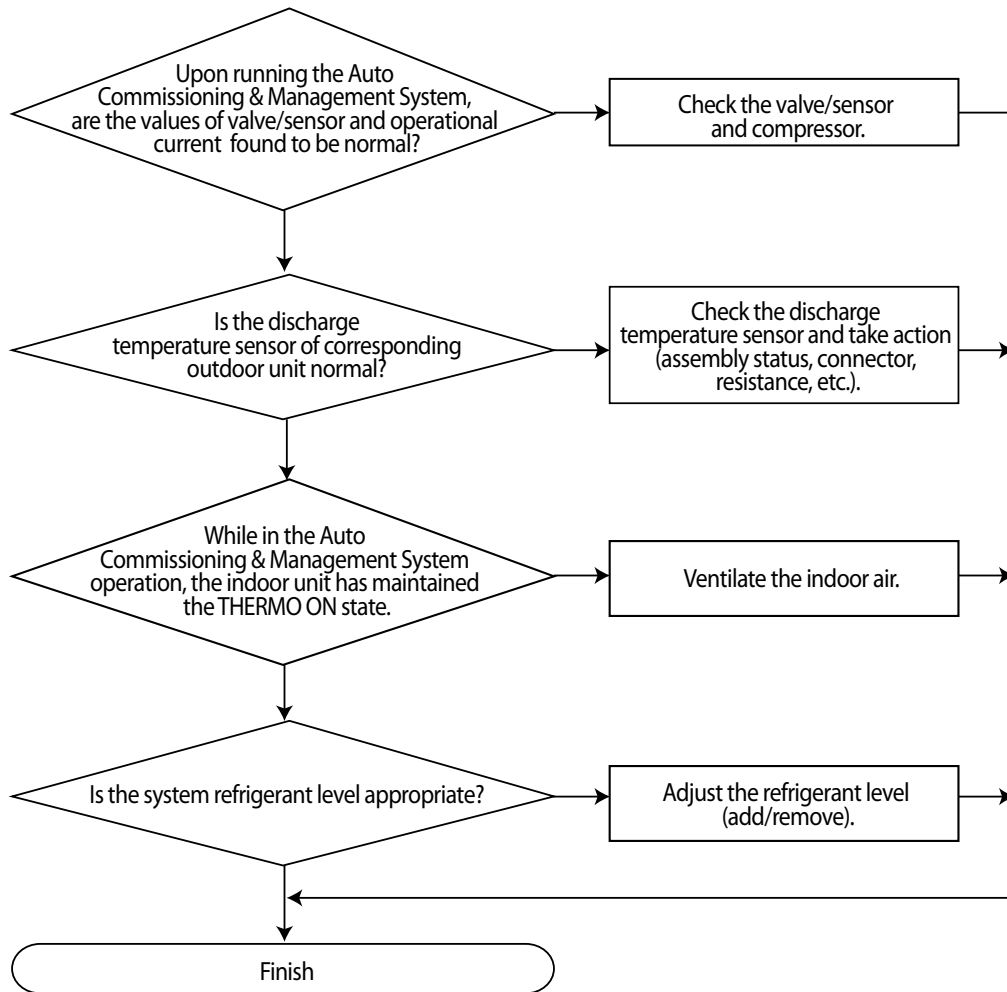
- Things to Check: Operational current of outdoor unit compressor
- Error Code: None (showing "Check Required" on the result report)
- Determine the operational current of outdoor unit compressor.
- When needing to check the operational current of outdoor unit compressor, please check in the following order.





#### 4) Cycle Status

- Things to Check: Cycle status of outdoor unit
- Error Code: None (showing "Check Required" on the result report)
- Determine the cycle status of each outdoor unit.
- When needing to check the cycle status of outdoor unit, please check in the following order.



#### \* How to Measure Resistance

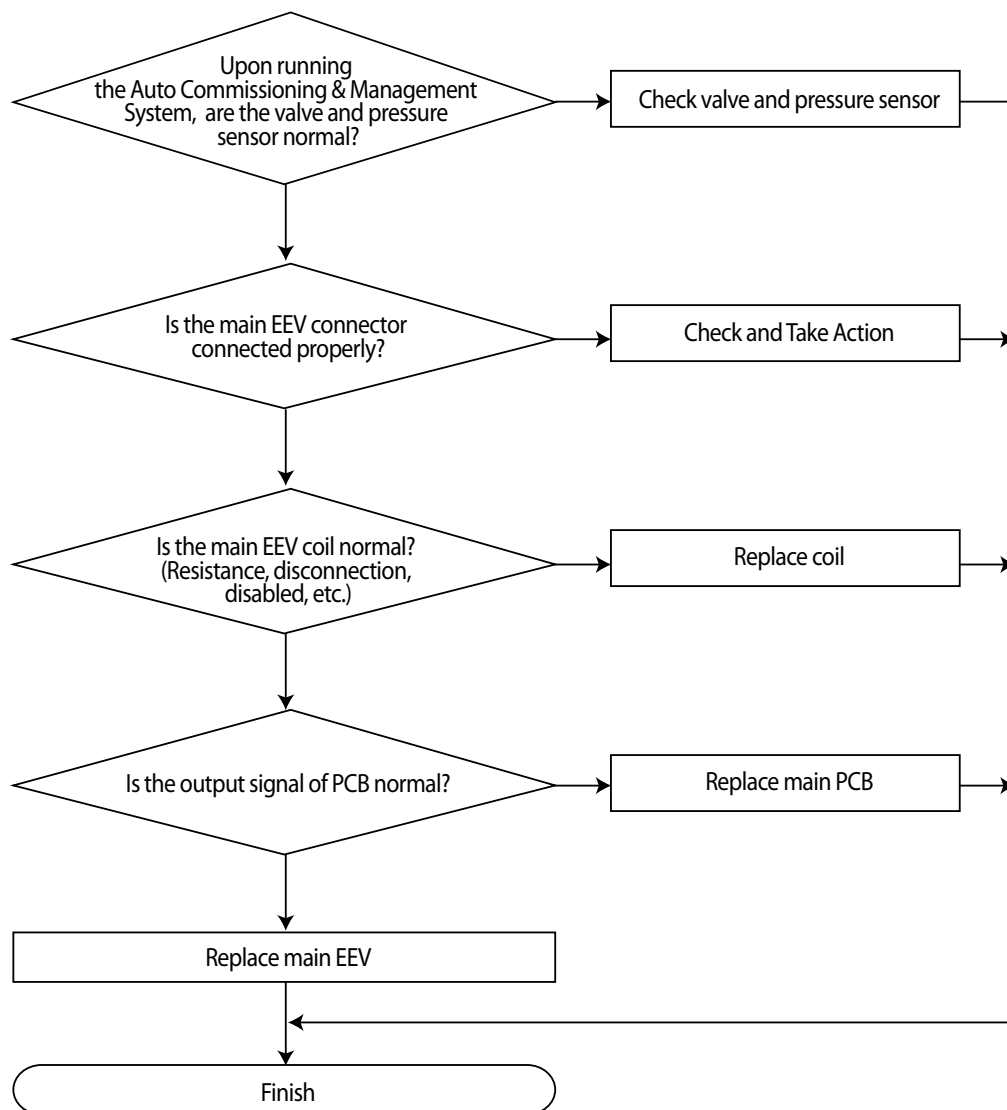
After separating the temperature sensor connector from PCB, measure the resistance between two connector terminals.

[Resistance of Discharge Temperature Sensor]

Main EEV Coil	Temperature	Resistance
	$12 \pm 1.2$	Re-Wh Re-Or Br-Ye Br-BI ----- $150 \pm 15$

### 5) Main EEV

- Things to Check: Main EEV of outdoor unit. (only when the operating mode of automated test operation is set to "heating")
- Error Code: None (showing "Check Required" on the result report).
- Determine the main EEV operation status of each outdoor unit.
- When needing to check the main EEV of outdoor unit, please check in the following order.

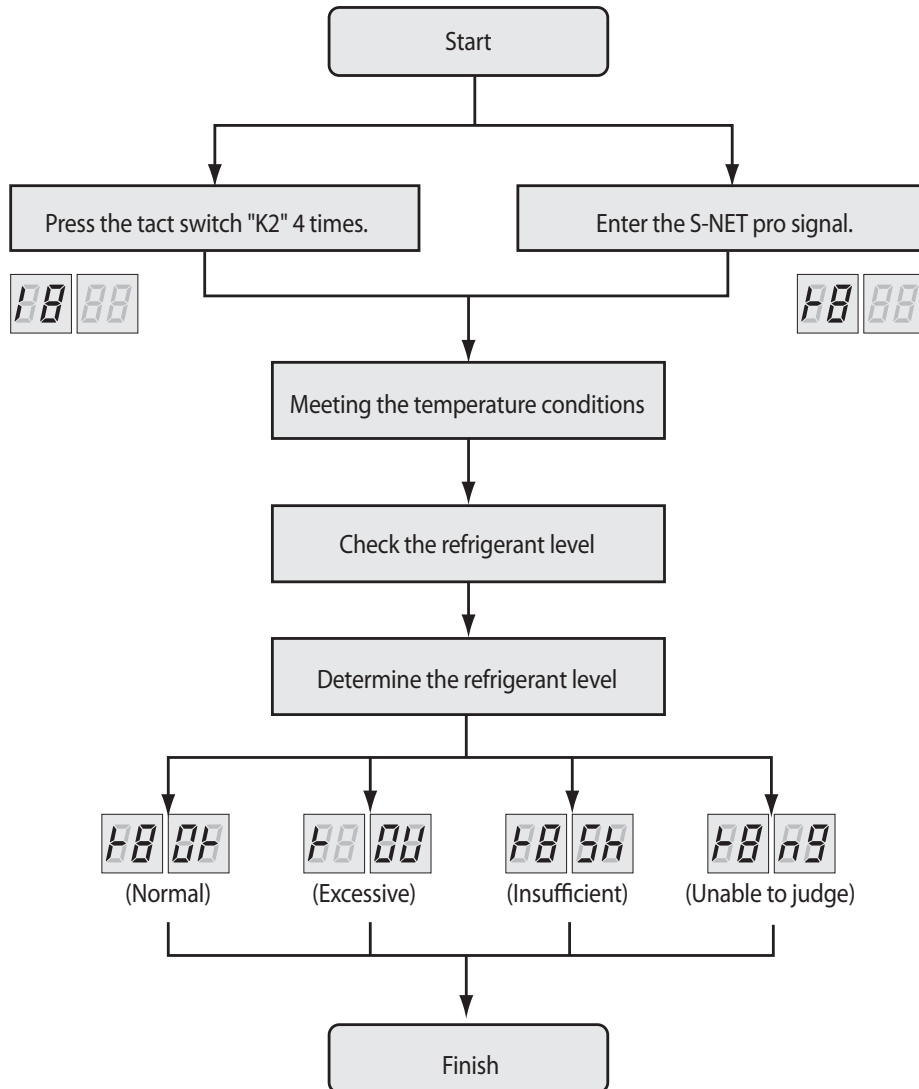


\* Standard Resistance Values of Main EEV Coil (Measured at 20 °C)

Main EEV Coil	Operating Voltage (VDC)	Phase-to-phase resistance (Ω)
	<b>12±1.2</b>	Re-Wh Re-Or Br-Ye Br-BI ----- <b>150±15</b>

## 8-2. Automatic Check of Refrigerant Level

This function determines the refrigerant level of system through the refrigerant level checking operation.



Note

- Beyond the temperature range of warranty, it is not possible to obtain an accurate result.
  - Indoor: 20 ~ 32°C
  - Outdoor: 5 ~ 43°C
- When the operational cycle is not stable, the refrigerant level detection operation may be forcefully terminated.
- When the system has not been used for a long time prior to the refrigerant level detection operation, the accuracy may be dropped. Hence, please try to run the system in cooling mode for 30 or minutes in advance.
- According to the installation environment, the refrigerant level checking result may not be accurate when running the system in protection mode.

### Action to Judgment Result

- Excessive Refrigerant Level: After removing 5% of refrigerant from the calculated refrigerant level, please try to run the refrigerant level detection function again.
- Insufficient Refrigerant Level: After adding 5% of refrigerant to the calculated refrigerant level, please try to run the refrigerant level detection function again.
- Excessive Lack of Refrigerant: After adding 10% of refrigerant to the calculated refrigerant level, please try to run the refrigerant level detection function again.
- Unable to Judge: Please check whether the system operates within the temperature range of warranty for the refrigerant level detection operation. Please check if there is any other problem in the system through test operation.

## 9. Index for Model Name

### 9-1. Outdoor Unit

AM	075	F	X	M	R	H	C	1
①	②	③	④	⑤	⑥	⑦	⑧	⑨

## ① Classification

AM	DVM
----	-----

## ② Capacity

***	HP
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## ③ Version

F	2013
G	2014
H	2015
K	2016

## ④ Product Type

N	Indoor Unit (NASA)
X	Outdoor Unit (NASA)

## ⑤ Product Notation

K	DVM PLUS4 (Outdoor Unit)
V	DVM Inverter (Outdoor Unit)
L	DVM SLIM (Outdoor Unit)
G	DVM GHP (Outdoor Unit)
M	DVM MINI (Outdoor Unit)
W	DVM WATER (Outdoor Unit)
C	DVM GEO (GEOTHERMAL) (Outdoor Unit)
D	DVM PLUS3(Outdoor Unit)
X	DVM PLUS2(Outdoor Unit)

## ⑥ Feature

A	STANDARD+GENERAL Temp.+MODULE
B	STANDARD+LOW Temp.+MODULE
C	STANDARD+TROPICAL+MODULE
D	STANDARD+GENERAL Temp.+ NON MODULE
E	STANDARD+LOW Temp.+NON MODULE
F	STANDARD+TROPICAL+NON MODULE
G	HIGH+GENERAL Temp.+MODULE
T	HIGH+LOW Temp.+MODULE
J	HIGH+TROPICAL+MODULE
K	HIGH+GENERAL Temp.+NON MODULE
L	HIGH+LOW Temp.+NON MODULE
M	HIGH+TROPICAL+NON MODULE
P	STANDARD+NORDIC+MODULE
Q	HIGH+NORDIC+MODULE
N	STANDARD+PJT-BIZ+MODULE
S	FLAGSHIP+GENERAL Temp.+MODULE
H	FLAGSHIP+LOW Temp.+MODULE
U	ULTRA+GENERAL Temp.+MODULE
R	RENEWAL+GENERAL Temp.+NON MODULE

## ⑧ Mode

C	COOLING ONLY
H	HEAT PUMP
R	HEAT RECOVERY

## ⑨ Version

/	BASIC
1	VERSION

## ⑦ Rating Voltage

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



### **GSPN (GLOBAL SERVICE PARTNER NETWORK)**

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