

BASIC MODEL : RT43(RT47) / RT46(RT49) / RT50(RT54) / RT53(RT56)

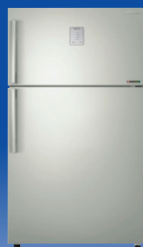
MODEL CODE : RT53K60**** (Recess Handle) / RT53K61**** (Bar Handle) / RT53K62**** (Display, Recess Handle)
 RT53K63**** (Display, Bar Handle) RT53K633P** (E-Grade) / RT53K65**** (Dispenser, Display, Bar Handle)
 RT53K66**** (Dispenser, Display, Recess Handle) RT53K665P** (E-Grade) / RT56K63**** (Display, Bar Handle)
 RT50K60**** (Recess Handle) / RT50K61**** (Bar Handle) / RT50K62**** (Display, Recess Handle)
 RT50N60**** (Recess Handle)
 RT50K63**** (Display, Bar Handle) RT50K633P** (E-Grade) / RT50K65**** (Dispenser, Display, Bar Handle)
 RT50K66**** (Dispenser, Display, Recess Handle) / RT54K65**** (Dispenser, Display, Bar Handle)
 RT46K60**** (Recess Handle) / RT46K61**** (Bar Handle) / RT46K62**** (Display, Recess Handle)
 RT46K63**** (Display, Bar Handle) / RT46K65**** (Dispenser, Display, Bar Handle)
 RT46K66**** (Dispenser, Display, Recess Handle) RT46K664P** (E-Grade) /
 RT46K67**** (Auto Ice Maker, Display, Recess Handle)
 RT46K68**** (Auto Ice Maker, Dispenser, Display, Recess Handle) / RT49K63**** (Display, Bar Handle)
 RT49K67**** (Auto Ice Maker, Display, Recess Handle) RT43K60**** (Recess Handle)
 RT43K61**** (Bar Handle) / RT43K62**** (Display, Recess Handle) / RT43K63**** (Display, Bar Handle)
 RT43K633P** (Display, Bar Handle, E-Grade)
 RT43K65**** (Dispenser, Display, Bar Handle) / RT43K66**** (Dispenser, Display, Recess Handle)
 RT47K62**** (Display, Recess Handle) / RT47K63**** (Display, Bar Handle)

SERVICE *Manual*

REFRIGERATOR



RT**K61****



RT**K63****



RT**K65****



RT**K60****



RT**K62****
RT**K67****



RT**K66****
RT**K68****

CONTENTS

1. Precautions (Safety warnings)	5
2. Product Specifications	8
3. Functions & Features	16
4. Disassembly & Reassembly	17
5. Self Diagnosis & Trouble Shooting	34
6. PCB Diagram	105
7. Wiring Diagram	112
8. Block Diagram	114
9. Reference Information	117



WARNING

IMPORTANT SAFETY NOTICE

The service guide is for service men with adequate backgrounds of electrical, electronic, and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or dealer cannot be responsible for the interpretation of this information.

SAMSUNG ELECTRONICS AMERICA, INC.

Technical Service Guide

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Contents

1. Precautions (Safety warnings)	5
2. Product Specifications	8
2-1. Introduction of Main Function	8
2-2. Model Specification	10
2-3. View of your FRIDGE / FREEZER	11
2-4. Electrical Part Specifications & Standard	12
2-5. Dimension (MM)	15
3. Functions & Features	16
3-1. Display Design	16
4. Disassembly & Reassembly	17
4-1. Precaution	17
4-2. Assy Door (Removing the Freezer Door)	18
4-3. Door Sub parts	20
4-4. Refrigerator compartments	22
4-5. Transporting to the installation place	31
4-6. Check the door level and adjust	32
5. Self Diagnosis & Trouble Shooting	34
5-1. Check-List before Trouble-Shooting	34
5-1-1. Test Function (Forced Operation / Forced Defrost)	34
5-1-2. Self-Diagnosis Function	41
5-1-3. Load Status Display Function	61
5-1-4. Operation Status Recovery Function in Case of Blackout	63
5-1-5. Exhibition Mode Setting Function	63
5-1-6. Option Setting Function	64
5-1-7. Option Table	67
5-2. Troubleshooting Flow-Chart by Symptoms	71
5-2-1. When Self-Diagnosis Error occurs	72
5-2-2. When the Freezer Fan does not operate (2 Board BLDC Motor)	80
5-2-3. When the Freezer Fan does not operate (1 Board BLDC Motor)	81
5-2-4. When the Fridge Fan does not operate - 2 Board	82
5-2-5. When the Fridge Fan does not operate - 1 Board	83
5-2-6. When Defrost does not work (F DEF Heater) - 2 Board	84
5-2-7. When Defrost does not work (F DEF Heater) - 1 Board	85
5-2-8. When there is no Power in MAIN PCB	86
5-2-9. When the Compressor is not working (INVERTER PBA) - 2 Board	90
5-2-10. When the Compressor is not working (INVERTER PBA) - 1 Board	91
5-2-11. When the unit keeps alarming (Buzzer Sound)	92
5-2-12. When PANEL PCB operates abnormally	97
5-2-13. When the Room Lamp (LED) does not light up - 2 Board	99
5-2-14. When the Room Lamp (LED) does not light up - 1 Board	100
5-2-15. When Ice Maker does not operate (Model with Ice Maker) - 2 Board	101
5-2-16. When Ice Maker does not operate (Model with Ice Maker) - 1 Board	102

Contents

6. PCB Diagram	105
6-1. Part Layout (Main Board) - 2 Board	105
6-1-1. BETTER.....	105
6-1-2. BEST/BETTER.....	106
6-2. Parts Layout (Inverter Board) - 2 Board.....	107
6-3. Parts Layout - 1 Board	108
6-4. Connector Arrangement (Main Board) - 2 Board.....	109
6-5. Connector Arrangement (Inverter Board) - 2 Board	110
6-6. Connector Arrangement (Main Board) - 1 Board	111
7. Wiring Diagram	112
7-1. Wiring Diagram - 2 Board	112
7-2. Wiring Diagram - 1 Board	113
8. Block Diagram.....	114
8-1. BLOCK DIAGRAM (PBA Main) - 2 Board	114
8-2. Block Diagram (PBA Inverter) - 2 Board.....	115
8-3. Block Diagram - 1 Board	116
9. Reference Information.....	117
9-1. Nomenclature	117
9-2. Trouble Shooting.....	118
9-3. Q&A	119

1. PRECAUTIONS (SAFETY WARNINGS)

- Upon electronic Control system repair/change, make sure the set unplugged. Be ware of electric shock.
- Use rated electronic Control equipment. Make sure to check out Model name, Rated voltage, Rated current, Operation Temp, etc.
- Upon repair, make sure that harnesses are not to be water-penetrated and are bundled tight. Should not be detached by a certain amount of external force.
- Upon repair, completely remove dust or other foreign substances from housing, harness, connector, etc. To prevent fire by tracking, short, etc.
- Check out whether water has penetrated into the electronic Control system. If there is any kind of trace, take necessary measures such as related component change, insulation tapping, etc.
- After repair, check out the assembled state of parts. It should be the same as the previous state.
- Check out the surrounding conditions. Change the location, if the fridge is located at humid, wet places or the installed state is unstable.
- If needed, ground the fridge. Especially, if there is a possibility of electric leakage, ground is indispensable.
- Do not allow consumers to overload a certain outlet.
- Check out whether the power cord or the outlet is broken, squeezed, chopped off or heat-deformed. Repair or replace the defective power cord/outlet immediately. Make sure the power cord is not punctuated or stomped down.
- Do not allow consumers to keep food unstable or place bottles in the Freezer Room.
- Do not allow consumers to repair the fridge for themselves.
- Do not allow consumers to keep things except for food. Pharmaceutical, Chemical substances : These are not possible to be fine-Controlled with a consumer fridge.
Flammable material (alcohol, benzene, ether, LPG, etc) : possibility of explosion.

PRECAUTIONS (SAFETY WARNINGS)

Read all instructions before repairing the product and keep to the instructions in order to prevent danger or property damage.

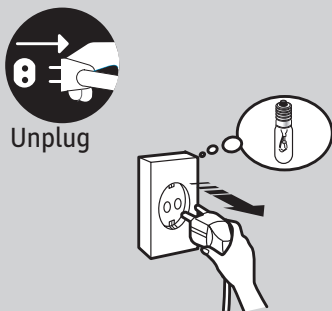
CAUTION/WARNING SYMBOLS DISPLAYED SYMBOLS

 Warning Indicates that a danger of death or serious injury exists.	 means Prohibition".
 Caution Indicates that a risk of personal injury or material damage exists.	 means Do not disassemble".
	 means No contact".
	 means The things to be followed".
	 means Power cord should be unplugged from the consent".
	 means Earth to prevent Electric shock".



Warning & Caution

Pull the power plug out to exchange the interior lamp of the refrigerator.
 • It may cause electric shock.



Unplug

Use the rated components on the replacement.

- Check the correct model, rated voltage, rated current, operating temperature and so on.



On repair, make sure that the wires such as harness are bundled tightly.

- Bundle tightly wires in order not to be detached by the external force and then not to be wetted.



On repair, remove completely dust or other things of housing parts, harness parts, and check parts.

- Cleaning may prevent the possible fire by tracking or short.



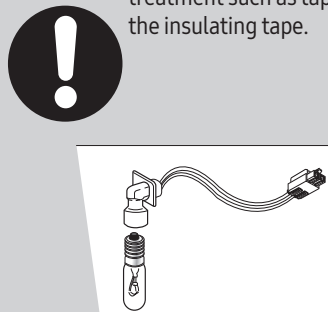
After repair, check the assembled state of components.

- It must be in the same assembled state when compared with the state before disassembly.



Check if there is any trace indicating the permeation of water.

- If there is that kind of trace, change the related components or do the necessary treatment such as taping using the insulating tape.



PRECAUTIONS (SAFETY WARNINGS)



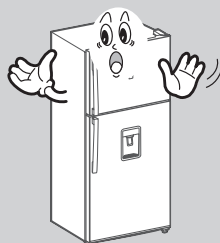
Warning & Caution

Do not allow users to put bottles or kinds of glass in the freezer.

- Freezing of the contents may inflict a wound.



Prohibition



Do not allow users to store narrow and lengthy bottles or foods in a small multi-purpose room.

- It may hurt you when refrigerator door is opened and closed resulting in falling stuff down.



Prohibition



Do not allow users to store pharmaceutical products, scientific materials, etc., in the refrigerator.

- The products which temperature control should not be stored in the refrigerator.



Prohibition

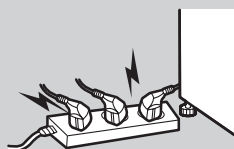


Do not allow users to insert the power plugs for many products at the same time.

- May cause abnormal generation of heat or fire.



Prohibition

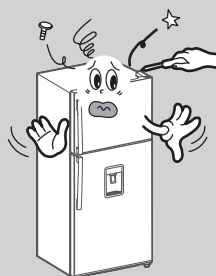


Do not allow users to disassemble, repair or alter.

- It may cause fire or abnormal operation which leads to injury.



Do not disassemble



Do not allow users to bend the power cord with excessive force or do not have the power cord pressed by heavy article.

- May cause fire.

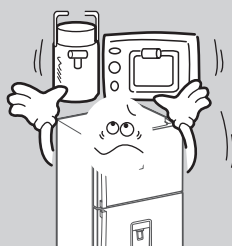


Do not allow users to store articles on the product.

- Opening or closing the door may cause things to fall down, with may inflict a wound.

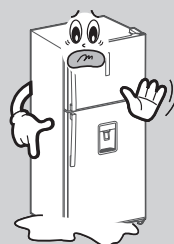


Prohibition



Do not allow users to install the refrigerator in the wet place or the place which water splashes.

- Deterioration of insulation of electric parts may cause electric shock or fire.

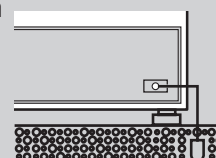


Make sure of the earth.

- If earthing is not done, it will cause breakdown and electric shock.



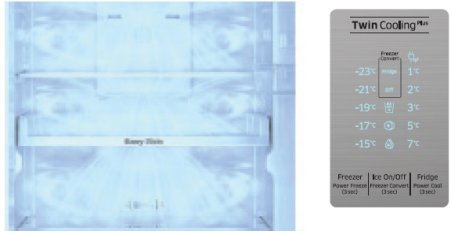
Earth



2. PRODUCT SPECIFICATIONS

2-1. Introduction of Main Function

- A newly developed SAMSUNG Top mount freezer has the following characteristics.

	QUICK COOLING MODE Pushing "Power Cool" button on the display, fridge starts cooling inside powerfully and helps reach to the target temperature in a short time. This convenient mode can reduce waiting time for cooling when needed.
	Supply of cool water without door opening With the water dispenser, you can obtain chilled water easily without opening the door. In addition, you can save electricity by more than 30% reducing the number of times the door is open.
	LED Lamp High Energy Efficiency, Long Life.
	COOL PACK Even in case of power shut-off, cool pack keeps cooling for 8 hours, which keeps foods from defrosting or ending up in the rubbish bin.
	MULTI STORAGE BASKET - Multi Storage Basket was designed to store various items such as cosmetics, medicines, and sauces separately from others. - It also can be detached and moved conveniently to a desired place.

PRODUCT SPECIFICATIONS

	TWIN COOLING PLUS - Fresh for a long time (Temperature departure in the Fridge of $\pm 1.0^{\circ}\text{C}$, High Humidity of 65-75%) - Clean ice with no odor (No Mix of odors between Fridge and Freezer)
	EASY SLIDE This specially designed shelf that can slide out enables a more efficient organization where one can easily store and take out food, while reducing unused space inside.
	BIG GUARD A wider and deeper Big Guard can store big and tall bottles easily, enabling to enjoy a big bottle of beverage for a long period of time or to store more and various beverages.
	ANTI BACTERIA PROTECTOR The inside fan creates air movement passing through a sterilizing / deodorizing filter and ensures more effective and powerful sterilization and deodorization.
	SILVER+ DEODORIZER Deodorizing Filter Has a natural fiber filter and deodorizing filter to eliminate food smell and bacteria that changes the original smell of groceries.

PRODUCT SPECIFICATIONS

2-2. Model Specification

Item		Specification			
Model		RT53	RT50	RT46	RT43
Net Capacity	Total	526	500	452	441
	Refrigerator	401	375	341	330
	Freezer	125	125	111	111
Net Dimension	W(mm)	790	790	700	700
	D(mm)	720	720	726	726
	H(mm)	1860	1790	1830	1790
Rated Voltage and Frequency		220V~240V / 50Hz 220V~240V / 60Hz 110V~127V / 60Hz			
Motor Rated	F-FAN	Max 2.5 W			
Consumption Power	R-Fan	Max 1.92 W			

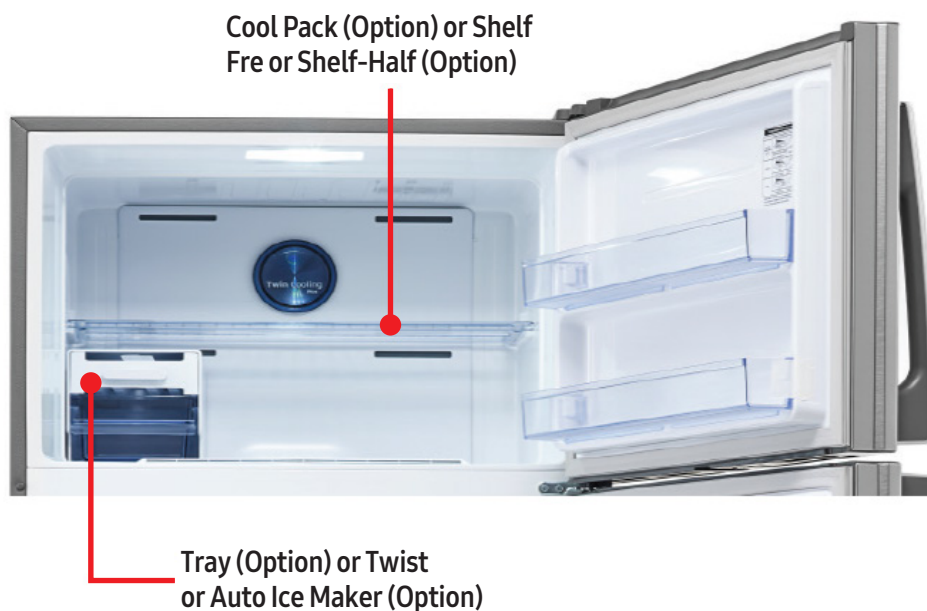
PRODUCT SPECIFICATIONS

2-3. View of your FRIDGE / FREEZER

Tray Type : RT43(RT47) / RT46(RT49) / RT50(RT54) / RT53(RT56)

Twist Type : RT43(RT47) / RT46(RT49) / RT50(RT54) / RT53(RT56)

Auto Ice Maker Type : RT46(RT49)



PRODUCT SPECIFICATIONS

2-4. Electrical Part Specifications & Standard

MODEL			Specification					
Components for Freezer	Models (Option)		RT53K	RT50K	RT46K	RT43K	RT53N	RT53K6**P** / RT50K6**P** RT46K6**P** / RT43K6**P**
	Refrigerant		R600a, 54g		R600a, 52g		R600a, 60g	R600a, 60g
	Freezing Capacity		4-STAR					
	Compressor	Model	A+ : NC4AV80ALR(Cu), A++ : NC4MVA1ALP (Cu)			A++ : NN34H9112APTT3(Cu)		E grade NI34T9101AD/TT3(Al)
		Starting type	BLDC					
		Oil Charge	A+ : Mineral Oil (10cSt), A++ : Mineral Oil (5cSt)					
	Freezer		Split Fin Type					
	Fridge		Steel Wire Type					
	Condense		No Condenser, Side Cluster 5 row (each side) except Korea, Singapore apply Side Cluster 7 row (each side)					
Electric Components	Dryer		Molecular Sieve 9gr					
	Capillary tube		F : OD2.05 x ID0.75 x L4000 R : OD : 1.8 x ID:0.75 x L4000					
	Defrost-Heater	Conducting at F Defrost	120V, 160W, 90ohm 230V, 160W, 330ohm					
	Thermal-Fuse for preventing over heating of Refrigerator Defrost-Heater		110°C(109°C) OFF					
	Bimetal for preventing over heating of Refrigerator Defrost-Heater		40°C ON, 60°C OFF					
	Valve step		3way, DC12V, Max700mA, 40ohm/phase					

PRODUCT SPECIFICATIONS

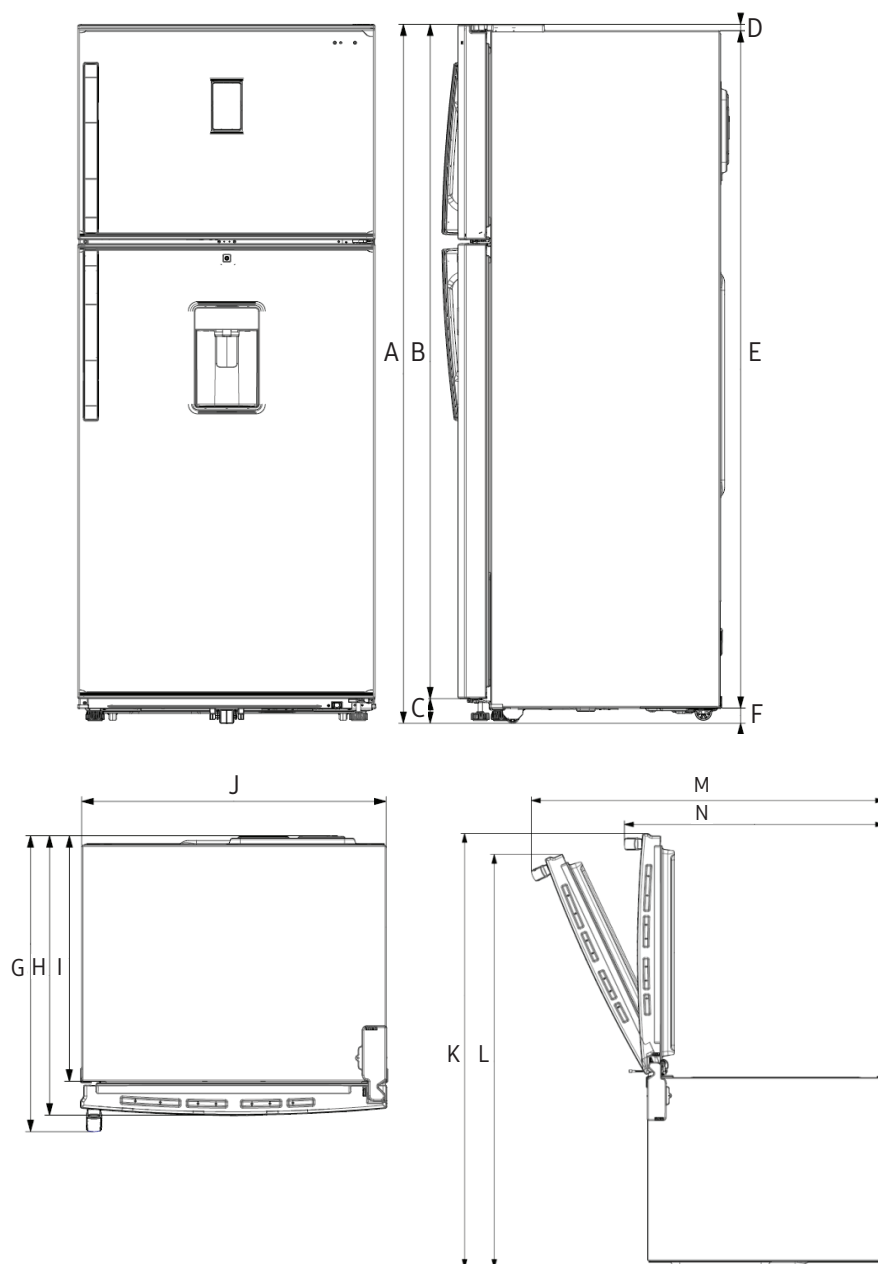
Items			Specification			
Electric Components	Models (Option)		RT53	RT50	RT46	RT43
	Over-load Relay	Model	-			
		Temp. ON	-			
		Temp. OFF	-			
	Motor	F FAN BLDC	ARES2120RA, 1870RPM±4%, 12V, 210mA±20%, 2.5W±20%			
		R-Fan BLDC	U92C12MS1B3, 3305 ±7%, DC12V, 0.16A, Max 1.92W			
		Deodorizer	G6015S12B, 2400RPM±7%, 12V, 0.07A, 1W, 4POLE, CW, 60*60*15			
	Lamp	LED Type	F-ROOM : 3CHIP, DC12V(45~75mA), R-ROOM : 5CHIP, DC12V(120~160mA)			
	Power Cord	Europe/Korea	UCP-2			
		United Kingdom	BF-3(BSI)			
		AUSTRALIA	AP-3			
		SINGAPORE	BF-3(PSB)			
		MALAYSIA	BF-3			
		IRAN	UCP-2			
	Door Switch		MDCG-4, 200VDC, 0.5A			
	Pump Motor		DC12V, 400mA(Optional)			
	Switch for water		AC 250VAC, 16A(Optional)			
	MOTOR - ANTI VIRUS PROTECTOR		DC12V, 70mA(Optional)			
	Water valve		DC12V, 300mA(Optional)			

PRODUCT SPECIFICATIONS

Items				Specification	
MODEL				RT53 / RT50 / RT46 / RT43	
Room Temperature Sensor Components	Refrigerator	MODEL	Temperature Selection	ON(°C)	OFF(°C)
		Thermistor (Freezer Sensor) 502AT	-23°C	-22.5	-23.5
			-19°C	-18.5	-19.5
			-15°C	-14.5	-15.5
		Thermistor (Fridge sensor) 502AT	1°C	2.5	-0.5
			2°C	3.5	0.5
			7°C	8.5	5.5
Defrost Related Components	Defrost Cycle	First Defrost Cycle (Concurrent defrost of F and R)		5hr ±10min	
		Defrost Cycle (FRE)		8~77hr (very according to the conditions used)	
		Pause time		12~77hr (Vary according to the conditions used)	
	F/R Defrost Sensor		Model	THERMISTOR SENSOR ASS'Y	
			SPEC	5.39 K Ω at 23°C	
	Thermal-Fuse		Rated	250V, 10A	
			Operating temperature	109~110°C	

PRODUCT SPECIFICATIONS

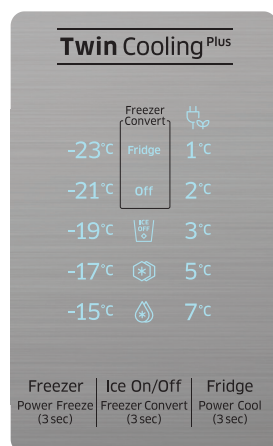
2-5. Dimension (MM)



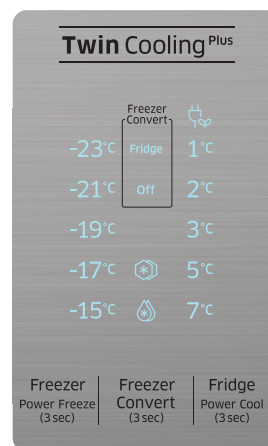
MODEL	A	B	C	D	E	F	G	H	I	J	K	L	M	N
RT53 (BAR)	1855	1790	65	17	1800	38	770	720	609	785	1435	1375	1170	861
RT50 (BAR)	1785	1720	65	17	1730	38	770	720	609	785	1435	1375	1170	861
RT46 (BAR)	1825	1760	65	17	1770	38	776	726	615	695	1350	1285	1045	774
RT43 (BAR)	1785	1720	65	17	1730	38	776	726	615	695	1350	1285	1045	774
RT46 (RECESS)	1825	1760	65	17	1770	38	-	726	615	695	1350	1285	1045	729
RT43 (RECESS)	1785	1720	65	17	1730	38	-	726	615	695	1350	1285	1045	729

3. FUNCTIONS & FEATURES

3-1. Display Design



RT**K67/RT**K68



RT**K60/RT**K61/RT**K62/
RT**K63/RT**K65/RT**K66

① Freezer

If you press the Freezer button, the Freezer temperature will be set to be between -15°C and -23°C. The default set temperature is -19°C, and if you press the button, the temperature will change and the set temperature will be displayed.

② Power Freeze

- 1) If you press the Power Freeze button for three seconds, the Power Freeze icon will be turned ON.
- 2) This function will last for a few hours, and after that, the temperature will return to the previous temperature.
- 3) This function may be automatically OFF. First, it is turned OFF automatically when the Power Freeze function is completed. Second, if you press the Power Freeze button again, it will be turned OFF automatically, and the temperature will return to the previous set temperature.

③ Ice On/Off

If you press the Ice On/Off button, you can change the status of the Ice Maker. If you press the button while the Ice On/Off button is not selected, the Ice Off icon will be turned ON, and the Ice Maker will not work.

④ Freezer Convert

The Freezer Convert function can change the mode of the Freezer. The default setting is the Freezer, and if you press the Freezer Convert button for three seconds in this status, the Fridge icon will light up and the Fridge will be turned ON. After you have pressed the Hold button for three seconds, you can change the mode with a single button. However, the status will be changed immediately after the Hold button is pressed for three seconds only when it is set to be the Freezer, which is the basic default setting.

⑤ POWER COOL

1. When you press the Power Cool button, the Indicator (🔥) will light up and the refrigerator will speed up the time.
2. This function will be activated for several hours and then return to the previous temperature.
3. This function switches off automatically. When the Power Cool process is completed, the Power Cool indicator switches off and the freezer switches back to the previous temperature setting. To deactivate this function, press the Power Cool button.

⑥ Fridge

Press the Fridge button to set the fridge to desired temperature from the range 1~2 °C to between 1 °C and 7 °C. Default set temperature is set on 2 °C and each time you press the Fridge button, temperature will changing following order and temperature indicator will display the desired temperature. You can also select the Vacation mode with the Fridge button.



4. DISASSEMBLY & REASSEMBLY

4-1. Precaution

- Unplug the refrigerator before cleaning and making repairs.
- Do not disassemble or repair the refrigerator by yourself.
 - You run risk of causing a fire, malfunction and/or personal injury.
- Remove any foreign matter or dust from the power plug pins.
 - Otherwise there is a risk of fire.
- Do not use a cord that shows cracks or abrasion damage along its length or at either end.
- Do not plug several appliances into the same multiple power board. The refrigerator should always be plugged into its own individual electrical which has a voltage rating that matched the rating plate.
 - This provides the best performance and also prevents overloading house wiring circuits, which could cause a fire hazard from overheated wires.
- Do not install the refrigerator in a damp place or place where it may come in contact with water.
 - Deteriorated insulation of electrical parts may cause an electric shock or fire.
- The refrigerator must be grounded.
 - You must ground the refrigerator to prevent any power leakages or electric shocks caused by current leakage from the refrigerator.
- Do not put bottles or glass containers in the freezer.
 - When the contents freeze, the glass may break and cause personal injury.
- Do not store volatile or flammable substances in the refrigerator.
 - The storage of benzene, thinner, alcohol, ether, LP gas and other such products may cause explosions.

■ NEED TOOL

IMAGE	ITEM	USE
	Phillips Head Driver	Use for assembling and disassembling of screw
	Flat Head Driver	Use for assembling and Disassembling of Home Bar, Dispenser, Deli Cartessen Box, Main PBA etc...
	Hex Wrench Ø2mm	Use for assembling and disassembling of Handle
	Socket Wrench Ø10mm	Use for assembling anddisassembling of Door Hinge

DISASSEMBLY & REASSEMBLY

4-2. Assy Door (Removing the Freezer Door)



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Removing the Freezer Door	1. With the door closed, remove the Cover-Hinge-Up.(Like the picture, take off the Cover-Hinge-Up along the arrow)	
	2. Disconnect the connector of wires.	
	3. Remove Hinge screws by turning to counterclockwise, and then take off the Hinge-Up.  Take care when removing the door to ensure that it does not fall on you.	
	4. Remove the door form the middle hinge by carefully lifting the door.  Be careful not to scratch.	



If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY

PART NAME	DESCRIPTION	FIGURE
Removing the Refrigerator Door	1. Open the Refrigerator door.	
	2. Remove hinge screws by turning to counterclockwise, and then take off the Hinge-Mid.	
	3. Remove the door from the low hinge by carefully lifting the door.  CAUTION Take care when removing the door to ensure that it does not fall on you.  CAUTION When disassembling, make sure the unit is turned off if you want to assemble, follow the reverse order.	



CAUTION

If you want to assemble, follow the reverse order.

DISASSEMBLY & REASSEMBLY

4-3. Door Sub parts



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Disassembly of Dispenser	1. Pick Assy Cover-Dispenser like the picture, pull them upward.  Be careful not to scratch.	
Control Panel	1. Remove Inlay film as shown. 2. Insert a flat-head screwdriver on the slot as shown, and unlock the tabs. 3. Disconnect the wire connector.  When disassembling, make sure the unit turned off.	 

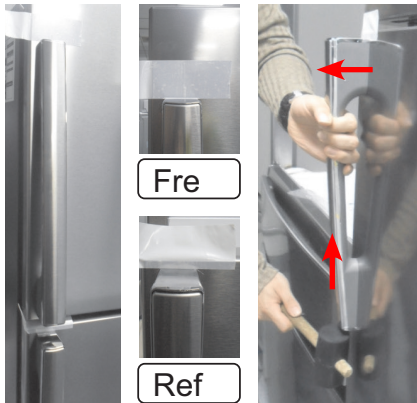


If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Door Hand	1. Attach Tape at the above handle to prevent scratch. 2. Open the door. 3. Pulling out the handle and hit handle bottom face verticality with rubber-hammer. (Refer to the picture)  Be careful not to scratch.  When disassembling, make sure the unit turned off if you want to assembly fellow the reverse order.	
Fridge Door Reed S/W	1. Use a small flat-head screwdriver to unlock the reed switches and pull the switches out. 2. Disconnect the connector of wires.	



If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY

4-4. Refrigerator compartments



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Glass Shelf	These shelves allow the storage of larger items and pull out for easy access. 1. Lift up and pull the shelf out to the front.	
	Drawers are designed for storage of fruits, vegetables and deli items. The drawers are located in the lower portion of the refrigerator. 1. Pull out the drawer as far as it goes 2. Tilt the drawer up and pull it out until it is removed.	

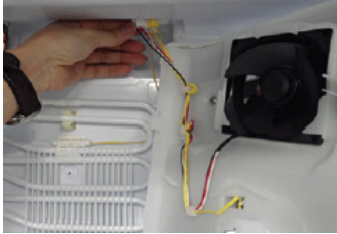


If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Anti Bacteria	1. Lift up and pull the Anti-Bacteria out to the front.  When disassembling, make sure the unit turned off if you want to assembly fellow the reverse order.	 
Deodorizer	1. Pull the Cover-Deodorizer out forward.	
Cover Multi	1. Remove the cap screw. 2. Turn the ASSY Accessory-Twin Cooling counterclockwise and remove it. 3. Remove the screw using a screwdriver.  When disassembling, make sure the unit turned off if you want to assembly fellow the reverse order.	   
	4. Pull the bottom part with hands. 5. Remove the housing.	 

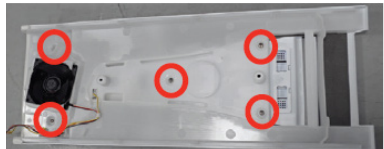
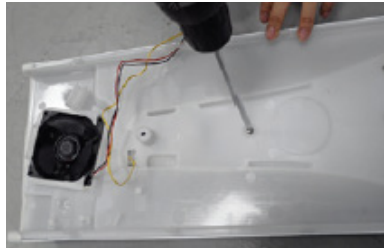
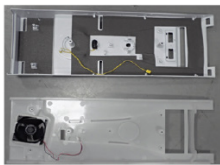
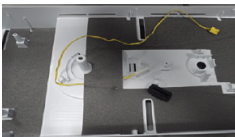
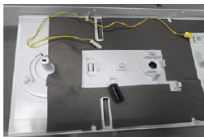


If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Sensor	1. Remove the Evap sensor housing by pulling it with hands. 2. Remove the sensor from the Evap.	  
	3. Remove the screws from the Multi Cover.	 
	4. Unfasten the hooks and remove it.	 
	5. Remove the sensor from the Multi Cover.	 

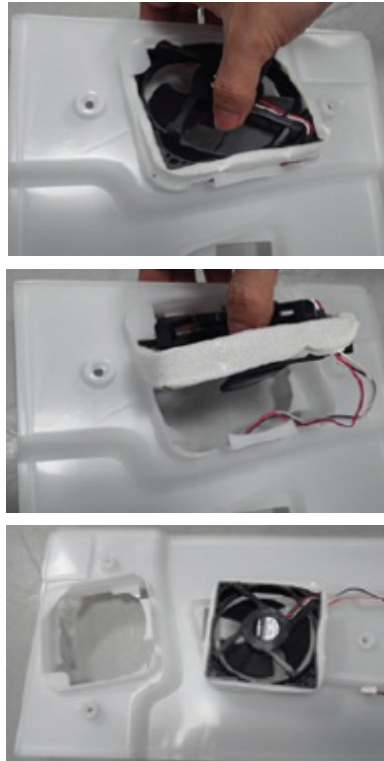


If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Fan	1. Pull the bottom part of the fan and remove it.	
Assy Accessory-Twin Cooling	1. Turn the ASSY Accessory-Twin Cooling counterclockwise and remove.	



If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Evaporator Cover in Freezer	1. Remove the cap screw. 2. Remove the screw.  When disassembling, make sure the unit turned off if you want to assembly fellow the reverse order.	  
	3. Pull the top part and remove it. 4. Remove the housing from top part on the left.	 



If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Sensor (Fan included)	1. Remove the sensor from the Evap. 2. Remove the housing.	
	3. Remove the marked screws.	
	4. Remove the marked screws after removing the Styrofoam. (Remove the fan.)	
	5. Remove the sensor.	

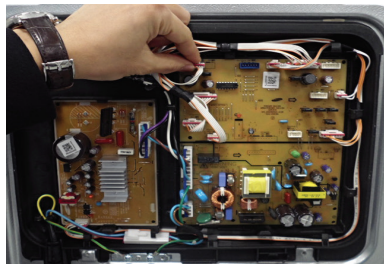
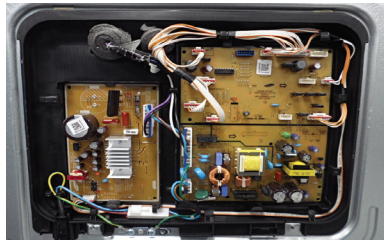


If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Main PBA and Inverter PBA (2 Board)	1. Remove 3 screws of the PBA cover.  When disassembling, make sure the unit turned off.	
	2. Disengage all housing connectors connected with Inverter PBA and Main PBA.	
	3. Remove the Inverter PBA and Main PBA by pulling the hook out. (refer the picture) Disconnect the sensor and the housing.	

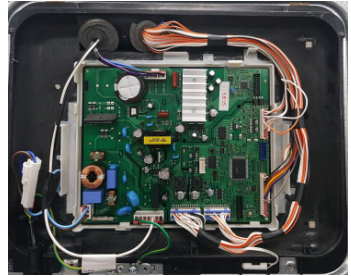
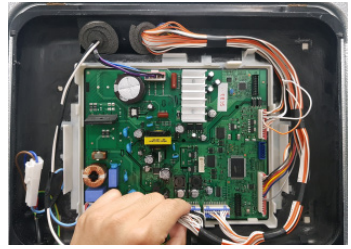
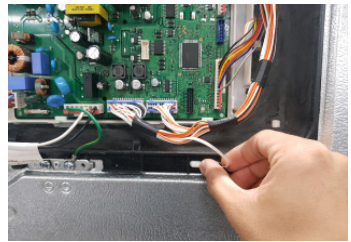


If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

PART NAME	DESCRIPTION	FIGURE
Main PBA and Inverter PBA (1 Board)	1. Remove 3 screws of the PBA cover.  When disassembling, make sure the unit turned off.	
	2. Disengage all housing connectors connected with Main PBA.	
	3. Remove the Main PBA by pulling the hook out. (Refer to the picture) Disconnect the Sensor and the Housing.	 



If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY



When disassembling, make sure the unit turned off.

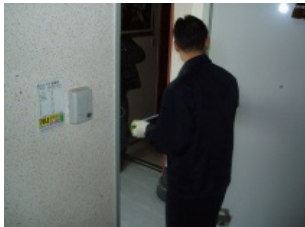
PART NAME	DESCRIPTION	FIGURE
Tray Drain Water	1. Turn off the refrigerator. 2. Remove all the storage inside.	
	2. Lay the front of the refrigerator to face the bottom.	
	3. Holding Chassis-comp and remove 4 screw with phillips head driver.	
	3. Holding Chassis-comp and remove 1 screw with phillips head driver. 4. Remove Tray-drain-water.	
Tray drain water Condenser	1. Holding Chassis-comp and remove 4 screw with phillips head driver	
	2. Remove wire earth and Fan connector 3. Remove screw condenser and take of classis comp 4. Remove screw and Take of fan from tray drain	



If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY

4-5. Transporting to the installation place

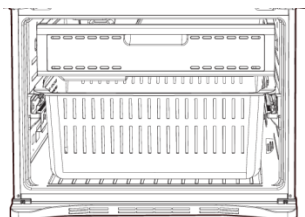
NO	PRECEDURES	HOW TO DO	PICTURES
1	Check the size of the entrance	Before moving in the ref, check the size of the elevator and the main entrance.	
2	Delivering Doors	Deliver the F/R-Doors first. Make sure not to scratch surfaces and bend the water supply hose.	
3	Delivering Body	To prevent side walls from scratches, reuse the packing materials during delivery. Upon delivery, make sure to work by 2 personal as a team.	



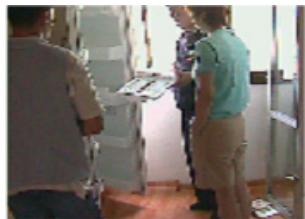
If you want to assembly, fellow the reverse order.

DISASSEMBLY & REASSEMBLY

4-6. Check the door level and adjust

NO	PRECEDURES	HOW TO DO	PICTURES
1	Put the unit on its installation place	- under the roof, they should use rug or mat to prevent the floor damage. ※ the installer should select a proper location.	
2	Check the floor even	- If the back of the ref is not leveled, there will be diagonal defect. So, make sure to put a hard insertion (ex: wooden block, plastic bar) on the lower floor, fix it with sticky tapes and level it.	
3	Insert leveling JIG	- to let the both rear caster touch the floor, lift up a little the unit and insert the JIG.	
4	Adjust the front legs	- using a flat driver, let the legs touch the floor.	
5	Remove the leveling JIG	- settle the unit entirely, pull out the JIG.	

DISASSEMBLY & REASSEMBLY

NO	PRECEDURES	HOW TO DO	PICTURES
6	Level the doors	- turn the adjusting screws clockwise or count clockwise, make the door level even. ※ make sure that the lock nut on adjusting screw entirely fixed.	
7	Explain to customer how to use properly.	- explain how to use temp controller, dispenser, no defect cases, how to purchase the accessories.	



If you want to assembly, fellow the reverse order.

5. SELF DIAGNOSIS & TROUBLE SHOOTING

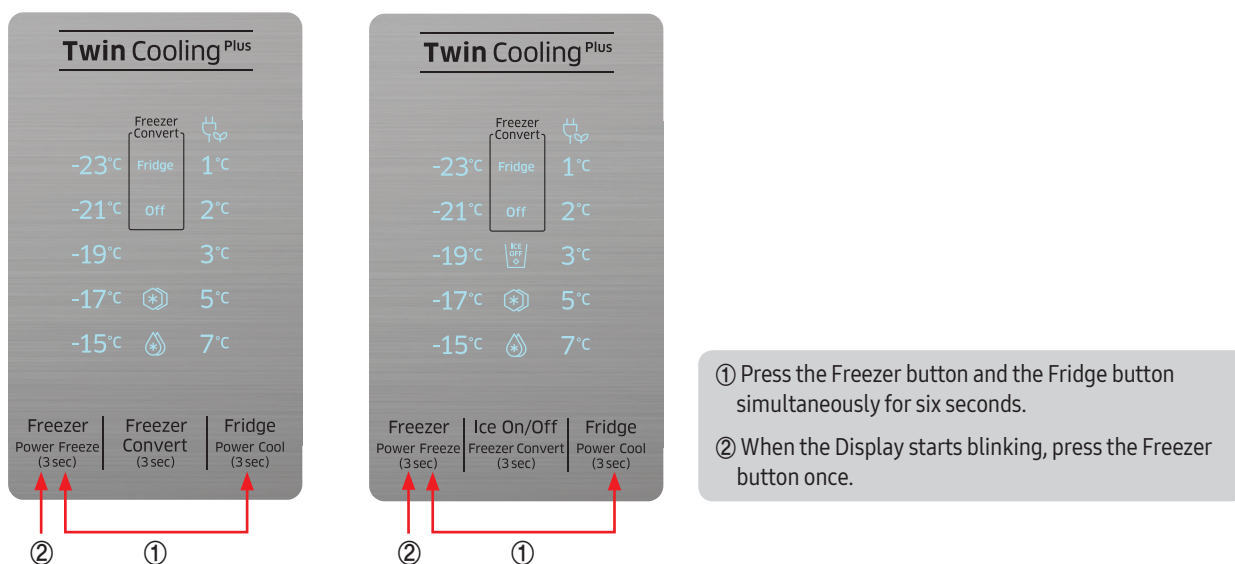
5-1. Check-List before Trouble-Shooting

5-1-1. Test Function (Forced Operation / Forced Defrost)

1. For Models with Electronic Displays

1. If the Freezer button and the Fridge button on the Panel PCB are pressed simultaneously for six seconds or longer, the Panel Display will turn ON/OFF all displays for about four seconds with an interval of 0.5 seconds. Here, if you take your finger off the Freezer button and the Fridge button and press the Fridge button, the product will enter the Test Mode.
2. During the Test Mode, if you press any button from among the buttons on the Panel, it will work as a test button.
3. If you press the Test button, it will change in the following order: Forced Operation 1, Forced Operation 2 (A-Valve/ Fan OFF), Forced Operation 3 (F-Valve/Fan OFF), Forced R Defrosting, Forced F/R Defrosting, Cancellation (normal operation), and Forced Operation 1.
4. If you want to cancel the Test mode in the middle, please turn OFF the power and turn it ON again.

1) Test Mode Entering Process



2. Models with ROTARY S/W (Fridge Room)



1. If repeating 3 times switch of 'Coldest' Choices as Rotary Switch and "Dead Zone" over a second choice, a Test key will be recognized as a one circuit. However, the choice of "Coldest" and "Dead zone" exceed 5 seconds. 3 time Count is initialized.
2. If you press the Test button in the normal operation status, the test function will change in the following order: Forced Operation 1, Forced Operation 2 (R-Valve/ Fan OFF), Forced Operation 3 (F-Valve/Fan OFF), Forced R Defrosting, Forced F/R Defrosting, Cancellation (normal operation), and Forced Operation 1.
3. If you press the Test button once in the normal mode, the product will enter the Forced Operation 1 function.
 - 3-1) Here, the Buzzer will perform alarm with a beep sound.
 - 3-2) When forced operation is selected, the Comp. will immediately work without the 15- minute delay in any operation mode.
Here, if the product is defrosting, the defrosting will be immediately stopped, and forced operation will be performed.
(If forced operation is performed immediately when the Comp. is OFF, overload may occur, so be careful.)
 - 3-3) When forced operation is selected, the Comp. and the F-Fan continues to operate for 24 hours, and the R Compartment will work by the set temperature.
 - 3-4) During forced operation, the alarm will sound until the forced operation will be ended, and you can cancel forced operation by repressing the Test button.
4. If you press the Test button again in the Forced Operation 1 status, the product will enter the Forced Operation 2 mode.
 - 4-1) Here, the Buzzer will perform alarm with a beep sound.
 - 4-2) When forced operation is selected, the Comp. will immediately work without the 15-minute delay in any operation mode. Here, if the product is defrosting, the defrosting will be immediately stopped, and forced operation will be performed. (If forced operation is performed immediately when the Comp. is OFF, overload may occur, so be careful.)
 - 4-3) When forced operation is selected, the Comp. and the F-Fan will continuously work for 24 hours, the R-Valve will be closed, and the R-Fan will be OFF.
 - 4-4) During the forced operation, the alarm will sound until the forced operation will be ended, and if you repress the Test button, the Forced Operation 2 mode will be canceled.

SELF DIAGNOSIS & TROUBLE SHOOTING



5. If you press the Test button again in the Forced Operation 2 status, the product will enter the Forced Operation 3 mode.

5-1) Here, the Buzzer will perform alarm with a beep sound.

5-2) When forced operation is selected, the Comp. will immediately work without the 15-minute delay in any operation mode. Here, if the product is defrosting, the defrosting will be immediately stopped, and forced operation will be performed. (If forced operation is performed immediately when the Comp. is OFF, overload may occur, so be careful.)

5-3) When forced operation is selected, the Comp. and the R-Fan will continuously work for 24 hours, the F-Valve will be closed, and the F-Fan will be OFF.

5-4) During forced operation, the alarm will sound until the forced operation will be ended, and you can cancel the Forced Operation 3 by repressing the Test button in the Forced Operation 3 status.

6. In the Forced Operation 3 status, if you press the Test button again, the Forced Operation 3 will be immediately canceled, and the product will enter the Forced R Defrosting mode.

6-1) Here, a beep alarm sound will be made for three seconds from when you enter the mode, and continue to be made by being ON for 0.1 seconds and being OFF for 0.9 seconds in the Forced R Defrosting mode.

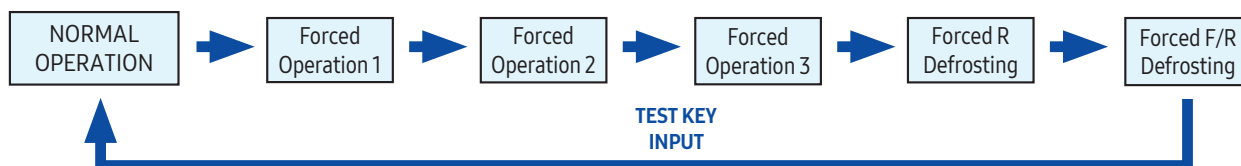
7. If you press the Test button again in the Forced R Defrosting status, the Forced R Defrosting will be immediately canceled, and the product will enter the Forced FR Defrosting mode.

7-1) Here, a beep alarm sound will be made for three seconds from when you enter the mode, and continue to be made by being ON for 0.5 seconds and being OFF for 0.5 seconds in the Forced FR Defrosting mode.

Reference

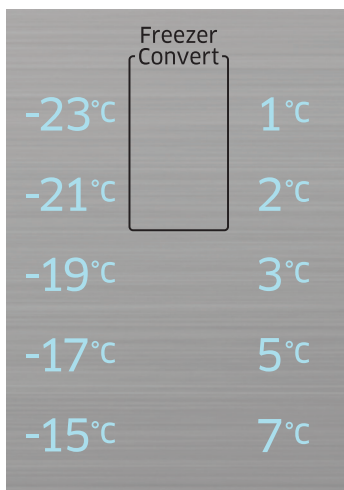
Dead zone : If do not set a specific Notch, set between Notch, It is recognized as not the middle value but abnormal range. This is called Dead zone.

※REFERENCE : TEST OPERATION BLOCK DIAGRAM (TEST MODE)



SELF DIAGNOSIS & TROUBLE SHOOTING

3. Forced Operation 1 mode



1-1) If you press any button once in the Test Mode, the product will enter the Forced Operation 1 mode. When the product enters the Forced Operation 1 mode, the Panel Display will display the LEDs from Weak, Weak Middle, Middle, and Middle Strong to Strong of the F/R Compartments. Here, the Buzzer will perform alarm with a beep sound.

1-2) When forced operation is selected, the Comp. will immediately work without the 15-minute delay in any operation mode. Here, if the product is defrosting, the defrosting will be immediately stopped, and forced operation will be performed. (If forced operation is performed immediately when the Comp. is OFF, overload may occur, so be careful.)

1-3) When forced operation is selected, the Comp. and the F-Fan continues to operate for 24 hours, and the R Compartment will work by the set temperature.

1-4) When forced operation is selected, the set temperature will be automatically selected to be -23°C for the Freezer and 1°C for the Fridge.

1-5) During forced operation, the Power Freeze and Power Cool functions will not work. (All the buttons function normally) If the function is selected, the Power mode icon will be automatically turned OFF in about 10 seconds.

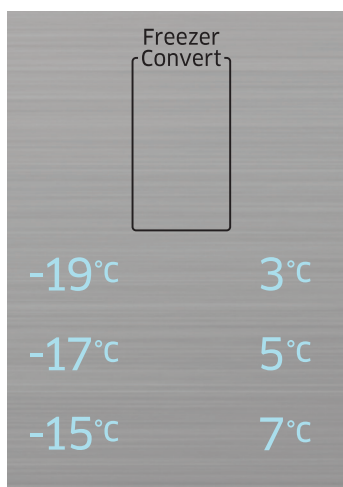
1-6) If you select the forced defrosting or the test cancellation when one minute has not passed after you have selected forced operation, the set temperature will be changed into the previous set temperature.

1-7) During forced operation, the alarm sound will not stop until the forced operation is finished.

Note

Models with the Rotary Switch operate the same as the above with the Forced Operation Mode on.

3. Forced Operation 2

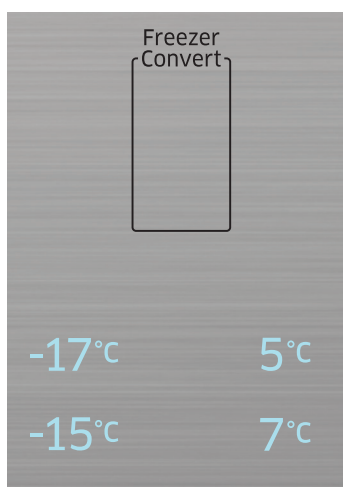


- 2-1) If you press any button twice in the Test mode, the product will enter the Forced Operation 2 mode. When the product enters the Forced Operation 2 mode, the Panel Display will display the LEDs from Weak and Weak Middle to Middle of the F/R Compartments. Here, the Buzzer will perform alarm with a beep sound.
- 2-2) When forced operation is selected, the Comp. will immediately work without the 15-minute delay in any operation mode. Here, if the product is defrosting, the defrosting will be immediately stopped, and forced operation will be performed. (If forced operation is performed immediately when the Comp. is OFF, overload may occur, so be careful.)
- 2-3) When forced operation is selected, the Comp. and the F-Fan will continuously work for 24 hours, the R-Valve will be closed, and the R-Fan will be OFF.
- 2-4) When forced operation is selected, the set temperature will be automatically selected to be -23°C for the Freezer and 1°C for the Fridge.
- 2-5) During forced operation, the Power Freeze and Power Cool functions will not work. (All the buttons function normally) If the function is selected, the Power mode icon will be automatically turned OFF in about 10 seconds.
- 2-6) If you select the forced defrosting or the test cancellation when one minute has not passed after you have selected forced operation, the set temperature will be changed into the previous set temperature.
- 2-7) During forced operation, the alarm sound will not stop until the forced operation is finished.

Note

Models with the Rotary Switch operate the same as the above with the Forced Defrost Mode on.

3. Forced Operation 3 mode



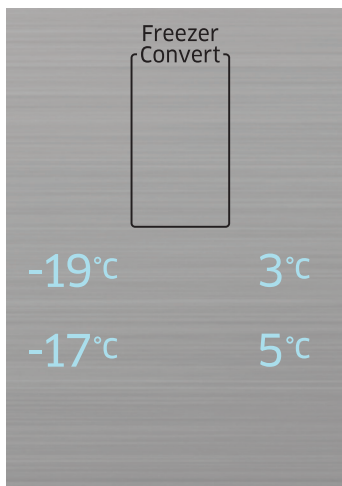
- 3-1) If you press any button three times in the Test mode, the product will enter the Forced Operation 3 mode. When the product enters the Forced Operation 3 mode, the Panel Display will display the LEDs of Weak and Weak Middle of the F/R Compartments. Here, the Buzzer will perform alarm with a beep sound.
- 3-2) When forced operation is selected, the Comp. will immediately work without the 15-minute delay in any operation mode. Here, if the product is defrosting, the defrosting will be immediately stopped, and forced operation will be performed. (If forced operation is performed immediately when the Comp. is OFF, overload may occur, so be careful.)
- 3-3) When forced operation is selected, the Comp. and the R-Fan will continuously work for 24 hours, the F-Valve will be closed, and the F-Fan will be OFF.
- 3-4) When forced operation is selected, the set temperature will be automatically selected to be -23°C for the Freezer and 1°C for the Fridge.
- 3-5) During forced operation, the Power Freeze and Power Cool functions will not work. (All the buttons function normally) If the function is selected, the Power mode icon will be automatically turned OFF in about 10 seconds.
- 3-6) If you select the forced defrosting or the test cancellation when one minute has not passed after you have selected forced operation, the set temperature will be changed into the previous set temperature.
- 3-7) During forced operation, the alarm sound will not stop until the forced operation is finished.

Note

Models with the Rotary Switch operate the same as the above with the Forced Defrost Mode on.

SELF DIAGNOSIS & TROUBLE SHOOTING

4. Forced R Defrosting mode



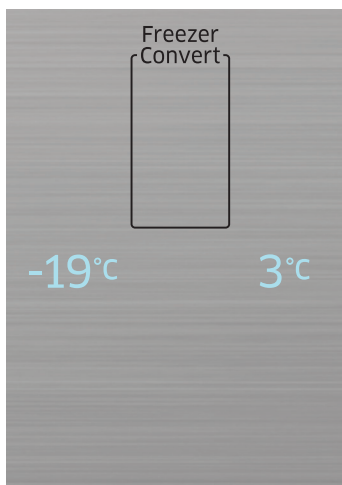
4-1) In the Forced Operation 3 status of Test Mode, if you press any button once more, the Forced Operation 3 will be immediately canceled, and the product will enter the Forced R Defrosting mode. When the product enters the Forced R Defrosting mode, the Panel Display will display the LEDs of Weak Middle and Middle of the F/R Compartments.

4-2) Here, a beep alarm sound will be made for three seconds from when you enter the mode, and continue to be made by being ON for 0.1 seconds and being OFF for 0.9 seconds in the Forced R Defrosting mode.

Note

Models with the Rotary Switch operate the same as the above with the Forced Defrost Mode on.

5. Forced FR Defrosting mode



5-1) In the Forced R Defrosting status of Test Mode, if you press any button once more, the Forced R Defrosting will be immediately canceled, and the product will enter the Forced FR Defrosting mode. When the product enters the Forced FR Defrosting mode, the Panel Display will display the LED of Middle of the F/R Compartments.

5-2) Here, a beep alarm sound will be made for three seconds from when you enter the mode, and continue to be made by being ON for 0.5 seconds and being OFF for 0.5 seconds in the Forced FR Defrosting mode.

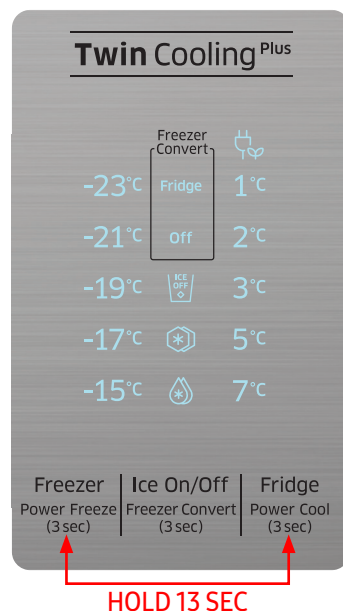
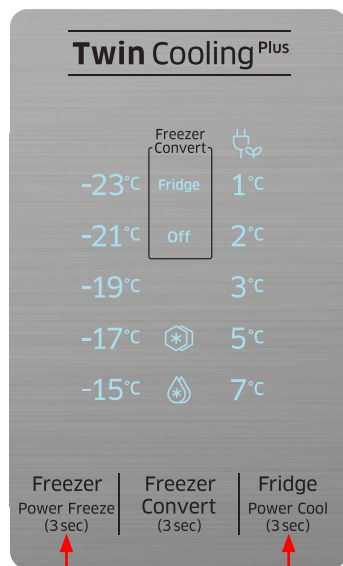
Note

Models with the Rotary Switch operate the same as the above with the Forced Operation Mode on.

SELF DIAGNOSIS & TROUBLE SHOOTING

5-1-2. Self-Diagnosis Function

1. For Models with Electronic Displays



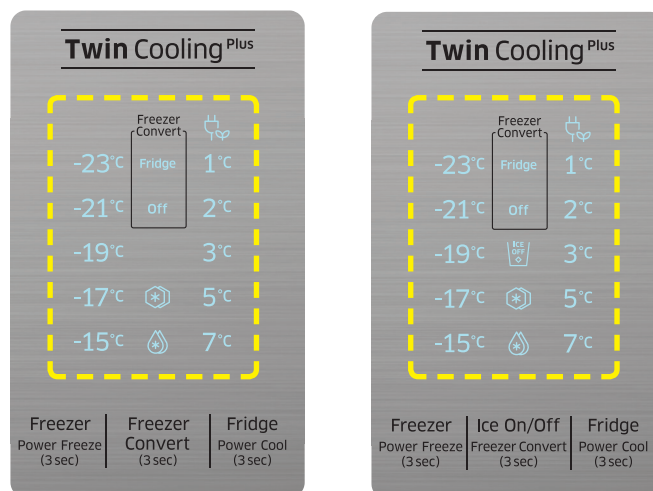
1) Self-Diagnosis Function upon Initial Power-On

- 1-1) When the unit is plugged into the power, MICOM diagnoses the status of the temperature sensors in a few minutes.
- 1-2) If defective sensor is found after Self-Diagnosis, relevant Display LEDs will blink at an interval of 0.5 sec. and there will be no beeping sound. (Refer to the Self-Diagnosis Check List)
- 1-3) When there is a defective sensor found and its relevant LED blinks, it will only recognize the Self-Diagnosis button combination and it doesn't do the normal display. But, the temperature will be controlled with the Emergency Operation.
- 1-4) To cancel the error code, fix the failure of the defective sensor or cancel the Initial Self-Diagnosis Function by pressing the Freezer KEY and the Fridge KEY buttons for 13 seconds.

2) Self-Diagnosis Function during Normal Operation

- 2-1) During the Normal Operation, press the Freezer KEY and the Fridge KEY for 7 seconds. Then, the "2°C, 3°C, 5°C" temperature LEDs on the Display Panel will blink at the interval of 0.5 seconds for 3 seconds. When pressing the Power Cool + Fridge buttons for 10 seconds including the 3-second blinking time, only the "3°C" temperature LED will blink at the interval of 0.5 seconds for 3 seconds. At this time, when pressing the Power Cool and the Fridge buttons at the same time for 13 seconds including the 3-second blinking time, it will send out a "Ding-Dong" buzzer sound and go into the Self Diagnosis Function.
- 2-2) When it goes into the Self-Diagnosis, the entire display panel goes off and when there is an error occurred, it will last for 60 seconds continuously and go to the normal operation whether or not the error is fixed. (It sends out "Ding-Dong" sound) (Refer to the Self-Diagnosis Check List below)
- 2-3) Buttons won't work during Self-Diagnosis.

SELF DIAGNOSIS & TROUBLE SHOOTING



① ERROR DISPLAY
(Refer to Self-Diagnosis
Check List below)

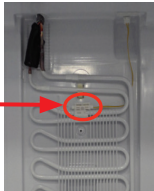
* Self-Diagnosis Check List

No	Item	Display	Description	
1	F-DEF	"-23°C" LED Lamp	When defrosting is ended by time	
2	EXT-SENSOR	"-21°C" LED Lamp	Open/Short error	
3	F-SENSOR	"-19°C" LED Lamp	Open/Short error	

SELF DIAGNOSIS & TROUBLE SHOOTING

No	Item	Display	Description	
4	R-SENSOR	"-17°C" LED Lamp	Open/Short error	
5	R-DEF SENSOR	"-15°C" LED Lamp	Open/Short error	
6	F-FAN ERROR	"1°C" LED Lamp	F-FAN constraint error	
7	ICE Maker Error	ICE Off() LED	Ice Making Sensor Error Ice Maker Function Error. Ice Maker Water Supply Pipe Heater Error.	
8	Comp Error (2 Board)	"3°C" LED Lamp	Comp start failure error	
			Comp IPM Fault Error	
			Comp location detection error	
			Comp motor constraint error	
			Comp low voltage error	
			Comp over voltage error	

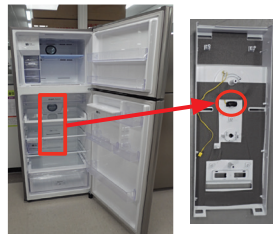
SELF DIAGNOSIS & TROUBLE SHOOTING

No	Item	Display	Description	
7	ICE Maker Error	ICE Off() LED	Ice Making Sensor Error Ice Maker Function Error. Ice Maker Water Supply Pipe Heater Error.	 
8	Comp Error (1 Board)	"3°C" LED Lamp	Comp start failure error	 
			Comp IPM Fault Error	
			Comp location detection error	
			Comp motor constraint error	
			Comp low voltage error	
			Comp over voltage error	
9	R-DEF SENSOR	Vacation() LED	Open/Short error	 
10	R-FAN ERROR	Power Freeze () LED	R-FAN constraint error	 
11	COMP-FAN ERROR	"2°C" LED Lamp	COMP-FAN constraint error	

※ The comp fan error detects only models with comp fans.

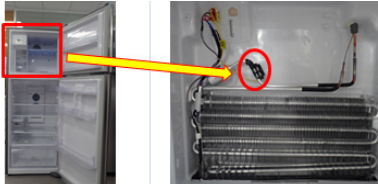
SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 2 Board

No	Error Code	Item	Description	Trouble Shooting	
1	-19℃	F-SENSOR	Separation of sensor housing part, contact error, disconnection, short circuit. The failure by temperature is displayed when the temperature sensed by the sensor is +65℃ or higher or -50℃ or lower.	The voltage between MAIN PCB CN30-"3(GRN) ↔ 1(WHT)" should be within 4.5V~0.5V.	
2	-17℃	R-SENSOR		The voltage between MAIN PCB CN30-"5(BLU) ↔ 1(WHT)" should be within 4.5V~0.5V.	
3	-15℃	F - DEF - SENSOR		The voltage between MAIN PCB CN30-"4(YEL) ↔ 1(WHT)" should be within 4.5V~0.5V.	
4		R - DEF - SENSOR		The voltage between MAIN PCB CN30-"6(RED) ↔ 1(WHT)" should be within 4.5V~0.5V.	

SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 1 Board

No	Error Code	Item	Description	Trouble Shooting	
1	-19°C	F-SENSOR		The voltage between MAIN PCB CN30-"14(WHT) ↔ 16(WHT)" should be within 4.5V~0.5V.	
2	-17°C	R-SENSOR	Separation of sensor housing part, contact error, disconnection, short circuit. The failure by temperature is displayed when the temperature sensed by the sensor is +65°C or higher or -50°C or lower.	The voltage between MAIN PCB CN30-"13(WHT) ↔ 15(WHT)" should be within 4.5V~0.5V.	
3	-15°C	F - DEF - SENSOR		The voltage between MAIN PCB CN30-"6(WHT) ↔ 8(BLK)" should be within 4.5V~0.5V.	
4		R - DEF - SENSOR		The voltage between MAIN PCB CN30-"5(WHT) ↔ 7(ORG)" should be within 4.5V~0.5V.	

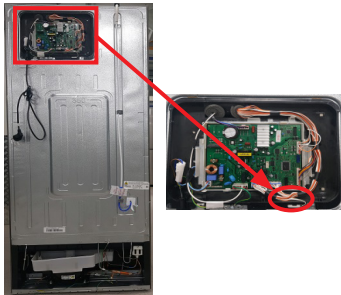
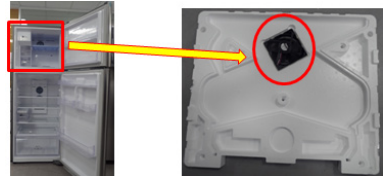
SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 2 Board

No	Error Code	Item	Description	Trouble Shooting	
5	-21℃	EXT - SENSOR		The voltage between MAIN PCB CN30-"2(WHT) ↔ 1(WHT)" should be within 4.5V~0.5V.	
6	1℃	F-FAN ERROR	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between MAIN PCB CN75-"4(YEL) ↔ 1(GRY)" should be within 7V~12V.	
7		R-FAN ERROR		The voltage between MAIN PCB CN75-"3(ORG) ↔ 1(GRY)" should be within 7V~12V.	
8	2℃	COMP-FAN ERROR			

SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 1 Board

No	Error Code	Item	Description	Trouble Shooting	
5		EXT - SENSOR		The voltage between MAIN PCB CN30-"2(YEL) ↔ 4(YEL)" should be within 4.5V~0.5V.	
6		F-FAN ERROR	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between MAIN PCB CN30-"20(WHT) ↔ 22(WHT)" should be within 7V~12V.	
7		R-FAN ERROR		The voltage between MAIN PCB CN30-"19(WHT) ↔ 21(WHT)" should be within 7V~12V.	

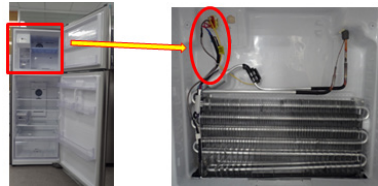
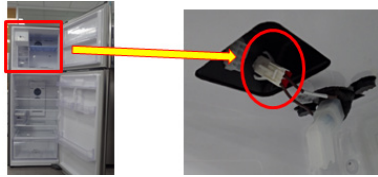
SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 2 Board

No	Error Code	Item	Description	Trouble Shooting	
9		F-DEF ERROR	It occurs when the failure is about the separation of the Housing related to the F Compartment Defrosting Heater, contact error, disconnection, short circuit, or the failure of Temperature Fuse. The failure is displayed when defrosting of the F Compartment does not end even after nonstop heating for 150 minutes or longer.	The voltage between MAIN PCB CN30-"4(YEL) ↔ 1(WHT)" should be within 4.5V~0.5V.	
10		WATER PIPE HEATER ERROR	Separation of sensor housing part, contact error, disconnection, short circuit. The failure by temperature is displayed when the temperature sensed by the sensor is +65°C or higher or -50°C or lower.	The voltage between MAIN PCB CN30-"3(GRN) ↔ 1(WHT)" should be within 4.5V~0.5V.	
11		ICE MAKER SENSOR ERROR	**Applies only to the models with Ice Maker	The voltage between MAIN PCB CN30-"3(GRN) ↔ 1(WHT)" should be within 4.5V~0.5V.	

SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 1 Board

No	Error Code	Item	Description	Trouble Shooting	
8		F-DEF ERROR	It occurs when the failure is about the separation of the Housing related to the F Compartment Defrosting Heater, contact error, disconnection, short circuit, or the failure of Temperature Fuse. The failure is displayed when defrosting of the F Compartment does not end even after nonstop heating for 150 minutes or longer.	The voltage between MAIN PCB CN30-"6(WHT) ↔ 8(BLK)" should be within 4.5V~0.5V.	
9		WATER PIPE HEATER ERROR	Separation of sensor housing part, contact error, disconnection, short circuit. The failure by temperature is displayed when the temperature sensed by the sensor is +65°C or higher or -50°C or lower.	The voltage between MAIN PCB CN90-"1(ORG) ↔ 2(WHT)" should be within 4.5V~0.5V.	
10		ICE MAKER SENSOR ERROR	The failure by temperature is displayed when the temperature sensed by the sensor is +65°C or higher or -50°C or lower. **Applies only to the models with Ice Maker	The voltage between MAIN PCB CN90-"5(RED) ↔ 10(GRY)" should be within 4.5V~0.5V.	

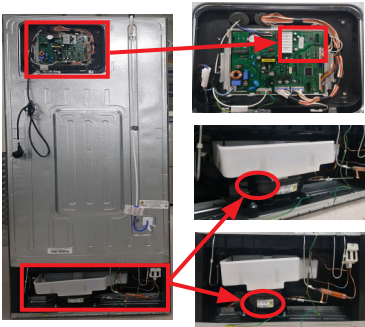
SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 2 Board

No	Error Code	Item	Description	Trouble Shooting	
12		ICE MAKER Function ERROR	ICE MAKER SENSOR ERROR ICE MAKER FUNCTION ERROR**Applies only to the models with Ice Maker	After replacing the Ice Maker, plug in the unit and check its operation.	 
13		COMP Run failure ERROR	The error code is displayed when the compressor has failed to start.	Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check if the DC 16V output is less than 13.5V. Check the Comp and Cycle.	   
14		COMP IPM FAULT ERROR	The error code is displayed when the compressor IPM fault error has occurred.		
15		Comp Abnormal Current Detection Error	The error code is displayed when the compressor location detection failed.		

SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 1 Board

No	Error Code	Item	Description	Trouble Shooting	
11		ICE MAKER Function ERROR	ICE MAKER SENSOR ERROR ICE MAKER FUNCTION ERROR**Applies only to the models with Ice Maker	After replacing the Ice Maker, plug in the unit and check its operation.	
12		COMP Run failure ERROR	The error code is displayed when the compressor has failed to start.	Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check if the DC 15V output is less than 13.5V. Check the Comp and Cycle.	
13		COMP IPM FAULT ERROR	The error code is displayed when the compressor IPM fault error has occurred.	Check the compressor wire connections. Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check the Comp and Cycle.	
14		Comp Abnormal Current Detection Error	The error code is displayed when the compressor location detection failed.	Check the compressor wire connections. Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check the Comp and Cycle.	

SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description - 2 Board

No	Error Code	Item	Description	Trouble Shooting	
16	3°C	Comp motor constraint error	The error code is displayed when the compressor motor is constrained.	Check if the compressor and the Cycle is normal. Check the input voltage. Check the soldering of the inverter PCB. (Check if any parts have short-circuited.)	
17	3°C	COMP Low Voltage ERROR	The error code is displayed when the AC Input Voltage is too low.	Check the input voltage. (This error occurs when the input voltage is AC 106 V or lower.)	
18	3°C	COMP Over Voltage ERROR	The error code is displayed when the AC Input Voltage is too high.	Check the input voltage. (This error occurs when the input voltage is AC 310V or higher.)	

SELF DIAGNOSIS & TROUBLE SHOOTING

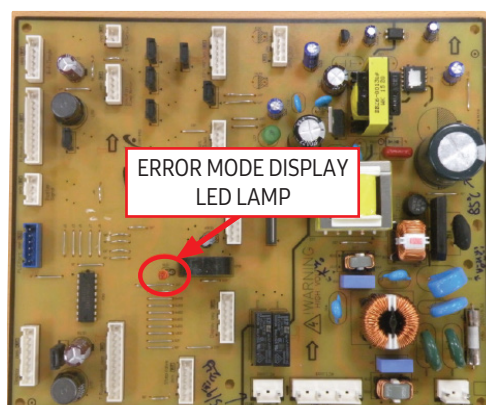
* Self-Diagnosis Error Description - 1 Board

No	Error Code	Item	Description	Trouble Shooting	
15	3°C	Comp motor constraint error	The error code is displayed when the compressor motor is constrained.	Check if the compressor and the Cycle is normal. Check the input voltage. Check the soldering of the inverter PCB. (Check if any parts have short-circuited.)	
16	3°C	COMP Low Voltage ERROR	The error code is displayed when the AC Input Voltage is too low.	Check the input voltage. (This error occurs when the input voltage is AC 106 V or lower.)	
17	3°C	COMP Over Voltage ERROR	The error code is displayed when the AC Input Voltage is too high.	Check the input voltage. (This error occurs when the input voltage is AC 310V or higher.)	

SELF DIAGNOSIS & TROUBLE SHOOTING

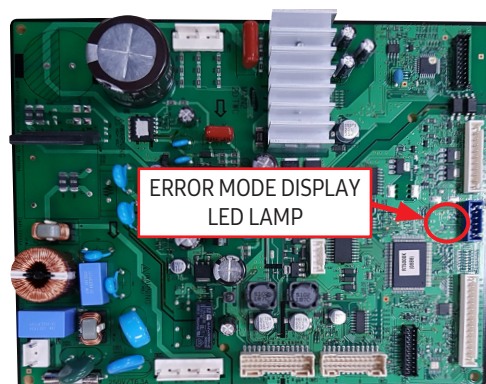
2. Models with ROTARY S/W - 2 Board

1. When the unit is plugged in, it will diagnose all its components to check if there are any defect parts. And when there is any defect part, the ERROR MODE DISPLAY LED LAMP will blink according to the LED Blinking Frequency in the below table. And, at the end of each blinking cycle, there is a two-second interval (Downtime).
2. When the unit is plugged in, it will also diagnose if there are any multiple parts or loads failures. If so, the ERROR MODE DISPLAY LED LAMP will blink according to the LED Blinking Frequency in the below table. And, at the end of each blinking cycle, there is a two-second interval (Downtime).



2. Models with ROTARY S/W - 1 Board

1. When the unit is plugged in, it will diagnose all its components to check if there are any defect parts. And when there is any defect part, the ERROR MODE DISPLAY LED LAMP will blink according to the LED Blinking Frequency in the below table. And, at the end of each blinking cycle, there is a two-second interval (Downtime).
2. When the unit is plugged in, it will also diagnose if there are any multiple parts or loads failures. If so, the ERROR MODE DISPLAY LED LAMP will blink according to the LED Blinking Frequency in the below table. And, at the end of each blinking cycle, there is a two-second interval (Downtime).



SELF DIAGNOSIS & TROUBLE SHOOTING

No	LED Blinking Frequency	Item	Trouble Shooting
1	8 times	F-Sensor	Open/Short error
2	Twice	F-DEF SENSOR	Open/Short error
3	3 times	EXT-SENSOR	Open/Short error
4	4 times	F-Rotary	Open/Short error
5	5 times	F-DEF	When defrosting is ended by time
6	6 times	R-SENSOR	Open/Short error
7	7 times	R-DEF SENSOR	Open/Short error
8	8 times	R-Rotary	Open/Short error

* Self-Diagnosis Error Description

No	LED Blinking Frequency	Item	Description	Trouble Shooting
1	1 Times	F-Sensor	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-“14(WHT) ↔ 16(WHT)” should be within 4.5V~0.5V.
2	Twice	F-DEF -SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-“6(WHT) ↔ 8(BLK)” should be within 4.5V~0.5V.
3	3 Times	EXT-SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-“2(YEL) ↔ 4(YEL)” should be within 4.5V~0.5V.
4	4 Times	F-Rotary Error	PBA-Rotary Switch Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Switch Part Defect	The voltage between MAIN PCB CN30-“10(WHT) ↔ 12(BLK)” should be within 4.5V~0.5V.
5	5 Times	F-DEF-ERROR	[Freezer Defrost Heater] Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor Freezer Defrost When the defrosting does not complete even after it does defrosting for more than 120 minutes.	Remove the MAIN PCB CN70 connector from the MAIN PCB and read the continuity between BLK ↔ WHT wires. (It differs according to the energy consumption.) When it reads 0 Ohm, check the Heater short and when it reads ∞ Ohm, check if the Wire/Thermal Fuse or the Bimetal is Open.

SELF DIAGNOSIS & TROUBLE SHOOTING

No	LED Blinking Frequency	Item	Description	Trouble Shooting
6	6 Times	R-SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-"13(WHT) ↔ 15(WHT)" should be within 4.5V~0.5V.
7	7 Times	R-DEF SENSOR ERROR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-"5(WHT) ↔ 7(ORG)" should be within 4.5V~0.5V.
8	9 Times	R-Rotary Error	PBA-Rotary Switch Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Switch Part Defect	The voltage between MAIN PCB CN30-"9(WHT) ↔ 11(WHT)" should be within 4.5V~0.5V.
9	10 Times	Comp start failure error	The error code is displayed when the compressor has failed to start.	Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check if the DC 15V output is less than 13.5V. Check the Comp and Cycle.
		Compressor IPM Fault Error	The error code is displayed when the compressor IPM fault error has occurred.	
		Comp location detection error	The error code is displayed when the compressor location detection failed.	Check the compressor wire connections. Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check the Comp and Cycle.
		Comp motor constraint error	The error code is displayed when the compressor motor is constrained.	Check if the compressor and the Cycle is normal. Check the input voltage. Check the soldering of the inverter PCB. (Check if any parts have short-circuited.)

SELF DIAGNOSIS & TROUBLE SHOOTING

No	LED Blinking Frequency	Item	Trouble Shooting
9	10 times	Comp Error	Comp start failure error
			Comp IPM Fault Error
			Comp location detection error
			Comp motor constraint error
			Comp low voltage error
			Comp over voltage error
10	11 times	F-FAN ERROR	F-FAN constraint error
11	12 times	R-FAN ERROR	R-FAN constraint error

* Self-Diagnosis Error Description

No	LED Blinking Frequency	Item	Description	Trouble Shooting
9	10 times	Comp low voltage error	The error code is displayed when the AC Input Voltage is too low.	Check the input voltage. (This error occurs when the input voltage is AC 106 V or lower.)
		Comp over voltage error	The error code is displayed when the AC Input Voltage is too high.	Check the input voltage. (This error occurs when the input voltage is AC 310V or higher.)
10	11 times	F-FAN ERROR	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between MAIN PCB CN30- "20(WHT) ↔ 22(WHT)" should be within 7V~12V
11	12 Times	R-FAN Error	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between MAIN PCB CN30- "19(WHT) ↔ 21(WHT)" should be within 7V~12V

SELF DIAGNOSIS & TROUBLE SHOOTING

* Self-Diagnosis Error Description

No	LED Blinking Frequency	Item	Description	Trouble Shooting
1	1 Times	F-Sensor	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-"4(RED) ↔ 7(Gray)" should be within 4.5V~0.5V.
2	Twice	F-DEF -SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-"4(RED) ↔ 7(Gray)" should be within 4.5V~0.5V.
3	3 Times	EXT-SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN31-"1(WHT) ↔ 2(WHT)" should be within 4.5V~0.5V.
4	4 Times	F-Rotary Error	PBA-Rotary Switch Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Switch Part Defect	The voltage between MAIN PCB CN30-"3(BRN) ↔ 7(Gray)" should be within 4.5V~0.5V.
5	5 Times	F-DEF-ERROR	[Freezer Defrost Heater] Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor Freezer Defrost When the defrosting does not complete even after it does defrosting for more than 120 minutes.	Remove the MAIN PCB CN70 and CN77 connectors from the MAIN PCB and read the continuity between BROWN ↔ ORG wires. (It differs according to the energy consumption.) When it reads 0 Ohm, check the Heater short and when it reads ∞ Ohm, check if the Wire/Thermal Fuse or the Bimetal is Open.
6	6 Times	R-SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-"5(ORG) ↔ 7(Gray)" should be within 4.5V~0.5V.
7	7 Times	R-DEF SENSOR ERROR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (higher than +65°C or lower than -50°C)	The voltage between MAIN PCB CN30-"5(ORG) ↔ 7(Gray)" should be within 4.5V~0.5V.
8	9 Times	R-Rotary Error	PBA-Rotary Switch Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Switch Part Defect	The voltage between MAIN PCB CN30-"3(BRN) ↔ 7(Gray)" should be within 4.5V~0.5V.

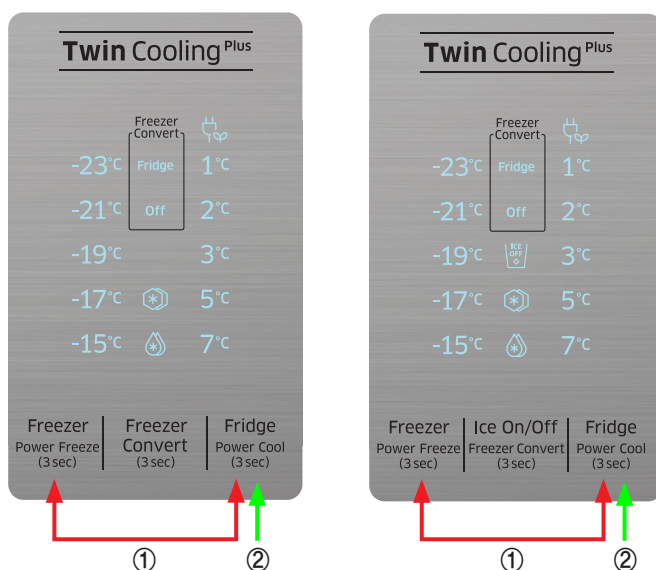
SELF DIAGNOSIS & TROUBLE SHOOTING

No	LED Blinking Frequency	Item	Description	Trouble Shooting
9	10 Times	Comp start failure error	The error code is displayed when the compressor has failed to start.	Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check if the DC 16V output is less than 13.5V. Check the Comp and Cycle.
		Compressor IPM Fault Error	The error code is displayed when the compressor IPM fault error has occurred.	
		Comp location detection error	The error code is displayed when the compressor location detection failed.	Check the compressor wire connections. Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check the Comp and Cycle.
		Comp motor constraint error	The error code is displayed when the compressor motor is constrained.	Check if the compressor and the Cycle is normal. Check the input voltage. Check the soldering of the inverter PCB. (Check if any parts have short-circuited.)
		Comp low voltage error	The error code is displayed when the AC Input Voltage is too low.	Check the input voltage. (This error occurs when the input voltage is AC 106 V or lower.)
		Comp over voltage error	The error code is displayed when the AC Input Voltage is too high.	Check the input voltage. (This error occurs when the input voltage is AC 310V or higher.)
10	11 times	F-FAN ERROR	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between MAIN PCB CN72-"9(PNK) ↔ 10(GRY)" should be within 7V~12V
11	12 Times	R-FAN Error	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between MAIN PCB CN72-"9(PNK) ↔ 10(GRY)" should be within 7V~12V

SELF DIAGNOSIS & TROUBLE SHOOTING

5-1-3. Load Status Display Function

- 1) If the Freezer + Fridge buttons are pressed simultaneously for about seven seconds during normal operation mode, the Panel Display will turn ON/OFF the LEDs of Weak Middle, Middle, and Middle Strong for about four seconds.
- 2) Here, if you take your fingers off the buttons and press the Fridge button (a "Ding-Dong" sound will be made and), the mode will be converted into the Load Status Display Function.
- 3) The Load Status Display function lets you know what the load for the current output of the Micom signal is. However, it just means that the Micom signal is outputted, and does not confirm whether the load is actually working or not. That is, even if it displays that the load is working, the load may not be working because of a disorder of the actual load or a faulty Relay on the PCB. (You need to check.)
- 4) The Load Status Display Function lasts only for 30 seconds, and the product will automatically return to the normal status after that.
- 5) The display of each load status is as follows:



- ① Press the Freezer + Fridge buttons simultaneously for six seconds.
- ② When the Display (Weak Middle, Middle, and Middle Strong) starts blinking, press the Fridge button once.

SELF DIAGNOSIS & TROUBLE SHOOTING

* Load Mode Check List

No	Item	Display	Description
1	COMP	-19°C	When the Comp works
2	F-DEF Heater	-21°C	When the F-DEF Heater works
3	Water Pipe Heater	-19°C	When the Water Pipe Heater works
4	Overload	-17°C	When the ambient temperature is 34°C
5	Low temperature	-15°C	When the ambient temperature is 23°C
6	Exhibition mode	1°C	In Exhibition mode
7	F-Fan High	2°C	F-Fan High
8	F-Fan Low	3°C	F-Fan Low
9	F-Valve	5°C	In case the F-Valve is open, the pertinent LED blinks.
10	R-Valve	7°C	In case the R-Valve is open, the pertinent LED blinks.
11	R-Fan High		R-Fan High
12	R-Fan Low		R-Fan Low
13	Ice Full		Full-ice level reached.
14	Normal	-17°C -15°C	When the ambient temperature is between 24-33°C

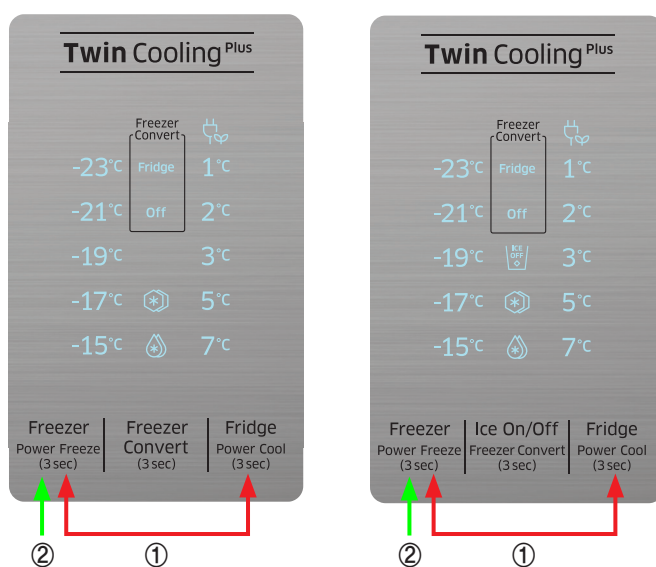
SELF DIAGNOSIS & TROUBLE SHOOTING

5-1-4. Operation Status Recovery Function in Case of Blackout

- 1) When the Panel Display is initialized in case of a temporal blackout, a non-sense call by consumers may occur. In order to prevent this, the product senses the temperature inside the Refrigerator at the point when the power is applied and initializes or recovers the existing operation status.
- 2) When the power is initially ON, the product senses the temperature inside the Freezer, Fridge, Freezer Defrosting Sensor, and of the Fridge Defrosting Sensor. If at least one from among the four temperatures is less than about +12°C, the product regards this as a temporal blackout during operation, and recovers the functions related to the Panel Display (Power Freeze, Power Cool, Fridge, Freezer, Door Alarm, Lock function, etc.).
- 3) When the power is initially ON, the product senses the temperature inside the Freezer, Fridge, Freezer Defrosting Sensor, and of the Fridge Defrosting Sensor. If all the four temperatures are about +12°C or higher, the product regards this as a blackout for a long time, and initializes the Panel Display. (The temperature of the Freezer is -19°C. The temperature of the Fridge is 3°C. The Door Alarm ON is automatically set.)

5-1-5. Exhibition Mode Setting Function

- 1) If the Freezer + Fridge buttons are pressed simultaneously for about seven seconds during normal operation mode, the Panel Display will turn ON/OFF the LEDs of Weak Middle, Middle, and Middle Strong for about four seconds.
- 2) Here, if you take your fingers off the buttons and press the Freezer button, (a "Ding-Dong" sound will be made and) the product will be converted into the Exhibition mode.
- 3) When the Exhibition Mode is set, the Display and all functions will normally work, and only the Compressor won't start.
- 4) The Exhibition Mode will be canceled if you press the Exhibition Mode button again or turn OFF the power.
- 5) During the Exhibition Mode, when the temperature of the Freezer or the Fridge increases to be 65 °C or higher, the Exhibition Mode will be canceled, and the product will enter the cooling operation condition.



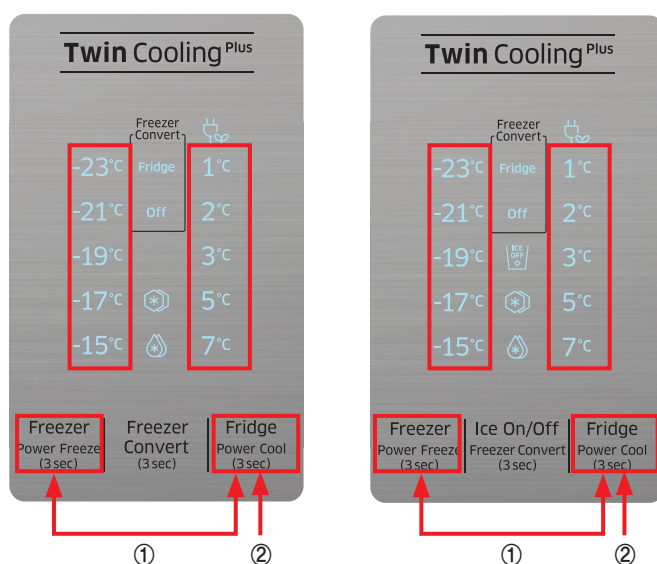
- ① Press the Freezer + Fridge buttons simultaneously for seven seconds.
- ② When the Display starts blinking, press the Freezer button once.

SELF DIAGNOSIS & TROUBLE SHOOTING

5-1-6. Option Setting Function

- 1) During the Normal Operation, press the Freezer + Fridge buttons for 4 seconds. Then, the entire Display Panel will blink at the interval of 0.5 seconds for 3 seconds.
- 2) At this time, release the Freezer + Fridge buttons and press the Power Cool button (it sends out "Ding Dong" sound.) Then, it shifts to the Option Setting Mode.

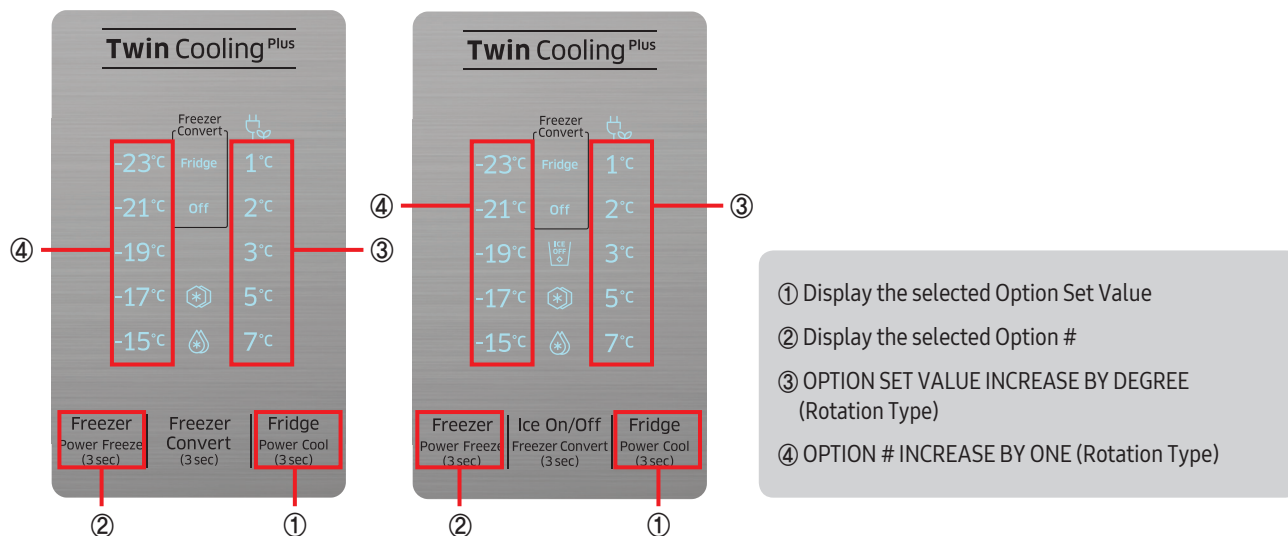
■ When there is no button press for 20 seconds at the Option Setting Mode, it will go back to the normal display mode.



- ① Press the Freezer + Fridge buttons for 4 seconds at the same time. Then, the Display LEDs will blink for 3 seconds. At this time, release the buttons
- ② And, press the Fridge button once.

SELF DIAGNOSIS & TROUBLE SHOOTING

Option Mode & Button Control Description



► The Bar Type Display Panel shows the numbers as shown in the following tables (Binary Type)

Value		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
F	R																
-23°C	1°C	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
-21°C	2°C	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒	☒
-19°C	3°C	☐	☐	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐	☒	☒	☒	☒
-17°C	5°C	☐	☐	☒	☒	☐	☐	☐	☒	☐	☐	☒	☒	☐	☐	☒	☒
-15°C	7°C	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒

Value		16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
F	R																
-23°C	1°C	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒	☒
-21°C	2°C	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	☒	☒	☒	☒	☒	☒
-19°C	3°C	☐	☐	☐	☒	☒	☒	☒	☒	☐	☐	☐	☐	☒	☒	☒	☒
-17°C	5°C	☐	☐	☒	☒	☐	☐	☒	☒	☐	☐	☒	☒	☐	☐	☒	☒
-15°C	7°C	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒	☐	☒

SELF DIAGNOSIS & TROUBLE SHOOTING

- When the Display Panel converts to the Option Setting mode, the Display will be changed to the Option # Select Mode or the Option Set

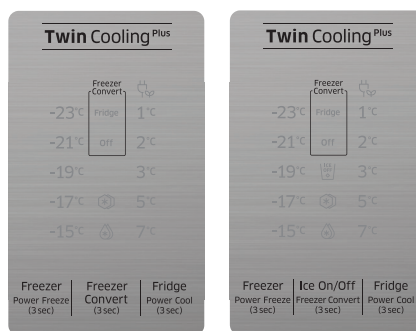


- 1) For example, if you want to shift the standard temp of the Fridge compartment by -2°C, follow the steps below. This function is to change the default temperature and when the default temperature of the Fridge compartment is 2°C and the default setting is lowered by -2°C with the Option function, the default temperature will be controlled at 0°C. That is, when changing temperature options, the Fridge compartment will operate at 0°C internally even if it shows 2°C on the display panel. Therefore, the temperature will be controlled by -2°C lower than the set temperature on the display panel.

Note

Basically, when units being shipped out, all the data in the Option function are cleared. That is, the Default settings are "0". However, for the purpose of quality improvement during mass production, the Default values may change. Therefore, be sure to check quality information, such as SVC bulletins.

- 2) After changing into the Option mode, "0"s on both of the Fridge and Freezer compartments lights up on the display panel. (when units being shipped out, the unit will be shipped out with "0" set on the Fridge compartments. However, for the purpose of quality improvement during mass production, the Default values may change.)



- 3) Press the Power Cool button. And, when the LED LAMP (LED On) for the Option #1 and the 7°C LEDs are on (Setting the Option #), press the Fridge Button and select the LED LAMP which equals to the Set-Value #4 (LED OFF, "3°C" LED ON). Then, its default temperature drops by -2°C.
: In 20 seconds after completing the adjustment, MICOM is to store the setting value in EEPROM and it goes back to the normal display mode, deactivating the Option Setting mode.

- 4) The Fridge temperature can be adjusted with the same method.

- 5) Make sure not to change the factory-set default values excluding exceptional circumstances. Also, the Option Setting will be completed when it goes back to the normal display mode in 20 seconds. So, do not turn off the unit before it goes back to the normal display mode.

SELF DIAGNOSIS & TROUBLE SHOOTING

5-1-7. Option Table

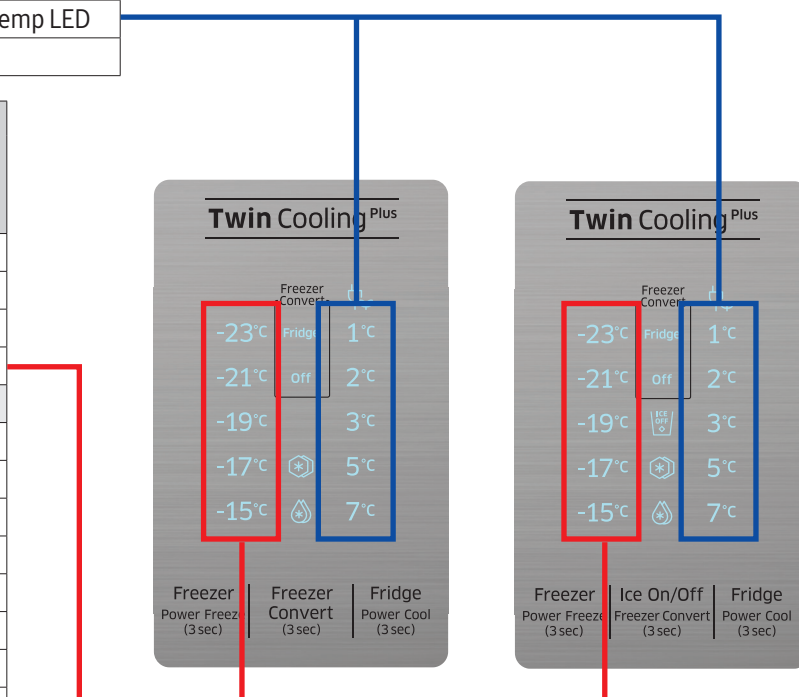
Note

There are other option setting functions. But, it's got to do with the performance of the unit, not for repair purposes. So, they are not handled in this manual.(Except those described in this manual, do not change other values.

1) Freezer Temp Shift Table

Setting Item	Freezer Temp Shift
Option Item	Location : Fridge Temp LED
	0

Setting Value Freezer Temp Display Panel Set Value	Option Value
0	0°C
1	-0.5°C
2	-1.0°C
3	-1.5°C
4	-2.0°C
5	-2.5°C
6	-3.0°C
7	-3.5°C
8	+0.5°C
9	+1.0°C
10	+1.5°C
11	+2.0°C
12	+2.5°C
13	+3.0°C
14	+3.5°C
15	+4.0°C

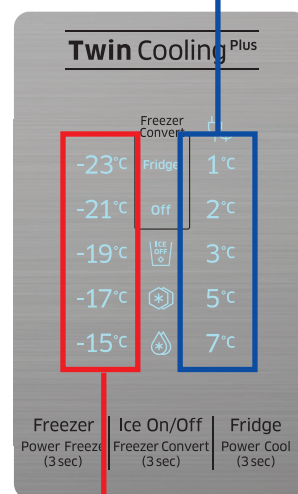
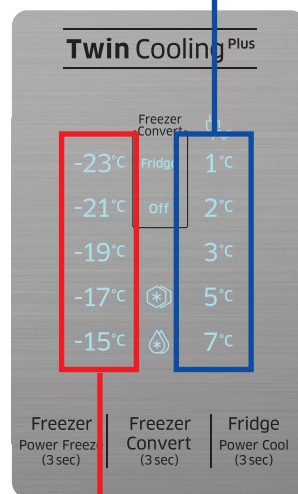


SELF DIAGNOSIS & TROUBLE SHOOTING

2) Fridge Temp Shift Table

Setting Item	Fridge Temp Shift
Option Item	Location : Fridge Temp Display 1

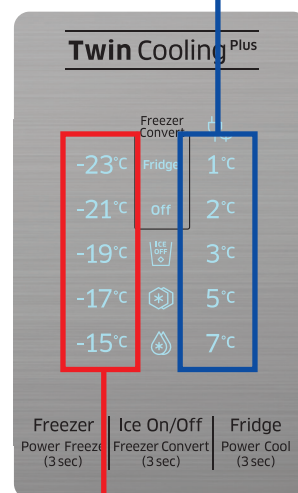
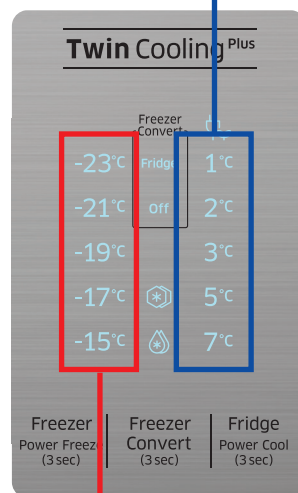
Setting Value	Option Value
Freezer Temp Display Panel Set Value	
0	0°C
1	-0.5°C
2	-1.0°C
3	-1.5°C
4	-2.0°C
5	-2.5°C
6	-3.0°C
7	-3.5°C
8	+0.5°C
9	+1.0°C
10	+1.5°C
11	+2.0°C
12	+2.5°C
13	+3.0°C
14	+3.5°C
15	+4.0°C



3) Display ON/OFF Control Table

Setting Item	Display On/Off Control
Option Item	Location : Fridge Temp Display 16

Setting Value	Option Value
Freezer Temp Display Panel Set Value	
0	Display OFF
1	Always Display On
2	Always Display On

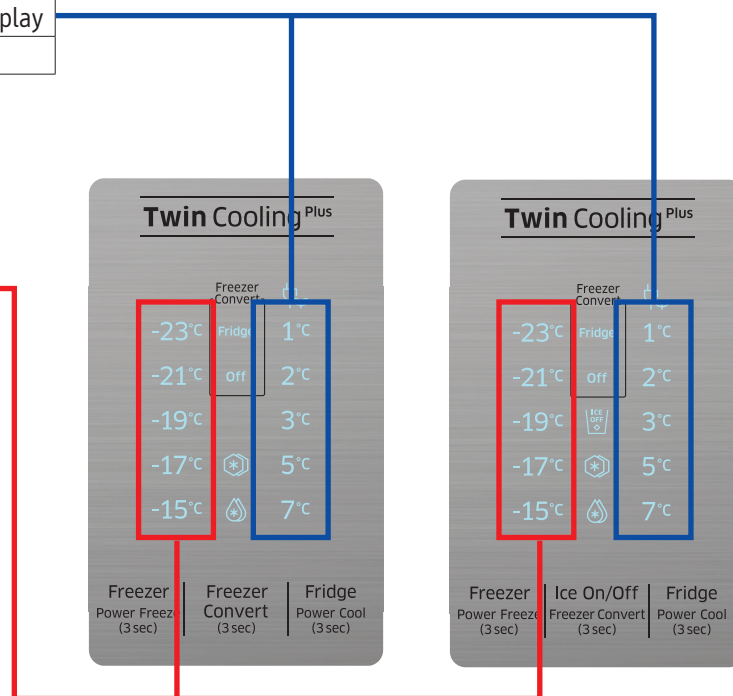


SELF DIAGNOSIS & TROUBLE SHOOTING

4) Temp Shift (F-Convert [F-Fridge/F-OFF] mode) Table

Setting Item	F Convert Room Shift
Option Item	Location : Fridge Temp Display
	20

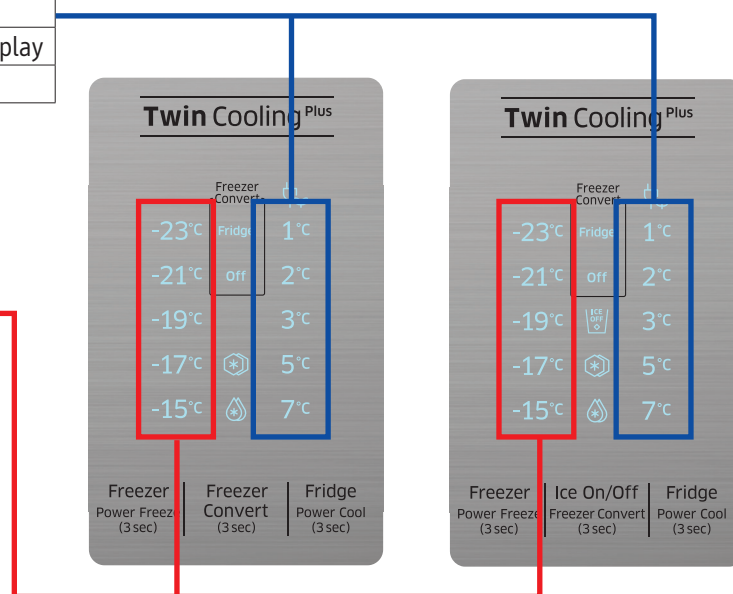
Setting Value	Option Value
Freezer Temp Display Panel Set Value	
0	0°C
1	-0.5°C
2	-1.0°C
3	-1.5°C
4	+0.5°C
5	+1.0°C
6	+1.5°C
7	+2.0°C



5) Change in Water Supply Table (Ice Maker)

Setting Item	Change in Water Supply for the Ice Maker
Option Item	Location : Fridge Temp Display
	2

Setting Value	Option Value
Freezer Temp Display Panel Set Value	
0	5.9 seconds
1	6.4 seconds

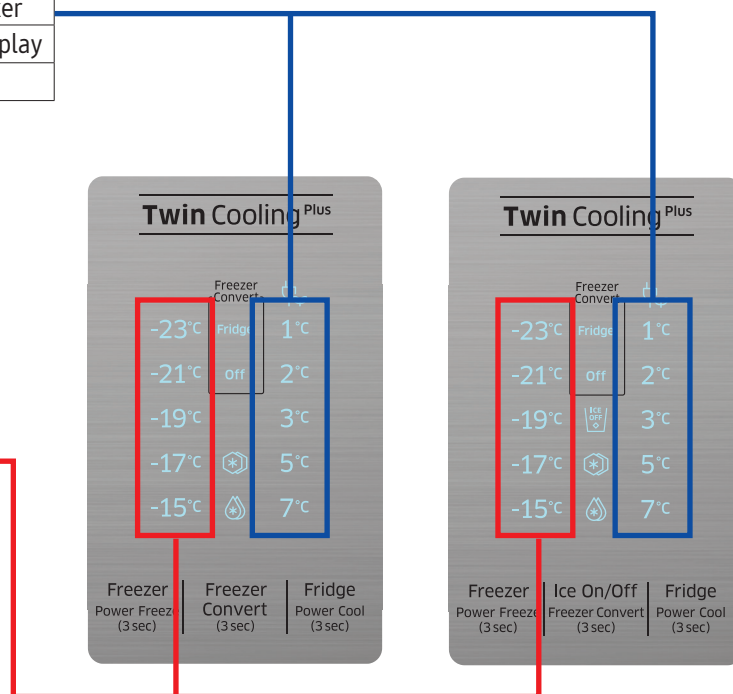


SELF DIAGNOSIS & TROUBLE SHOOTING

6) Waiting Time Table for Separating Ice in Ice Maker

Setting Item	Changing Waiting Time for Separating Ice in Ice Maker
Option Item	Location : Fridge Temp Display
	3

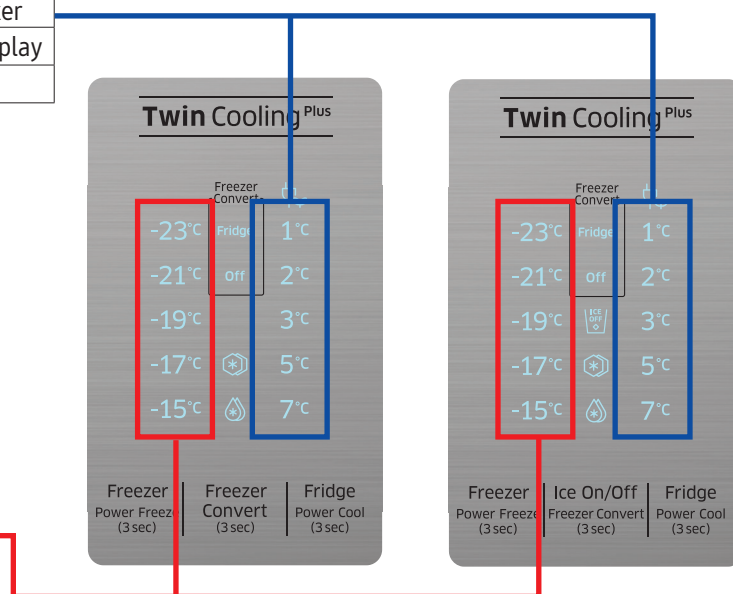
Setting Value Freezer Temp Display Panel Set Value	Option Value
0	90
1	91
2	92
3	93
4	94
5	95
6	96
7	97
8	98
9	99
10	100
11	89
12	88
13	87
14	86
15	85



7) Temperature Setting Table for Separating Ice in Ice Maker

Setting Item	Setting Temperature for Separating Ice in Ice Maker
Option Item	Location : Fridge Temp Display
	4

Setting Value Freezer Temp Display Panel Set Value	Option Value
0	-15.0°C
1	-14.0°C
2	13.0°C
3	-12.0°C
4	-11.0°C
5	-16.0°C
6	-17.0°C
7	-18.0°C



SELF DIAGNOSIS & TROUBLE SHOOTING

5-2. Troubleshooting Flow-Chart by Symptoms

DATA1. Temp Table

Conversion Table - Temperature / MICOM PORT Voltage / Resistance

SENSOR CHIP : PX41C

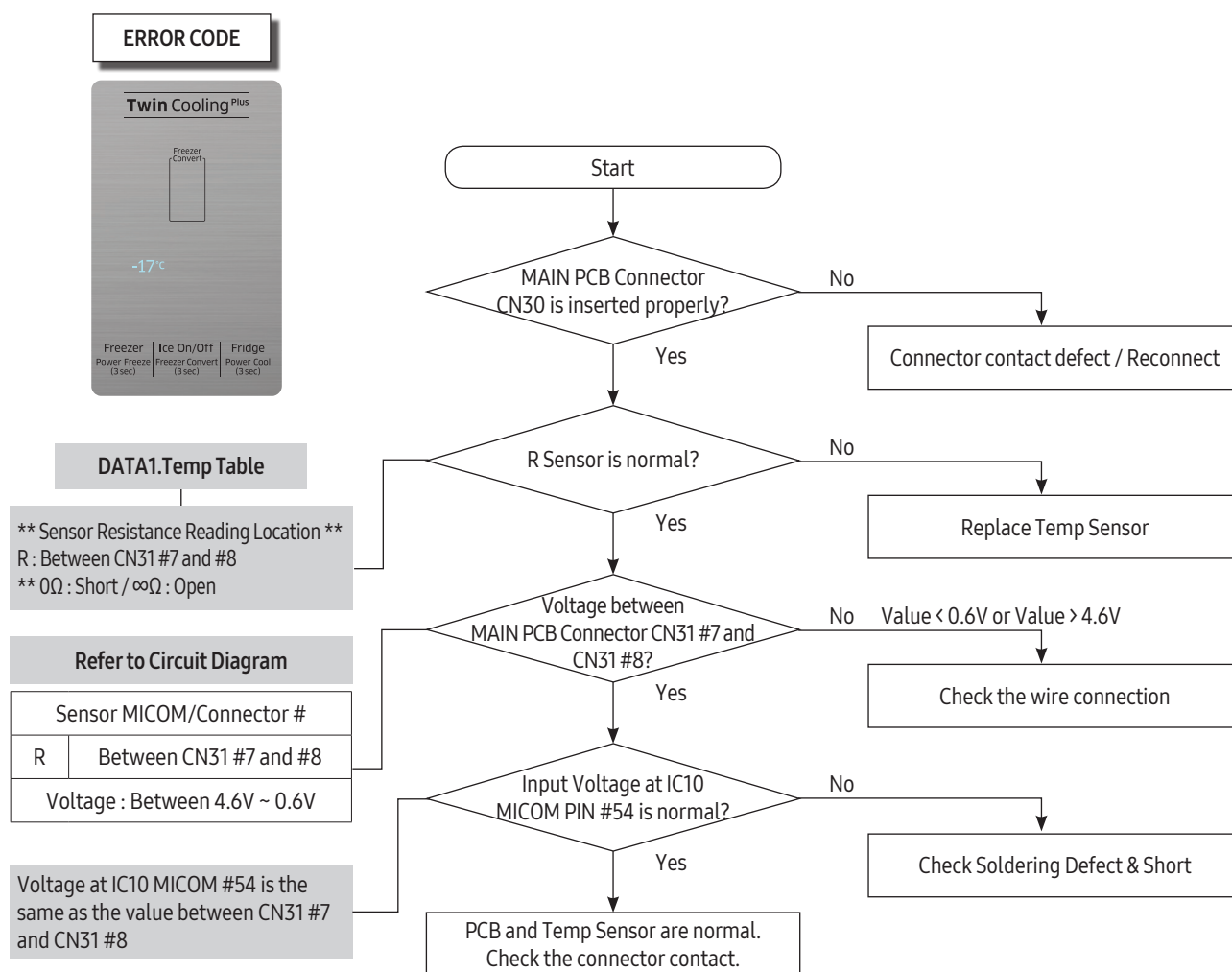
°C	°F	Voltage	Ω	°C	°F	Voltage	Ω	°C	°F	Voltage	Ω
-50	-58	4.694	153319	-5	23	3.107	16419	40	104	1.153	2997
-49	-56.2	4.677	144794	-4	24.8	3.057	15731	41	105.8	1.124	2899
-48	-54.4	4.659	136798	-3	26.6	3.006	15076	42	107.6	1.095	2805
-47	-52.6	4.641	129294	-2	28.4	2.955	14452	43	109.4	1.068	2714
-46	-50.8	4.622	122248	-1	30.2	2.904	13857	44	111.2	1.04	2627
-45	-49	4.602	115631	0	32	2.853	13290	45	113	1.014	2543
-44	-47.2	4.581	109413	1	33.8	2.802	12749	46	114.8	0.988	2462
-43	-45.4	4.56	103569	2	35.6	2.751	12233	47	116.6	0.963	2384
-42	-43.6	4.537	98073	3	37.4	2.7	11741	48	118.4	0.938	2309
-41	-41.8	4.514	92903	4	39.2	2.649	11271	49	120.2	0.914	2237
-40	-40	4.49	88037	5	41	2.599	10823	50	122	0.891	2167
-39	-38.2	4.465	83456	6	42.8	2.548	10395	51	123.8	0.868	2100
-38	-36.4	4.439	79142	7	44.6	2.498	9986	52	125.6	0.846	2036
-37	-34.6	4.412	75077	8	46.4	2.449	9596	53	127.4	0.824	1973
-36	-32.8	4.385	71246	9	48.2	2.399	9223	54	129.2	0.803	1913
-35	-31	4.356	67634	10	50	2.35	8867	55	131	0.783	1855
-34	-29.2	4.326	64227	11	51.8	2.301	8526	56	132.8	0.762	1799
-33	-27.4	4.296	61012	12	53.6	2.253	8200	57	134.6	0.743	1745
-32	-25.6	4.264	57977	13	55.4	2.205	7888	58	136.4	0.724	1693
-31	-23.8	4.232	55112	14	57.2	2.158	7590	59	138.2	0.706	1642
-30	-22	4.199	52406	15	59	2.111	7305	60	140	0.688	1594
-29	-20.2	4.165	49848	16	60.8	2.064	7032	61	141.8	0.67	1547
-28	-18.4	4.129	47431	17	62.6	2.019	6771	62	143.6	0.653	1502
-27	-16.6	4.093	45146	18	64.4	1.974	6521	63	145.4	0.636	1458
-26	-14.8	4.056	42984	19	66.2	1.929	6281	64	147.2	0.62	1416
-25	-13	4.018	40938	20	68	1.885	6052	65	149	0.604	1375
-24	-11.2	3.98	39002	21	69.8	1.842	5832	66	150.8	0.598	1335
-23	-9.4	3.94	37169	22	71.6	1.799	5621	67	152.6	0.574	1297
-22	-7.6	3.899	35433	23	73.4	1.757	5419	68	154.4	0.56	1260
-21	-5.8	3.858	33788	24	75.2	1.716	5225	69	156.2	0.546	1225
-20	-4	3.816	32230	25	77	1.675	5039	70	158	0.532	1190
-19	-2.2	3.773	30752	26	78.8	1.636	4861	71	159.8	0.519	1157
-18	-0.4	3.729	29350	27	80.6	1.596	4690	72	161.6	0.506	1125
-17	1.4	3.685	28021	28	82.4	1.558	4526	73	163.4	0.493	1093
-16	3.2	3.64	26760	29	84.2	1.52	4369	74	165.2	0.481	1063
-15	5	3.594	25562	30	86	1.483	4218	75	167	0.469	1034
-14	6.8	3.548	24425	31	87.8	1.447	4072	76	168.8	0.457	1006
-13	8.6	3.501	23345	32	89.6	1.412	3933	77	170.6	0.446	978
-12	10.4	3.453	22320	33	91.4	1.377	3799	78	172.4	0.435	952
-11	12.2	3.405	21345	34	93.2	1.343	3670	79	174.2	0.424	926
-10	14	3.356	20418	35	95	1.309	3547	80	176	0.414	902
-9	15.8	3.307	19537	36	96.8	1.277	3428	81	177.8	0.404	877
-8	17.6	3.258	18698	37	98.6	1.253	3344	82	179.6	0.394	854
-7	19.4	3.208	17901	38	100.4	1.213	3204	83	181.4	0.384	832
-6	21.2	3.158	17142	39	102.2	1.183	3098	84	183.2	0.375	810

SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-1. When Self-Diagnosis Error occurs

- The Display Panel shows the Sensor Error and, when the unit is plugged in and there are sensor errors, the unit does not operate and Display bar related to the defective sensors keep blinking.
- When sensor defects occur during the operation, the unit keeps working. But, it shifts to the Emergency Operation and it may not work properly. So, please check the unit according to the Self Diagnosis function.

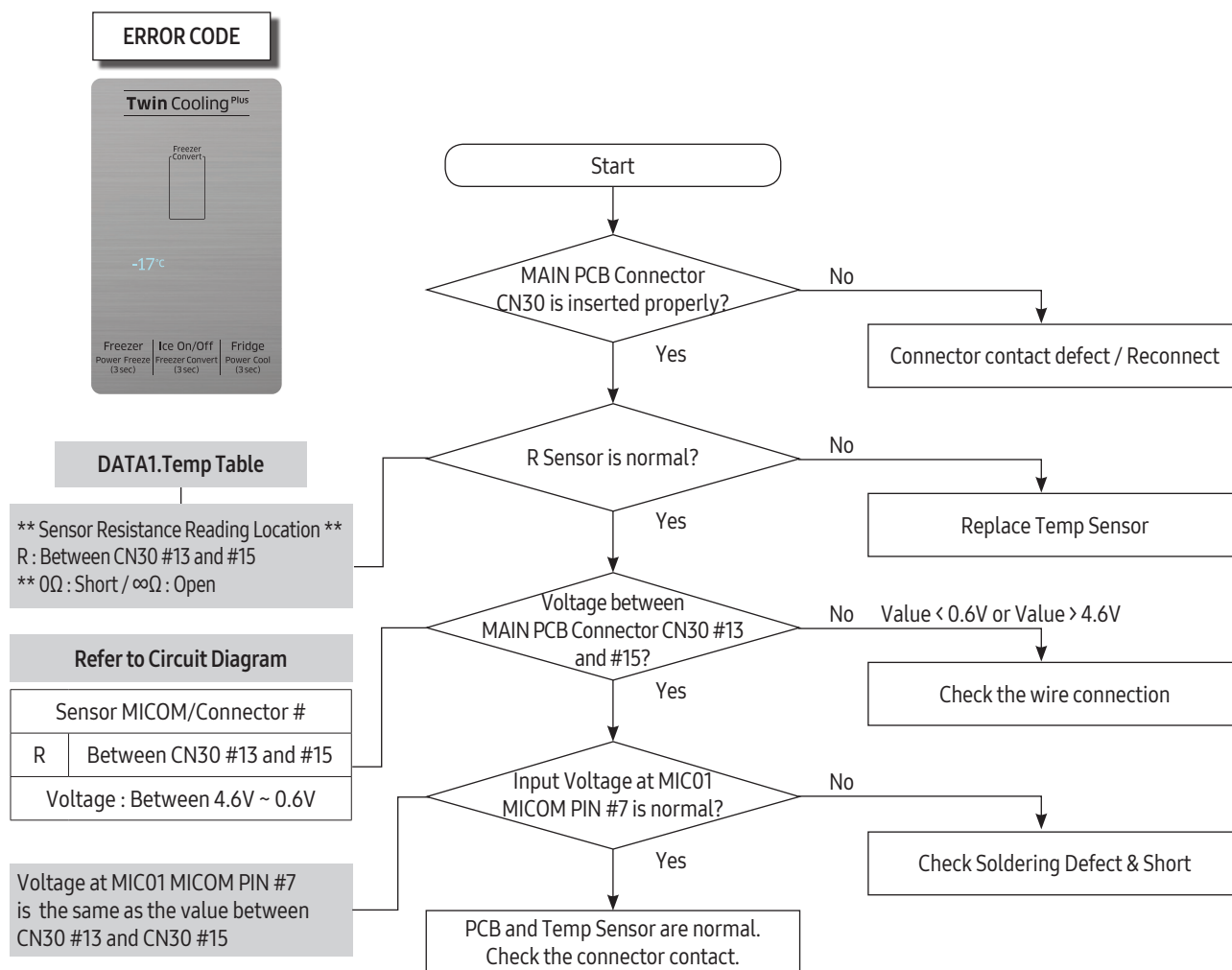
1) When the R-Sensor is defective - 2 Board



SELF DIAGNOSIS & TROUBLE SHOOTING

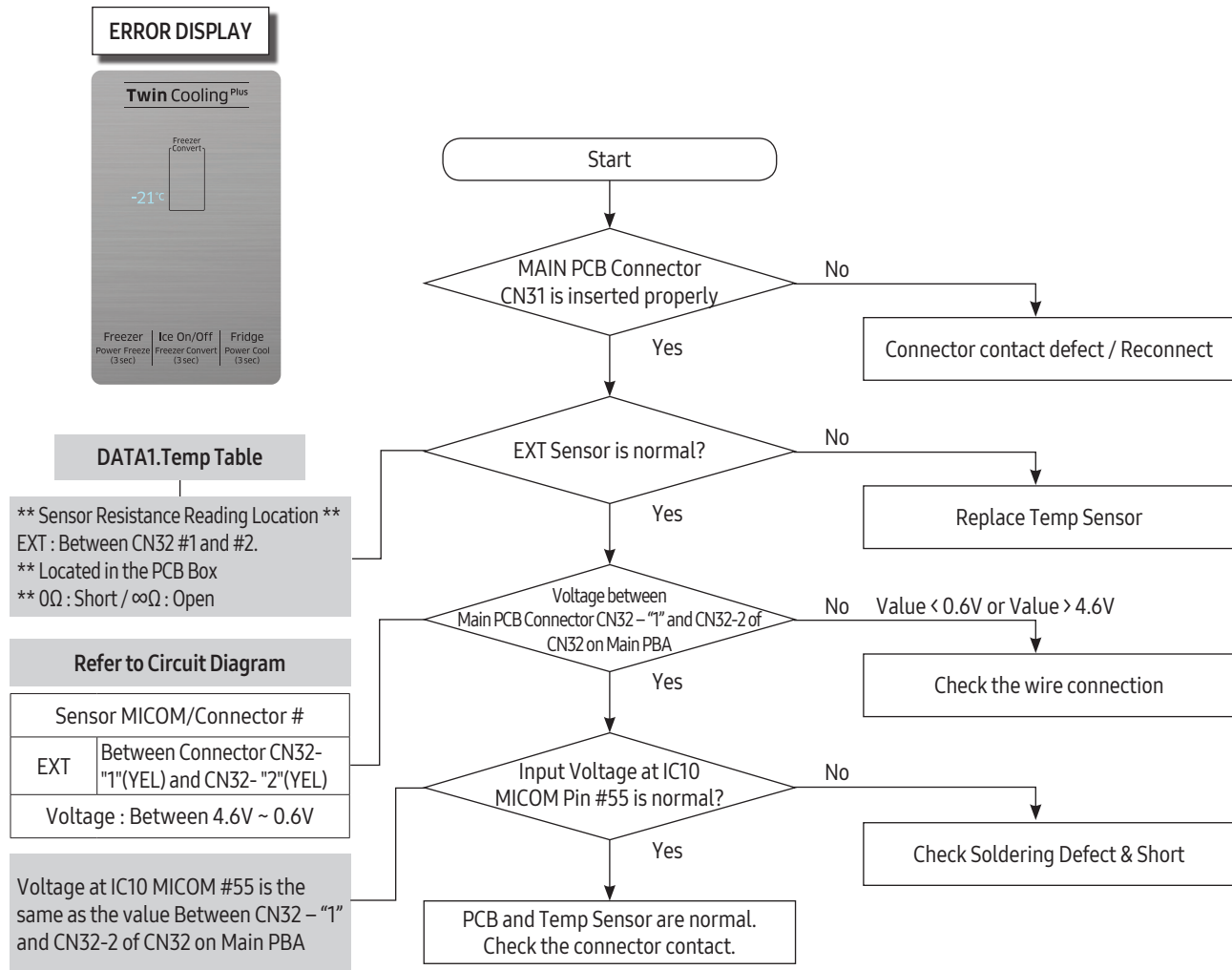
- The Display Panel shows the Sensor Error and, when the unit is plugged in and there are sensor errors, the unit does not operate and Display bar related to the defective sensors keep blinking.
- When sensor defects occur during the operation, the unit keeps working. But, it shifts to the Emergency Operation and it may not work properly. So, please check the unit according to the Self Diagnosis function.

1) When the R-Sensor is defective - 1 Board



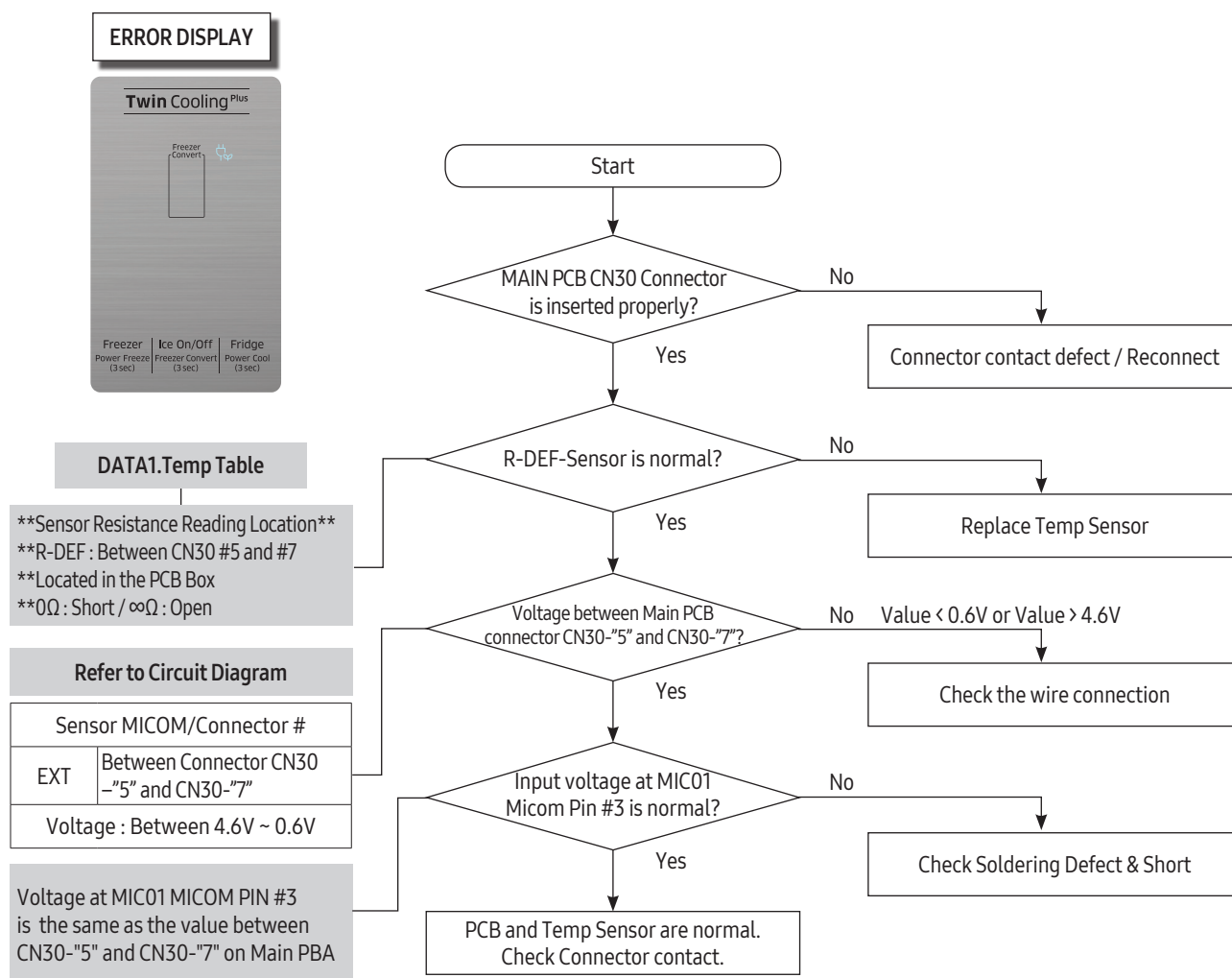
SELF DIAGNOSIS & TROUBLE SHOOTING

2) When the EXT-Sensor is defective - 2 Board



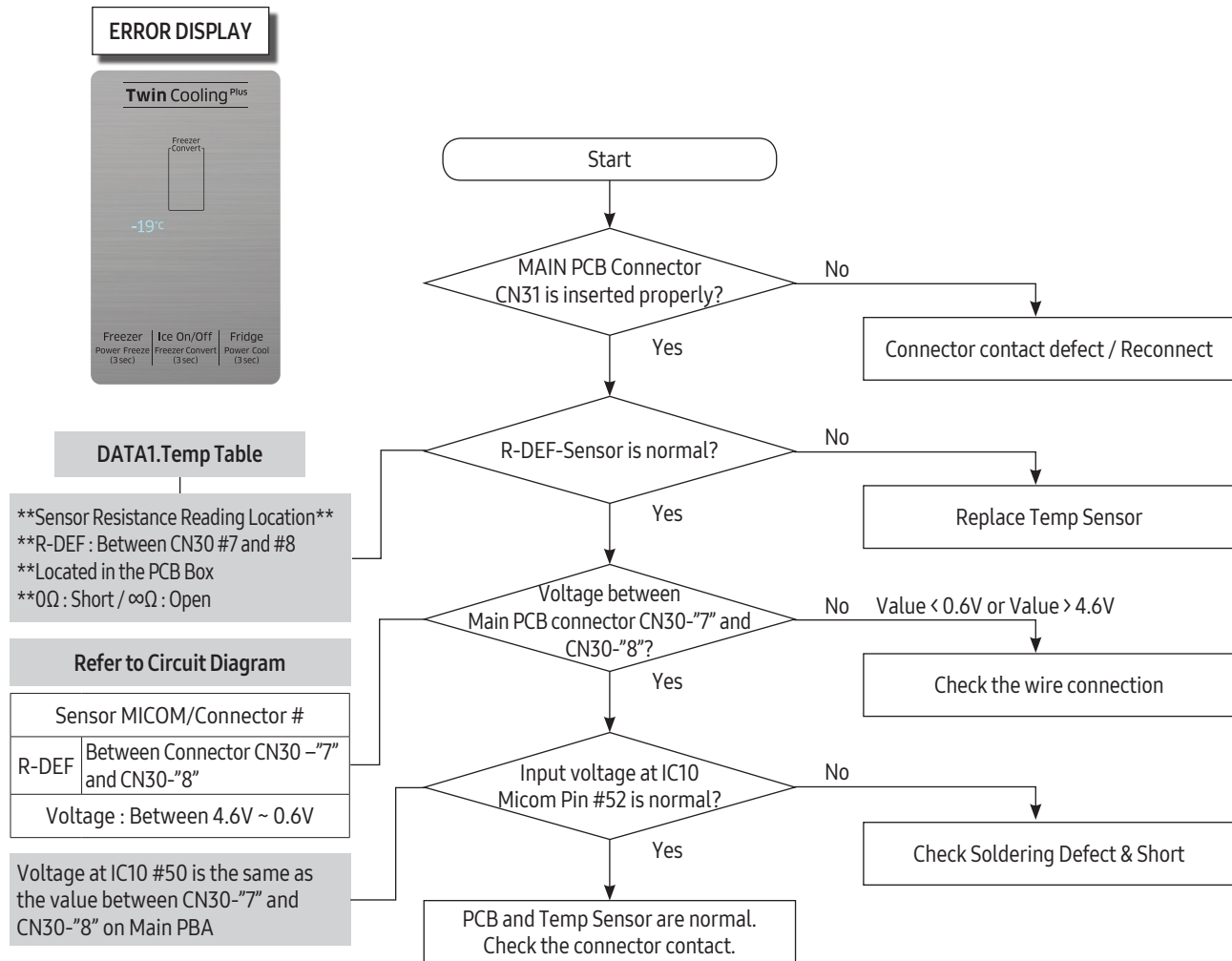
SELF DIAGNOSIS & TROUBLE SHOOTING

2) When the R-DEF-sensor is defective - 1 Board



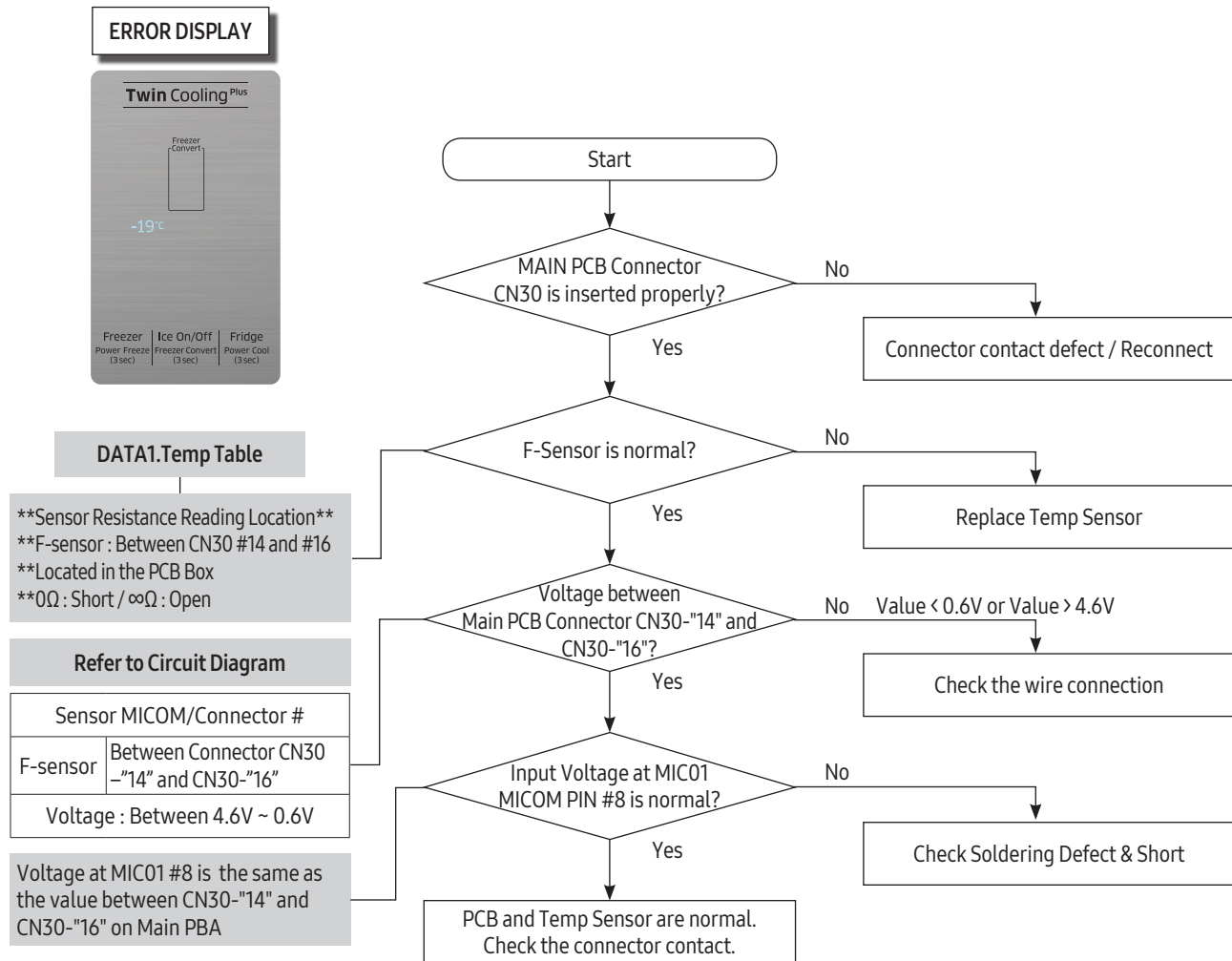
SELF DIAGNOSIS & TROUBLE SHOOTING

3) When the F-Sensor is defective - 2 Board



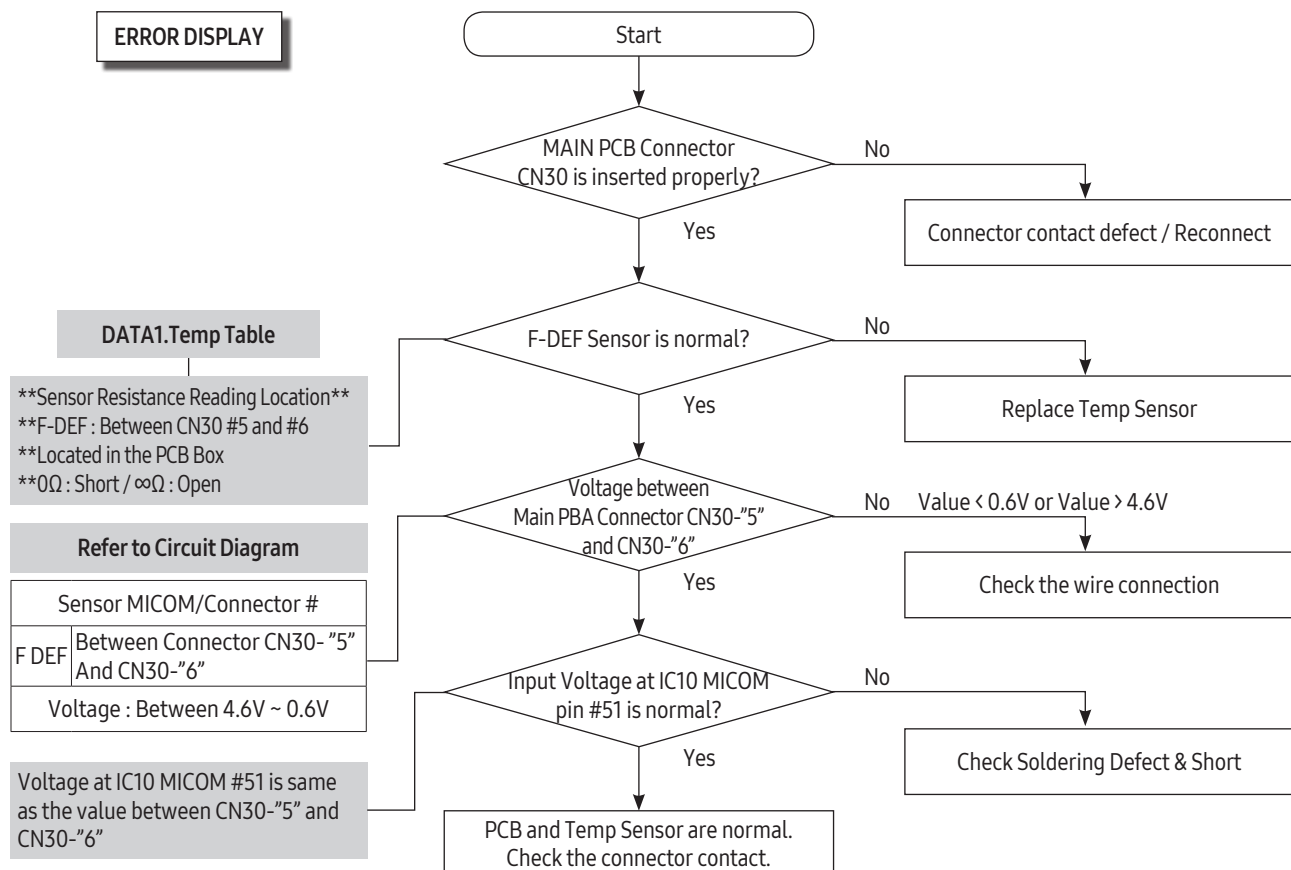
SELF DIAGNOSIS & TROUBLE SHOOTING

3) When the F-Sensor is defective - 1 Board



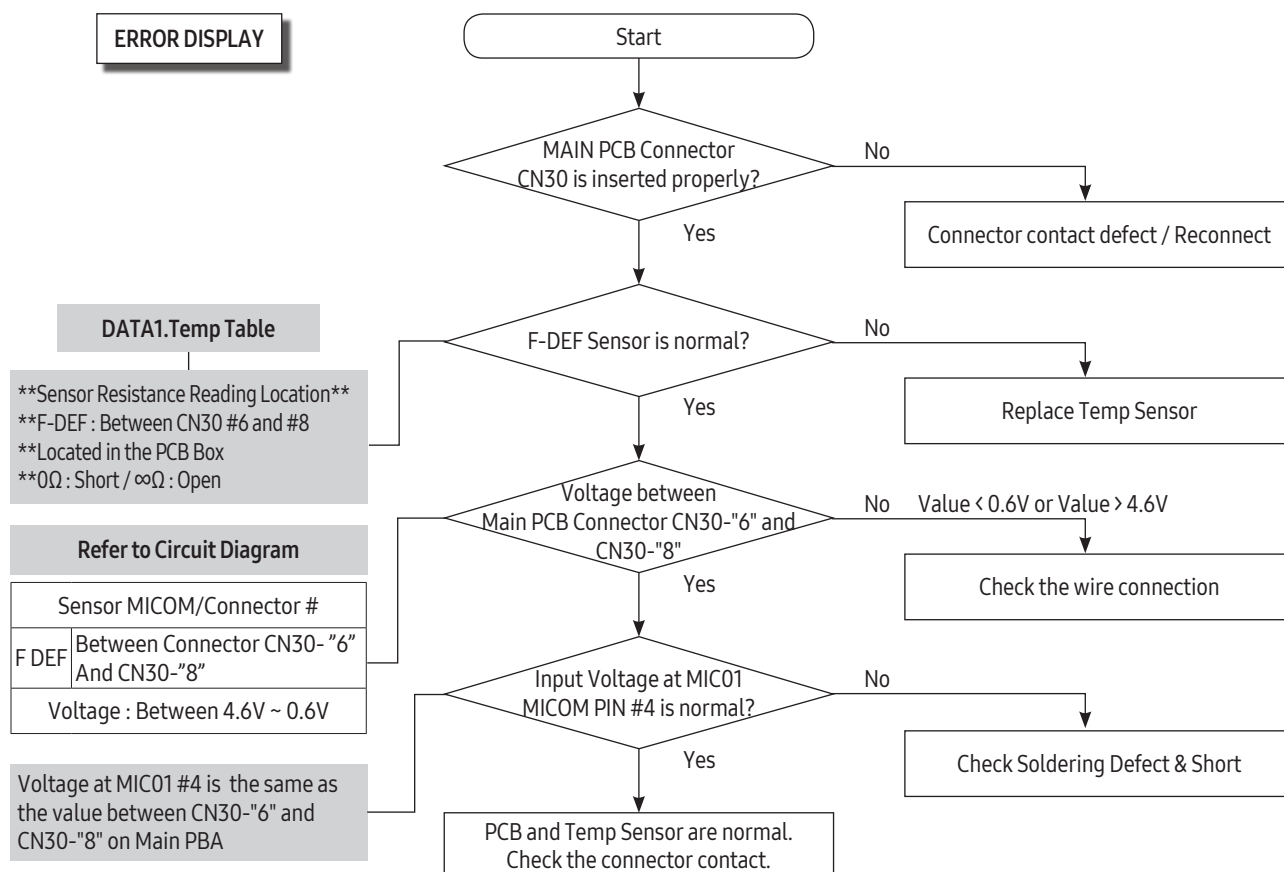
SELF DIAGNOSIS & TROUBLE SHOOTING

4) When the DEF-Sensor is defective - 2 Board



SELF DIAGNOSIS & TROUBLE SHOOTING

5) When the F-DEF-Sensor is defective - 1 Board

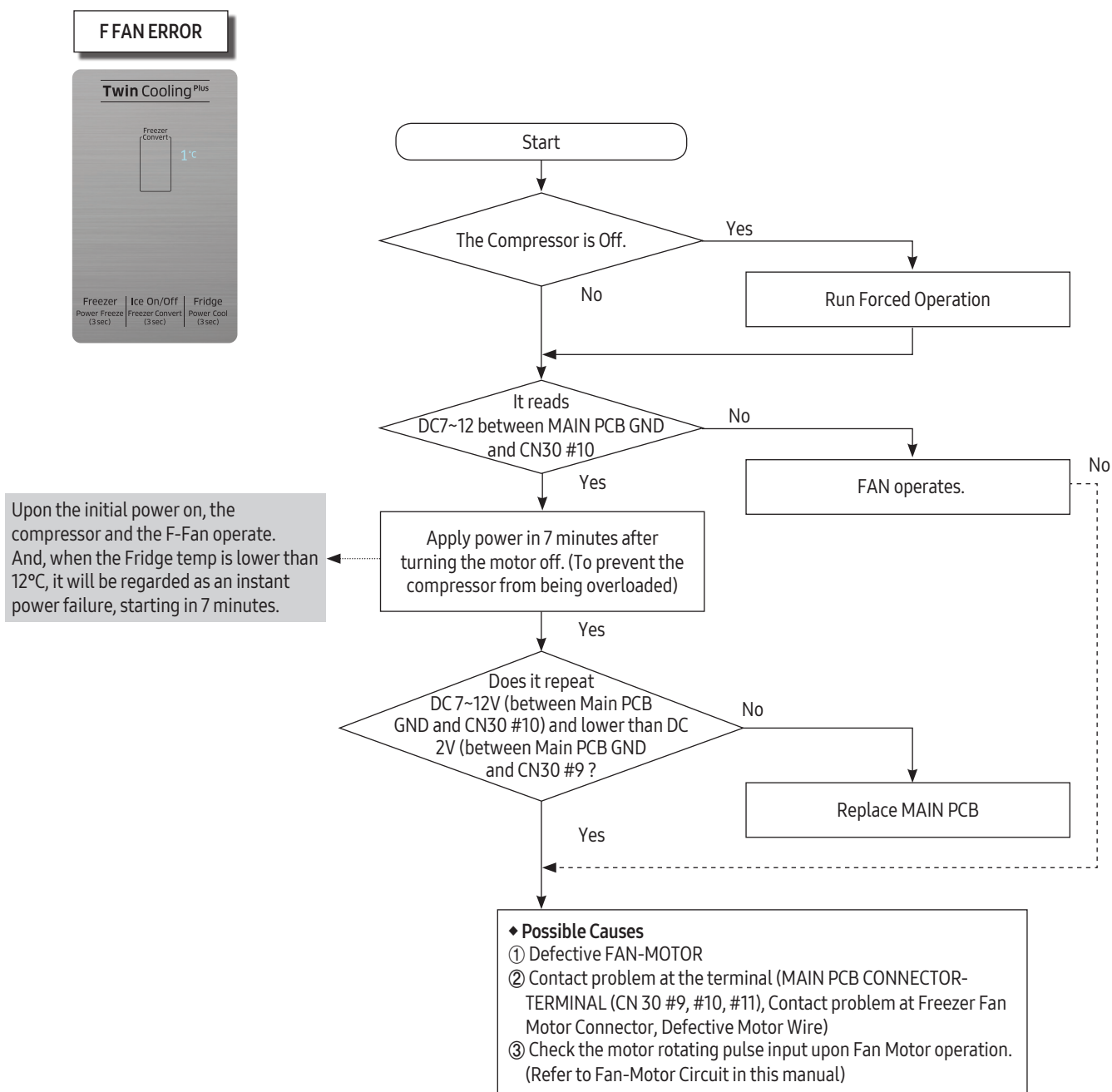


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-2. When the Freezer Fan does not operate (2 Board BLDC Motor)

- This refrigerator uses the BLDC Fan Motor. (OPTION)
- The BLDC Motor operates with DC 7~12V.
- The F-Fan motor generally runs together with the compressor.

► When checking with the Self Diagnosis

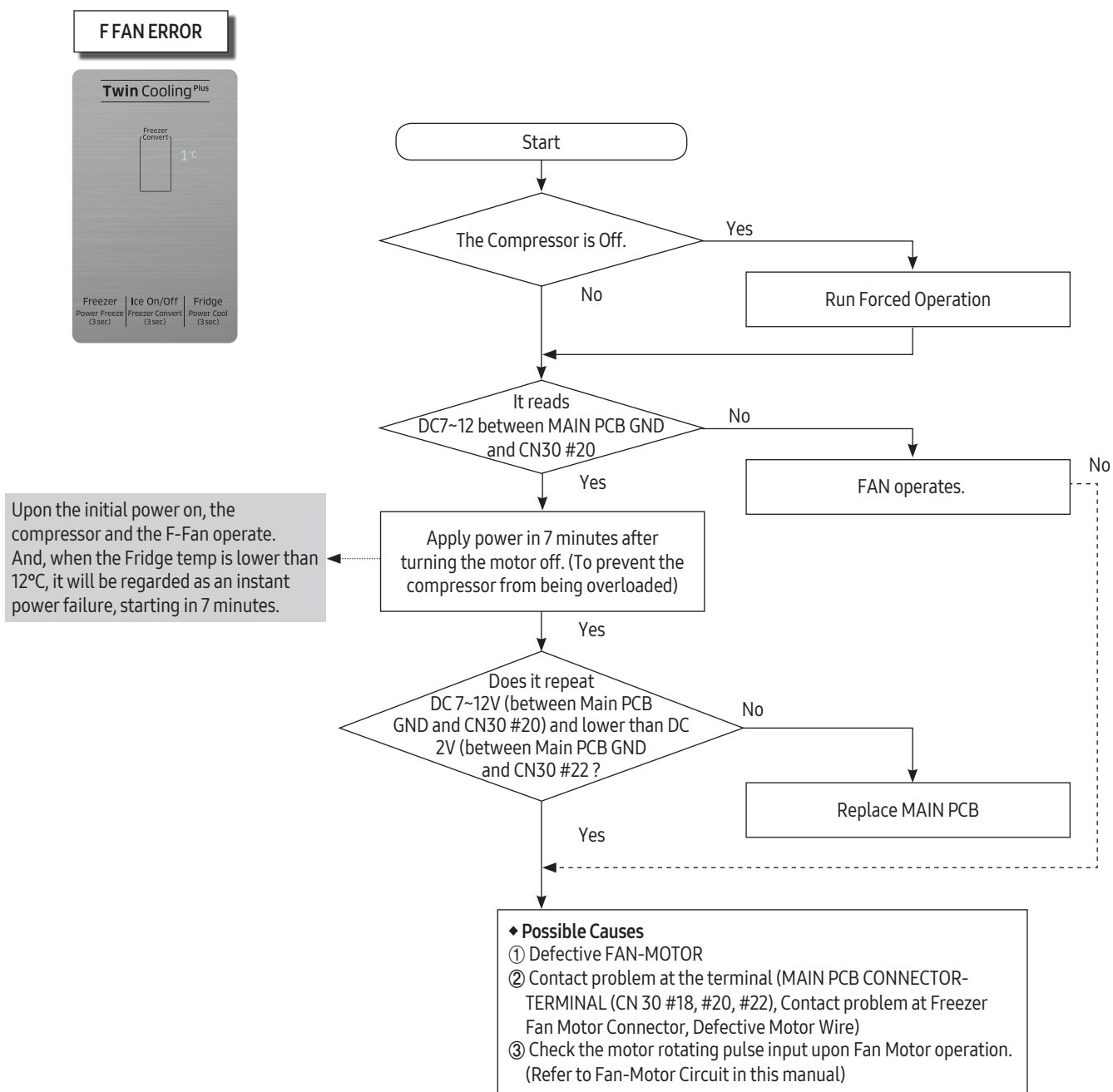


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-3. When the Freezer Fan does not operate (1 Board BLDC Motor)

- This refrigerator uses the BLDC Fan Motor. (OPTION)
- The BLDC Motor operates with DC 7~12V.
- The F-Fan motor generally runs together with the compressor.

► When checking with the Self Diagnosis

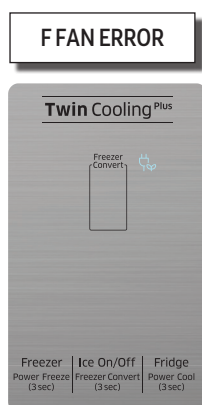


SELF DIAGNOSIS & TROUBLE SHOOTING

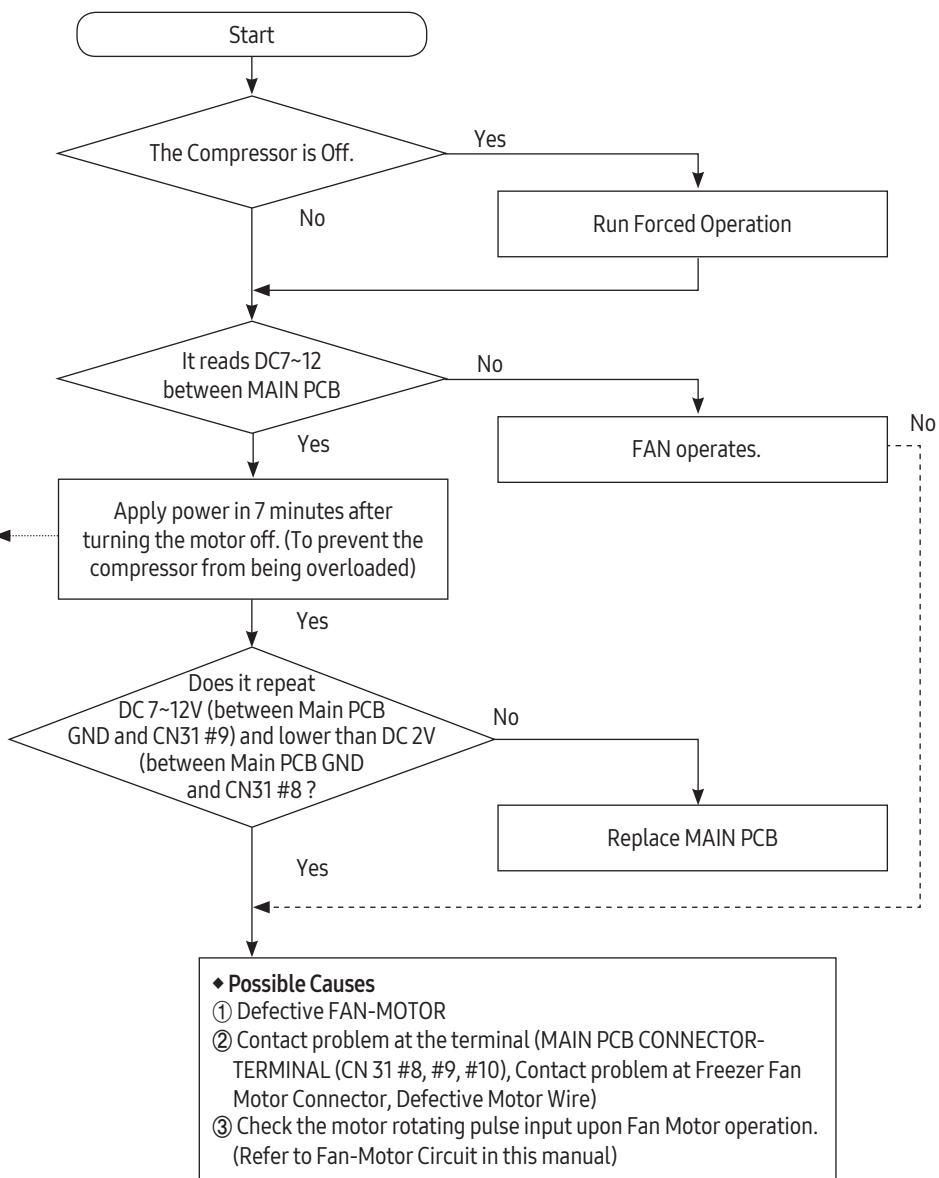
5-2-4. When the Fridge Fan does not operate - 2 Board

- This refrigerator uses the BLDC Fan Motor. The BLDC Motor operates with DC 7~12V.
- The F-Fan motor generally runs together with the compressor.

► When checking with the Self Diagnosis



Upon the initial power on, the compressor and the R-Fan operate. And, when the Fridge temp is lower than 12°C, it will be regarded as an instant power failure, starting in 7 minutes.

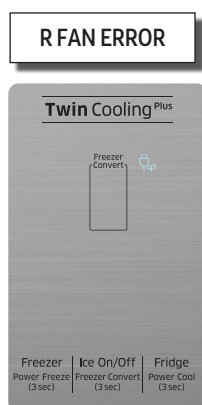


SELF DIAGNOSIS & TROUBLE SHOOTING

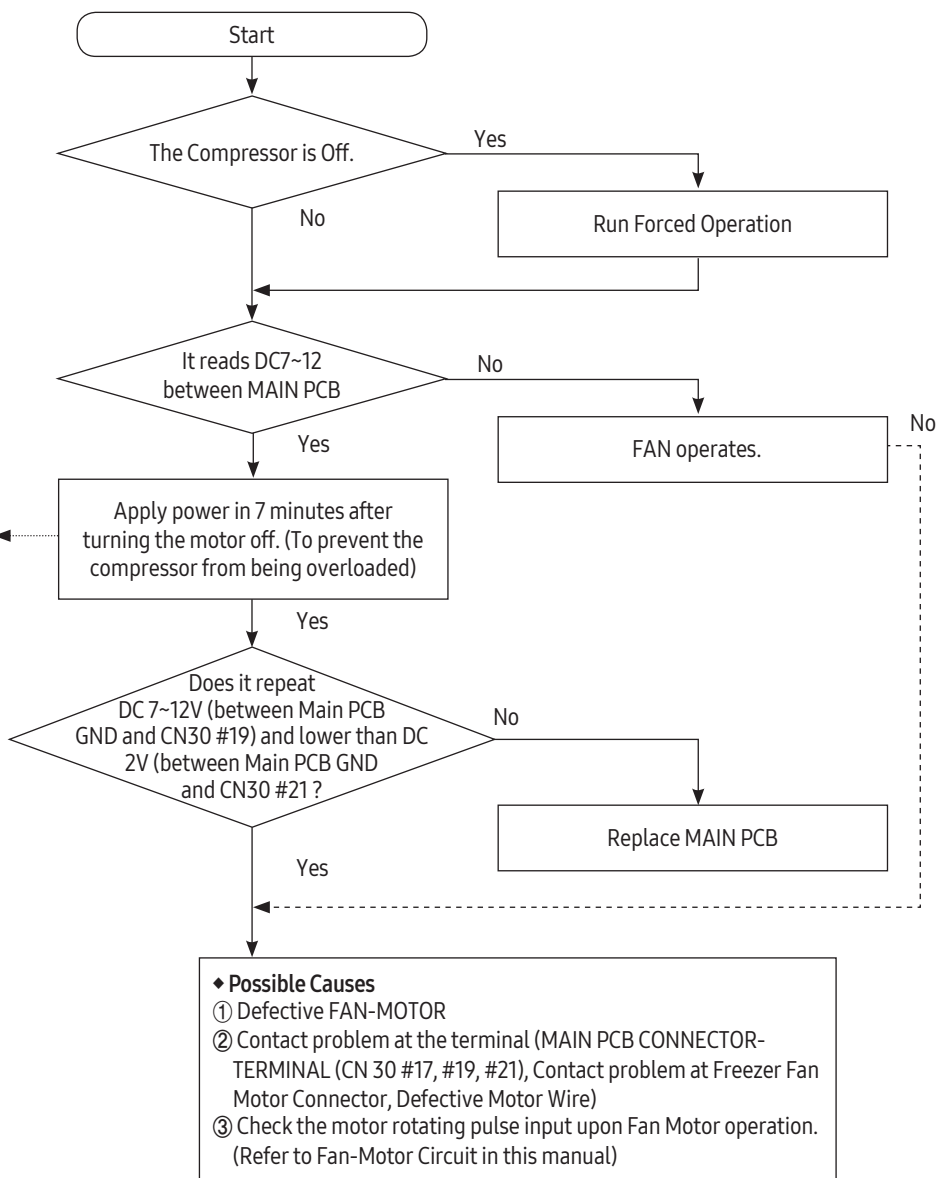
5-2-5. When the Fridge Fan does not operate - 1 Board

- This refrigerator uses the BLDC Fan Motor. The BLDC Motor operates with DC 7~12V.
- The R-Fan motor generally runs together with the compressor.

► When checking with the Self Diagnosis



Upon the initial power on, the compressor and the R-Fan operate. And, when the Fridge temp is lower than 12°C, it will be regarded as an instant power failure, starting in 7 minutes.



SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-6. When Defrost does not work (F DEF Heater) - 2 Board

- When there is a trouble in defrosting, select the Self-Diagnosis function before turning off the unit. And, check if there is any defect in the Defrost Heater. If not, plug out the unit and do the Trouble-Shooting. (Refer to the Self-Diagnosis function and check the details)

**** Heater Resistance Reading Location ****

F-DEF : Resistance between CN72 #5 ↔ CN73 #1 should be ohm ± 10%.

**** 0Ω : Short / ∞Ω : Open**
(Bimetal / Thermal Fuse / Heater Defect)

**** Sensor Resistance Reading Location ****

F-DEF : Between CN30 #7 ↔ CN30#8

**** 0Ω : Short / ∞Ω : Open**

Temp vs. Resistance Table

30°C	4.22kΩ
20°C	6.05kΩ
10°C	8.87kΩ
0°C	13.29kΩ
-10°C	20.42kΩ
-20°C	32.23kΩ
-30°C	52.41kΩ

For more detail data, refer to **DATA1**. Temp Table

**** Sensor Voltage Reading Location ****

F-DEF : Between PCB COMMON Ground and CN30 #5 (or SEN_2)

**** 0V : Short / 5V : Open**

After pressing the Power Cool and the Fridge buttons simultaneously for 6 seconds, push the Fridge button to enter the Test Mode.

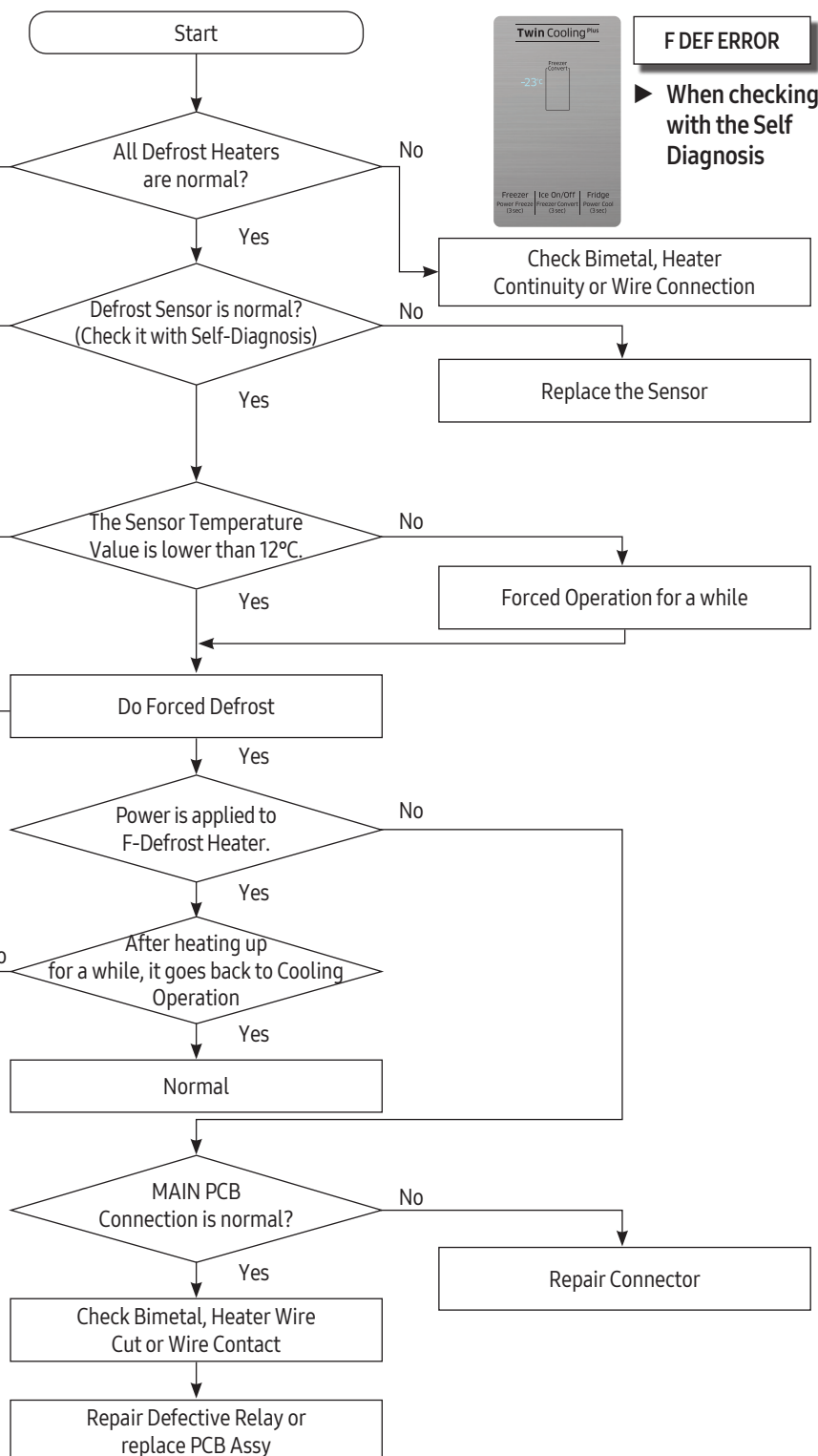
And then, when any one of the buttons is pressed twice, the Forced Defrost will start and "3°C, 5°C and 7°C" LEDs will light up on the display panel.

Check the related sensors if they are defective.

Note

When the temperature of the F DEF Sensor goes over 12°C with the Defrost Heater heating up, it stops heating and it goes back to Cooling Operation.

SEG	Voltage	Watt	OHM
RT29 / RT32	230	130	406.9
	120	130	110.8
RT35 / RT38	230	160	330.6
	120	160	90
RT22 / RT25	230	120	440.8
	120	120	120



F DEF ERROR

► When checking with the Self Diagnosis

SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-7. When Defrost does not work (F DEF Heater) – 1 Board

- When there is a trouble in defrosting, select the Self-Diagnosis function before turning off the unit. And, check if there is any defect in the Defrost Heater. If not, plug out the unit and do the Trouble-Shooting. (Refer to the Self-Diagnosis function and check the details)

**** Heater Resistance Reading Location ****

F-DEF : Resistance between CN70 #1 ↔ CN70 #3 should be ohm ±10%

**** 0Ω : Short / ∞Ω : Open**
(Bimetal / Thermal Fuse / Heater Defect)

**** Sensor Resistance Reading Location ****

F-DEF : Between CN30 #14 ↔ CN30#16

**** 0Ω : Short / ∞Ω : Open**

Temp vs. Resistance Table

30°C	4.22kΩ
20°C	6.05kΩ
10°C	8.87kΩ
0°C	13.29kΩ
-10°C	20.42kΩ
-20°C	32.23kΩ
-30°C	52.41kΩ

For more detail data, refer to **DATA1. Temp Table**

**** Sensor Voltage Reading Location ****

F-DEF : Between PCB COMMON Ground and CN30 #14 (or SEN_2)

**** 0V : Short / 5V : Open**

After pressing the Power Cool and the Fridge buttons simultaneously for 6 seconds, push the Fridge button to enter the Test Mode.

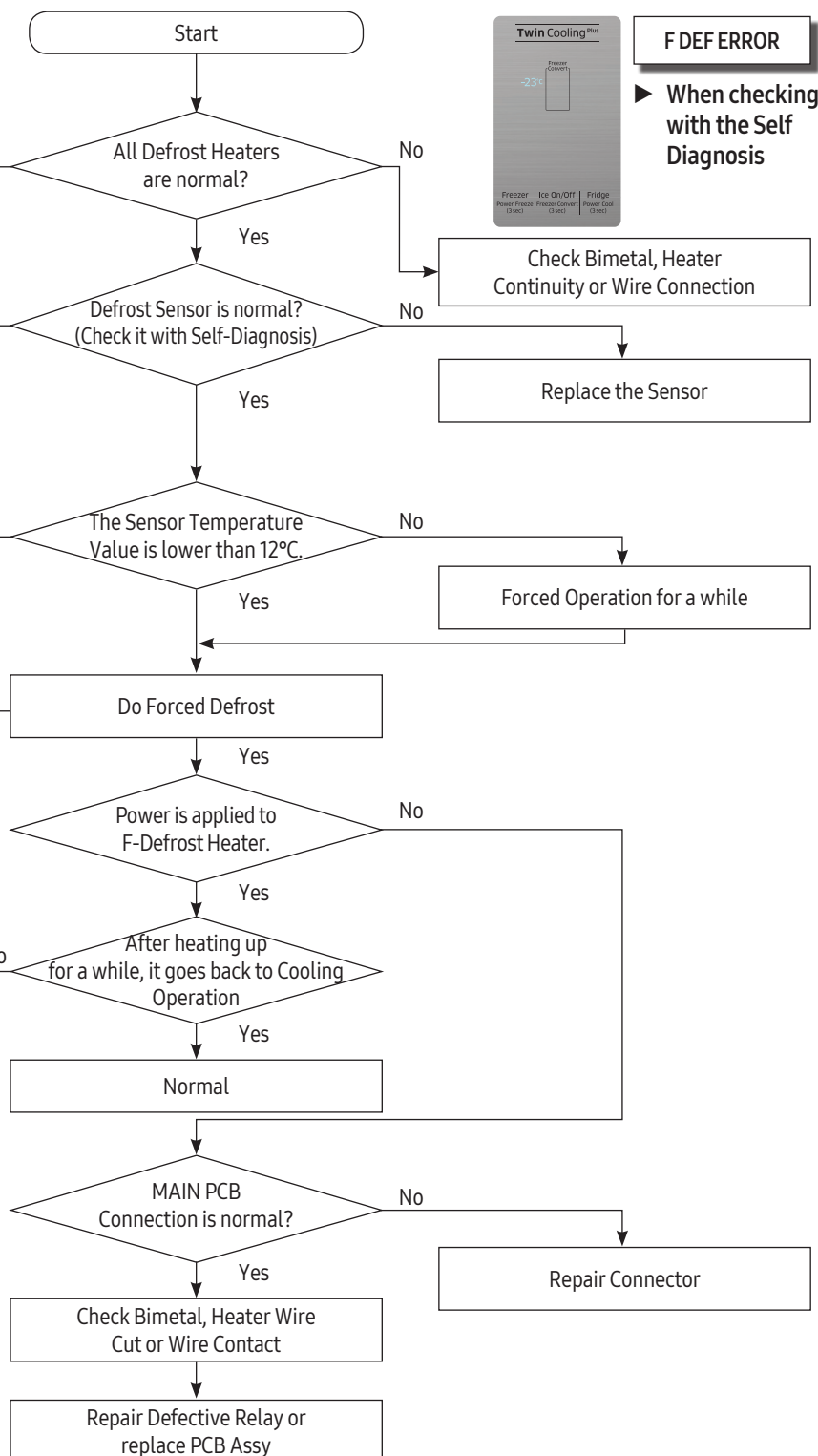
And then, when any one of the buttons is pressed twice, the Forced Defrost will start and "3°C, 5°C and 7°C" LEDs will light up on the display panel.

Check the related sensors if they are defective.

Note

When the temperature of the F DEF Sensor goes over 12°C with the Defrost Heater heating up, it stops heating and it goes back to Cooling Operation.

SEG	Voltage	Watt	OHM
RT29 / RT32	230	130	406.9
	120	130	110.8
RT35 / RT38	230	160	330.6
	120	160	90
RT22 / RT25	230	120	440.8
	120	120	120



F DEF ERROR

► When checking with the Self Diagnosis

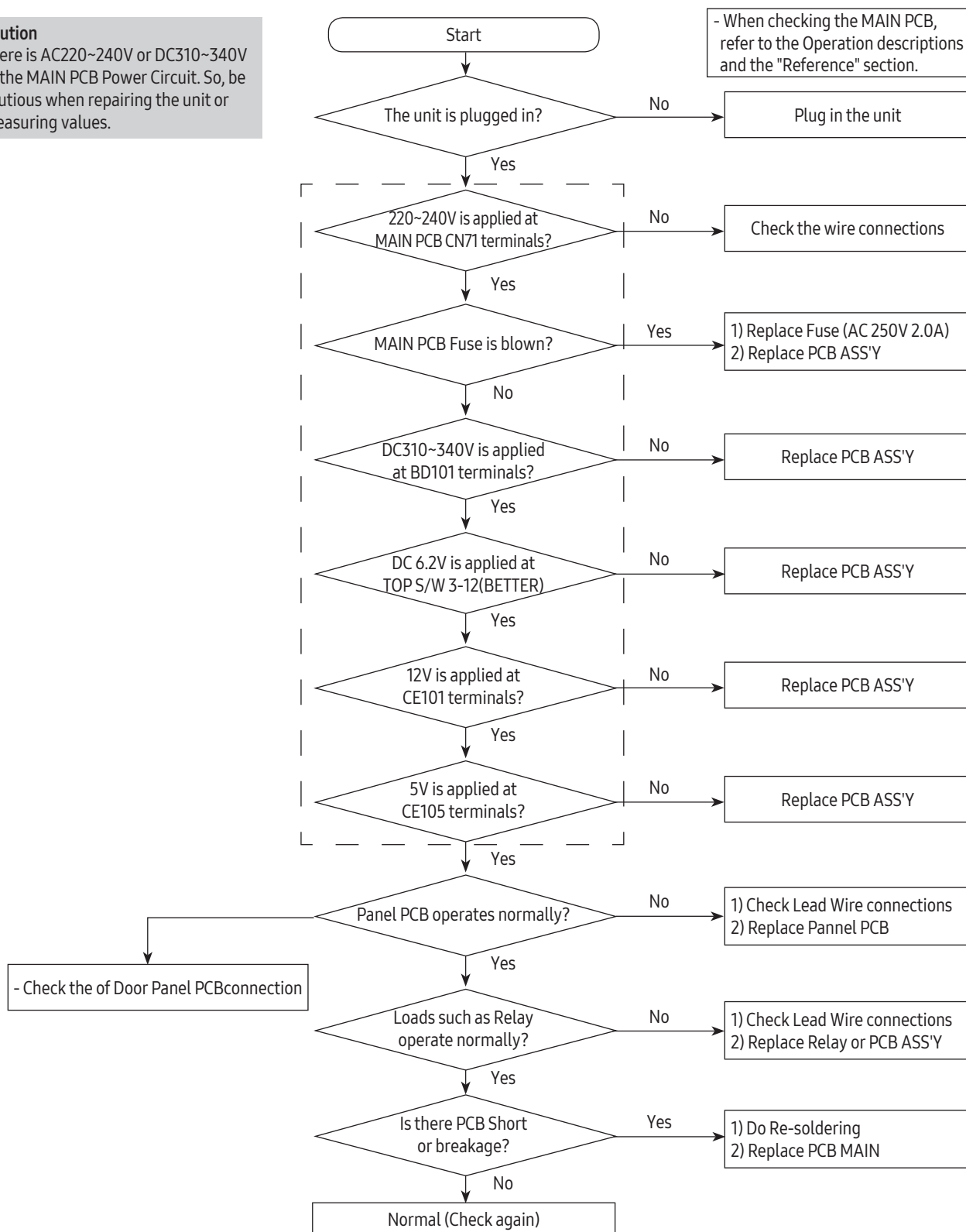
SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-8. When there is no Power in MAIN PCB

5-2-8-1. Area that is Rated input voltage 220~240V. - 2 Board

Caution

There is AC220~240V or DC310~340V at the MAIN PCB Power Circuit. So, be cautious when repairing the unit or measuring values.

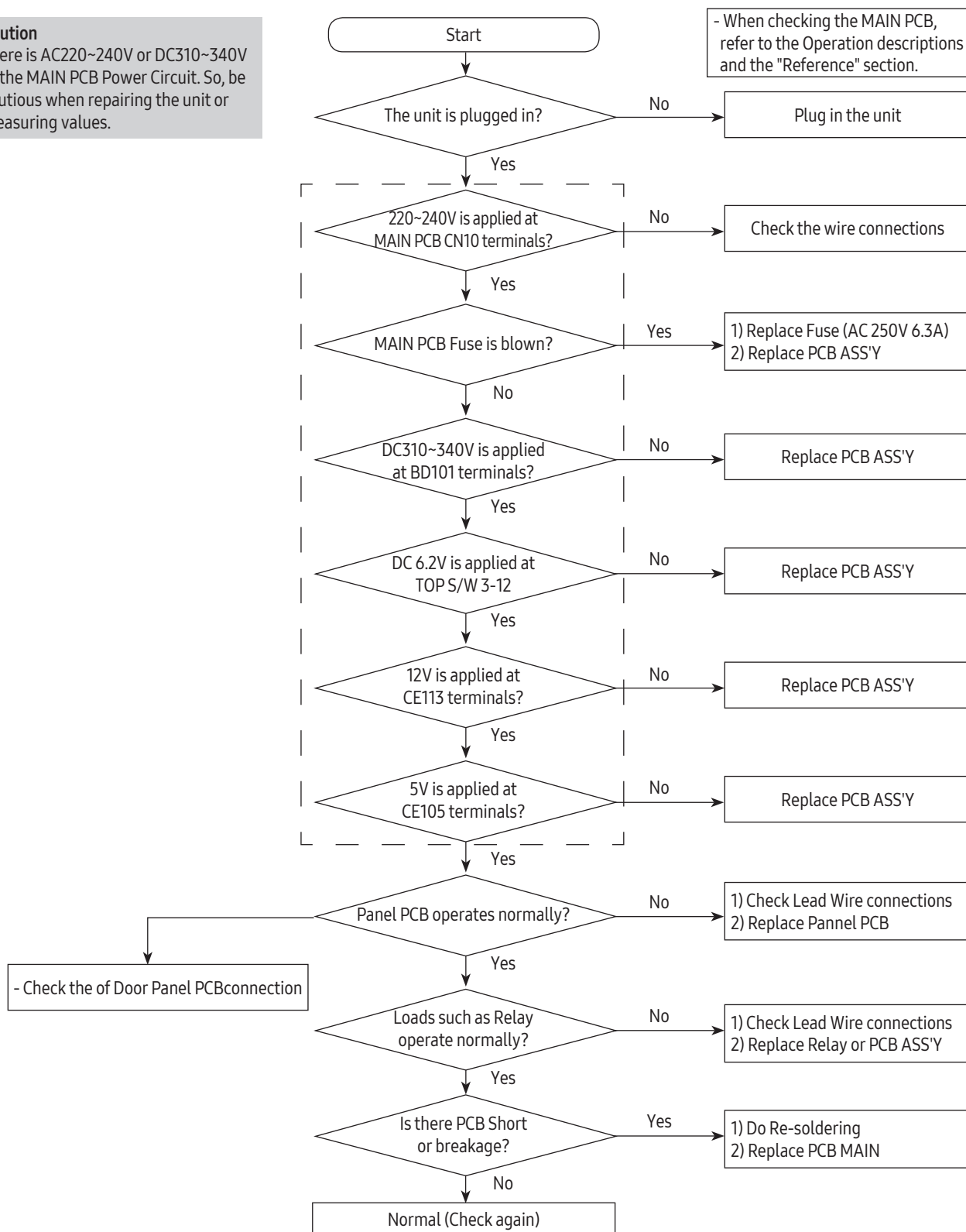


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-8-1. Area that is Rated input voltage 220~240V. - 1 Board

Caution

There is AC220~240V or DC310~340V at the MAIN PCB Power Circuit. So, be cautious when repairing the unit or measuring values.

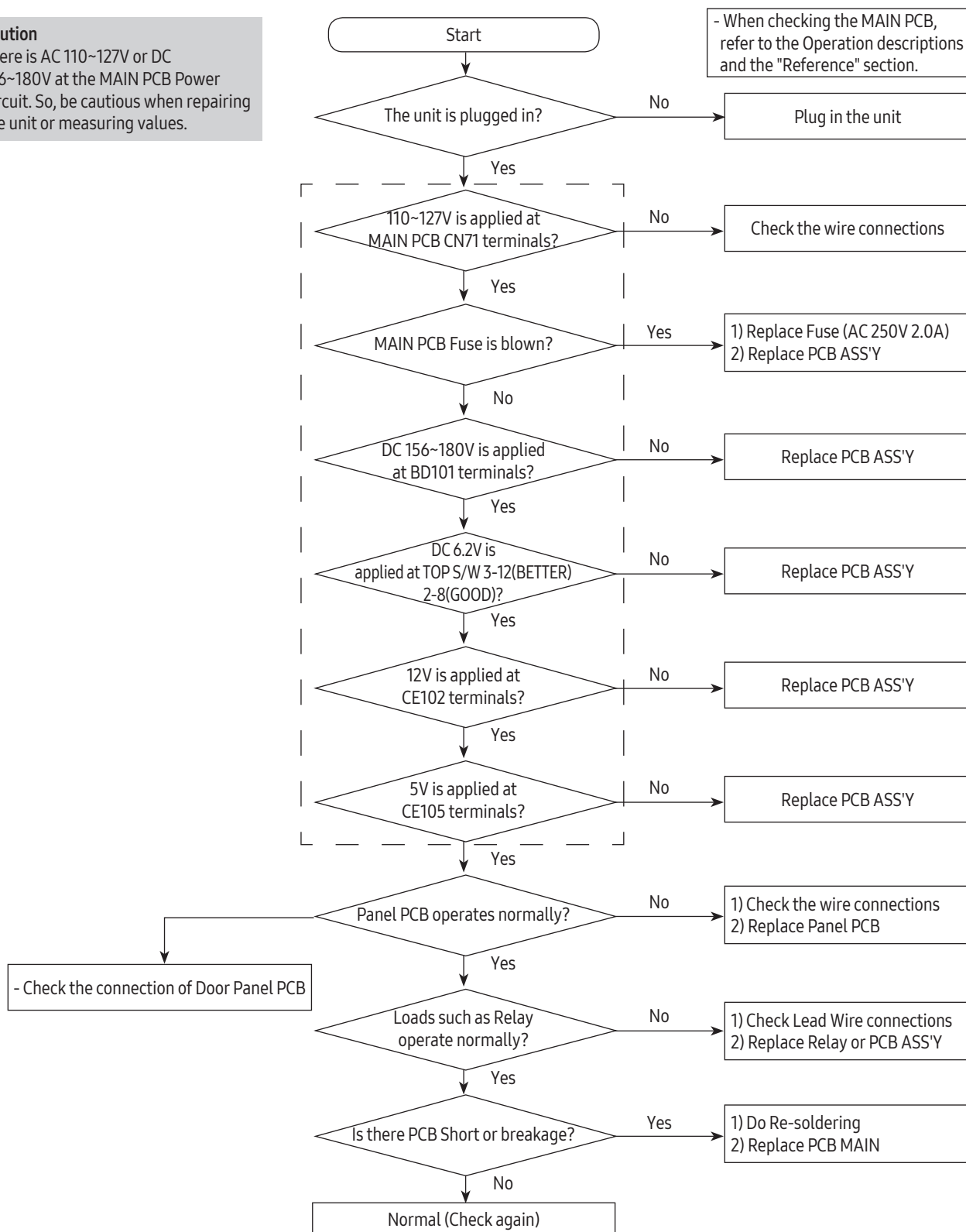


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-8-2. Area that is Rated input voltage 110~127V. - 2 Board

Caution

There is AC 110~127V or DC 156~180V at the MAIN PCB Power Circuit. So, be cautious when repairing the unit or measuring values.

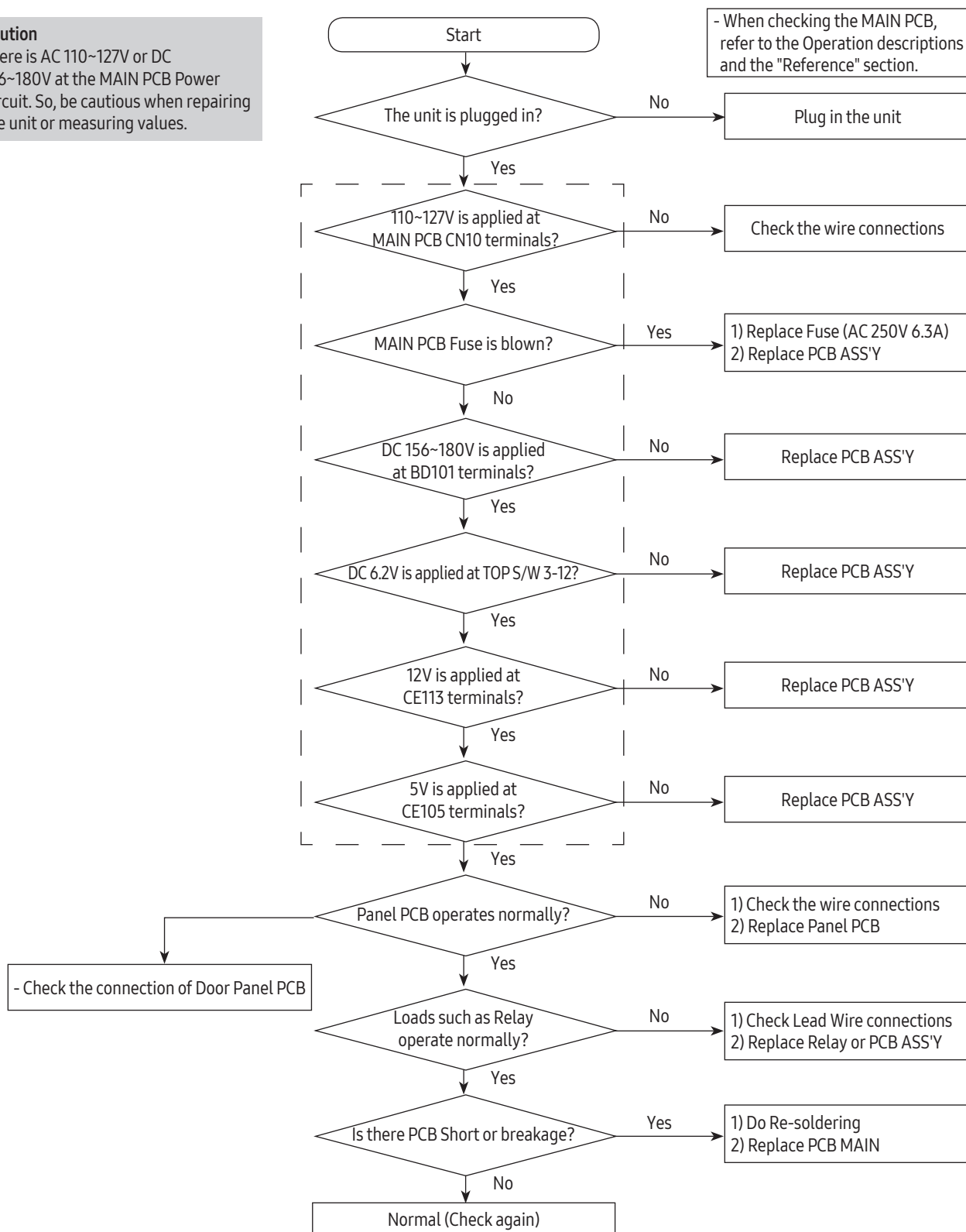


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-8-2. Area that is Rated input voltage 110~127V. - 1 Board

Caution

There is AC 110~127V or DC 156~180V at the MAIN PCB Power Circuit. So, be cautious when repairing the unit or measuring values.



SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-9. When the Compressor is not working (INVERTER PBA) - 2 Board

When the inverter PBA LED is ON, it indicates that the compressor does operate normally.

Refer to Test Function in this manual

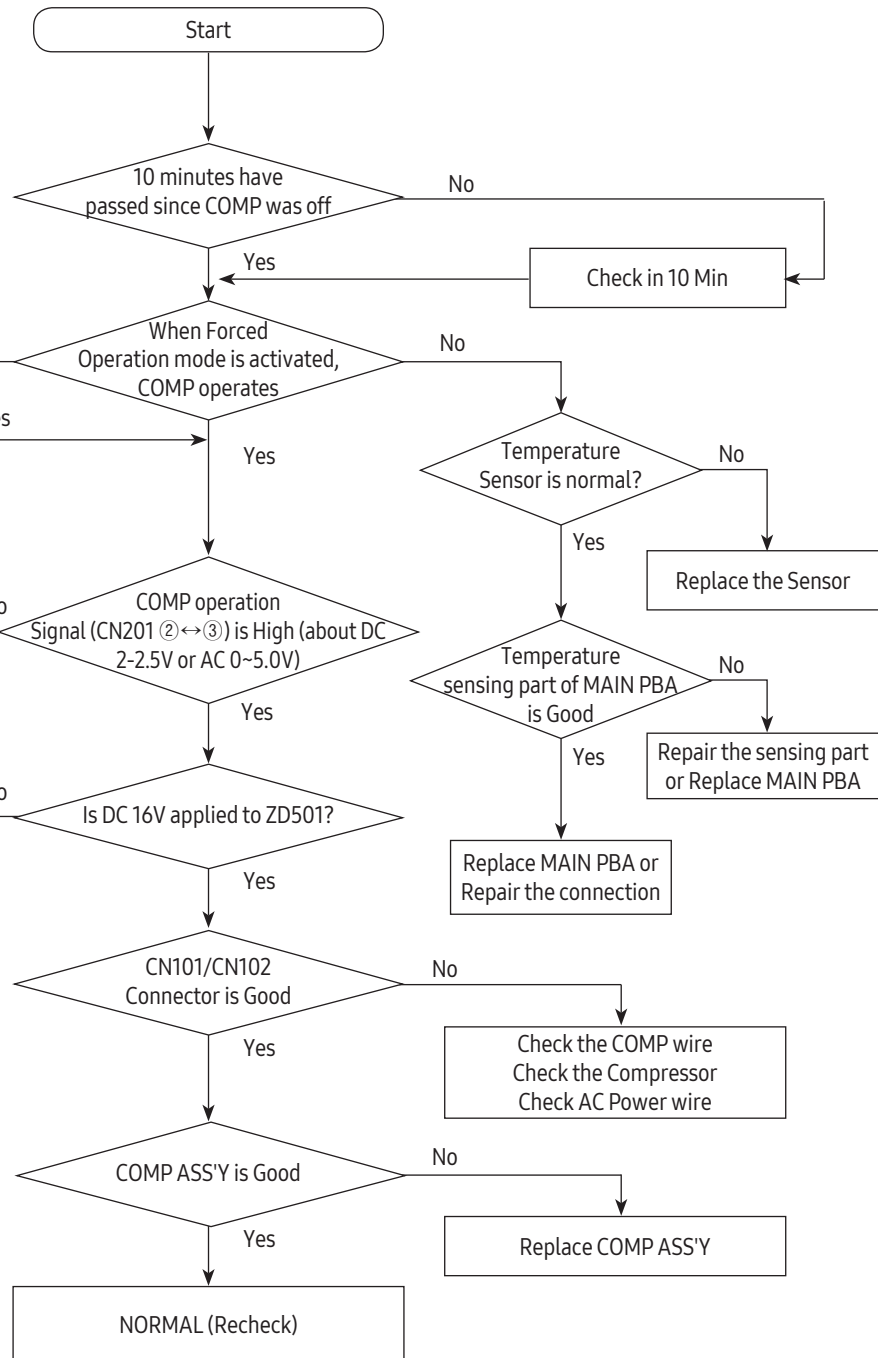
Forced Operation signal sound should be checked

0~800Hz 50% Duty Signal Output

Check the wire harness
Replace the MAIN PBA

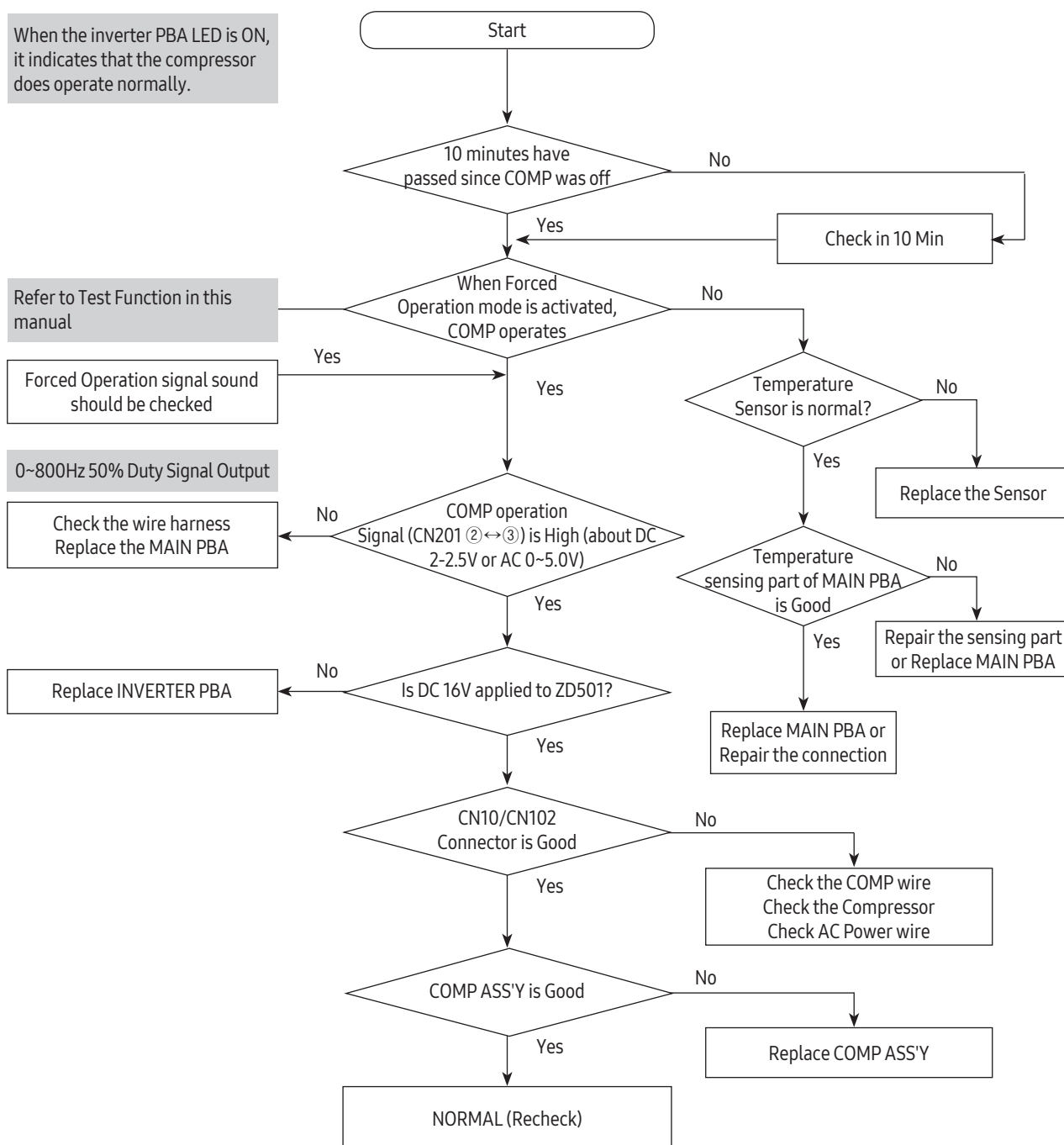
Replace INVERTER PBA

SMPS Primary Voltage checking(+16V) : REG1(+5V)
Terminal(Input and GND) : C16V±1.6V
Terminal(Output and GND) : DC5V±0.2V



5-2-10. When the Compressor is not working (INVERTER PBA) - 1 Board

When the inverter PBA LED is ON, it indicates that the compressor does operate normally.



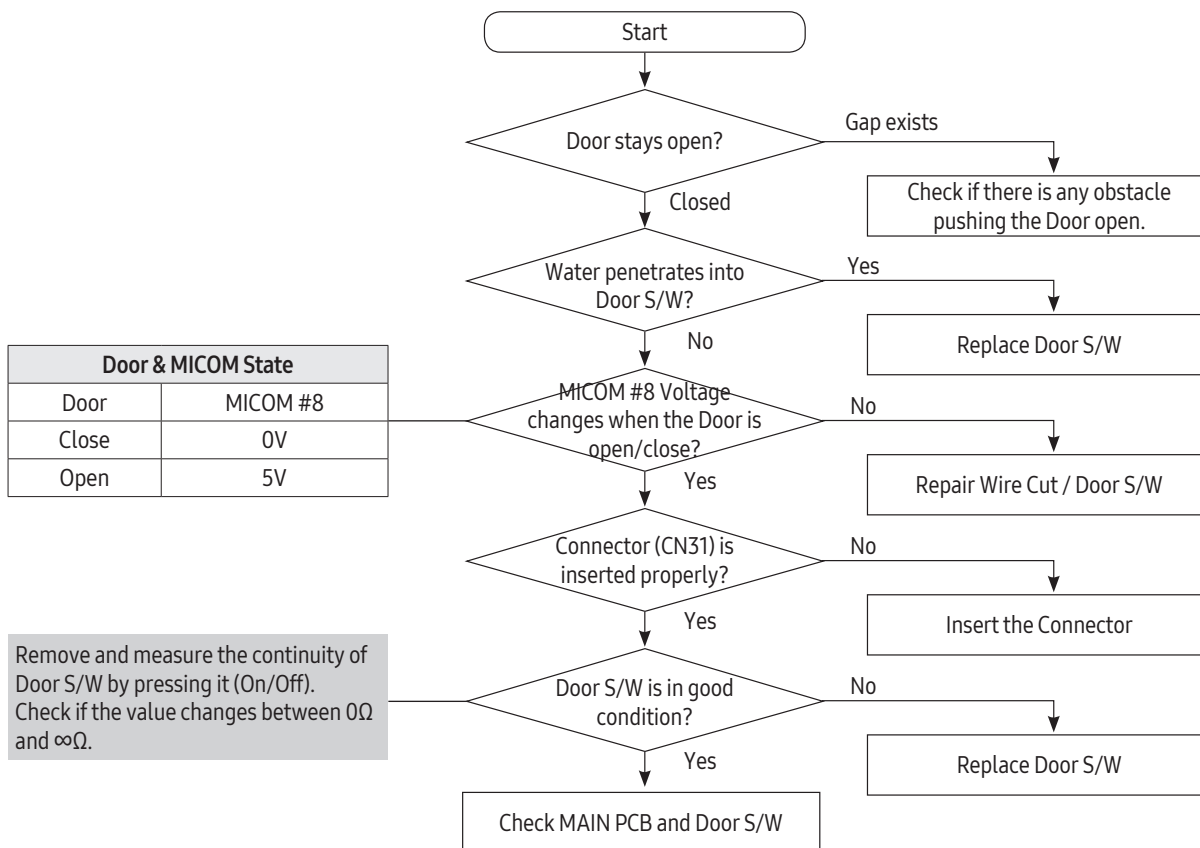
SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-11. When the unit keeps alarming (Buzzer Sound)

Note

1. Fridge / Freezer Door Open Alarm : It sends out an alarm sound when it passes over 2 minutes after the door is open. And, when the door remains open, it will keeps alarming every minute.
2. When the door is not closed properly, MICOM recognizes it as Door Open and sends out an alarm sound. When it passes over 10 minutes after it recognizes the Door Open, the room lamps will be off. At this time, when the Door is completely open, the Lamp will not be on right away, but after a while.

① When there is "Ding Dong" sound not stopping - 2 Board

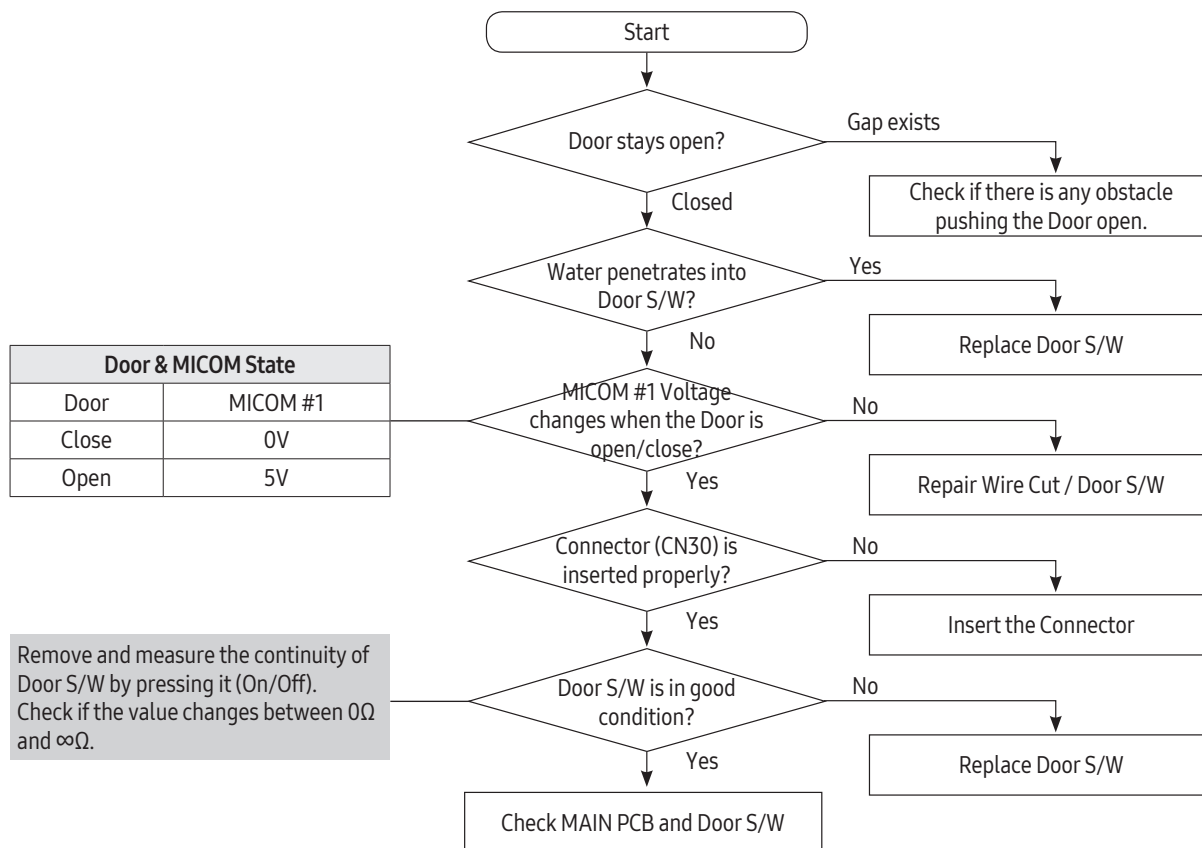


SELF DIAGNOSIS & TROUBLE SHOOTING

Note

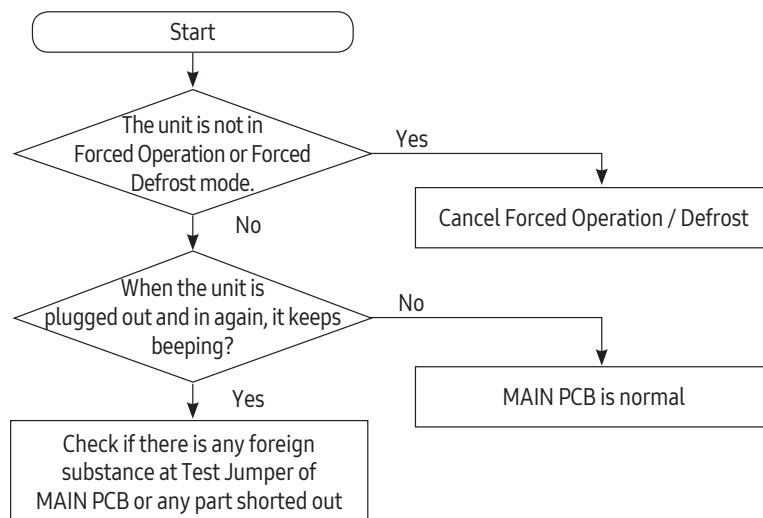
1. Fridge / Freezer Door Open Alarm : It sends out an alarm sound when it passes over 2 minutes after the door is open. And, when the door remains open, it will keeps alarming every minute.
2. When the door is not closed properly, MICOM recognizes it as Door Open and sends out an alarm sound. When it passes over 10 minutes after it recognizes the Door Open, the room lamps will be off. At this time, when the Door is completely open, the Lamp will not be on right away, but after a while.

① When there is "Ding Dong" sound not stopping - 1 Board

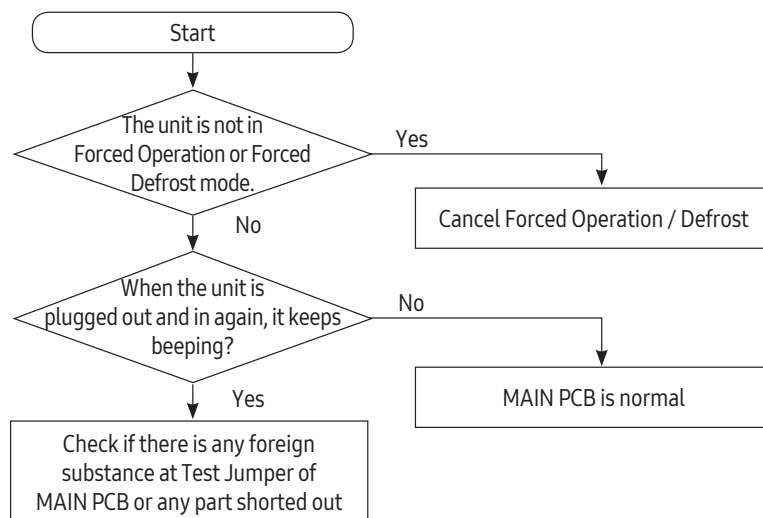


SELF DIAGNOSIS & TROUBLE SHOOTING

② When it keeps 'Beeping' - 2 Board



② When it keeps 'Beeping' - 1 Board

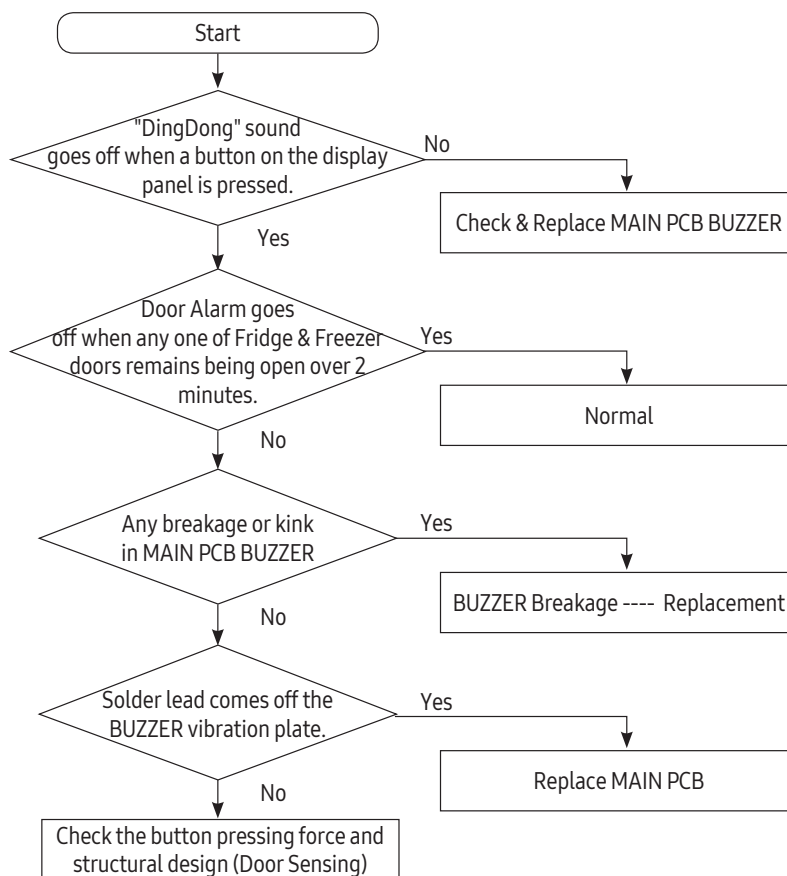


SELF DIAGNOSIS & TROUBLE SHOOTING

③ No Buzzer Sound - 2 Board

This model has a buzzer affixed on the MAIN PCB. If there is no buzzer sound upon button press, Forced Operation or Door Open, disconnect MAIN PCB and check if the buzzer is damaged or there is any defective soldering. (If it is not a soldering problem, it is recommended replacing MAIN PCB due to difficulties in repairing)

※ It may not be able to check when it is a closed built-in environment and there is lots of noise around.

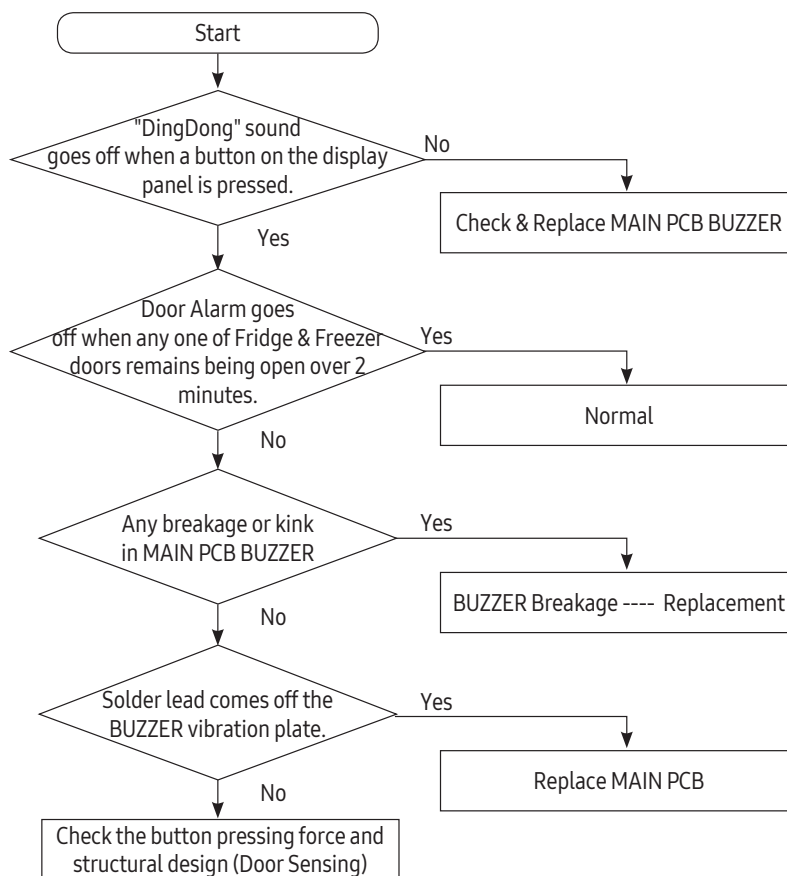


SELF DIAGNOSIS & TROUBLE SHOOTING

③ No Buzzer Sound - 1 Board

This model has a buzzer affixed on the MAIN PCB. If there is no buzzer sound upon button press, Forced Operation or Door Open, disconnect MAIN PCB and check if the buzzer is damaged or there is any defective soldering. (If it is not a soldering problem, it is recommended replacing MAIN PCB due to difficulties in repairing)

※ It may not be able to check when it is a closed built-in environment and there is lots of noise around.

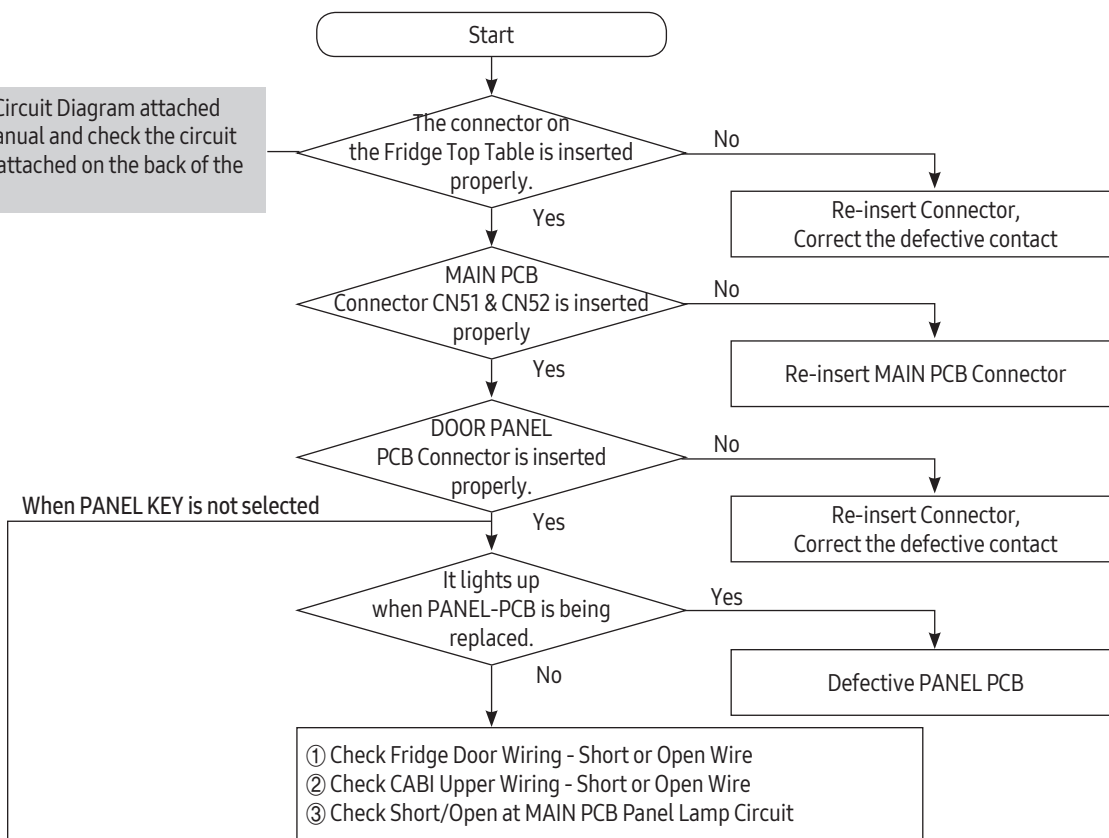


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-12. When PANEL PCB operates abnormally

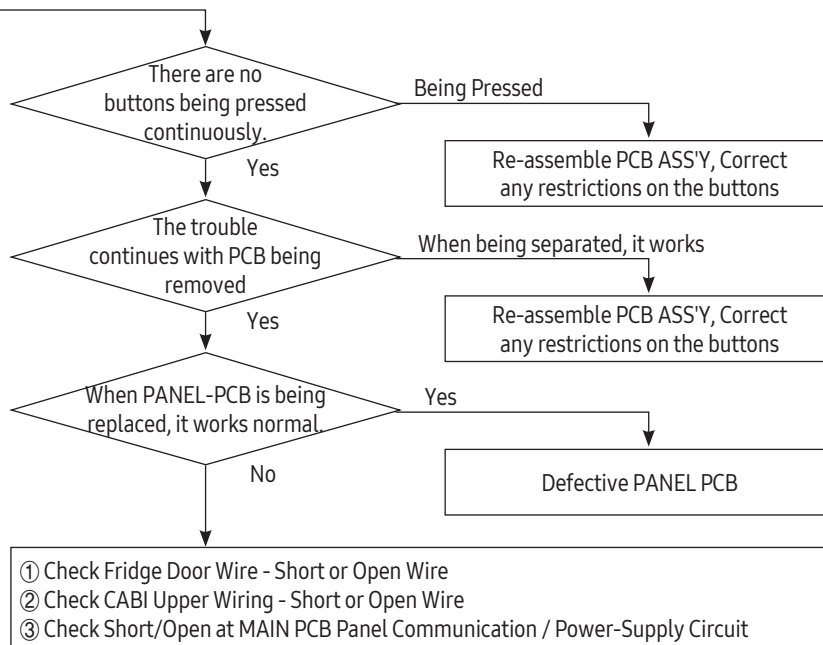
① When PANEL PCB does not light up or partially does - 2 Board

Refer to Circuit Diagram attached in this manual and check the circuit diagram attached on the back of the unit.



② When Panel PCB buttons are not working

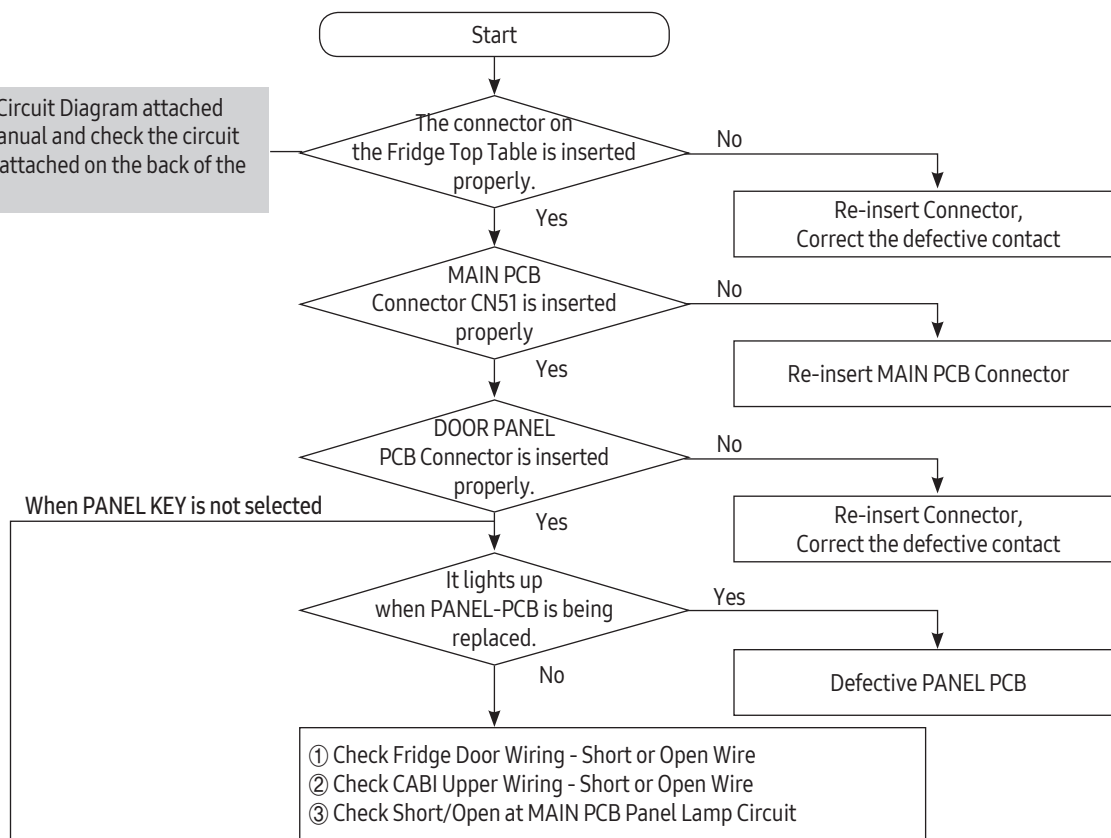
※ When the trouble is being remained after the above.



SELF DIAGNOSIS & TROUBLE SHOOTING

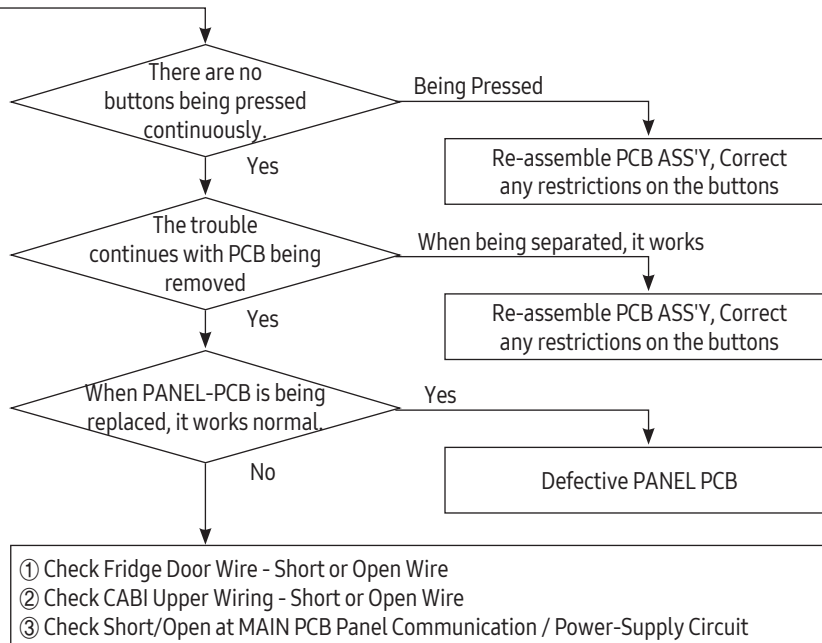
① When PANEL PCB does not light up or partially does - 1 Board

Refer to Circuit Diagram attached in this manual and check the circuit diagram attached on the back of the unit.

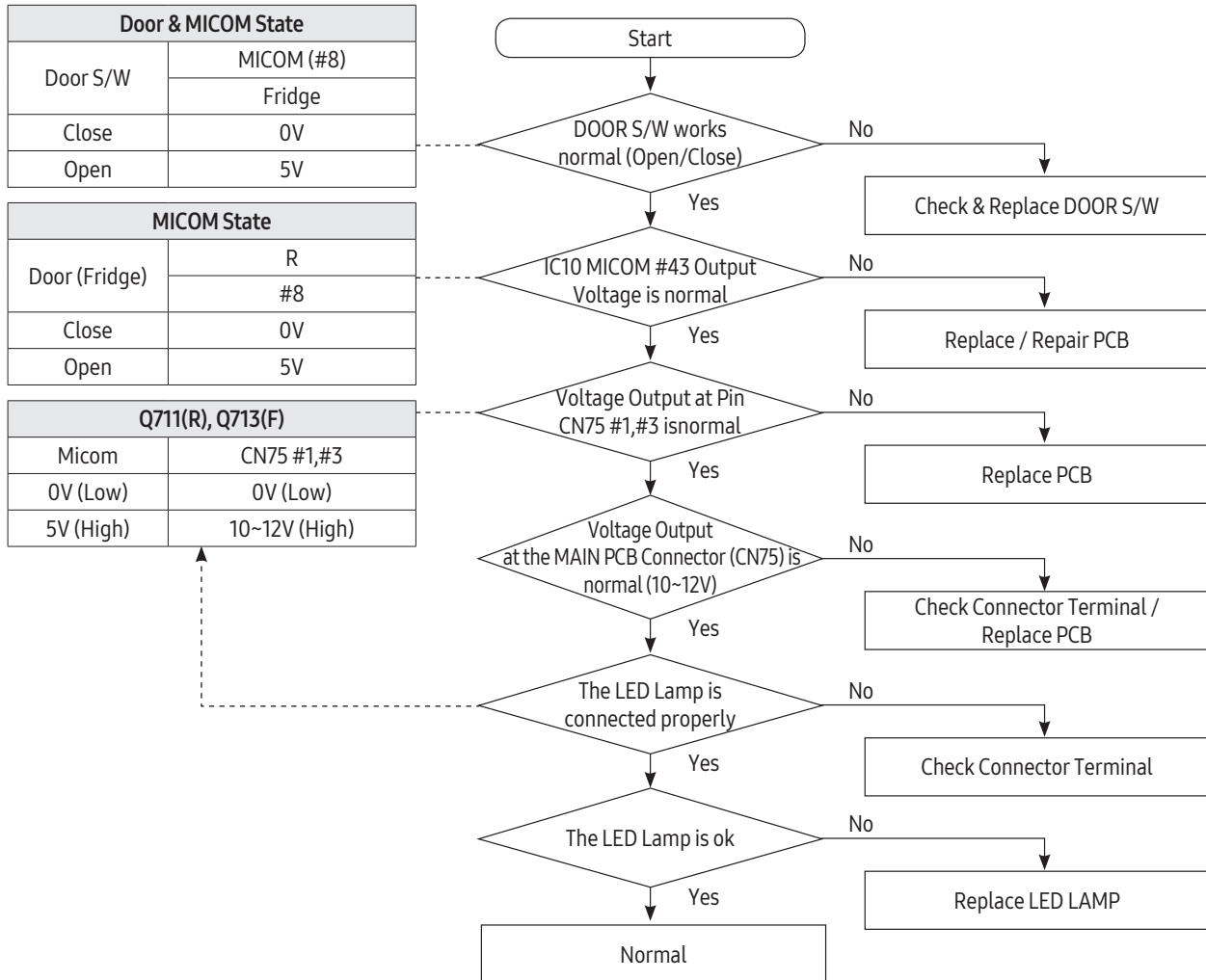


② When Panel PCB buttons are not working

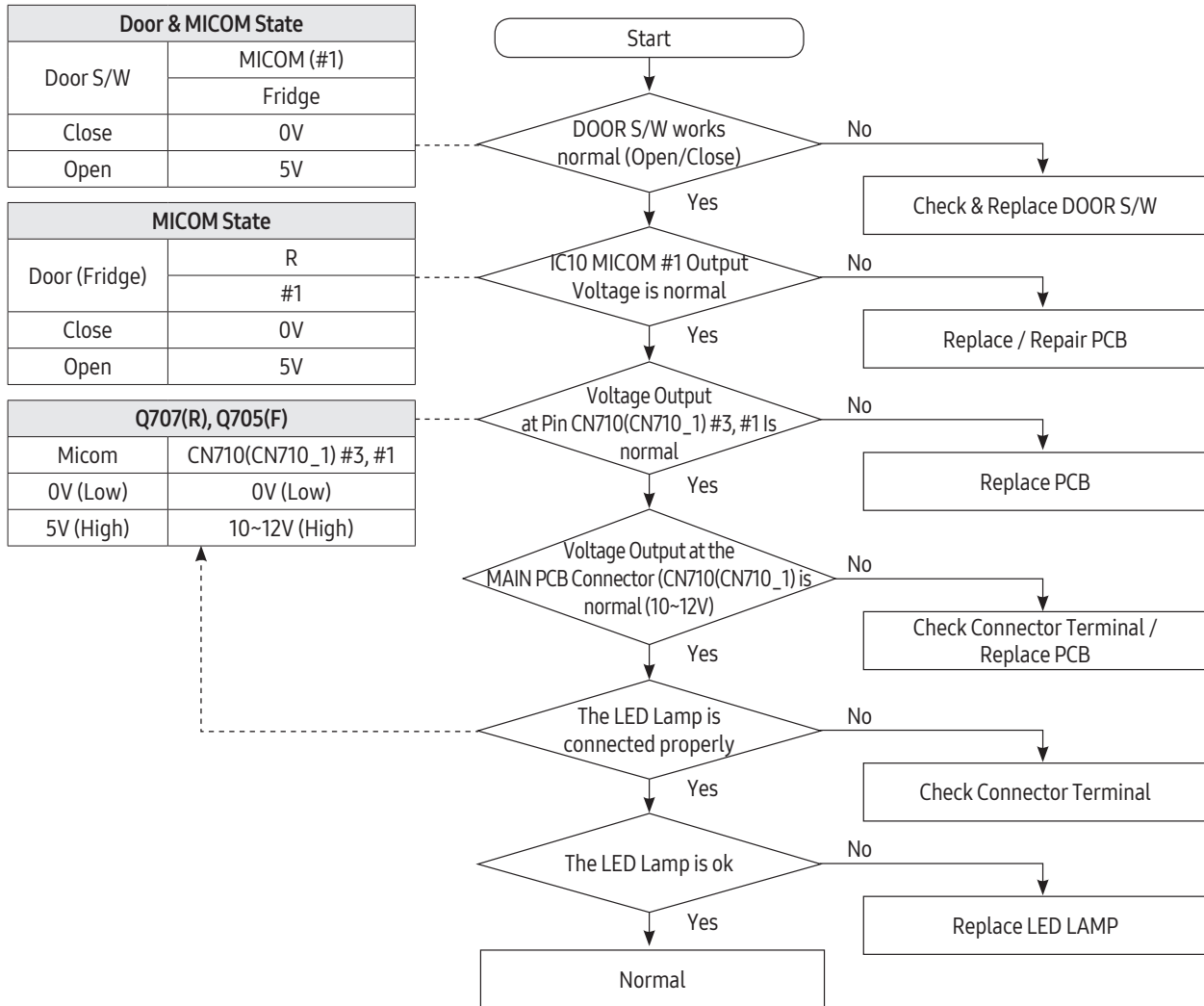
※ When the trouble is being remained after the above.



5-2-13. When the Room Lamp (LED) does not light up – 2 Board



5-2-14. When the Room Lamp (LED) does not light up – 1 Board

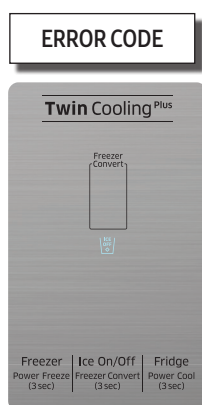


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-15. When Ice Maker does not operate (Model with Ice Maker) – 2 Board

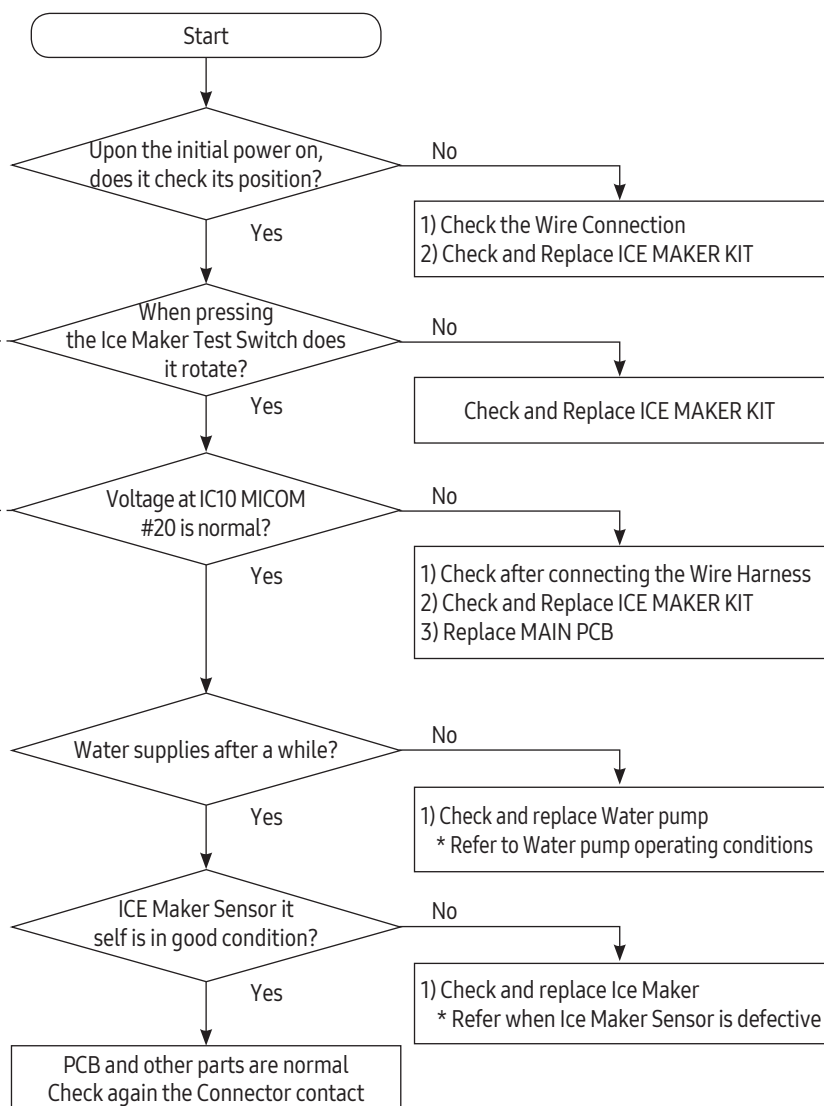
This model has a buzzer affixed on the MAIN PCB. If there is no buzzer sound upon button press, Forced Operation or Door Open, disconnect MAIN PCB and check if the buzzer is damaged or there is any defective soldering. (If it is not a soldering problem, it is recommended replacing MAIN PCB due to difficulties in repairing)

※ It may not be able to check when it is a closed built-in environment and there is lots of noise around.



MICOM(IC10) Operation Status		
#20 (Test Switch)	Standby	On
	5V	0V

Micom(IC10) Operation Status					
	Standby	Rotating	Full Rotated	Rotating Back	Standby
#16	5V	0V	5V	0V	5V

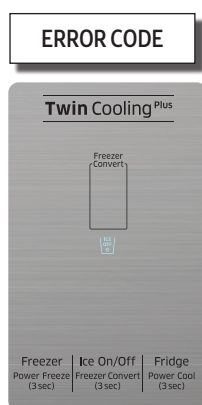


SELF DIAGNOSIS & TROUBLE SHOOTING

5-2-16. When Ice Maker does not operate (Model with Ice Maker) – 1 Board

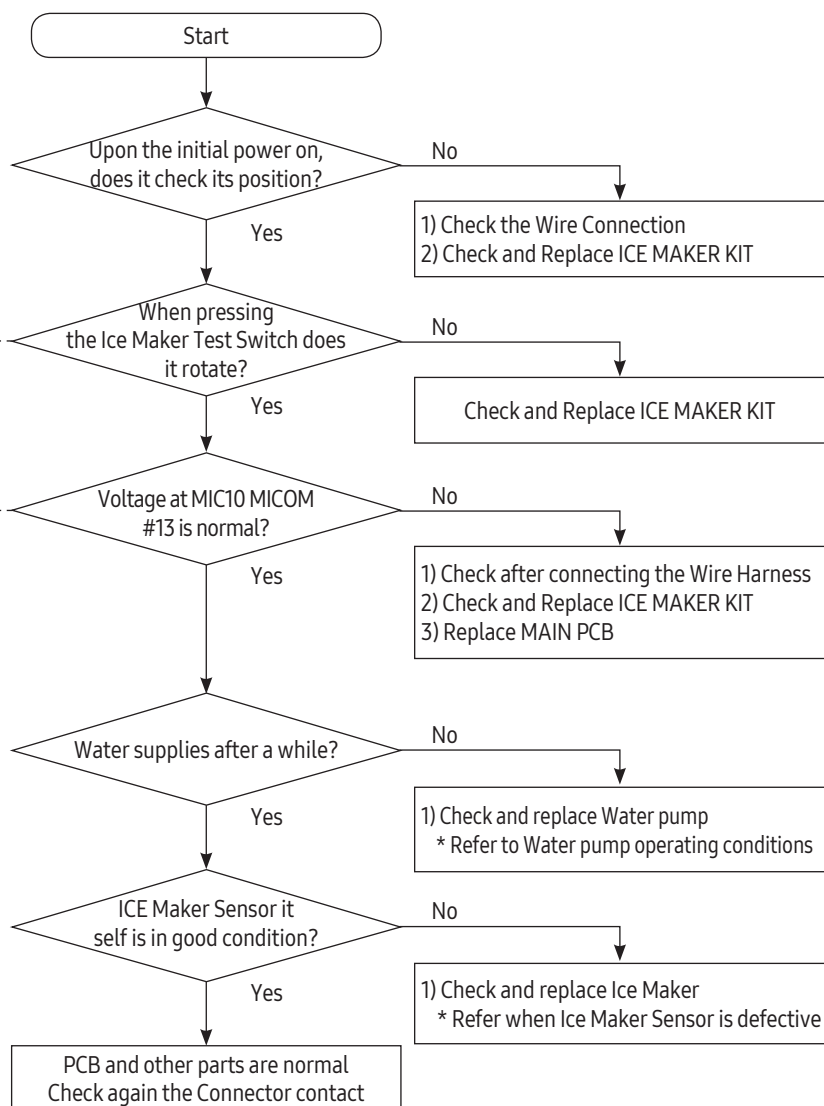
This model has a buzzer affixed on the MAIN PCB. If there is no buzzer sound upon button press, Forced Operation or Door Open, disconnect MAIN PCB and check if the buzzer is damaged or there is any defective soldering. (If it is not a soldering problem, it is recommended replacing MAIN PCB due to difficulties in repairing)

※ It may not be able to check when it is a closed built-in environment and there is lots of noise around.



MICOM(MIC01) Operation Status		
#13 (Test Switch)	Standby	On
	5V	0V

Micom(MIC01) Operation Status					
	Standby	Rotating	Full Rotated	Rotating Back	Standby
#13	5V	0V	5V	0V	5V



SELF DIAGNOSIS & TROUBLE SHOOTING

LED blinking frequency depending on protecting functions(Inverter PBA) – 2 Board

* Self-Diagnosis Error Description

- When the Failure Condition occurs, the Compressor will immediately stop if the Compressor is running and there will be a 5 minute standby. During the 5 minute standby, RPM signals will be ignored. That is, even though the Inverter PBA receives the RPM signals, the Compressor does not work. It blinks every second and there is 2 second off at the end of each cycle.

Protecting Functions	LED Blinking Frequency	Remarks
Normal Operation		N/A
Starting Failure		1. Short between COMP U,V, and W phase (CN102) 2. Short among IC3 Pins (No. #1~24)
IPM Fault		3. Drop the IPM operating Voltage under DC 13.5V 4. Other cases, check the COMP, cycle, etc.
Motor Position Error		1. Open the COMP wire (CN102) 2. Bad condition of resistor R1(ex. Bad soldering) 3. Other cases, check the COMP, cycle, etc. 4. Short or Open resistor R515, R516, R517
Motor Position Error		1. Operating the locked rotor COMP within 5 second. 2. Operating the COMP under 1000 RPM more than 5 seconds. 3. Occur the huge change of input voltage in a moment. 4. Other cases, check the COMP, cycle, etc.
Low Voltage		1. Drop the input voltage under AC106V. Short resistor R514 (DC link resistor)
Over Voltage		1. Increase the input voltage over AC 310V 2. Short resistor among R511, R512 and R513 (DC Link resistor)

SELF DIAGNOSIS & TROUBLE SHOOTING

LED blinking frequency depending on protecting functions(Inverter PBA) – 1 Board

If Failure Condition is detected during compressor is operating, immediately stop Compressor operating and stand by 5 minutes. During this 5 minutes, RPM command signal is not available. It means, even if available RPM command signal is applied to the compressor, it does not work and keep standing by.

Blinking time is 1 second and dwell time is 2 seconds.

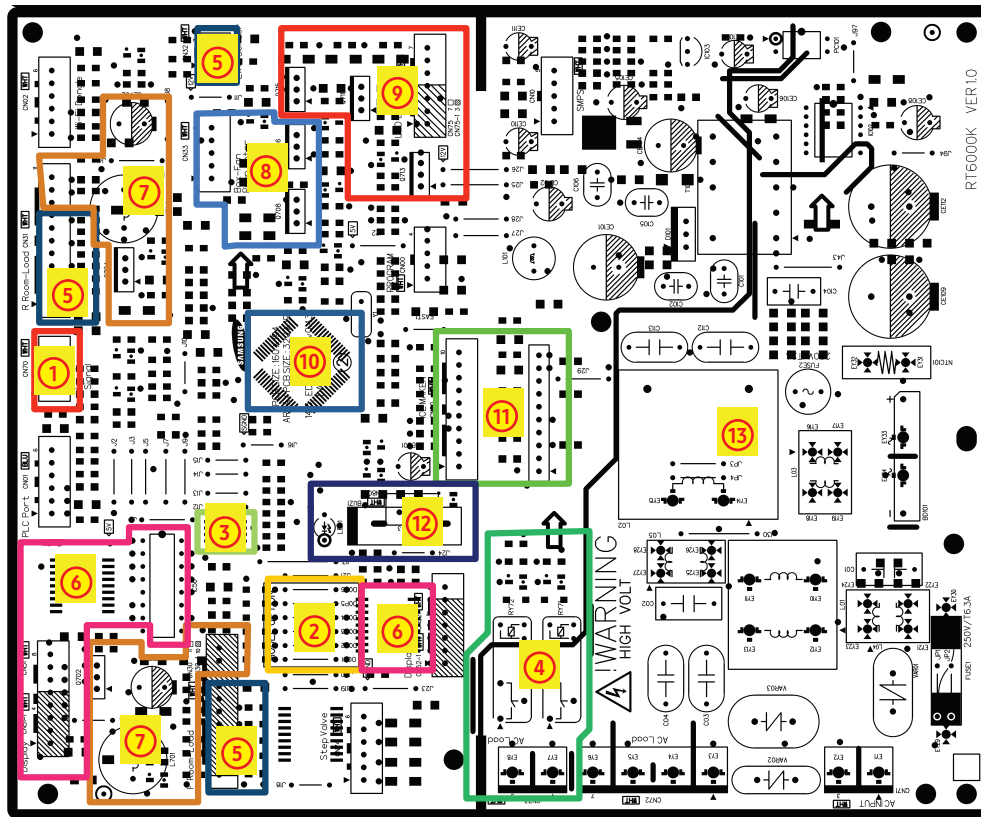
Description	LED Blinking Frequency	Remarks
Normal Operation		N/A
Starting Failure		1. Check the COMP terminals short(U,V,W) 2. Check IPM Pins short of Inverter PBA 3. Check IPM operating Voltage(under DC 13.5V) 4. Other cases, check the COMP, cycle, etc.
IPM Fault		
Position Sensing Error		1. Check COMP wire connections(U,V,W) 2. Check PCB Bottom side soldering state 3. Other cases, check the COMP, cycle, etc.
Motor Locked / Over RPM		1. Check PCB Bottom side soldering state. 2. Check Input voltage oscillation 3. Other cases, check the COMP, cycle, etc.
Under Voltage		1. Check input voltage under AC 53V(Input Power AC110~127V) or AC 106V(Input Power AC 220 ~ 240V) 2. Check PCB Bottom side soldering state.
Over Voltage		1. Check input voltage over AC 155(Input Power AC110~127V) or AC 310V(Input Power AC 220 ~ 240V) 2. Check PCB Bottom side soldering state.

LED blinking frequency depending on protecting functions If the same blinking, After 5 minutes, Follow the Remarks

6. PCB DIAGRAM

6-1. Part Layout (Main Board) - 2 Board

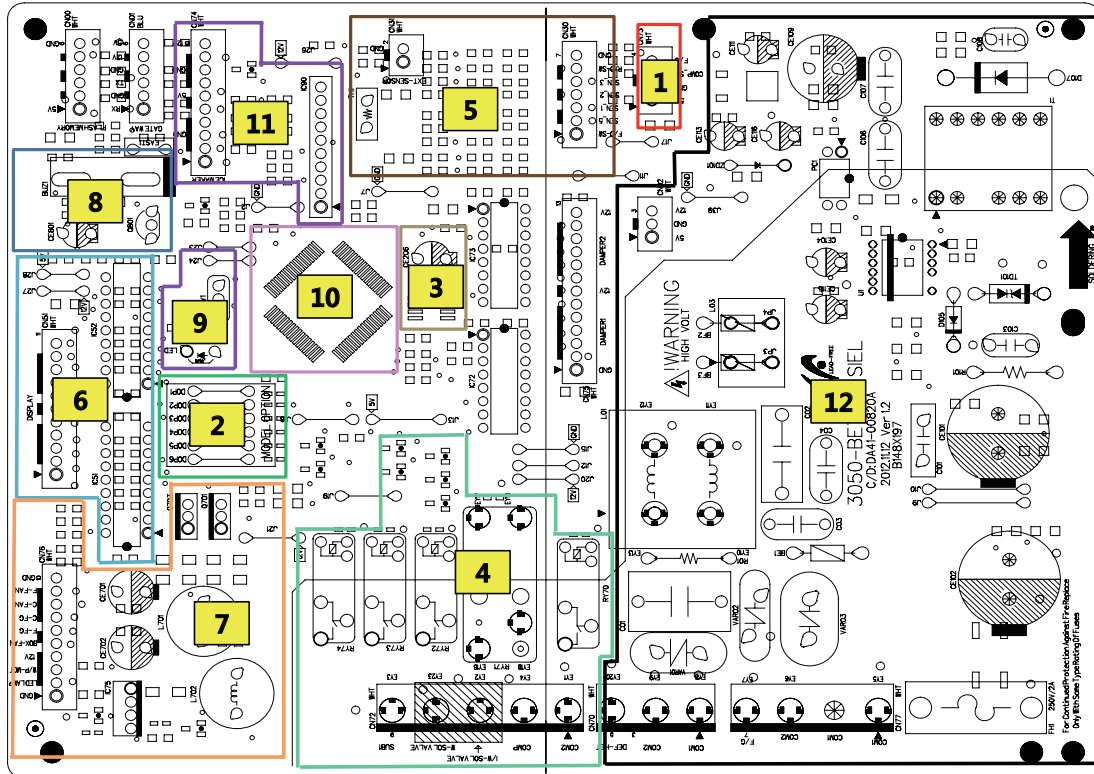
6-1-1. BETTER



1. Inverter Comp. Signal Section
2. Section for Diode Option : Set option setting
3. EEPROM : Storing / Writing various data
4. This Relay section controls the AC load and operates by receiving the driving signals for Micom via the sink IC.
5. It receives various sensor signals and delivers them to MICOM after eliminating noises, and it detects the Fridge/ Freezer door open.
6. Main → Panel PCB operation control
7. Fan motor (F/R) control. It supplies DC 8 ~ 12V to the fan motor.
8. Anti-Bacteria kit control. It supplies DC 12V to the kit
9. F/R room lamp control. It supplies DC 12V to the LED lamp (Room Lamp).
10. Micom, clock generation, micom resetting.
11. It controls the operation of the Auto Ice Maker kit. (option item)
12. Buzzer Alarm : It sends out periodic alarm sounds when a button is pressed or when the door is opened
13. Converting AC power source to DC power source (Noise filter and SMPS)

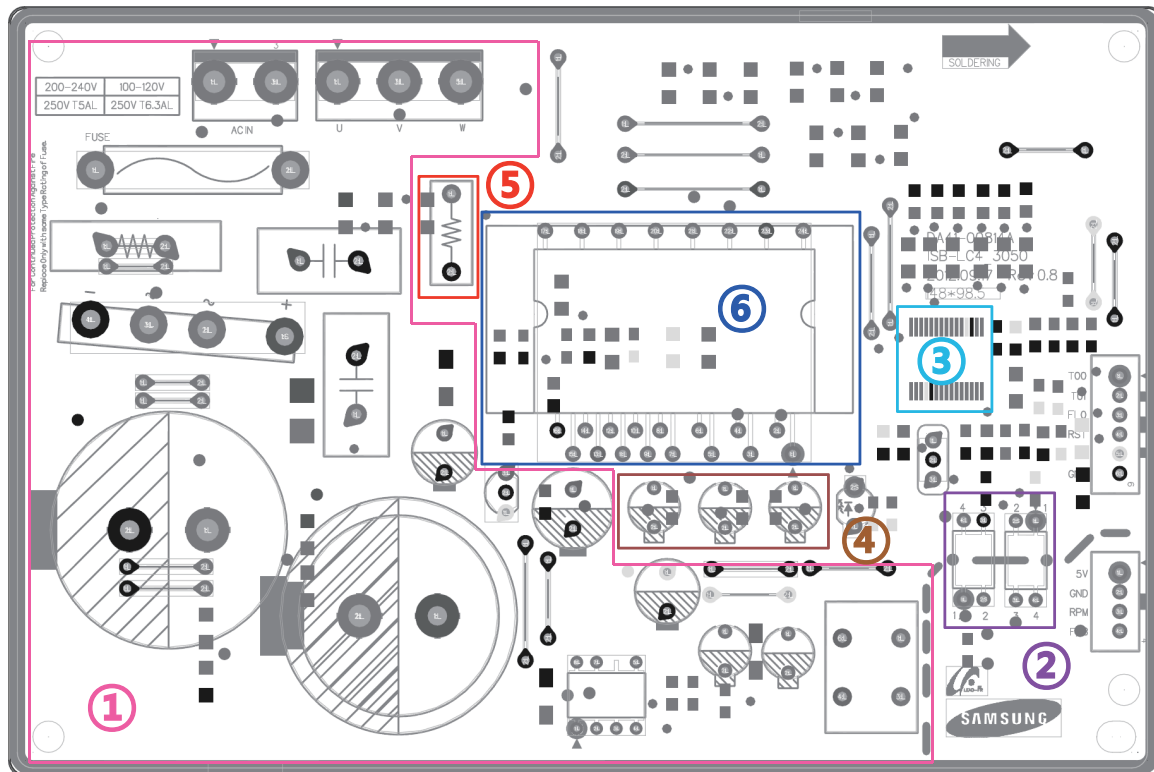
6-1-2. BEST/BETTER

FOR SIEL PLANT(INDIA)



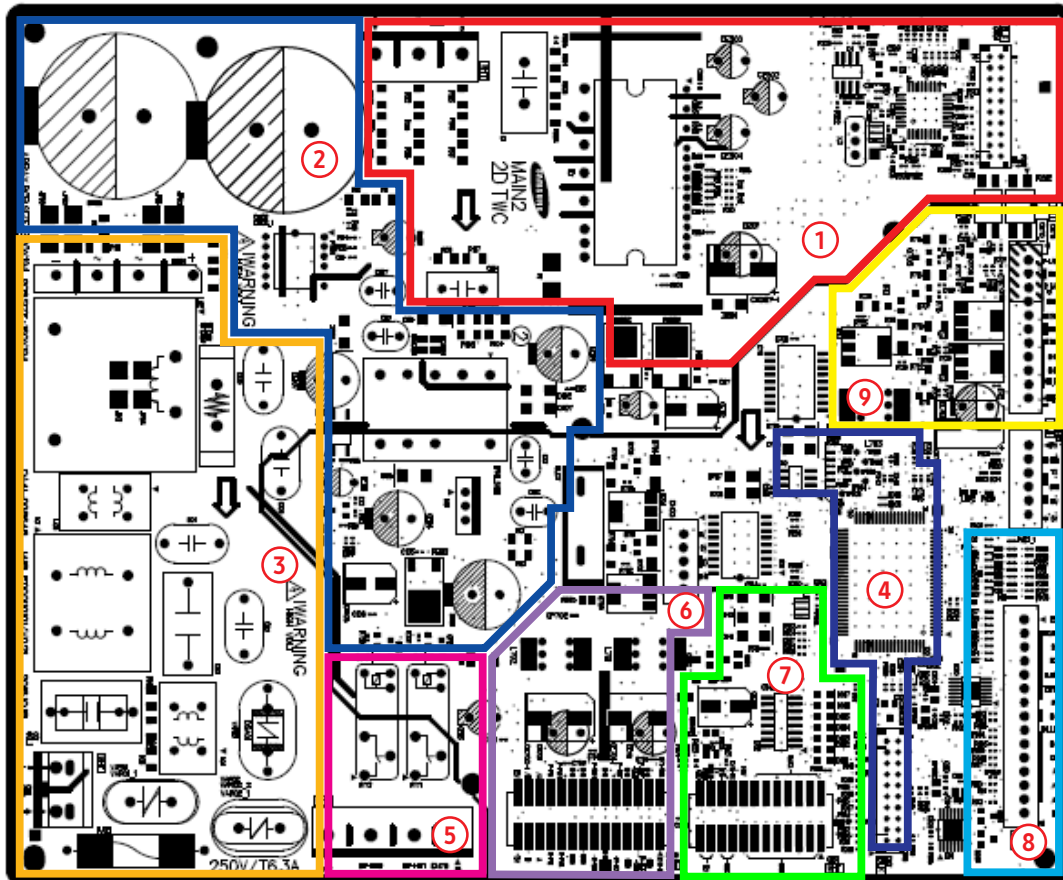
1. Inverter COMP. Signal Section
2. Section for Diode Option Setting
3. EEPROM : Storing/Writing various data.
4. This Relay Section controls the AC Load and operates by receiving the driving signals for Micom via the Sink IC.
5. It receives various sensor signals and delivers them to MICOM after eliminating noises, and it detects the Fridge Door open and the Operation of the Water S/W.
6. MAIN → PANEL PCB Operation Control
7. Fan Motor / LED Lamp / Water Pump Driver It supplies 8V ~ 12V to the motors depending on their types. (Option)
8. Buzzer Alarm : It sends out periodic alarm sounds when a button is pressed or when the door is open.
9. MICOM, Clock Generation, Software Resetting
10. Main Micom(CPU)
11. It controls the operation of the ICE MAKER KIT.
12. Converting AC Power into DC(POWER SOURCE UNIT)

6-2. Parts Layout (Inverter Board) - 2 Board



1. PBA Power Supply : Supplies DC 16V and 5V to the Inverter circuit for the Compressor control.
2. COMP Driving / Feedback Circuit It receives the COMP(MSV) operation signals from the Main PBA and feedbacks the inverter errors to the Main PBA.
3. Micom (uPD78F1201)
4. BOOTSTRAP Charger : It is an independent power circuit for the driving of the IPM High-Phase IGBT.
5. Current Sensing Circuit : It pickups the currents taken by the Shunt resistance and does the PWM DUTY control.
6. IPM (IGCM04G60HA)

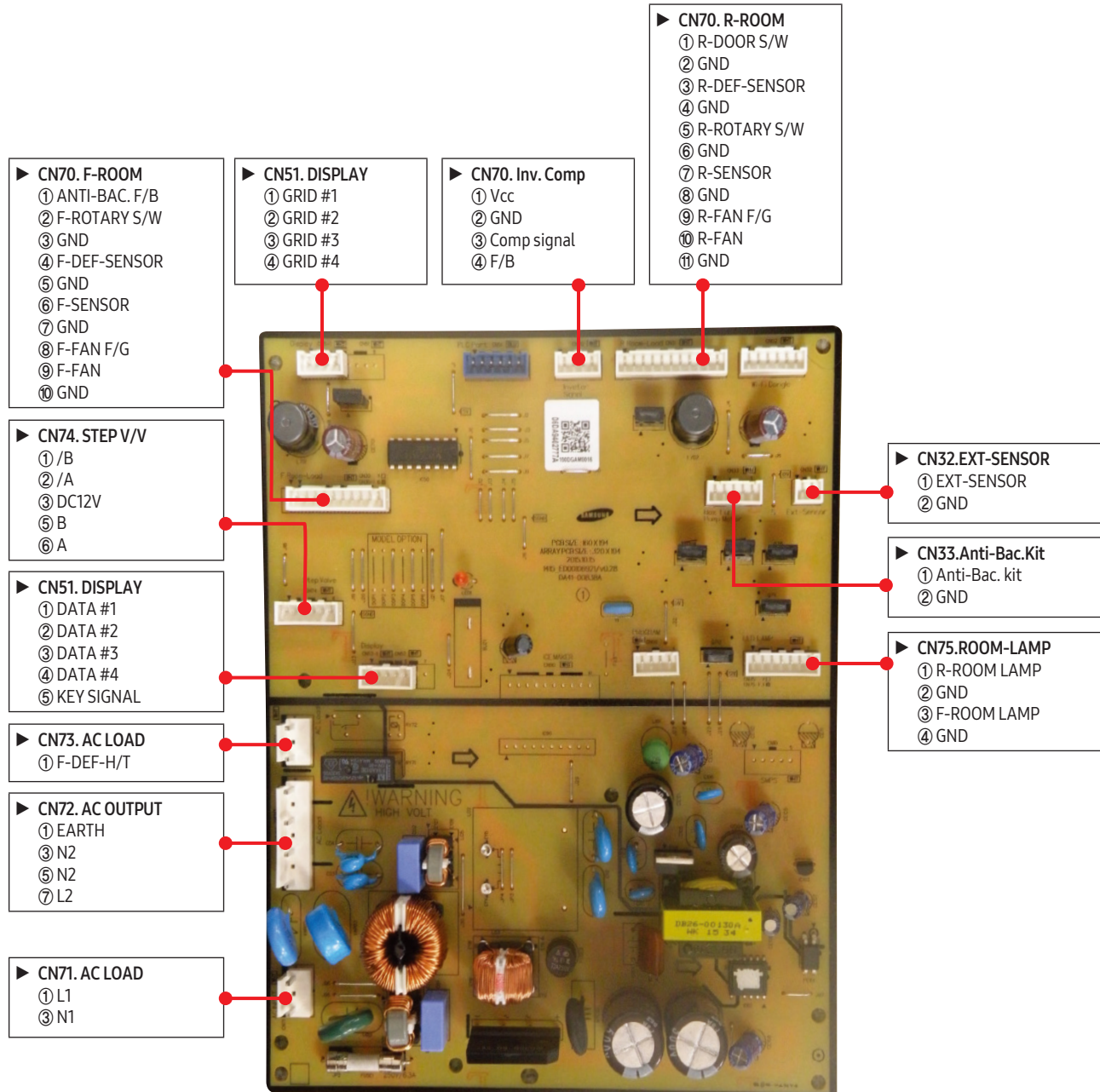
6-3. Parts Layout - 1 Board



1. Inverter COMP Control Block.
2. SMPS Block : Supply DC Power Source
3. Noise Filter Block : Protect Internal / External Noise and elimination EMI Noise
4. Main Micom & EEPROM Block: Storing/Writing various data.
5. This Relay block controls the AC Load (Freezer Defrost Heater Control)
6. It receives various sensor signals and delivers them to MICOM after eliminating noises. Fan Motor control. It supplies 8V ~ 12V to the motors depending on load types.
7. Main -> Panel PCB operation control
8. ICE MAKER / DAMPER control
9. F/R room lamp control. It supplies DC 12V to the LED lamp(Room Lamp). ANTI BACTERIA FAN control.

PCB DIAGRAM

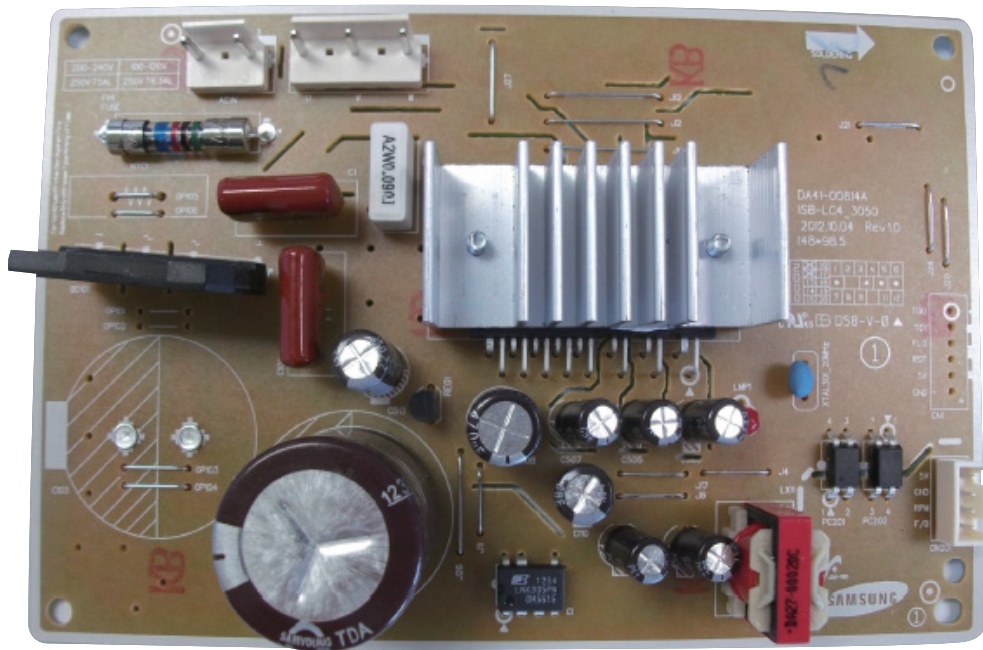
6-4. Connector Arrangement (Main Board) - 2 Board



PCB DIAGRAM

6-5. Connector Arrangement (Inverter Board) - 2 Board

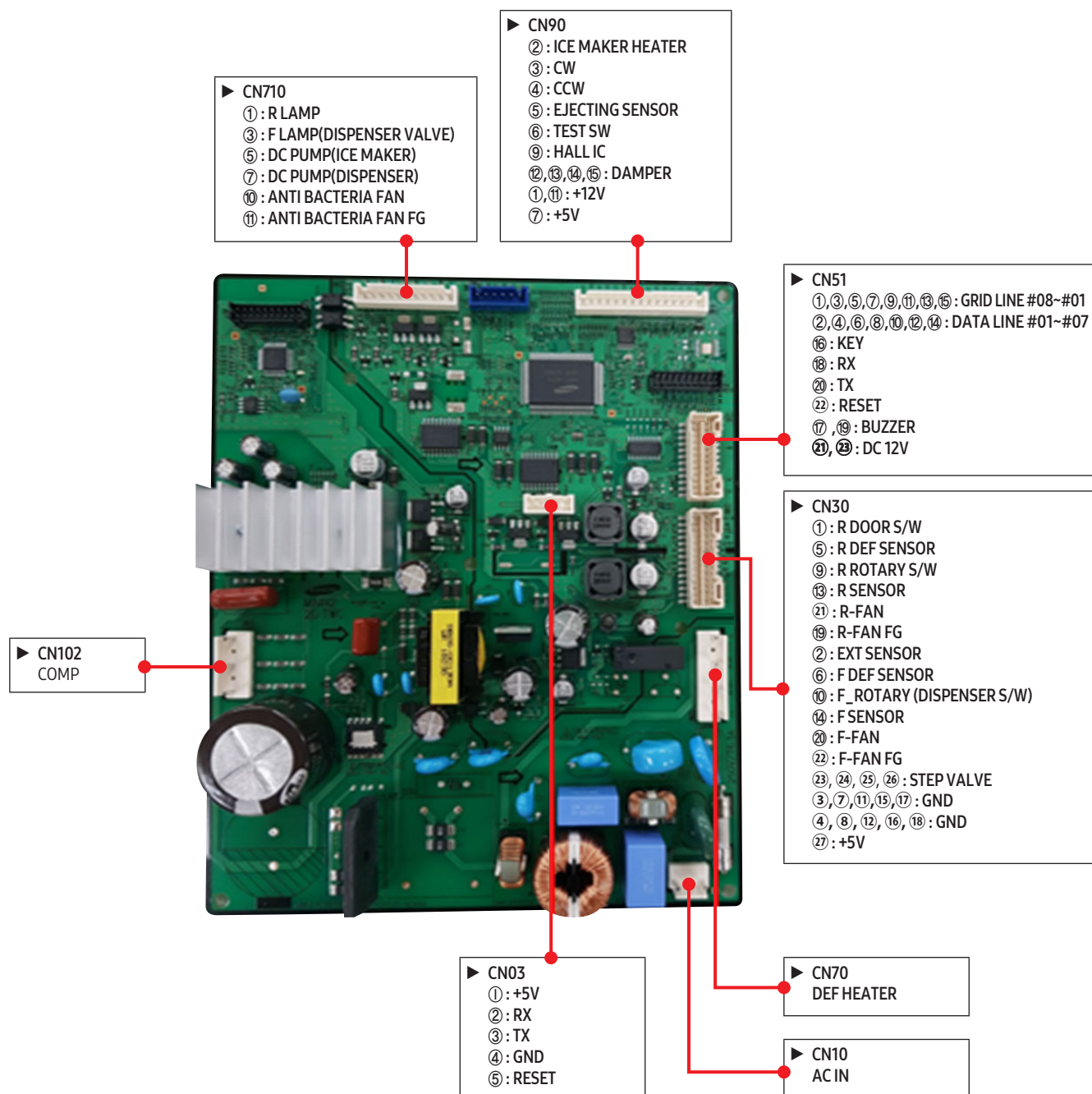
AC IN COMP



- ① DC 5V
- ② GND
- ③ Comp RPM
- ④ Comp Feedback

PCB DIAGRAM

6-6. Connector Arrangement (Main Board) - 1 Board



<DOOR S/W>

	F	R
Close	On (Lo)	On (Lo)
Open	Off (Hi)	Off (Hi)

POWER

N L

BLK RED

FUSE

ROTARY OPTION

F-ROTARY S/W

F-DEF-SENSOR

F-SENSOR

BLDC M/T

R-DOOR S/W

R-DEF-SENSOR

ROTARY OPTION

R-ROTARY S/W

R-SENSOR

BLDC M/T

ANTI BACTERIA OPTION

ANTI BACTERIA

ICE MAKER OPTION

PUMP MOTOR

EXT-SENSOR

INVERTER PBA (LC4-3050)

ISV GND RX TX

BLK PRP BLU

Inverter COMP

DISPLAY OPTION

ORG WHT WHT WHT WHT WHT WHT WHT WHT WHT

ORG WHT

BUZZER

STEP VALVE

ORG WHT WHT WHT WHT WHT WHT

R-LAMP LED ASS'Y

F-LAMP LED ASS'Y

ICE MAKER OPTION

ORG WHT WHT WHT WHT WHT WHT WHT WHT

ORG WHT

ICE MAKER KIT

ICE PIPE HEATER

HASS OPTION

ORG WHT WHT WHT WHT

RX GND TX VCC

HASS

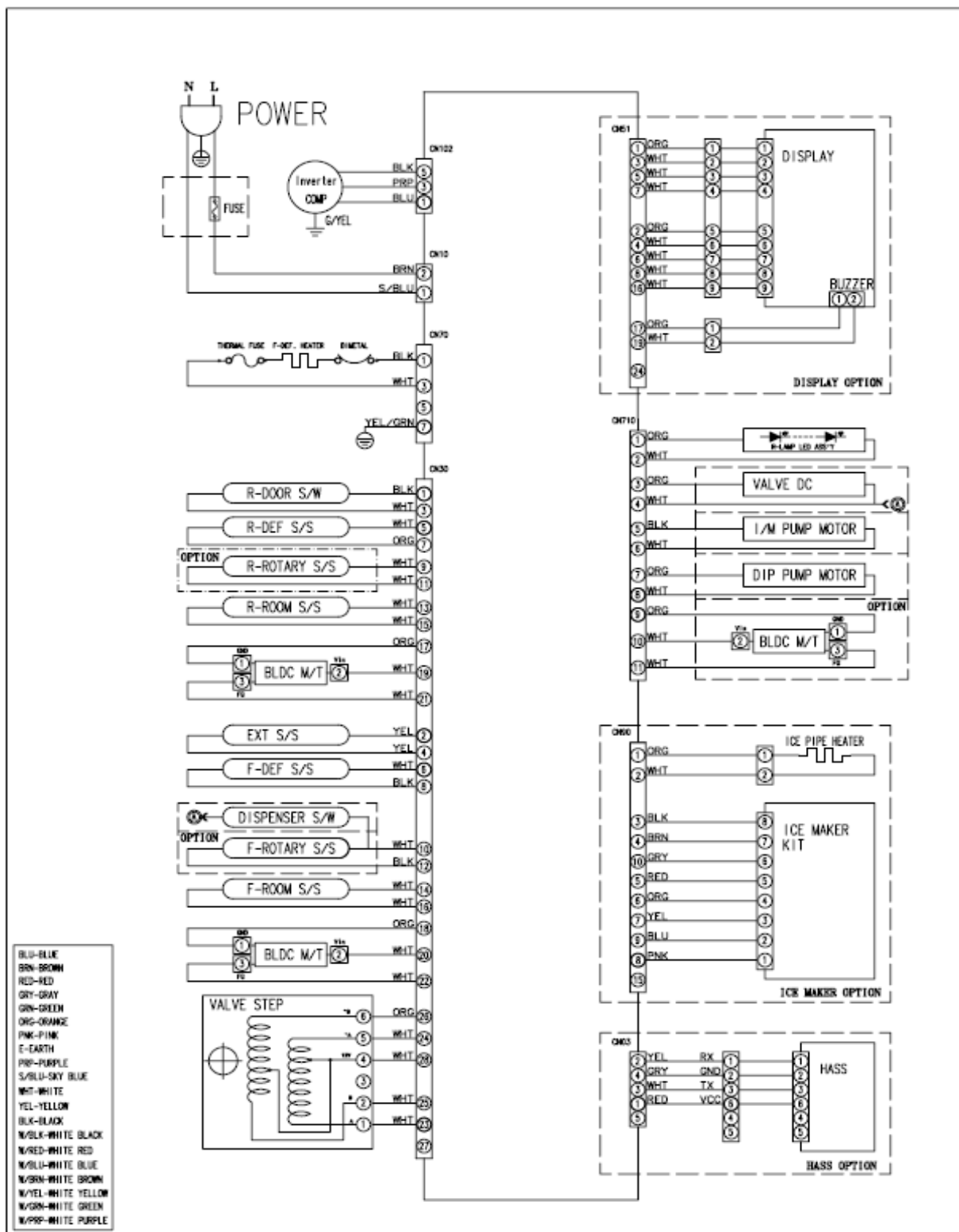
Legend:

- BLU-BLUE
- BRN-BROWN
- RED-RED
- GRY-GRAY
- GRN-GREEN
- ORG-ORANGE
- PNK-PINK
- E-EARTH
- PRP-PURPLE
- S/BLU-SKY BLUE
- WHT-WHITE
- YEL-YELLOW
- BLK-BLACK
- W/BLK-WHITE BLACK
- W/RED-WHITE RED
- W/BLU-WHITE BLUE
- W/BRN-WHITE BROWN
- W/YEL-WHITE YELLOW
- W/GRN-WHITE GREEN
- W/PRP-WHITE PURPLE

WIRING DIAGRAM

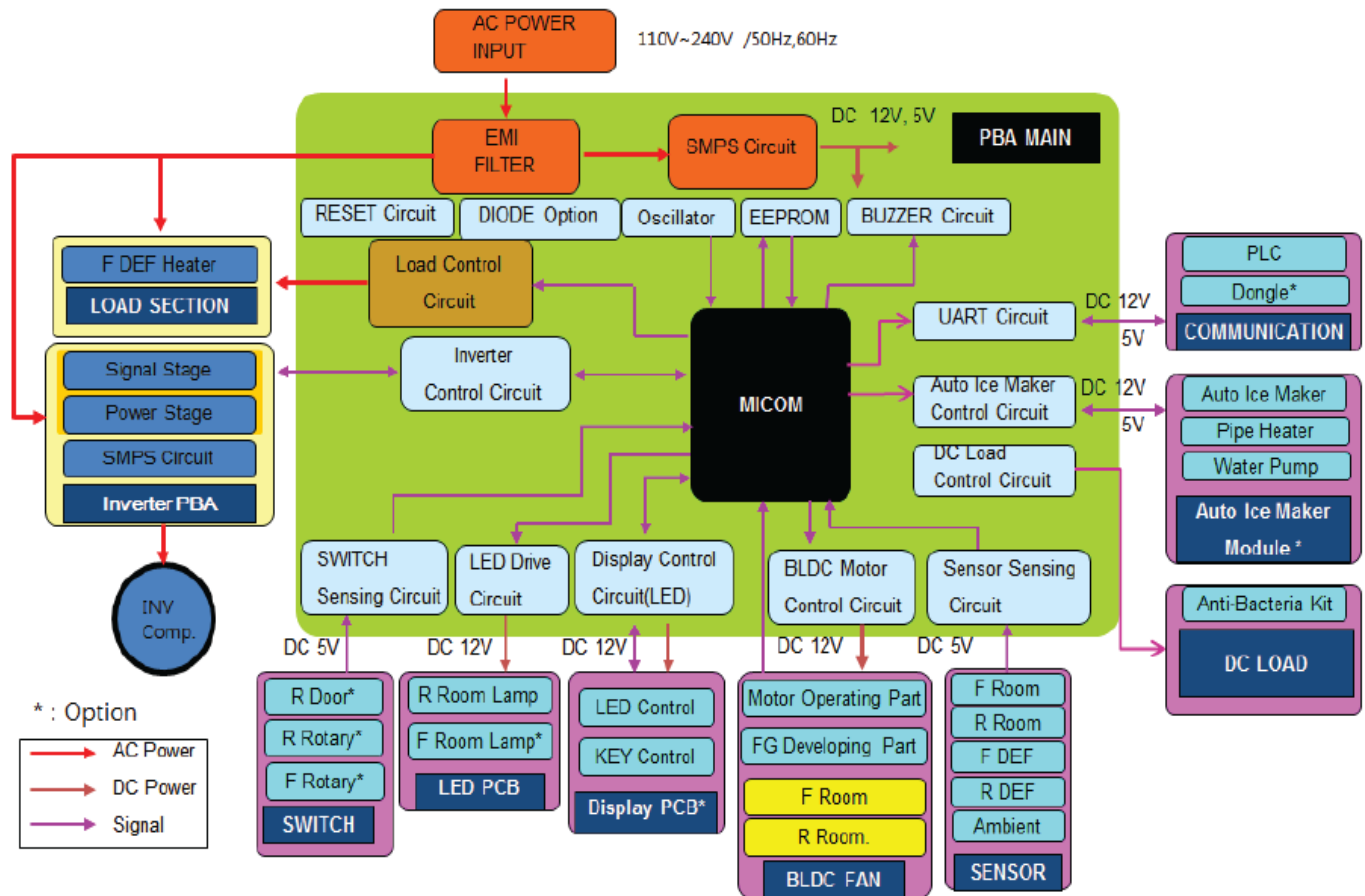
7-2. Wiring Diagram - 1 Board

RT5/6000K1BOARD



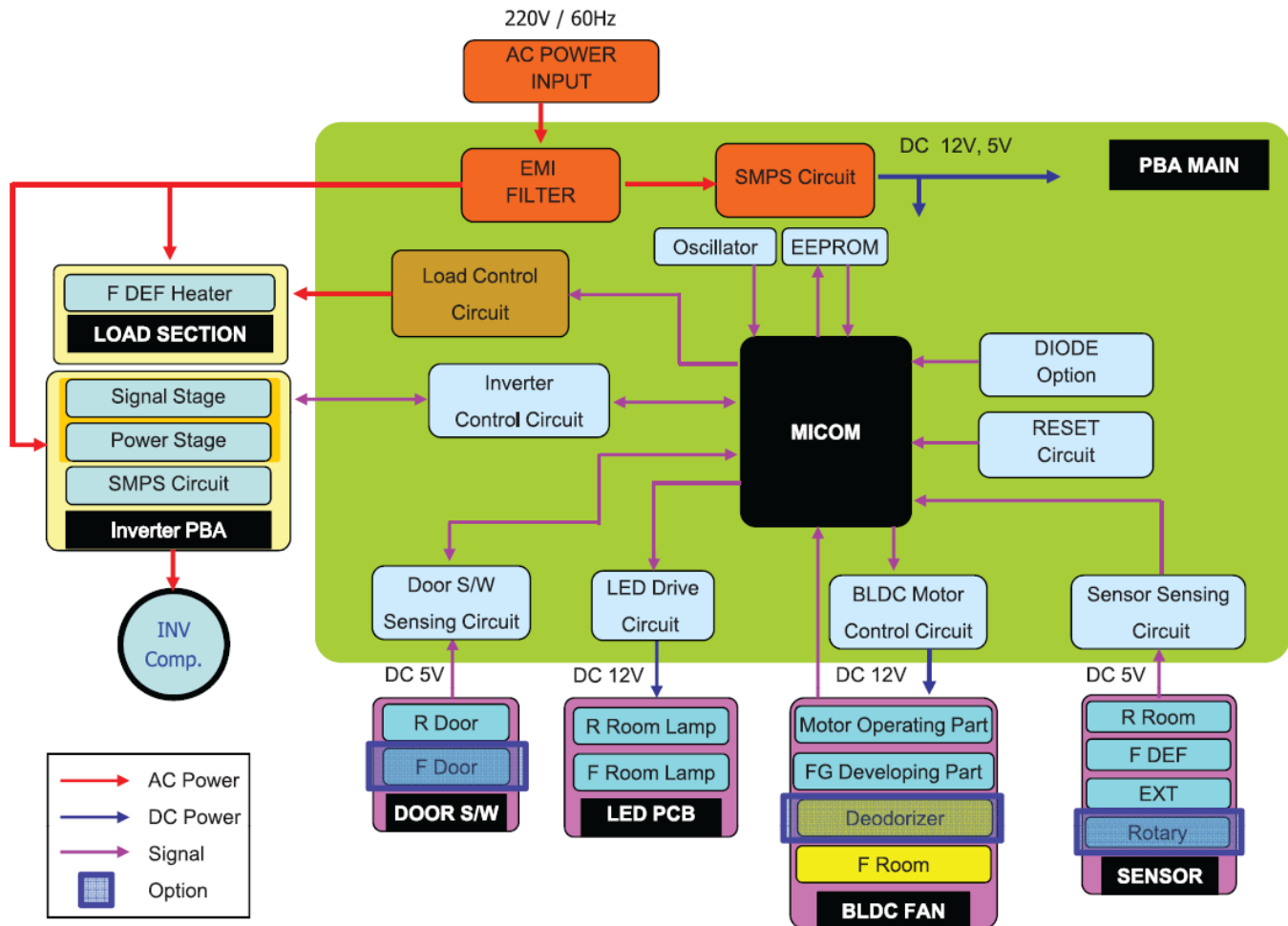
8. BLOCK DIAGRAM

8-1. BLOCK DIAGRAM (PBA Main) - 2 Board



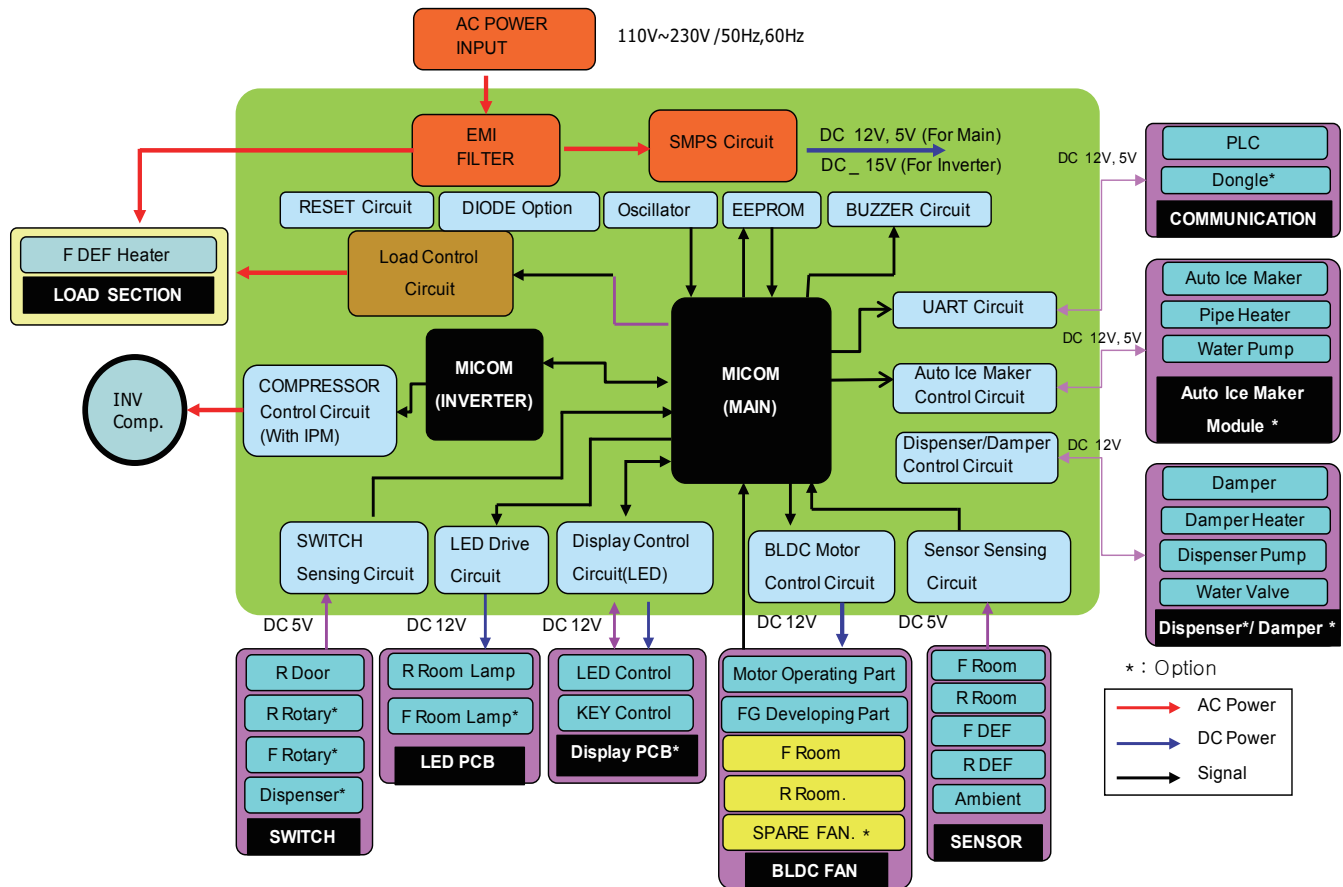
BLOCK DIAGRAM

8-2. Block Diagram (PBA Inverter) - 2 Board



BLOCK DIAGRAM

8-3. Block Diagram - 1 Board



9. REFERENCE INFORMATION

9-1. Nomenclature

20151013 Version(RT6000K) - Handle Type Clarification('Fixed' added)

Global	PJT	Type		Capa.	Year	Series	Feature 1 (Exterior)				Feature 2 (Interior)															
		R	T				# #		K	7	0				0											
S.E asia Middle East L. America S.W asia (Produced in TSE)	RT6000	RT	SW	4	3					Auto Ice Maker	Water Dispenser (Drop Type)	Display (Silver)	Handle			Ice Maker (Feature 1 : 0~6)	Easy Slide Shelf	2nd Veg Box	Freshroom	Multi Storage box	Anti-Bacteria Protector	Deodorizer	Hot stamping (Fridge Shelf, F/R Guard)			
				4	6										0	Tray	ESS		Freshroom				DO			
				5	0										1	Tray	ESS		2nd Veg Box	Freshroom				DO		
				5	3										2									DO		
				4	7										3	Twist	ESS			Freshroom				DO		
				4	9			K	6						4	Twist	ESS		2nd Veg Box	Freshroom				DO		
				5	4										5	Twist	ESS		2nd Veg Box	Freshroom		ABP(W/O. H/S)				
				5	6							W/D		External	Bar(Fixed)		6	Twist	ESS		2nd Veg Box	Freshroom	MSB		DO	H/S
												W/D		External	Recess(Fixed)		7	Twist	ESS		2nd Veg Box	Freshroom	MSB	ABP(W. H/S)		H/S
													AIM		External	Recess(Fixed)		8								
									AIM	W/D	External	Recess(Fixed)		9												

For Southwest Asia only

20151013 Version(RT6000K) - Handle Type Clarification('Fixed' added)

20151013 version(KT6000K) - Handle type Clarification(Fixed added)													
Global	PJT	Type		Capa.	Year	Series	Feature 3 (Energy/Etc)				Color		
		R	I	#	#	K	7	0				S	L
S.E asia Middle East L. America S.W asia (Produced in TSE)	RT6000	RT	SW	4	3			Energy	Freezer Shelf	Key Lock		Twin Cooling Plus(Phrase)	Color
				4	6		0	A+	Plastic			Twin Cooling Plus	SG Black Caviar
				5	0		1	A+	Coolpack			Twin Cooling Plus	SL EZ Clean Steel(Silver)
				5	3		2						SP Platinum Inox(New VCM), ※ Stainless Platinum
				4	7	K	3						SA METAL GRAPHITE
				4	9		4						WW Snow White
				5	4		5	A++	Plastic			Twin Cooling Plus	UT Pebble Blue
				5	6		6	A++	Coolpack			Twin Cooling Plus	EF Vanilla Beige(Europe)
							7	A++(Improved energy)	Plastic			Twin Cooling Plus	WV Embo White
							8	3Star(SIEL)	Coolpack	KL		Twin Cooling Plus	
			9										
											</		

For Southwest Asia only

- * For TRIM KIT Model, only '0' can be selected in Feature 1
- * A model with Auto I/M selected in Feature1 is not relevant to the one with Ice Maker in Feature2 (Tray I/M, Twist I/M are not applied)
- * For Dispenser Model, MSB option can not be selected
 - ABP(W. H/S) : Anti Bacteria Protector With Hot Stamping
 - ABP(W/O H/S) : Anti Bacteria Protector Without Hot Stamping
- * India KL is applied for Bar Handle only / In case no. 8 is selected with Recess Handle, KL is not applied

9-2. Trouble Shooting

Problem	What To Do
The appliance is not operating at all or the temperature is too high.	• Check that the power plug is correctly connected. • Is the temperature control on the front panel correctly set? • Does sun shine on the appliance or are there heat sources nearby? • Is the back of the appliance too near to the wall?
The food in the refrigerator is frozen.	• Is the temperature control on the front panel set to the coldest temperature? • Is the surrounding temperature too low? • Did you store the food with a high water content in the coldest part of the fridge?
There are unusual noises.	• Check that the appliance is installed on a stable, level floor. • Is the back of the appliance too near to the wall? • Have any foreign objects fallen behind or under the appliance? • Is the noise coming from the compressor in the appliance? • A ticking sound may be heard inside the appliance; this is normal. This sound occurs when the various accessories contract or expand.
The front corners and sides of the appliance are warm and condensation starts to form.	• Heat-proof pipes are installed in the front corners of the appliance to prevent condensation from forming. When the surrounding temperature rises, this may not always be effective. However, this is not abnormal. • In very humid weather, condensation may form on the outer surface of the appliance when the moisture in the air comes into contact with the cool surface of the appliance.
You can hear a liquid bubbling in the appliance.	• This is the refrigerant, which cools the inside of the appliance.
There is a bad smell inside the appliance.	• Has a food item spoiled? • Make sure that strong smelling food (for example, fish) is wrapped so that it is airtight. • Clean out your freezer periodically and throw away any spoiled or suspect food.
There is a layer of frost on the appliance walls.	• Are the air outlet vents blocked by food stored inside the refrigerator. • Space the food out as much as possible to improve ventilation. • Is the door fully closed?
Condensation forms on the inside wall of the appliance and around vegetables.	• Food with a high water content is stored uncovered with a high humidity level or the door has been left open for a long time. • Store the food with a cover or in sealed containers.

REFERENCE INFORMATION

9-3. Q&A

Descriptions of symptoms	Check Points	Corrective Measures
► Noise (resonance) problems keep on even though the noise generating BLDC motors for both of the compartments are replaced several times. What does generate the resonance and how can it be settled down?	When the BLDC fan motor rotates in low RPM, The friction with air is quite high and it generates “grinding” noises.	If you replace the ambient thermistor with a 2.7K resistance (detecting 43°C), the BLDC fan motor rotates in high RPM, which reduces friction with air resulting in reduction of the “grinding” resonance.
► What causes the “knocking” noises? How to solve it?	It makes “knocking” or “branch breaking” noises when the liner and the shelves hit each other due to the fluctuation of the inside air pressure upon door open/close. Also, these noises occur when the liners and the shelves hit each other as the liners expand and contract due to the temperature change in both of the compartments.	Check the clearance between the selves and the liners. 1. Freezer Shelves: Remove the trim shelves already attached and replace them with those supplied for service. 2. Fridge Shelves: Because noise-preventing trim selves are not attached, it needs attaching.
► What is the solution if the same problem occurs even though the counter action in the service bulletin has been implemented already for the “knocking” noises?	Check if the selves wobble. If they do, have shelves sit firmly on their places.	
► What causes the liquid passing noises from the back of the refrigerator?	Refrigerant goes into the evaporator via the capillary tube in which the refrigerant expands as it circulates the cooling cycle. At this time, the refrigerant is in its liquid state and it starts evaporating as it reaches at the inlet of the evaporator with a bigger diameter, which causes the refrigerant noises. And, it gets worse when the refrigerant does not flow freely.	
► What is the solution for the compressor noises?	For new refrigerators.	
	Check if the refrigerator is leveled.	Check if the refrigerator wobbles by shaking with hands.
	Check if there is enough clearance at the back of the refrigerator for the ventilation of the machine compartment.	If there is not enough clearance or it is blocked by things such as newspaper, there could be resonance noises.
	Required clearance around the product.	More than 5cm from the back, 30cm from the top and 10cm from its sides.

REFERENCE INFORMATION

Descriptions of symptoms	Check Points	Corrective Measures
► What is the solution for the compressor noises?	For old refrigerators.	
	Dust could get built-up in the machine compartment. Then, its ventilation would get restricted which makes the refrigerator overheated resulting in the increase of the noise level.	Explain it to customers and let them clean dust or any other foreign substances in the machine compartment.
	As the vibration proof rubbers get hardened, noises generate during the comp operation. (The noise level is quite high.) → Replace the vibration proof rubbers.	The compressor is dislocated due to impact during its transportation such as moving-in. → Check if it's dislocated when it is more noisy after moving-in.
► During the comp start-up, iron friction noises occur. What causes them?	The reciprocation piston could get worn out or inner components could get dislocated.	
► What can be checked when the unit sends out noises?	1. Check its symptoms and patterns. 2. Check if the unit is installed on a firm and leveled floor. 3. Check if the unit is installed close to the customer's living area. 4. Check if the panel on the machine compartment hits on the rear wall and the unit has enough clearance with the rear wall. 5. Check if the refrigerant pipes are shaped as normal.	
► Why is the fridge compartment not cool? (Not a defect)	Advise customers to adjust its temperature level to one or two step higher. For example, when the ambient temperature is low such as in winter (especially, when you use it in the morning with the door not being opened or closed during the night), the compartment temperature could get increased by 1~2°C. So, advise customers to shift its temperature level and explain to them that it does not affect its power consumption that much when its temperature setting is adjusted to one or two step lower.	
► Why is the food melt even though the display of the freezer compartment shows -20°C?	Check the compartment temperature with a thermometer.	If it is considered to be low cooling, When the BLDC motor fan does not rotate because its restriction is not picked up. When the evaporator is frozen-up (defrost it) Temp detection error according to the characteristic change of the thermistor (set the compartment temperature or replace the thermistor)

REFERENCE INFORMATION

Descriptions of symptoms	Check Points	Corrective Measures
► Why is the fridge compartment not cool? (Not a defect)		Advise customers to adjust its temperature level to one or two step higher. For example, when the ambient temperature is low such as in winter (especially, when you use it in the morning with the door not being opened or closed during the night), the compartment temperature could get increased by 1~2°C. So, advise customers to shift its temperature level and explain to them that it does not affect its power consumption that much when its temperature setting is adjusted to one or two step lower.
► What is the reason that vegetables get frozen even though the fridge compartment is set to MIN?		Replace the fridge thermistor because it could be faulty. 1st: Check if the thermistor works after referring to the self-diagnosis checklist on the MAIN-PCB cover. If the over-cooling keeps on even though there is no problem with the above, replace it.
► What can be done when frozen food gets melt in the freezer compartment or it does not cool down?		Defrost it by using hot water and check the defrost system for any fault. And then, eliminate the root causes so as to prevent it from reoccurring.
► Why doesn't the compressor operate upon power supply?		Upon the initial power on, the compressor starts operating after a five minute delay to protect the compressor. So, please wait until it starts operating.
► Why does it send out "Ding Dong" or alarm sounds with the doors closed? (Except for the Rotary model as it does not have any alarm.)		Check if the food sticks out preventing the doors from closing properly. If it send out the above sounds with the door closed well, the door switch may not have been pressed down completely. So, make sure for the door switches to be pressed completely. Still, if it does not stop going off, check the wiring connections because the door switch signals may not be inputted into the PCB. And, when the door switch is faulty or it is not pressed down completely, the fan does not rotate and it causes low-cooling advancing to a defrost problem.
		Note : When it comes to automatic models, the fan motor does not operate right on with the door closed after being opened. The fan motor for dual-evaporator refrigerators starts after a 10- second delay and when the ambient temperature is higher than 33°C, it starts after a minute.
► What can be done when it sends out much smell in the fridge and the freezer compartments after 2 months? ► The ice smells odd.		When the stored food sends out much smell. ☞ Check if there is any food sending out sustaining smells. Dried squid, dried laver : Hold on them Pounded garlic : Put it in an airtight container Medical herbs : Make sure they are packed airtight. Replace the old packing or wrap with a new one. Others : Check if the container is sealed or the food is packed airtight. ☞ Check if the compartment temperature is normal and the food is contaminated. ☞ Check if there are any overflow of side dishes on the shelves or the bottom of the compartments. ☞ Put the food sending out much smell in an airtight bag or container. ☞ Open the door and ventilate it. Also, clean liners, shelves, containers and door bins. ☞ If you make ice with tap water, a chlorine odor may occur. It is recommended using mineral water or water filtrated by a water filtration device.

REFERENCE INFORMATION

Descriptions of symptoms	Check Points	Corrective Measures
► What can be done when the Ice Maker does not produce ice?	☞ Wait 12 hours after installation of the refrigerator before making ice. ☞ Check if you stop the ice making function manually. ☞ If the freezer temperature is too warm, try setting the freezer temperature lower. ☞ Check if the water tank is filled with water. ☞ Check if you fit the water tank correctly.	
► What can be done when the Water dispenser does not function?	☞ If the water tank is frozen because the fridge temperature is too low, try selecting a warmer setting on the Digital display. ☞ Check if the water tank is filled with water. ☞ Check if you fit the water tank correctly.	
	Note : 1) When it passes 120 seconds after turning on the Water Lever, the Water Solenoid Valve will be turned off stopping the water supply regardless of the state of the Water Lever. 2) After this, it does not supply water for one minute even if the Water Lever is being pushed (on). 3) And then, after the one-minute delay time, water supplies again when the Water Lever is being pushed.	
► What is the cause and its counter action for chemical smells with new products?	During its delivery to customers, chemical smells from various components could build up inside of the compartments. So, please let the doors open for some time to use the unit.	
	Precautions : Smells tend to get soaked into the liners or other components. If food generating much smell is stored inside, it would stick onto the liners and other components and it is so difficult to remove the smell. Especially, customers should take care in storing smelly food properly with its sealing being tight during the early period of the product's use.	
► What can be done when the smell keeps on even though the deodorizers are cleaned?	1) Turn off the refrigerator (unplug the unit) and remain the door opened. 2) Take out the food stored in the refrigerator. And then, take out all the shelves, door bins and containers, and put them in warm water. After cleaning them by using dish detergents and drying them, put them back to their locations. 3) Remove the deodorizer and soak it in warm water more than 4 hours. After drying it in sunlight, put it back to its location. 4) Throw away the smell-soaked plastic bags and put the food in new ones.	
► What is the small hole on the body?	1) The main body and doors are insulated with Polyurethane foam. This allows gas to build up inside the inflated foam, for which a hole is needed so that it could be removed. 2) Residual gas remaining inside the foam could cause a poor insulating performance or a swelling of the main body. (The hole measures ϕ 5 mm)	



GSPN (GLOBAL SERVICE PARTNER NETWORK)

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