SAMSUNG

REFRIGERATOR

FRENCH DOOR REFRIGERATOR

MODEL NAME: RF28K9380*
RF28K9070*
RF85K9012**

MODEL CODE: RF28K9380**/FA
RF28K9380**/EM
RF28K9380**/CL
RF28K9380**/AP
RF28K9380**/ZS
RF28K9380**/TL
RF28K9380**/HC
RF28K9070**/SA
RF85K9012**/TR

SERVICE Manual

REFRIGERATOR

Ice & Water Model

Normal Model

CONTENTS

WARNING

IMPORTANT SAFETY NOTICE

The service guide is for service technicians with sufficient background in electrical, electronic and mechanical engineering.
Any attempt to repair the appliance yourself may result in personal injury and property damage.
The manufacturer or dealer will not be held responsible for the interpretation of this information.

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CONTENTS

1. PRECAUTIONS (SAFETY WARNINGS)

- Unplug the appliance before replacing or repairing any of the electrical parts.
  ···› Be careful to avoid electric shock.

- Make sure to use the correct replacement parts.
  ···› Check the model, rated voltage, rated current and running temperature rating.

- When troubleshooting, verify that the wire harnesses are connected securely.
  ···› Make sure the connectors are not separated when power is supplied.

- Check for visible traces of water on the electrical parts.
  ···› Replace or secure any parts that have come into contact with water.

- Check the status of parts after the replacement or troubleshooting.
  ···› All parts must be reinstalled properly.

- Check the location where the refrigerator will be used.

Do not install the refrigerator in a damp or wet location and make sure that the surface where the product will be installed is even.

- The refrigerator must be grounded properly.
  ···› The product should be grounded if there is a risk of high humidity or wetness.

- The refrigerator must be plugged into a dedicated outlet.
  Make sure that the power cord is not damaged in any way, or has any objects placed on it.

- If the plug is damaged, replace the plug.
  Do not use the plug if it is damaged.

- Customers must not try to repair the refrigerator themselves.

- Do not store anything in the refrigerator other than food.
  ···› Drugs that require a specific temperature should not be stored in the refrigerator.
  ···› Do not store flammable substances (alcohol, benzene, ether, LP gas, etc.) in the refrigerator as this may result in explosion.

PRECAUTIONS(SAFETY WARNINGS)

Read all the instructions before repairing the product and make sure to follow the instructions in order to prevent danger or property damage.
Unplug the refrigerator and remove all the items before repairing the product.

CAUTION/WARNING SYMBOLS DISPLAYED

Warning	Indicates a danger of death or serious injury.
Caution	Indicates a risk of personal injury or material damage.

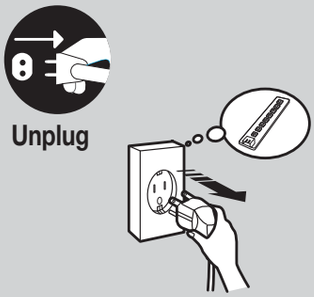
SYMBOLS

means "Prohibited".
means "Do not disassemble".
means "No contact".
means "Warning or Caution".
means "Unplug the unit before servicing the product"
means "Earth or Ground".

Warning & Caution

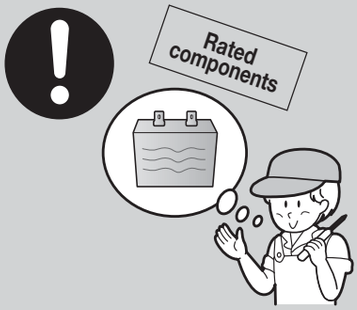
Unplug the product before changing the interior lamp.

- ***This may result in electric shock.***



Use rated components when replacing parts.

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



When repairing the product, make sure that the all wire harnesses are reconnected.

- ***The wire harnesses should be connected tightly and kept dry.***
- ***Tightly tie the wires so that they are not detached by an external force and or become wet due to moisture.***

When repairing the product, make sure that all parts and wires are free of dust and foreign substances.

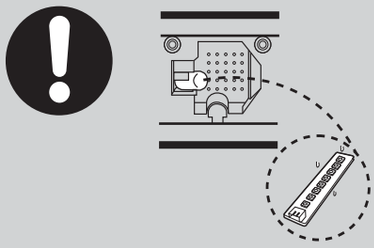
- ***Cleaning parts when servicing the product can help prevent fire or short circuits.***

Check the status of parts after the replacement or troubleshooting.

- ***All parts must be reinstalled properly.***

Check for visible traces of water on the electrical parts.

- ***Replace or secure any parts that have come into contact with water.***



PRECAUTIONS(SAFETY WARNINGS)

❊ ***Please let users know about the following warnings & cautions in detail.***

⚠ Warning & Caution

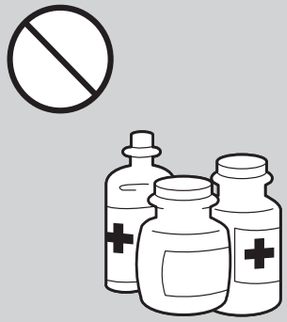
Customers should not store full glass bottles in the freezer section.

- *The frozen bottles could explode and result in injury.*

Customers should not store narrow or long bottles, or food in one of the small door shelves.

- *These items could fall when the door is opened, resulting in injury to the customer.*

Drugs that require a specific temperature should not be stored in the refrigerator.



The refrigerator should be plugged into a dedicated outlet.

- *Multiple plugs connected to an outlet may cause excessive heat or fire.*

Consumers must not try to repair the refrigerator.

- *Electrical and mechanical parts could injure the consumer.*

Make sure that the power cord is not damaged.

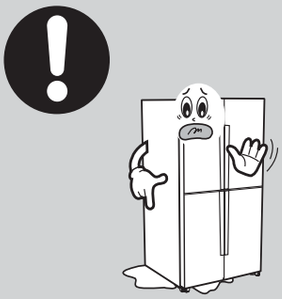
- *A damaged cord could result in excessive heat or fire.*

Customers should not place or store objects on the product.

- *Opening or closing the door may cause items to fall, which may result in injury.*

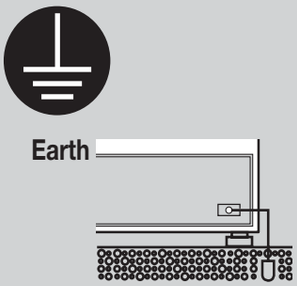
Do not allow users to install the refrigerator in the wet place or the place where water splashes.

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



The refrigerator must be grounded properly.

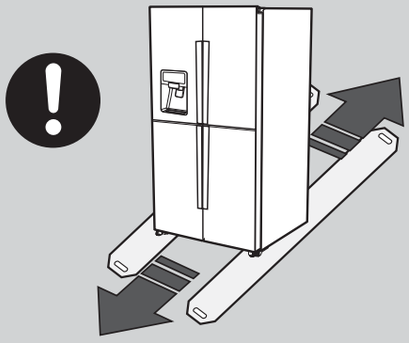
- *The product should be properly grounded if there is a risk of high humidity or moisture.*



PRECAUTIONS(SAFETY WARNINGS)

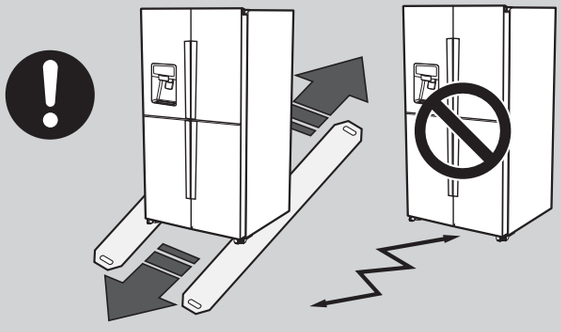
FLOORING

To ensure that the product is properly installed, the refrigerator must be installed on a level, solid surface that is the same height as the rest of the flooring. The surface should be strong enough to support a fully loaded refrigerator.



MOVING

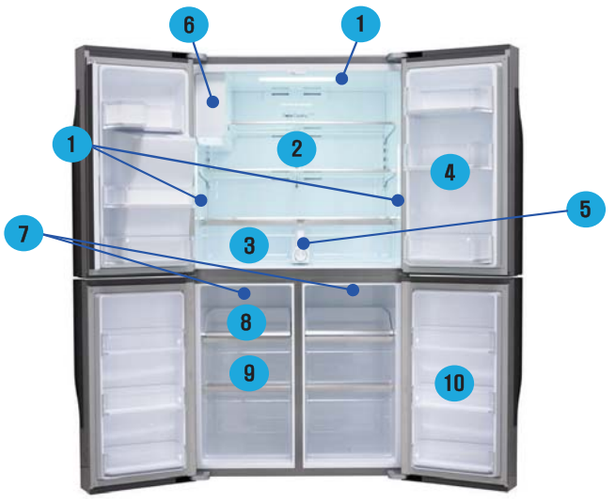
Protect the finish of the flooring. Cut a large section of cardboard carton and place it under the refrigerator where you are working. When moving the product, make sure that you pull the unit straight out and push it back straight in.



2. PRODUCT FEATURES AND SPECIFICATIONS

2–1. Compartment Features by Model

Water Dispenser model :
RF28K9070**



Appearance

A) Smart home dongle (hinge cover)
B) Buttons / Indicators

Fridge Compartment

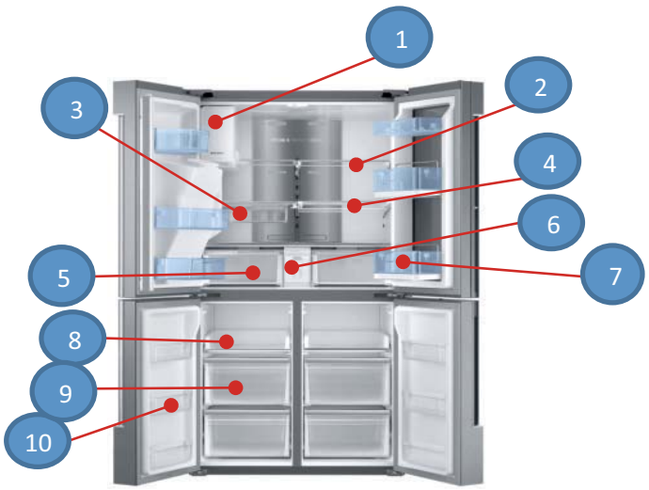
1) Refrigerator lamps
2) Refrigerator shelf
3) Refrigerator drawer
4) Refrigerator door bins
5) Water filter
6) Auto ice maker

Freezer Compartment / Cool Select Room

7) Freezer lamps
8) Freezer shelf
9) Freezer drawer
10) Freezer door bins

PRODUCT FEATURES AND SPECIFICATIONS

Water Dispenser model :
RF28K9380**



Appearance

A) Smart home dongle (hinge cover)
B) Buttons / Indicators
C) Showcase / Innercase (Fridge door)

Fridge Compartment

1) Auto Ice maker
2) Shelf
3) Wine rack
4) Quick space shelf
5) Drawer
6) Water filter
7) Door bins

Freezer Compartment / Cool Select Room

8) Shelf
9) Drawer
10) Door bins

2-2. Basic Product Specifications

Item	Model				
	RF28K9070**/SA	RF28K9380**/FA	RF28K9380**/EM	RF28K9380**/CL	RF28K9380**/AP
External dimensions (width x depth x height, mm)					
Packing dimensions (width x depth x height, mm)					
Rated power frequency (Hz)	50	50	60	60	60
Rated power (V)	240	230	127	120	110
Rated power consumption of the electric motor (W)	145				
Rated power consumption of the electric heater (W)	380				
Refrigerator type	Indirect cooling type refrigerator				
Refrigerant	R-600a	R-600a	R-134a	R-134a	R-600a
Amount of sealed refrigerant (g)	83	83	195	195	83
Weight (kg)					
Packing weight (kg)					

Item	Model				
	RF28K9380**/ZS	RF28K9380**/TL	RF28K9380**/HC	RF85K9012**/TR	RF85K9002**/ML
External dimensions (width x depth x height, mm)				908*932*1825	908*932*1825
Packing dimensions (width x depth x height, mm)				972*972*1970	972*972*1970
Rated power frequency (Hz)	50	50	50	50	50
Rated power (V)	220	220	220	220	230
Rated power consumption of the electric motor (W)	145				
Rated power consumption of the electric heater (W)	380			240	240
Refrigerator type	Indirect cooling type refrigerator				
Refrigerant	R-600a	R-600a	R-600a	R-600a	R-600a
Amount of sealed refrigerant (g)	83	83	83	83	83
Weight (kg)				151	151
Packing weight (kg)				162	162

PRODUCT FEATURES AND SPECIFICATIONS

2-3. Comparison of Specifications

No.	Module		RF28K9070**/9380**
1	Dimensions (width x depth x height)		35 3/4" X 34 5/16" X 71 7/8" (908 X 871 X 1825)
2	Door		SWING 4 Door/ STS
3	Lighting	Fridge	Top: 6 Flat Lamps * 2ea, Side: 3 Flat Lamps * 2ea
		Freezer/ Cool Select	Top: 3 Lamps * 1ea, Evap Cover: 2 Lamps * 1ea
4	Shelf	Fridge	SLIDE, FIX, FOLD / AL Foil-Trim
		Freezer/ Cool Select	Tray Shelf / AL FOIL-TRIM
5	Box	Fridge	2 Pieces / AL Foil-Trim
		Freezer/ Cool Select	2 Pieces / AL Foil-Trim
6	Cool Select Room modes		Freezer / Soft Freezing / Chill / Cool
7	Ice Maker		Direct cooling system Auto I/M
8	Guard	Frige	Transparent 1 piece / Stamping
		Freezer/ Cool Select	Transparent 1 piece / Stamping
9	Handle		Hidden Handle / STS Pattern (Real Stainless + Hair Line Pattern)
10	Display		Fridge Door Top dispenesr

Classification			RF28K9070**/SA	RF28K9380**/FA	RF28K9380**/EM	RF28K9380**/CL	RF28K9380**/AP	RF28K9380**/ZS	RF28K9380**/TL	RF28K9380**/HC	RF85K9012**/TR
Electrical parts	Motor & Fan	Freezer	BLDC(12035GE-12M-YT-F1), Φ120 11 Wings, CW DC 12V, 2.5W, 1870rpm								
		Cool Select Room	BLDC(12035GE-12M-YT-F1), Φ120 11 Wings, CW DC 12V, 2.5W, 1870rpm								
		Fridge	BLDC(12035GE-12M-YT-F1), Φ120 11 Wings, CW DC 12V, 2.5W, 1870rpm								
		Machine compartment	BLDC(DRCP8020LA), ∅160 3Wing, CCW 12VDC 1.7W, 1120rpm								
	Heater	F-Evap.	AC 230 V, 121 W		AC 120 V, 121 W			AC 230 V, 121 W			
		CV-Evap.	AC 230 V, 121 W		AC 120 V, 121 W			AC 230 V, 121 W			
		R-Evap.	Not applied.								
		French	AC 230 V, 10 W		AC 120 V, 10 W			AC 230 V, 10 W			
		Dispenser	AC 230 V, 2.5 W		AC 120 V, 2.5 W			AC 230 V, 2.5 W			-
		Water Pipe	DC12V 2.3W (Cord Heater)								-
		ICE Room	DC12V 2W (Cord Heater)								-
		ICE Maker	AC 230 V, 141 W		AC 120 V, 141 W			AC 230 V, 141 W			-
		Damper	Not applied.								
	Comp electrical parts	OLP	Not applied. (Optional)		4TM445PHBYY-82 (Optional)			Not applied. (Optional)			
		PTC Relay	Not applied.								
		Capacitor	Not applied.								
	Over heating protector	Freezer	Bimetal [Off 60℃, On 40℃]								
			Thermal Fuse (Cut-off, 109(110) ℃)								
		Cool Select Room	Bimetal [Off 60℃, On 40℃]								
			Thermal Fuse (Cut-off, 109(110) ℃)								
		Fridge	Not applied.								
			Not applied.								
	Internal lamp	Freezer	3 Lamps * 1ea, Evap Cover: 2 Lamps * 1ea								
		Cool Select Room	3 Lamps * 1ea, Evap Cover: 2 Lamps * 1ea								
		Fridge	Top: 6 Flat Lamps * 2ea, Side: 3 Flat Lamps * 2ea								
	Step Valve		3 Way Valve (DC 12V)								

PRODUCT FEATURES AND SPECIFICATIONS

2-4. Specifications

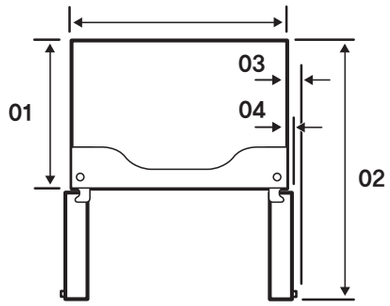
Model				RF28K9380**/EM, RF28K9380**/CL, RF28K9380**/AP		RF28K9070**/SA, RF28K9380**/FA, RF28K9380**/ZS, RF28K9380**/TL, RF28K9380**/HC, RF85K9002**/ML	
Freezer performance				✻✻✻ (4 stars)			
Freezer Parts	Compressor		Model no.	NC1MV90ALP/E01		NF34H9151AMD01	
			Driving type	INVERTER			
	Refrigerant			R-134a, 195g		R-600a, 83g	
Temperature sensors inside Compartment	Freezer	Thermistor (F-Sensor)	Temp. Selection	Threshold that turns the sensor output on		Threshold that turns the sensor output off	
			-23℃	-21.5℃	-24.5℃	-21.5℃	-24.5℃
			-19℃	-18.5℃	-21.5℃	-18.5℃	-21.5℃
			-15℃	-13.5℃	-16.5℃	-13.5℃	-16.5℃
	Cool Select Room	Thermistor (R-Sensor)	Freezer	Same as Freezer compartment	Same as Freezer compartment	Same as Freezer compartment	Same as Freezer compartment
			Soft Freezing	-3.0℃	-7.0℃	-3.0℃	-7.0℃
			Chill	0.5℃	-3.5℃	0.5℃	-3.5℃
			Cod	3.5℃	-0.5℃	3.5℃	-0.5℃
		Thermistor (R-Sensor)	1℃	2.5℃	-0.5℃	2.5℃	-0.5℃
			3℃	4.5℃	1.5℃	4.5℃	1.5℃
			7℃	8.5℃	5.5℃	8.5℃	5.5℃
Defrosting Parts	Defrosting interval	Initial defrosting interval (simultaneous defrosting of F and R)		6 hours ± 10 minutes			
		Freezer defrosting interval		12~77 hours (depending on the operating conditions)			
		Fridge defrosting interval		40 ~ 400 minutes (depending on the operating conditions)			
		Idle time		1 minute			
	Defrosting sensor	F defrosting - sensor	Model no.	THERMISTOR (DTN-C502)			
			Specifications	5.0 kΩ at 77 ℉ (25 ℃)			
		R defrosting - sensor	Model no.	THERMISTOR (DTN-C502)			
			Specifications	5.0 kΩ at 77 ℉ (25 ℃)			
	Bimetal (Freezer)		Model no.	BIMETAL THERMOSTAT			
			Operating temperature	Off : 140 ℉ (60 ℃) / On: 104 ℉ (40 ℃)			
	Bimetal (Cool Select)		Model no.	BIMETAL THERMOSTAT			
			Operating temperature	Off : 140 ℉ (60 ℃) / On: 104 ℉ (40 ℃)			
	Thermo-FUSE (Freezer)		Operating Temperature	Off : 110 (109 ℃) Off			
	Thermo-FUSE (Cool Select)		Operating Temperature	Off : 110 (109 ℃) Off			

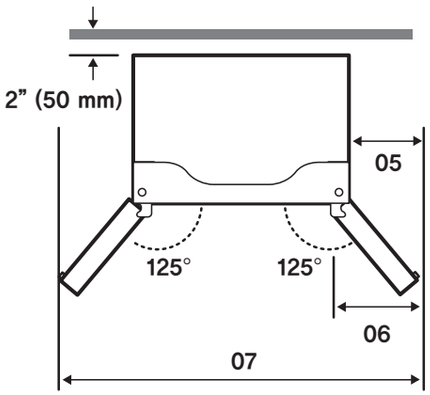
PRODUCT FEATURES AND SPECIFICATIONS

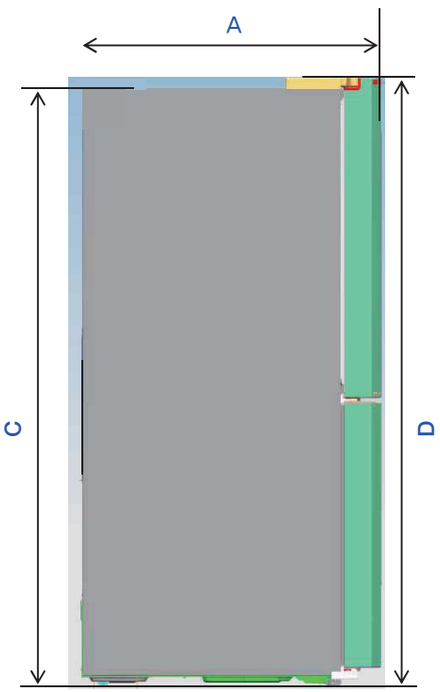
Model			RF28K9380**/AP	RF28K9380**/EM RF28K9380**/CL	RF28K9070**/SA RF28K9380**/FA RF28K9380**/ZS RF28K9380**/TL RF28K9380**/HC	RF85K9012**/TR RF85K9002**/ML
Electrical parts	F compartment defrosting heater	Current flows when F defrosting is conducted.	AC 120V, 121W		AC 230V, 121W	
	CV compartment defrosting heater	Current flows when CV defrosting is conducted.	AC 120V, 121W		AC 230V, 121W	
	R compartment defrosting heater	Current flows when R defrosting is conducted.	–			
	French heater	According to external humidity, Heater is operated	AC 120V, 10W		AC 230V, 10W	
	Water tank heater		–			
	Dispenser heater		AC 120V, 2.5W		AC 230V, 2.5W	–
	Ice water drain pipe heater		DC12V 2.3W			–
	ICE Room Heater		DC12V 2W			–
	Damper heater		–			
	F compartment door heater	The heater is operated by the external humidity sensor.	–			
	CV compartment door heater	The heater is operated by the external humidity sensor.	–			
	R compartment door heater	The heater is operated by the external humidity sensor.	–			
	F compartment defrosting heater overheating prevention bimetal		THERMOSTAT (BT–121–M) On: 40 ℃ Off: 60 ℃			
	F compartment defrosting heater overheating prevention fuse		110 ℃, 250 V/10 A			
	CV compartment defrosting heater overheating prevention bimetal		THERMOSTAT (BT–121–M) On: 40 ℃ Off: 60 ℃			
	CV compartment defrosting heater overheating prevention fuse		110 ℃, 250 V/10 A			
	Noise filter		20 mH, 80*60*1.6 t			
	OLP	Model no.	- (Optional)	4TM445PHBYY-82 (Optional)	- (Optional)	- (Optional)
		Temperature at which it turns on (℃)	- (Optional)	69 ℃ (Optional)	- (Optional)	- (Optional)
		Temperature at which it turns off (℃)	- (Optional)	125 ℃ (Optional)	- (Optional)	- (Optional)
	F compartment cooling fan motor		DC 12V BLDC (12035GE-12M-YT-F1)			
	CV compartment cooling fan motor		DC 12V BLDC (12035GE-12M-YT-F1)			
	R compartment cooling fan motor		DC 12V BLDC (12035GE-12M-YT-F1)			
	Comp. cooling fan motor		DC12V BLDC(DRCP8020LA)			
	Motor step valve		DC 14 V / 0.7 A			
	Internal lamp	Freezer	3 Lamps x 1 EA, 2 Lamps x 1 EA (Evap Cover)			
		Cool Select room	3 Lamps x 1 EA, 2 Lamps x 1 EA (Evap Cover)			
		Fridge	6 Flat Lamps x 2 EA (Top), 3 Flat Lamps x 2 EA (Side)			
	Door reed switch		DC 200 V / 0.5 A			
	Power cord		AC125V / 15A			
	Grounding screw		BSBN (brass screw)			

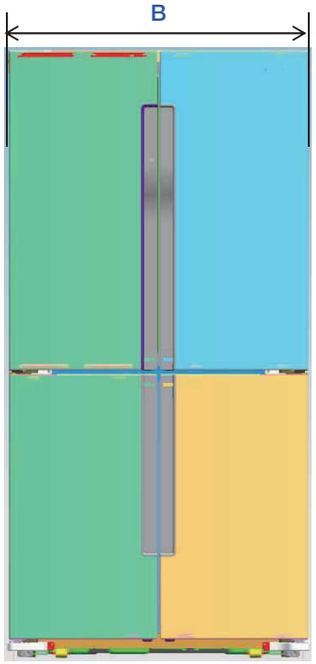
PRODUCT FEATURES AND SPECIFICATIONS

2–5. Dimensions





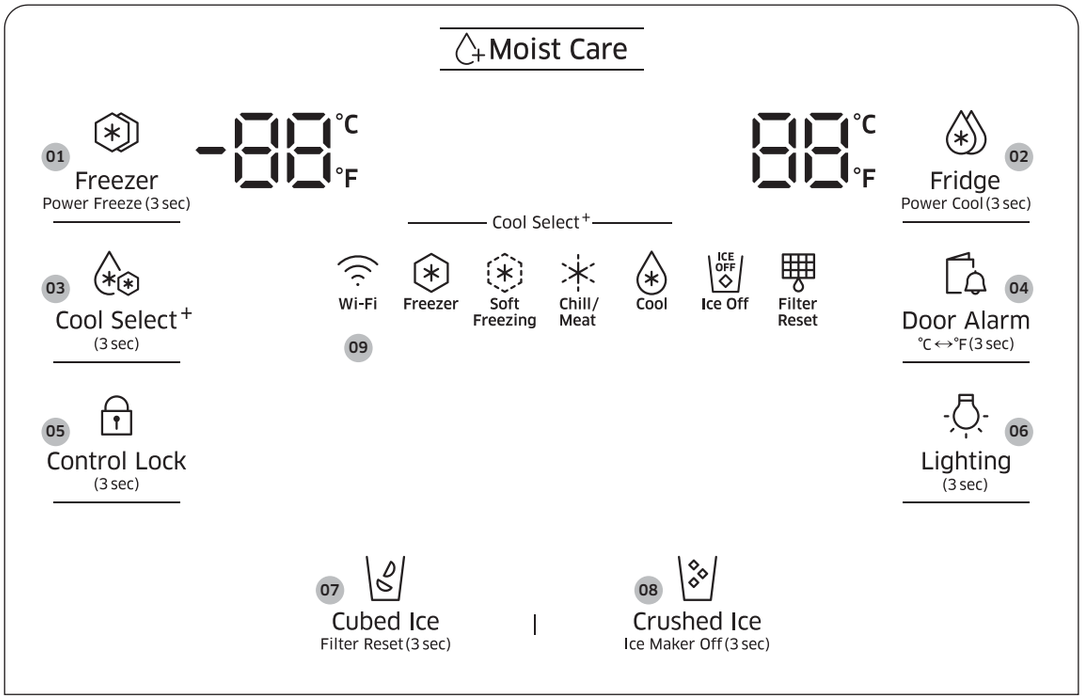




Model	RF28K*	RF85K*
01	748	785
02	1245	1258
03	80	72.3
04	43	43
05	303	303
06	305	305.5
07	1515	1258

Model	RF28K*	RF85K*
Depth "A"	871	908
Width "B"	908	908
Height “C”	1797	1797
Overall Height “D”	1825	1825

2–6. Feature panel



01 Freezer / Power Freeze
02 Fridge / Power Cool
03 Cool Select+
04 Door Alarm / °C ↔°F
05 Control Lock
06 Lighting
07 Cubed Ice / Filter Reset
08 Crushed Ice / Ice Maker Off
09 Network connection

01 Freezer / Power Freeze (3 sec)

Freezer	The **Freezer** button can be used to set the freezer temperature, or to activate Power Freeze. Available temperatures are between -15 °C and -23 °C.
Power Freeze	Power Freeze speeds up the freezing process at maximum fan speed. The freezer keeps running at full speed for several hours and then returns to the previous temperature. • To activate Power Freeze, press and hold **Freezer** for 3 seconds. The corresponding indicator ( ) lights up, and the refrigerator speeds up the cooling process for you. • To deactivate, press and hold **Freezer** for 3 seconds again. The freezer returns to the previous temperature setting. • To freeze large amounts of food, activate Power Freeze for at least 20 hours before putting food in the freezer. **NOTE** Using Power Freeze increases power consumption. Make sure you turn it off to return to the previous temperature if you do not intend to use it.

02 Fridge / Power Cool (3 sec)

Fridge	The **Fridge** button can be used to set the fridge temperature, or to activate/deactivate Power Cool. You can manually adjust the cooling temperature for the fridge. The temperature indicator informs you of the currently set or selected temperature. Keep pressing **Fridge** to select a desired temperature between 1 °C and 7 °C.
Power Cool	Power Cool speeds up the cooling process at maximum fan speed. This is useful to quickly cool food that spoils quickly, or after the door is left open for some time. The fridge keeps running at full speed for several hours and then returns to the previous temperature. Press and hold **Fridge** for 3 seconds.

NOTE

When you change the temperature on the panel, the panel displays the actual temperature inside the refrigerator until the temperature matches the temperature you set. Then, the panel displays the new set temperature. Note that it will take time for the refrigerator to reach the new temperature. This is normal. During this time, you need not set the temperature again.

03 Cool Select+

With the Cool Select function, you can arrange food items in the Cool Select Room in an organized manner, which is located on the bottom right of the refrigerator. Press and hold **Cool Select+** for 3 seconds, and then press to cycle through the modes. When a desired mode is selected, release the button. There are 4 modes available as below:

Freezer	Select **Freezer** to set the Cool Select Room to the same temperature as the freezer. This is useful to keep frozen food fresh.
Soft Freezing	Select **Soft Freezing** to set the Cool Select Room to -5 °C. This is useful to keep meat and fish fresh for an extended time.
Chill/Meat	Select **Chill/Meat** to set the Cool Select Room to -1 °C. This is useful to keep deli like steak, fish, bacon and cheese.
Cool	Select **Cool** to set the Cool Select Room to 3 °C. This is useful to keep food for general purposes, such as keeping water, juice, soft drinks, and beer.

⚠ CAUTION

- When switching or turning off the function, meat blood or food moisture may come out due to temperature difference.
- Do not store meat or food in the Cool Select Room with the fridge settings. The meat or food may spoil.

NOTE

If the button does not activate, make sure the button is unlocked. Press and hold **Control Lock** for more than 3 seconds until the lock icon (🔒) turns off.
Then, press and hold **Cool Select+** for more than 3 seconds to change the mode.

04 Door Alarm / °C ↔°F (3 sec)

Door Alarm	You can set the alarm for a reminder. If the door is left open for more than 2 minutes, the alarm will sound with the Alarm indicator blinking. You can toggle to enable and disable the alarm by pressing **Door Alarm**. The alarm is enabled by factory default.
°C ↔°F	The **Door Alarm** button can be used to switch the temperature scale between Celsius and Fahrenheit. To switch the temperature scale, press and hold **Door Alarm** for 3 seconds to change the current temperature scale.

05 Control Lock (3 sec)

Control Lock	To prevent accidental manipulation, press and hold **Control Lock** for 3 seconds. All controls will be disabled with the indicator ( ) on. To deactivate, press and hold again for 3 seconds. The controls will be enabled as normal.

06 Lighting (3 sec)

Lighting	By default, the dispenser lamp turns on only when the dispenser is used. If you want to keep the dispenser lamp turning on (continuous mode), press and hold **Lighting** for 3 seconds. The lighting indicator also turns on. To restore the default settings, press and hold **Lighting** for 3 seconds again.

07 Cubed Ice / Filter Reset (3 sec)

Cubed Ice	You can select an ice type. Press **Cubed Ice** to dispense cubed ice. The corresponding indicator turns on.
Filter Reset	After about 6 months (approximately 1200 L) of using the original water filter, the Filter indicator blinks red to remind you that the filter needs to be replaced. If this happens, replace the filter, and press and hold **Cubed Ice** for 3 seconds. The filter lifecycle will be reset and the Filter indicator turns off. **NOTE** • Some regional areas have relatively large amounts of lime contained in the water. This may reduce the lifecycle of the filter. In these areas, you will have to replace the water filter more often than specified above. • If water is not dispensing properly, replace the water filter because this happens when the water filter is clogged.

08 Crushed Ice / Ice Maker Off (3 sec)

Crushed Ice	You can select an ice type. Press **Crushed Ice** to dispense Crushed Ice. The corresponding indicator turns on.
Ice Maker Off	To disable ice making, press and hold for 3 seconds. In this mode, ice making is disabled even if you press **Cubed Ice** or **Crushed Ice**.

09 Network connection (applicable models only)

You can use the optional Smart Home Dongle (sold separately) to control and monitor your refrigerator through the Samsung Smart Home app. For more information, see the Samsung Smart Home section.

NOTE

- Recommended encryption systems include WPA/TKIP and WPA2/AES. Any newer or unstandardized Wi-Fi authentication protocols are not supported.
- Wireless networks may be affected by the surrounding wireless communication environment.
- If your Internet service provider has registered the MAC address of your PC or modem for identification, the Smart Home Dongle may fail to connect to the Internet. If this happens, contact your Internet service provider for technical assistance
- The firewall settings of your network system may prevent Internet connection. Contact your Internet service provider for technical assistance. If this symptom continues, contact a local Samsung service center or retailer.
- The Smart Home Dongle supports Wi-Fi 2.4 GHz with IEEE 802.11 b/g/n and Soft-AP protocols.

2–7. Samsung Smart Home

Installation

Visit the Google Play Store, Galaxy Apps, or Apple App Store and search for “Samsung Smart Home”. Download and install the Samsung Smart Home app provided by Samsung Electronics to your smart device.

NOTE

- The Samsung Smart Home app is designed for Android 4.0 (ICS) or higher, or iOS 7.0 or higher, and is optimized for Samsung smartphones (Galaxy S and Galaxy Note series).
- For improved performance, the Samsung Smart Home app is subject to change without notice, or discontinued support according to the manufacturer’s policy.

Samsung account

You are required to register your Samsung account to use the app. If you don’t have a Samsung account, follow the app’s onscreen instructions to create a free Samsung account.

Getting started

1. Insert the Smart Home Dongle into the corresponding port of your refrigerator.
2. Run the Samsung Smart Home app and log in with your Samsung account. iPhone users are required to provide the login information each time they access the app.
3. Access **Device** > the **+** icon, and then tap **Refrigerator**.
4. Follow the onscreen instructions to provide the necessary information about the router, and then tap **Next**.
5. Press and hold **Fridge** for more than 5 seconds until the "AP" message appears on the display. Your refrigerator will be registered with the app.
6. When the device registration is complete, the refrigerator icon will appear on the Samsung Smart Home app.
7. Tap the refrigerator icon to open the refrigerator page.
8. When a network connection is established, the Wi-Fi icon lights up on your refrigerator.

Refrigerator app

Integrated control

You can monitor and control your refrigerator at home as well as while on the move.

- Tap the refrigerator icon on the Samsung Smart Home to open the refrigerator page.
- Check the operation status or notification of your refrigerator, and change options or settings if necessary.

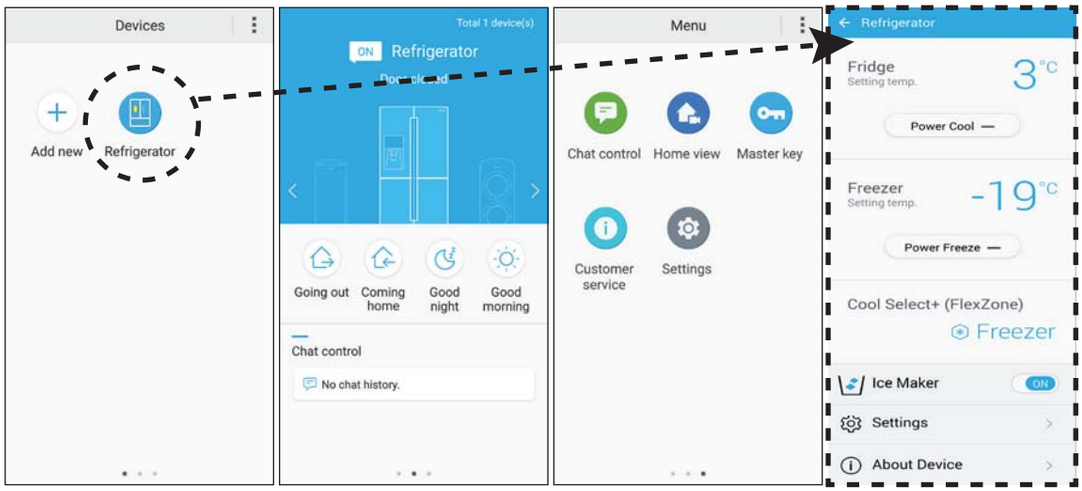
NOTE

Some options or settings of the refrigerator may not be available for remote control.

Key features

Register Samsung smart home appliances to the Samsung Smart Home server for remote access.

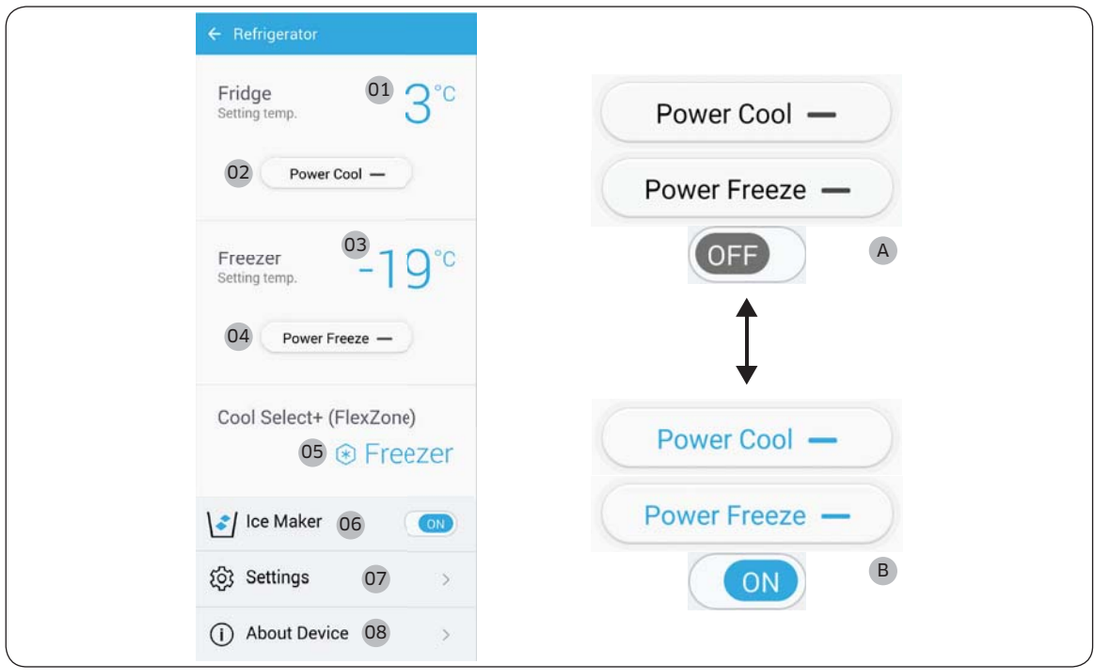
Menu overview



- Tap **Refrigerator** to open the settings page of the refrigerator.
- Swipe to move to the next page.

Chat control	You can control your Samsung smart home appliances remotely, or check the operating status.
Home view (applicable models only)	By using the built-in camera of a Samsung smart home appliance, you can monitor your living room. This is available only with applicable models.
Master key	The master key is designed to control the locking system for different user activities such as going out, coming home, going to bed at night, and waking up in the morning. This is available only with applicable models.
Customer service	The user manual is downloadable, and the contact information for customer support is also provided.
Settings	You can check the connected device as well as the software information (version and open-source licenses), and add devices or select a country. You can simulate the operation of the current device for demonstration purposes.

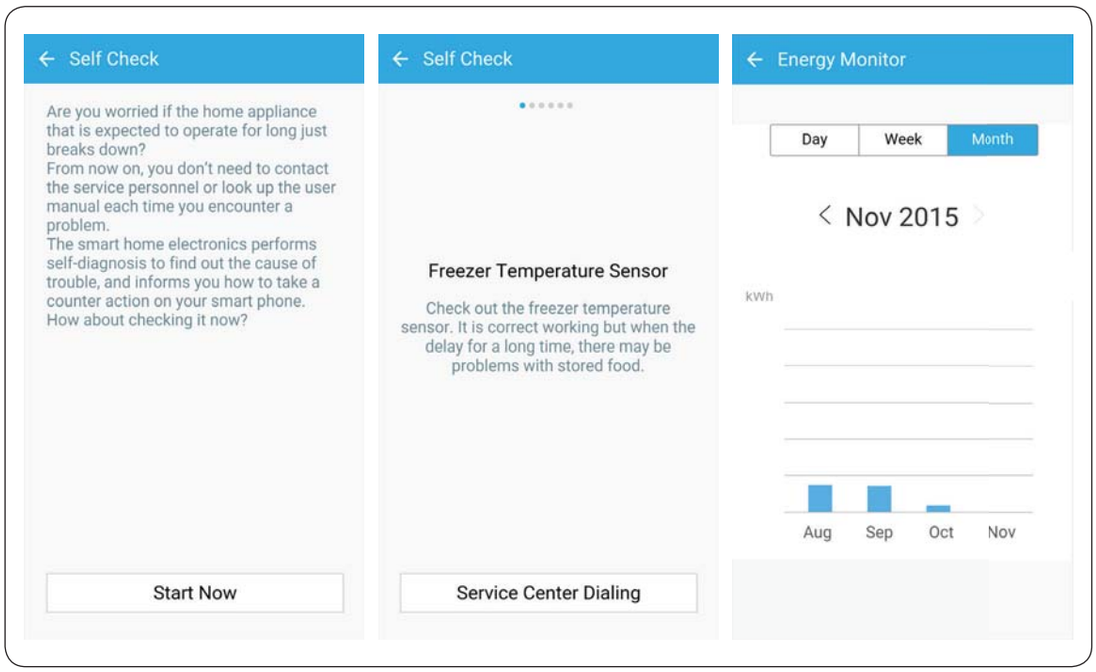
Refrigerator settings



A : Disabled (black)

B : Enabled (blue)

Fridge	**01** Displays the currently set fridge temperature. **02** You can turn on or off Power Cool, and check the current settings.
Freezer	**03** Displays the currently set freezer temperature. **04** You can turn on or off Power Freeze, and check the current settings.
Cool Select+ (FlexZone)	**05** Displays the current mode setting.
Ice Maker	**06** You can turn on or off Ice Maker, and check the current settings as well as the ice making status.



Settings	**07** On the Settings screen, you can monitor the energy usage status of your refrigerator in a preferred format. Supported formats are daily, weekly, or monthly cumulative energy consumption reports covering a max of the last 180 days.
About Device	**08** Displays the product information including the current version, tutorial, Self Check, and Help Desk. The user manual is downloadable, and the contact information for customer support is also provided. Self Check By referencing Self Check, you can check the diagnostic results of your refrigerator. If the refrigerator detects an issue to check, it displays detailed information about the issue that can be used for customer service.

2-8. ICE-MAKER Function (Ice & Water Model)

- The ICE-MAKER function is an option and the following explains the function of these models.
- The ICE-MAKER is a kit that supplies water on its own, freezes water into ice and stores the ice cubes in the Ice Container with the capability of making ice automatically without manual controlling

1) Shape of Icemaker

2) Initial Operations

1. When the power is on, it checks the temperature of the Ice Maker Sensor. If the Ice Maker Sensor temperature is lower than 0℃, the Ice Maker Heater will be on for 4 minutes. After that, it will run the Initial Test Mode. If the Ice Maker Sensor temperature is higher than 0℃, it will run the Initial Test Mode right away.
2. During the Initial Test Mode, it carries out the operation of the Ice Maker Motor and its Heater turns on for 30 seconds.
3. If the Ice Maker Sensor temperature is over 0℃ upon the initial power on, the Water Valve will work for a second while its Heater is on.
4. The Ice Maker Motor rotates both clockwise and counter clockwise repeatedly. And, when it is sensed as being at the parallel position (Home) within 6 minutes after the Motor starts operating, its initial operation will stop and its normal ice making will begin.
5. When it does not sense the parallel position (Home) within 6 minutes after the Motor starts operating, it will be considered as the Ice Maker defect and its initial operation will stop.

※ Operation upon Ice Maker Defect during the Initialization.

1) Upon the termination of the Initialization due to the Ice Maker Defect, it runs the Initialization again. And, when the defect is detected during all the set number of times (ex. 3 times), it will stop the Initialization of the Ice Maker.

2) When it is sensed as defect 3 times in a row during the initialization, the Ice Maker does not operate for the set duration (ex. 3 hours) and it runs the initialization again after a set time period.

3) General Operation

- Water Supply 〉 Stand-by Time for Ice Making 〉 Temperature Checking for Ice Maker Sensor 〉 Ice Removing
  Water Supply Ice Making Ice Removing

1. After supplying water, it stands by for 14 minutes before starting the ice making. After that, it checks the Ice Maker Temperature.
2. When the Ice Maker Sensor temperature is measured lower than -13℃ for more than 5 seconds, its ice making is completed.
3. When the ice making is completed, the Ice Maker Heater and Motor operates and the ice cubes are to be removed from the Ice Maker. At this time, its heater thaws out the outer surface of the ice cubes allowing them to be removed from the Ice Maker easily. And, its motor turns both clockwise and counter clockwise to remove the ice cubes from the Ice Maker.
4. The Ice Maker repeats the operation of the (1) ~ (3) until ice cubes build up in the Ice Bucket triggering the Full-Ice Detect Sensor on. At this time, the Ice Maker stops producing ice cubes.

4) Ice Off (Stopping Ice Making) Function

1. When turning on the Ice Off function at the preference setting, the Ice Maker function will be off.
2. When the Ice Maker is off, it does not supply water to the Ice Tray.
3. When turning off the Ice Off function, the Ice Off function will be cancelled. When the Ice Off is cancelled, it starts from ice making and the operation of the Ice Maker resumes.

5) TEST Function

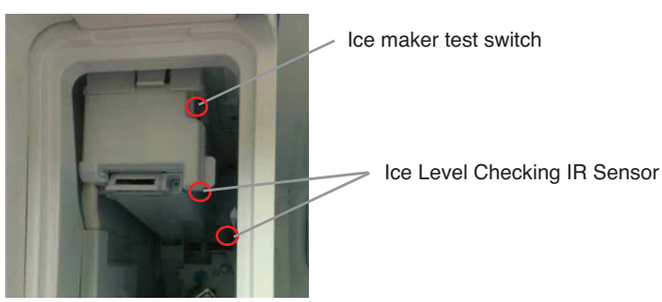
- It is a function to be used when it needs the forced operation for the purpose of repairs or cleaning.

1. When pressing the Test Button for 1.5 seconds, the Test Function will start.
2. The Test Function works as follows.
   Start (Alarm Sound) → Motor On (Rotating Counter Clockwise) → Motor On (Rotating Clockwise) → Heater On → Motor On (Rotating Clockwise) → Home Location → Water Supply → Completed (Alarm Sound)

※ The Ice Maker Heater will be On / Off
The Ice Maker Heater will be On and Off according to the temperature conditions of the Ice Maker Sensor when the Ice Maker Motor rotates clockwise.

3. When the entire operation is to be completed within 6 minutes after the motor starts operating upon pressing the Test button, it sends out alarm sound. And, after this, it does normal ice making.
4. When the entire operation does not complete normally (ex. Not reaching at the Home location) within 6 minutes after the motor starts operating upon pressing the Test button, it will be considered as the Ice Maker defect and the entire loads (Motor, Heater, etc) will be off. (No alarm sound)
   After this, it performs an operation checking whether the Ice Maker operates normally according to the set time cycle (ex. 3 hour).

Caution When the Ice Maker Heater is on, it may cause personal injury. So, take extra care



2-9. Material Specification

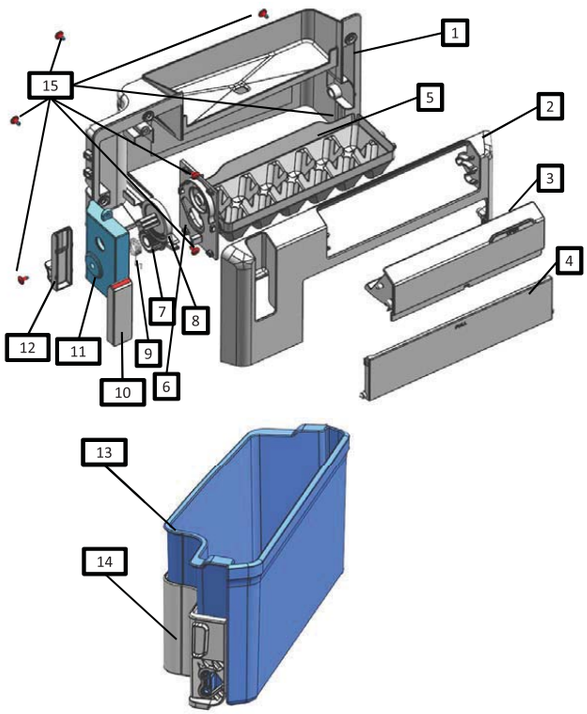
Photograph	Part Name	Part Code	AMOUNT
	FILTER WATER-ASSY (Ice & Water Model)	DA29-00019B	1
	LED LAMP TOP	DA96-01119B	2
	LED LAMP SIDE	DA96-01119A	2
	LED LAMP CONV (FRE)	DA41-00519P	2
	LED LAMP COVER EVAP FRE	DA41-00519X	2

2-10. Indoor Ice Maker (Normal model)

- For detailed information on how it works, please refer to the explanation below.
- This manual ice maker allows you to supply water yourself to make the ice, which then it keeps in a separate bucket upon the lever being pulled to finish it.

1) Ice Maker Parts

No.	PART NAME
1	CASE TRAY
2	COVER TRAY-FRONT
3	GUIDE WATER-OUT
4	CASE TRAY-FRE UP
5	TRAY ICE
6	SUPPORT TRAY
7	GEAR CAM-MIDDLE
8	GEAR CAM
9	SPRING LEVER
10	LEVER HANDLE
11	COVER GEAR
12	LEVER
13	CASE ICE
14	GUIDE ICE
15	SCREW TAPPING



2) How It Works

- Supply water(MAX LINE_140cc) by tilting the GUIDE WATER-OUT (3) and then close it. After that the water will be supplied automatically to the TRAY ICE (5) through the drain (HOLE_1).
- When you have finished making the ice, pull the lever(10, 12 Assy) and the ICE TRAY (5) rotates to keep it in the CASE ICE (13).
- You may simply take out the ice by pulling the CASE ICE (13) forward.

※ Caution

1. Ice made from liquids other than water may not get separated completely just by pulling the lever once.
2. When separated with it still not fully frozen, the ice in the case may stick to each other, which then may damage the case when frozen with any remaining water.
   To prevent this from happening, please remove the case from the GUIDE ICE (14) and wipe it well so the surface is completely dry.

3. DISASSEMBLY AND REASSEMBLY

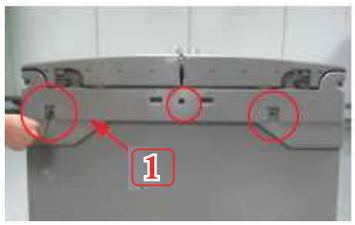
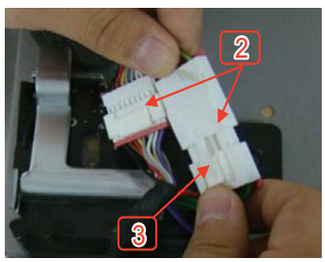
3–1. Precautions

- Before replacing or repairing an electrical part, be sure to unplug the product's power cord.
  – Failing to do so may result in electric shock.
- Be sure to replace any electrical parts with rated parts.
  – Be sure to check the model no, rated power voltage, operating temperature etc. printed on the product.
- When repairing a product, connect the harnesses firmly so that no water enters the product.
  – They should not become separated if a certain amount of force is applied.
- When repairing the product, completely remove all dust or foreign substances from the housing, connectors and terminals.
  – Prevents fire due to tracking or short–circuits.
- Check if there are any marks of moisture having entered the electric parts.
  – If it appears that moisture has penetrated the part, take countermeasures such as replacing the part or wrapping the part with insulation tape.
- After fixing a problem, check the assembly status of the parts.
  – The status must be the same as before repairing the product.
- Check the operating environment of the refrigerator.
  – If the refrigerator is exposed to moisture or is installed near water or on an unstable surface, relocate the refrigerator.
- Ground the refrigerator if necessary.
  – In particular, if there is a danger of electric leakage due to moisture or water, be sure to ground the refrigerator.
- Do not share a power strip with other appliances.
- Check if the power plug or electrical outlet is damaged, deformed or old.
  – If the power plug or outlet is damaged or out of order, repair it immediately.
  – Take care when you move the product so that the power cord is not damaged, cut or becomes trapped.
- Do not store food in an unstable manner in the refrigerator or store bottles in the freezer.
- Do not let customers repair the product by themselves.
- Do not let customers store items other than food in the refrigerator.
  – Medicine or chemicals: A precise temperature cannot be maintained by the refrigerator for home use.
  – Inflammable materials (alcohol, benzene, ether, LP gas, butane gas, etc.): There is a danger of explosion.

Required Tools

Image	Item
	(+) screw driver
	(–) screw driver
	Hexagon wrench (5 mm diameter)
	Long nose pliers
	Box wrench (12 mm) – To disassemble the compressor
	Box wrench (10 mm) – To disassemble the hinge Lower

3-2. Disassembling the Fridge door

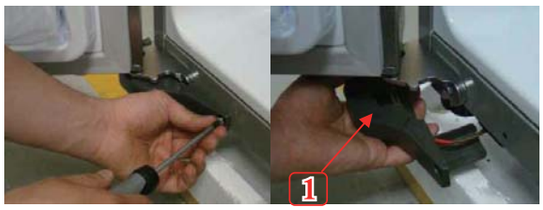
How To Do	Descriptive Picture
1. Remove the 3 screws fixing the Top Table and separate the Top Table (①).	
2. Separate the 2 housing connectors (②) from the hinge at the top left of the fridge compartment door and the 1 housing connector (②–1) from the hinge at the top right of the door. To separate the housing connectors more easily, pull the connector while holding down the fixing hook (③). Caution Make sure to unplug the power cord before performing the procedures above. Note. The number of housing units may differ depending on the model.	 
3. As shown in the picture, Remove water tube from hinge (4) by holding at the both sides of the Tube Fitting and pulling it out. And, remove the Tube Fitting (5) by pulling the water hose after pushing in the locking ring tab at the end of the Tube Fitting.	 
4.Lift up the FIXER LEVER on left/right side and remove it.	

How To Do	Descriptive Picture
5. Remove the right upper Hinge and then lift up the right Door and disassemble it. Caution The door is able to fall down when disassemble the Hinge, so hold the Door with hand and then disassemble it.	 
6. Remove the left Hinge and lift up the left Door and disassemble it. Caution The door is able to fall down when disassemble the Hinge, so hold the Door with hand and then disassemble it.	 

DISASSEMBLY AND REASSEMBLY

3-3. Disassembling the Freezer

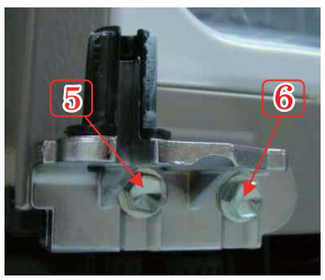
Caution There is a heater wire at the bottom of the freezer compartment. Before disassembling the door, be sure to disassemble the heater housing!

How To Do	Descriptive Picture
1. Open the freezer compartment door and remove the screw fixing the hinge cover (①) at the bottom with the (+) screw driver. Caution Disassemble the freezer door only after disassembling the fridge door.	
2. Separate the housing connector (②) at the bottom.	
3. Slightly push the freezer compartment door in the direction of the arrow, check the position of the freezer compartment door hinge shaft through the hinge hole (③), put in a hexagonal wrench in the opposite angle direction, and press the freezer compartment hinge shaft to separate.	
4. Tilt the freezer compartment door forward so that it does not interfere with the middle hinge and then lift the door up to separate it completely. Caution Take care not to drop the door.	

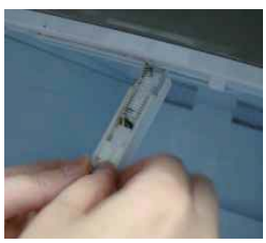
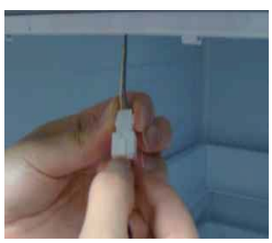
3-4. Disassembling the Middle Hinge

How To Do	Descriptive Picture
1. Remove the 1 screw (③) with a (+) screw driver and remove the 2 bolts (①, ②) with a 4.95mm hexagonal wrench to separate the middle hinge. Caution When reassembling the hinge, be sure to fix it in the following order to prevent the hinge from moving. : Bolt (①) → Bolt (②) → Screw (③)	

3-5. Disassembling the Lower Hinge

How To Do	Descriptive Picture
1. Remove the 2 bolts (⑤, ⑥) with a 10 mm socket wrench and then separate the lower hinge. Caution When reassembling the hinge, be sure to fix it in the following order to prevent the hinge from moving. : Bolt (⑤) → Bolt (⑥)	

3-6. Disassembling the Reed Switch

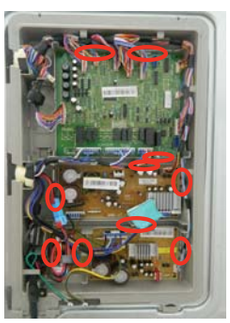
How To Do	Descriptive Picture
1. Open the freezer/Cool Select Room door and check the location of the upper reed switch.	
2. Insert the (–) screw driver into the groove next to the arrow to separate the Switch Cover. Caution Applying excessive force may damage the parts.	
3. Remove the Switch Case with your hand. Caution Applying excessive force may damage the parts.	
4. Remove the wire protection tape and then separate the housing within the case.	 
5. Slide the Reed Switch outward to separate the Reed Switch.	

3-7. Disassembling the Display

How To Do	Descriptive Picture
1. Remove the screw (1ea) on the bottom of the Dispenser.	
2. Hold the bottom of the Dispenser and pull it forward to take it off from its locking tabs. And, remove the assembly by pulling it down.	
3. Separate the Dispenser Wire Connector.	

Caution When reassembling the Display Assy, supply power to prevent errors.

3-8. Disassembling the Main PCB and Inverter PCB

How To Do	Descriptive Picture
1. Pull the refrigerator forward to secure sufficient work space behind the refrigerator.	
2. Remove the 5 screws.	
3. Separate the 17 housing connectors. (However, the number of housing connectors may differ depending on the model and functions.)	
4. Separate the Main PBA and the Inverter PBA by pulling them forward holding the upper hooks upward at the locations shown by the figure.	

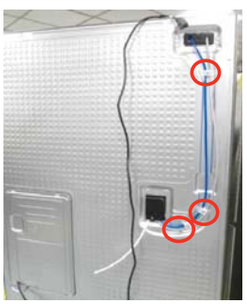
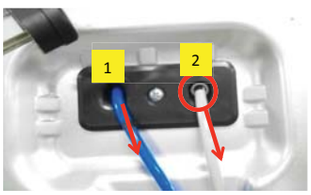
3-9. Dispenser

How To Do	Descriptive Picture
1. .With a flat-head (-) screwdriver, separate the Wire Connector.	 
2. Remove the two screws from the Case Ice Route Assy.	
3. Pull out the Case Ice Route Assy.	

How To Do	Descriptive Picture
4. Do the assembly in the reverse order of the disassembly. When assembling the Case–Ice Route Assy, assemble the Water Hose properly.	 
5. When assembling the Display, slide it up and tap on the bottom of it slightly to complete the assembly.	

DISASSEMBLY AND REASSEMBLY

3–10. Case Water Filter

How To Do	Descriptive Picture
To disassemble the Case Water Filter, remove the water filter and all drawers and shelves.	
1. Disconnect the 2 housing connectors.	 
2. Pull out the water hose(blue) from the tube fitting by pushing in on the locking ring.	 
3. Remove three screws secuting the water tubes.	
4. a. Pull the Water blue hose out. b. Pull the grey hose pushing the Tube Fitting.	
5. Lift and pull the Case Water Filter out.	

DISASSEMBLY AND REASSEMBLY

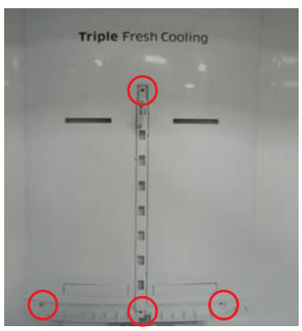
3-11. Water Filter (Assembly & Disassembly)

How To Do	Descriptive Picture
1. Turn the water filter count-clockwise. (Refer to the picture)	
2. Remove the water filter by pulling it. (Refer to the picture)	
3. Push the water filter directly.	
4. Turn the water filter clockwise until it locked.	

CAUTION Be sure to flush the dispenser thoroughly (approx. 6 to 7 minutes), otherwise water may drip from the dispenser. This means that there is still air in the line.

DISASSEMBLY AND REASSEMBLY

3-12. Disassembling the REF EVAP Cover

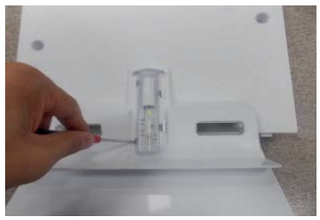
How To Do	Descriptive Picture
1. Remove the screw cover with the (–) screw driver. (See the figure) Caution Take care not to scratch the cabinet or damage the screw cover.	
2. Remove the 4 screws.	
3. Pull the centre angle forward and push it down to separate it. (Refer to the figure)	
4. Pull the lower part of the cover forward and press it downward to separate it. (Refer to the figure)	
5. Separate the 3 housing connectors. (Refer to the figure)	
Caution Be careful not to damage the seal (When replacing, humidity sensor, temperature sensor, fan motor)	

3-13. Disassembling the FRE EVAP Cover

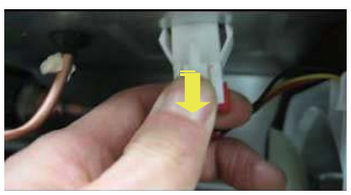
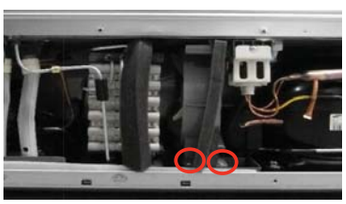
How To Do	Descriptive Picture
1. Remove all the shelves and drawers.	
2. Remove the 2 screws from both sides of the EVAP Cover.	
3. Separate the EVAP Cover by pulling the bottom part forward.	
4. Separate the housing connector from the middle of the EVAP Cover.	

DISASSEMBLY AND REASSEMBLY

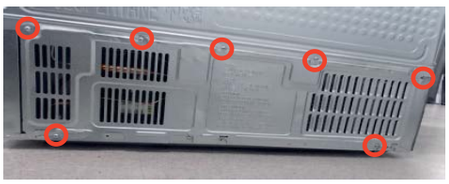
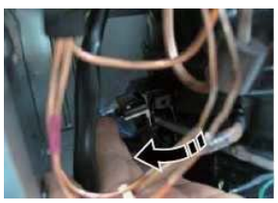
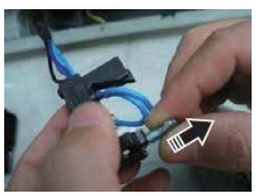
3-14. COVER EVAP LED LAMP

How To Do	Descriptive Picture
1. Remove the cover lamp with the (–) screw driver.	
2. Remove the 6 screws.	
3. Separate the cover evap rear from cover evap fre.	
4. Remove the connector from the LED LAMP.	

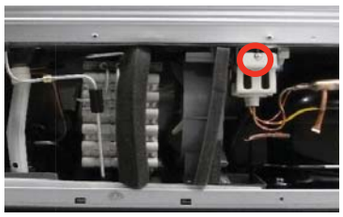
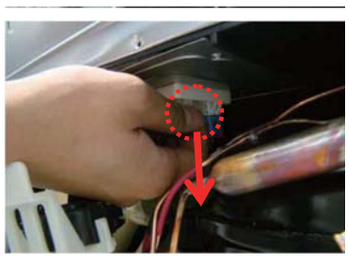
3-15. Disassembling the Machine Compartment Motor Fan

How To Do	Descriptive Picture
1. Remove 7 screws from the Comp cover	
2. Separate the housing connector.	
3. Remove the screw from the bottom part of the Motor Support Circuit Assy and pull the assy forward to separate it.	
4. Separate the Fan Spring with a pair of long nose pliers.	
5. Separate the fan by pulling it forward.	
6. Remove the 4 screws fixing the motor and separate the motor.	 

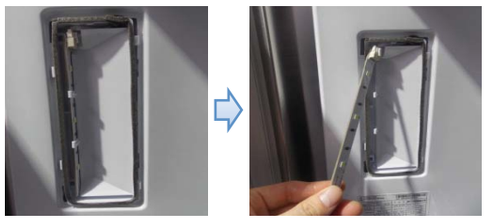
3-16. Disassembling the Relay Protector O/L

How To Do	Descriptive Picture
1. Remove the 6 screws from the COMP Cover.	
2. Separate the Relay Cover with the (-) screw driver. Caution When separating the cover, the pipe may fold and if excessive force is applied, a hand may become chopped.	
3. Separate the Relay Protector O/L with the (-) screw driver. Pull the connector to separate the relay as shown by the figure.	 
Caution Perform the repair referring to the layout of the machine compartment. Check the location of the COMP and then start the disassembly. If the pipe is bent more than 10 times, cracks may appear inside of the pipe.	

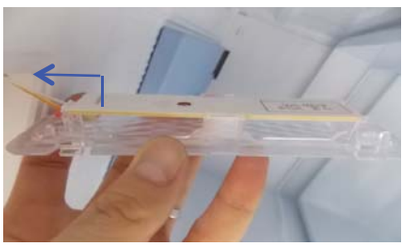
3-17. Disassembling the Step Valve

How To Do	Descriptive Picture
1. Remove the 6 screws from the COMP Cover.	
2. Remove the screw and pull the Step Valve forward to separate it.	
3. Separate the housing connector from the Step Valve.	
4. Remove the refrigerant and then separate the Step Valve from the connection pipe. Caution If you apply excessive force to form the pipe, the pipe may fold or break.	

3-18. Disassembling the Fridge Internal Lamp

How To Do	Descriptive Picture
1. Insert a flat head screwdriver following the arrow symbol on the COVER LAMP and remove the hook.	
2. Remove it from the opposite side by pulling it manually.	
3. Unfasten the hook from the LED LAMP so that you could remove it.	

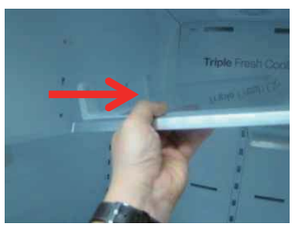
3-19. Disassembling the Freezer Internal Lamp

How To Do	Descriptive Picture
1. Insert the (–) screw driver into the hook at the back and pull the internal lamp cover forward to separate it. Caution Take care not to scratch the cabinet or damage the screw cover. Caution Be sure to unplug the power cord before performing the operation above.	
2. Remove the connector from the LED by lifting and then pulling it to the direction of the arrow on the right.	
3. Remove the connector from the LED LAMP.	

3-20. Disassembling the Tempered Glass Shelf

How To Do	Descriptive Picture
1. Lift the shelf up slightly and pull it forward to separate it.	

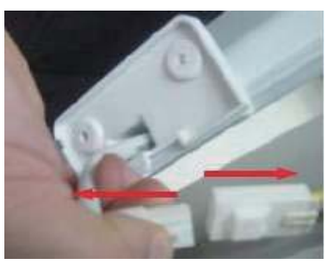
3-21. Folder Shelf Assembling

How To Do	Descriptive Picture
1. Remove each one of the screws (2ea in total) from the front and the back of the Folder Shelf.	  
2. As shown in the image on the right, remove the Folder Shelf from the side wall of the Ice Maker Compartment. Do the assembly in the reverse order of the disassembly.	 

3-22. Disassembling the Vegetable Shelf

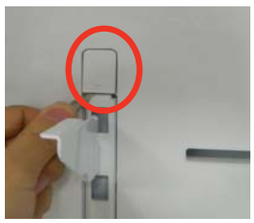
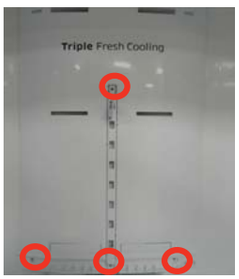
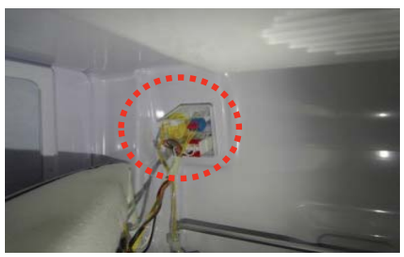
How To Do	Descriptive Picture
1. Remove the guard in front of the vegetable drawers and then remove the vegetable drawers as shown by the figure.	
2. Lift the vegetable shelf.	
3. Pull the vegetable shelf forward to separate it. (Refer to the figure)	

3-23. Disassembling the French

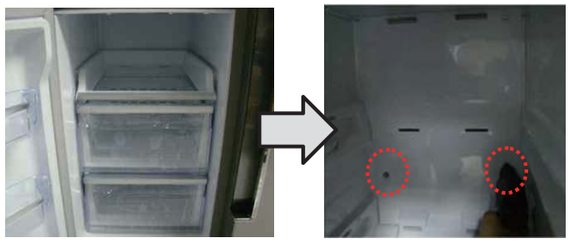
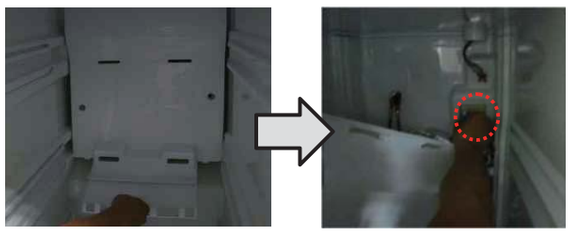
How To Do	Descriptive Picture
1. Remove the 2 screws.	
2. Lift the French upward perpendicularly to separate it. (Refer to the figure)	
3. Separate the housing connector inside the French.	

Note
The French here refers to the part that looks like a long stick between the left and right fridge doors.
(It prevents cold air from escaping through the gap between the left and right doors.)

3-24. Disassembling the Fridge Evaporator

How To Do	Descriptive Picture
1. Remove all the shelves and drawers and remove the 4 screws from the EVAP Cover. Caution Remove the screw covers with the (–) screw driver. (Refer to the figure)	 
2. Pull the bottom part of the EVAP Cover forward to separate it. Separate the housing connector from the EVAP Cover.	
3. Separate the housing connector from the evaporator.	
4. Separate the 4 fixing parts of the evaporator and pull it forward to separate it.	

3-25. Disassembling the Freezer / Cool Select Room Evaporator

How To Do	Descriptive Picture
1. Remove all the shelves and drawers and remove the 2 screws on each of the left and right sides of the EVAP Cover.	
2. Pull the bottom part of the EVAP Cover forward to separate it. Separate the housing connector from the EVAP Cover.	
3. Separate the housing connector from the evaporator.	
4. While lifting the evaporator up (1), pull it forward to separate it. (2)	

3-26. Ice-Maker

How To Do	Descriptive Picture
1. Wait for 5 minutes after manual defrost of freezer and fresh food compartments. (Reference of Forced Defrost method in troubleshooting)	
2. Lift up the Ice Bucket and pull it out.	
3. Remove the screw from the Wire Housing Cover.	
4. Remove the Wire Housing Cover.	
5. Disconnect the Ice Maker Housing Connector.	

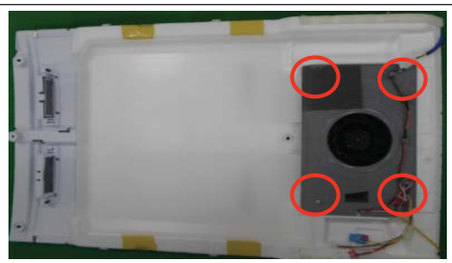
DISASSEMBLY AND REASSEMBLY

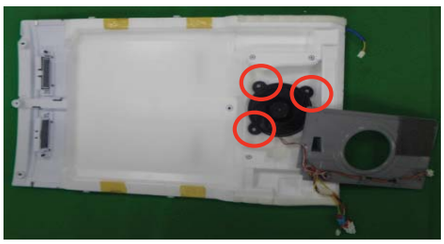
How To Do	Descriptive Picture
6. Remove the screw from the Duct Tray–ice.	
7. With a flat blade screwdriver, push the duct to the right and remove it from the locking tab. (Refer to the image.)	
9. Push down the refrigerant pipe slightly and separate the refrigerant pipe and the Ice Maker Assembly completely.	
10. While pressing the Hook, pull out the Ice Maker.	
11. While pushing down the Duct–Tray–Ice, pull out the Ice Maker carefully and remove it. ※ When removing the ice maker, be careful not to damage the grommets on the tray or the refrigerant tube. (Refer to the dotted parts on the right side photo.)	

3-27. Auger Motor Fan

How To Do	Descriptive Picture
1. Disconnect the FAN-AUGER-ASSY Connector.	
2. Hold the Hook on the bottom of the FAN-AUGER-ASSY and lift it up to make it free from the Locking Tab.	
3. While lifting it up, take the FAN-AUGER-ASSY out of the Ice Maker Compartment.	

3-28. Humidity Sensor removing

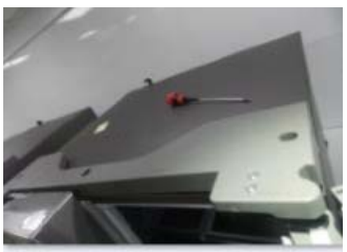
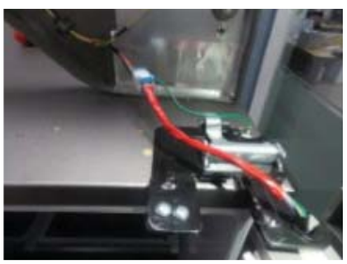
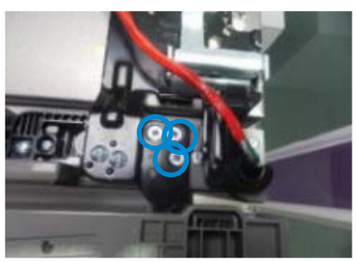
How To Do	Descriptive Picture
1. As shown in the image on the right, Remove slowly the seal on the ASSY COVER EVAP REF. ※ Be careful not damage the seal	 
2. Remove the 4 screws.	
3. As shown in the image on the right, remove the humidity sensor connector. (push the connector center by finger)	 

How To Do	Descriptive Picture
4. Remove the 3 screws.	
5. As shown in the image on the right, Remove the 4 tape on both sides and 3 hook at the bottom.	 
6. As shown in the image on the right, open the INSULATION EVAP REF and remove humidity sensor.	

3-29. Freezer Cool Pack

How To Do	Descriptive Picture
1. Push the front of the Cool Pack to the direction of the arrow and remove the hook at the front first.	
2. Pull the Cool Pack forward and remove the rear hook.	
3. Assemble it in the reverse order of disassembly. Please mind the position of each hook.	

3-30. Disassembling the Fridge door (Showcase model)

How To Do	Descriptive Picture
1. Remove the 3 screws fixing the Top Table and separate the Top Table.	
2. Remove the Wire Housing Cover.	
3. Remove the 3 marked screws.	
4. Hold the handle and open the door slightly before you lift and remove it.	

3-31. Disassembling the Ice Maker (Normal model)

How To Do	Descriptive Picture
1. Remove the CASE ICE by slightly tilting forward and then pulling it.	
2. Remove the case mount from the PANEL-BID by lifting and then pulling it forward.	
3. Put your hand into the gap on the right and the bottom, and pull it forward. *Assembly is the reverse of disassembly.	

4. TROUBLESHOOTING

4–1. Functions for failure diagnosis

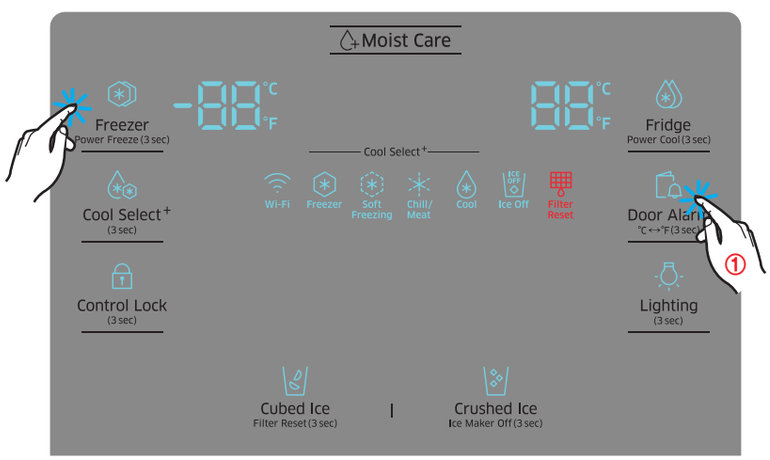
4–1–1. Test mode (manual operating / manual defrosting function)

- Freezer + Door Alarm on the front of panel are pressed simultaneously for 8 seconds , it will be chang to the test mode and all displays on the front of panel will be off.

- If any key on the front of panel is pressed within 15 seconds after the test mode, it will be operated as below sequence :
  Forced Operation (FF) → Fridge Room ON Forced Operation (FF r) → Freezer Room ON Forced Operation (FF F) → CV Room ON Forced Operation (FF C) → Forced F/CV/R (Fan) Defrosting (Fd)

- If any key on the front of panel is not pressed within 15 seconds after the test mode, the test mode will be canceled and it will be returned to previous mode.

1) Manual operation function



① Freezer + Door Alarm Key are pressed simultaneously for 8 seconds, (displays are all off)
It will be changed to the test mode (manual operation) by pressing any key

2) Forced Operating function

2–1) If you press the Lock key once in Test Mode, the Display shows "FF" indicating a Forced Operation. At this time, the buzzer sounds a beep to indicate a Forced Operation.

2–2) In the Forced Operation (FF), each time you press the lock Key will change the display as shown in the illustration to.

2–3) If Forced Operation is selected, the compressor immediately runs without the 10 minute delay in any operating mode.
At this time, if defrosting was in progress, defrosting is immediately stopped and the Forced Operation is executed. (Take care at this time not to overload the compressor because if you run the Forced Operation when the compressor is about to stop, it may overload the compressor.)

2–4) If Forced Operation is selected, the F COMP and the Freezer Fan run for 24 hours continuously. The Fridge will run as follows depending on the Forced Operation settings and the model.

DISPLAY		Operating Time	Operation					
Freezer	Fridge		F–Fan (Freezer)	R–Fan (Fridge)	CV–Fan (FlexZone)	F Valve	R Valve	CV Valve
FF		24hr	Continuous operation	The temperature is controlled	Continuous operation	Swing	Swing	Swing
FF	r	24hr	Continuous operation	Continuous operation	Continuous operation	OFF	ON	OFF
FF	F	24hr	Continuous operation	Continuous operation	Continuous operation	ON	OFF	OFF
FF	C	24hr	Continuous operation	Continuous operation	Continuous operation	OFF	OFF	ON

2–5) If Forced Operation is selected, the freezer temperature is automatically set to –8℉(–23℃) and the fridge temperature is set to 34℉(1℃) and they are displayed on the Display Panel.

2–6) When the Forced Operation is running, the Power Freezing function does not work.
Even if you select the Power Freezing function, the Power Freezing icon will light up and then turn off automatically in approximately 10 seconds.

2–7) To abort the Forced Operation, turn the power off and then on again or select Release Test Mode in Step 3) below.

2–8) The Forced Operation beeping alarm continues (0.5 seconds ON / 0.5 seconds OFF) until the Forced Operation is finished and this cannot be muted.

3) Forced defrosting function

3–1) If you press the Lock key again while the Forced Operation (Fr) is running, Fd is displayed on the Display, the Forced Operation (FF F) is cancelled immediately and the Forced defrosting (Fd) operation runs.

3–2) If Forced Freezing, Cool Select defrosting or Fridge Compartment defrosting (Fan Defrost) (Fd) begins, a beeping sound will be heard for 2 seconds and then the sound will be turned on for 0.5 seconds and then off for 0.5 seconds repeatedly while the Forced defrosting function runs.

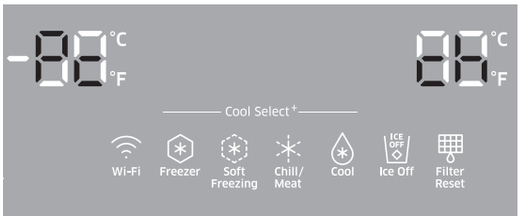
4) Releasing Test Mode

4–1) When the refrigerator is performing the defrosting operation of both the freezer and the fridge compartments through the Forced Operation, if you switch the Display Panel to Test Mode and press the Lock key again, the defrosting operation of the freezer and the fridge compartments is released and the refrigerator returns to normal operations. Alternatively, if you turn the main power switch off and then on, Test Mode is released.

4–1–2. Display function of Communication error

1) Display function when Panel → MAIN MICOM communication has error

1–1) If there is no answer for 10 seconds after the panel micom received the requirement of communication, "Pc – Ch" display on the panel PCB will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)

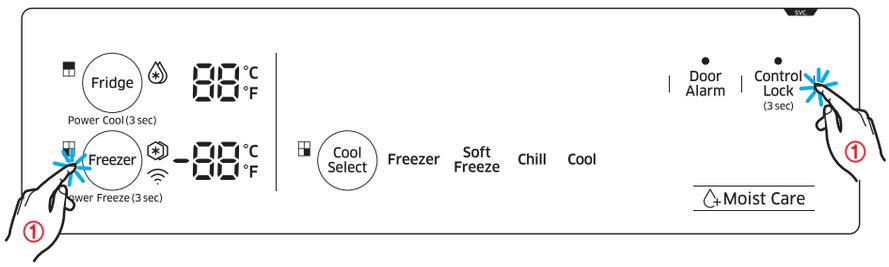


2) Display function when Panel → MAIN MICOM OPTION has error

2–1) "OP – Ch" code is repeatedly ON/OFF until Option error settles down.

4–1–3. Test function (force start/force defrost)

- When the Control Lock + Freezer buttons are pressed simultaneously during normal operation for about 6 seconds, the entire panel display blinks on and off at intervals of 0.5 sec. for 4 sec.
- Release the Control Lock + Freezer buttons within 4 seconds while the panel display is repeating on/off and press the Control Lock button to turn off all panel displays and enter test mode (force start/defrost mode).
- If you press any button on the front display within 15 seconds after entering test mode, functions operate in this order: Force start (FF) → Force start R compartment (FF r) → Force start F compartment (FF F) → Force start CV compartment (FF C) → Force defrost F/CV/R (fan) → Turn off all (all displays off). The best way to cancel a function during test mode is to turn the power off and then on again.



① Press for 6 sec., then the display blinks for 4 sec.
② Press when the display blinks for 4 sec.

1) Force start

1–1) If you press any button in test mode once, the display indicates FF, meaning force start. The buzzer alerts at this time with a beep.

1–2) Each time the Control Lock button is pressed during force start (FF), the display changes as in the picture below.

1–3) When force start is on, the comp. immediately starts without its 10–minute delay regardless of operating mode.
If defrosting at this time, defrosting immediately stops and force start runs.
(Be careful as overload may occur if you run force start immediately after the comp. is turned off.)

1–4) When force start is on, the F comp. and freezer fan keep running for 24 hours and the fridge operates as follows depending on its force start settings and model.

Display		Operating time	Operation					
Freezer	Fridge		F–fan (Freezer)	R–fan (Fridge)	CV–fan (Variable temperature compartment)	F valve	R valve	CV valve
FF		24 hr	Continuous operation	Temperature control	Continuous operation	Swing	Swing	Swing
FF	r	24 hr		Continuous operation		Off	On	Off
FF	F	24 hr				On	Off	Off
FF	C	24 hr				Off	Off	On

1–5) When force start is turned on, the freezer display temperature is automatically set to –23℃, and the fridge display temperature to 1 ℃.

1–6) The rapid freeze feature does not work during force start.
When this feature is turned on, its icon shows for about 10 sec., then automatically turns off.

1–7) To turn off force start while it is on, turn the power off (reset) and then on again to turn off test mode as in paragraph 3) below.

1–8) During force start, the warning sound (0.5 sec. on/0.5 sec. off) continues until force start is finished and cannot be turned off.

※ Force start functions (FF r, FF F, FF C) are for valve testing.

※ After FF is input, all step valves are open for 2 minutes.
To perform vacuum work for repair, turn off the power within 2 minutes after FF is input and then perform with vacuum work.

2) Force defrost

2–1) If you press the Control Lock button once more in force start (FF C), the display indicates Fd. Force start (FF C) is immediately turned off and force defrost (Fd) runs.

2–2) When beginning force defrost of the freezer (Fd), variable temperature compartment, or fridge (fan defrost), warning beep sounds 2 seconds and then it will sound on and off in half–second intervals for the duration of force defrost.

2–3) When beginning force defrost of the freezer or fridge (Fd), warning beep sounds 2 seconds and then it will sound on and off in half–second intervals for the duration of force defrost.

3) Turning off test mode

3–1) If the panel display changes to test mode and the button is pressed once more while defrost of the freezer and fridge are simultaneously running due to force start, both defrost functions are simultaneously turned off and normal operation is restored. If the main power is turned off and then on, all test functions are turned off.

4–1–4. Self–diagnostic function

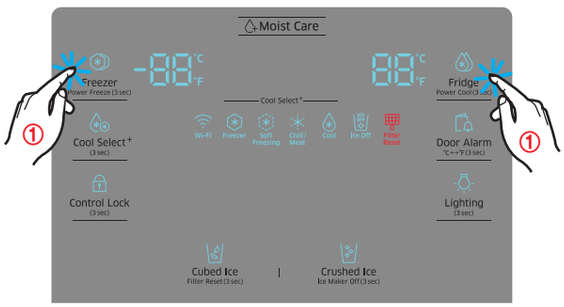
1) Self–diagnostic function in the Initial power ON

1–1) Micom operates self–diagnostic function to check the temperature sensor condition within 1 second when the refrigerator turned On initially.

1–2) If bad sensor is detected by the self–diagnostic function, the applicable display LED will blink for 0.5 sec. At this moment, there is no beep sound.(Refer to self–diagnostic CHECK LIST)

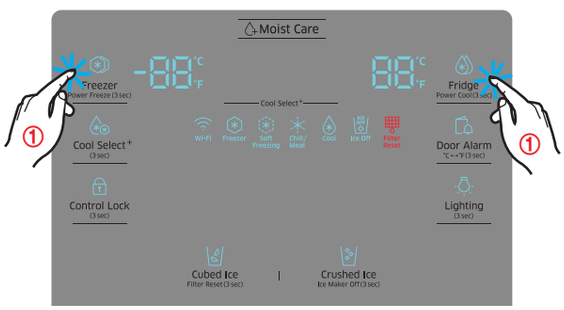
1–3) Self–diagnostic button is recognized only when the error is displayed by the bad sensor. Display does not operate normally but temperature control will be controlled by the emergency operation.

1–4) When the error is detected by self–diagnosis, the error can be canceled automatically if all troubled sensors are corrected or Self–diagnostic function key (Freezer + Fridge Key) are pressed simultaneously for 8 seconds.
(Return to normal display mode)



① Freezer + Fridge Key are pressed simultaneously
for 8 seconds, the error mode by self–diagnosis will be canceled.

2) Self–diagnostic function during normal operation



② Freezer + Fridge Key are pressed simultaneously
for 8 seconds, the error mode by self–diagnosis will be canceled.

2–1) If Freezer + Fridge Key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display will operate for 2 seconds (ON/OFF 0.5sec each).
If Freezer + Fridge Key are pressed simultaneously for 8 seconds (including above 2 seconds), self–diagnostic function will be selected.

2–2) At this moment, self–diagnostic function will be returned with buzzer sound 'ding–dong'.
If there is an error, display of error will be operated for 60 seconds and then return to normal condition whether problem is corrected or not. (Refer to self–diagnosis CHECK LIST)

2–3) Input by button is not accepted during self–diagnostic function.

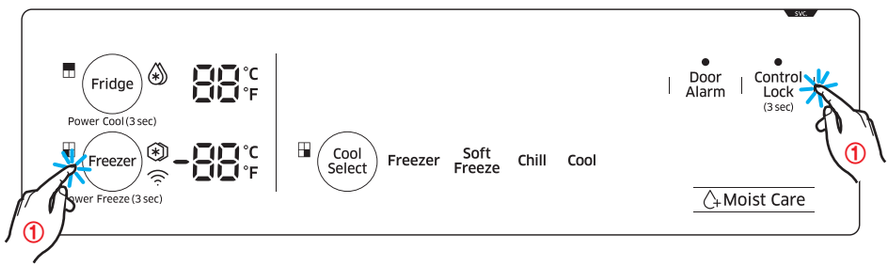
4–1–5. Self–diagnostic function

1) Self–diagnosis function when power is first turned on

1–1) When power is first connected to the refrigerator, the temperature sensor in the MICOM checks itself for abnormalities.

1–2) If the sensor detects a fault as a result of self–diagnosis, the error codes are indicated on the panel display for 2 seconds one at a time. Error code display repeats 0.5 sec. on and 0.5 sec. off. (See self–diagnosis checklist)

1–3) While self–diagnosis errors due to faulty sensors are displayed, only the self–diagnosis buttons (Control Lock + Freezer button pressed simultaneously for 10 seconds) are recognized. Displays other than the error indication display do not show and temperature is controlled via emergency operation.



① Press the Fridge and Freezer buttons simultaneously for 10 seconds to turn off self–diagnosis error mode.

2) Self–diagnosis during normal operation

2–1) If the Control Lock + Freezer buttons are pressed simultaneously for about 6 seconds while the fridge operating normally, all temperature setting displays are on/off at intervals at 0.5 second for about 2 seconds.
Within the 4 seconds while LEDs are repeating on/off, if the Freezer and Fridge buttons are continuously simultaneously pressed for about 8 seconds, self–diagnosis is turned on.

2–2) If self–diagnosis detects a faulty sensor, the relevant display LEDs are displayed numerically at 0.5 second intervals according to the segment indication. There is a “beep” sound at this time.
Error display continues for 60 seconds and then normal mode is restored regardless of whether the fault has been repaired.
(“Ding–dong” buzzer sound) (See self–diagnosis checklist)

2–3) Button input is not received during self–diagnosis.

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* Detailed information about self-diagnostic error codes

※ For sensors (no. 1~7), refer to the sensor check points of the Main PCB

Error Code		Part	Display Criteria	Display Criteria	Image
1	C	Freezer Sensor	The sensor housing separating, incomplete contact, open-circuited wire, short-circuit and abnormal temperature errors are displayed when the temperature measured by the sensor is +50 ℃ or higher or -50 ℃ or lower.	The voltage between the Main PCB CN30 pins 1 and 3 should be within the 4.5V~1.0V range. 	 
2		Fridge Sensor		The voltage between the Main PCB CN30 pins 1 and 5 should be within the 4.5V~1.0V range.	 
4		Freezer compartment defrosting sensor		The voltage between the Main PCB CN30 pins 1 and 4 should be within the 4.5V~1.0V range.	 
5		Fridge compartment defrosting sensor		The voltage between the Main PCB CN30 pins 1 and 6 should be within the 4.5V~1.0V range.	 
6		External air sensor		The voltage between the Main PCB CN30 pins 1 and 2 should be within the 4.5V~1.0V range.	 
9		Cool Select Room sensor		The voltage between the Main PCB CN30 pins 8 and 9 should be within the 4.1V~0.8V range.	 
11		Cool Select Room defrosting sensor		The voltage between the Main PCB CN30 pins 8 and 10 should be within the 4.1V~0.8V range.	 

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Error Code		Part	Display Criteria	Display Criteria	Image
13		Humidity sensor	The sensor housing separating, incomplete contact, open-circuited wire, short-circuit and abnormal temperature errors are displayed when the temperature measured by the sensor is +50 ℃ or higher or -50 ℃ or lower.	The voltage between the Main PCB CN30 pins 8 and 11 should be within the 4.1V~0.8V range.	
14		Ice Maker (Fridge) Sensor Error		The voltage between MAIN PCB CN90 3↔9 should be within 4.5V~1.0V.	
15		Ice Maker Sensor Error		The voltage between MAIN PCB CN30 8↔13 should be within 4.5V~1.0V.	
16	C	Fridge humidity sensor		The voltage between the Main PCB CN30 pins 8 and 12 should be within the 4.1V~0.8V range.	
21		Freezer Fan Error	This error is displayed while the corresponding fan motor is operating and a feedback signal line contact error, motor wire separation or motor error occurs.	The voltage of the MAIN PCB CN74 1↔4: should be between 7V~12V.	
22		Fridge Fan Error		The voltage of the MAIN PCB CN74 1↔3: should be between 7V~12V.	
23		C-Fan Error		The voltage of the MAIN PCB CN74 1↔6: should be between 7V~12V.	

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Error Code		Part	Display Criteria	Display Criteria	Image
24		Freezer Defrosting Error	The separation of the freezer compartment defrosting heater housing part, contact error, disconnection, short circuit or temperature fuse error. One of these error codes is displayed if the defrosting operation of the freezer or Cool Select Room does not finish even after the continuous heating operation has been performed for 120 minutes.	After separating the MAIN PCB CN70_1 wire from the PCB, check the resistance between CN70_1 3 and SMPS CN1 3. (For the resistance value, refer to the electric wiring diagram). For 0 Ohm, check if the heater is short-circuited. For ∞ Ohm, check if the wire or temperature fuse is open-circuited.	
29		Cool Select Room defrosting Error		After separating the MAIN PCB CN70_1 wire from the PCB, check the resistance between CN70_1 1 and SMPS CN1 3. (For the resistance value, refer to the electric wiring diagram). For 0 Ohm, check if the heater is short-circuited. For ∞ Ohm, check if the wire or temperature fuse is open-circuited.	
31	C	Cool Select Room Fan Error	One of these error codes is displayed in case of the feedback signal line contact error, the motor wire separation or the motor error when the fan motor starts to run.	The voltage of the MAIN PCB CN74 1↔5: should be between 7V~12V.	
39		Ice Maker (Fridge) Function Error	It occurs when there is a defect in removing ice cubes or in making it paralleled [When there is an error while doing self-diagnosis of the Initial Motor Rotation.]	After replacing the Ice Maker (Fridge), plug in the Fridge and check if the Ice Maker operates normally	
40		Ice Maker 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 CN52-"1(GRY) ↔ 3(BLU)" should be 12V.	
41		Main↔Panel Error	A communications error between the Main and the Panel PCBs	Since an oscilloscope is required for the examination, it is recommended replacing the Main PCB and then checking the problem again.	

Error Code		Part	Display Criteria	Display Criteria	Image
44		Main – Comp. Inverter Communication Error	Display 44C in the panel : Comp. Inverter MICOM ↔ Main MICOM communication error.	Actually, If there is not a problem, it is desirable to replace Main and Inverter PCB With the oscilloscope after a cable problem confirming.	
46		I/O Expander Communication Error	Display 46E in the panel : I/O Expander ↔ Main MICOM communication error.	It is desirable to replace Main PCB.	
61		Fridge Ice Duct Heater Error	Connector Slipped–Out or Open–Contact, Wire Cut or Short–Circuited, Defective Thermistor	Remove the MAIN PCB CN52 connectors from the MAIN PCB and read the continuity between CN51 4↔5. (Refer to the Block Diagram for the Resistance Value.) When it reads 0 Ohm, check the Heater short and when it reads ∞ Ohm, check if the Wire is open or slipped out.	
65	C	Fridge Ice Bucket Heater Error		Remove the MAIN PCB CN52 connectors from the MAIN PCB and read the continuity between CN51 4↔6. (Refer to the Block Diagram for the Resistance Value.) When it reads 0 Ohm, check the Heater short and when it reads ∞ Ohm, check if the Wire is open or slipped out.	
66		Door Handle Heater Error	Door Handle Heater Open Error	After separating the MAIN PCB CN52 wires from the PCB, check the resistance between CN51 1↔3. (For the resistance value, refer to the electric wiring). For 0 Ohm, check if the heater is short–circuited. For ∞ Ohm, check if the wire is open–circuited or not connected.	
71		The F compartment abnormal high–temperature indicator blinks	When the freezer temperature is abnormally high or the freezer door is open for a certain period of time and the freezer temperature increases, the freezer display blinks.	The temperature has been abnormally increased. Check if the door has been open for a long time or if hot food has been stored in the compartment. If the reason for the error is removed, the error code disappears after a pre–determined period of time.	

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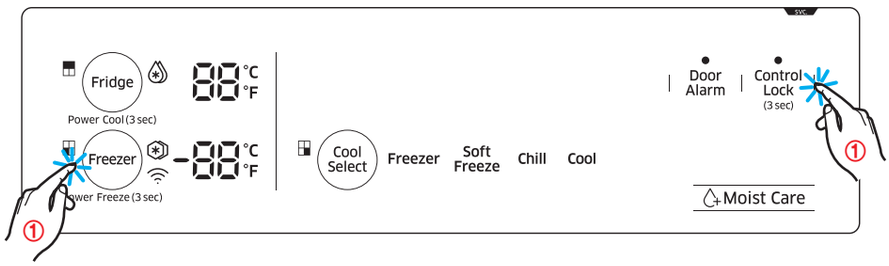
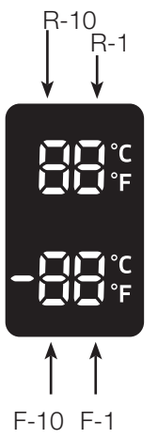
Error Code		Part	Display Criteria	Display Criteria	Image
72		The R compartment abnormal high-temperature indicator blinks	When the freezer temperature is abnormally high or the fridge door is open for a certain period of time and the fridge temperature increases, the fridge display blinks.	Check if the door has been open for a long time or if hot food has been stored in the compartment. If the reason for the error is removed, the error code disappears after a pre-determined period of time.	
81		F 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.	  
82		F Comp IPM Fault Error	The error code is displayed when the compressor IPM fault error has occurred.		
83	C	F 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.	
84		F 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.)	
85		F 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.)	 
86		F 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.)	

4-1-6. Load status display functions

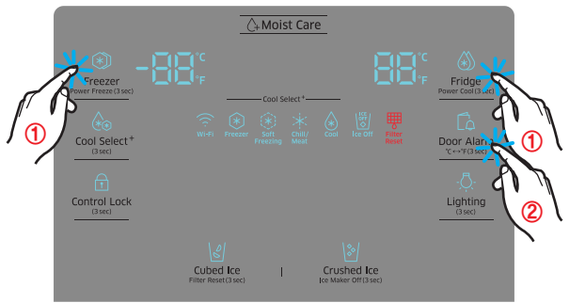


① Press Freezer + Control Lock button simultaneously for 6 seconds,
then display blinks for 4 seconds.
② Press the Fridge button when display blinks for 4 seconds to enter load mode

1) When the Freezer + Control Lock buttons are pressed simultaneously for about 6 seconds during normal operation, the fridge and freezer temperature settings all blink on and off at 0.5 second intervals for about 4 seconds.
2) If you release the Freezer + Control Lock buttons and press the DOOR OPEN ALARM button at this time (makes a "ding-dong" noise), switches to load status display mode. Only the load LED blinks on "display LEDs" at 0.5 second intervals while all LEDs are on in the segment.
3) Load status display mode shows the load currently output by the MICOM signal. However, as this is the signal output from the MICOM, it does not confirm the actual load. Therefore, even if load operation is displayed, it may not be the actual load due to load abnormalities or a faulty PCB relay. This feature may be used for A/S purposes.
4) The load display feature continues for 30 seconds, and then automatically returns to normal.
5) Load status display is as follows.



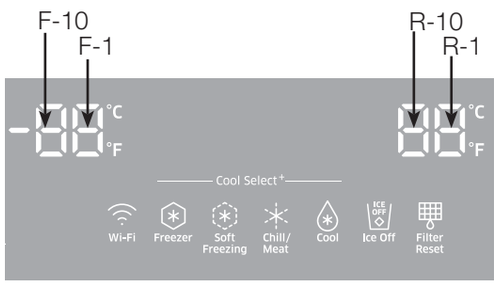
4-1-7. Display function of Load condition

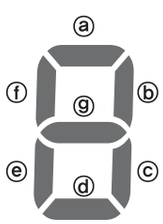


① If Freezer + Fridge Key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 2 seconds.

② If take the finger off from above keys and press Door Alarm, load condition mode will be started.

1) If Power Freezer + Fridge Key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display of fresh food and freezer compartments will blink ALL ON/OFF with 0.5 for 2 seconds.
2) At this moment, If Door Alarm Key after Freezer + Fridge Key is pressed, load condition display mode will be returned with alarm. At LED all on state, only load condition display will blink ON/OFF with 0.5 seconds interval.
3) Load condition display mode shows the load that micom signal is outputting.
However, It means that micom signal is outputting, it does not mean whether load is operating or not. That is to say that though load operation is displayed, load could not be operated by actual load error or PCB relay error etc. (This function would be applied at A/S.)
4) Load condition display function will maintain for 30 seconds and then normal condition will be returned automatically.
5) Load condition display is as below.





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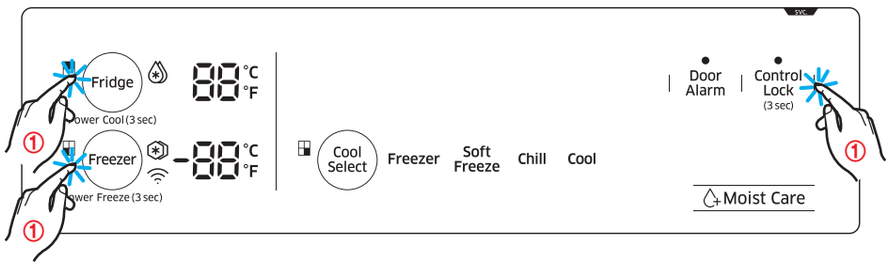
* Load mode checklist

No.	Part	Display (LED)	Description
1	R-FAN HIGHEST	"a" and "b" at the lowest order digit of the R compartment	In the case of the R-FAN HIGHEST operation, the corresponding LED is turned on.
2	R-FAN HIGH	"a" at the lowest order digit of the R compartment	In the case of the R-FAN HIGH operation, the corresponding LED is turned on.
3	R-FAN LOW	"b" at the lowest order digit of the R compartment	In the case of the R-FAN LOW operation, the corresponding LED is turned on.
4	Overload	"e" at the lowest order digit of the R compartment	If the external air temperature is 34℃ or higher, the corresponding LED is turned on.
5	Low Temperature	"f" at the lowest order digit of the R compartment	If the external air temperature is 21℃ or less, the corresponding LED is turned on.
6	Demo Mode	"g" at the lowest order digit of the R compartment	The LED is turned on in Demo Mode.
7	COMP	"a" at the lowest order digit of the F compartment	In the case of the COMP operation, the corresponding LED is turned on.
8	F-FAN HIGHEST	"b" and "c" at the lowest order digit of the F compartment	In the case of the F-FAN HIGHEST operation, the corresponding LED is turned on.
9	F-FAN HIGH	"b" at the lowest order digit of the F compartment	In the case of the F-FAN HIGH operation, the corresponding LED is turned on.
10	F-FAN LOW	"c" at the lowest order digit of the F compartment	In the case of the F-FAN LOW operation, the corresponding LED is turned on.
11	F compartment defrost heater	"d" at the lowest order digit of the F compartment	The LED is turned on when the freezer defrosting heater operates.
12	C-FAN HIGHEST	"e" and "f" at the lowest order digit of the F compartment	In the case of the C-FAN HIGHEST operation, the corresponding LED is turned on.
13	C-FAN HIGH	"e" at the lowest order digit of the F compartment	In the case of the C-FAN HIGH operation, the corresponding LED is turned on.
14	C-FAN LOW	"f" at the lowest order digit of the F compartment	In the case of the C-FAN LOW operation, the corresponding LED is turned on.
15	F Valve	"b" at the second lowest order digit of the F compartment	In the case of the F valve open, the LED is turned on.
16	CV Valve	"c" at the second lowest order digit of the F compartment	If the CV valve opens, the LED is turned on.
17	R Valve	"f" at the second lowest order digit of the F compartment	If the R valve opens, the LED is turned on.
18	French Heater	"g" at the second lowest order digit of the F compartment	In the case of the French Heater operation, the corresponding LED is turned on.
19	CV-FAN HIGHEST	“Freezer” or “Thin Ice” for the CV compartment	In the case of the CV-FAN HIGHEST operation, the corresponding LED is turned on.
20	CV-FAN HIGH	“Freezer” for the CV compartment	In the case of the CV-FAN HIGH operation, the corresponding LED is turned on.
21	CV-FAN LOW	“Thin Ice” for the CV compartment	In the case of the CV-FAN LOW operation, the corresponding LED is turned on.
22	CV compartment defrosting heater	“Fridge” for the CV compartment	When the CV compartment defrosting heater operates, the LED is turned on.
23	Normal	"e" and "f" in the lowest order digits of the R compartment, and the LEDs are all turned off.	When the external temperature is within the range of 22℃ ~ 33℃.
24	Ice Room-FAN	"d" at the second lowest order digit of the F compartment	When Ice Room-FAN operates, applicable LED ON.
25	Ice maker full	"e" at the second lowest order digit of the R compartment	When the Ice Maker's Bucket is full, applicable LED ON
26		WiFi Status	Not connected to the IP sharer (AP) or the Internet: Off Router(AP) connected: Blink Internet connected: On
27	R-Ice maker HEATER	"c" at the second lowest order digit of the R compartment	When the R-Ice maker heater operates, the LED is blink.
28	Showcase HEATER	"a" at the second lowest order digit of the F compartment	When the Showcase heater operates, the LED is blink.

TROUBLESHOOTING

4-1-8. Shop mode settings



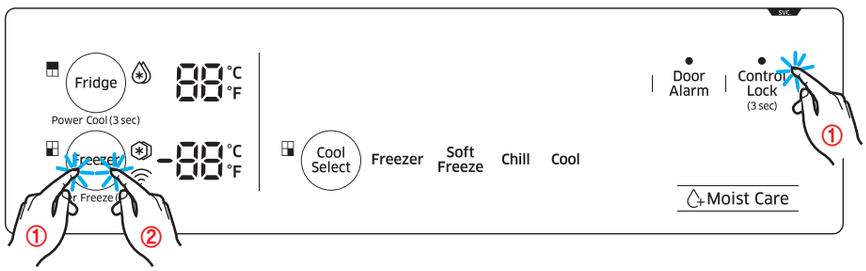
① Press the Freezer + Fridge + ALARM buttons simultaneously for 5 seconds to enter shop mode.

1) Press the Freezer + Fridge + ALARM button simultaneously for 5 seconds during normal operation to enter shop mode. ("On" is displayed for 5 sec. when entering shop mode)
2) Press the Freezer + Fridge + ALARM buttons simultaneously for 5 seconds to turn off shop mode. ("oF" is displayed for 5 sec. when turning off shop mode)
3) When entering shop mode, the panel temperature settings are displayed normally.
4) If the temperature of the freezer, fridge, or CoolSelect sensor is above about 65℃ during shop mode, the mode is automatically turned off and cooling recommences. (No buzzer when shop mode turned off due to temperature)
5) Operation in shop mode
   - All features including displays and fan motor operate normally, while the compressor and mechanical fan motor do not operate.
   - Defrost and French heater do not operate.
   - Initial actual temperature display ends
   - Shop mode is turned off even if power is turned off, then on in this mode.

4-1-9. Option settings function

1) Press the COOLSELECT and FRDIGE buttons simultaneously for 12 seconds during normal operation to display the freezer and fridge temperature in option settings mode.

How to switch to option settings mode



① Press Control Lock + Freezer buttons for 6 seconds, then display blinks for 4 seconds.

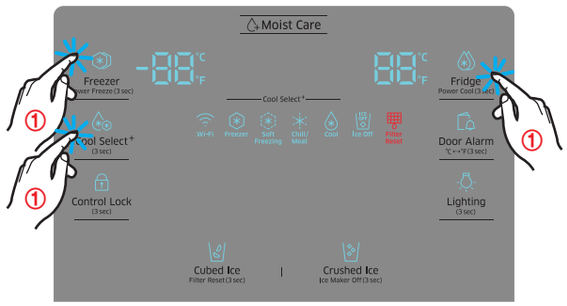
② Press Freezer button when display blinks for 4 seconds.

* Button commands in option settings mode

Lock Key button	Set the setting value
Press the Fridge button	Increase the value
Press the Freezer button	Decrease the value

2) When the display changes to option settings mode, all displays turn off except the freezer and fridge temperature displays, as follows.
All options work the same way as in the table. Only the fridge and freezer will be used as examples.)

4–1–10. Exhibition Mode setting function



① If Freezer Key + CoolSelect+ Key + Fridge Key are pressed for 5 seconds, Exhibition mode will be started.

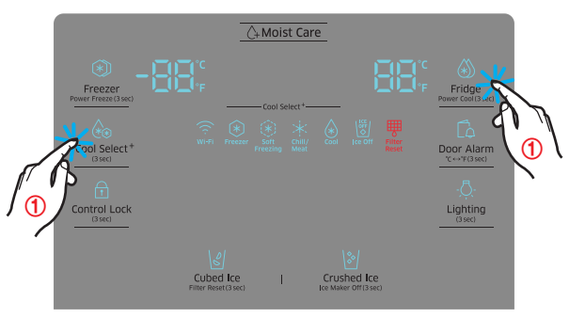
1) If Freezer Key + CoolSelect+ Key + Fridge Key are pressed simultaneously for 5 seconds during normal operation, Exhibition mode will be started with buzzer sound(ding–dong).
2) If above Freezer Key + CoolSelect+ Key + Fridge Key are pressed one more time, Exhibition mode will be canceled.
3) During Exhibition mode, if fresh food and freezer compartments sensors are higher than 65℃(149℉). Exhibition will be canceled automatically and freezing operation will be returned.(There is no buzzer sound when the Exhibition mode is canceled by the temperature.)
4) Operation contents of Exhibition Mode

– Display, Fan motor and etc operate normally, not to operate compressor only.
– Defrost is not operated. (including french heater)
– Display function of the initial real temperature is finished.

4–1–11. Option setting function

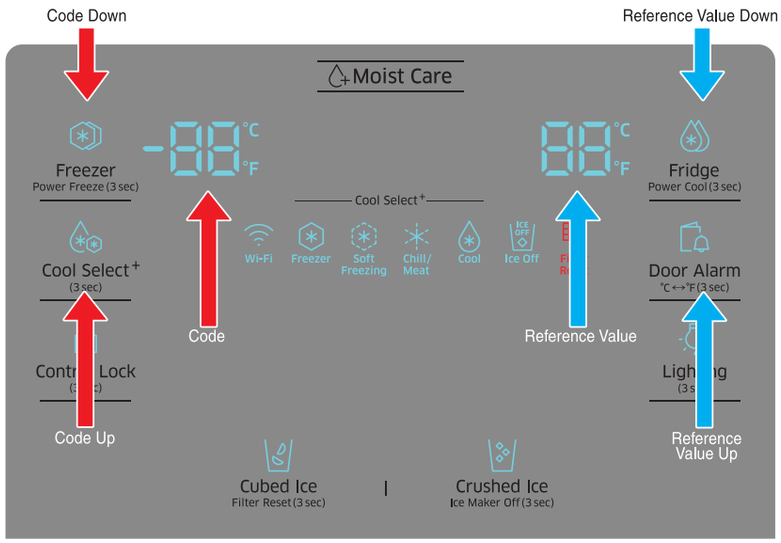
- If CoolSelect+ + Fridge Key are pressed simultaneously for 12 seconds during normal operation, fresh food and freezer compartments temperature display will be changed to option setting mode.

KEY operation method for changing to option mode



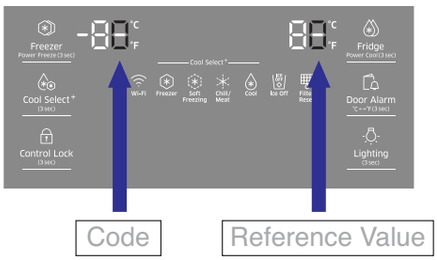
① If CoolSelect+ + Fridge Key are pressed simultaneously for 12 seconds, option setting mode will be started.

KEY control method after converting to option mode



Freezer Key	Code Down key
Cool Select+ Key	Code Up key
Fridge Key	Reference Value down key
Door Alarm Key	Reference Value Up key

- If the display changes to option setting mode, all displays will be off except freezer and fridge compartments temperature display as below.
  (Fresh food and freezer compartments case will be explained only because all options are operated with the same method according to the option table.)



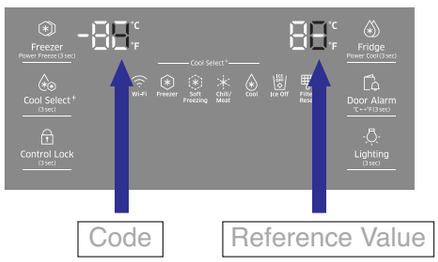
1) For example, if you want to change freezer compartment standard temperature to –2℃(–4℉) by operating option, do as below. This function is for changing the standard temperature.
In –19℃(–2℉) of current temperature of freezer compartment, if you make the temperature lower to –2℃ (–4℉) by the option, the standard temperature would be controlled –21℃(–6℉)
Therefore, if you change the setting of temperature option to –19℃(–2℉) on the panel, the appliance will be operated with –21℃(–6℉). It means that standard temperature is controlled –2℃(–4℉) less than setting temperature in the display.

NOTE

Basically, all the data in option has cleared from the factory.
Therefore, almost all setting value are "0".
But, some setting values could be changed for the purpose of improving performmance.
You need to check the product manual and/or specification.

2) After changing to the option mode, fresh food compartment "0" , freezer compartment "0" will be displayed.
(Basically fresh food compartment "0", freezer "0" would be set at shipping process, but setting value could be changed for the purpose of improving product at mass producing process.)
– If fresh food compartment "0" shows only, temperature reference value of freezer compartment will be set and current freezer compartment temperature code will be displayed on the freezer temperature display.

3) If freezer compartment "4" is set as below freezer compartment code after fresh food compartment "0 is set, standard temperature of freezer compartment will be lower than –2℃(–4℉).
(Refer to the picture "changing the freezer compartment temperature")



: If you wait for 20 seconds after completing the setting, MICOM will save the setting value to the EEPROM and normal display will be returned and the option setting mode will be canceled.

4) Option changing method as above is the same as all RF858QALASL**, RF858QALAXW** model.

5) By the same method as above, it is possible to control the fresh food compartment temperature, water supply, ice–maker harvest temperature/time, defrost return time, hysteresis by temperature, notch gap by temperature etc.

6) Option function is set in the EEPROM at shipping process in the factory.
You would better not to change the option of your own.
Completing the setting is that option function return to normal display after 20 seconds.
Do not turn off the appliance before returning to the normal display mode.

NOTE

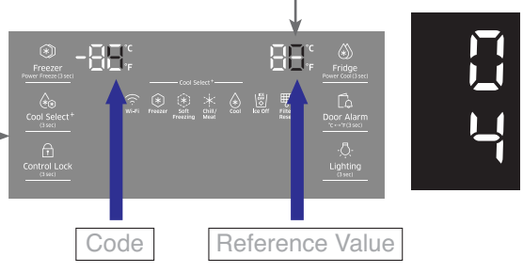
Option setting function exists in the other items.
We will skip the explanation of the other functions by the option because it is associated with refrigerator control function and is not needed at SERVICE.
(Please do not set the other options except above SERVICE Manual.)

4-1-12. Option TABLE

1) Temperature changing table of freezer compartment

Set item	Freezer Temp Shift
MODEL	RF23*
Reference	Fridge Room 7-SEG
Value	0

Setting value	
FZ compartment Code	Temp. compensation
0	0.0℃(0℉)
1	-0.5℃(-1℉)
2	-1.0℃(-2℉)
3	-1.5℃(-3℉)
4	-2.0℃(-4℉)
5	-2.5℃(-5℉)
6	-3.0℃(-6℉)
7	-3.5℃(-7℉)
8	+0.5℃(+1℉)
9	+1.0℃(+2℉)
10	+1.5℃(+3℉)
11	+2.0℃(+4℉)
12	+2.5℃(+5℉)
13	+3.0℃(+6℉)
14	+3.5℃(+7℉)
15	+4.0℃(+8℉)



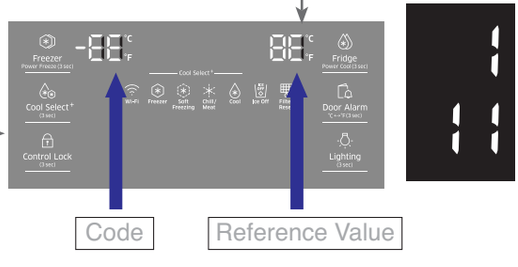
ex) If you want to change the freezer standard temperature to -2°C(-4℉)

2) Temperature changing table of Fridge Compartmentt

Set item	Fridge Temp Shift
MODEL	RF23*
Reference	Fridge Room 7-SEG
Value	1

Setting value	
FZ compartment Code	Temp. compensation
0	0.0℃(0℉)
1	-0.5℃(-1℉)
2	-1.0℃(-2℉)
3	-1.5℃(-3℉)
4	-2.0℃(-4℉)
5	-2.5℃(-5℉)
6	-3.0℃(-6℉)
7	-3.5℃(-7℉)
8	+0.5℃(+1℉)
9	+1.0℃(+2℉)
10	+1.5℃(+3℉)
11	+2.0℃(+4℉)
12	+2.5℃(+5℉)
13	+3.0℃(+6℉)
14	+3.5℃(+7℉)
15	+4.0℃(+8℉)

ex) If you want to change the fridge compartment standard temperature to 2°C(4℉)



3) Cool Select Room Temperature Change Table

Setting Item	CV Compartment Temperature Offset
Model	Common for all models
Option	Location: R compartment temperature display
	3

F compartment temperature display setting	Value of the Option
0	0 ℃
1	−0.5 ℃
2	−1.0 ℃
3	−1.5 ℃
4	−2.0 ℃
5	−2.5 ℃
6	−3.0 ℃
7	−3.5 ℃
8	+0.5 ℃
9	+1.0 ℃
10	+1.5 ℃
11	+2.0 ℃
12	+2.5 ℃
13	+3.0 ℃
14	+3.5 ℃
15	+4.0 ℃

4) Sub Heater (French Heater, Door Handle Heater) Control Function

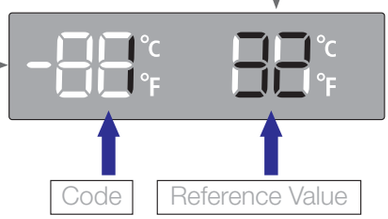
Setting Item	French Heater Control
Model	Common for all models
Option	Location: R compartment temperature display
	19

F compartment temperature display setting	Operation
0	Operating according to the control specifications
1	Operating according to the control specifications +20%(MAX 100%)

5) Amount of water supply to ice tray

Set item	Amount of Water Supply
Reference	Fridge Room 7-SEG
Value	32

Setting value	
FZ compartment Code	Amount of water supply
0	65CC
1	75CC
2	–
3	–
4	–
5	–
6	–
7	–

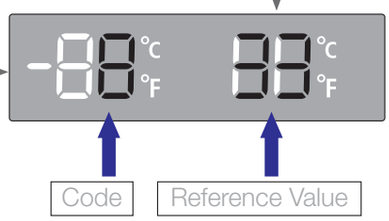


ex) If you want to change the amount of water supply to ice tray to 75CC

6) Time changing table of ice maker dropping standby time

Set item	Ice Maker Standby Time
Reference	Fridge Room 7-SEG
Value	33

Setting value FZ compartment Code	Temp. compensation
0	14min.
1	13min.
2	12min.
3	11min.
4	10min.
5	15min.
6	16min.
7	17min.
8	18min.
9	19min.
10	20min.
11	21min.
12	22min.
13	23min.
14	24min.
15	25min.

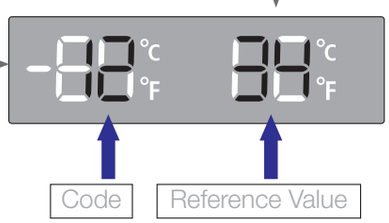


ex) If you want to change the ice maker dropping standby time to 18minutes.

7) Temperature changing table of ice room

Set item	Ice Room Temp Shift
Reference	Fridge Room 7-SEG
Value	34

Setting value FZ compartment Code	Temp. compensation
0	0℉(0.0℃)
1	-1℉(-0.5℃)
2	-2℉(-1.0℃)
3	-3℉(-1.5℃)
4	-4℉(-2.0℃)
5	-5℉(-2.5℃)
6	-6℉(-3.0℃)
7	-7℉(-3.5℃)
8	+1℉(+0.5℃)
9	+2℉(+1.0℃)
10	+3℉(+1.5℃)
11	+4℉(+2.0℃)
12	+5℉(+2.5℃)
13	+6℉(+3.0℃)
14	+7℉(+3.5℃)
15	+8℉(+4.0℃)

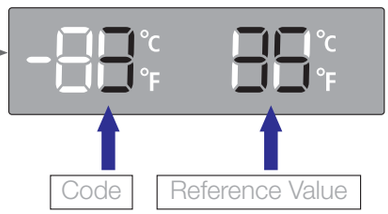


ex) If you want to change the ice room standard temperature to +5℉(+2.5℃)

8) Temperature changing table of Ice Maker Dropping Temperature

Set item	Ice Maker Dropping Temperature
Reference	Fridge Room 7-SEG
Value	35

Setting value	
FZ compartment Code	Temp. compensation
0	-13℃
1	-12℃
2	-11℃
3	-10℃
4	-14℃
5	-15℃
6	-16℃
7	-17℃



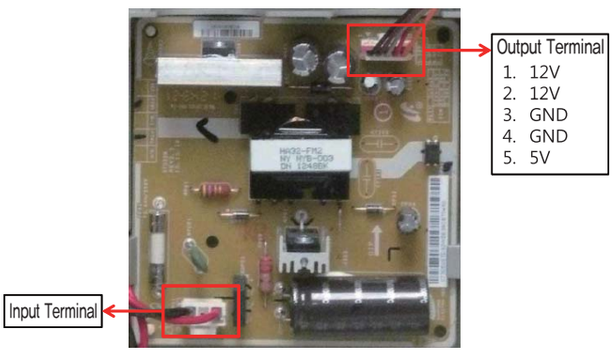
Code | Reference Value

ex) If you want to change the ice maker dropping temperature to -10℃

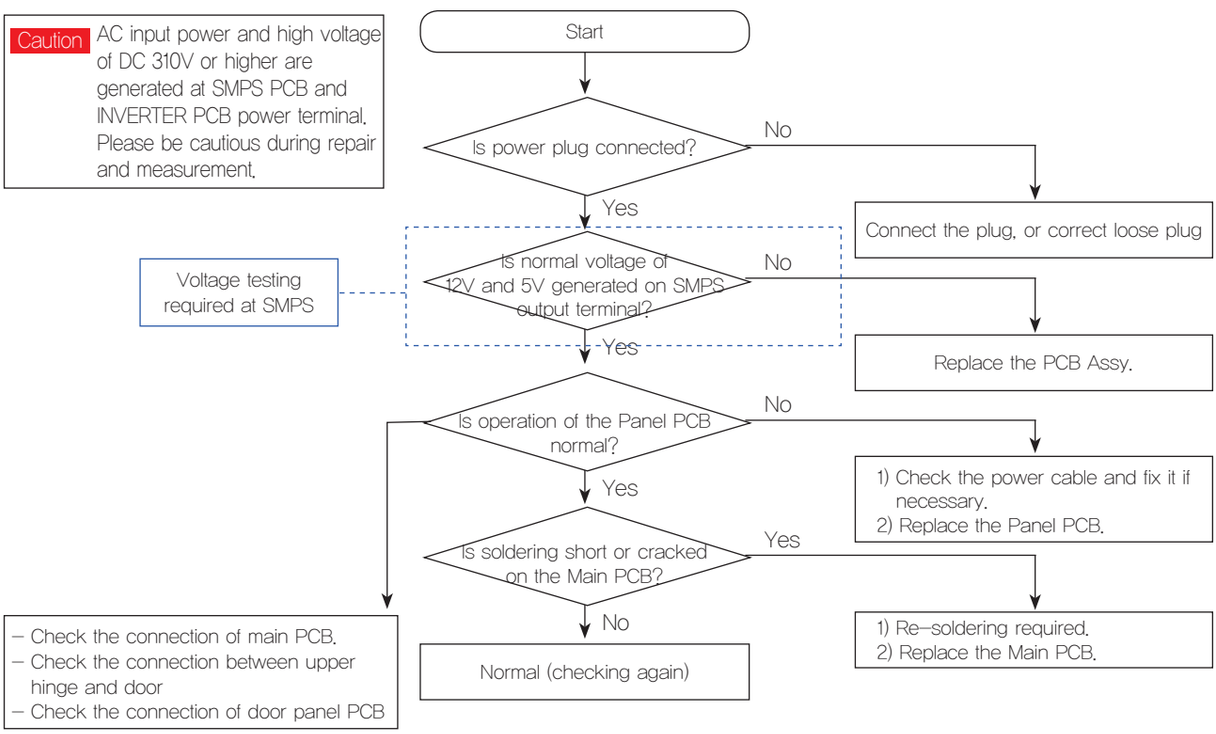
TROUBLESHOOTING

4-2. Diagnostic method according to the trouble symptom

4-2-1. Power Not Supplied



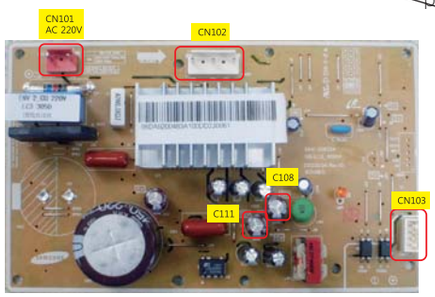
Caution AC input power and high voltage of DC 310V or higher are generated at SMPS PCB and INVERTER PCB power terminal. Please be cautious during repair and measurement.



4-2-2. When the compressor does not work properly

Caution AC input power and high voltage of DC 310V or higher are generated at INVERTER PBA power terminal. Please be cautious during repair and measurement.

Note When the LED of the Inverter PBA is turned, it means that the compressor is working properly.



Start

At least 10 minutes have passed since the compressor is turned OFF.
- No → Check it again after 10 minutes.
- Yes

Does the COMP start working after running it in forced operation mode?
- Yes → Does the thermistor work properly?
  - No → Repair the defective contact of the sensor or replace the sensor if necessary.
  - Yes → Does the thermistor (Main PBA) work properly?
    - No → Repair the sensor or replace the Main PBA.
    - Yes → Normal (checking again)
- No → Refer to the Test mode section.

Does the buzzer beep for its forced operation? (Please check it after running it in forced operation mode)
- Yes
- No → The voltage between Inverter PBS CN103 #1 and #3①↔③ is measured at 2-3VDC.
  - No → 0-800 Hz 50% Duty Signal generated → Connect the Main-Inverter PBA. Check the wire and recheck the forced operation.
  - Yes → 15 VDC applied to C111 (ZD501)
    - No → 220 VAC applied to CN 101
      - No → Check the filter and the power cable.
      - Yes → Replace the Inverter PBA.
    - Yes → 5 VDC applied to C108 (C110)
      - No → 220 VAC applied to CN 101
      - Yes → Does the connector CN102 work properly?
        - No → Make sure that it's properly inserted.
        - Yes → Is the operation of Comp Ass'y normal?
          - No → Repair (replace) the Comp Ass'y.
          - Yes → Does the compressor work properly?
            - No → Repair (replace) the compressor.
            - Yes → Normal (checking again)

4-2-3. The LED blinking frequency depending on the protection functions

If the Failure Condition is detected while the compressor is operating, stop the Compressor operating immediately and wait for 5 minutes. During these 5 minutes, the RPM command signal is not available. Even if the RPM command that orders the compressor to run is sent, the compressor does not work and keep standing by.

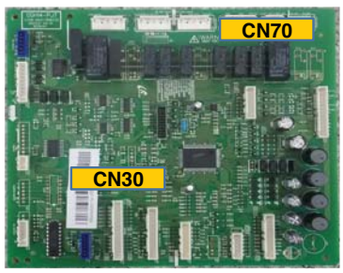
The LED is tuned on for 1 second and then off for 2 seconds.

LED Blinking Frequency	Protecting Functions	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.
	SPM Fault	
	Abnormal Current Detection	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 155V(Input Power AC110~127V) or AC 310V(Input Power AC 220 ~ 240V) 2. Check PCB Bottom side soldering state.

The LED blinking frequency depending on the protection functions

If the blinking continues, after 5 minutes, please refer to the remarks in the table above.

4-2-4. When a 1, 2, 4, 5, 6, 7, 13, 16, 24, 25 "C" error occurs (defrosting failure)



F-Defrost: Measure the resistance between the Main PBA CN70_1 pin #3 and the INV PBA CN101 pin #1.
Cool Select-Defrost : Measure the resistance between the Main PBA CN70_1 pin #1 and the INV PBA CN101 pin #1. (Cool Select Room)

Is the measured voltage of the defrosting sensor 3.1 V or higher?

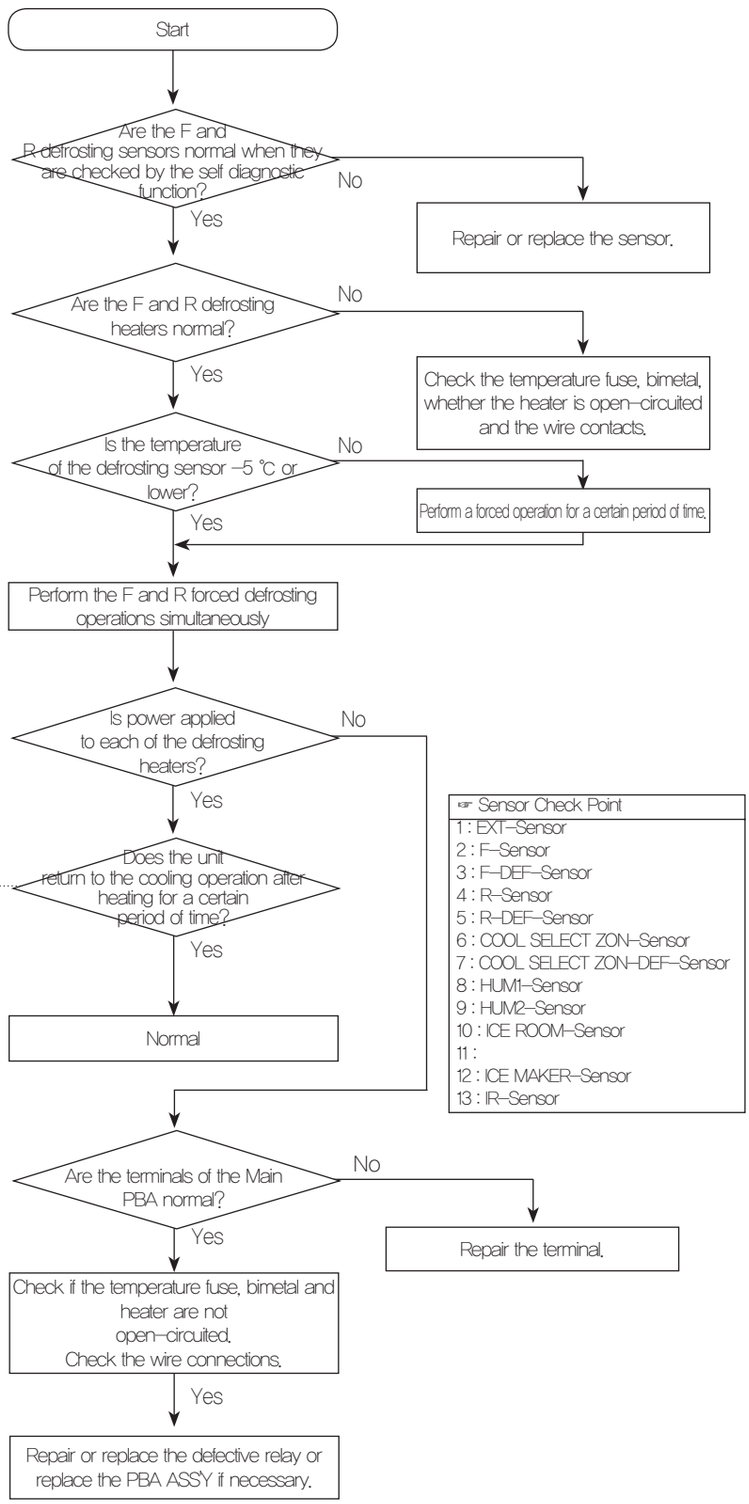
F-DEF-Sensor: Measure the resistance between CN30 pins 4 and 7.
R-DEF-Sensor: Measure the resistance between CN30 pins 6 and 7.
Cool Select-DEF-Sensor: Measure the resistance between CN30 pins 10 and 8.

Press the Freezer+Cool Select Key+ simultaneously 8 seconds and any key

Double-check if the sensors that do not return to the cooling operation are normal.

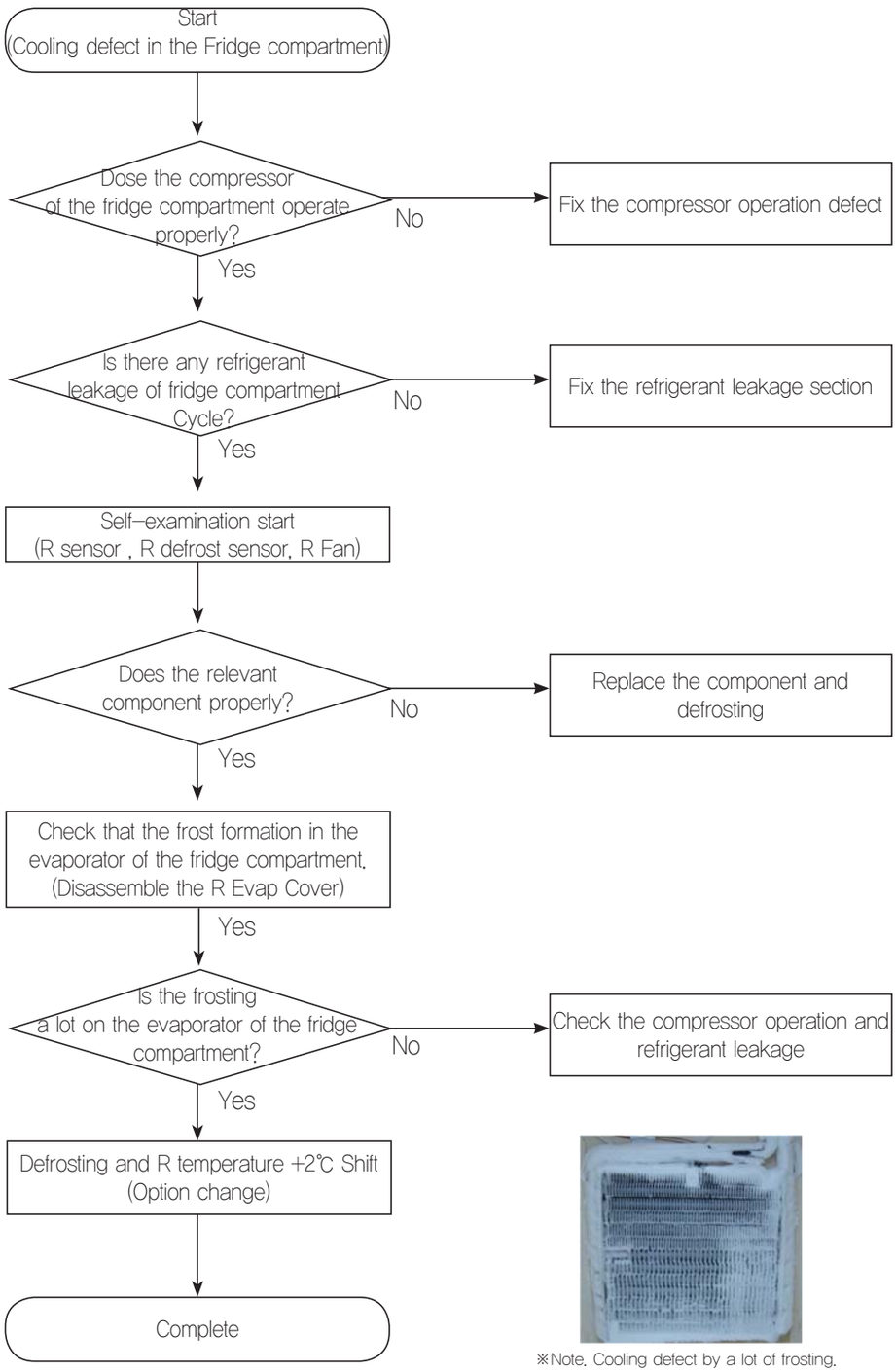
Note. If the temperatures of the F and R defrosting sensors are 8 ℃ and 12 ℃ respectively due to the heater, the heating is stopped and the refrigerator starts cooling after some idle time.

☞ To check the voltage of the defrosting sensor of the freezer compartment
- Measure the voltage of the PCB Sensor Check Point #5
- After the measurement, compare the voltage to the temperature table. (Measure the voltage of the other sensors in the same way.)



☞ Sensor Check Point
1 : EXT-Sensor
2 : F-Sensor
3 : F-DEF-Sensor
4 : R-Sensor
5 : R-DEF-Sensor
6 : COOL SELECT ZON-Sensor
7 : COOL SELECT ZON-DEF-Sensor
8 : HUM1-Sensor
9 : HUM2-Sensor
10 : ICE ROOM-Sensor
11 :
12 : ICE MAKER-Sensor
13 : IR-Sensor

4-2-5. When occur the cooling defect by a lot of frosting on the Fridge compartment



※Note. Cooling defect by a lot of frosting.

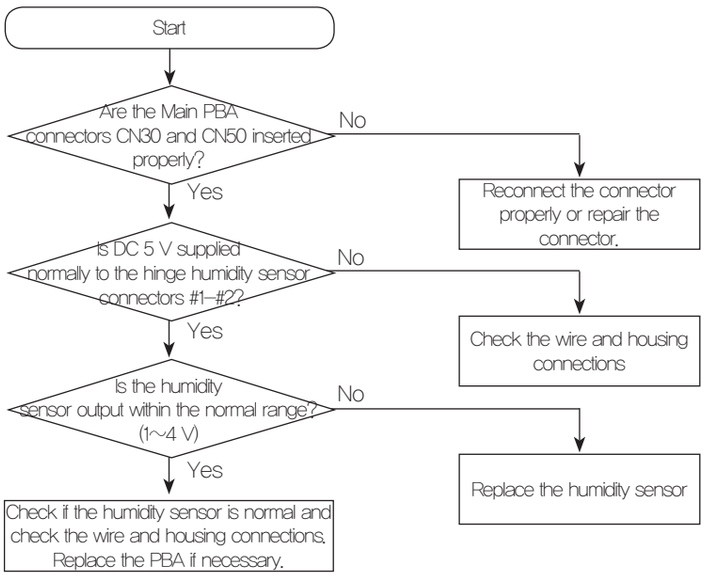
4-2-6. When an error occurs in self diagnostic mode (in case of a sensor error)

- A sensor error is displayed on the front display panel of the refrigerator. If a sensor error is detected when the power is supplied to the refrigerator for the first time, the sensor error message is displayed on the display panel.
- Even if a sensor error occurs during an operation, the refrigerator does not stop. However, the refrigerator operates in emergency operating mode and the cooling operation may not be performed properly. Therefore, in this case, check the refrigerator referring to the self diagnostic section in this manual.

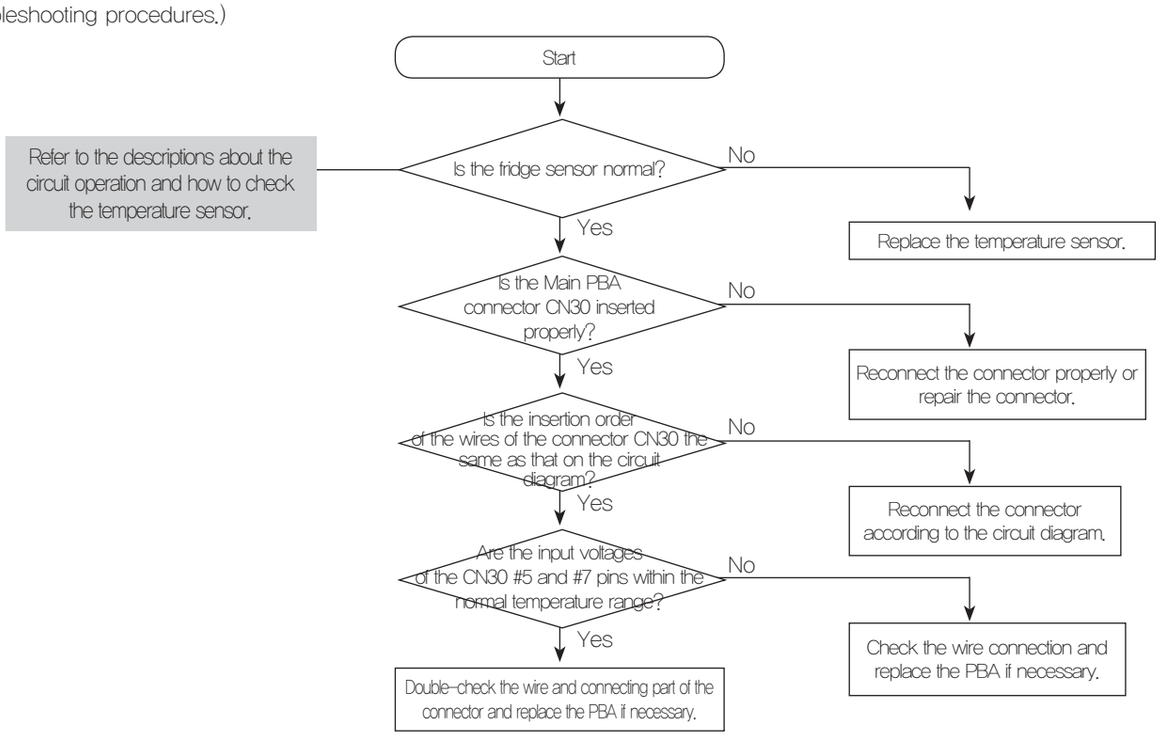
① When the "13C" (humidity sensor) or "16C" (internal humidity sensor) error occurs

☞ Check the input voltage to the humidity sensor
Humidity sensor operating voltage: 5 V
Check if 5 V is measured at the humidity sensor connectors #1-#2.

☞ Check the output voltage from the humidity sensor
Check the voltages of the humidity sensor connectors #1-#4 referring to the humidity sensor voltage table.

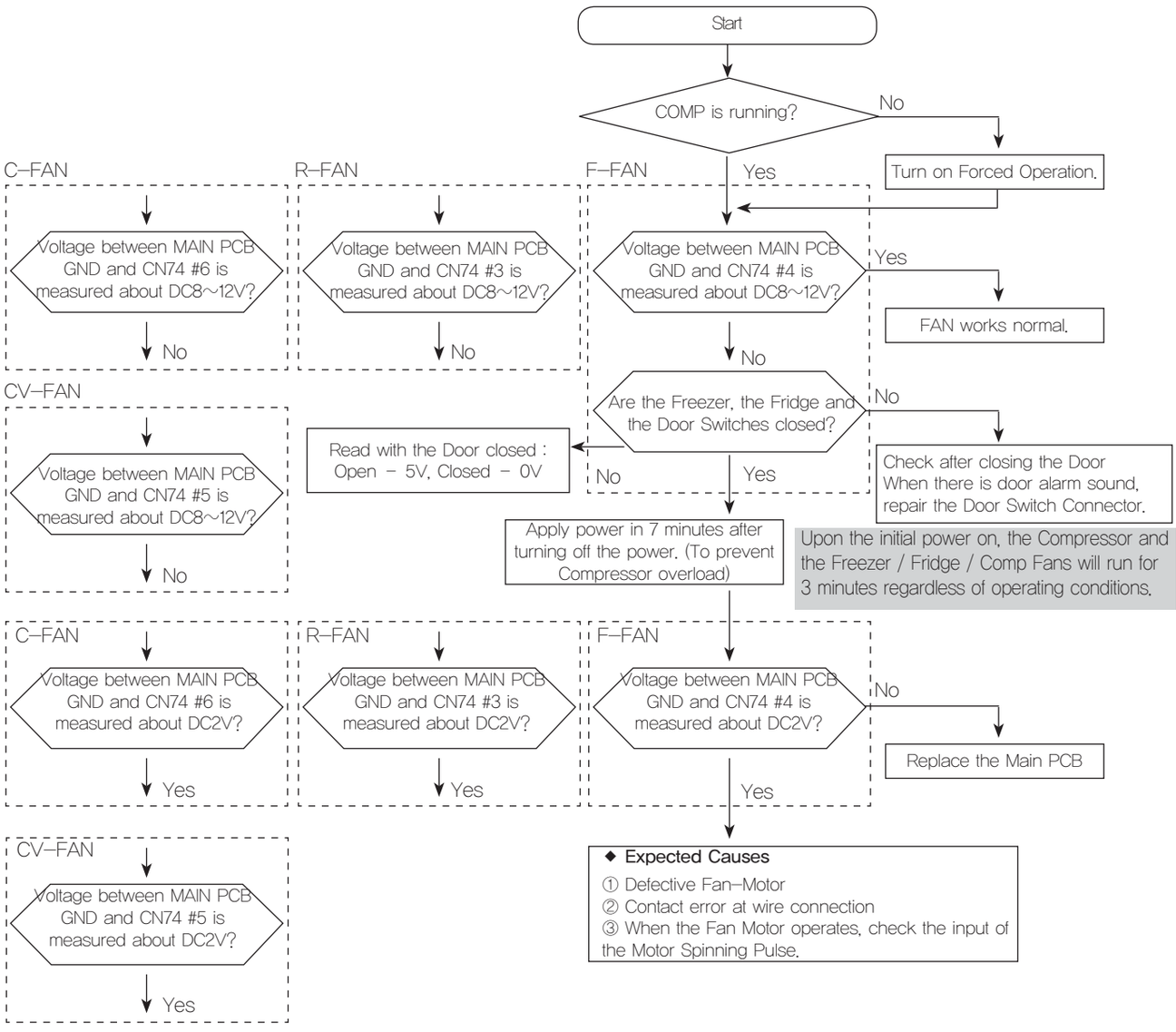


② When the "2C" (fridge temperature sensor) error occurs. (Please also check the other sensors by applying these troubleshooting procedures.)



4-2-7. When the Fan does not operate (F, R, M, C – FAN)

– This refrigerator uses the BLDC Fan Motor. The BLDC Motor operates with DC 7~12V.
– Under Comp On conditions, the R-Fan operates generally. But, when the ambient temperature is high or when you open and close the Door once, it operates after one-minute delay. So, don't get misled by it. It is normal.
– When there is defect, turn on the Self-Diagnosis function and confirm the defect before turning off the unit.



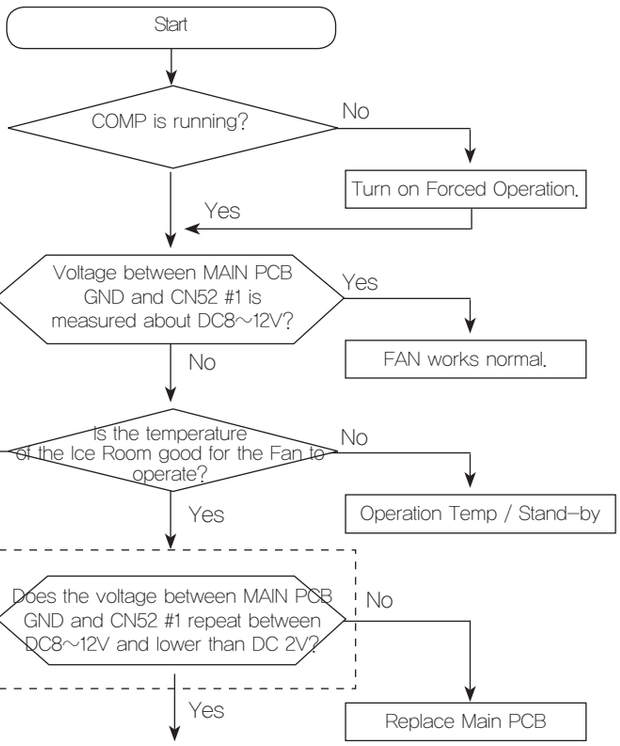
Note

Pulse signal is generated at CN74 #9 (F), #10 (R), #11 (C) and #8 (CV Freezer) when the Motor spins. This signal enters to MICOM and if there is no signal entering when the Motor spins, the Fan goes off and works again in 10 seconds.
If there is still no signal entering, it repeats the above operation 4 more times. If it keeps not sending the signal, the Motor operates in 10 minutes. This is a function to overcome the case that there is a restriction in the Motor due to foreign substances around the Motor.

How to Check the F-Fan Voltage
– Measure voltage between MAIN PBA GND and CN74 #4.
– When it is between 8~12V, it is normal. (Measure with the same method for R/M/C-Fans.)

4-2-8. When the Fan does not operate (ICE ROOM - FAN)

- This refrigerator uses the BLDC Fan Motor. The BLDC Motor operates with DC 7~12V.
- Under Comp On conditions, the R-Fan operates generally.
- When there is defect, turn on the Self-Diagnosis function and confirm the defect before turning off the unit.



Ice Room Control Temperatture	
Ice ON	-13℃
Ice Off	-3℃

Note

Pulse signal is generated at CN74 #7 when the Motor spins. This signal enters to MICOM and if there is no signal entering when the Motor spins, the Fan goes off and works again in 10 seconds.
If there is still no signal entering, it repeats the above operation 4 more times. If it keeps not sending the signal, the Motor operates in 10 minutes. This is a function to overcome the case that there is a restriction in the Motor due to foreign substances around the Motor.

◆ **Expected Causes**

① Defective Fan-Motor
② Contact error at wire connection
③ When the Fan Motor operates, check the input of the Motor Spinning Pulse.

☞ How to check Ice Room FAN Motor
Ice Room FAN ; Voltage between CN52 #1 and GND shall be DC 7~12V.
- After measuring it, check it again if the measurement is different each other.

1) Ice Room - FAN

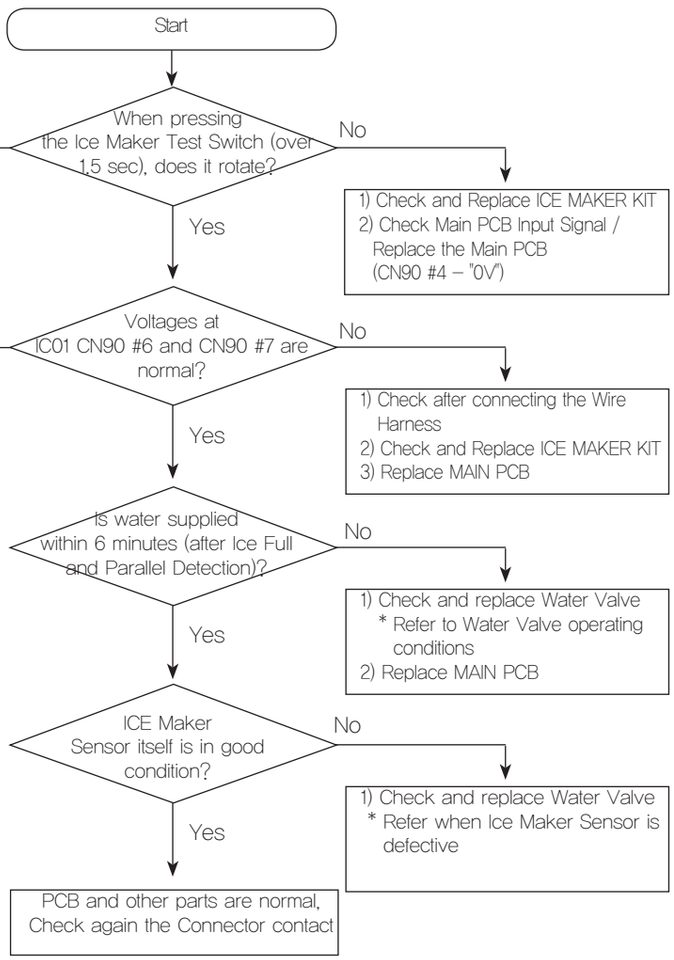
4-2-9. When the ICE MAKER does not operate

1. Water supplies to the Ice Maker automatically and ice is to be scooped out depending on its temperature and the timing.
2. Power is always applied to the Ice Maker. So, refer to the disassembly section to remove it.
3. To check the operation of the Ice Maker, press the Ice Maker Test Switch ,before disassembling it. It is not possible to check its operation after disconnecting its power.
4. The PCB and the Ice Maker are located at the back and at the front. So, if possible, check it with a team of two technicians.
5. When the Ice Maker Heater is on, it may cause personal injury. So, take extra care while working with the Ice Maker.

Operation Status (CN90 #4)		
Test Switch	Stand-by	On
	5V	0V

Micom (IC01) Operation Status				
	Stand-by	Rotation	Before completing	Home
CN90 #6 (Blade Ice Scoop)	0V	4.9V	4.9V	0V
CN90 #5 (Guide Ice Full)	0V	0V	4.9V	0V

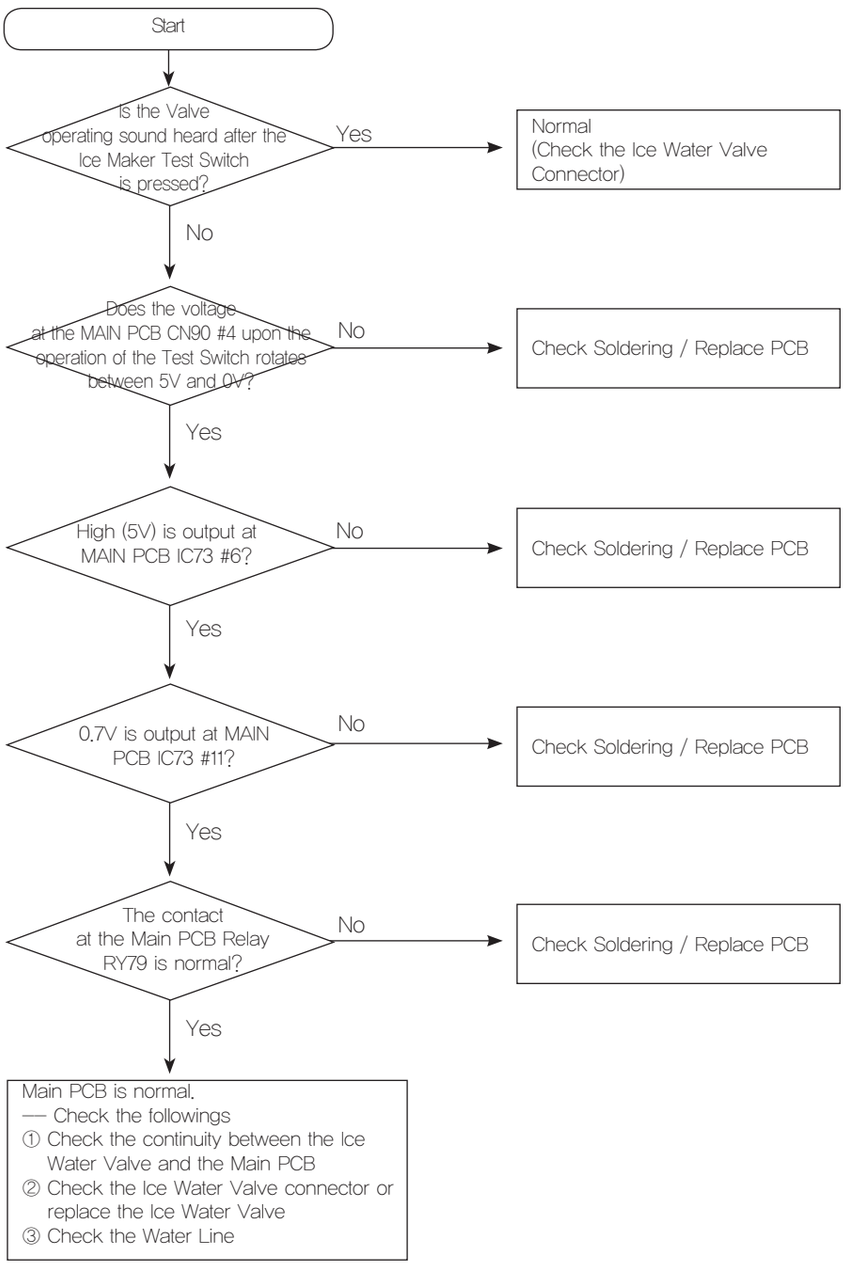
Operation Condition upon Motor Rotation, Operation Status of Micom (IC01)		
	Stand-by	On
Motor Load (#80, #81)	0V	5V
Heater Load (IC71 #5)	0V	5V
Heater operates differently according to its conditions. During the Test Mode, it will be on 30 seconds.		



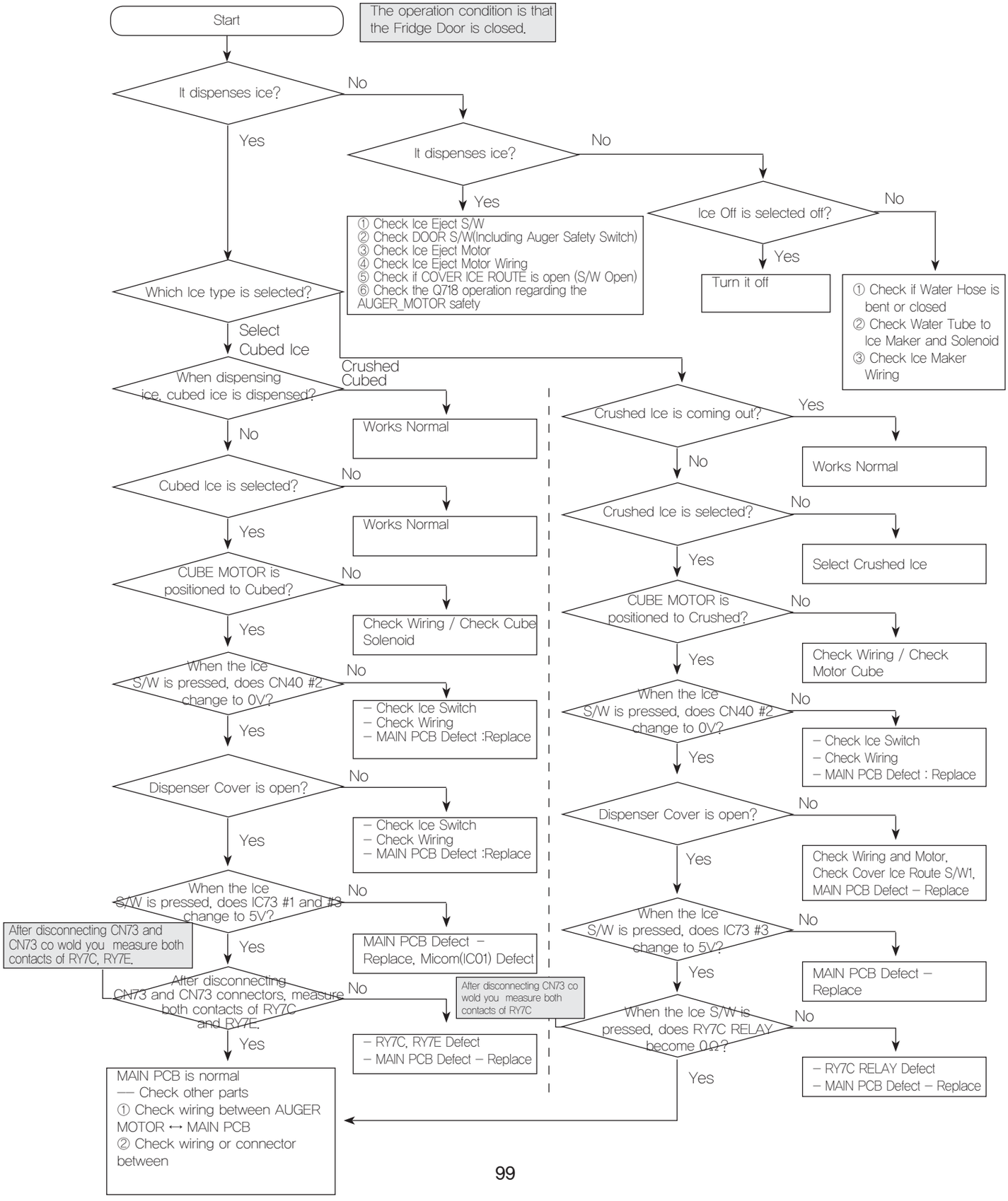
4-2-10. When water does not supply at Ice Maker

Advance Checking

1. Water is directly supplied to the Water Valve. So, make sure to cut off the water before doing repairs.
2. There is electricity flowing in the wire. So, take extra care not to get electric shock.



4-2-11. When Cubed or Crushed ice does not dispense properly

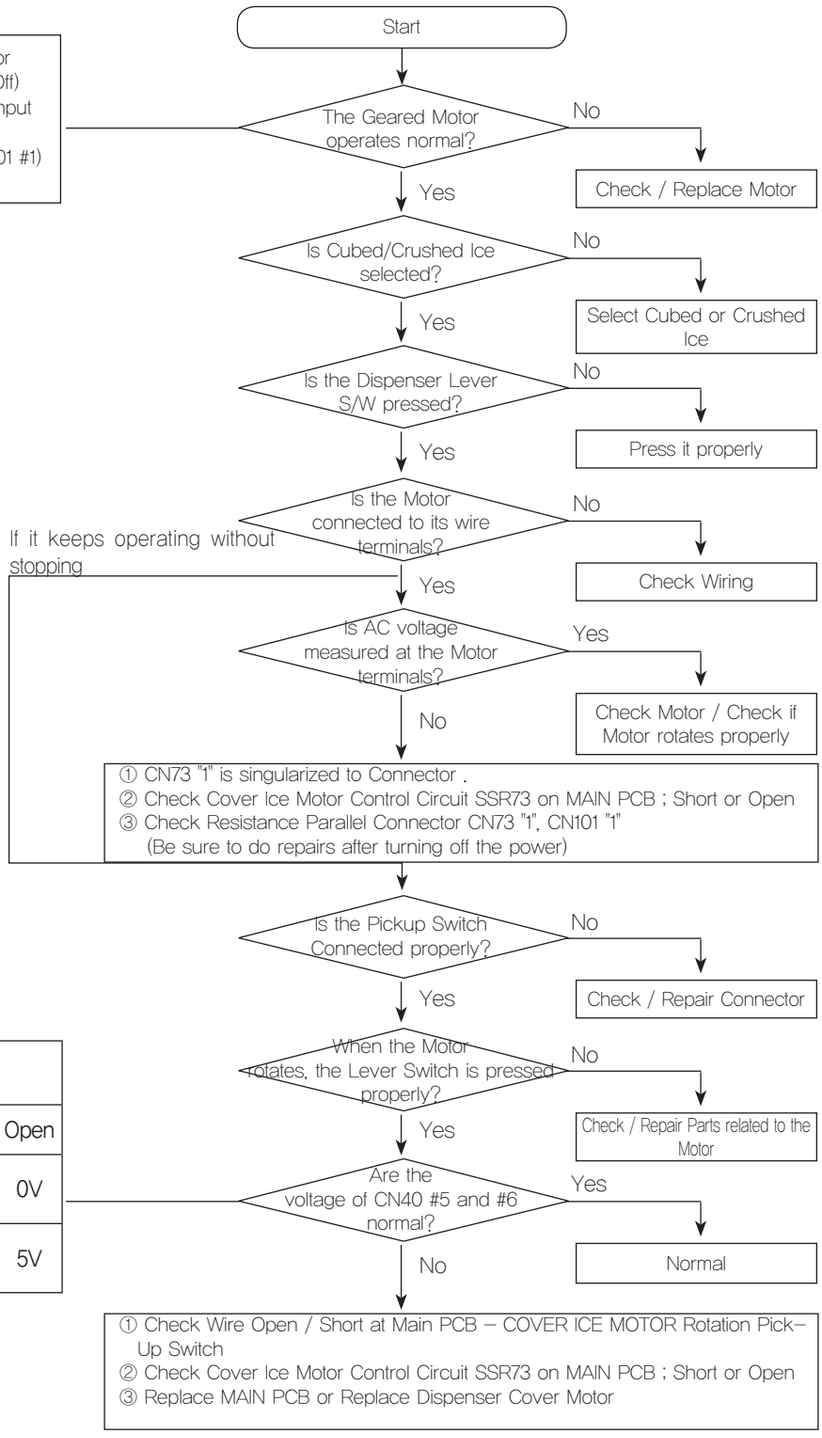


4-2-12. When COVER ICE ROUTE MOTOR (GEARED MOTOR) does not work properly

Caution

1. When replacing the Cover Ice Motor, pull out the plug to avoid an electric shock.
2. Be careful! When disassemble the Cover Ice Motor, spring can jumped out and may cause personal injury.
3. Motor will rotate continuously when the Motor Switch is not sensed.

☞ Checking Method of Cover Ice Route Motor Resistance (Make sure to work after Power Off)
The Resistance is variable according to the input voltage.
** 0Ω : Short / ∞Ω : Open (CN73 #1 – CN101 #1)



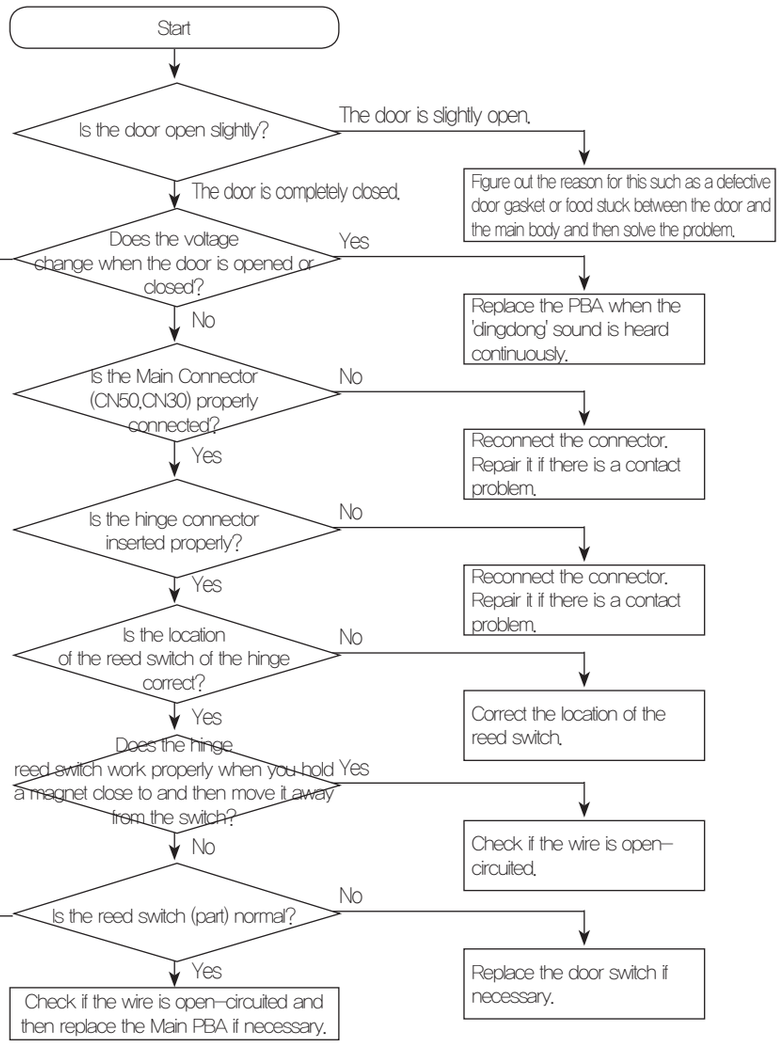
Dispenser Open/Close Conditions
CN40 – Switch1,2 Operation

	Close	..ing	Open
Ice Route Switch1 CN40 – #5	0V	5V	0V
Ice Route Switch2 CN40 – #6	0V	5V	5V

4-2-13. When the alarm is heard continuously (buzzer sound)

① If a 'dingdong' sound is heard continuously or the 'Refrigerator door is opened' message is displayed.

Freezer door detection: CN50 #7-#9
Fridge door detection: CN50 #6-#9
Cool Select Room door detection: CN30 #14-#8
- The normal voltages are as follows: When the door is open: 5 V / When the door is closed: 0 V

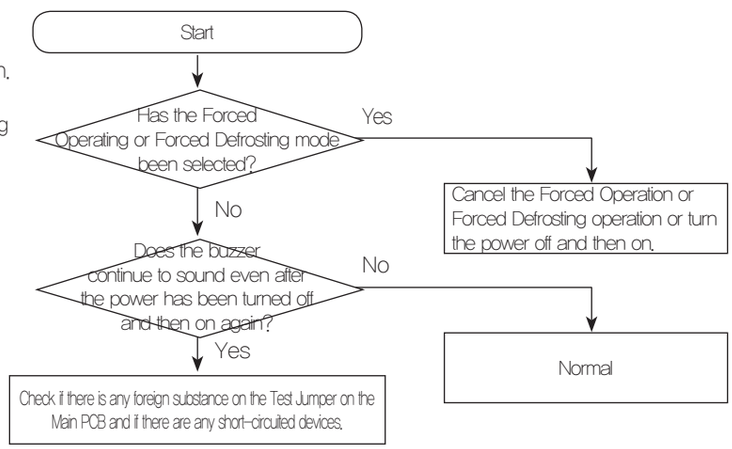


- Check if the resistance of the reed switch changes to 0Ω and ∞Ω when you separate the switch and change the switch status to on and off.

※ Tips when checking the reed switch
The reed switch is turned on or off by the magnetic force of the magnet attached to the door.
- When the reed switch is magnetised → 0Ω (when the door is closed.)
- When the reed switch is not magnetised → ∞Ω (when the door is open.)

If the magnetic force of the magnet on the door is weak or the location of the reed switch is not correct, consider replacing the part.

② If a 'beep-beep' sound is heard continuously, perform a Forced Operation. If a 'ddiriririring' sound is heard continuously, perform a Forced Defrosting operation. If the 'dding dding dding' sound is heard continuously, the buzzer sound is heard.



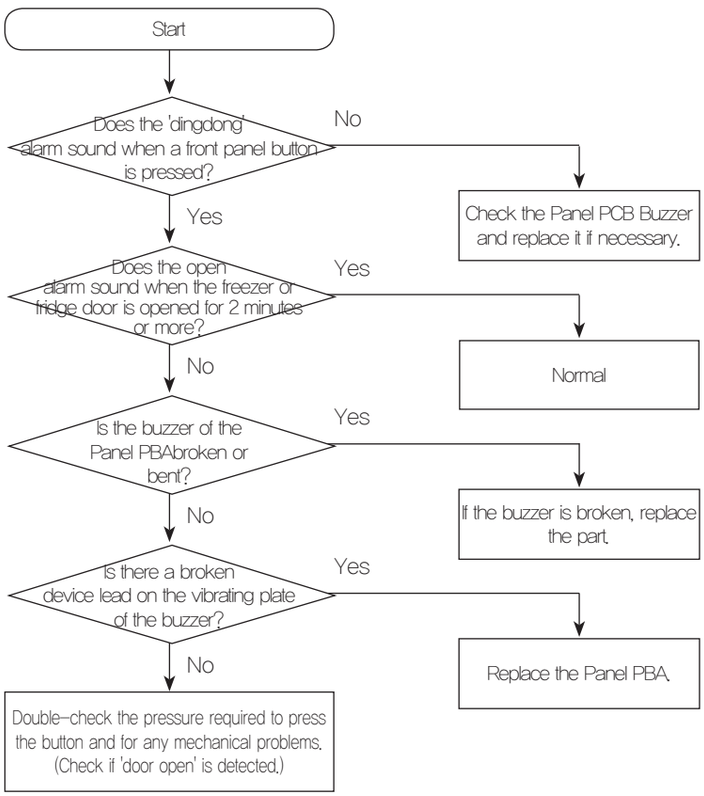
③ When there is no buzzer sound.

The buzzer is attached to the Panel PBA in this model.

If the buzzer does not sound when you press a key, run the Forced Operating operation or open the door, separate the Panel PBA and check if the buzzer is broken or improperly soldered.

(If the problem is not an improperly soldered part but a defective part, it is recommended replacing the Panel PBA because repairing the part is difficult.)

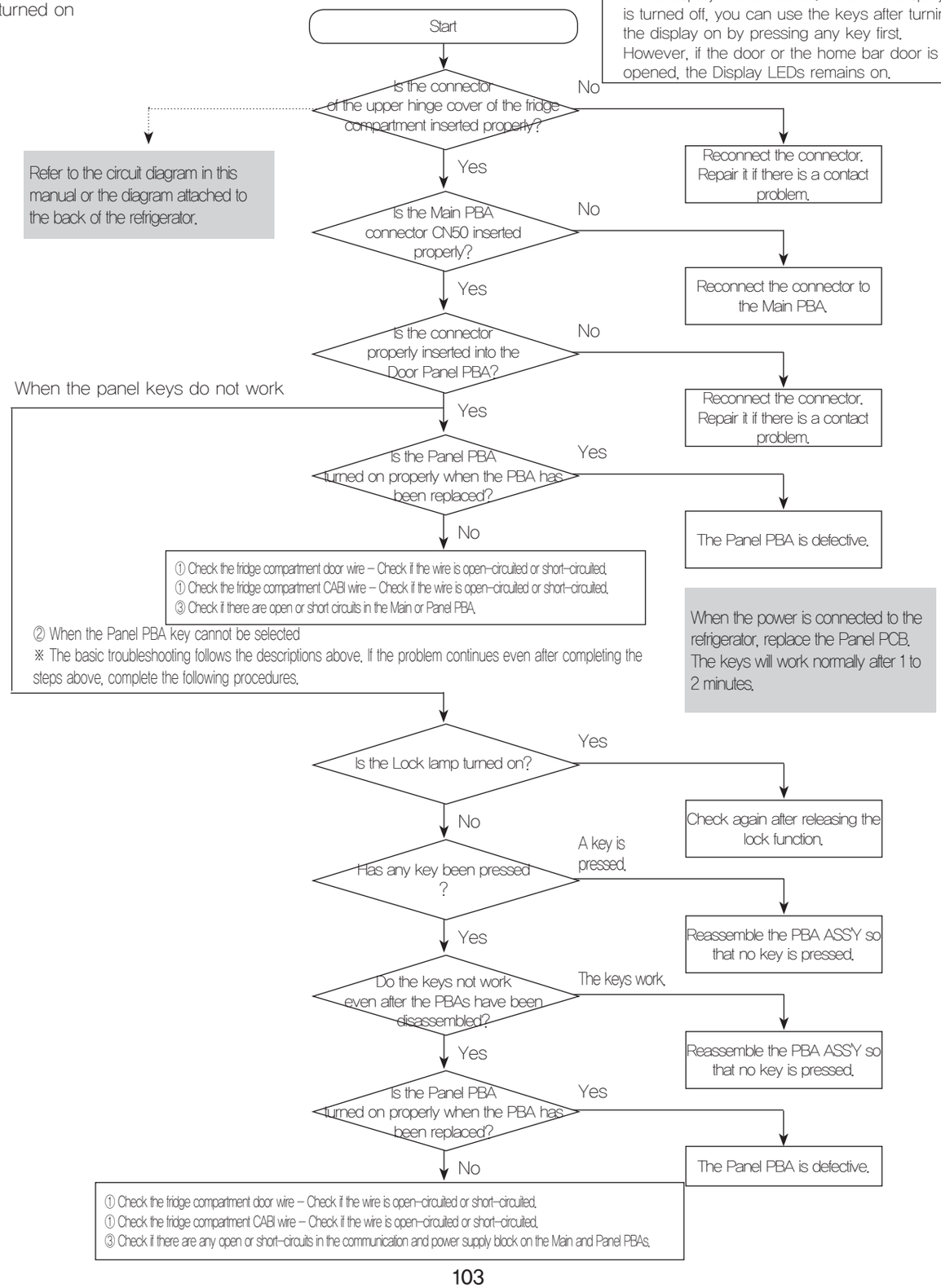
※ Note that the problem may not be identified when the refrigerator is a built-in appliance of the house or the installation location is very noisy.



4-2-14. When the Panel PBA does not work properly

① When the Panel PBA is not turned on or only some of the lamps are turned on

※ If no key is pressed for 10 seconds, the LEDs of the display are turned off. When the display is turned off, you can use the keys after turning the display on by pressing any key first. However, if the door or the home bar door is opened, the Display LEDs remains on.

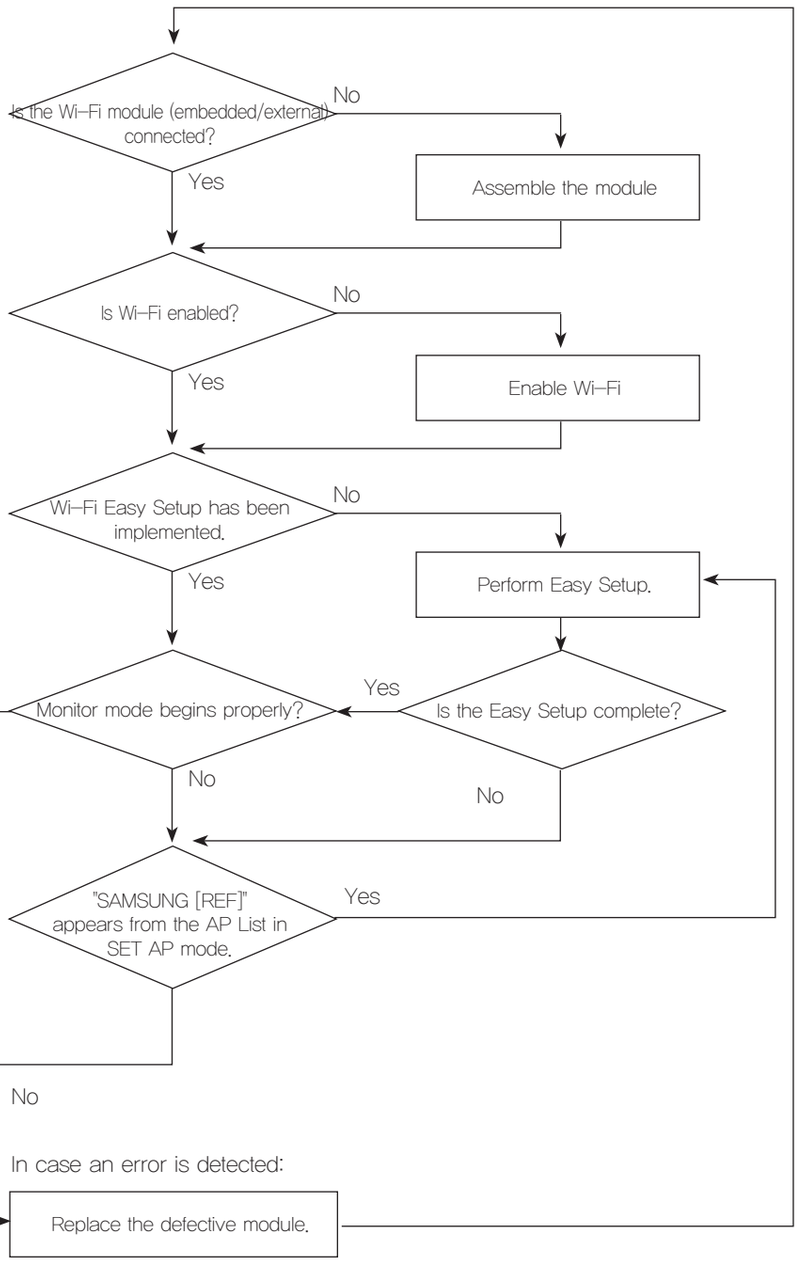


4-2-15. When the Wi-Fi does not work properly

1	TX
2	RX
3	RST
4	GND
5	VCC

1	VCC
2	RX
3	TX
4	RST
	GND

1	TX
2	RX
3	RST
4	GND
5	VCC



Port	Standby
TX	0-5V swing
RX	0-5V swing
RST	5V
VCC	5V or 12V

■ Voltage and resistance of the temperature sensor by temperature

Temp. (°F)	Temp. (°C)	Resistance (kΩ)	Voltage (V)
-43.6	-42	98.9	4.54
-41.8	-41	93.7	4.52
-40.0	-40	88.9	4.49
-38.2	-39	84.2	4.47
-36.4	-38	79.8	4.44
-34.6	-37	75.7	4.42
-32.8	-36	71.8	4.39
-31.0	-35	68.2	4.36
-29.2	-34	64.7	4.33
-27.4	-33	61.5	4.30
-25.6	-32	58.4	4.27
-23.8	-31	55.6	4.24
-22.0	-30	52.8	4.20
-20.2	-29	50.2	4.17
-18.4	-28	47.8	4.13
16.6	-27	45.5	4.10
-14.8	-26	43.3	4.06
-13.0	-25	41.2	4.02
-11.2	-24	39.2	3.99
-9.4	-23	37.4	3.95
-7.6	-22	35.7	3.91
-5.8	-21	34.0	3.86
-4.0	-20	32.4	3.82
-2.2	-19	30.9	3.78
-0.4	-18	29.5	3.73
1.4	-17	28.1	3.69
3.2	-16	26.9	3.64
5.0	-15	25.7	3.60
6.8	-14	24.5	3.55
8.6	-13	23.4	3.50
10.4	-12	22.4	3.46

Temp. (°F)	Temp. (°C)	Resistance (kΩ)	Voltage (V)
12.2	-11	21.4	3.41
14.0	-10	20.5	3.36
15.8	-9	19.6	3.31
17.6	-8	18.7	3.26
19.4	-7	17.9	3.21
21.2	-6	17.2	3.16
23.0	-5	16.4	3.11
24.8	-4	15.7	3.06
26.6	-3	15.1	3.01
28.4	-2	14.5	2.96
30.2	-1	13.9	2.90
32.0	0	13.3	2.85
33.8	1	12.7	2.80
35.6	2	12.2	2.75
37.4	3	11.7	2.70
39.2	4	11.3	2.65
41.0	5	10.8	2.60
42.8	6	10.4	2.55
44.6	7	10.0	2.50
46.4	8	9.6	2.45
48.2	9	9.2	2.40
50.0	10	8.8	2.35
51.8	11	8.5	2.30
53.6	12	8.2	2.25
55.4	13	7.9	2.20
57.2	14	7.6	2.15
59.0	15	7.3	2.10
60.8	16	7.0	2.06
62.6	17	6.7	2.01
64.4	18	6.5	1.97
66.2	19	6.2	1.92

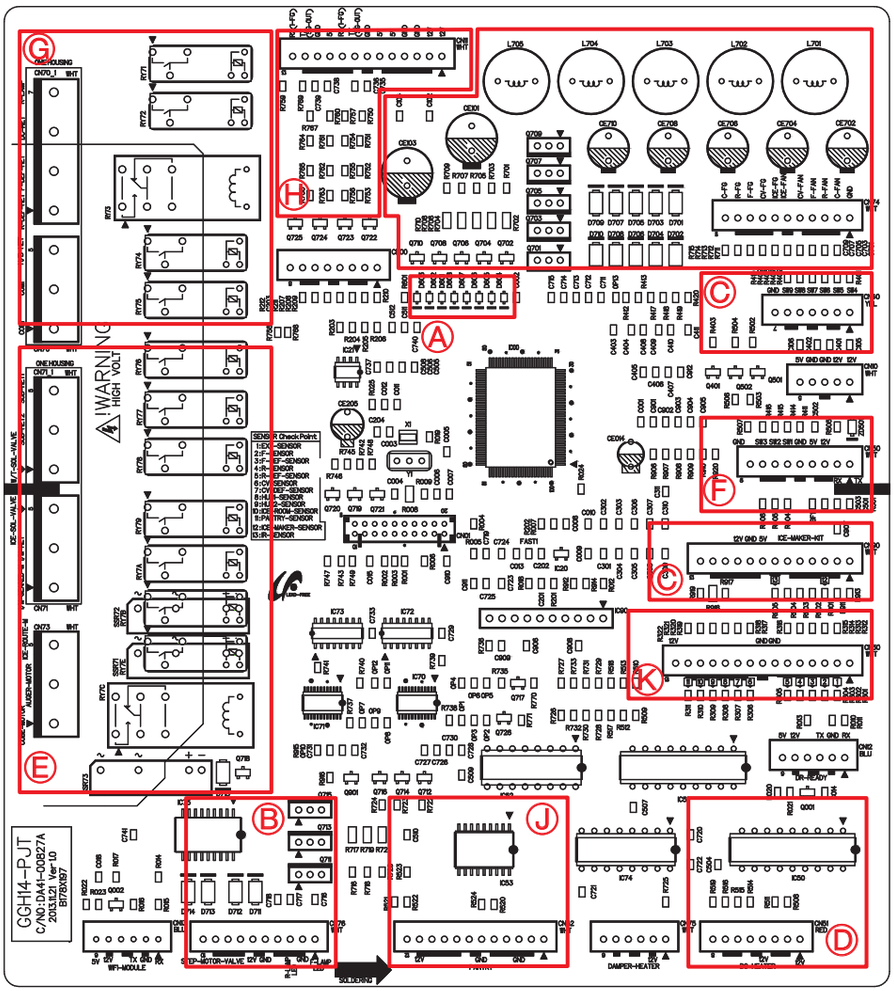
Temp. (°F)	Temp. (°C)	Resistance (kΩ)	Voltage (V)
68.0	20	6.01	1.88
69.8	21	5.79	1.83
71.6	22	5.58	1.79
73.4	23	5.38	1.75
75.2	24	5.19	1.71
77.0	25	5.00	1.67
78.8	26	4.82	1.63
80.6	27	4.65	1.59
82.4	28	4.49	1.55
84.2	29	4.33	1.51
86.0	30	4.18	1.47
87.8	31	4.03	1.44
89.6	32	3.89	1.40
91.4	33	3.76	1.37
93.2	34	3.63	1.33
95.0	35	3.51	1.30
96.8	36	3.39	1.27
98.6	37	3.28	1.23
100.4	38	3.17	1.20
102.2	39	3.06	1.17
104.0	40	2.96	1.14
105.8	41	2.86	1.11
107.6	42	2.77	1.09
109.4	43	2.68	1.06
111.2	44	2.59	1.03
113.0	45	2.51	1.00
114.8	46	2.43	0.98
116.6	47	2.35	0.95
118.4	48	2.28	0.93
120.2	49	2.21	0.90

■ Voltage of the humidity sensor by humidity

RH (%)	Output (mV)	RH (%)	Output (mV)
0	909	51	2376
1	943	52	2402
2	977	53	2428
3	1010	54	2454
4	1043	55	2480
5	1076	56	2505
6	1109	57	2530
7	1141	58	2555
8	1173	59	2580
9	1205	60	2605
10	1235	61	2630
11	1266	62	2655
12	1297	63	2680
13	1328	64	2705
14	1359	65	2730
15	1390	66	2756
16	1420	67	2782
17	1450	68	2808
18	1480	69	2834
19	1510	70	2860
20	1540	71	2886
21	1569	72	2912
22	1598	73	2938
23	1627	74	2964
24	1656	75	2990
25	1685	76	3017
26	1713	77	3044
27	1741	78	3071
28	1769	79	3098
29	1797	80	3125
30	1825	81	3152
31	1852	82	3179
32	1879	83	3206
33	1906	84	3233
34	1933	85	3260
35	1960	86	3288
36	1986	87	3316
37	2012	88	3344
38	2038	89	3372
39	2064	90	3400
40	2090	91	3426
41	2116	92	3452
42	2142	93	3478
43	2168	94	3504
44	2194	95	3530
45	2220	96	3566
46	2246	97	3595
47	2272	98	3624
48	2298	99	3653
49	2324	100	3683
50	2350		

5. PCB DIAGRAM

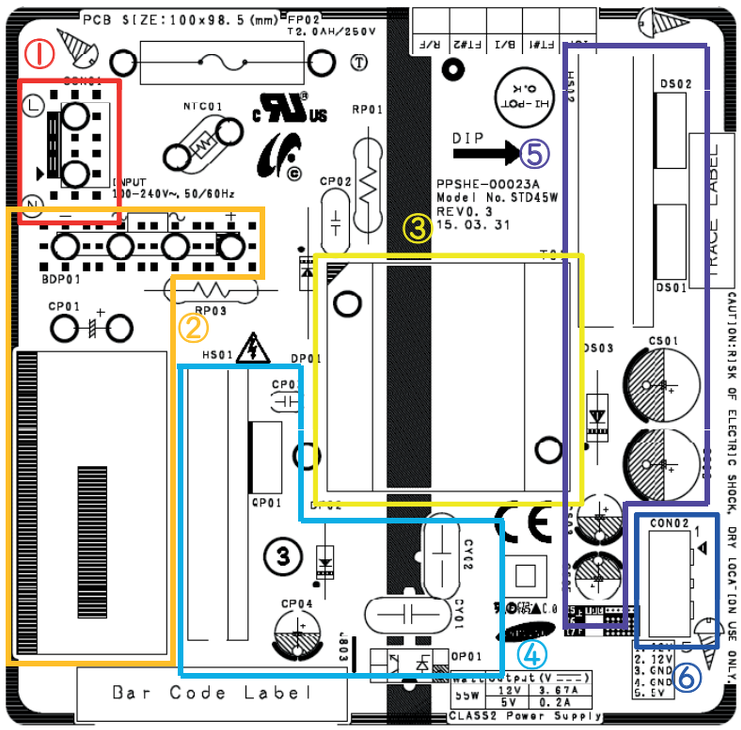
5-1. PCB Layout with part positions (Main Board)



A. Diode option setting
B. Step valve & LED Room lamp controlling circuit
C. Ice maker kit control & Lever
D. DC heater control
E. Dispenser controlling part
F. Panel PBA communication and power supply circuit
G. Defrost Heater controlling part
H. Inverter Comp driving signal section
I. Fan Motor driving circuit : It supplies to various types of motors
J. Ice-Room FAN & SPI2 Module Controlling part
K. By receiving various sensor signals, it sends them to MICOM after removing noise.

PCB DIAGRAM

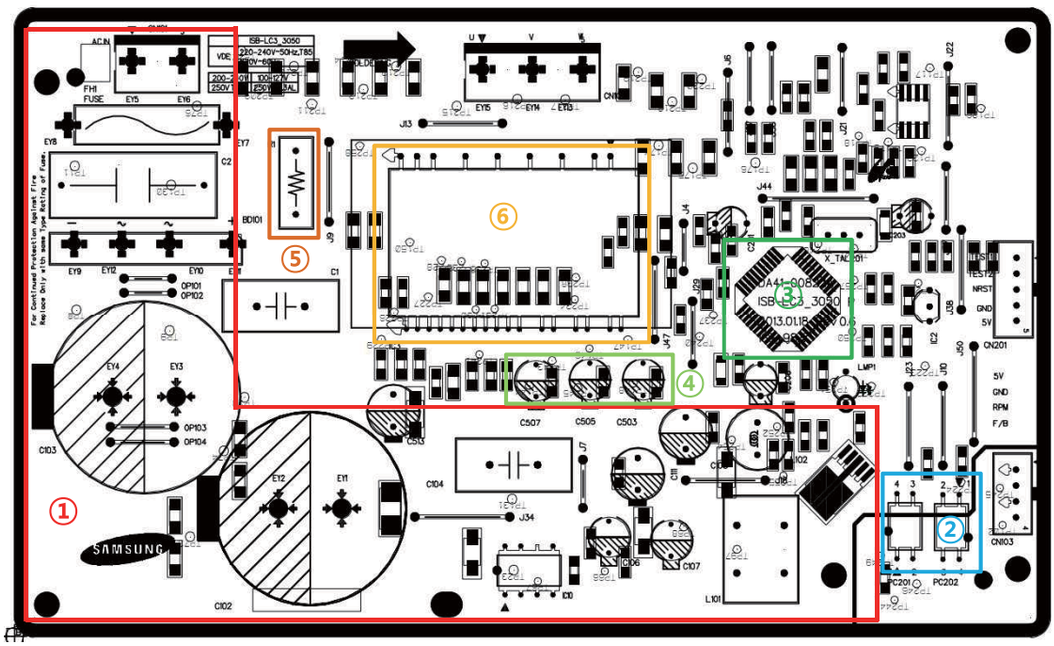
5-2. SMPS Board



1. AC Input Connector : AC 220V Power Input Connector
2. Input Voltage Rectification Block : Rectifying AC 220V to DC 310V
3. Transformer
4. Switching and Feedback Block: Converting 310V DC to 5V, 12V Voltage by Switching and supplying stable DC voltage by receiving feedback signal
5. Output Voltage Rectification Block : Supplying stable DC output Voltage by Rectifying 5V, 12V Output Voltage
6. DC Output Connector : 5V, 12V DC Output Connector

PCB DIAGRAM

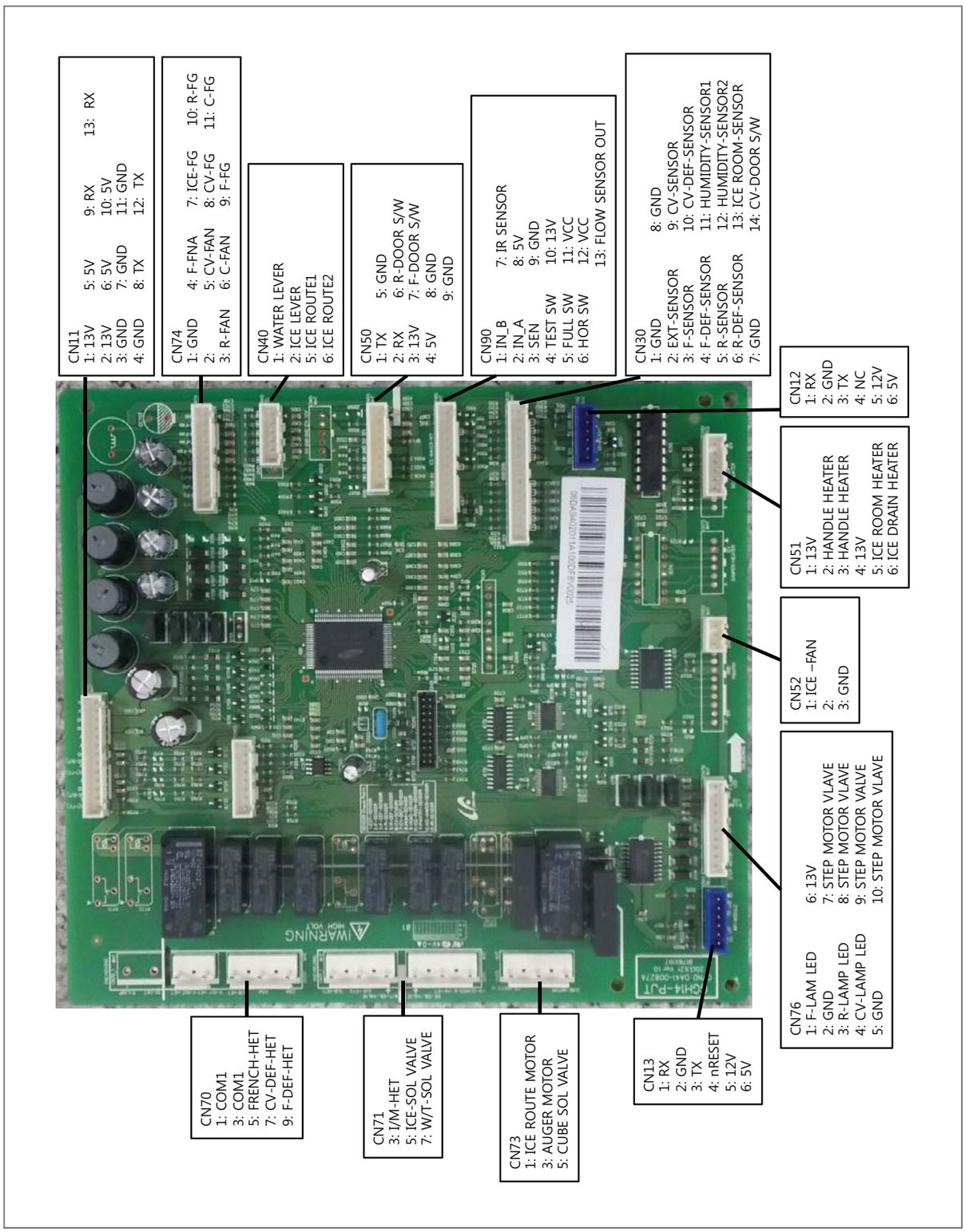
5-3. Inverter PCB Layout with part positions



1. PCB Power Supply : Supplies DC 15V and 5V to the inverter circuit for the Compressor control..
2. Comp Driving / Feedback circuit : It receives the COMP operation signals from the Main PBA and feedbacks the inverter errors to the Main PBA.
3. Micom (MN103SFC2d)
4. Bootstrap charger : It is an independent power circuit for the driving of the IMP High-Phase IGBT.
5. Current Pickip Circuit : It pickups the currents taken by the Shunt resistance and does the PWM DUTY control.
6. IPM (FNB40560)

PCB DIAGRAM

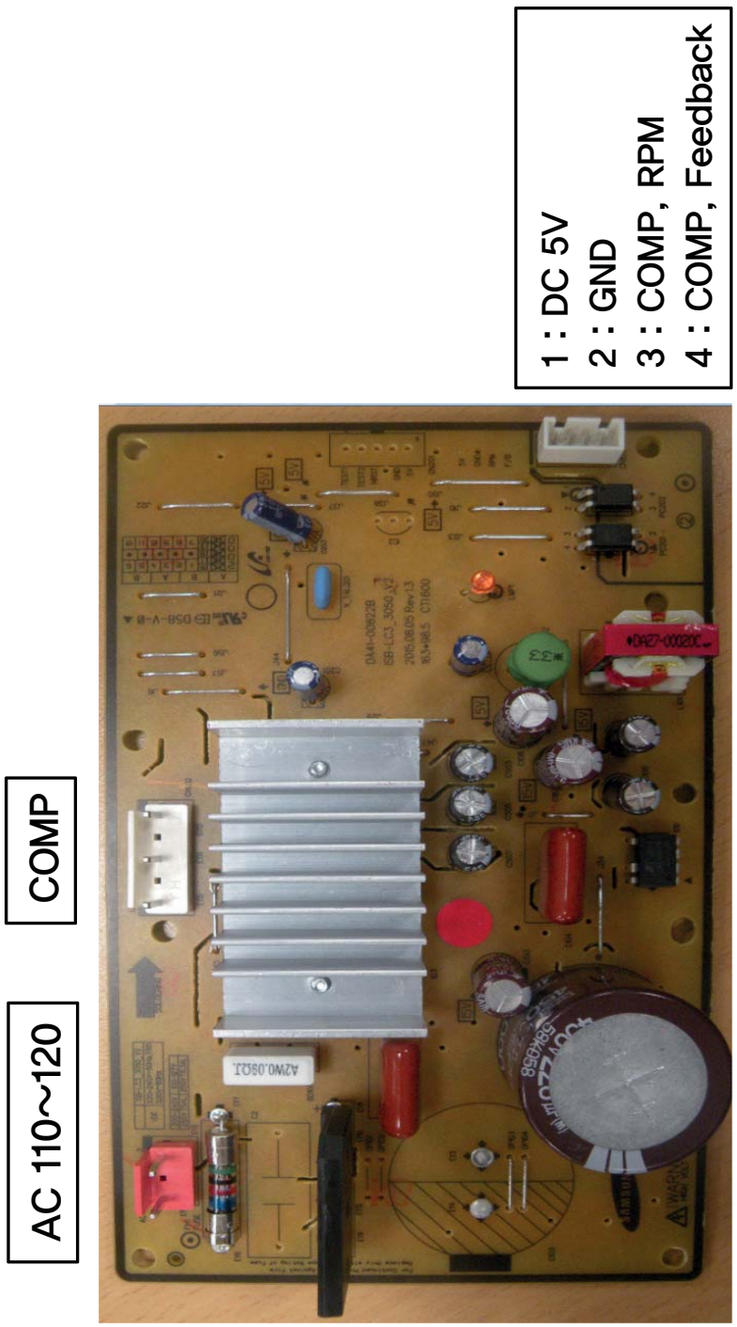
5-4. Connector Layout with part positions (Main Board)



PCB DIAGRAM

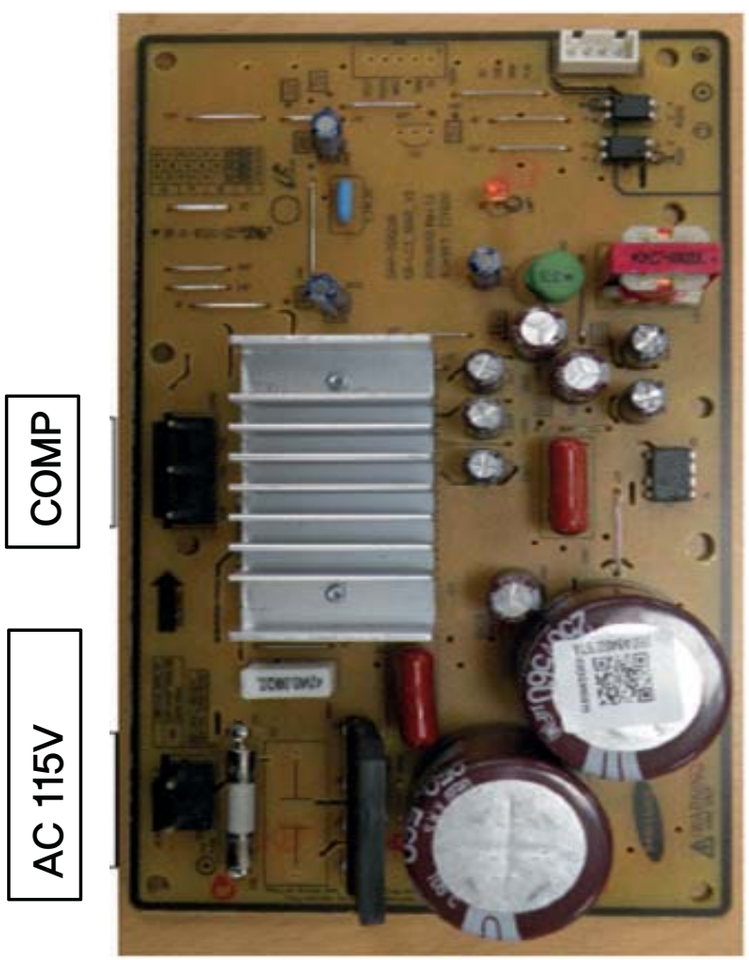
5-5. PBA Layout with part position (INVERTER PBA)

220 ~ 240 V

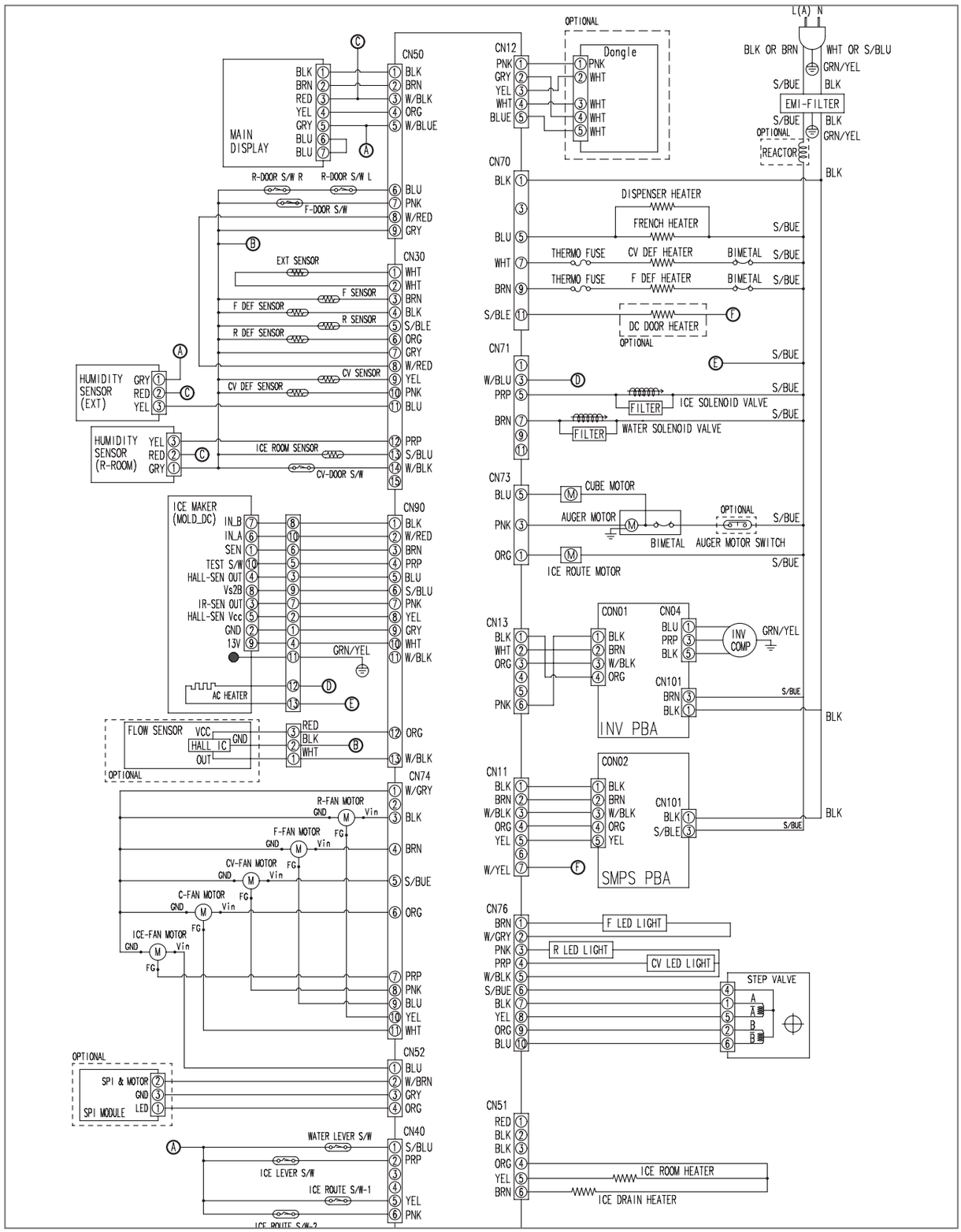


PCB DIAGRAM

110 ~ 120 V

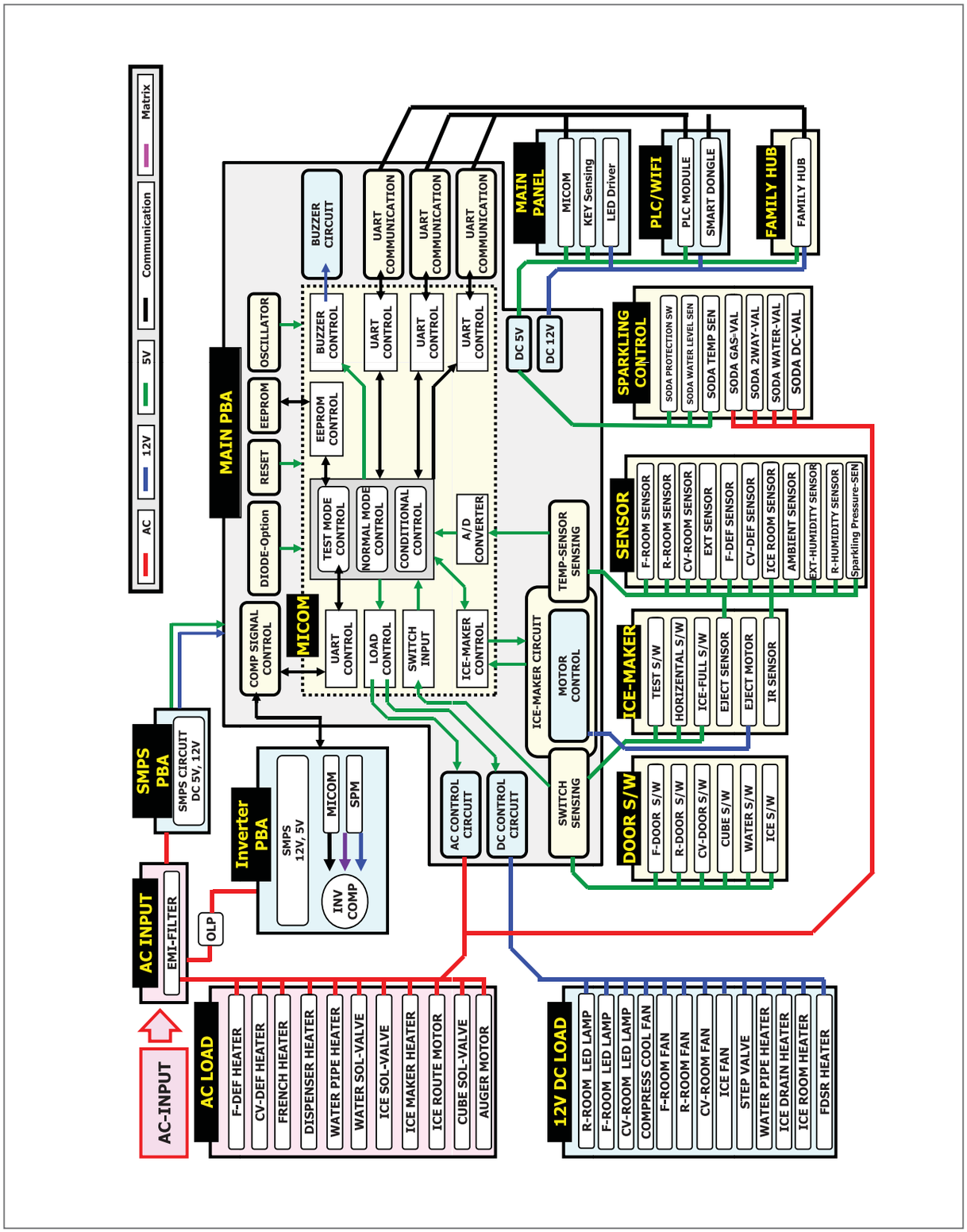


6. WIRING DIAGRAM



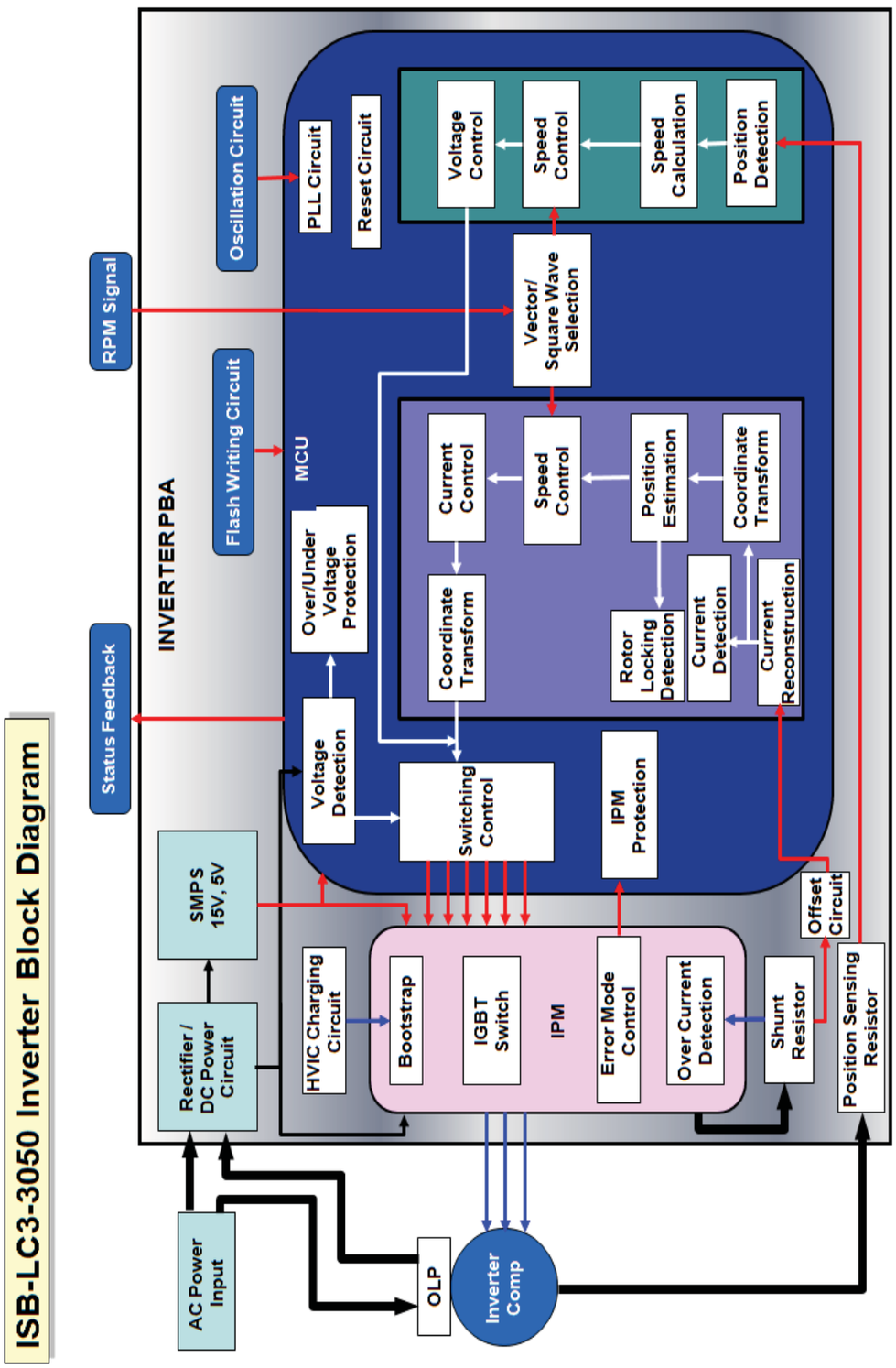
7. BLOCK DIAGRAM

7-1. Basic Model



BLOCK DIAGRAM

7-2. Inverter block diagram

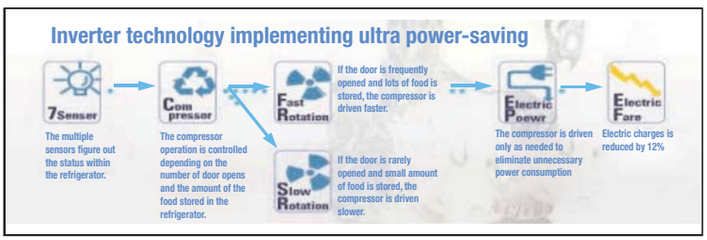


8. REFERENCES

8-1. Glossary

About Inverter technology

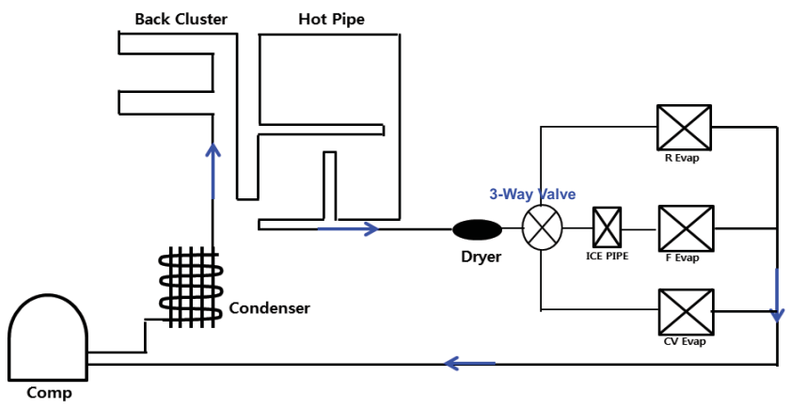
This is a technology for ensuring efficiency that automatically controls the freezing and cooling performance depending on the various conditions including the surrounding temperature, the number of times the door is opened and the amount of stored food.



About Natural Defrosting

- This is a technology that helps keep food fresh by raising the humidity in the refrigerator by removing frost that has formed on the evaporator by running the fan when the cooling operation is not being executed.

About the Parallel Cycle (1-compressor is applied.)



Control the temperature of each room using three-way valve.

8-2. French Heater Control Using a Humidity Sensor

▶ The French heater of the fridge is controlled by the humidity sensor value, the surrounding temperature and the fridge temperature.

▶ If the output voltage of the humidity sensor is 0.6V or lower or 4.7V or higher, it is judged to be a humidity sensor error (self diagnosis error code: 13E) and the French heater of the fridge is controlled by the surrounding temperature and the fridge temperature. (Humidity sensor voltage table : Refer to page 112)

<table>
<tr><td>External Air Condition</td><td colspan="3">High surrounding temperature</td><td colspan="3">Fridge compartment internal lamp</td></tr>
<tr><td>Humidity / Fridge Temperature Setting</td><td>High humidity</td><td>~</td><td>Low humidity</td><td>High humidity</td><td>~</td><td>Low humidity</td></tr>
<tr><td>0 ℃</td><td colspan="3" rowspan="3">The operating ratio decreases.</td><td colspan="3" rowspan="3">The operating ratio decreases.</td></tr>
<tr><td>~</td></tr>
<tr><td>5 ℃</td></tr>
</table>

▶ The French heater operating ratio depending on whether the humidity sensor is applied or not

▶ If the humidity sensor is in the Open or Short Error state, the French Heater operates: The heater operates in the high-humidity condition

▶ The French Heater operating ratio when the control function service option is applied: 100 %

REFERENCES

* Glossary

Terminology	Description
LED	LED stands for Light Emitting Diode. An LED is a semiconductor device that emits visible light when an electric current passes through it.
Tx, Rx	This refers to the communication ports of the micom. TX : Transmit signal. RX : Receive Signal.
Driver IC	The IC used to electrically drive devices. (Power supply type – Source, power cut-off type-Sink)
Micom	This is also called a Micro Computer. It can be viewed as a small computer on a single chip that consists of a ROM where the program is stored, RAM where the data are stored, and ALU that calculates, I/O, Interrupt, etc.
Connector	The connector that connects a separate load and circuit.
Resistor	This is used to suppress the current in the circuit or to distribute voltages.
PCB	This stands for Printed Circuit Board and is used to mechanically support and electrically connect electronic components using conductive pathways, tracks or signal traces etched from copper sheets laminated onto a non-conductive substrate.
Single-Sided PCB	A Printed Circuit Board that only has conductive pathways on one side of the substrate.
Double-Sided PCB	A Printed Circuit Board that has conductive pathways on both sides of the substrate.
SCR SSR	SCR Silicon Control Rectifier, SSR Solid State Relay (Electrical Contact Relay)
TR	Transistor ---- An amplification device using the electric conduction of semiconductor crystals.
Varistor	This stands for Variable Resistor. There are symmetric varistors whose resistance is determined by the voltage only regardless of the polarity of the voltage and asymmetric varistors whose resistance is determined by the polarity of the applied voltage.
Compressor	Compressor – A mechanical device that compresses gas to increase the pressure of the gas. In general, the compressor used for refrigerators is a reciprocating compressor that uses pistons driven by a crankshaft that is rotated by the motor to deliver gas at high pressure.
Inverter	A device that converts DC to AC. This device converts direct current voltage (or current) to alternating current voltage (or current) that is required to drive a motor.
Alignment	This refers to the process that generates a rotating magnetic field in a direction to align the location of the rotor to the rotating magnetic field when starting a motor. In general, to drive a motor, the rotor location must be identified (except V/f) but the location of the rotor cannot be easily identified before starting the motor. Therefore, a process to locate the rotor at a specific position by force is required and this is called alignment.
Activation	A valid signal status This represents the Low status for an activation low signal and the High status for an activation high signal.
Deactivation	An invalid signal status This represents the High status for the activation low signal and the Low status for the activation high signal.
Bootstrap Capacitor	The capacitor that stores the power voltage to drive the High-Side Power Switch of the SPM. A 3-Phase Full-Bridge Inverter consists of 3 capacitors. By turning on the Low-Side Power Switch for a pre-determined period of time just before the motor starts, the capacitors are charged.
SPM	Smart Power Module Although this was originally the model name for a product, it now refers to a power semiconductor package that has an inverter function including a switching device, a driving circuit of the switching device and a protection circuit.
PWM	Pulse Width Modulation
RPM	Revolutions Per Minute This refers to the number of rotations per 1 minute.
RPS	Revolutions Per Second This refers to the number of rotations per 1 second.

Digit	1	2	3	4	5	6	7	8	9	10	11
	Type		Capacity		Year	Series		Feature	Energy	CMF	
Code	R	F	2	8	K	9	0	7	1	S	R

R	F	2	8	K	9	9	0	0		S	R
		2	8	2016	9	0	* Refer to below Feature table	0	E/Star, Austrailia 2.5Star, A+		
		NorthAmerica I&W / I&W FDSR	28 cu.ft		F-Hub	95					
					Normal	90					

Digit 6-7	Digit 8 (Feature)							
Code	Code	Fresh / Sanitation			Storage	Design		
		CV	Bactericidal / Deodorant	Fresh vegetables sealed drawer	Wine Rack	Deco	MetalCooling Duct	Handle design
95 (F-Hub)	8	FlexZone	-	-	●	Shelf Gloss film + Guard Hot Stamping	●	New
93 (FDSR)	8	FlexZone	-	-	●	Shelf Gloss film + Guard Hot Stamping	●	New
90 (I&W)	7	FlexZone	-	-	-	Shelf Gloss film + Guard Hot Stamping	-	New

8-4. Troubleshooting. Check the following before calling the service centre

Symptom	Troubleshooting
Spurting, spitting sound	– The sound may be heard when the refrigerant inside the refrigerator flows as a gas and a liquid. – In addition, the frost attached to the cooler may generate a sound like a 'chikchik' or 'bukbuk' and so on when the frost melts. Since this is normal and not a problem, please use the refrigerator without worries.
Tapping sound	– The sound may be generated when the parts inside of the refrigerator expand or shrink as the temperature inside the refrigerator changes. – When the frost covering the cooler melts, a similar sound may be heard. Since this is normal and is not a problem, please use the refrigerator without worries.
whining or humming sound	– These sounds may be generated by the compressor or fan when the refrigerator starts or ends the operation. The sound may be louder or softer as the compressor or fan rotates faster or slower depending on the surrounding temperature or the status within the refrigerator. The reason for the sound is similar to the sound that is heard when you start or stop the engine of a vehicle or you accelerate a vehicle. Since this is normal and not a problem, please use the refrigerator without worries.
The refrigerator has just been installed but the noise is too loud!	– When the refrigerator starts for the first time or restarts after the power has been cut, the compressor and fan rotate faster to decrease the temperature inside the refrigerator. At this time, the sound may be loud but the noise will decrease as the temperature inside the refrigerator decreases. Since this is normal and not a problem, please use the refrigerator without concern.
vacuum sound	– If you open and close the door, the air captured by the refrigerator is rapidly cooled and this temporarily decreases the internal pressure and may generate the sound of air flowing from the back of the refrigerator such as 'shik~'. Alternatively, in this case, the internal structure of the refrigerator is temporarily distorted and this may generate a sound like 'ddudduk'. Since this is normal and not a problem, please use the refrigerator without concern.
There is a loud noise as well as a strange sound.	– Install the refrigerator on a flat, solid floor. – Please keep the back of the refrigerator away from the wall by at least 5cm. – Keep objects away from the back and sides of the refrigerator. – Do not place heavy objects on the refrigerator.
There is an odd smell coming from inside the refrigerator. The ice smells odd.	– Be sure to cover the cap or wrap side dishes such as kimchi. In particular, be sure to wrap meat and dried-fish with plastic bags. Food that has been stored in the refrigerator for a long time can be the cause of the smell. – If food has overflowed its container, clean it completely because it may contaminate the ice. – 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. – To clean the inside of the refrigerator, store the food in another location, unplug the power cord, wait 2~3 hours, clean the inside of the refrigerator with a dry cloth and then ventilate the inside of the refrigerator. – Put slices of bread, coffee beans, hardwood charcoal or a copper plate in the refrigerator to remove the smell.
I can't easily open the refrigerator door.	– Since the separated freezer and fridge are bonded without a gap, it may difficult to open the door. – Check if the front of the refrigerator is higher than the back. If it is, adjust the level using the height adjustable legs of the refrigerator.
The fridge door is lower than the freezer door when I look at the refrigerator from the front. The upper and lower gaps between the freezer door and the fridge door are different.	– Since the size and weight of the fridge compartment and the freezing compartment are not the same, this symptom may occur due to some hidden weight. For information on how to adjust the height of the doors, please refer to page 47. – Due to the same reason, the upper and lower gaps between the doors may not be the same. For information on how to adjust the gaps between the doors, please refer to page 48.
The freezer compartment is covered with frost! (The fridge compartment is wet with dew.)	– Frost or dew may appear when the surrounding temperature or humidity is high or the refrigerator door has been opened for a long time or food with plenty of moisture is stored without closing the cover for it.

REFERENCES

Symptom	Troubleshooting
The main body of the refrigerator and the internal lamp cover in the freezer compartment are wet with dew.	– Since the lamp in the freezer generates heat if the door is open for a long time, frost may appear due to the temperature difference between the external air and the freezer compartment. The frost will disappear if the door is closed. – When the surrounding humidity is too high, the moisture in the air can turn to dew when the air reaches the cold surface of the refrigerator.
The surface of the refrigerator is hot!	– This is because there are pipes around the front and sides of the refrigerator to cool the contents of the refrigerator quickly and save power. In particular, when the refrigerator is installed for the first time or during summer, it may be feel hot but this is not a problem.
The freezer and fridge do not work at all. (The cooling performance is low.)	– Check if the power cord is unplugged. – If the target temperature is high, press and hold the Lock button for 3 seconds until the Lock icon 🔒 disappears and then set the temperature to a lower temperature. – Check if the refrigerator is exposed to direct sunlight or if there is a heater near the refrigerator. – Be sure to keep a distance of at least 5cm between the back of the refrigerator and the wall.
Hot air blows from the bottom of the refrigerator.	– The heat is exhausted from the compressor that runs to decrease the temperature inside the refrigerator. The refrigerator is designed so that the heat is exhausted from the side of the refrigerator. If the side of the refrigerator is blocked by the wall or other object, customers may experience hot air from the front and this is not a problem of the refrigerator.
The food in the fridge compartment is frozen.	– If the fridge compartment temperature is set too low, adjust the temperature to an adequate level. – When the surrounding temperature is 5℃ or lower, the food stored in the fridge may freeze. – Keep food with plenty of moisture at the front of the shelf. Otherwise the food may freeze due to the direct contact with the cold air inside the compartment.
The refrigerator does not stop and runs continuously!	– Although the compressor that cools the temperature inside the refrigerator stops, the cooling fan inside the refrigerator continues to maintain the cold air flow and keep the temperature stable. Since this is normal and not a problem, please use the refrigerator without concern. (However, the operation will stop if the freezer or fridge door is opened.)
The temperature display is not turned on.	– To save energy, if no key is pressed, the temperature display is turned off after 10 seconds. If you press a button or open or close the refrigerator door or home bar door, the temperature display is turned on.
The buttons on the control panel of the refrigerator do not work.	– Check if the Lock icon 🔒 is turned on. – If you touch a button wet hands or clean a button with a damp cloth, the button may not work. If you remove the moisture, you can use the buttons normally.

8-4. How To Repair the Compressor Applying R600a Refrigerant

■ Tools for Repair

1. R600a refrigerant
2. Pinch Plier
3. Hose
4. Refrigerant Return Bag
5. Vacuum Pump
6. Welding Machine
7. Charging Tube
8. Leakage Tester

■ Features of R600a refrigerant

▶ It is a natural, non-polar gas refrigerant ch(ch3))3.

▶ R600a is similar to the butane gas and if discharged to the atmosphere at a proper level, it can cause a fire (You need to be extremely careful when you perform medium scale repairs of it)

▶ Explosion level: 1.8 %-8.4 %/Vol.

▶ Ignition Temperature: 494 ℃

REFERENCES

■ How To Perform Middle-Sized Repair of Refrigerator Applying R600a Refrigerant

1. How to collect the refrigerant

▶ Necessary Equipments: Pinch Plier, Refrigerant Discharge Hose, Refrigerant Return Bag

▶ Work Sequence

1) Keep the door open.

2) Connect the Pinch Plier and the Refrigerant Discharge Hose.

3) Make sure the outlet of the hose faces outward. (Remove fire or heat source from around the Hose Outlet.)

4) When servicing within an enclosed space, make sure to use the return bag.

5) Drill the Charging Pipe of the compressor with Pinch Plier.
(Remove fire or heat source from around the Refrigerator before servicing.)

6) Please make sure to discharge the refrigerant for at least seven minutes.

2. How to collect remaining refrigerant

▶ Necessary Equipments: Pinch Plier, Refrigerant Discharge Hose, Vacuum Pump

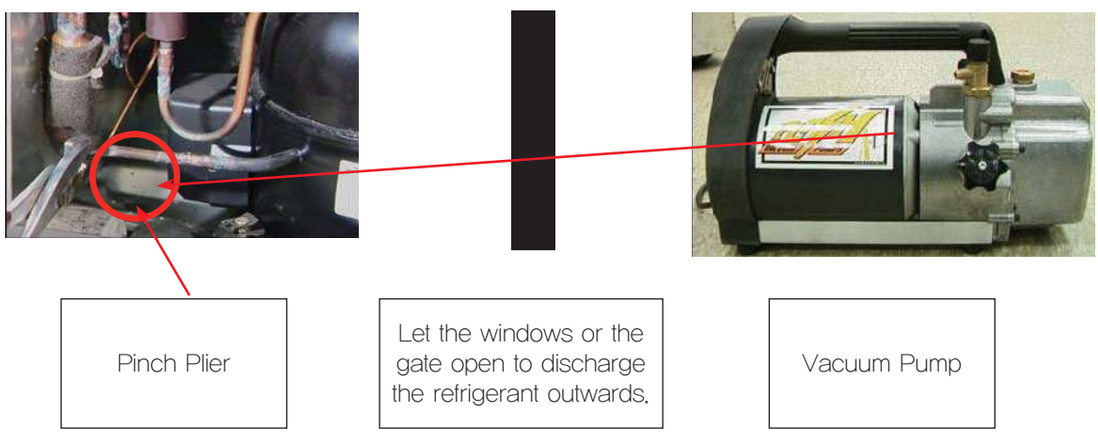
▶ Work Sequence

1) When seven minutes have passed for the refrigerant collection, connect the Vacuum Pump to the end of the Refrigerant Return Hose. (Operate the Vacuum Pump outdoors)

2) Connect the Pinch Plier and the Refrigerant Discharge Hose.

3) Operate the Vacuum Pump and collect the remaining refrigerant in the pipe of the refrigerator.

4) Discharge the refrigerant using the pump for at least 10 minutes.



3. Steps to Compressor Replacement

▶ Necessary Equipment: Welding Machine

▶ Work Sequence

1) After the remaining refrigerant is collected, remove the Pinch Plier.

2) Cut the end of the Dryer Filling Pipe. (Check if the remaining refrigerant comes out.)

3) Cut the end of the Charging Pipe with a cutter. (Check if the remaining refrigerant comes out.)

4) Separate the Suction Pipe.

5) Separate the Discharge Pipe.

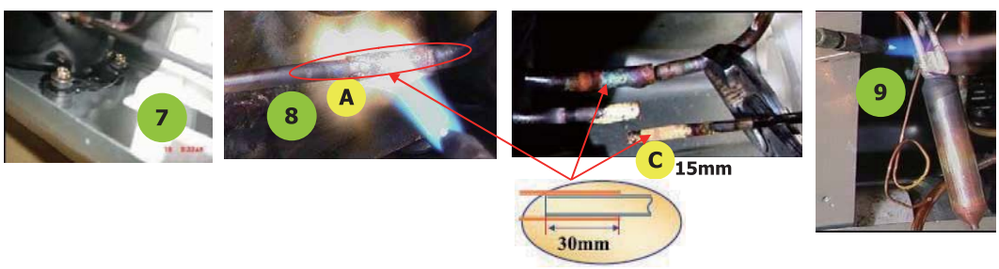
6) Separate the Dryer.

7) Replace the Comp.

8) Perform welding work on the Suction Pipe and the Discharge Pipe.

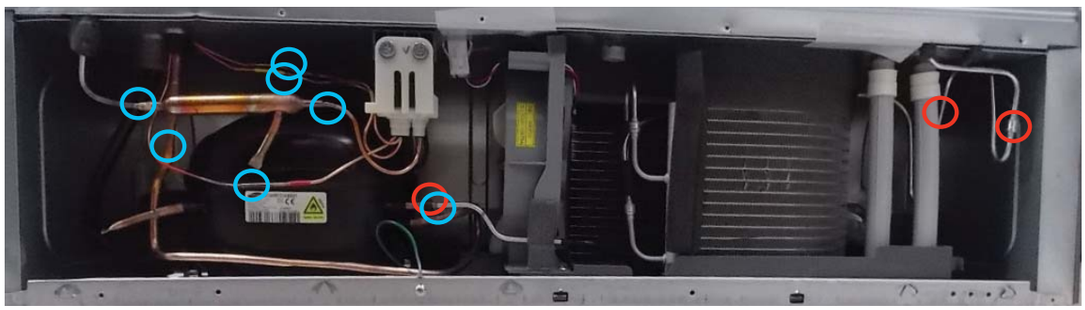
(When performing welding, insert the Pipe by 30 mm.)

9) Perform welding on the Dryer.



※ When performing welding, please make sure that the evaporating dishes or wires around the welded part won't get carbonized by flame.

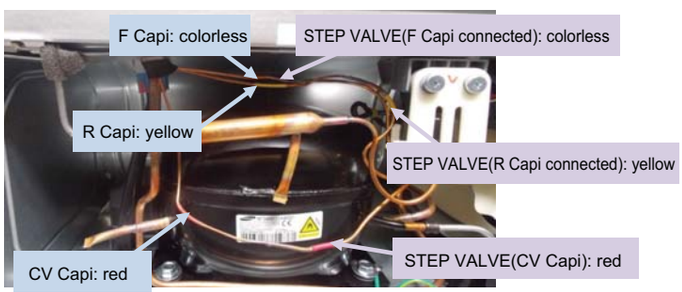
4. How to service the pipes in the machinery room (RF9000K)

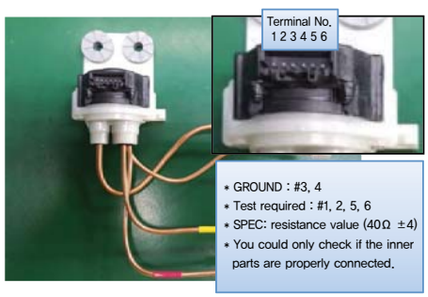


Welding Points		Check Required
Lock-ring	3	○
High Frequency	7	○
Total	10	

※ When performing welding, please make sure that the evaporating dishes or wires around the welded part won't get carbonized by flame.

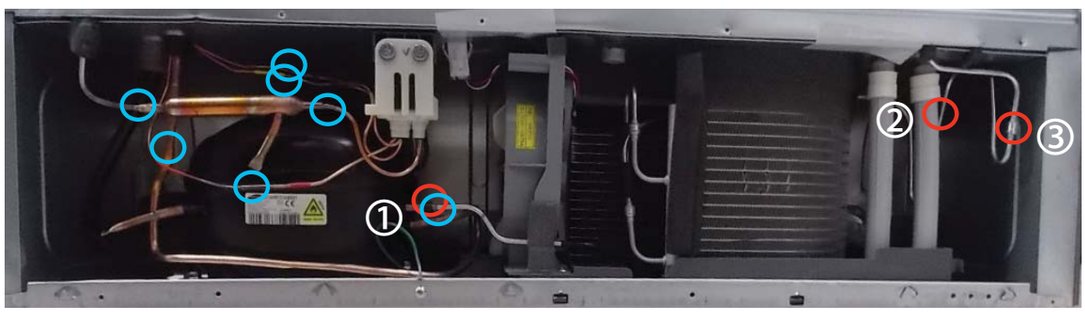
※ How to service the pipes in the machinery room (RF9000K, 4WAY VALVE)



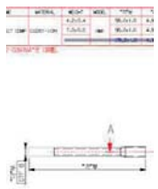


(1) Lock-ring SVC

▶ 1) Lay-Out



▶ 2) Part type: Two types



Material Code	Pipe Shape	Length
DA81-05659A	'–' shaped. Pipe expanded on one side.	55 mm
DA81-05659B	'–' shaped. Pipe expanded on one side.	95 mm
DA62-02878A	'U'-shaped	–

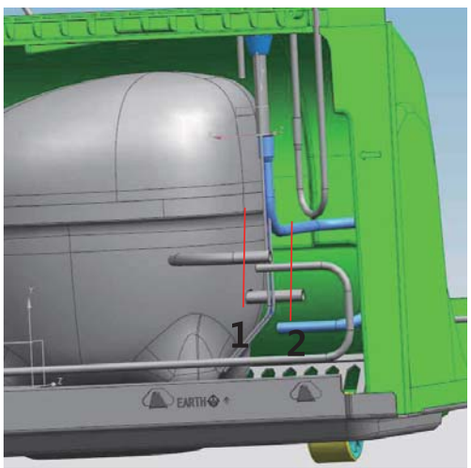
5. Review Results

1) ②, ③: Normal and there is enough space.

2) ①: '–' type (55 mm) is applied and repair is performed.

※ When performing welding, please make sure that the evaporating dishes or wires around the welded part won't get carbonized by flame.

6. How to service (for #3 and #1)



1) Cut Line No. 1.
Precaution: Make sure the cutter is as close to the Lock-ring as possible when you work on it.

2) Cut Line No. 2.
Precaution: Make sure the cutter is as close to the Comp connecting pipe as possible when you work on it.

3) Cut the end of the A/S Pipe by about 10-15 mm before connecting it.
Lock-ring length; 20 + Cutting (Comp) 5
Pipe inserted 15 + Cutting (Pipe) 5 = 45

※ When performing welding, please make sure that the evaporating dishes or wires around the welded part won't get carbonized by flame.

7. Steps to Charging Tube Connection

▶ Necessary Equipments: Charging Tube, Welding Machine

▶ Work Sequence

1) After replacing the Comp, weld the Charging Tube to the end of the Charging Pipe and refill the R600a refrigerant.

Connect the Charging Tube.

Weld it to the Comp Charging Pipe.

Connect to the Bomb and the Charging Hose.

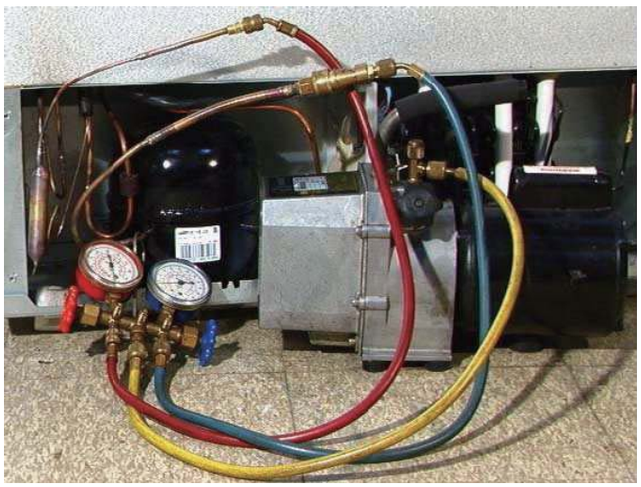
8. Vacuumizing operation

▶ Necessary Equipment: Vacuum Pump

▶ Work Sequence

1) Connect the Vacuum Pump to the Charging Tube and make the whole cycle in vacuum state.

2) Perform the operation for at least one hour. (If shorter, it will cause malfunction in the cooling cycle and a poor performance)



For H–M Cycle, perform the two–side vacuumization to improve the efficiency.

9. GAS CHARGING

▶ Work Sequence

1) Attach the Adapter to the CAN.

2) Attach the CAN to the Comp Charging Nipple and inject the refrigerant.

3) Run the compressor and inject it for at least five minutes.

① ② ③

Do not perform welding or other fire or spark-producing operation after injecting the refrigerant.

272, Oseon-Dong, Gwangsan-Gu,
Gwangju-City, Korea, 506-253
TEL: 82-62-950-6193, 6896
FAX: 82-62-950-6859

Europe, CIS, Mideast & Africa: gspn1.samsungcsportal.com
Asia: gspn2.samsungcsportal.com
North & Latin America: gspn3.samsungcsportal.com
China: china.samsungportal.com