SAMSUNG

REFRIGERATOR

BOTTOM MOUNTED FREEZER TYPE
BASIC MODEL : RL44Q*
MODEL NAME : RL44Q*/E*/S*/W*/F*/P*
RL41H*/E*/S*/W*/P*
RL38H*/E*/S*

SERVICE Manual

REFRIGERATOR

RL44Q/F
RL41/38H
RL44/41/38E

RL44/41W
RL44/41P

RL44/41/38S

PRODUCT FEATURE

- High Efficiency A+
- Easy Open Handle
- CoolSelect Zone™
- Digital Temperature Display

For the latest information, Please access to our service web site
(•North America : http://service.samsungportal.com •Latin America : http://latin.samsungportal.com
•CIS : http://cis.samsungportal.com •Europe : http://europe.samsungportal.com
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WARNING

IMPORTANT SAFETY NOTICE

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

SAMSUNG ELECTRONICS AMERICA, INC.

Technical Service Guide

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1. PRECAUTIONS (SAFETY WARNINGS)

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

PRECAUTIONS(SAFETY WARNINGS)

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

CAUTION/WARNING SYMBOLS DISPLAYED

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

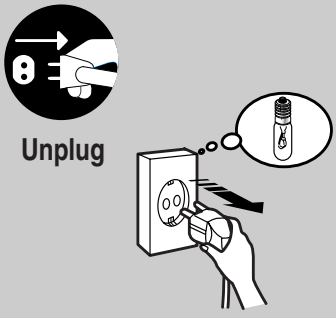
SYMBOLS

means Prohibition".
means Do not disassemble".
means No contact".
means The things to be followed".
means Power cord should be unplugged from the consent"
means Earth to prevent Electric shock".

Warning & Caution

Pull the power plug out to exchange the interior lamp of the refrigerator.

- *It may cause electric shock.*



Use the rated components on the replacement.

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

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

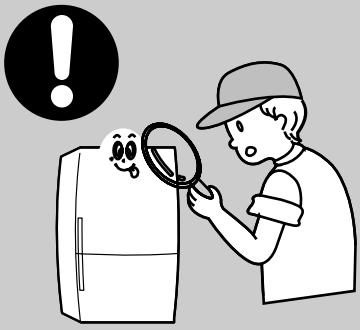
- *Bundle tightly wires in order not to be detached by the external force and then not to be wetted.*

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

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

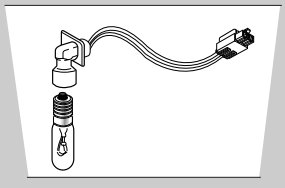
After repair, check the assembled state of components.

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



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

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



PRECAUTIONS(SAFETY WARNINGS)

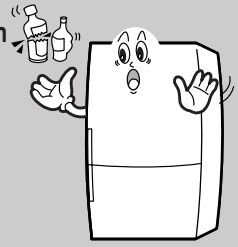
❊ Please ler users know following warnings & cautions in detail.

Warning & Caution

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

- *Freezing of the contents may inflict a wound.*

Prohibition



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

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

Prohibition

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

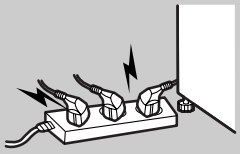
- *The products which temperature control should not be stored in the refrigerator.*

Prohibition

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

- *May cause abnormal generation of heat or fire.*

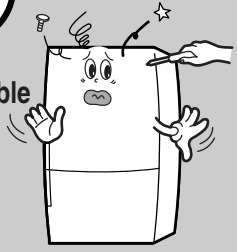
Prohibition



Do not allow users to disassemble, repair or alter.

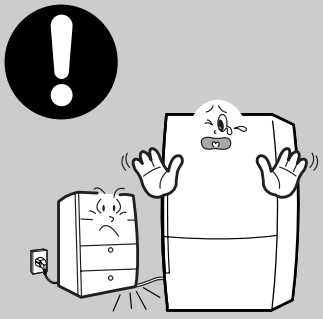
- *It may cause fire or abnormal operation which leads to injury.*

Do not disassemble



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

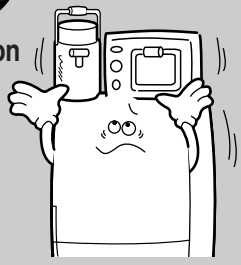
- *May cause fire.*



Do not allow users to store articles on the product.

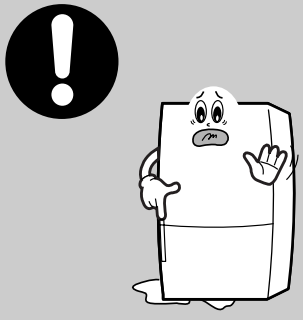
- *Opening or closing the door may cause things to fall down, with may inflict a wound.*

Prohibition



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

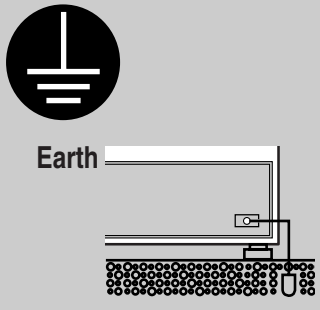
- *Deterioration of insulation of electric parts may cause electric shock or fire.*



Make sure of the earth.

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

Earth



2. PRODUCT SPECIFICATIONS

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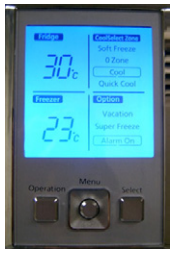
PRODUCT SPECIFICATIONS

2-1) Introduction of main function

- **SAMSUNG refrigerator has the following characteristics.**

Characteristics	Specification
Environment-friendly fridge/freezer using R600a	• This products protects the environment by using the R600a refrigerant and the cyclopentane blowing agent • Properties :ODP(Ozone Depletion Potential):0GWP :Lowest * GWP(Global Warming Potential)
High -energy efficiency(A+)	• Optimized power consumption when using R600a and cyclopentne
Fresh compartment, just above 0 °C	• Drawer for dry or wrapped food • Drawer for fresh salades,vegetables and fruits
Fridge at the top, drawer-type freezer at the bottom	• The highly ergonomic vegetables compartment is placed at waist height as it is frequently used. • The drawer -type freezer minimize temperature variations and stores food cleanly and conveniently. • The operation switch is handy to switch the appliance on and off without pulling out the main plug.
Digital temperature control display	• The display shows all functions of the appliance, so that you can easily control them.
Supply of cool water without door openning	• With the water dispenser,you can obtain chilled water easily without opening the door. In addition, you can save electricty by more than 30%reducing the number of times the door is open.
SUPER fast freezing function	• Food can be stored in fresh conditions by cooling it quickly via the "Super Freeze"freezing function. 
Vacation	• Save on energy consumption by switching off the fridge and maintaining only the freezer running when you take a long vacation or are away for any reason
BRITA water filter	• The Brita Filter supplies users with higher quality water than before.
LED LAMP	• High Energy Efficiency, Long Life

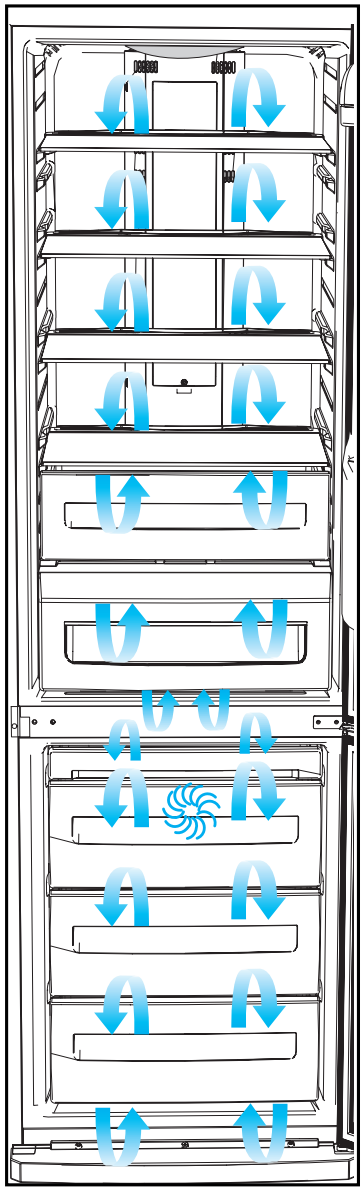
Item		Specification													
Model		RL44Q*	RL44F*	RL44E*	RL44S*	RL44P*	RL44W*	RL41H*	RL41E*	RL41S*	RL41P*	RL41W*	RL38H*	RL38E*	RL38S*
Net Capacity	Total	326L		345L		338L		325L			318L		301L		
	Refrigerator	232L		245L		244L		231L			224L		207L		
	Freezer	94L						94L					94L		
Net dimension	W(mm)	595													
	D(mm)	643													
	H(mm)	2000						1920					1820		
Rated Voltage and Frequency		220 ~ 240V/50Hz						220 ~ 240V/50Hz					220 ~ 240V/50Hz		
						115~127V / 60Hz					115~127V/ 60Hz				
Motor Rated Consumption Power		90 ~ 95W													
Electric Heater Rated Consumption Power		240W ~ 288W													
Kind of Refrigerator		INDIRECT COOLING METHOD REFRIGERATOR													
Refrigerant/Refrigerant Amount		R600a / 60g	R600a/56g			R600a /60g	R600a/56g R134a/145g	R600a/60g	R600a/56g		R600a /60g	R600a/56g R134a/145g	R600a/60g	R600a/56g R134a/145g	
Freezer Performance		**** 4 -STAR													
Product Weight		78kg						76kg					73kg		

PRODUCT SPECIFICATIONS

NOTE

This operation instruction covers various models.

The characteristics of your appliance may differ slightly from those described in this manual.



PRODUCT SPECIFICATIONS

- Comparison with competitor

ITEM			SPEC.	SAMSUNG CORE-PJT	Whirlpool ARC7290	LIEBHERR CNPes3867	LG GR-459QVJA
				Average	Actual data	Actual data	Actual data
Appearance							
Product Feature			Cooling type	Indirect type	Direct type	Direct & Indirect type	Indirect type
			Door Type	STS	INOX	STS	WHT
			Fresh drawer	Cool select zone	Vegetable drawer	Vegetable drawer	Fresh drawer
Performance	Cooling speed (Min)	F-ROOM	180↓	153.1	359.2	452.2	163.5
		R-ROOM	180↓	154.9	182.5	234.0	180.0
	43℃	F-ROOM	-18↓	-24.4	-20.1	-19.9	-20.3
		R-ROOM	5↓	-4.0	-2.8	2.9	-7.3
	Temperature distribution (Fridge)	F-ROOM	-	1.1	3.3	2.8	0.9
		R-ROOM	2.0↓	1.4	5.9	2.0	0.8
	Operation rate	N-N	65%↓	51.1	61.4%	78.8%	56.3%
Noise	Sound power level		45dB↓	40.1	39.0	40.5	45.0
	Sound pressure level		43db↓	39.1	39.3	38.1	41.3

PRODUCT SPECIFICATIONS

2-3) Electric Parts Specification

Item			Specification				
Models			RL44P&41P	RL44*/RL41*/RL38*		RL41WCPS1/XTL	
Components for Freezer	Refrigerant		✱ ✱✱✱ 4-STAR				
	Freezing Capacity		R600a		R134a		
	Compressor	Model	MD4A1Q-L1U/E03	MD4A1Q-L1U/E02	MK172Q-L2U/E18	MK172H-L2U/E18	MK162D-L1U/E08
		Starting type	R.S.C.R		R.S.C.R		
		Oil Charge	Mineral Oil(10 cst)		FREOL α-10(ESTER)		
	Evaporator	Freezer	Split Fin Type				
	Condenser		Natural Convection Type				
	Dryer		Molecular Sieve XH-9				
	Capillary Tube		ID0.75xL3500, 5.95 kg/cm^2				
	Defrost-Heater	Conducting at F Defros	240W				
	Thermal-Fuse for preventing overheating of Refrigerator Defrost-Heater		AC 250V 10A 77°C(+0°C/-5°C)				
Electric Components	Condenser for Compressor (Package)	Running	400VAC/5㎌			250VAC/12㎌	
		Starting	-			-	
	Starting-Relay	Operation	PTHTM330MD3	J531Q35E330M385-2		J531Q34E220M350-2	J531Q33E100M200-2
		Model	33 Ω ± 40%	33 Ω ± 20%		22 Ω ± 20%	10 Ω ± 20%
	Over-load Relay	Model	4TM189PHBYY-53	4TM232SHBYY-53		4TM265RFBYY-53	4TM412SFBYY-53
		Temp. ON	125 ± 9°C	135 ± 9°C		130 ± 9°C	135 ± 9°C
		Temp. OFF	69 ± 5°C	69 ± 5°C		61 ± 5°C	61 ± 5°C
	Rated Voltage		220 ~ 240V/50Hz			220 ~ 240V/50Hz	115~127V/60Hz
	Motor	BLDC	DREP5020LB		-	-	-
		AC	-	IS-27210SNC5B			IS-27210SNP6A
	Lamp	LED TOWER Type	-	DC 12V,3.0W(12EA)			-
		TOP	DC 12V 2.3W (8EA)				AC 115~127V/40W(1EA)
		BULB Type	AC 230V 40W(1EA)				
	Door Switch		REED SWITCH				

PRODUCT SPECIFICATIONS

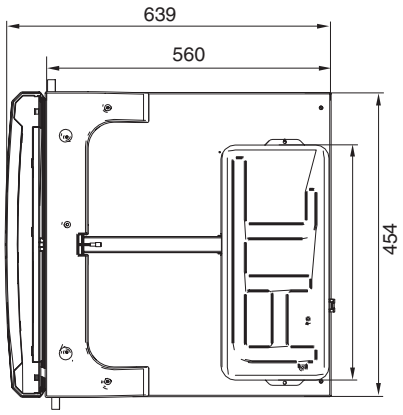
Items				Specification	
Model				RL44/RL41/RL38	
Room Temperature Sensor Components	Freezer	Model	Temperature Selection	ON(°C)	OFF(°C)
		THERMISTOR (FREEZER SENSOR) 502AT	-23℃	-22.0	-24.0
			-20℃	-19.0	-21.0
			-14℃	-13.0	-15.0
	Refrigerator	Model	Temperature Selection	ON(°C)	OFF(°C)
		THERMISTOR (FRIDGE SENSOR) 502AT	1℃	2.0	0
			3℃	4 .0	2.0
			7℃	8 .0	6 .0
Defrost Related Components	Defrost Cycle	First Defrost Cycle (Concurrent defrost of F and F)		6hr ±10mi n	
		Defrost Cycle(FRE)		6 ~19 hr (vary according to the conditions used)	
		Pause time		8 ±1 min	
	Defrost Sensor		Model	Thermister(502AT)	
			SPEC	5.0㏀ at 25 °C	
	Thermal-Fuse		Rated	AC 250V 10A	
			Operating temperature	77 °C (+0 °C/-5 °C)	

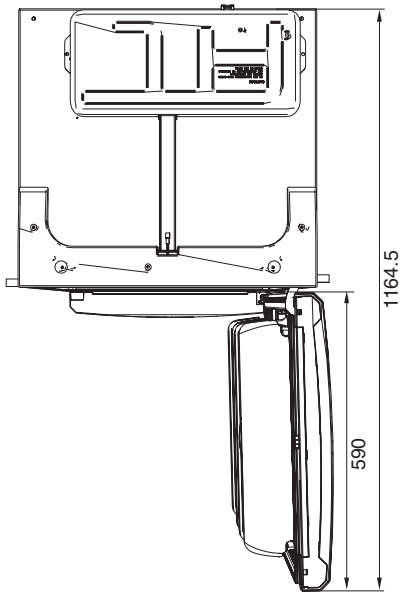
2-4) Optional Material Specification

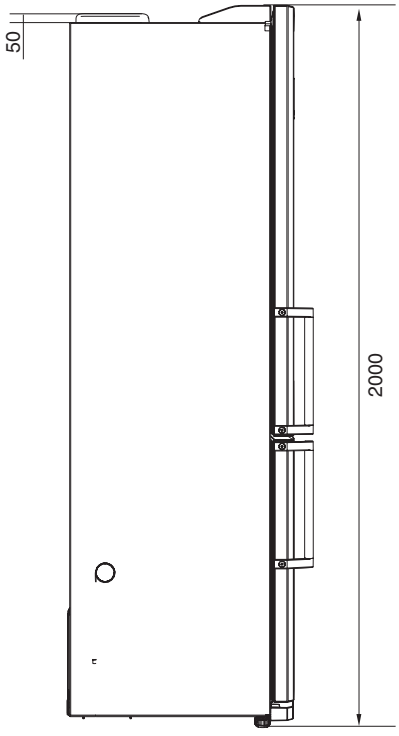
Photograph	Part Name	Part Code	Quantity	Remark
	ASSY LABELMANUAL FILTER	DA99-01629A	1	RL44P/41P
	FILTER WATERASSY	DA61-03989A	1	RL44P/41P

PRODUCT SPECIFICATIONS

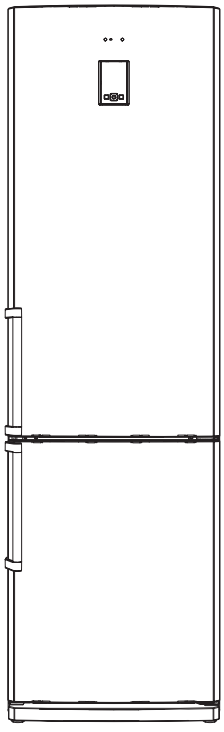
2-5) Dimensions (mm)







RL44	RL41	RL38
2,000	1,920	1,820



3. DISASSEMBLY & REASSEMBLY

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DISASSEMBLY & REASSEMBLY

3-1) PRECAUTION

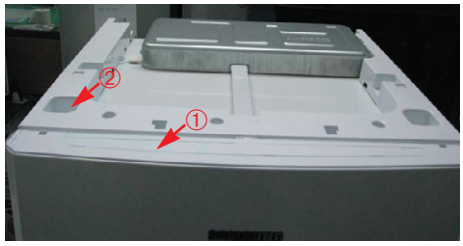
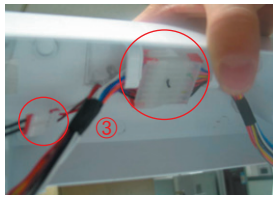
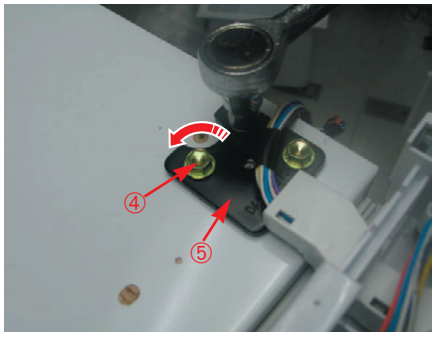
- Unplug the refrigerator before cleaning and making repairs.
- Do not dissemble or repair the refrigerator by yourself.
  - You run risk of causing a fire, malfunction and/or personal injury.
- Remove any foreign matter or dust from the power plug pins.
  - Otherwise there is a risk of fire.
- Do not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

- NEED TOOL

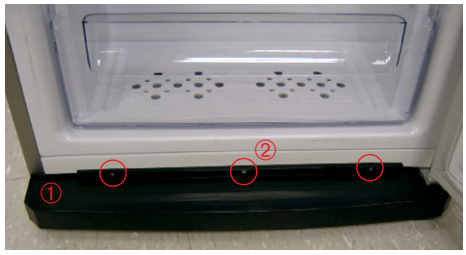
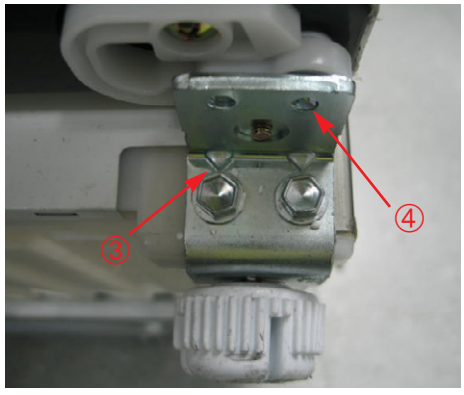
IMAGE	ITEM	USE
	Phillips Head Driver	Use for assembling and disassembling of screw
	Flat Head Driver	Use for assembling and disassembling of HomeBar, Dispenser, Deli Cartessen Box, Main PBA etc...
	Hex Wrench ø2mm	Use for assembling and disassembling of Handle
	Socket Wrench ø10mm	Use for assembling and disassembling of Door Hinge

3-2) Assy Door

Removing the Refrigerator Door

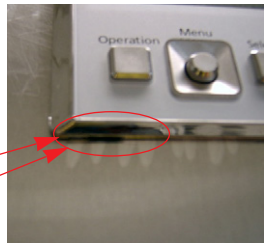
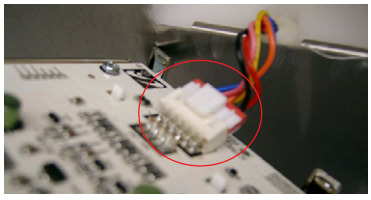
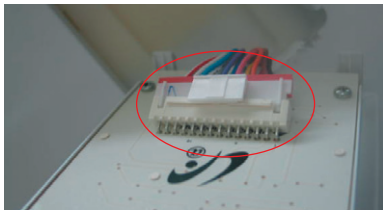
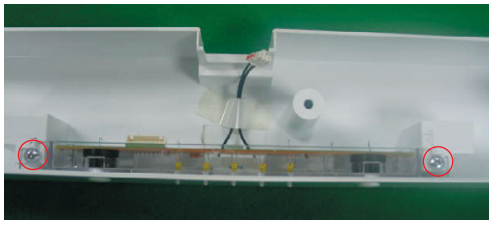
PART NAME	FIGURE	DESCRIPTION
Removig the Refrigerator Door	 	1) With the door closed, remove the Cover Wire Door (①) and Cap Cabi (②) using a flat-head screwdriver and philips-head screwdriver, and then disconnect the wires (③). ⚠ Be careful of injury.
		2) Remove hinge screws (④)by turning to counter-clockwise,and take off the upper hinge (⑤)along the arrow. ⚠ Take care when removing the door to ensure that it does not fall on you.
		3) Remove the door from the middle hinge by carefully lifting the door (⑥). ⚠ Be careful not to scratch.

Removing the Freezer Door

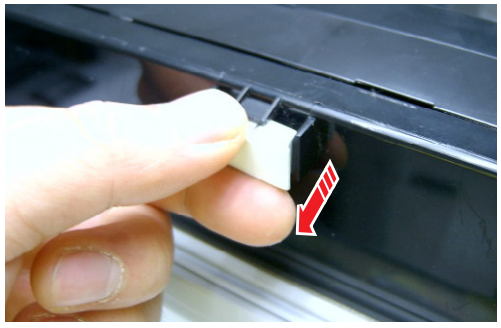
PART NAME	FIGURE	DESCRIPTION
Removing the Freezer Door		1) Open the Freezer door,and then take off the Front Leg Cover assembly (①) by removing the 3 screws (②) to counter-clockwise. ⚠ Be careful not to scratch.
		2) Remove hinge screws (③)by turning to counter-clockwise,and take off the lower hinge (④)by pulling out. ⚠ Take care when removing the door to ensure that it does not fall on you. **- If you want to aseemble, follow the reverse order.**

DISASSEMBLY & REASSEMBLY

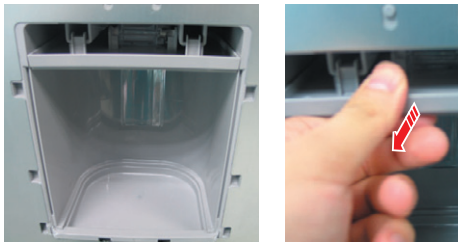
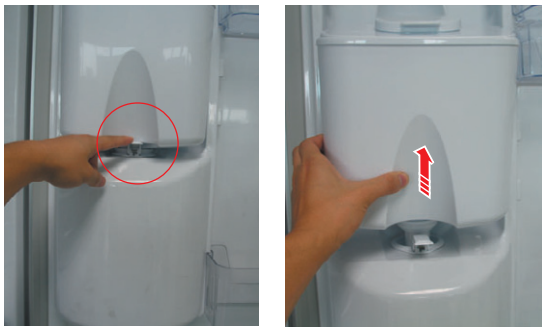
3-3) Door Sub parts

PART NAME	FIGURE	DESCRIPTION
Control Panel	 	**- LCD TYPE** 1. Insert a flat-head screwdriver on the slot as shown,and unlock the tabs. 2. Disconnect the wire connector. ⚠ When diassembling, make sure the unit turned off.
		**- LED TYPE** 1. Insert a flat-head screwdriver on the slot as shown,and unlock the tabs. 2. Disconnect the wire connector. ⚠ When diassembling, make sure the unit turned off.
		**- LED SEMI TYPE** 1. After removing Cap-Cabi SEMI (refer to Removing the Refrigertor Door), remove 2 screws.

DISASSEMBLY & REASSEMBLY

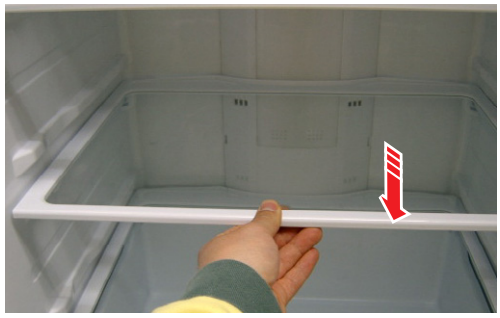
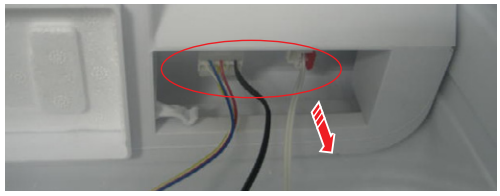
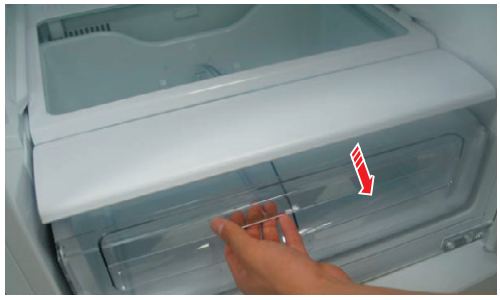
PART NAME	FIGURE	DESCRIPTION
Door Handle		1.Insert a flat-head screwdriver on the slot as shown,and unlock the caps. 2.Remove screws by turning to counter-clockwise,and take off the Handle Assy by pulling out.
Door Gasket		The door gasket is a molded gasket set into a channel located in the door liner. 1. Open the door. 2. Grasp the gasket and pull in an outward motion until the molded gasket separates from the door liner. ⚠ Be careful of injury.
Refriger-ator Door Magnet S/W		The refrigerator has a door magnet switch located in the upper center for the refrigerator. 1. Use a small flat-blade screwdriver to unlock the locking tab and pull the switch out.

DISASSEMBLY & REASSEMBLY

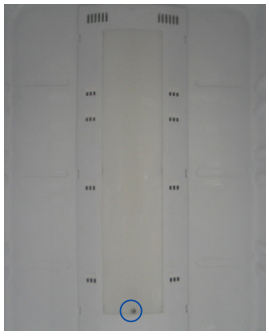
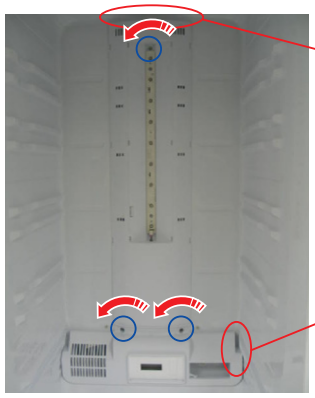
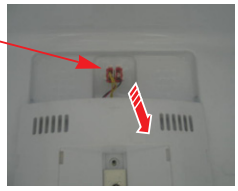
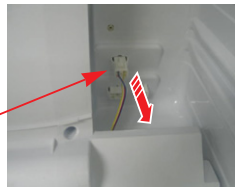
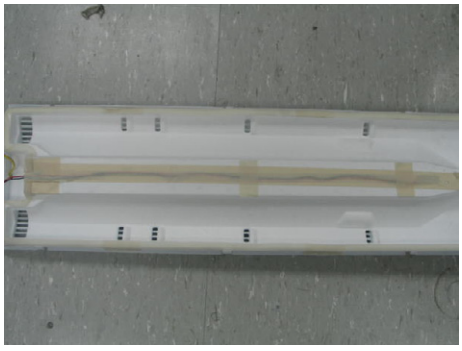
PART NAME	FIGURE	DESCRIPTION
Disassembly of Dispenser		1. Insert a flat-head screwdriver on the slot as shown,and unlock the tabs 2. Disassemble the cover-dispenser from bottom to top in order
		1. Take off the Cover -dispenser 2. Pull out the Ass'y -Lever dispenser.
Tray Dispenser		1. Pick up the tray-dispenser and lift it up.
Water Tank		1. Push down the Lever-dispenser. 2. Draw up Water Tank,then separate it from the Panel.

DISASSEMBLY & REASSEMBLY

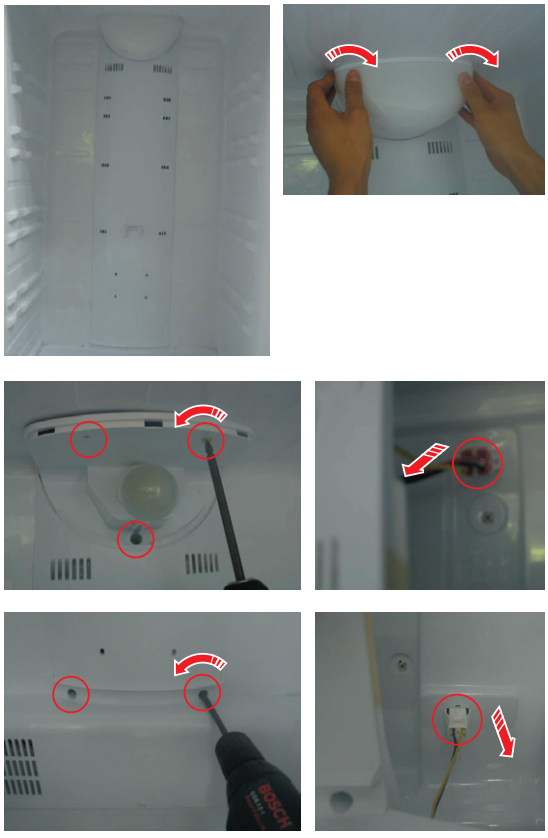
3-4) Refrigerator Compartments

PART NAME	FIGURE	DESCRIPTION
Glass Shelf		These shelves allow the storage of larger items and pull out for easy access. 1. Lift it up and pull the shelf out to the front.
Plastic Drawers In Refrigerator		Drawers are designed for storage of fruits,vegetables,and deli items.The drawers are located in the lower portion of the refrigerator. 1. Pull out the drawer as far as it goes. 2. Tilt the drawer up and pull it out until it is removed.
Cool Select Zone™	 	1. Remove 2 screws and pull the CoolSelect Zone drawer out and then disconnect the 2 wire connectors. ⚠ When diassembling, make sure the unit turned off.
CHILLED ROOM	 	1. Remove 2 screws and pull the Chilled Room drawer out.

DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
Refriger-ator Light (LED Type)	    	The refrigerator lights are located in the Refrigerator. 1. Remove all shelves,plastic drawer and CoolSelect Zone drawer. 2. Pull out cover lamp after removing 1 screw as shown. 3. Remove 3 screws as shown and disconnect the upper and lower wire connectors. ⚠ When diassembling, make sure the unit turned off. 4. Remove tape for cover of wire at the back side and remove 3 screws at the front side.

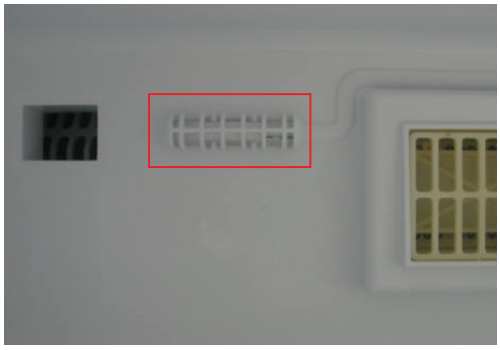
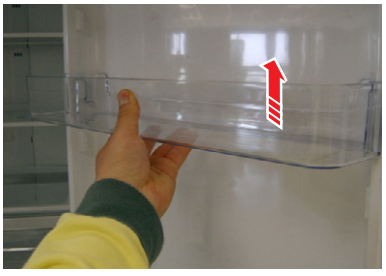
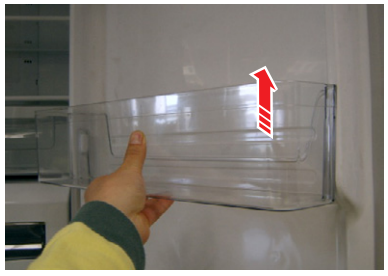
DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
Refrigerator Light (BULB Type)		The refrigerator lights are located in the Refrigerator. 1. Remove all shelves,plastic drawer and CoolSelect Zone drawer. 2. Pull out cover lamp with 2 hands. 3. Remove bulb and then remove 5 screws located at upper and lower side. ⚠ Disconnect the upper and lower wire connectors as shown.
Refrigerator Thermistor		**- LED TYPE** The refrigerator thermistor is located inside of the light cover of the refrigerator.
		- BULB TYPE The refrigerator thermistor is located inside the refrigerator.

DISASSEMBLY & REASSEMBLY

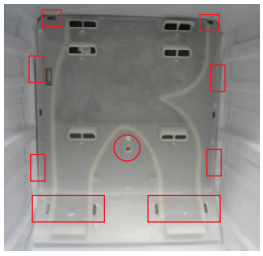
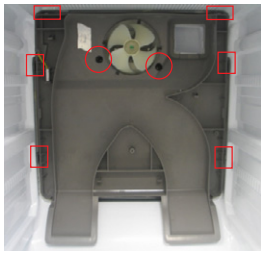
PART NAME	FIGURE	DESCRIPTION
Refriger-ator Light (LED type)		1. Disassemble Refrigerator Compartment COVER-LAMP while pressing down the threshold. 2. Take off LED-LAMP while pressing down CASE-LAMP threshold. 3. Separate LED and the cable.

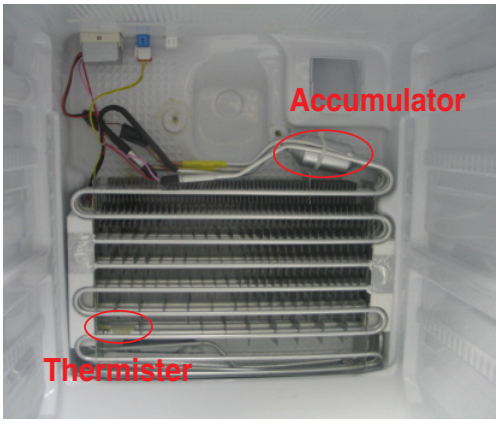
DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
Cool Select-Zone™ Thermistor		The CoolSelect Zone™ thermistor is located inside the back of CoolSelect Zone™ drawer. The temperature signal is sent to the microprocessor.
Door Bin	**Dairy Bin**  **Variety Bin**  **Bottle Bin**	The door bins allow storage of perishable items. 1.Push the bin up and slide it out .

DISASSEMBLY & REASSEMBLY

3-5) Freezer Compartments

PART NAME	FIGURE	DESCRIPTION
Plastic Drawer In Freezer	 **Upper Drawer** **Mid Drawer** **Lower Drawer**	Drawers are designed for storage of meat and dry foods.The drawers are located in the lower portion of the refrigerator. 1. Pull out the drawer as far as it goes. 2. Tilt the drawer up and pull it out until it is removed.
Evapor-ator Cover In Freezer	  	1. Pull out all drawers 2. Pull out the cover evap front after removing 1 screw and unlocking hooks using flat-head screwdriver. 3. Pull out the cover evap rear after removing 2 screws nd unlocking hooks using flat-head screwdriver. ⚠ When diassembling, make sure the unit turned off.

PART NAME	FIGURE	DESCRIPTION
Evaporator In Freezer		Evaporator is located in the bottom of freezer to produce cold air driven across the evaporator Coils. 1. Take off the ductwork in Freezer. 2. Disconnect the wire connector (Heater,Bimetal,and Thermistor). 3. Cut the pipes, desoldering is dangerous with R600a charged appliances. 4. Remove the evaporator. 5. Take the same steps to seal the system as mentioned earlier.
Freezer Thermistor		The freezer thermistor is located at the lower left of freezer vent.It sends temperature signals to the micro-processor.

3-6) Machine Compartments

PART NAME	FIGURE	DESCRIPTION
	 	The electric box is located in the top of the refrigerator. 1. Remove 1 screw at right side. ⚠ When diassembling, make sure the unit turned off. **- If you want to aseemble, follow the reverse order.**

DISASSEMBLY & REASSEMBLY

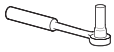
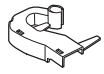
3-7) Reversing the Door swing

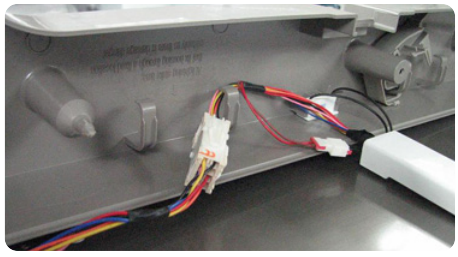
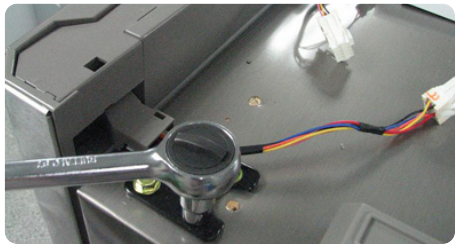
Read these instructions completely and carefully

Warning

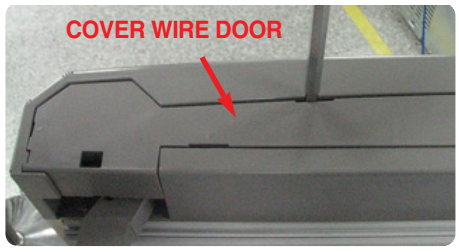
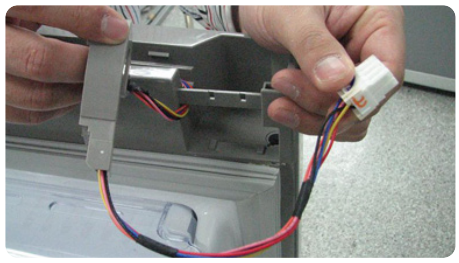
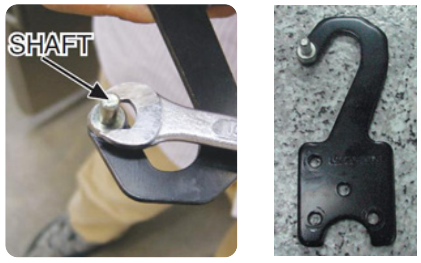
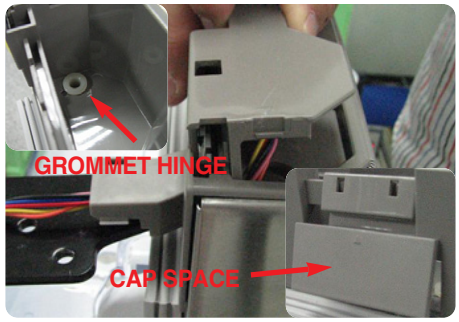
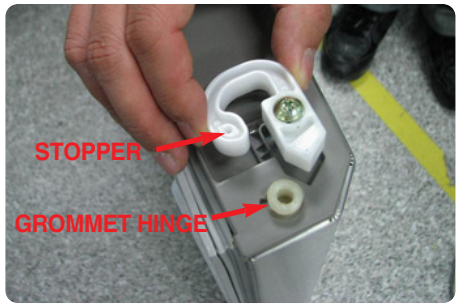
- Before reversing the door,first of all,main power should be switched off.you should take out contents and accessories like door guard from the doors.Be careful not to drop the doors during dissembling or assembling.

1. Handle parts carefully to avoid scratching paint.
2. Set screws down by their related parts to avoid using them in the wrong places.
3. Provide a non-scratching work surface for the doors.(ex:blanket)
4. During door reversing,refrigerator should not be stained with oil.

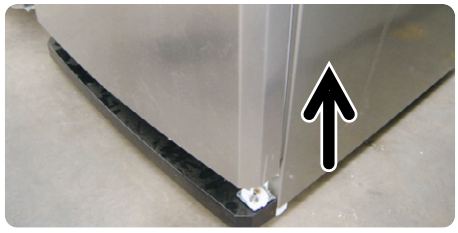
NOT PROVIDED					ADDITIONAL PART
					
Phillips Head Driver (+)	Flat Head Driver (-)	10mm Socket Wrench (for bolts)	11mm Wrench (for hinge shaft)	3/16" Allen Wrench (for middle hinge)	Top Left Hinge Cover (Underneath the Top Cover)

PART NAME	FIGURE	DESCRIPTION
DISASSEMBLY OF THE FRIDGE DOOR		1. After removing screws,disassemble the CAP CABI.
		2. Disconnect electric wires inside of the CAP CABI. When diassembling, make sure the unit turned off.
		3. With a 10mm socket wrench wrench, remove bolts on the top of the refrigerator.
		4. Disassemble the Fridge door by lifting it upward. Be careful not to drop and scratch the face of the Fridge door. Be careful not to scratch.

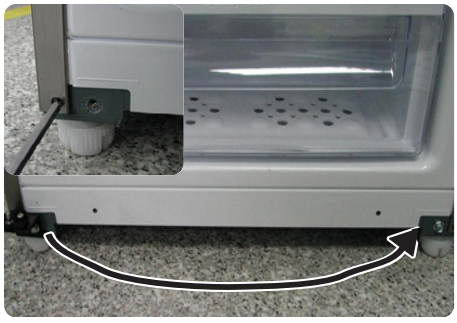
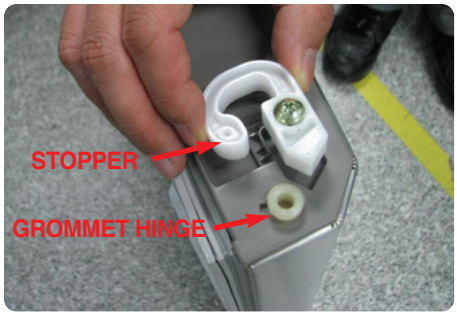
DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
DISASSEMBLY OF THE FRIDGE DOOR		5. Disassemble the COVER WIRE DOOR on the top of the fridge door with a flathead screw driver by putting it into the indicated position(△). ⚠ Becareful not to scratch.
		6. Disjoin the COVER WIRE HINGE R from the ASSY HINGE UPP as shown. Take out the electric wire from the COVER WIRE HINGE R.
		7. Switch the direction of the electric wire as below. Take out the COVER WIRE HINGE L from the underneath the CAP CABI and rejoin it with the electric wire. ⚠ Make sure the length of the electric wire should be more than 150mm.
		8. With 11mm wrench, separate the HINGE SHAFT and then flip the HINGE and reattach the HINGE SHAFT.
		9. After rejoining the COVER WIRE HINGE L and the ASSY HINGE UPP and switching the position of the GROMMET HINGE and the CAP SPACE DOOR, reposition the ASSY HINGE UPP and assemble the COVER WIRE DOOR as shown. (The electric wire should be inside of the COVER WIRE DOOR.)
		10. Switch the position of the STOPPER DOOR and the GROMMET HINGE as shown.

DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
DISASSEMBLY OF THE FREEZER DOOR		11. After unscrewing and removing two bolts, disassemble the ASSY HINGE MID.
		12. Disassemble the Freezer Door by lifting it upward. ⚠ Be careful not to drop and scratch the Freezer Door.
		13. Remove the COVER LEG FRONT COVER by removing the screws. ⚠ Be careful not to scratch.
	   	14. Disassemble the ASSY HINGE LOW as shown and put the AUTO GUIDE upside down, switch the position of the SHAFT.
REVERSING THE HANDLE BAR (FRIDGE/ FREEZER)	 	15. Detach the CAP SCREW HANDLE with flat screwdriver and disassemble the HANDLE BAR with unscrewing.
		16. Switch the position of the CAP HOLE DOORs, pulling out and pushing them in. ⚠ Be careful not to scratch.

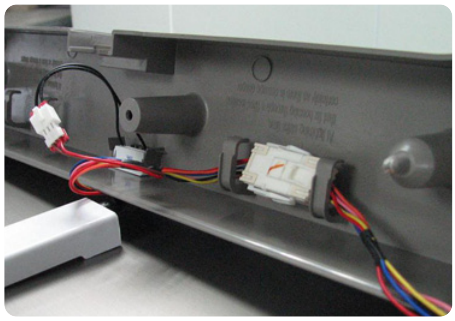
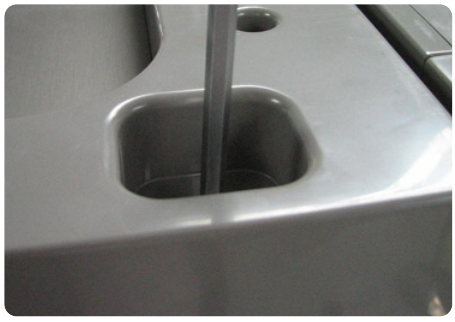
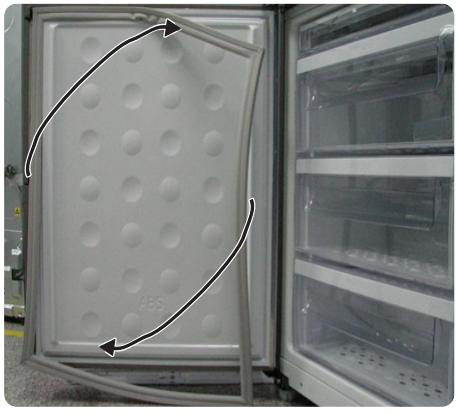
DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
REVERSING THE HANDLE BAR (FRIDGE/ FREEZER)		17. Reattach the HANDLE BARs on the other side of doors in reverse order.
ASSEMBLY OF THE FREEZER DOOR		18. Exchange the positions of a bolt and the assy HINGE LOW after making a hole with phillips head driver on the left bottom side of the unit.
		19. After switching the position of the CAP HOLE HINGE LOW, reassemble the COVER LEG FRONT. ⚠ Becareful not to scratch
		20. Switch the position of the CAP HOLE HINGE MID and a screw.
		21. Switch the position of the STOPPER DOOR and the GROMMET HINGE as shown.

DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
ASSEMBLY OF THE FREEZER DOOR		22. Switch the position of the GROMMET HINGE and the CAP HINGE HOLE.
		23. Carefully put the Freezer door back on and assemble HINGE MID with 2 bolts. ⚠ A screw will be remained after reversing freezer door. And it does not affect performance of the refrigerator.
ASSEMBLY OF THE FRIDGE DOOR		24. Carefully put the Fridge door back on. ⚠ Be careful of injury.
		25. Secure the ASSY HINGE UPP with 3 bolts as shown. Make sure the Fridge Door is firmly closed.
		26. Switch the position of the CAP HOLE HINGE UPP.

DISASSEMBLY & REASSEMBLY

PART NAME	FIGURE	DESCRIPTION
ASSEMBLY OF THE FRIDGE DOOR		27. Reconnect the electric wires and reposition the wires inside of the CAP CABI as shown below.
		28. Reassemble the CAP CABI after assuring the position of Wires.
		29. Detach the Fridge and Freezer gaskets and attach them after rotating 180°. (Make sure the door gaskets are properly arranged. If not, there can be a noise or dew can be formed which affects perfomance of the unit.)
		30. Make sure the doors are working properly.

4. TROUBLESHOOTING

4-1) ALIGNMENTS AND ADJUSTMENTS

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TROUBLESHOOTING

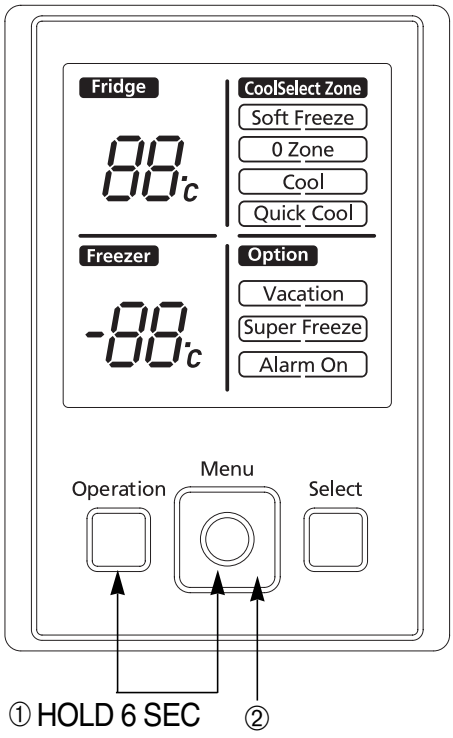
4-1-1 LCD Model

4-1-1-1) Test Function (Forced Freeze /Forced Defrost)

1) How to Enter Test Mode

- When the Operation and the Menu buttons on the display panel are held down for more than 6 seconds, the entire lamps on the display panel are to blink in an interval of 0.5 second for about 4 seconds.
  Now,take your fingers off the Operation and the Menu buttons,and press the Menu button to go into the Test mode (Forced Freeze/Defrost Mode).
  At the Test mode, any one of the Operation / Menu / Select buttons will work as the Test button.
- Each time the Test button is pressed, it will be changed in the following order.
  Forced Freeze(FF) → Forced Freezer defrost (Fd) → Cancellation (Normal Operation) It is most recommended that the unit be re-plugged in to terminate the operation of the Test function.

2) Test Mode Entering Process



TROUBLESHOOTING

3) Test Mode Operation

3-1) Forced Freeze Function

3-1-1) When the Menu button is pressed once at the Test mode, FF will light up on the display sending out beeping sounds.

3-1-2) If Forced Freeze is selected, the compressor operates immediately without 5 min. delay in any operation mode.
At this point, if it is in Defrost mode, it stops defrosting immediately.
(When it goes into the Forced Freeze right after the Compressor Off, it can cause over-load. So, take care not to trigger over-load.)

3-1-3) When the Forced Freeze is selected,the compressor and the Freezer Fan operate for 24 hours without stopping and the Fridge compartment will operate according to the set temperature.

3-1-4) When the Forced Freeze is selected,the Freezer and the Fridge comparts will be set to "-25 °C" and "2 °C"automatically.

3-1-5) The Super Freeze does not run together with the Forced Freeze.
When it is selected, the Super Freeze LED goes off in 10 seconds.

3-1-6) To cancel the Forced Freeze before being completed, turn off and on the power, or select the Test cancelation mode.

3-1-7) During the Forced Freeze, it keeps sending out alarm sounds (0.25 sec On &0.75 sec Off) until it is completed. And, it is not possible to turn it off.

3-2) Forced Freezer defrost

3-2-1) When the Lock button is pressed once more at the Forced Freeze, Fd will light up on the display and it will start the Freezer defrost after terminating the Forced Freeze right away.

3-2-2) At this time,it sends out a beeping sound for 3 seconds and then the beeping goes on for 0.5 sec and off for 0.5 sec during the Forced Freeze.

3-3) Test Cancellation Mode

3-3-1) When turning the display panel into the Test mode and pressing the TEST button once more during the Forced Freezer defrost, the Forced Freezer defrost will be cancelled and it will go back to the normal operation.
Also, when the unit is plugged out and in again, the Test mode is to be deactivated.

TROUBLESHOOTING

4-1-1-2) Self-Diagnosis Function

1) Self-Diagnosis Function upon Initial Power-On

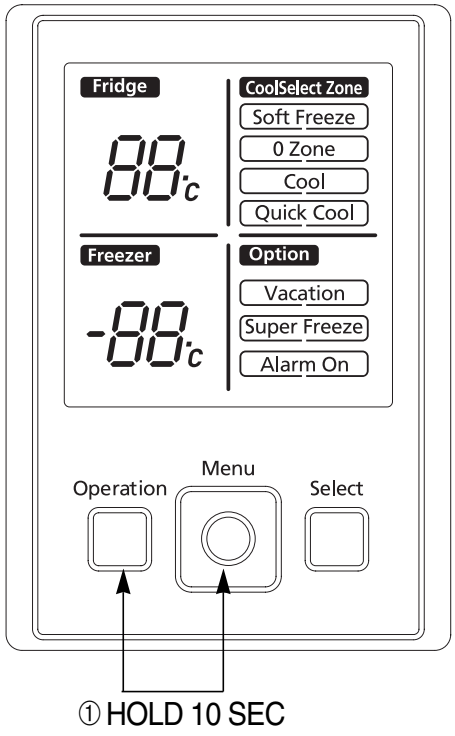
1-1) When the unit is plugged into the power, MICOM diagnoses the status of the temperature sensors in a few minutes.

1-2) If defective sensor is found after Self-Diagnosis, relevant Display LEDs will blink at an interval of 0.5 sec.and there will be no extra warning sound (Refer to Self-Diagnosis Check List)

1-3) During a state that a defective sensor were found and its relevant LED were blinking, it would only recognize the Self-Diagnosis button combination and it does not do the normal display. But, the temperature will be controlled through the Emergency Operation.

1-4) To cancel these error codes, fix all the problems with the defective sensor or press the Menu + Operation buttons for 10 seconds.

2) Self-Diagnosis Function during Normal Operation

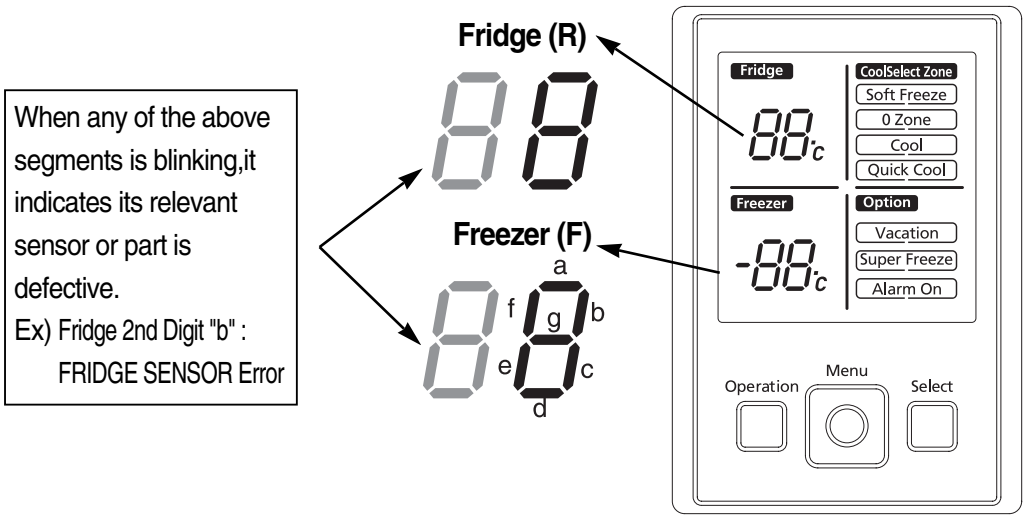


2-1) When the Menu + Operation buttons are held down for 6 seconds at the same time during normal operation, the temperature setting display will blink at an interval of 0.5 sec for 4 seconds.
When the Menu + Operation buttons are held down for 10 seconds (including the 4-second LED blinking) at the same time, it sends out a "Ding-Dong" sound and goes into the Self-Diagnosis function.

2-2) When it goes into the Self-Diagnosis,the entire display panel goes off and when error occurs,it will last for 30 seconds continuously and go back to the normal status. (It sends out "Ding-Dong"sounds.) (Refer to Self-Diagnosis Check List below)

TROUBLESHOOTING

When any of the above segments is blinking,it indicates its relevant sensor or part is defective.
Ex) Fridge 2nd Digit "b" :
FRIDGE SENSOR Error



∗ Self-Diagnosis Check List

NO	Category	Description	Error Code	
①	FREEZER SENSOR	Rel at edt oF-SENSOR	Freezer	Freezer Second Digit "b"
②	FRIDGE SENSOR	Rel at edt oR-SENSOR	Fridge	Fridge Second Digit "b"
③	F-DEF-SENSOR	Rel at edt oF-DEF-SENSOR	Freezer	Freezer Second Digit "c"
④	EXT-SENSOR	Related to EXT-SENSOR	Freezer	Freezer Second Digit "a"
⑤	CoolSelect Zone SENSOR	Related to CoolSelect Zone SENSOR	Fridge	Fridge Second Digit "f"
⑥	Freezer Fan Error	Related to Freezer Fan Motor	Freezer	Freezer Second Digit "d"
⑦	Freezer defrost Error	Related to Freezer defrost	Freezer	Freezer Second Digit "g"
⑧	Damper Heater Error	Damper Heater Open or Short-Circuited	Freezer	Freezer First Digit "b"
⑨	Panel ↔ MAIN MICOM Communication Error	Communication Error between Panel ↔ MAIN MICOM	Freezer	Freezer First Digit "g"

TROUBLESHOOTING

- Descriptions of Self-Diagnosis Error Code

NO	Error Code	Item	Description	How to Self-Diagnose
1	Freezer	FREEZER SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #1 and #6.
2	Fridge	FRIDGE SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #3 and #6.
3	Freezer	DEFROST SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #2 and #6.
4	Freezer	AMBI SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN31 #1 and #3.
5	Fridge	COOLSELECT ZONE SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #4 and #6.
6	Freezer	FREEZER FAN ERROR	Bad Feed-Back Signaling Wire Contact, Motor Wire Slipped-Out, Defective Motor	The voltage should be 7V~12V between MAIN PCB CN72 #1(GRAY)and #2(YELLOW).
7	Freezer	F-DEF ERROR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor, or When it keeps heating during Fridge Defrost even after it does defrosting for 80 minutes.	Read the resistance between the purple and the white wire terminals (the reading varies according to the basic Power Consumption. 0 Ohm → Heater Short ∞ Ohm → Wire Cut or Blown Thermistor
8	Freezer	DAMPER HEATER ERROR	Damper Heater is sensed as open error due to Connector Slipped-Out or Open-Contact, Wire Cut.	After plugging out MAIN PCB CN90 from PCB, check the resistance between #1(BLACK) and #2 (BROWN) → it should read 140 ~160 Ohm. 0 Ohm → Heater Short ∞ Ohm → Wire Cut or Connector Slipped-Out
9	Freezer	COMMUNICATION ERROR	No communication between MICOM on the main PCB and the display panel =>The Er / Pc error code will light up with alarming sounds.	It needs a Oscilloscope to do the error check.So,it is more realistic checking the error after replacing Main &Power Line PCBs.

NOTE **Communication Error Display Function**

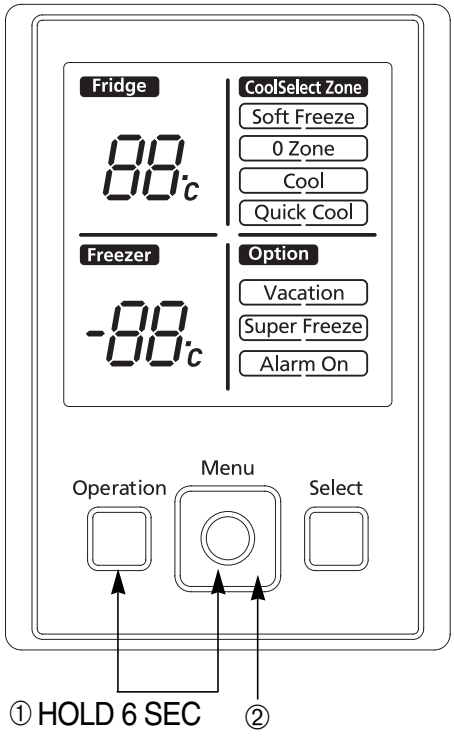
1) DISPLAY PANEL ↔ MAIN MICOM COMMUNICATION ERROR DISPLAY FUNCTION

1-1) When the Panel MICOM receives a request for communication and there is no reply signal for 10 seconds, "Pc Er" lights up on the display panel until the Communication Error is cleaned out.

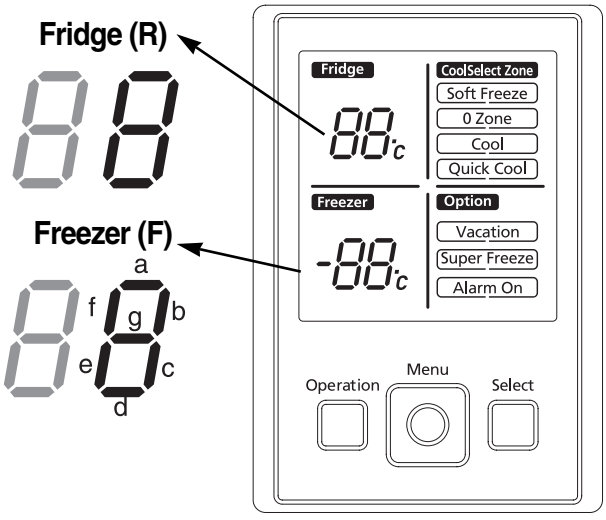
1-2) When the Panel MICOM receives a request from MAIN MICOM for communication and there is no reply signal for 10 seconds, the display panel on CoolSelect Zone will light up the communication error.

4-1-1-3) Load Status Display Function

1) When the "Menu + Operation" buttons are held down together for 6 seconds during the normal operation, the Fridge and Freezer temperature LEDs will blink for 4 seconds at an interval of 0.5 sec.
2) At this time, when taking your fingers off the "Menu + Operation " buttons and pressing the Select button (sending out a "Ding-Dong" sound, it goes into the Load Status Display function.
3) The Load Status Display mode shows the loads which MICOM sends out operational signals to. It only means that there are operational signals from MICOM. So, it does not indicate that those signalled loads are in operation. And, even though a specific part is displayed as in-operation, it may not operate due to its own defect or the defective relay on PCB.
4) The Load Status Display lasts for 30 seconds and it goes back to the normal operation mode.



5) The 7-Segment Load Status is as follows.



TROUBLESHOOTING

∗ Load Mode Check List

NO	Category	Display LED		Description
①	START MODE	Fridge	Fridge Second Digit "d"	When power is applied to the unit
②	OVER LOAD	Fridge	Fridge Second Digit "e"	When the ambient temperature is over 35 °C
③	LOWER TEMP	Fridge	Fridge Second Digit "f"	When the ambient temperature is lower than 17 °C
④	EXHIBITION MODE	Fridge	Fridge Second Digit "g"	When the exhibition mode is activated
⑤	COMPRESSOR	Freezer	Freezer Second Digit"a"	When the compressor is running
⑥	F FAN HIGH	Freezer	Freezer Second Digit"b"	When the Freezer Fan runs HIGH
⑦	F FAN LOW	Freezer	Freezer Second Digit"c"	When the Freezer Fan runs LOW
⑧	C FAN HIGH	Freezer	Freezer Second Digit"e"	When the Condenser Fan runs HIGH
⑨	C FAN LOW	Freezer	Freezer Second Digit"f"	When the Condenser Fan runs LOW
⑩	FREEZER DEFROST HEATER	Freezer	Freezer Second Digit"d"	When the Freezer defrost HEATER is on
⑪	DAMPER	Freezer	Freezer First Digit "f"	CoolSelect Zone Damper Open
⑫	NORMAL CONDITION	Fridge Second Digit "e"&"f" All LED Off		When the ambient temp is 18 °C ~ 34 °C

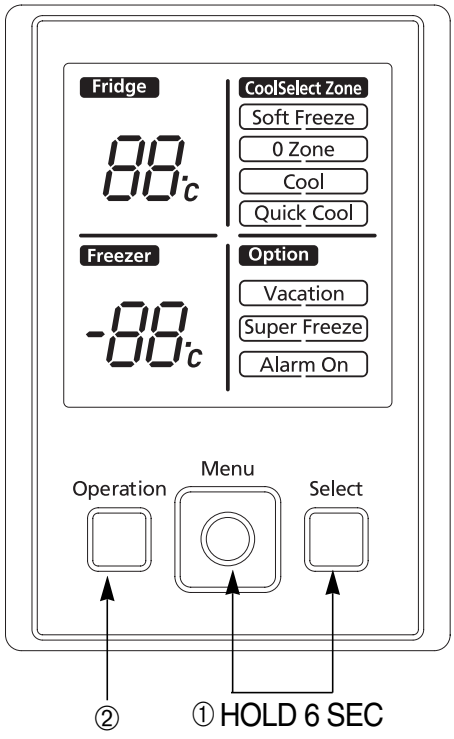
TROUBLESHOOTING

4-1-1-4) Restoration of Previous Settings Upon Power Failure

1) If the panel display is reset upon instant power failure, it will trigger nonsense calls at the call center.To prevent this, the following measure is implemented into the unit.
   Upon the power supply, it initializes the unit or brings back its previous settings based on the Freezer temperature.
2) Upon the initial power on, it checks its Freezer temperature.When it is lower than +5 °C, it is to be considered as an instant power failure and it brings back all its previous operation functions (Super Freeze, Vacation, Freezer Settings, Fridge Settings, CoolSelect Zone Settings, Alarm On, Power Off, etc) related to the panel display.
3) When it is higher than +5 °C, it is to be considered as a long-period power failure and it will initialize the panel display. (Freezer : -20 °C, Fridge : 3 °C, CoolSelect Zone : Cool, Alarm On : Turned On)

4-1-1-5) Exhibition Mode Function

1) When the Menu + Select buttons are pressed at the same time for 6 seconds during the normal operation, the Fridge and the Freezer 7-SEG LEDs will blink for 4 seconds at an interval of 0.5 second.
2) Then, take the fingers off from the Menu + Select buttons and press the Operation button to go into the Exhibition mode.
3) When the Exhibition mode is activated, the display panel and all the functions will work normally, but the compressor and the Condenser Fan remain off.
4) To deactivate the Exhibition Mode, do the Exhibition entering mode again or turn off the power.
5) When the Freezer or the Fridge temperature increases over 65 °C, the Exhibition mode will be terminated and the unit will go to the normal operation mode.

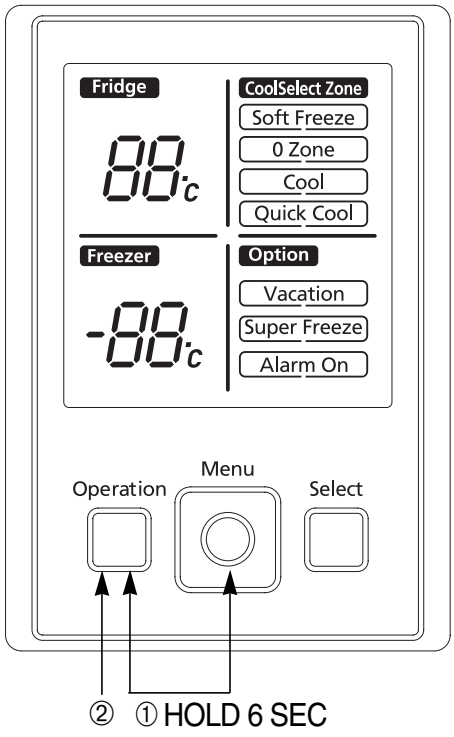


TROUBLESHOOTING

4-1-1-6) Option Setting Function

- When the Operation + Menu buttons are pressed for 6 seconds at the same time, the entire display blinks for 4 seconds. Then, take your fingers off the Operation + Menu buttons and press the Operation button to convert the display to the Option Setting mode.
- When there is no button press for 15 seconds during the Option Setting mode, it goes back to the normal display mode.

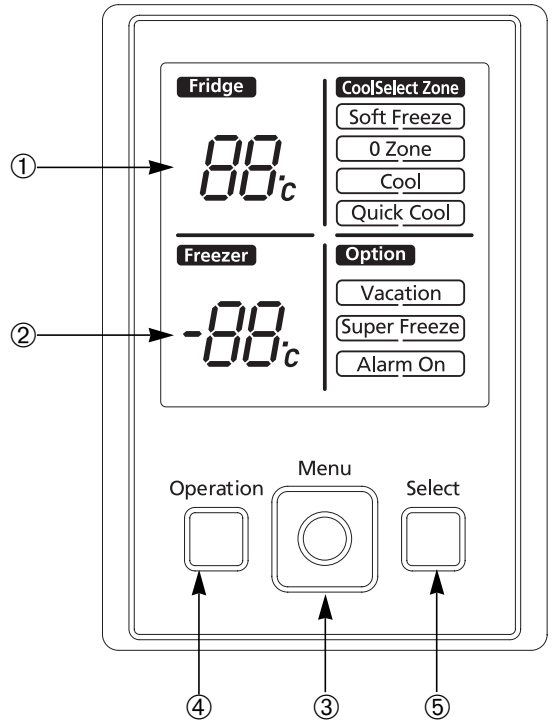
How to Enter into Option Setting Mode



① Take your fingers off the buttons when the entire panel is blinking for 4 seconds after pressing the Menu + Operation buttons at the same time for 6seconds
② Press the Operation button once.

TROUBLESHOOTING

Descriptions of Option Mode & Button Operation



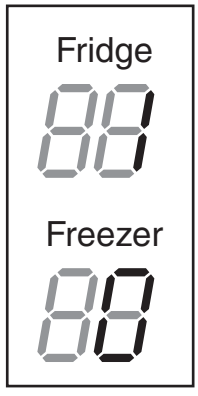
∗ Option Mode & Button Operation

①	Fridge Display	Displaying Option Setting Item
②	Freezer Display	Displaying Current Set Value by Item
③	Menu key	Increasing &Decreasing the set value (Rotating)
④	Operation key	Selecting items downwards
⑤	Select key	Selecting items upwards

- When the display is converted to Option Setting mode, the entire display is to be turned off except the Fridge & Freezer 7-SEG LEDs as follows.

Freezer Temp Setting,

Freezer Temp Setting,



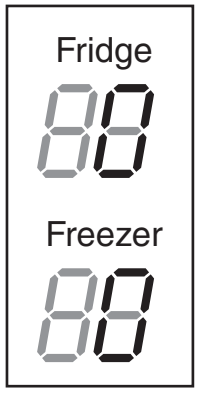
TROUBLESHOOTING

1) The following shows the way to shift the Freezer temperature by -3 °C.
This function is to shift its base temperature. For example, if the current base temperature is -18 °C and it is lowered by -3 °C with the Option Setting function, the unit is to be controlled based on -21 °C ; that is even though it shows -18 °C on the display panel after shifting the base temperature, it is to be controlled based on -21 °C.
So, when the base temperature is lowered by -3 °C, the unit is controlled -3 °C lower than the displayed temperature.

NOTE The units are shipped out with all their data being cleared.
i.e. the setting values are "0" for all together. But, for the purpose of quality improvement, the settings can be changed before being shipped out, make sure to check relevant SVC

2) With the Option Setting mode, "0" blinks on both of the Fridge and the Freezer sections.
(Generally, they are set to "0" at both the Fridge and the Freezer sections.
But, they can be changed for the purpose of quality improvement.)
- When "0" blinks on the Fridge section, it is set to the Freezer Option Setting and the Freezer temp code will be displayed on the Freezer temp section.

3) If the Freezer temp code is set to "6" as the following table after setting the Fridge section to "0", the Freezer base temperature is to be lowered by -3 °C (Refer to the Freezer temperature setting image.)



: In 15 seconds after completing the adjustment, MICOM is to store the setting value in EEPROM and it goes back to the normal display mode, deactivating the Option Setting mode.

5) The Fridge temperature is to be adjusted with the same method.

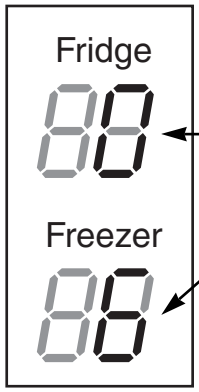
6) Make sure not to change the factory-set default values otherwise exception cases.
Also, the Option Setting is to be completed when it goes back to the normal display mode.
So, do not turn off the unit before it goes back to the normal display mode.

4-1-1-7) Option Table

NOTE There are more functions which can be adjusted. But, they are not to be described in this manual because they are not actually related to the diagnosis of the unit.
(Do not change the option settings other than the ones described in this manual)

1) Freezer Temperature Shift Table

Setting Item	Freezer Temp Shift
MODEL	Common for all models
DISPLAY	Location:Fridge 7-SEG LED
	0

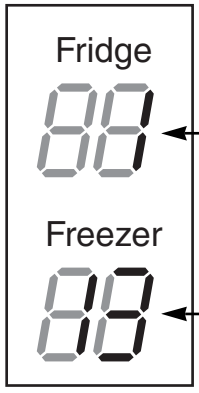


VALUE FREEZER 7-SEG LED	OPTION
0	0.0℃
1	-0.5℃
2	-1.0℃
3	-1.5℃
4	-2.0℃
5	-2.5℃
6	-3.0℃
7	-3.5℃
8	+0.5℃
9	+1.0℃
10	+1.5℃
11	+2.0℃
12	+2.5℃
13	+3.0℃
14	+3.5℃
15	+4.0℃

Ex) Lowering the Freezer base temp by -3 °C

2) Fridge Temp Shift Table

Setting Item	Freezer Temp Shift
MODEL	Common for all models
DISPLAY	Location:Fridge 7-SEG LED
	1



VALUE FRIDGE 7-SEG LED	OPTION
0	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℃

Ex) Raising the Fridge base tempby +3.0 °C

TROUBLESHOOTING

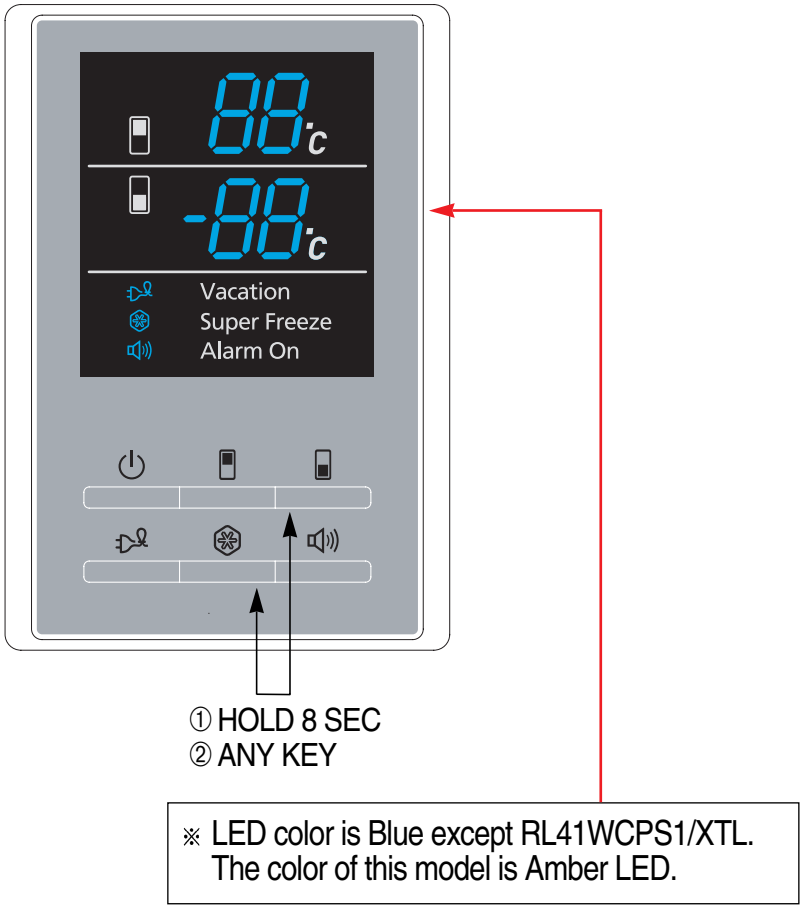
4-1-2 LED Model

4-1-2-1) Test Function (Forced Freeze /Forced Defrost)

1) How to Enter Test Mode

- When the Super Freeze and the Fridge buttons on the display panel are held down for more than 8 seconds, the display panel goes off and it goes into the Test mode. At this time, any one of the Operation / Menu / Select buttons will work as the Test button.
- Each time the Test button is pressed, it will be changed in the following order.
  Forced Freeze(FF) → Forced Freezer defrost (Fd) → Cancellation (Normal Operation) It is most recommended that the unit be re-plugged in to terminate the operation of the Test function.

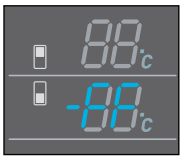
2) Test Mode Entering Process



TROUBLESHOOTING

3) Test Mode Operation

3-1) Forced Freeze Function



3-1-1) When any one of the buttons is pressed once at the Test mode, FF will light up on the display sending out beeping sounds.

3-1-2) If Forced Freeze is selected, the compressor operates immediately without 5 min. delay in any operation mode.
At this point, if it is in Defrost mode, it stops defrosting immediately. (When it goes into the Forced Freeze right after the Compressor Off, it can cause over-load. So, take care not to trigger over-load.)

3-1-3) When the Forced Freeze is selected,t he compressor and the Freezer Fan operate for 24 hours without stopping and the Fridge compartment will operate according to the set temperature.

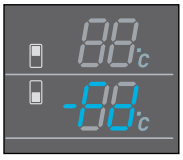
3-1-4) When the Forced Freeze is selected, the Freezer and the Fridge comparts will be set to "-25 °C" and "2 °C" automatically.

3-1-5) The Super Freeze does not run together with the Forced Freeze.
When it is selected, the Super Freeze LED goes off in 10 seconds.

3-1-6) To cancel the Forced Freeze before being completed, turn off and on the power, or select the Test cancelation mode.

3-1-7) During the Forced Freeze, it keeps sending out alarm sounds (0.25 sec On &0.75 sec Off)

3-2) Forced Freezer defrost



3-2-1) When the Lock button is pressed once more at the Forced Freeze, Fd will light up on the display and it will start the Freezer defrost after terminating the Forced Freeze right away.

3-2-2) At this time, it sends out a beeping sound for 3 seconds and then the beeping goes on for 0.5 sec and off for 0.5 sec during the Forced Freeze.

3-3) Test Cancellation Mode

3-3-1) When turning the display panel into the Test mode and pressing the TEST button once more during the Forced Freezer defrost, the Forced Freezer defrost will be cancelled and it will go back to the normal operation.
Also, when the unit is plugged out and in again, the Test mode is to be deactivated.

TROUBLESHOOTING

4-1-2-2) Self-Diagnosis Function

1) Self-Diagnosis Function upon Initial Power-On

1-1) When the unit is plugged into the power, MICOM diagnoses the status of the temperature sensors in a few minutes .

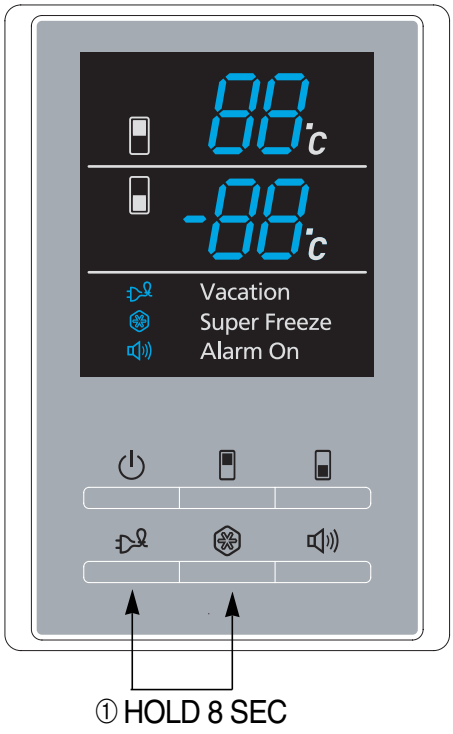
1-2) If defective sensor is found after Self-Diagnosis,relevant Display LEDs will blink at an interval of 0.5 sec. and there will be no extra warning sound (Refer to Self-Diagnosis Check List)

1-3) During a state that a defective sensor were found and its relevant LED were blinking, it would only recognize the Self-Diagnosis button combination and it does not do the normal display. But, the temperature will be controlled through the Emergency Operation.

1-4) To cancel these error codes,fix all the problems with the defective sensor or press

the Super Freeze + Vacation buttons for 8 seconds.

2) Self-Diagnosis Function during Normal Operation

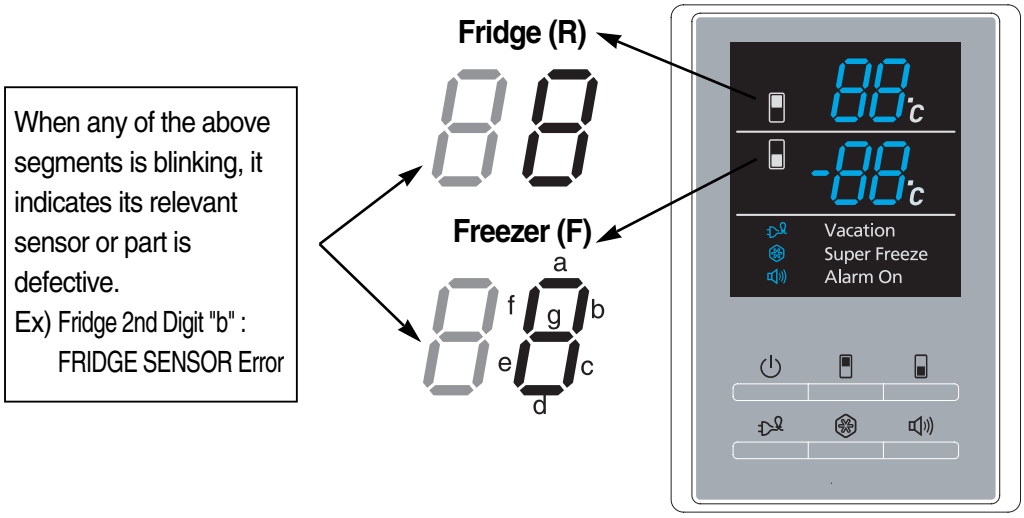


2-1) When the Super Freeze + Vacation buttons are held down for 6 seconds at the same time during normal operation, the temperature setting display will blink at an interval of 0.5 sec for 2 seconds.
When the Super Freeze +Vacation buttons are held down for 8 seconds (including the 4-second LED blinking) at the same time, it sends out a "Ding-Dong" sound and goes into the Self-Diagnosis function.

2-2) When it goes into the Self-Diagnosis, the entire display panel goes off and when error occurs, it will last for 30 seconds continuously and go back to the normal status.
(It sends out "Ding-Dong" sounds.) (Refer to Self-Diagnosis Check List below)

2-3) Buttons won't work during Self-Diagnosis.

TROUBLESHOOTING



∗ Self-Diagnosis Check List

NO	Category	Description	Error Code	
①	FREEZER SENSOR	Rel at edt oF-SENSOR	Freezer	Freezer Second Digit "b"
②	FRIDGE SENSOR	Rel at edt oR-SENSOR	Fridge	Fridge Second Digit "b"
③	F-DEF-SENSOR	Rel at edt oF-DEF-SENSOR	Freezer	Freezer Second Digit "c"
④	EXT-SENSOR	Related to EXT-SENSOR	Freezer	Freezer Second Digit "a"
⑤	Freezer Fan Error	Related to Freezer Fan Motor	Freezer	Freezer Second Digit "d"
⑥	Freezer defrost Error	Related to Freezer defrost	Freezer	Freezer Second Digit "g"
⑦	Damper Heater Error	Damper Heater Open or Short-Circuited	Freezer	Freezer First Digit "b"

TROUBLESHOOTING

- Descriptions of Self-Diagnosis Error Code

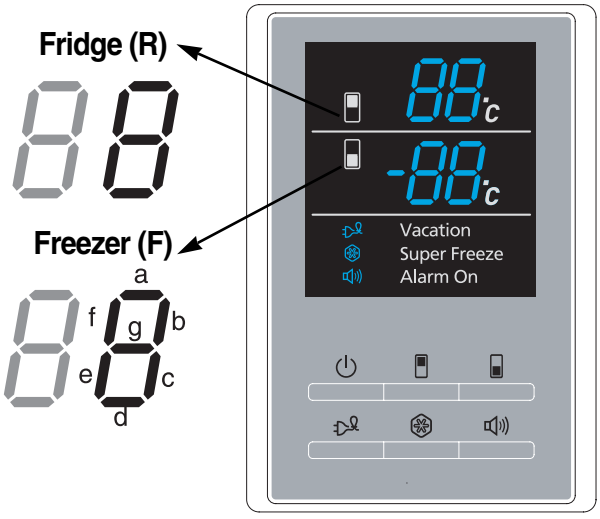
NO	Error Code	Item	Description	How to Self-Diagnose
1	Freezer	FREEZER SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #1 and #6.
2	Fridge	FRIDGE SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #3 and #6.
3	Freezer	DEFROST SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #2 and #6.
4	Freezer	AMBI SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN31 #1 and #3.
5	Freezer	Freezer Fan ERROR	Bad Feed-Back Signaling Wire Contact, Motor Wire Slipped-Out, Defective Motor	The voltage should be 7V~12V between MAIN PCB CN72 #1 (GRAY) and #2 (YELLOW).
6	Freezer	F-DEF ERROR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor, or When it keeps heating during Fridge Defrost even after it does defrosting for 80 minutes.	Read the resistance between the purple and the white wire terminals (the reading varies according to the basic Power Consumption. 0 Ohm → Heater Short ∞ Ohm → Wire Cut or Blown Thermistor
7	Freezer	DAMPER HEATER ERROR	Damper Heater is sensed as open error due to Connector Slipped-Out or Open-Contact, Wire Cut.	After plugging out MAIN PCB CN90 from PCB, check the resistance between #1(BLACK) and #2 (BROWN) → it should read 140 ~160 Ohm. 0 Ohm → Heater Short ∞ Ohm → Wire Cut or Connector Slipped-Out

TROUBLESHOOTING

4-1-2-3) Load Status Display Mode

1) When the Super Freeze + Vacation buttons ar ehel ddownt oget her for 6 seconds during the normal operation, the Fridge and Freezer temperature LEDs will blink for 2 seconds at an interval of 0.5 sec.
2) At this time, when taking your fingers off the Super Freeze + Vacation buttons and pressing the Fridge button (sending out a "Ding-Dong" sound), it goes into the Load Status Display function.
3) The Load Status Display mode shows the loads which MICOM sends out operational signals to. It only means that there are operational signals from MICOM. So, it does not indicate that those signalled loads are in operation. And, even though a specific part is displayed as in-operation, it may not operate due to its own defect or the defective relay on PCB.
4) The Load Status Display lasts for 30 seconds and it goes back to the normal operation mode.

5) The 7-Segment Load Status is as follows.



TROUBLESHOOTING

∗ Load Mode Check List

NO	Category	Display LED		Description
①	START MODE	Fridge	Fridge Second Digit "d"	When power is applied to the unit
②	OVER LOAD	Fridge	Fridge Second Digit "e"	When the ambient temperature is over 35 °C
③	LOWER TEMP	Fridge	Fridge Second Digit "f"	When the ambient temperature is lower than 17 °C
④	EXHIBITION MODE	Fridge	Fridge Second Digit "g"	When the exhibition mode is activated
⑤	COMPRESSOR	Freezer	Freezer Second Digit "a"	When the compressor is running
⑥	F FAN HIGH	Freezer	Freezer Second Digit "b"	When the Freezer Fan runs HIGH
⑦	F FAN LOW	Freezer	Freezer Second Digit "c"	When the Freezer Fan runs LOW
⑧	C FAN HIGH	Freezer	Freezer Second Digit "e"	When the Condenser Fan runs HIGH
⑨	C FAN LOW	Freezer	Freezer Second Digit "f"	When the Condenser Fan runs LOW
⑩	FREEZER DEFROST HEATER	Freezer	Freezer Second Digit "d"	When the FREEZER DEFROST HEATER is on
⑪	DAMPER	Freezer	Freezer First Digit "f"	CoolSelect Zone Damper Open
⑫	NORMAL CONDITION	Fridge Second Digit "e" & "f" All LED Off		When the ambient temp is 18 °C ~ 34 °C

TROUBLESHOOTING

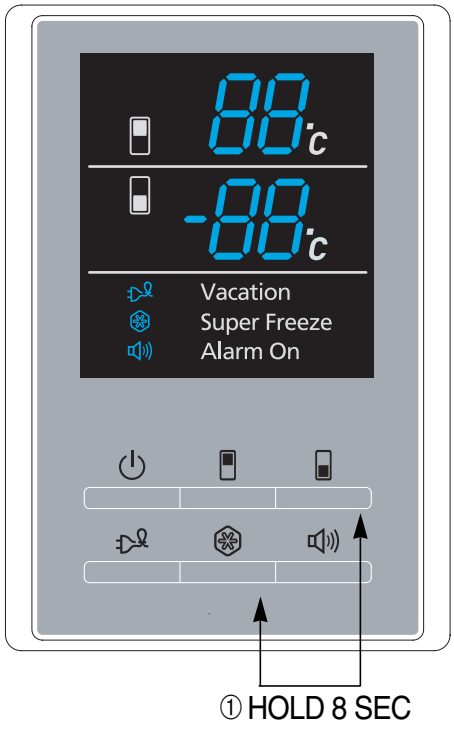
4-1-2-4) Restoration of Previous Settings Upon Power Failure

1) If the panel display is reset upon instant power failure,it will trigger nonsense calls at the call center. To prevent this, the following measure is implemented into the unit.
Upon the power supply, it initializes the unit or brings back its previous settings based on the Freezer temperature.
2) Upon the initial power on, it checks its Freezer temperature.When it is lower than +5 °C, it is to be considered as an instant power failure and it brings back all its previous operation functions (Super Freeze, Vacation, Freezer Settings, Fridge Settings, Alarm On, Power Off,etc) related to the panel display.
3) When it is higher than +5 °C, it is to be considered as a long-period power failure and it will initialize the panel display. (Freezer : -20 °C, Fridge : 3 °C, Alarm On : Turned On)

4-1-2-5) Exhibition Mode Function

1) When the Super Freeze + Freezer buttons are pressed at the same time for 8 seconds during the normal operation.
2) When the Exhibition mode is activated, the display panel and all the functions will work normally, but the compressor and the Condenser Fan remain off.
3) To deactivate the Exhibition Mode, do the Exhibition entering mode again or turn off the power.
4) When the Freezer or the Fridge temperature increases over 65 °C, the Exhibition mode will be terminated and the unit will go to the normal operation mode.

How to Enter into Exhibition Mode



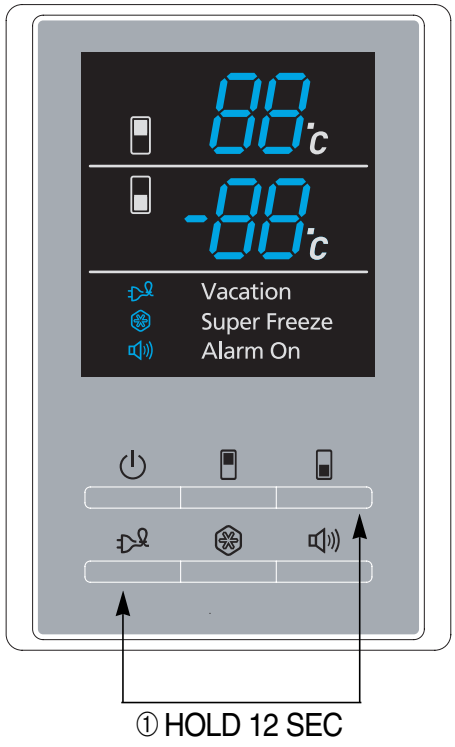
① When pressing the Super Freeze + Freezer buttons for 8 seconds, it goes into the Exhibition mode.

TROUBLESHOOTING

4-1-2-6) Option Setting Function

- When the Vacation + Freezer buttons are pressed for 12 seconds at the same time, the display is to be converted to the Option Setting mode.
- When there is no button press for 15 seconds during the Option Setting mode, it goes back to the normal display mode.

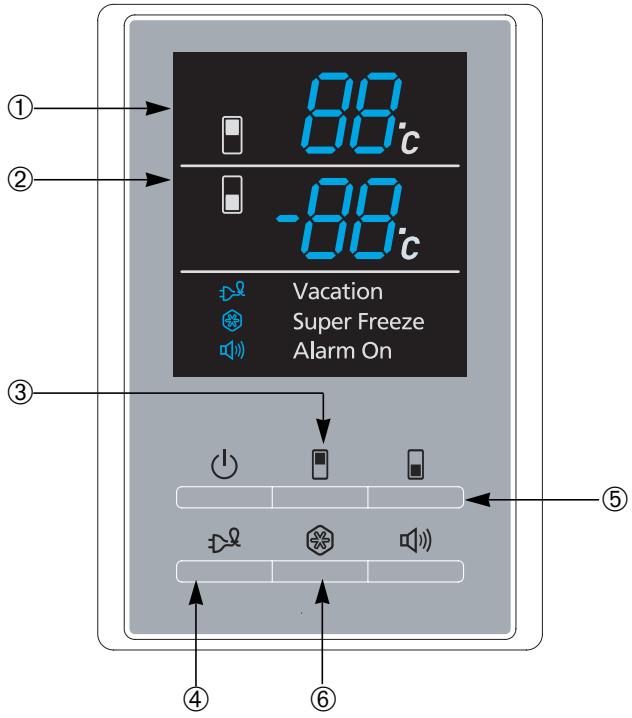
How to Enter into Option Setting Mode



① When pressing the Super Freeze + Freezer buttons for 8 seconds, it goes into the Exhibition mode.

TROUBLESHOOTING

Descriptions of Option Mode & Button Operation

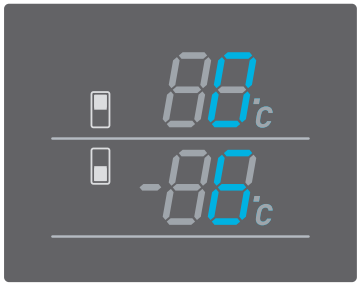


∗ Option Mode & Button Operation

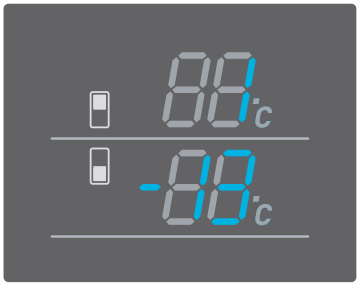
①	Fridge Display	Displaying Option Setting Item
②	Freezer Display	Displaying Current Set Value by Item
③	Fridge key	Selecting items upwards
④	Vacation key	Selecting items downwards
⑤	Freezer key	Increasing the set value by one step
⑥	Super Freeze key	Decreasing the set value by one step

- When the display is converted to Option Setting mode, the entire display is to be turned off except the Fridge & Freezer 7-SEG LEDs as follows.

Freezer Temp Setting,



Freezer Temp Setting,



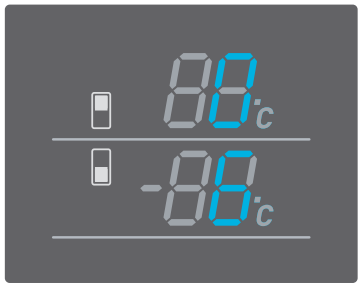
TROUBLESHOOTING

1) The following shows the way to shift the Freezer temperature by -3 °C.
This function is to shift its base temperature. For example, if the current base temperature is -18 °C and it is lowered by -3 °C with the Option Setting function, the unit is to be controlled based on -21 °C; that is even though it shows -18 °C on the display panel after shifting the base temperature, it is to be controlled based on -21 °C.
So, when the base temperature is lowered by -3 °C, the unit is controlled -3 °C lower than the displayed temperature.

NOTE The units are shipped out with all their data being cleared.
i.e. the setting values are "0" for all together.But,for the purpose of quality improvement, the settings can be changed before being shipped out, make sure to check relevant SVC

2) With the Option Setting mode, "0" blinks on both of the Fridge and the Freezer sections.
(Generally,they are set to "0"at both the Fridge and the Freezer sections.
But, they can be changed for the purpose of quality improvement.)
- When "0" blinks on the Fridge section, it is set to the Freezer Option Setting and the Freezer temp code will be displayed on the Freezer temp section.

3) If the Freezer temp code is set to "6" as the following table after setting the Fridge section to "0", the Freezer base temperature is to be lowered by -3 °C (Refer to the Freezer temperature setting image.)



: In 15 seconds after completing the adjustment, MICOM is to store the setting value in EEPROM and it goes back to the normal display mode, deactivating the Option Setting mode.

5) The Fridge temperature is to be adjusted with the same method.

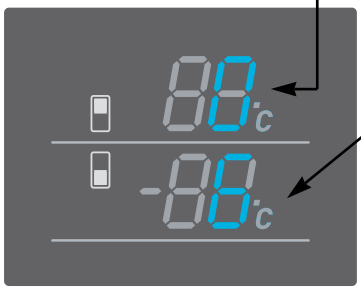
6) Make sure not to change the factory-set default values otherwise exception cases.
Also,the Option Setting is to be completed when it goes back to the normal display mode.
So, do not turn off the unit before it goes back to the normal display mode.

4-1-2-7) Option Table

NOTE There are more functions which can be adjusted. But, they are not to be described in this manual because they are not actually related to the diagnosis of the unit.
(Do not change the option settings other than the ones described in this manual)

1) Freezer Temperature Shift Table

Setting Item	Freezer Temp Shift
MODEL	Common for all models
DISPLAY	Location:Fridge 7-SEG LED
	0

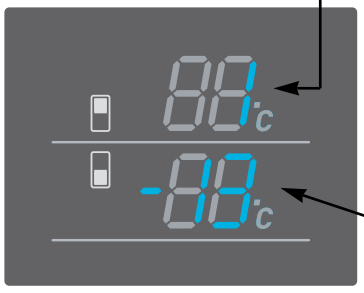


VALUE FREEZER 7-SEG LED	OPTION
0	0.0℃
1	-0.5℃
2	-1.0℃
3	-1.5℃
4	-2.0℃
5	-2.5℃
6	-3.0℃
7	-3.5℃
8	+0.5℃
9	+1.0℃
10	+1.5℃
11	+2.0℃
12	+2.5℃
13	+3.0℃
14	+3.5℃
15	+4.0℃

Ex) Lowering the Freezer base temp by -3 °C

2) Fridge Temp Shift Table

Setting Item	Freezer Temp Shift
MODEL	Common for all models
DISPLAY	Location:Fridge 7-SEG LED
	1



VALUE FRIDGE 7-SEG LED	OPTION
0	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℃

Ex) Rai si ngt heFr i dgebaset empby+3.0 °C

TROUBLESHOOTING

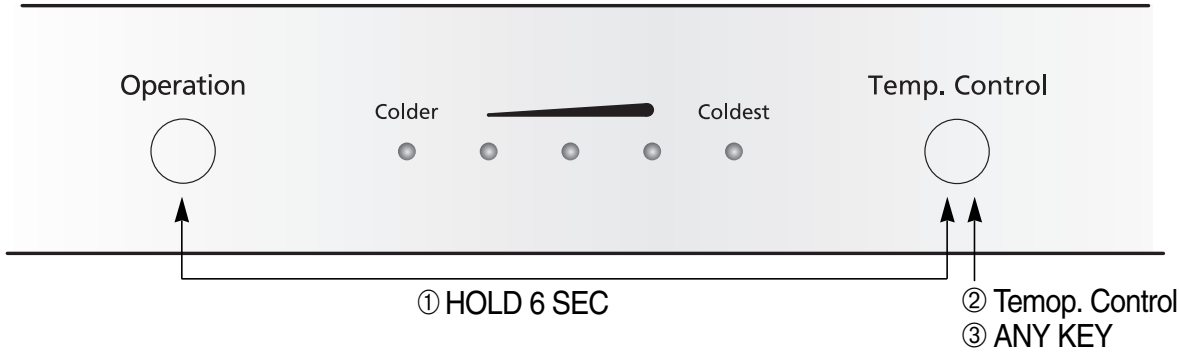
4-1-3 LED SEMI Model

4-1-3-1) Test Function (Forced Freeze /Forced Defrost)

1) How to Enter Test Mode

- When the Operation and the Temp.Control buttons on the display panel are held down for more than 6 seconds, the entire lamps on the display panel are to blink in an interval of 0.5 second for about 2 seconds.
  Now, take your fingers off the Operation and the Temp.Control buttons,and press the Menu button to go into the Test mode (Forced Freeze/Defrost Mode).
  At the Test mode, any one of the buttons on the display panel will work as the Test button.
- Each time the Test button is pressed,it will be changed in the following order.
  Forced Freeze(FF) → Forced Freezer defrost (Fd) → Cancellation (Normal Operation) It is most recommended that the unit be re-plugged in to terminate the operation of the Test function.

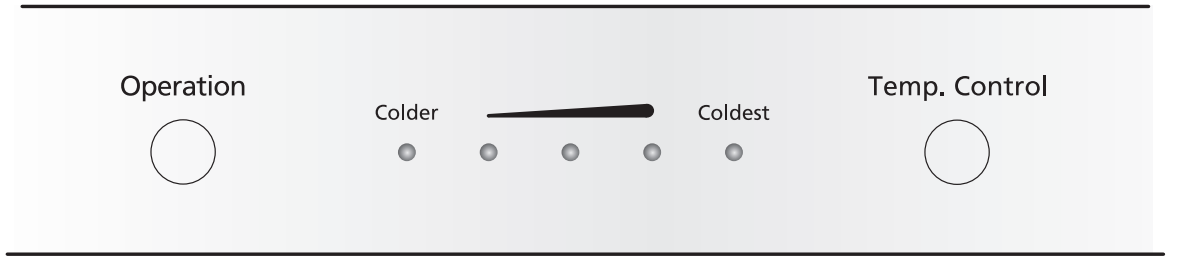
2) Test Mode Entering Process



3)Test Mode Operation

3-1) Forced Freeze Function

3-1-1) When any one of the buttons at the Test mode is pressed once, the entire display will light



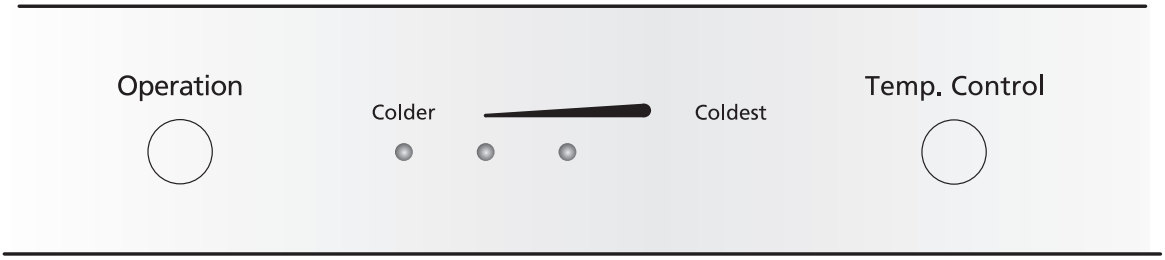
3-1-2) If Forced Freeze is selected, the compressor operates immediately without 5 min. delay in any operation mode. At this point, if it is in Defrost mode, it stops defrosting immediately. (When it goes into the Forced Freeze right after the Compressor Off, it can cause over-load. So, take care not to trigger over-load.)

3-1-3) When the Forced Freeze is selected, the compressor and the Freezer Fan operate for 24 hours without stopping and the Fridge compartment will operate according to the set temperature.

3-1-4) When the Forced Freeze is selected, the Freezer and the Fridge compartsw il lb e set to "-25 °C" and "2 °C" automatically (internally).

3-1-5) To cancel the Forced Freeze before being completed, turn off and on the power, or select the Test cancelation mode.

3-2) Forced Freezer defrost



3-2-1) When any one of the buttons is pressed during the Forced Freeze, will start the Freezer defrost after terminating the Forced Freeze right away.

2-2) The above three LEDs from Colder on the display panel will light up.

3-3) Test Cancellation Mode

3-1) When turning the display panel into the Test mode and pressing the TEST button once more during the Forced Freezer defrost, the Forced Freezer defrost will be cancelled and it will go back to the normal operation.
Also,when the unit is plugged out and in again,the Test mode is to be deactivated.

4-1-3-2) Self-Diagnosis Function

1) Self-Diagnosis Function upon Initial Power-On

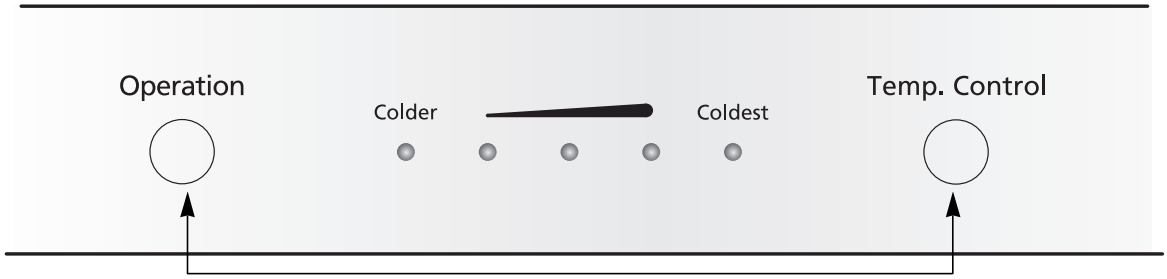
1-1) When the unit is plugged into the power, MICOM diagnoses the status of the temperature sensors in a few minutes.

1-2) If defective sensor is found after Self-Diagnosis, relevant Display LEDs will blink at an interval of 0.5 sec. and there will be no extra warning sound (Refer to Self-Diagnosis Check List)

1-3) During a state that a defective sensor were found and its relevant LED were blinking, it would only recognize the Self-Diagnosis button combination and it does not do the normal display. But, the temperature will be controlled through the Emergency Operation.

1-4) To cancel these error codes, fix all the problems with the defective sensor or press the Operation + Temp. Control buttons for 12 seconds.

2) Self-Diagnosis Function during Normal Operation



TROUBLESHOOTING

2-1) When the Operation + Temp.Control buttons are held down for 12 seconds at the same time during normal operation, it will go into the Self-Diagnosis function.

2-2) When it goes into the Self-Diagnosis, the entire display panel goes off and when error occurs, it will last for 30 seconds continuously and go back to the normal status.
(Refer to Self-Diagnosis Check List below)

2-3) Buttons won't work during Self-Diagnosis.

∗ SELF-DIAGNOSIS CHECK LIST

NO	Category	Description	Error Code	
①	FREEZER SENSOR	FREEZER SENSOR ERROR		Center LED
②	FRIDGE SENSOR	FRIDGE SENSOR ERROR		2nd LED from Colder
③	F-DEF-SENSOR	FREEZER SENSOR ERROR		Colder LED
④	EXT-SENSOR	AMBIENT SENSOR ERROR		2nd LED from Coldest
⑤	FREEZER DEFROST ERROR	FREEZER RELATED ERROR		Coldest LED

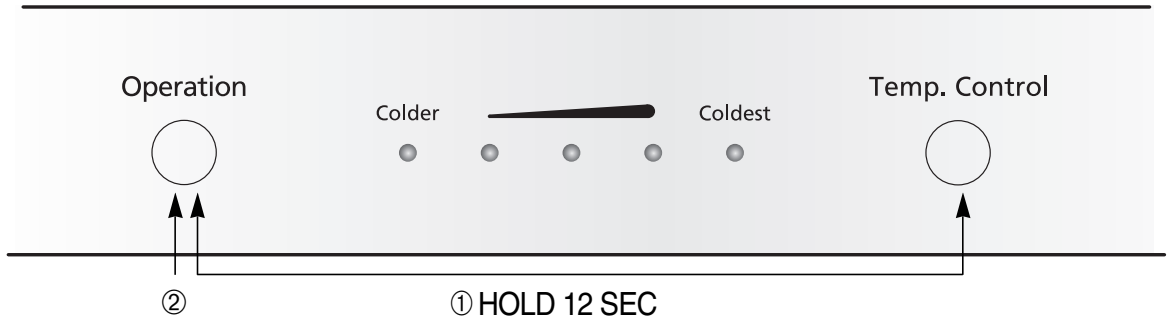
- Descriptions of Self-Diagnosis Error Code

NO	Error Code	Item	Description	How to Self-Diagnose
①		FREEZER SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #1 and #6.
②		FRIDGE SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #3 and #6.
③		DEFROST SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN30 #2 and #6.
④		AMBIENT SENSOR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp (+50 °C and over, or -50 °C and lower)	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN31 #1 and #3.
⑤		FREEZER DEFROST ERROR	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor, or When it keeps heating during Fridge Defrost even after it does defrosting for 80 minutes.	Read the resistance between the purple and the white wire terminals (the reading varies according to the basic Power Consumption. 0 Ohm → Heater Short ∞ Ohm → Wire Cut or Blown Thermistor

TROUBLESHOOTING

4-1-3-3) Load Status Display Function

1) When the Operation + Temp. Control buttons are held down together for 8 seconds during the normal operation, the Fridge and Freezer temperature LEDs will blink for 4 seconds at an interval of 0.5 sec.
2) At this time,when taking your fingers off the Operation +Temp.Control buttons and pressing the Operation button,it goes into the Load Status Display function.
3) The Load Status Display mode shows the loads which MICOM sends out operational signals to. It only means that there are operational signals from MICOM.So,it does not indicate that those signalled loads are in operation.And,even though a specific part is displayed as in-operation,it may not operate due to its own defect or the defective relay onPCB.
4) The Load Status Display lasts for 30 seconds and it goes back to the normal operation mode.



5) The 7-Segment Load Status is as follows.

∗ LOAD STATUS CHECK LIST

NO	Category	Display LED		Description
①	Overload	2nd LED from Colder		LED on with over 35 °C ambient temperature
②	Low Temperature	Colder LED		LED on with lower 17 °C ambient temperature
③	COMPRESSOR	Coldest LED		Relevant LED on when compressor operates
④	Freezer defrost Heater	2nd LED from Coldest		LED on when Freezer defrost Heater operates
⑤	Damper	Center LED		Fridge Damper Open(OPTION)
⑥	Normal	Colder LED and 2nd LED from Colder =>a ll off		When the ambient temperature is 18 °C ~ 34 °C

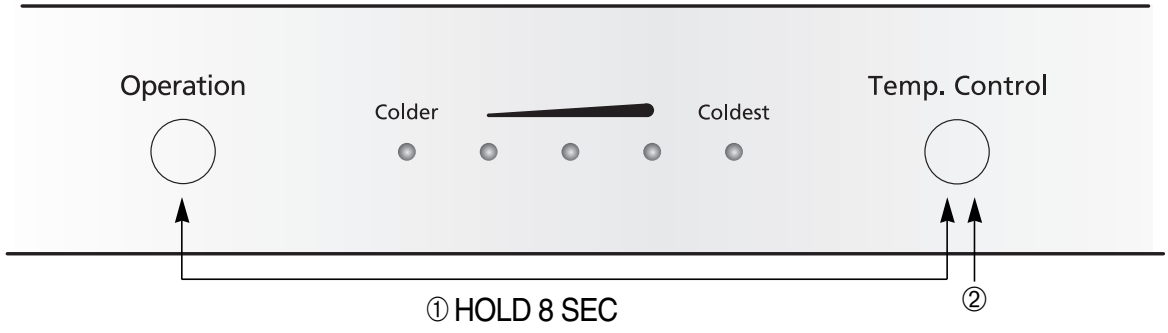
4-1-3-4) Restoration of Previous Settings Upon Power Failure

1) If the panel display is reset upon instant power failure, it will trigger nonsense calls at the call center.To prevent this, the following measure is implemented into the unit.
Upon the power supply, it initializes the unit or brings back its previous settings based on the Freezer temperature.
2) Upon the initial power on, it checks its Freezer temperature. When it is lower than +5 °C, it is to be considered as an instant power failure and it brings back all its previous operation functions (Temp Setting LEDs, Power Off,etc) related to the panel display.
3) When it is higher than +5 °C, it is to be considered as a long-period power failure and it will initialize the panel display. (Freezer : -19 °C, Fridge:3 °C, "MID" Temp LED on : third from left)

4-1-3-5) Exhibition Mode Function

1) When the Operation and the Temp.Control buttons are pressed at the same time for 8 seconds during the normal operation, the Fridge and the Freezer temperature setting LEDs will blink for 4 seconds at an interval of 0.5 sec.
2) At this time,take your fingers off from the Operation and the Temp. Control buttons and the Temp. Control button. Then, it goes into Exhibition mode.
3) When the Exhibition mode is activated, the display panel and all the functions will work normally, but the compressor and the Condenser Fan remain off.
4) To deactivate the Exhibition Mode, do the Exhibition entering mode again or turn off the power.
5) When the Freezer or the Fridge temperature increases over 65 °C, the Exhibition mode will be terminated and the unit will go to the normal operation mode.

How to Enter into Exhibition Mode



4-1-3-6) Option Setting Function

● There is no extra option setting function and it can be controlled with DIODE (1N4148).

1) Freezer Temp Shift

DIODE 1N4148 (● Yes , ❍ No)			
DIODE (1N4148)			Temperature Compensation
D603	D602	D601	
❍	❍		0.0 ºC
❍	❍	●	-0.5 ºC
❍	●	❍	-0.1 ºC
❍	●	●	-1.5 ºC
●	❍	❍	+0.5 ºC
●	❍	●	+1.0 ºC
●	●	❍	+1.5 ºC
●	●	●	+2.0 ºC

2) Fridge Temp Shift

DIODE 1N4148 (● Yes , ❍ No)			
DIODE (1N4148)			Temperature Compensation
D607	D606	D605	
❍	❍		0.0 ºC
❍	❍	●	-0.5 ºC
❍	●	❍	-0.1 ºC
❍	●	●	-1.5 ºC
●	❍	❍	+0.5 ºC
●	❍	●	+1.0 ºC
●	●	❍	+1.5 ºC
●	●	●	+2.0 ºC

3) Defrost Termination Temp

DIODE 1N4148 (● Yes , ❍ No)		
DIODE (1N4148)		Temperature Compensation
D614	D613	
❍		12 ºC
❍	●	10 ºC
●	❍	15 ºC
●	●	17 ºC

TROUBLESHOOTING

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4-2) Troubleshooting Flow-Chart by Symptoms

DATA1.Temp Table
Sensor Reading & MICOM Port Voltage Vs. Temperature
SENSOR CHIP : PX41C

(V : Voltage, R : Resistance)

˚C	˚F	V	R	˚C	˚F	V	R	˚C	˚F	V	R
-50	-58	4.694	153319	-5	23	3.107	16419	40	104	1.153	2997
-49	-56.2	4.677	144794	-4	24.8	3.057	15731	41	105.8	1.124	2899
-48	-54.4	4.659	136798	-3	26.6	3.006	15076	42	107.6	1.095	2805
-47	-52.6	4.641	129294	-2	28.4	2.955	14452	43	109.4	1.068	2714
-46	-50.8	4.622	122248	-1	30.2	2.904	13857	44	111.2	1.040	2627
-45	-49	4.602	115631	0	32	2.853	13290	45	113	1.014	2543
-44	-47.2	4.581	109413	1	33.8	2.802	12749	46	114.8	0.988	2462
-43	-45.4	4.560	103569	2	35.6	2.751	12233	47	116.6	0.963	2384
-42	-43.6	4.537	98073	3	37.4	2.700	11741	48	118.4	0.938	2309
-41	-41.8	4.514	92903	4	39.2	2.649	11271	49	120.2	0.914	2237
-40	-40	4.490	88037	5	41	2.599	10823	50	122	0.891	2167
-39	-38.2	4.465	83456	6	42.8	2.548	10395	51	123.8	0.868	2100
-38	-36.4	4.439	79142	7	44.6	2.498	9986	52	125.6	0.846	2036
-37	-34.6	4.412	75077	8	46.4	2.449	9596	53	127.4	0.824	1973
-36	-32.8	4.385	71246	9	48.2	2.399	9223	54	129.2	0.803	1913
-35	-31	4.356	67634	10	50	2.350	8867	55	131	0.783	1855
-34	-29.2	4.326	64227	11	51.8	2.301	8526	56	132.8	0.762	1799
-33	-27.4	4.296	61012	12	53.6	2.253	8200	57	134.6	0.743	1745
-32	-25.6	4.264	57977	13	55.4	2.205	7888	58	136.4	0.724	1693
-31	-23.8	4.232	55112	14	57.2	2.158	7590	59	138.2	0.706	1642
-30	-22	4.199	52406	15	59	2.111	7305	60	140	0.688	1594
-29	-20.2	4.165	49848	16	60.8	2.064	7032	61	141.8	0.670	1547
-28	-18.4	4.129	47431	17	62.6	2.019	6771	62	143.6	0.653	1502
-27	-16.6	4.093	45146	18	64.4	1.974	6521	63	145.4	0.636	1458
-26	-14.8	4.056	42984	19	66.2	1.929	6281	64	147.2	0.620	1416
-25	-13	4.018	40938	20	68	1.885	6052	65	149	0.604	1375
-24	-11.2	3.980	39002	21	69.8	1.842	5832	66	150.8	0.589	1335
-23	-9.4	3.940	37169	22	71.6	1.799	5621	67	152.6	0.574	1297
-22	-7.6	3.899	35433	23	73.4	1.757	5419	68	154.4	0.560	1260
-21	-5.8	3.858	33788	24	75.2	1.716	5225	69	156.2	0.546	1225
-20	-4	3.816	32230	25	77	1.675	5039	70	158	0.532	1190
-19	-2.2	3.773	30752	26	78.8	1.636	4861	71	159.8	0.519	1157
-18	-0.4	3.729	29350	27	80.6	1.596	4690	72	161.6	0.506	1125
-17	1.4	3.685	28021	28	82.4	1.558	4526	73	163.4	0.493	1093
-16	3.2	3.640	26760	29	84.2	1.520	4369	74	165.2	0.481	1063
-15	5	3.594	25562	30	86	1.483	4218	75	167	0.469	1034
-14	6.8	3.548	24425	31	87.8	1.447	4072	76	168.8	0.457	1006
-13	8.6	3.501	23345	32	89.6	1.412	3933	77	170.6	0.446	978
-12	10.4	3.453	22320	33	91.4	1.377	3799	78	172.4	0.435	952
-11	12.2	3.405	21345	34	93.2	1.343	3670	79	174.2	0.424	926
-10	14	3.356	20418	35	95	1.309	3547	80	176	0.414	902
-9	15.8	3.307	19537	36	96.8	1.277	3428	81	177.8	0.404	877
-8	17.6	3.258	18698	37	98.6	1.253	3344	82	179.6	0.394	854
-7	19.4	3.208	17901	38	100.4	1.213	3204	83	181.4	0.384	832
-6	21.2	3.158	17142	39	102.2	1.183	3098	84	183.2	0.375	810

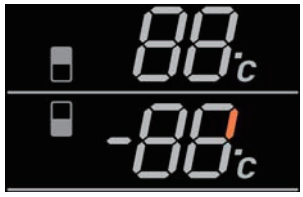
TROUBLESHOOTING

4-2-1. Troubleshooting for Self-Diagnosis Errors

- When there is a sensor error, it will light up on the display panel. And, when there is a sensor error upon the initial power on, the unit does not operate blinking the relevant section in the 7-SEG.
- The refrigerator does not stop when there are sensor errors during the operation, but it goes into the emergency operation mode, which is not able to do the normal operation. So, do the double check with the Self Diagnosis in this manual.

1) When the Freezer Sensor is defective

Error Display



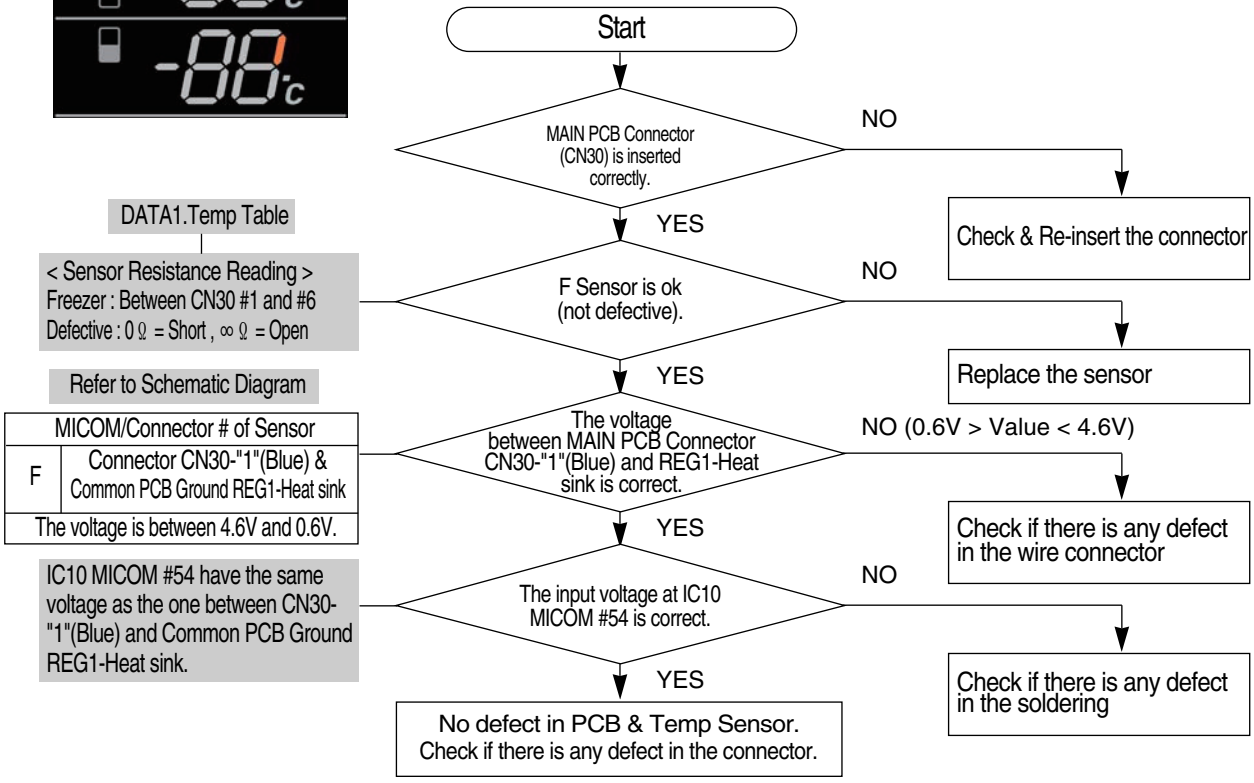
DATA1.Temp Table

< Sensor Resistance Reading >
Freezer : Between CN30 #1 and #6
Defective : 0 Ω = Short , ∞ Ω = Open

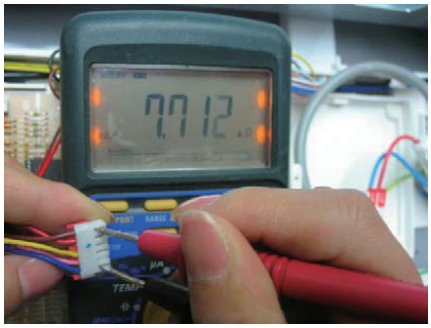
Refer to Schematic Diagram

MICOM/Connector # of Sensor	
F	Connector CN30-"1"(Blue) & Common PCB Ground REG1-Heat sink
The voltage is between 4.6V and 0.6V.	

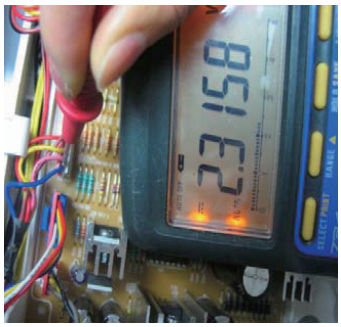
IC10 MICOM #54 have the same voltage as the one between CN30-"1"(Blue) and Common PCB Ground REG1-Heat sink.



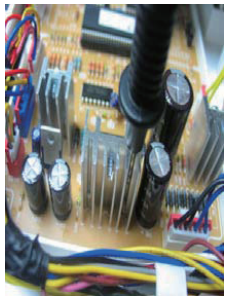
☞ How to measure the Freezer Sensor Resistance
- Measure CN30-"1"(Blue) ↔ "6"(Brown) and compare with the value at the temp table.



☞ How to measure the Freezer Sensor Voltage
- Measure IC10 MICOM #54 or CN30-"1"(Blue) ↔ REG1-Heat Sink and compare with the value at the temp table. Measure between CN30-"1"(Blue) ↔ Common PCB Ground Voltage



Common PCB Ground
REG1-Heat sink



TROUBLESHOOTING

4-2-1. Troubleshooting for Self-Diagnosis Errors

2) When the Refrigerator Sensor is defective

Error Display

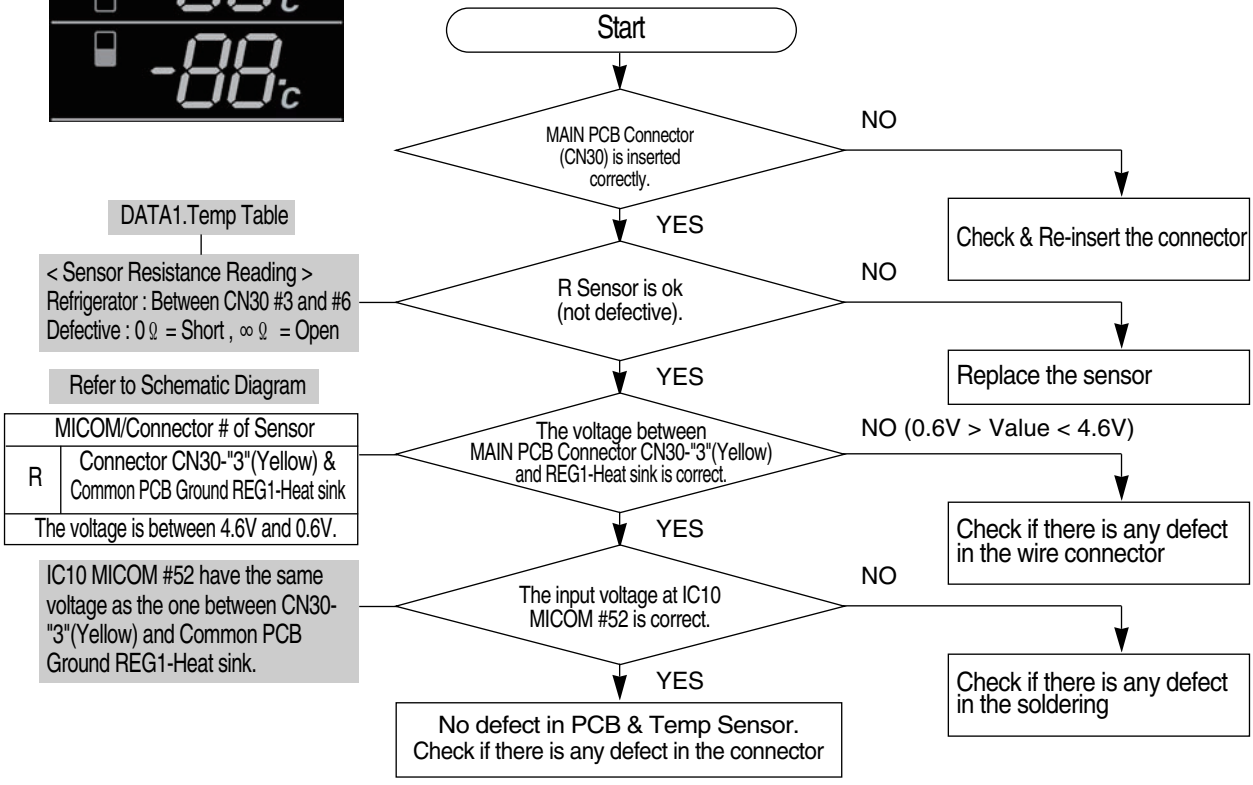
DATA1.Temp Table

< Sensor Resistance Reading >
Refrigerator : Between CN30 #3 and #6
Defective : 0Ω = Short , ∞Ω = Open

Refer to Schematic Diagram

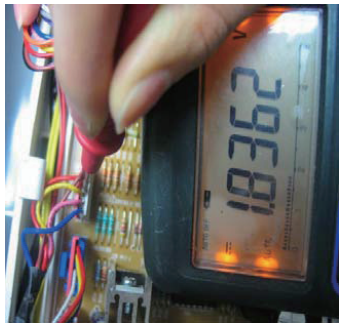
MICOM/Connector # of Sensor	
R	Connector CN30-"3"(Yellow) & Common PCB Ground REG1-Heat sink
The voltage is between 4.6V and 0.6V.	

IC10 MICOM #52 have the same voltage as the one between CN30-"3"(Yellow) and Common PCB Ground REG1-Heat sink.

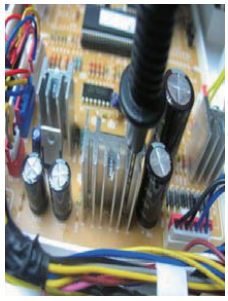


☞ How to measure the R-Sensor Resistance
- Measure CN30-"3"(Yellow) ↔ "6"(Brown) and compare with the value at the temp table.

☞ How to measure the R-Sensor Voltage
- Measure IC10 MICOM #52 or CN30-"3"(Yellow) ↔ REG1-Heat Sink and compare with the value at the temp table. Measure between CN30-"3"(Yellow) ↔ Common PCB Ground Voltage



Common PCB Ground
REG1-Heat sink



4-2-1. Troubleshooting for Self-Diagnosis Errors

3) When the Defrost Sensor is defective

Error Display

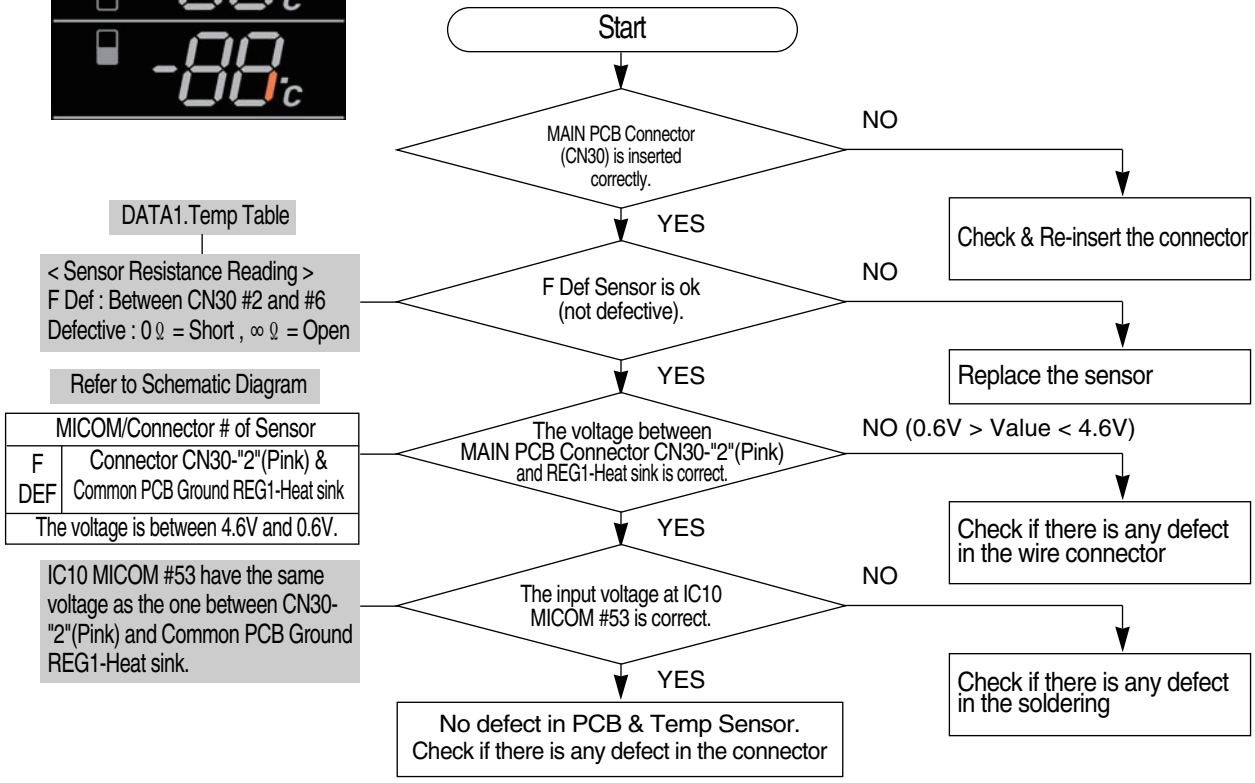
DATA1.Temp Table

< Sensor Resistance Reading >
F Def : Between CN30 #2 and #6
Defective : 0Ω = Short , ∞Ω = Open

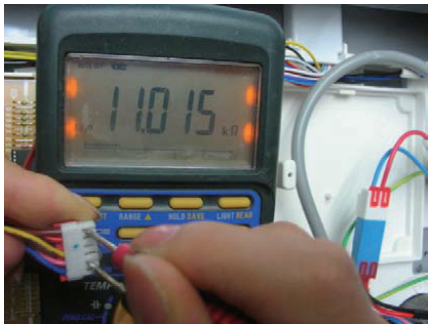
Refer to Schematic Diagram

MICOM/Connector # of Sensor	
F DEF	Connector CN30-"2"(Pink) & Common PCB Ground REG1-Heat sink
The voltage is between 4.6V and 0.6V.	

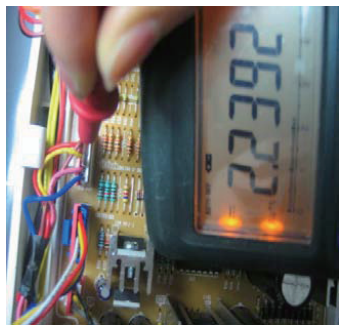
IC10 MICOM #53 have the same voltage as the one between CN30-"2"(Pink) and Common PCB Ground REG1-Heat sink.



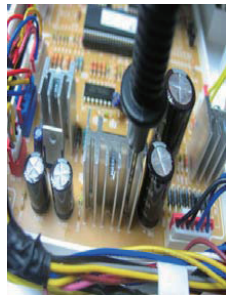
☞ How to measure the Def-Sensor Resistance
- Measure CN30-"2"(Pink)) ↔ "6"(Brown) and compare with the value at the temp table.



☞ How to measure the Def-Sensor Voltage
- Measure IC10 MICOM #53 or CN30-"2"(Pink) ↔ REG1-Heat Sink and compare with the value at the temp table. Measure between CN30-"2"(Pink) ↔ Common PCB Ground Voltage



Common PCB Ground
REG1-Heat sink



4-2-1. Troubleshooting for Self-Diagnosis Errors

4) When the Ambient Sensor is defective

Error Display

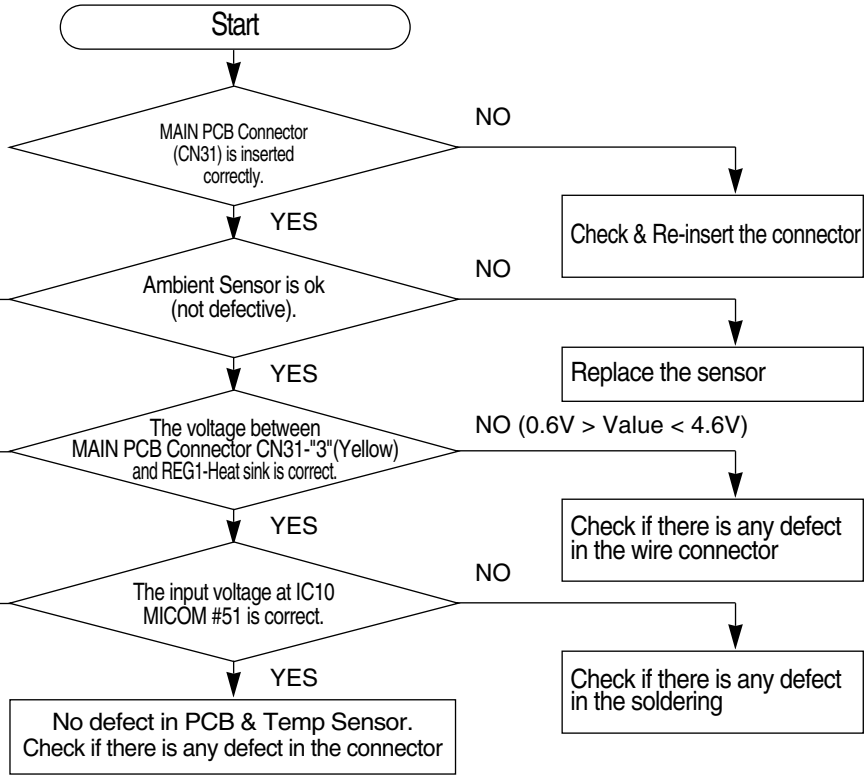
DATA1.Temp Table

< Sensor Resistance Reading >
Refrigerator : Between CN31 #1 and #3
* Located at the left upper door hinge.
Defective : 0Ω = Short , ∞Ω = Open

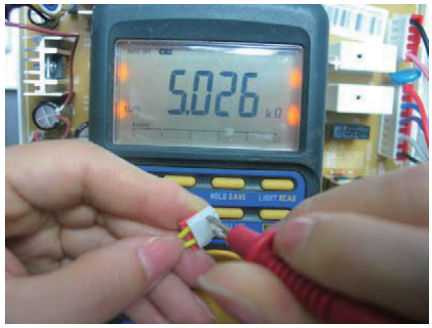
Refer to Schematic Diagram

MICOM/Connector # of Sensor	
F DEF	Connector CN31-"3"(Yellow) & Common PCB Ground REG1-Heat sink
The voltage is between 4.6V and 0.6V.	

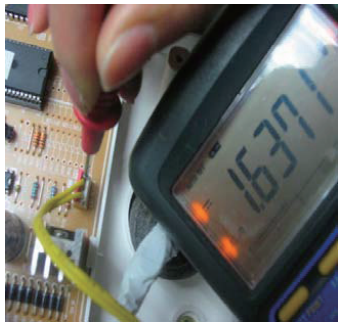
IC10 MICOM #51 have the same voltage as the one between CN31-"3"(Yellow) and Common PCB Ground REG1-Heat sink.



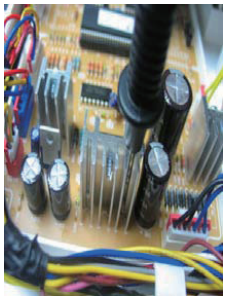
☞ How to measure the Amb-Sensor Resistance
- Measure CN31-"1"(Yellow) ↔ "3"(Yellow) and compare with the value at the temp table.



☞ How to measure the Amb-Sensor Voltage
- Measure IC10 MICOM #51 or CN31-"3"(Yellow) ↔ REG1-Heat Sink and compare with the value at the temp table. Measure between CN31-"3"(Yellow) ↔ Common PCB Ground Voltage



Common PCB Ground
REG1-Heat sink

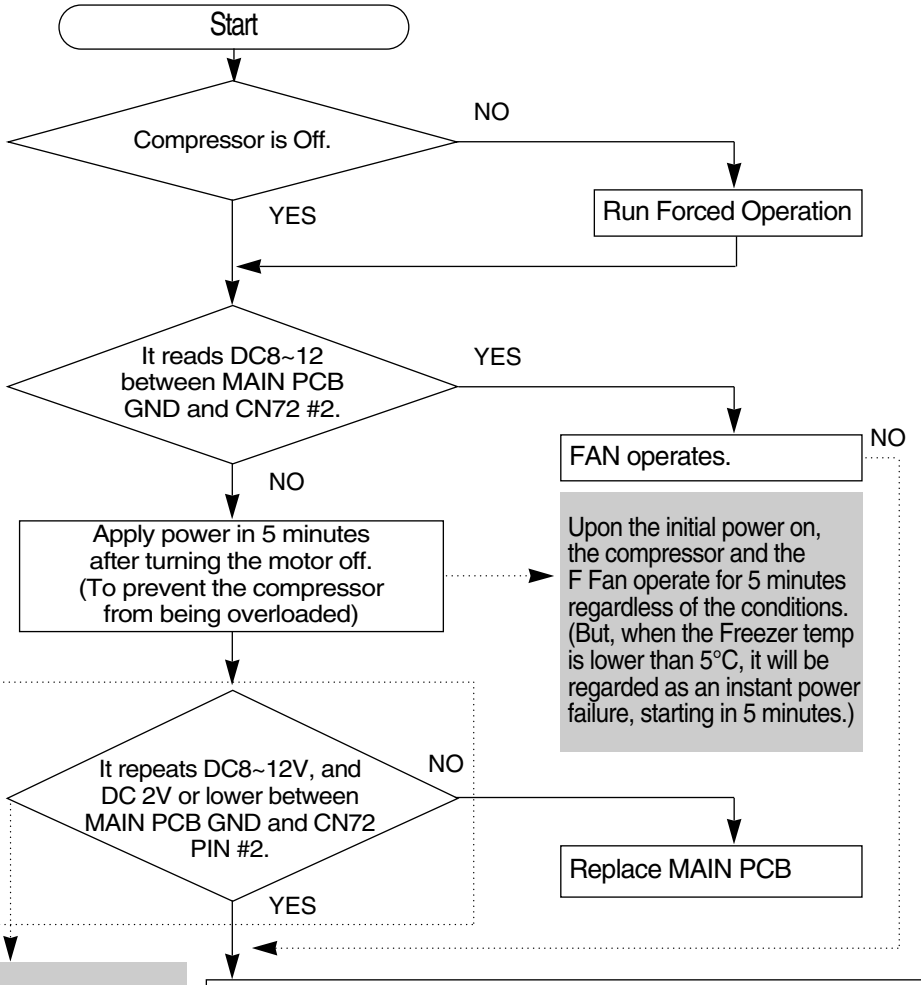


4-2-2. When the Freezer Fan does not operate

- A BLDC Fan Motor is applied to this refrigerator and it runs on DC 8~12V.
- The F-Fan motor runs together with the compressor.

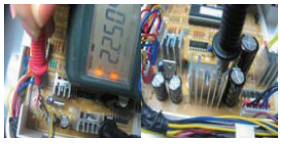
☞ **Self-Diagnosis Error Display**

F FAN ERROR



<Note>
Pulse signals being generated when the motor is rotating are to be input to CN72 #3 (F).
These will be input to MICOM and when there are no input signals with the motor rotating, the fan will be turned off and then be turned on in 10 seconds.
If there are still no input signals, it keeps trying the above 4 times. And, if it still fails, it runs the motor in 10 minutes. It is implemented to prevent the motor
from being overloaded due to restrictions by foreign substances such as ice built up around the motor.

◆ Possible Causes
① Defective FAN-MOTOR
② Contact problem at the terminal (MAIN PCB CONNECTOR -TERMINAL (CN72, ①, ②, ④), Contact problem at Freezer Fan Motor Connector, Defective Motor Wire)
③ Check the motor rotating pulse input upon Fan Motor operation. (Refer to Fan-Motor Circuit in this manual)



It is pulse signal. So, the voltage keeps changing. But, when it is measured with the Multi-Meter, it reads about 2~3V.

☞ How to measure voltage for the F-Fan Motor
- The voltage between the Common PCB Ground and the FFan CN75-"3" (Orange) is DC7~12V.
- When the measurement is different, it needs additional checking.

1) F-Fan

Common PCB Ground
REG1-Heat sink

TROUBLESHOOTING

4-2-3. When it (F DEF Heater) does not Defrost

- When there is a Defrost error, check if there is a Defrost Heater error with the Self-Diagnosis before turning off the unit. And then, turn off the unit and do the trouble shooting. (Check with the Self-Diagnosis.)

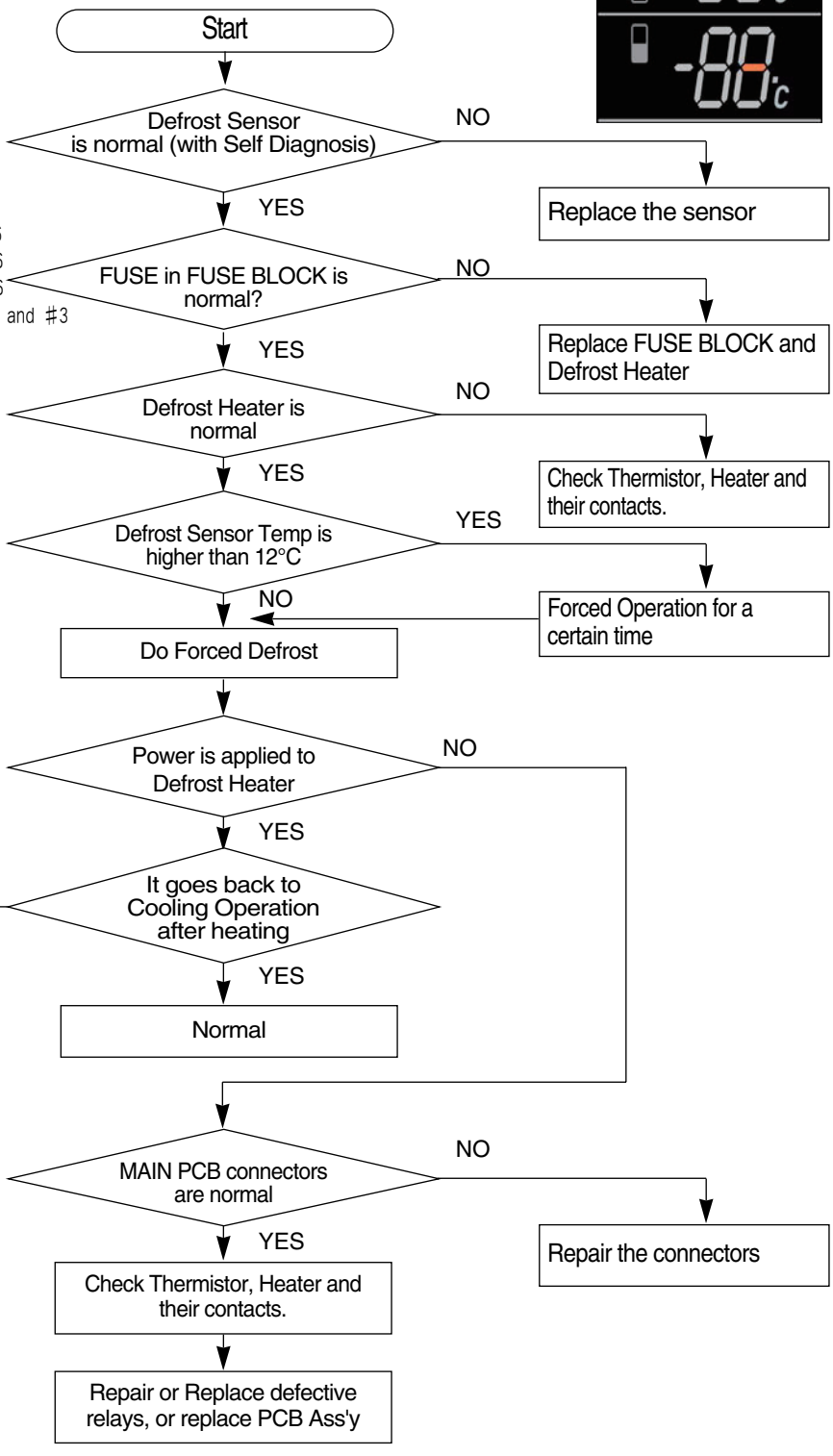
Sensor Resistances by Temp		
30°C	4.22㏀	Refer to DATA1. Temp Table for detail Temp
20°C	6.05㏀	
10°C	8.87㏀	
0°C	13.29㏀	
-10°C	20.42㏀	
-20°C	32.23㏀	
-30°C	52.41㏀	

F-SEN:Read Resistance between CN30 #1 and #6
R-SEN:Read Resistance between CN30 #3 and #6
D-SEN:Read Resistance between CN30 #2 and #6
AMBIENT-SEN :Read Resistance between CN31 #1 and #3

Defrost: Read Resistance between CN70 #7 and #5
Based on 220V Input Voltage (203ohm ± 7%)

Defrost Sensor Voltage is lower than 2.25V

*** LED Segment Type**
Press the OPERATION & MENU buttons at the same time for 6 sec and press the MENU button once



〈Note〉
When Defrost Sensor is higher than +12 ℃, (+10 ℃, +15 ℃, +17 ℃) after heating,it will stop heating and go back to Cooling Operation.

☞ How to measure resistance for the Defrost Heater.
- Measure the resistance between CN70 #7 (White) ↔ #5 (Violet)
- When the measurement is different, it needs additional checking.

1) Defrost Heater

TROUBLESHOOTING

4-2-4 When the refrigerator does not turn on

☞ How to measure

1) Measure the input voltage of the primary Trans

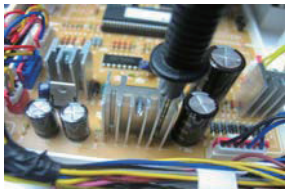
2) Measure the output voltage of the secondary Trans (A)

3) Measure the output voltage of the secondary Trans (B)

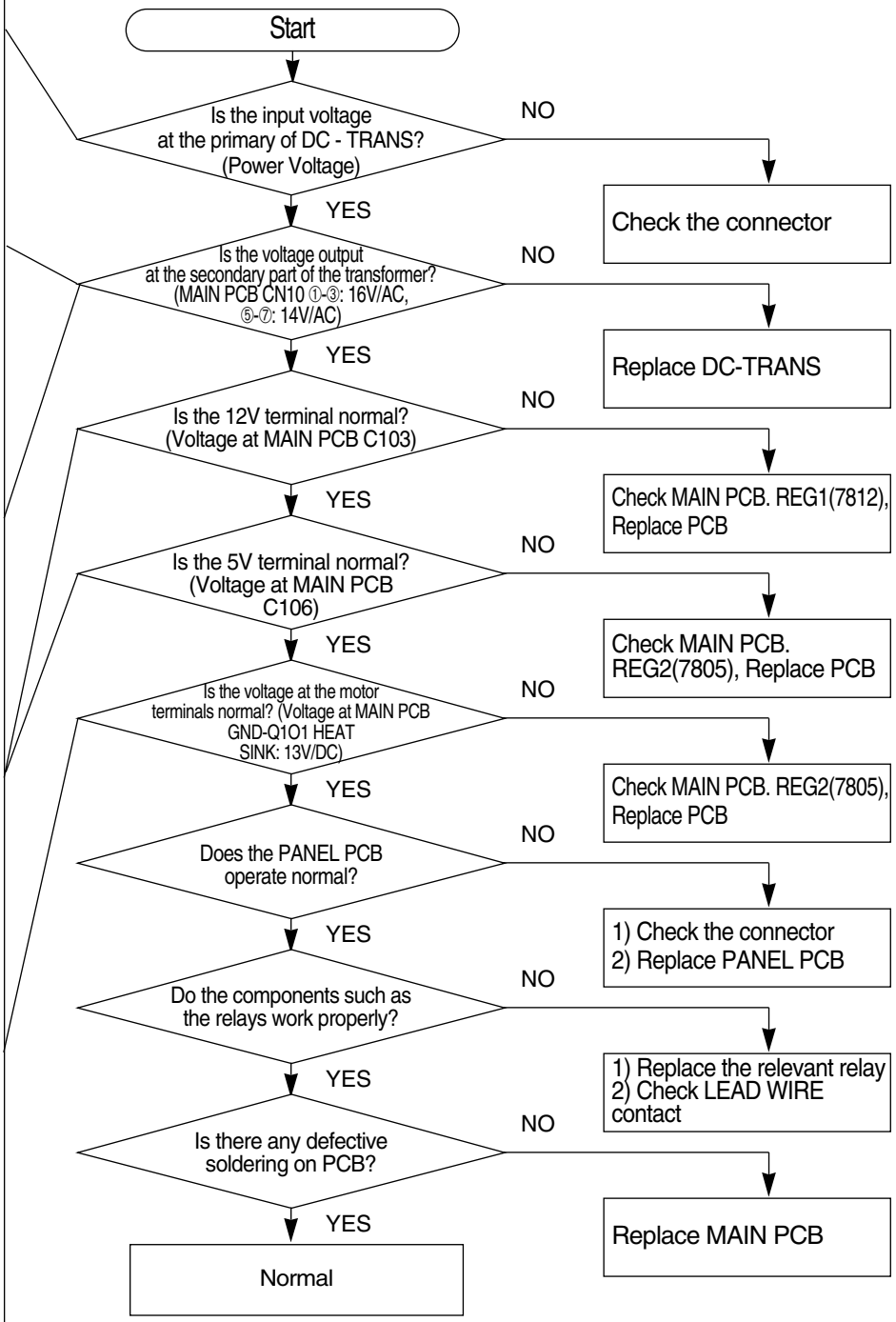
4) Measure the voltage at the 12V terminal (C103) and. And, by using the Common PCB Ground, measure the voltage at the 5V terminal (C106)

5) Measure the Motor input voltage (Q101-GND)

6) Common PCB Ground



<Note>
There is AC 200~240V flowing at the Main PCB. So, take care when doing a repair or a easurement with a tester.



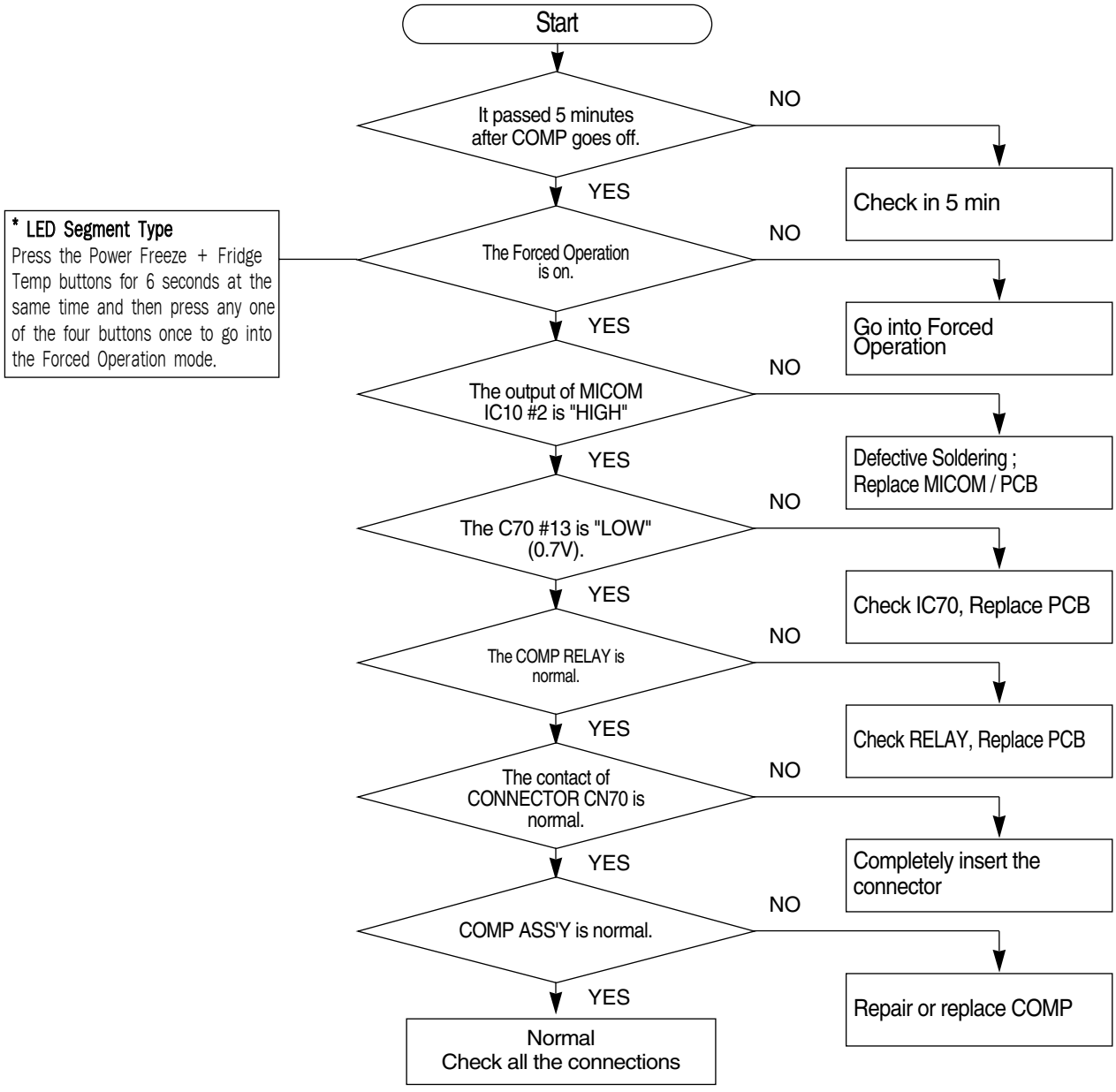
- Check MAIN PCB Connector
- Check the connection at the Upper Hinge Cabi-Door
- Check the Door Panel PCB connections

TROUBLESHOOTING

4-2-5. When the compressor does not operate

Pre-Check
Check the compressor during the Forced Operation
1. It takes more than 5 minutes before the compressor starts operating since it becomes the set temperature.
2. The compressor does not work during the defrost.
3. It also takes more than 5 minutes to run the compressor again when an instant power failure is detected.

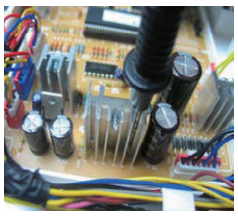
*** LED Segment Type**
Press the Power Freeze + Fridge Temp buttons for 6 seconds at the same time and then press any one of the four buttons once to go into the Forced Operation mode.



☞ How to measure the voltage With the compressor on, it is High Voltage (5V ±0.5V) between the Common PCB Ground and IC10 MICOM #2.

☞ How to measure the voltage With the compressor on, it is Low Voltage 0.7V °æ0.5V) between the Common PCB Ground and IC70 #13.

Common PCB Ground
REG1-Heat sink

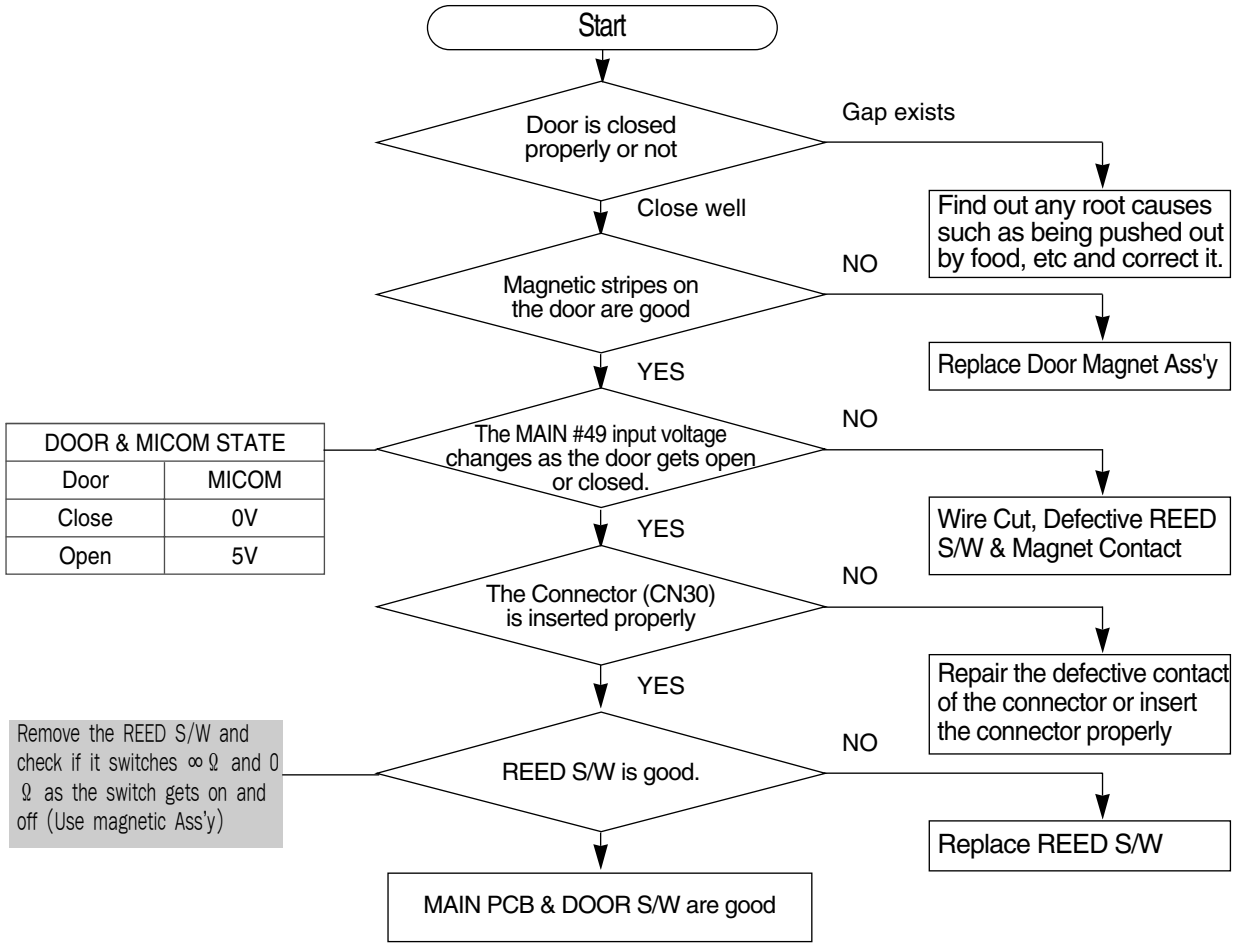


4-2-6 When it keeps alarming (Buzzer Sound)

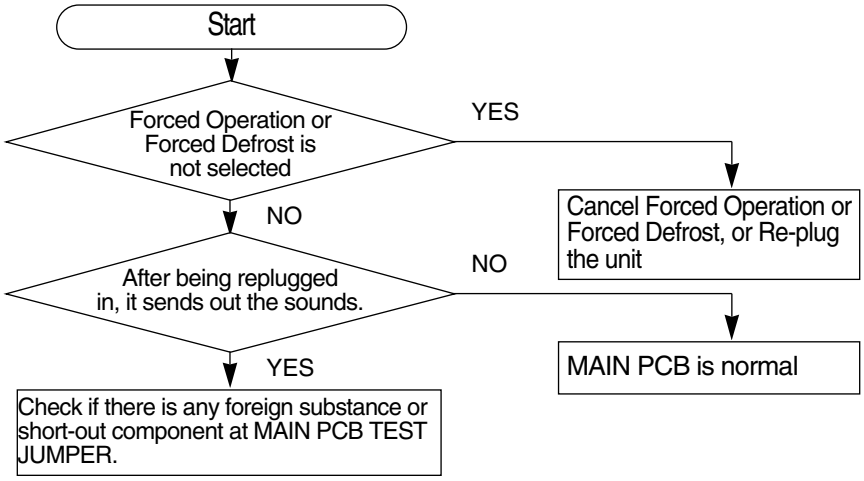
※ The DOOR REED SWITCH is a magnetic type.
So, check its open & close with the magnet attached on the Fridge door.

※ Because there is no buzzer with LED SEMI type, it does not send out alarm sounds (isolated to LED SEG model)

1) When "DingDong" sound continues



2) When it keeps beeping

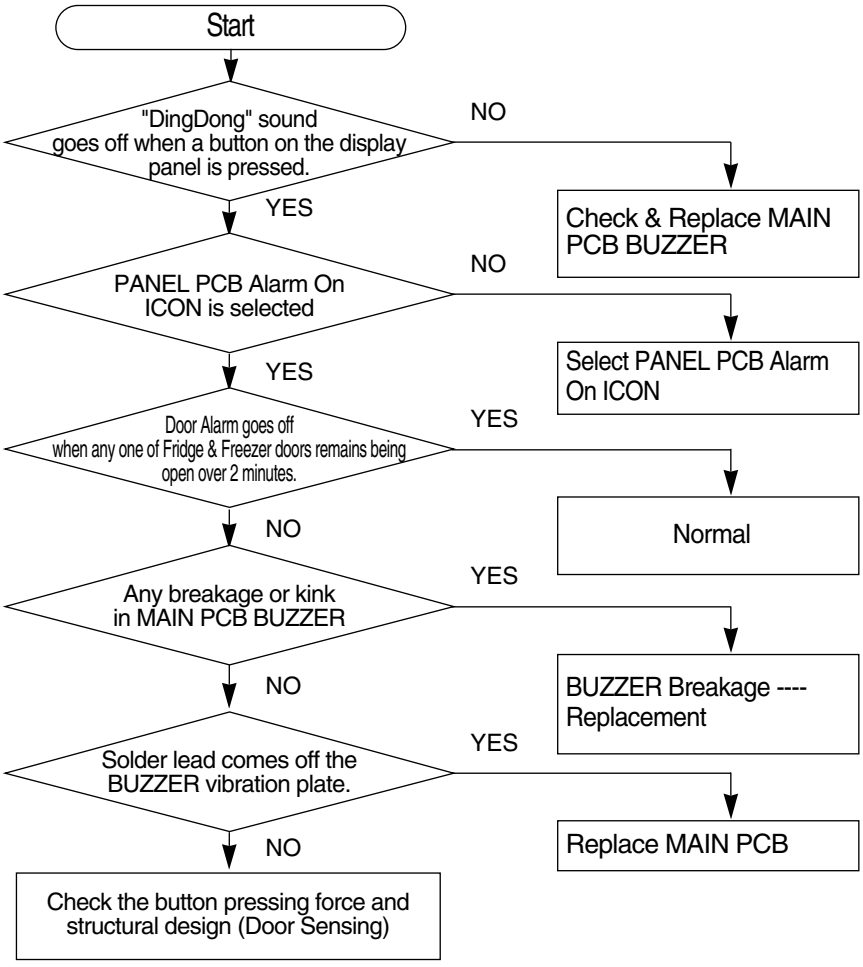


4-2-6 When it keeps alarming (Buzzer Sound)

3) No Buzzer Sound

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

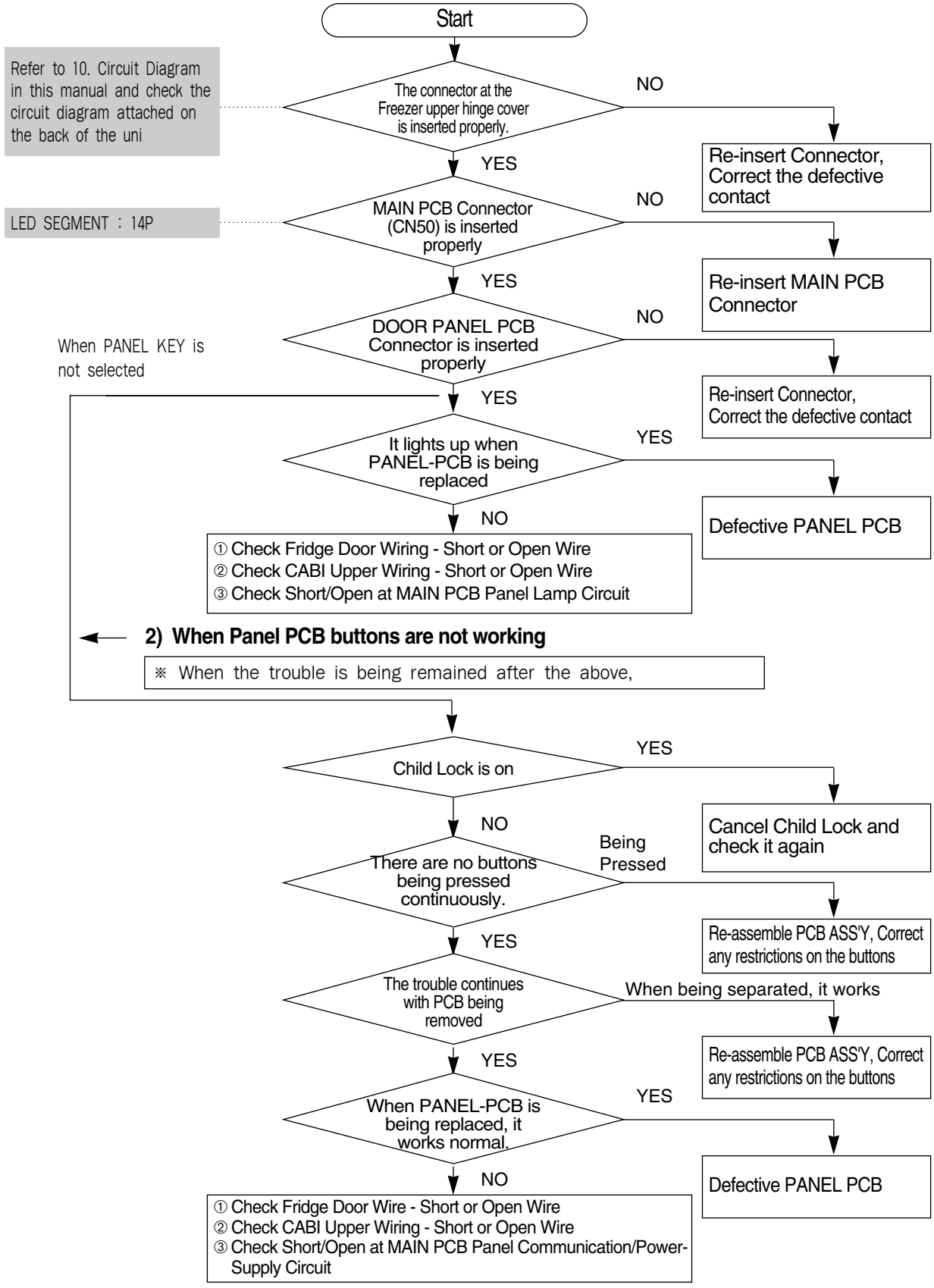
※ It may not be able to check when it is a closed built-in environment and there is lots of noise around.



TROUBLESHOOTING

4-2-7 When the Panel PCB does not work properly

1) When PANEL PCB does not light up or partially does



2) When Panel PCB buttons are not working

※ When the trouble is being remained after the above,

TROUBLESHOOTING

4-2-8. When the fridge lamp does not turn on

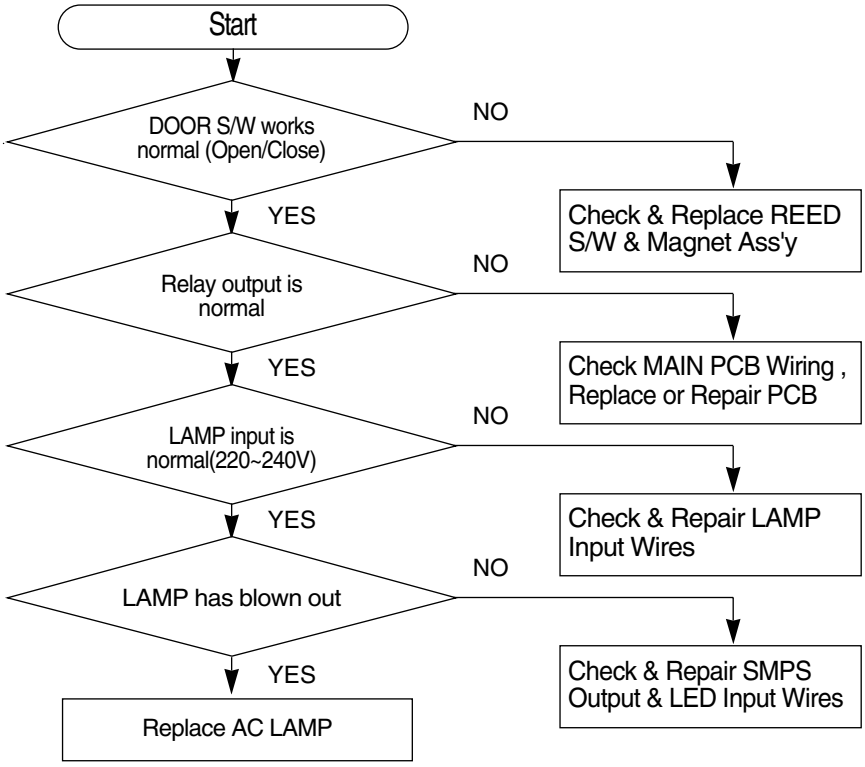
Caution

1. When replacing the Fridge Lamp (incandescent lamp), be sure to turn off the power to prevent electric shock.
2. Take care when replacing the incandescent lamp to prevent skin burn.

When the lamp is controlled with Relay + SMPS (LED lamp is used).

DOOR & MICOM STATE	
Door	MICOM(#48)
Close	0V
Open	5V

〈Note〉
The Room Lamp Relay switches on & off when the door gets opened and closed.
When the lamp does not light up, check the relay operation with its switching sounds by opening & closing the door.



〈 Lamp Control Process 〉

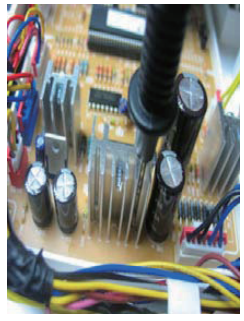
DOOR S/W(REED S/W) → PBA MAIN MICOM Input → RELAY Output (LAMP Control) → AC LAMP

☞ When measuring the lamp resistance, the reading varies depending on the lamp input voltage.
(The reading in the photo below is an example.)

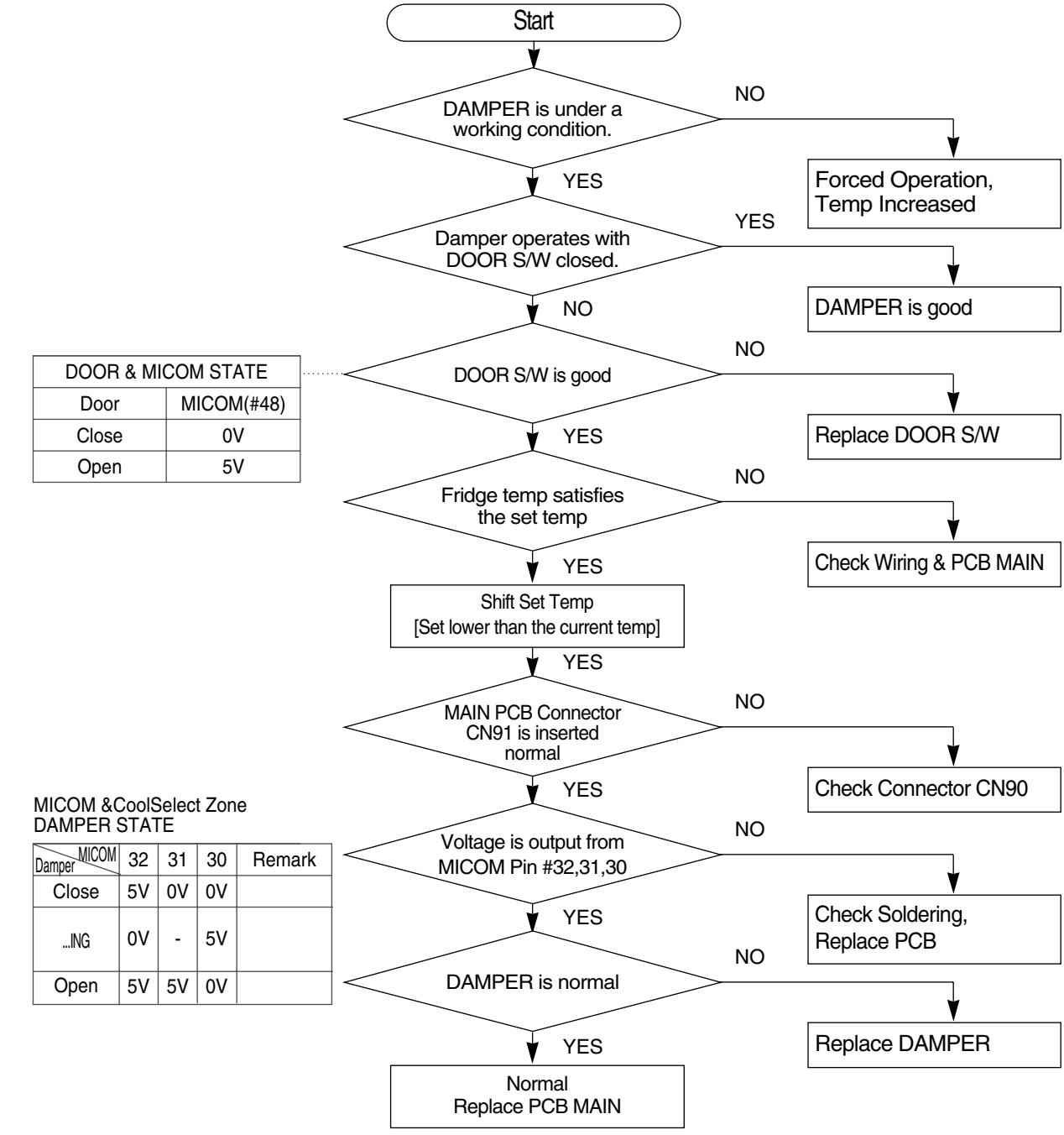
☞ Fridge Lamp
CN71-"1"(Black) ↔ "1"(Pink) ; 89Ohm ± 7%
Lamp ; 40W

☞ How to measure Door Switch Voltage
- Measure voltage between the Common PCB Ground and CN30-"5"(Red).
- Open : 5V ± 0.5V , Close : 0V

Common PCB Ground
CN10-"3"(Black)



4-2-9. Wen the Refrigerator Damper does not work

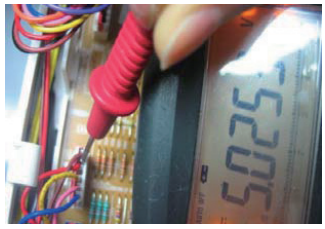


DOOR & MICOM STATE	
Door	MICOM(#48)
Close	0V
Open	5V

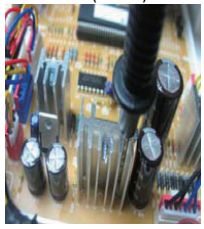
MICOM &CoolSelect Zone
DAMPER STATE

Damper \ MICOM	32	31	30	Remark
Close	5V	0V	0V	
...ING	0V	-	5V	
Open	5V	5V	0V	

☞ How to measure Door Switch Voltage
- Measure voltage between the PCB Ground and the CN30-"5"(Red) voltage.
- Open : 5V ± 0.5V , Close : 0V



Common PCB Ground
CN10-"3"(Black)



5. EXPLODED VIEW & PARTS LIST

5-1) FREEZER - LCD MODEL 82

5-2) FREEZER - LED MODEL 84

5-3) FREEZER - LED SEMI MODEL 86

5-4) FRIDGE - COOL SELECT ZONE & LED LAMP MODEL 88

5-5) FRIDGE - COOL SELECT ZONE & BULB LAMP MODEL & LED LAMP MODEL 90

5-6) FRIDGE - CHILLED ROOM & VEGETABLE BOX MODEL& LED LAMP MODEL 94

5-7) FRIDGE - BIG VEGETABLE BOX MODEL & LED LAMP MODEL 98

5-8) FRIDGE - RL38 MODEL 102

5-9) CABINET - LCD MODEL 106

5-10) CABINET - LED MODEL 109

5-11) CABINET - LED SEMI MODEL 113

5-12) DOOR - LCD MODEL 116

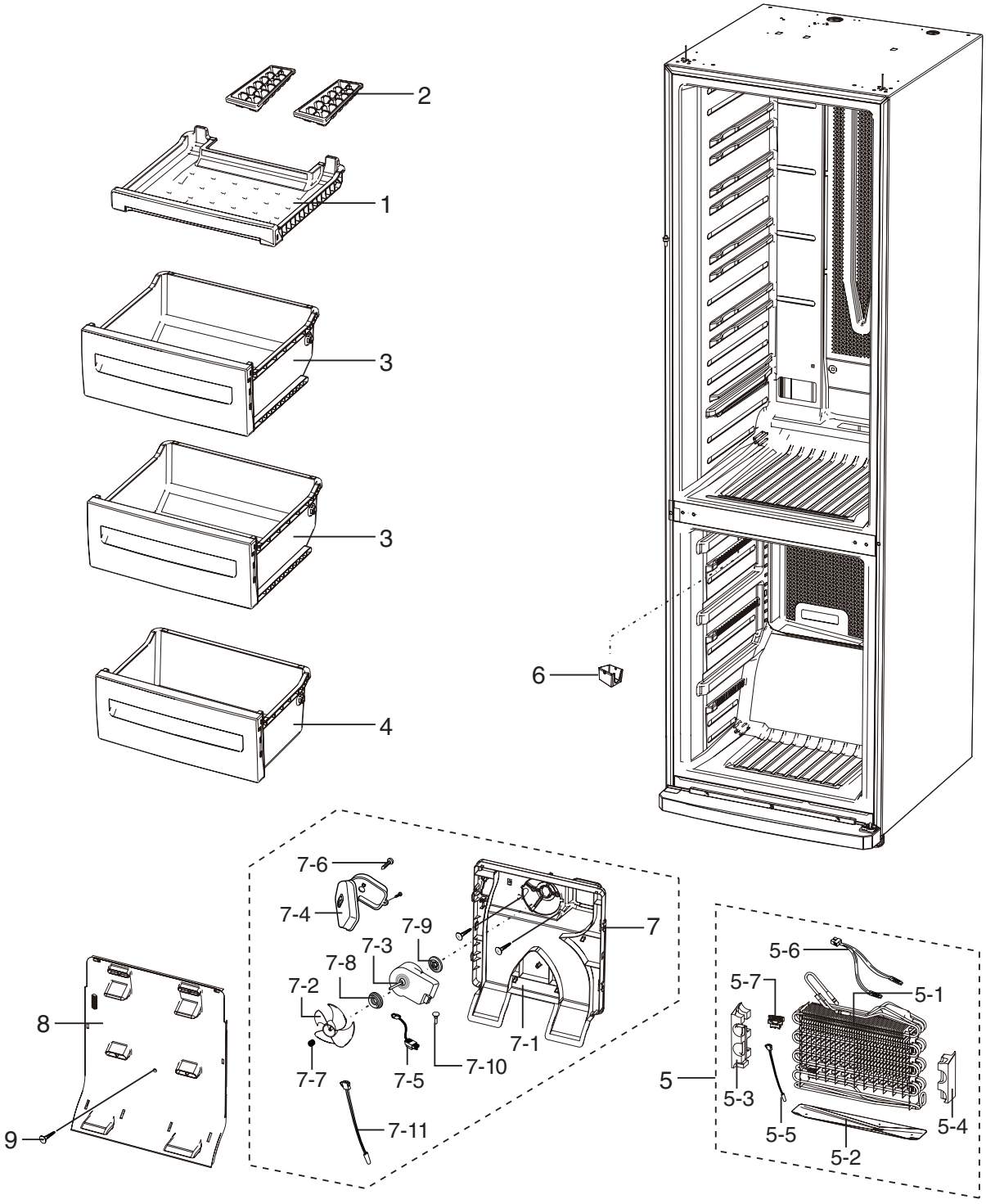
5-13) DOOR - LED MODEL 120

5-14) DOOR - LED DISPENSER MODEL 125

5-15) DOOR - LED SEMI MODEL 130

EXPLODED VIEW & PARTS LIST

5-1) Freezer- LCD Model



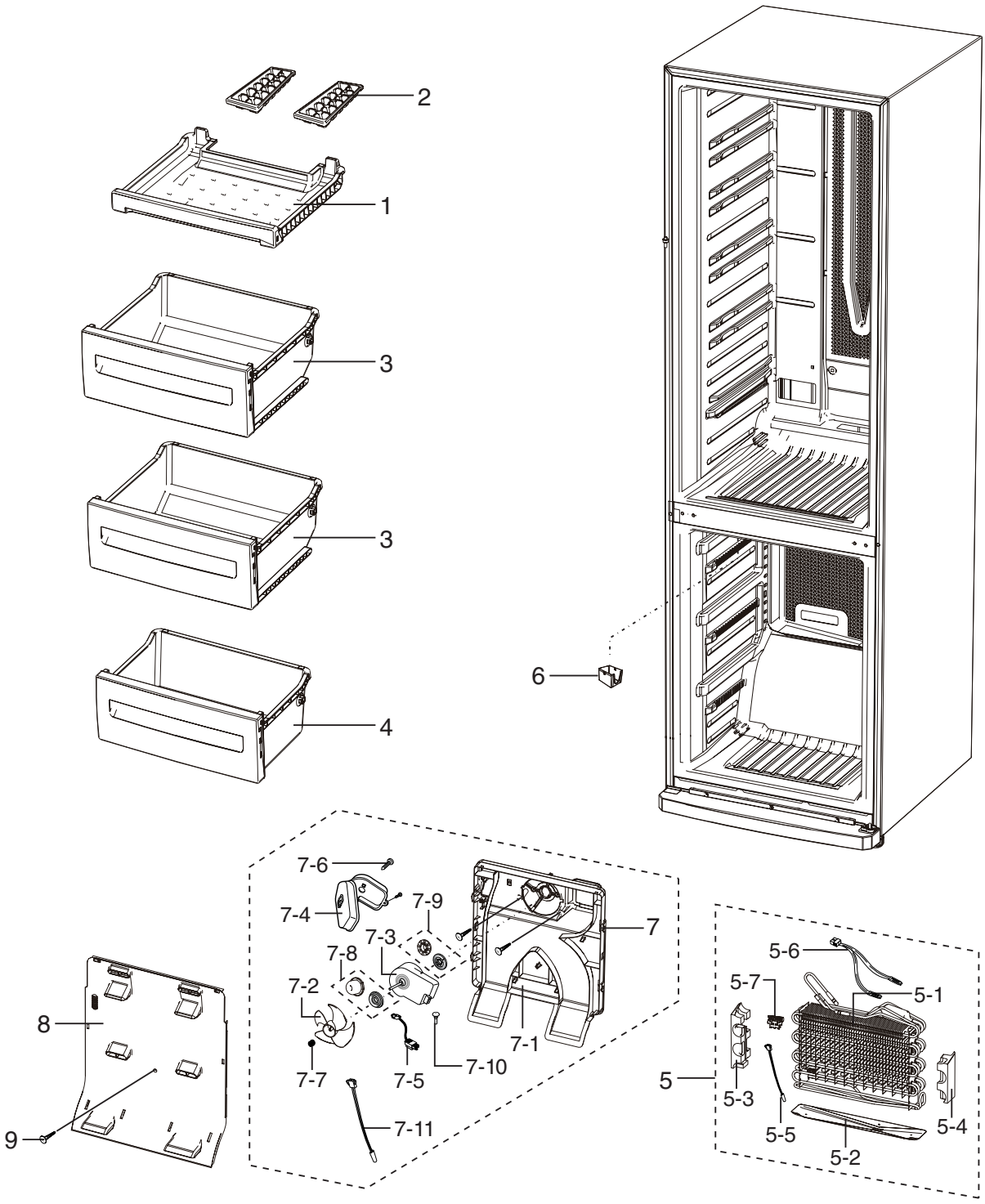
EXPLODED VIEW & PARTS LIST

■ Parts List of Freezer - LCD MODEL

NO	CODE-NO	PART NAME	MODEL		Quantity	SA/SNA	Remark
			RL44Q	RL44F			
1	DA97-04099A	ASSY TRAY-FRE UPP	●		1	SA	
2	DA67-40146B	TRAY-ICE	●		1	SA	
3	DA97-04089A	ASSY TRAY-FRE MID	●		2	SA	
4	DA97-04090A	ASSY TRAY-FRE LOW	●		1	SA	
5	DA96-00280D	ASSY EVAP-FRE	●		1	SA	
5-1	DA59-00350D	EVAP FRE	●		1	SA	
5-2	DA61-02812B	PLATE DRAIN EVAP	●		1	SNA	
5-3	DA60-00153A	SPACER EVAP L	●		1	SA	
5-4	DA60-00154A	SPACER EVAP R	●		1	SA	
5-5	DA32-00006B	SENSOR ASSY-REF	●		1	SA	
5-6	DA47-00095F	THERMO FUSE-ASSY	●		1	SA	
5-7	DA61-02901A	FIXER SENSOR EVAP	●		1	SA	
6	DA63-02902B	COVER-FIXER HOUSING,V	●		1	SA	
7	DA97-04021D	ASSY COVER-EVAP REAR	●		1	SA	
	DA97-04244E			●			
7-1	DA63-03076B	COVER EVAP-REAR	●		1	SA	
7-2	DA31-00148A	FAN-AX112W5CCI	●		1	SA	
7-3	DA31-00146E	MOTOR DC-BLDC	●		1	SA	
	DA31-00103H	MOTOR FAN-AC		●			
7-4	DA63-01809A	COVER MOTOR-BLDC	●		1	SA	
	DA63-01283C	COVER MOTOR-AC		●			
7-5	DA39-00060K	WIRE HARNESS-MOTOR	●		1	SA	
7-6	6002-000213	SCREW-TAPPING	●		3	SA	
7-7	DA61-20128A	SPRING ETC-FAN	●		1	SA	
7-8	DA63-01808A	GROMMET-MOTOR,FRONT	●		1	SA	
	DA63-01976A	GROMMET-MOTOR		●			
7-9	DA63-01146A	GROMMET-MOTOR,REAR	●		1	SA	
	DA63-00771A	GROMMET-FAN MOTOR		●			
7-10	DA63-40167A	GROMMET-COVER CHIL	●		1	SA	
7-11	DA32-00006G	SENSOR TEMP-F DEF	●		1	SA	
8	DA97-04020A	ASSY COVER-EVAP FRONT	●		1	SA	
9	6002-000215	SCREW-TAPPING	●		3	SA	

EXPLODED VIEW & PARTS LIST

5-2) Freezer - LED Model



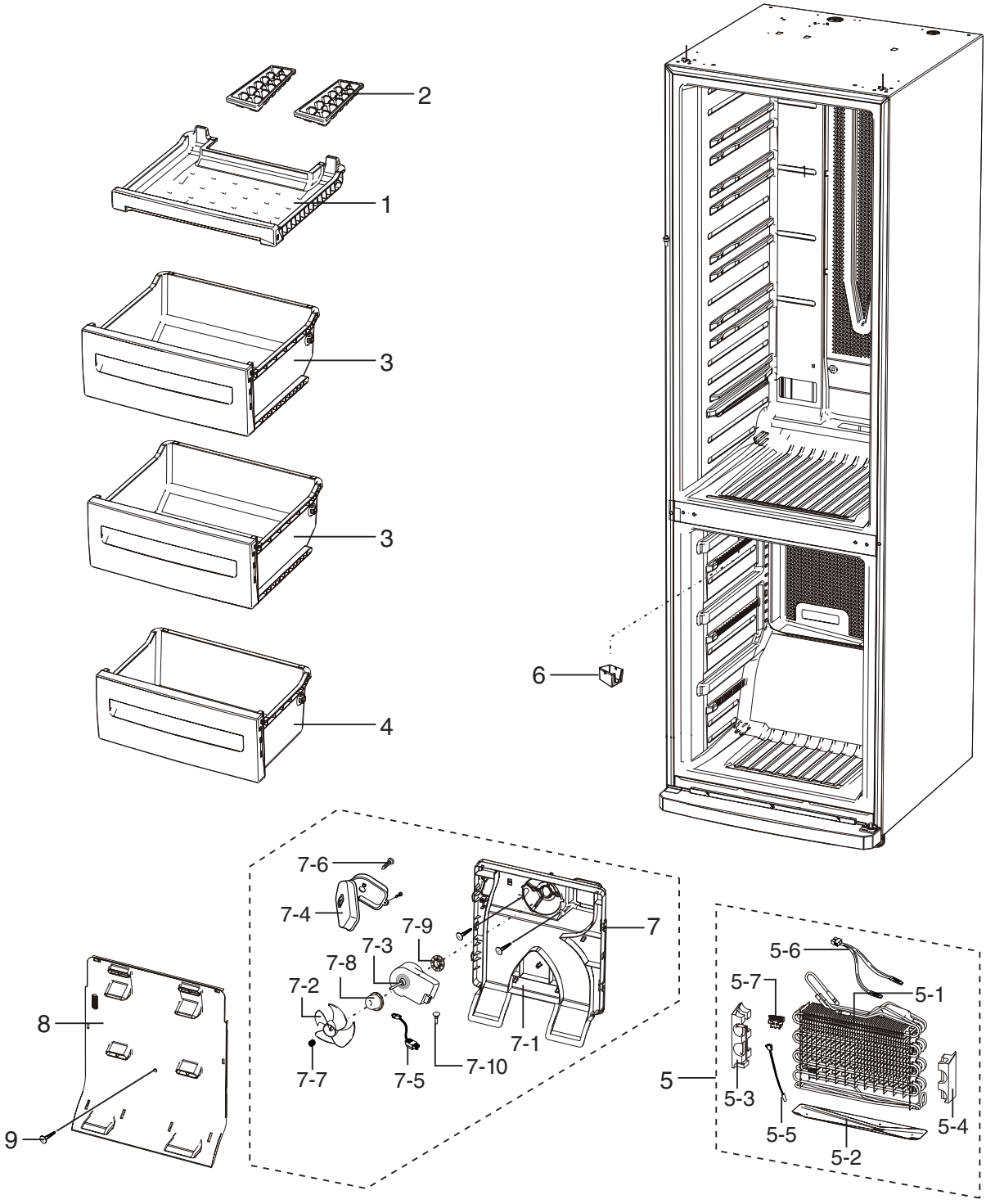
EXPLODED VIEW & PARTS LIST

■ Parts List of Freezer - LED MODEL

NO	CODE-NO	PART NAME	MODEL									Quantity	SA/SNA	Remark
			RL44E	RL44W	RL44P	RL41H	RL41E	RL41W	RL41P	RL38H	RL38E			
1	DA97-04099A	ASSY TRAY-FRE UPP					●					1	SA	
2	DA67-40146B	TRAY-ICE					●					1	SA	
3	DA97-04089A	ASSY TRAY-FRE MID	●			●						2	SA	PREMIUM
	DA97-04127A			●	●		●	●	●	●	●			NORMAL
4	DA97-04090A	ASSY TRAY-FRE LOW	●			●						1	SA	PREMIUM
	DA97-04126A			●	●		●	●	●	●	●			NORMAL
5	DA96-00280D	ASSY EVAP-FRE	●	●	●	●	●	●	●	●	●	1	SA	220～240V/50Hz
	DA96-00280E													110～127V/60Hz
5-1	DA59-00350D	EVAP FRE	●	●	●	●	●	●	●	●	●		SA	220～240V/50Hz
	DA59-00350E													110～127V/60Hz
5-2	DA61-02812B	PLATE DRAIN EVAP					●					1	SNA	
5-3	DA60-00153A	SPACER EVAP L					●					1	SA	
5-4	DA60-00154A	SPACER EVAP R					●					1	SA	
5-5	DA32-00006B	SENSOR ASSY-REF					●					1	SA	
5-6	DA47-00095F	THERMO FUSE-ASSY					●					1	SA	
5-7	DA61-02901A	FIXER SENSOR EVAP					●					1	SA	
6	DA63-02902B	COVER-FIXER HOUSING,V					●					1	SA	
7	DA97-04021D	ASSY COVER-EVAP REAR			●	●			●	●		1	SA	
	DA97-04244E		●	●			●	●			●			220～240V/50Hz
	DA97-04244F			●				●						115～127V/60Hz
7-1	DA63-03076B	COVER EVAP-REAR					●					1	SA	
7-2	DA31-00148A	FAN-AX112W5CCI					●					1	SA	
7-3	DA31-00146E	MOTOR DC-BLDC			●	●			●	●		1	SA	
	DA31-00103H	MOTOR FAN-AC	●	●			●	●			●			220～240V/50Hz
	DA31-00103J			●				●						115～127V/60Hz
7-4	DA63-01809A	COVER MOTOR-BLDC			●	●			●	●		1	SA	
	DA63-01283C	COVER MOTOR-AC	●	●			●	●			●			
7-5	DA39-00060K	WIRE HARNESS-MOTOR			●	●			●	●		1	SA	
7-6	6002-000213	SCREW-TAPPING					●					3	SA	
7-7	DA61-20128A	SPRING ETC-FAN					●					1	SA	
7-8	DA63-01808A	GROMMET-MOTOR,FRONT			●	●			●	●		1	SA	
	DA63-01976A	GROMMET-MOTOR	●	●			●	●			●			
7-9	DA63-01146A	GROMMET-MOTOR,REAR			●	●			●	●		1	SA	
	DA63-00771A	GROMMET-FAN MOTOR	●	●			●	●			●			
7-10	DA63-40167A	GROMMET-COVER CHIL					●					1	SA	
7-11	DA32-00006G	SENSOR TEMP-F DEF					●					1	SA	
8	DA97-04020A	ASSY COVER-EVAP FRONT					●					1	SA	
9	6002-000215	SCREW-TAPPING					●					3	SA	

EXPLODED VIEW & PARTS LIST

5-3) Freezer - LED SEMI Model



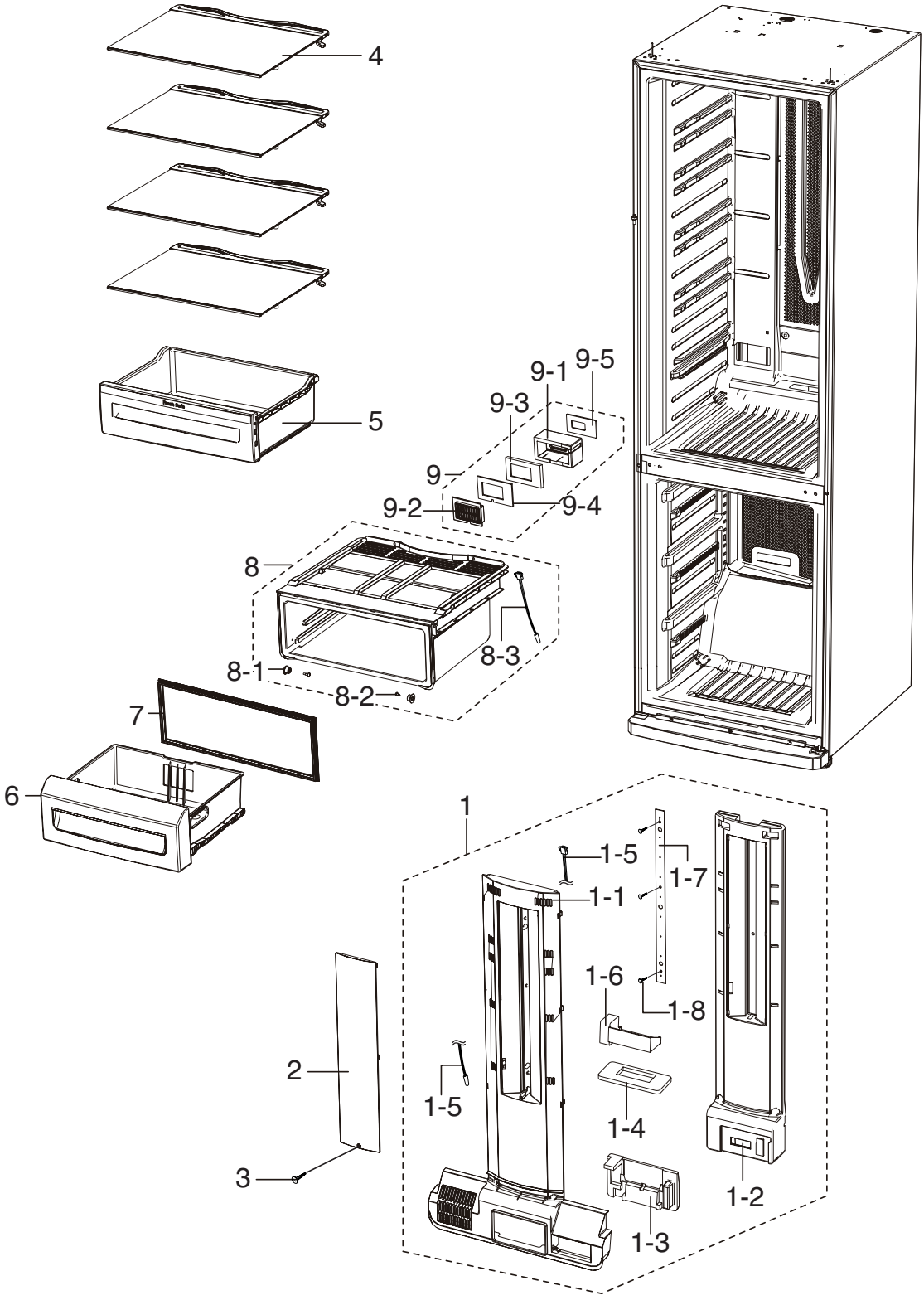
EXPLODED VIEW & PARTS LIST

■ Parts List of Freezer - LED SEMI MODEL

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41S	RL38S			
1	DA97-04099A	ASSY TRAY-FRE UPP		●		1	SA	
2	DA67-40146B	TRAY-ICE		●		1	SA	
3	DA97-04127A	ASSY TRAY-FRE MID		●		2	SA	
4	DA97-04126A	ASSY TRAY-FRE LOW		●		1	SA	
5	DA96-00280D	ASSY EVAP-FRE		●		1	SA	
5-1	DA59-00350D	EVAP FRE		●		1	SA	
5-2	DA61-02812B	PLATE DRAIN EVAP		●		1	SNA	
5-3	DA60-00153A	SPACER EVAP L		●		1	SA	
5-4	DA60-00154A	SPACER EVAP R		●		1	SA	
5-5	DA32-00006B	SENSOR ASSY-REF		●		1	SA	
5-6	DA47-00095F	THERMO FUSE-ASSY		●		1	SA	
5-7	DA61-02901A	FIXER SENSOR EVAP		●		1	SA	
6	DA63-02902B	COVER-FIXER HOUSING,V		●		1	SA	
7	DA97-04244E	ASSY COVER-EVAP REAR		●		1	SA	
7-1	DA63-03076B	COVER EVAP-REAR		●		1	SA	
7-2	DA31-00148A	FAN-AX112W5CCI		●		1	SA	
7-3	DA31-00103H	MOTOR FAN-AC		●		1	SA	
7-4	DA63-01283C	COVER-MOTOR		●		1	SA	
7-5	DA32-00006G	SENSOR TEMP-F DEF		●		1	SA	
7-6	6002-000520	SCREW-TAPPING		●		3	SA	
7-7	DA61-20128A	SPRING ETC-FAN		●		1	SA	
7-8	DA63-00771A	GROMMET-FAN MOTOR		●		1	SA	
7-9	DA63-01976A	GROMMET-MOTOR		●		1	SA	
7-10	DA63-40167A	GROMMET-COVER CHIL		●		1	SA	
8	DA97-04020A	ASSY COVER-EVAP FRONT		●		1	SA	
9	6002-000215	SCREW-TAPPING		●		3	SA	

EXPLODED VIEW & PARTS LIST

5-4) Fridge - Cool Select Zone & LED Lamp Model



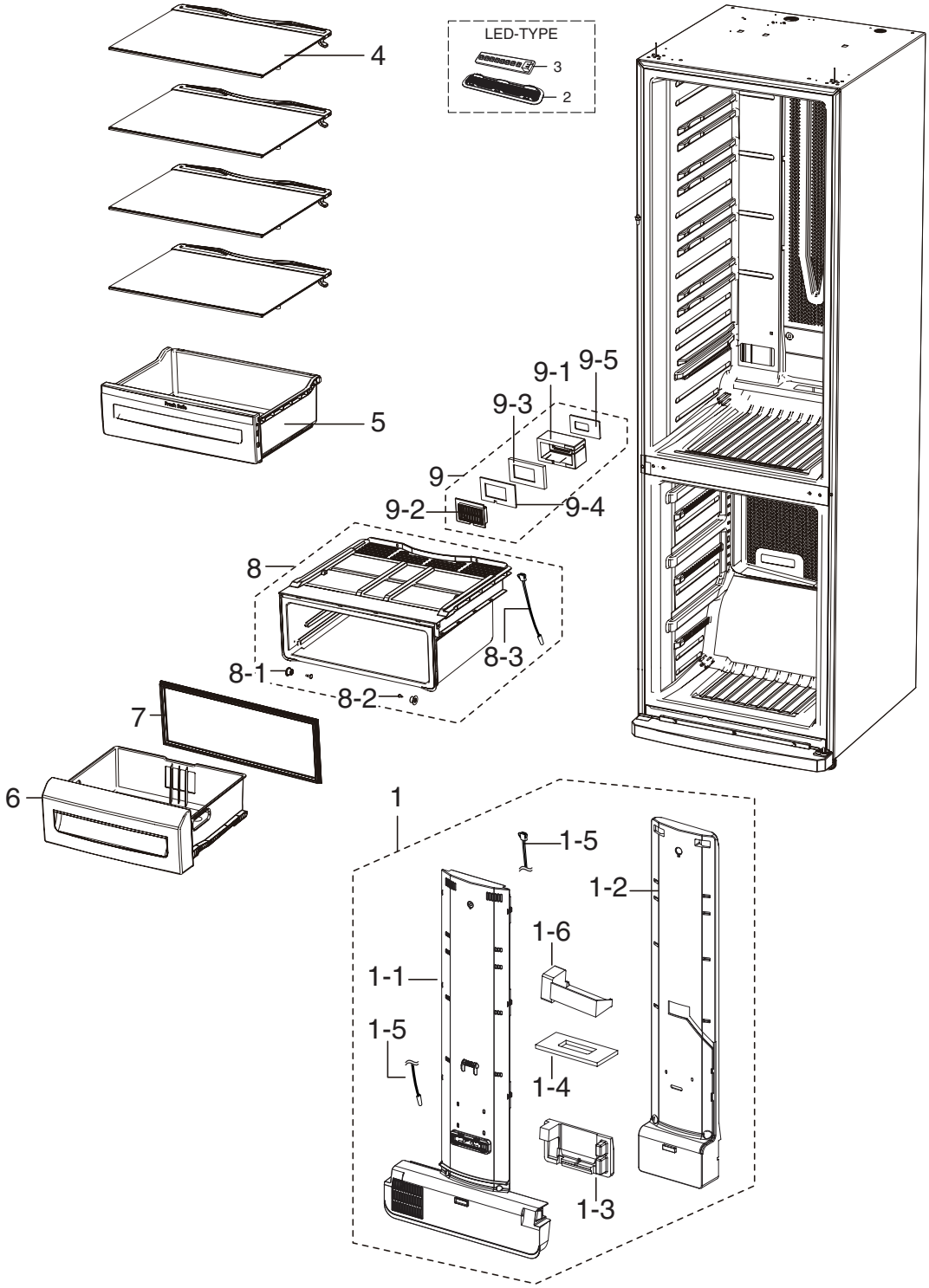
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - Cool Select Zone & LED Lamp MODEL

NO	CODE-NO	PART NAME	MODEL	Quantity	SA/SNA	Remark
			RL44Q			
1	DA97-03878B	ASSY COVER-MULTI REF	●	1	SA	
1-1	DA63-03021A	COVER-MULTI REF	●	1	SNA	
1-2	DA62-01221A	INSULATION-MULTI REF A	●	1	SNA	
1-3	DA62-01223A	INSULATION-MULTI REF B	●	1	SNA	
1-4	DA62-01229B	SEAL-COVER MULTI LOW	●	1	SNA	
1-5	DA32-10105R	SENSOR ASSY-FRE	●	1	SA	
1-6	DA31-00043C	MOTOR DC-DAMPER	●	1	SA	
1-7	DA96-00287A	ASSY LAMP-LED	●	1	SA	
1-8	6002-000319	SCREW-TAPPING	●	3	SNA	
2	DA63-03026A	COVER LAMP-REF	●	1	SA	
3	6002-001369	SCREW-TAPPING	●	1	SNA	
4	DA97-04091D	ASSY SHELF REF	●	4	SA	
5	DA97-04105A	ASSY CASE-VEG UPP	●	1	SA	
6	DA97-04100A	ASSY TRAY-CONVERTIBLE	●	1	SA	
7	DA63-01783F	GASKET-CONVERTIBLE	●	1	SA	
8	DA97-04102B	ASSY CASE-CONVERTIBLE	●	1	SA	
8-1	DA66-00151A	ROLLER-FRONT	●	2	SA	
8-2	6009-001293	SCREW-SPECIAL	●	2	SA	
8-3	DA32-00011N	SENSOR TEMP-CSZ SENSOR	●	1	SNA	
9	DA97-04106C	ASSY DAMPER-CONVERTIBLE	●	1	SNA	
9-1	DA31-00071D	MOTOR DC-ASS'Y DAMPER	●	1	SA	
9-2	DA63-03189B	COVER DAMPER-CONVERTIBLE	●	1	SNA	
9-3	DA62-01235A	INSULATION-CONVERTILBE DAMPER	●	1	SNA	
9-4	DA62-01299A	SEAL-CONV DAMPER FRONT	●	1	SNA	
9-5	DA62-01300A	SEAL-CONV DAMPER REAR	●	1	SNA	

EXPLODED VIEW & PARTS LIST

5-5) Fridge - Cool Select Zone & Bulb Lamp Model (LED TYPE)



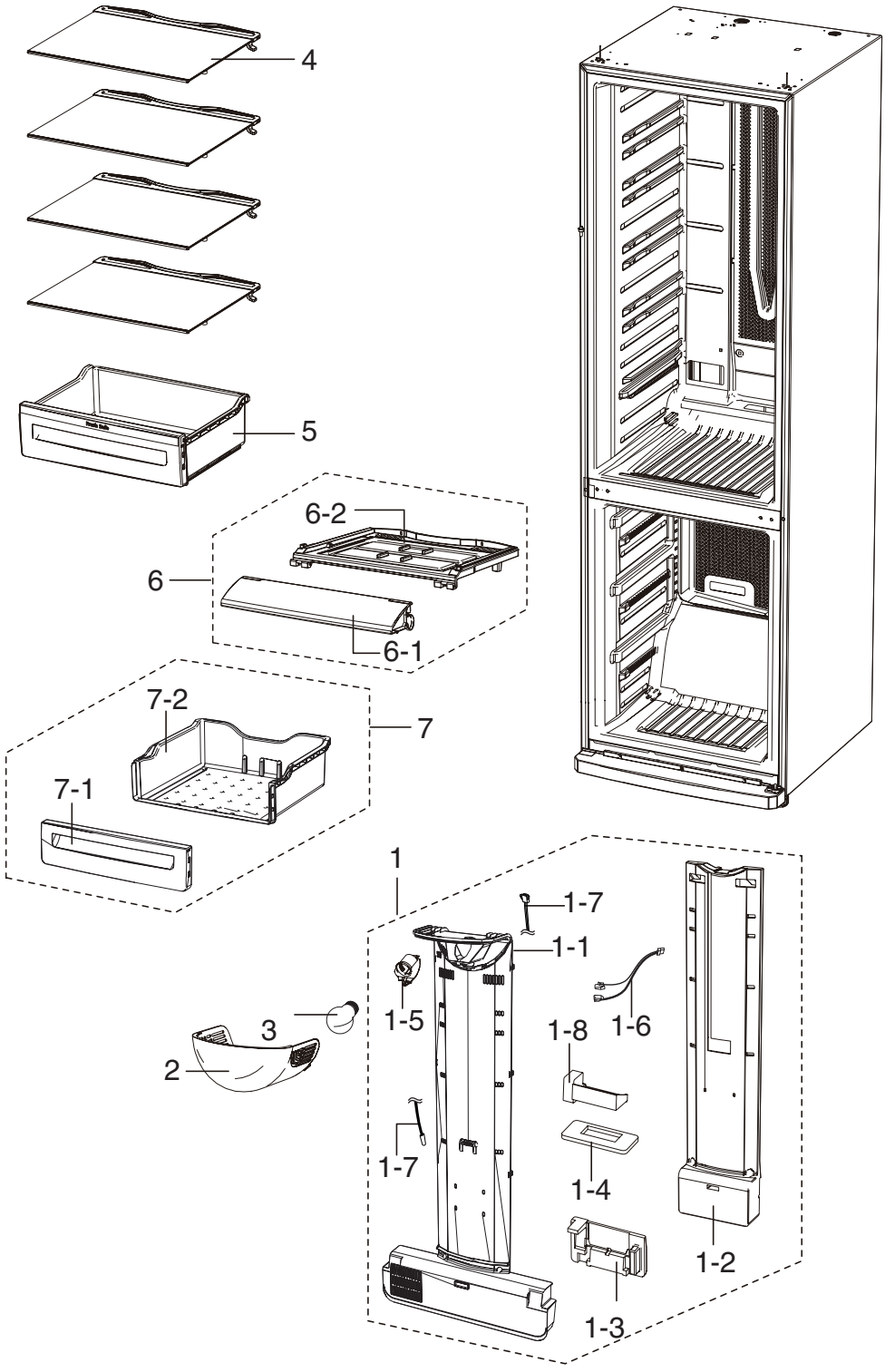
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - Cool Select Zone & Bulb Lamp MODEL (LED TYPE)

NO	CODE-NO	PART NAME	MODEL	Quantity	SA/SNA	Remark
			RL44F			
1	DA97-03949D	ASSY COVER MULTI	●	1	SA	LED TYPE
1-1	DA63-05685A	COVER-MULTI REF	●	1	SA	LED TYPE
1-2	DA62-02702A	INSULATION-MULTI REF A	●	1	SNA	LED TYPE
1-3	DA62-01222A	INSULATION-MULTI REF B	●	1	SNA	LED TYPE
1-4	DA62-01229B	SEAL-COVER MULTI LOW	●	1	SNA	LED TYPE
1-5	DA32-00011E	SENSOR TEMP-F SENSOR	●	1	SA	LED TYPE
1-6	DA31-00043C	MOTOR DC-DAMPER	●	1	SC	LED TYPE
2	DA63-04119A	COVER LED LAMP	●	1	SA	LED TYPE
3	DA41-00519A	LED LAMP	●	1	SA	LED TYPE
4	DA97-04091D	ASSY SHELF REF	●	4	SA	
5	DA97-04105A	ASSY CASE-VEG UPP	●	1	SA	
6	DA97-04100A	ASSY TRAY-CONVERTIBLE	●	1	SA	
7	DA63-01783F	GASKET-CONVERTIBLE	●	1	SA	
8	DA97-04102B	ASSY CASE-CONVERTIBLE	●	1	SA	
8-1	DA66-00151A	ROLLER-FRONT	●	2	SA	
8-2	6009-001293	SCREW-SPECIAL	●	2	SA	
8-3	DA32-00011N	SENSOR TEMP-CSZ SENSOR	●	1	SNA	
9	DA97-04106C	ASSY DAMPER-CONVERTIBLE	●	1	SNA	
9-1	DA31-00071D	MOTOR DC-ASS'Y DAMPER	●	1	SA	
9-2	DA63-03189B	COVER DAMPER-CONVERTIBLE	●	1	SNA	
9-3	DA62-01235A	INSULATION-CONVERTILBE DAMPER	●	1	SNA	
9-4	DA62-01299A	SEAL-CONV DAMPER FRONT	●	1	SNA	
9-5	DA62-01300A	SEAL-CONV DAMPER REAR	●	1	SNA	
10	6002-000216	SCREW-TAPPING	●	2	SA	

EXPLODED VIEW & PARTS LIST

5-6) Fridge - Chilled Room & Vegetable Box Model & LED Lamp Model (BLUB TYPE)



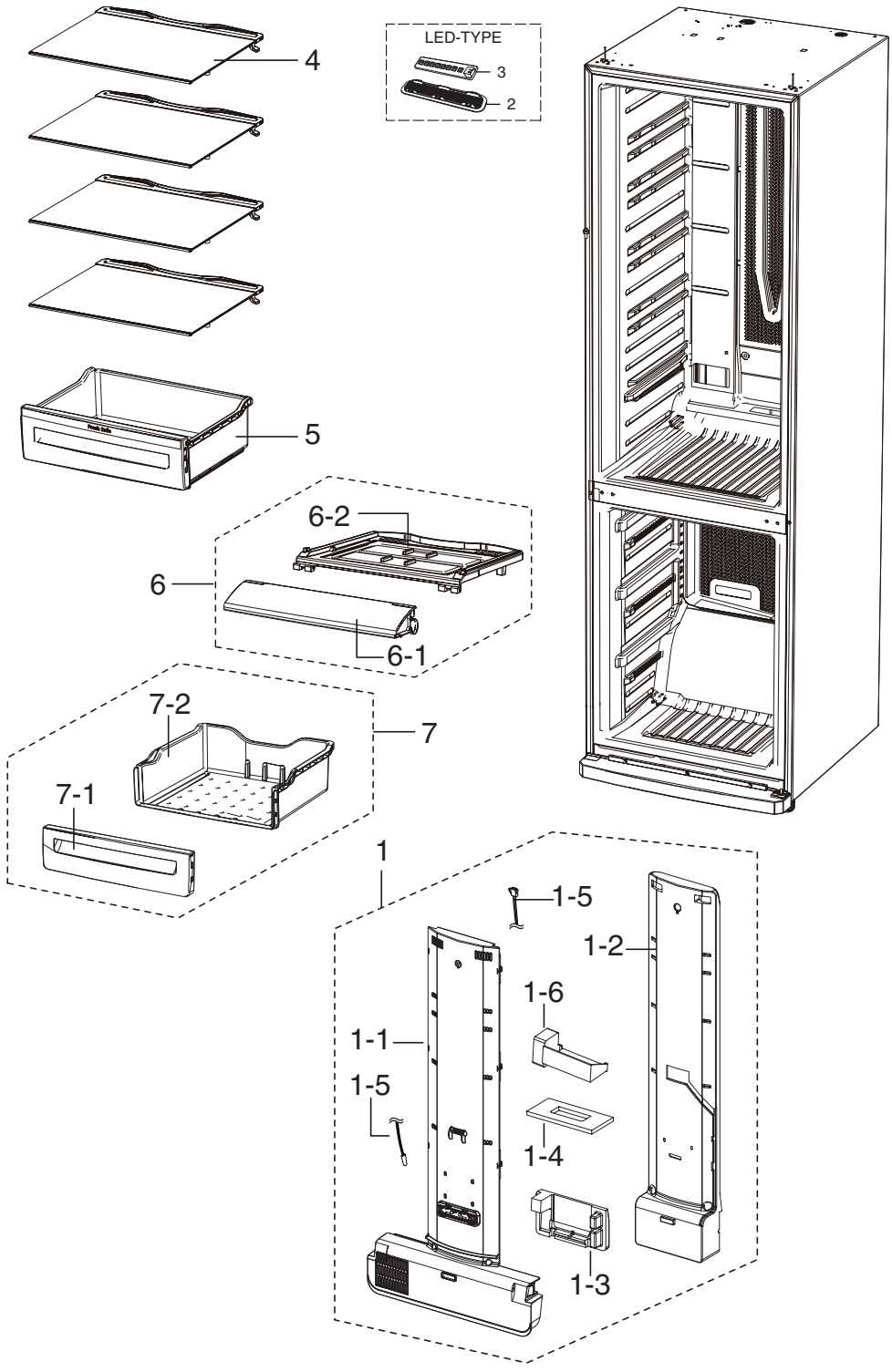
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - Chilled Room & Vegetable Box MODEL (BLUB TYPE)

NO	CODE-NO	PART NAME	MODEL							Quantity	SA/SNA	Remark
			RL44E	RL44W	RL44P	RL41H	RL41E	RL41W	RL41P			
1	DA97-03949B	ASSY COVER-MULTI REF	●	●	●					1	SA	
	DA97-03950B					●	●	●	●			
1-1	DA63-03041A	COVER-MULTI REF	●	●	●					1	SNA	
	DA63-03100A					●	●	●	●			
1-2	DA62-01246A	INSULATION-MULTI REF A	●	●	●					1	SNA	
	DA62-01247A					●	●	●	●			
1-3	DA62-01222A	INSULATION-MULTI REF B	●							1	SNA	
1-4	DA62-01229B	SEAL-COVER MULTI LOW	●							1	SNA	
1-5	DA47-40001C	LAMP HOLDER-ASSY	●							1	SA	
1-6	DA96-00286A	ASSY-WIRE HARNESS LAMP	●							1	SA	
1-7	DA32-00011E	SENSOR ASSY-FRE	●	●	●					1	SA	
	DA32-10105R	SENSOR TEMP-ASSY				●	●	●	●			
1-8	DA31-00043F	MOTOR DC-DAMPER	●							1	SA	
2	DA63-03025A	COVER LAMP-REF	●							1	SA	
3	4713-001201	LAMP-INCANDESCENT	●	●	●	●	●	●		1	SA	230V,0mA,40W
	4713-001206								●			120V,340mA,40W
4	DA97-04091D	ASSY SHELF REF	●			●				4	SA	PREMIUM
	DA67-01446B	SHELF-REF		●	●		●	●	●	4		NORMAL
5	DA97-04105A	ASSY CASE-VEG UPP	●			●				1	SA	PREMIUM
	DA97-04105B			●	●		●	●	●			NORMAL
6	DA97-04152A	ASSY COVER-CHILLED UPP	●							1	SA	
6-1	DA63-03051A	COVER-CHILLED UPP A	●							1	SA	
6-2	DA63-03052B	COVER-CHILLED UPP B	●							1	SA	
7	DA97-04149C	ASSY TRAY-CHILLED ROOM	●							1	SA	
7-1	DA63-03044A	COVER-TRAY CHILLED	●							1	SA	
7-2	DA63-03054A	TRAY-CHILLED ROOM	●							1	SA	
8	6002-000216	SCREW-TAPPING	●							2	SA	

EXPLODED VIEW & PARTS LIST

5-6) Fridge - Chilled Room & Vegetable Box Model & LED Lamp Model (LED TYPE)



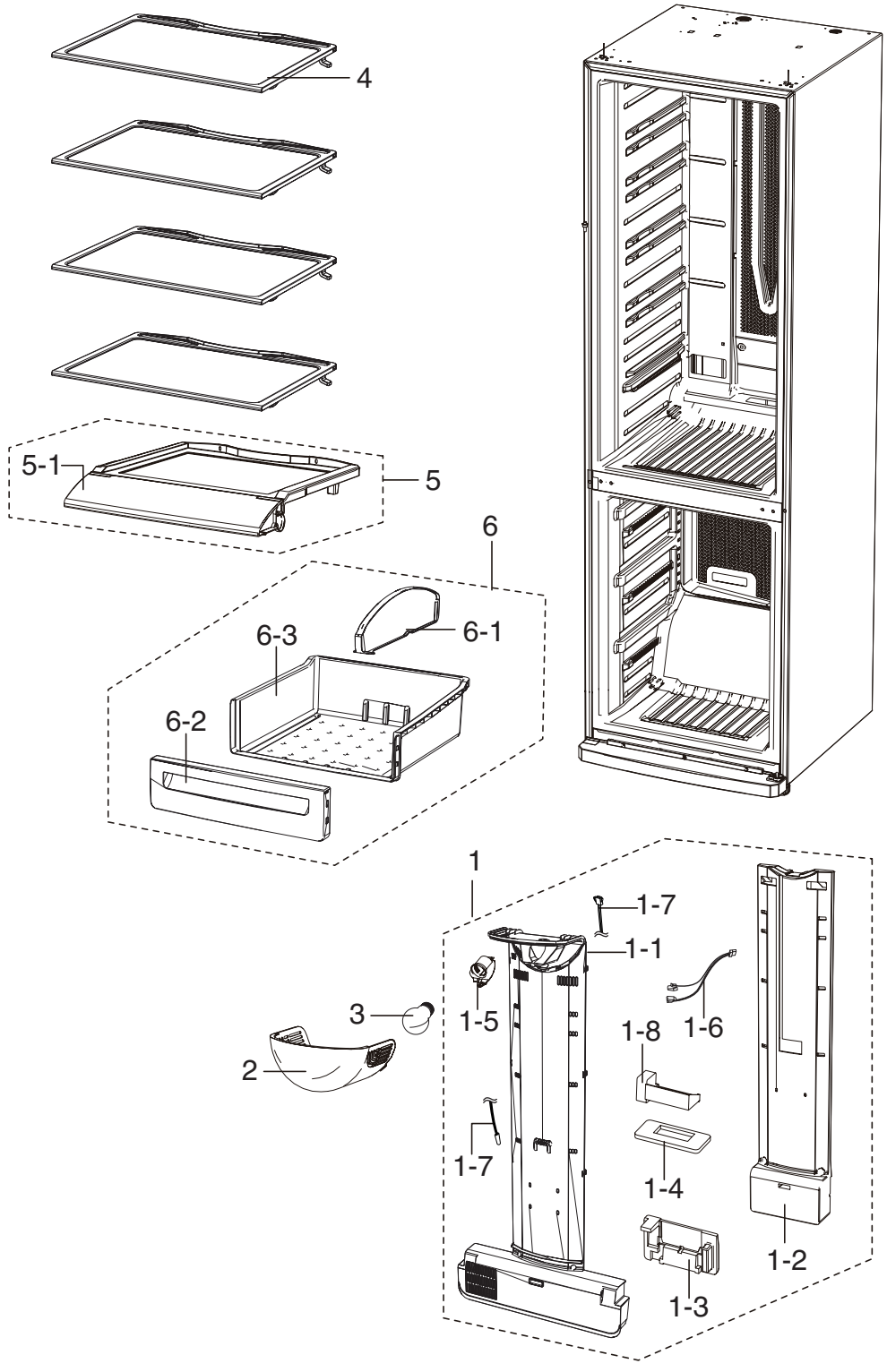
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - Chilled Room & Vegetable Box MODEL (LED TYPE)

NO	CODE-NO	PART NAME	MODEL							Quantity	SA/SNA	Remark
			RL44E	RL44W	RL44P	RL41H	RL41E	RL41W	RL41P			
1	DA97-08249A	ASSY COVER MULTI	●	●	●					1	SA	LED TYPE
	DA97-08259A					●	●	●	●			
1-1	DA63-05277A	COVER-MULTI REF	●	●	●					1	SA	LED TYPE
	DA63-05278A					●	●	●	●			
1-2	DA62-02405A	INSULATION-MULTI REF A	●	●	●					1	SA	LED TYPE
	DA62-02403A					●	●	●	●			
1-3	DA62-01222A	INSULATION-MULTI REF B	●							1	SNA	LED TYPE
1-4	DA62-01229B	SEAL-COVER MULTI LOW	●							1	SNA	LED TYPE
1-5	DA32-10105R	SENSOR TEMP	●							1	SA	LED TYPE
1-6	DA31-00043F	MOTOR DC-MOTOR-DAMPER	●							1	SA	LED TYPE
2	DA63-04119A	COVER LED LAMP	●							1	SA	LED TYPE
3	DA41-00519A	LED LAMP	●							1	SA	LED TYPE
4	DA97-04091D	ASSY SHELF REF	●			●				4	SA	PREMIUM
	DA67-01446B	SHELF-REF		●	●		●	●	●	4		NORMAL
5	DA97-04105A	ASSY CASE-VEG UPP	●			●				1	SA	PREMIUM
	DA97-04105B			●	●		●	●	●			NORMAL
6	DA97-04152A	ASSY COVER-CHILLED UPP	●							1	SA	
6-1	DA63-03051A	COVER-CHILLED UPP A	●							1	SA	
6-2	DA63-03052B	COVER-CHILLED UPP B	●							1	SA	
7	DA97-04149C	ASSY TRAY-CHILLED ROOM	●							1	SA	
7-1	DA63-03044A	COVER-TRAY CHILLED	●							1	SA	
7-2	DA63-03054A	TRAY-CHILLED ROOM	●							1	SA	
8	6002-000216	SCREW-TAPPING	●							2	SA	

EXPLODED VIEW & PARTS LIST

5-7) Fridge - Big Vegetable Box Model (BLUB TYPE)



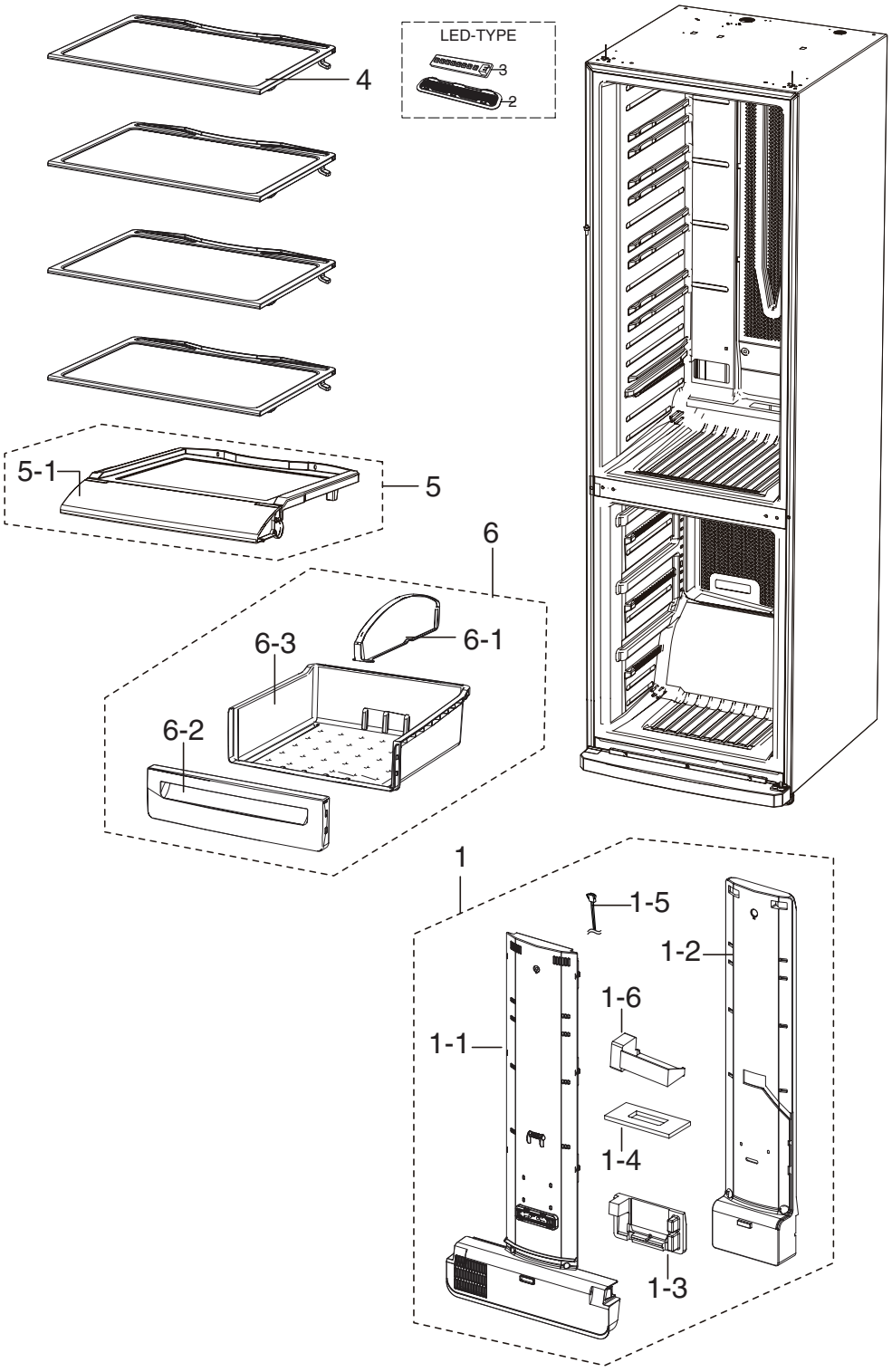
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - Big Vegetable Box MODEL (BLUB TYPE)

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41E	RL41S			
1	DA97-03879C	ASSY COVER-MULTI REF	●			1	SA	
	DA97-03951C			●	●			
1-1	DA63-03041A	COVER-MULTI REF	●			1	SNA	
	DA63-03100A			●	●			
1-2	DA62-01220A	INSULATION-MULTI REF A	●			1	SNA	
	DA62-01248A			●	●			
1-3	DA62-01222A	INSULATION-MULTI REF B	●			1	SNA	
1-4	DA62-01229B	SEAL-COVER MULTI LOW	●			1	SNA	
1-5	DA47-40001C	LAMP HOLDER-ASSY	●			1	SA	
1-6	DA96-00286A	ASSY-WIRE HARNESS LAMP	●			1	SA	
1-7	DA32-00011E	SENSOR ASSY-FRE	●			1	SA	
	DA32-10105R	SENSOR TEMP-ASSY		●	●			
1-8	DA31-00043F	MOTOR DC-DAMPER	●			1	SA	
2	DA63-03025A	COVER LAMP-REF	●			1	SA	
3	4713-001201	LAMP-INCANDESCENT	●			1	SA	40W
4	DA67-01446B	SHELF-REF	●			4	SA	
5	DA97-04151B	ASSY SHELF-VEG	●			1	SA	
5-1	DA63-03052A	COVER-CHILLED UPP B	●			1	SA	
6	DA97-04149B	ASSY TRAY-CHILLED ROOM	●			1	SA	
6-1	DA61-02825B	GUIDE VEG	●			1	SA	
6-2	DA63-03044A	COVER-TRAY CHILLED	●			1	SA	
6-3	DA63-03054A	TRAY-CHILLED ROOM	●			1	SA	
7	6002-000216	SCREW-TAPPING	●			2	SA	

EXPLODED VIEW & PARTS LIST

5-7) Fridge - Big Vegetable Box Model (LED TYPE)



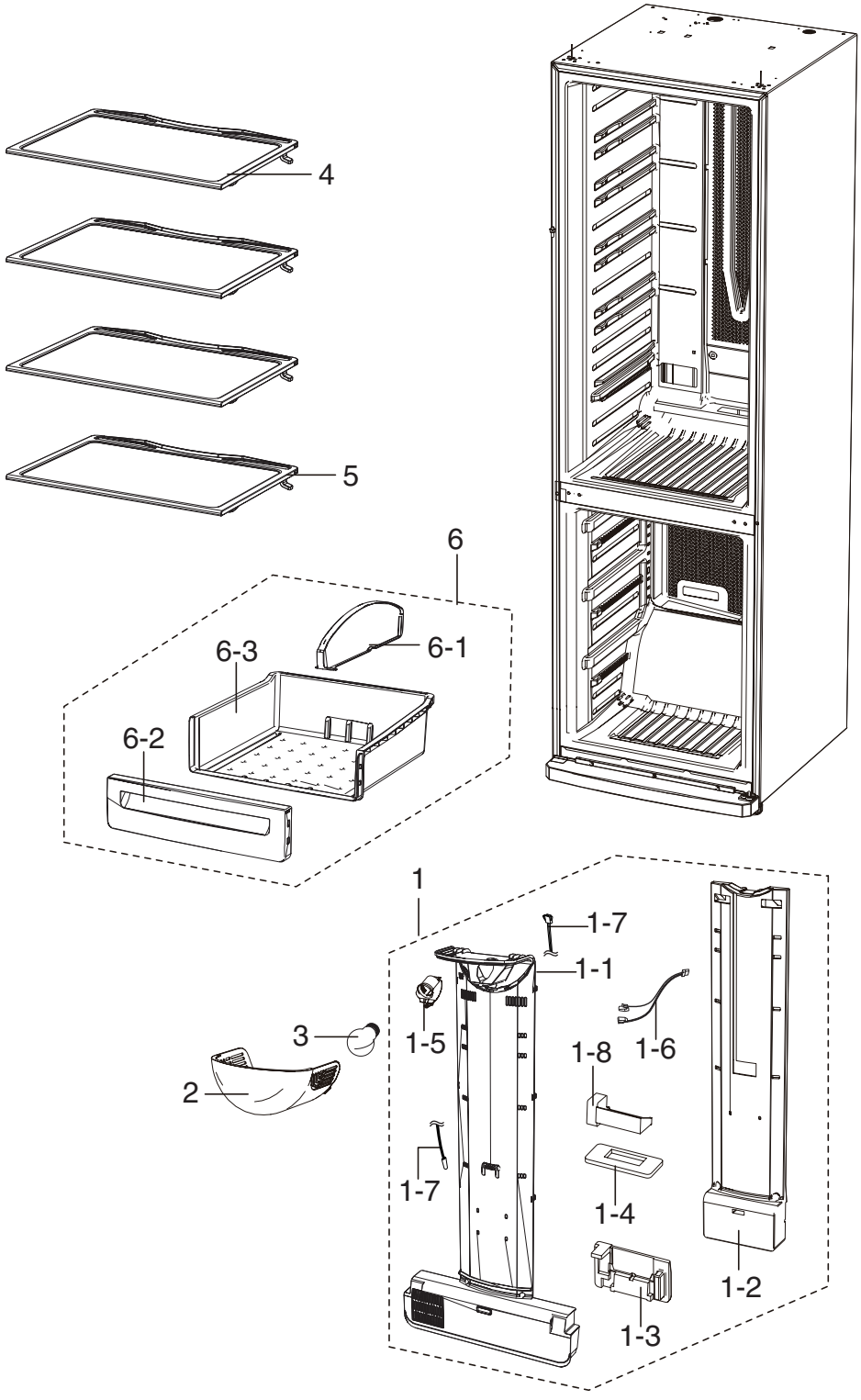
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - Big Vegetable Box MODEL (LED TYPE)

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41E	RL41S			
1	DA97-08250A	ASSY COVER-MULTI REF	●			1	SA	LED TYPE
	DA97-08260A			●	●			
1-1	DA63-05277A	COVER-MULTI REF	●			1	SNA	LED TYPE
	DA63-05278A			●	●			
1-2	DA62-02402A	INSULATION-MULTI REF A	●			1	SNA	LED TYPE
	DA62-02404A			●	●			
1-3	DA62-01222A	INSULATION-MULTI REF B	●			1	SNA	LED TYPE
1-4	DA62-01229B	SEAL-COVER MULTI LOW	●			1	SNA	LED TYPE
1-5	DA32-10105R	SENSOR TEMP	●			1	SA	LED TYPE
1-6	DA31-00043F	MOTOR DC-MOTOR-DAMPER	●			1	SA	LED TYPE
2	DA63-04119A	COVER LED LAMP	●			1	SA	LED TYPE
3	DA41-00519A	LED LAMP	●			1	SA	LED TYPE
4	DA67-01446B	SHELF-REF	●			4	SA	
5	DA97-04151B	ASSY SHELF-VEG	●			1	SA	
5-1	DA63-03052A	COVER-CHILLED UPP B	●			1	SA	
6	DA97-04149B	ASSY TRAY-CHILLED ROOM	●			1	SA	
6-1	DA61-02825B	GUIDE VEG	●			1	SA	
6-2	DA63-03044A	COVER-TRAY CHILLED	●			1	SA	
6-3	DA63-03054A	TRAY-CHILLED ROOM	●			1	SA	
7	6002-000216	SCREW-TAPPING	●			2	SA	

EXPLODED VIEW & PARTS LIST

5-8) Fridge - RL38 Model (BLUB TYPE)



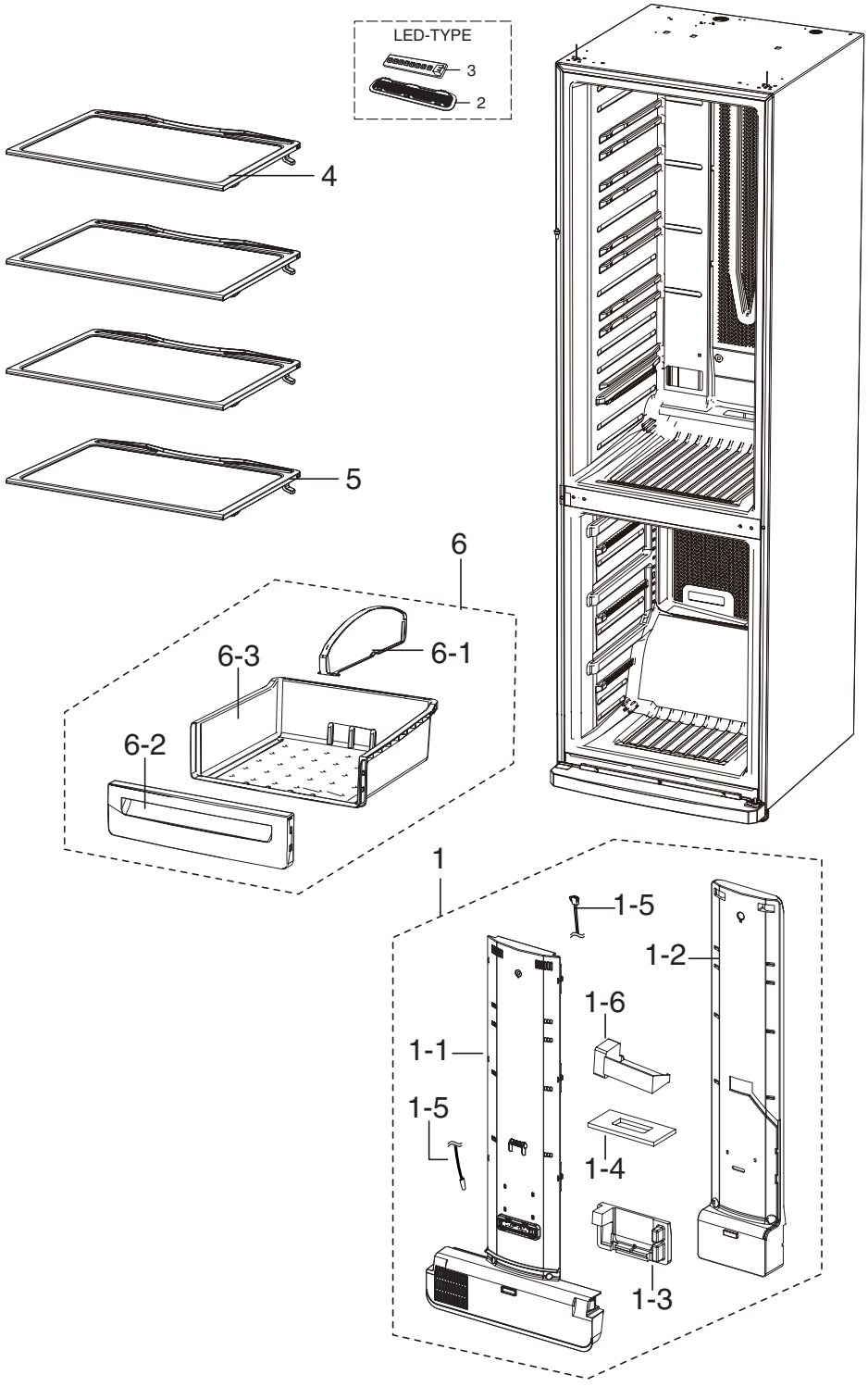
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - RL38 MODEL (BLUB TYPE)

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL38H	RL38E	RL38S			
1	DA97-03952C	ASSY COVER-MULTI REF		●		1	SA	
1-1	DA63-03101A	COVER-MULTI REF		●		1	SNA	
1-2	DA62-01249A	INSULATION-MULTI REF A		●		1	SNA	
1-3	DA62-01222A	INSULATION-MULTI REF B		●		1	SNA	
1-4	DA62-01229B	SEAL-COVER MULTI LOW		●		1	SNA	
1-5	DA47-40001C	LAMP HOLDER-ASSY		●		1	SA	
1-6	DA96-00286A	ASSY-WIRE HARNESS LAMP		●		1	SA	
1-7	DA32-00006N	SENSOR ASSY-FRE		●		1	SA	
1-8	DA31-00043F	MOTOR DC-DAMPER		●		1	SA	
2	DA63-03025A	COVER LAMP-REF		●		1	SA	
3	4713-001201	LAMP-INCANDESCENT		●		1	SA	40W
4	DA67-01446B	SHELF-REF		●		3	SA	NORMAL
5	DA67-01469A	SHELF-VEGETABLE		●		1	SA	
6	DA97-04150A	ASSY CASE VEG-LOW		●		1	SA	
6-1	DA61-02826B	GUIDE-VEG		●		1	SA	
6-2	DA61-02889A	CASE-VEG LOW		●		1	SA	
6-3	DA63-03170A	COVER VEG-LOW		●		1	SA	
7	6002-000216	SCREW-TAPPING		●		2	SA	

EXPLODED VIEW & PARTS LIST

5-8) Fridge - RL38 Model (LED TYPE)



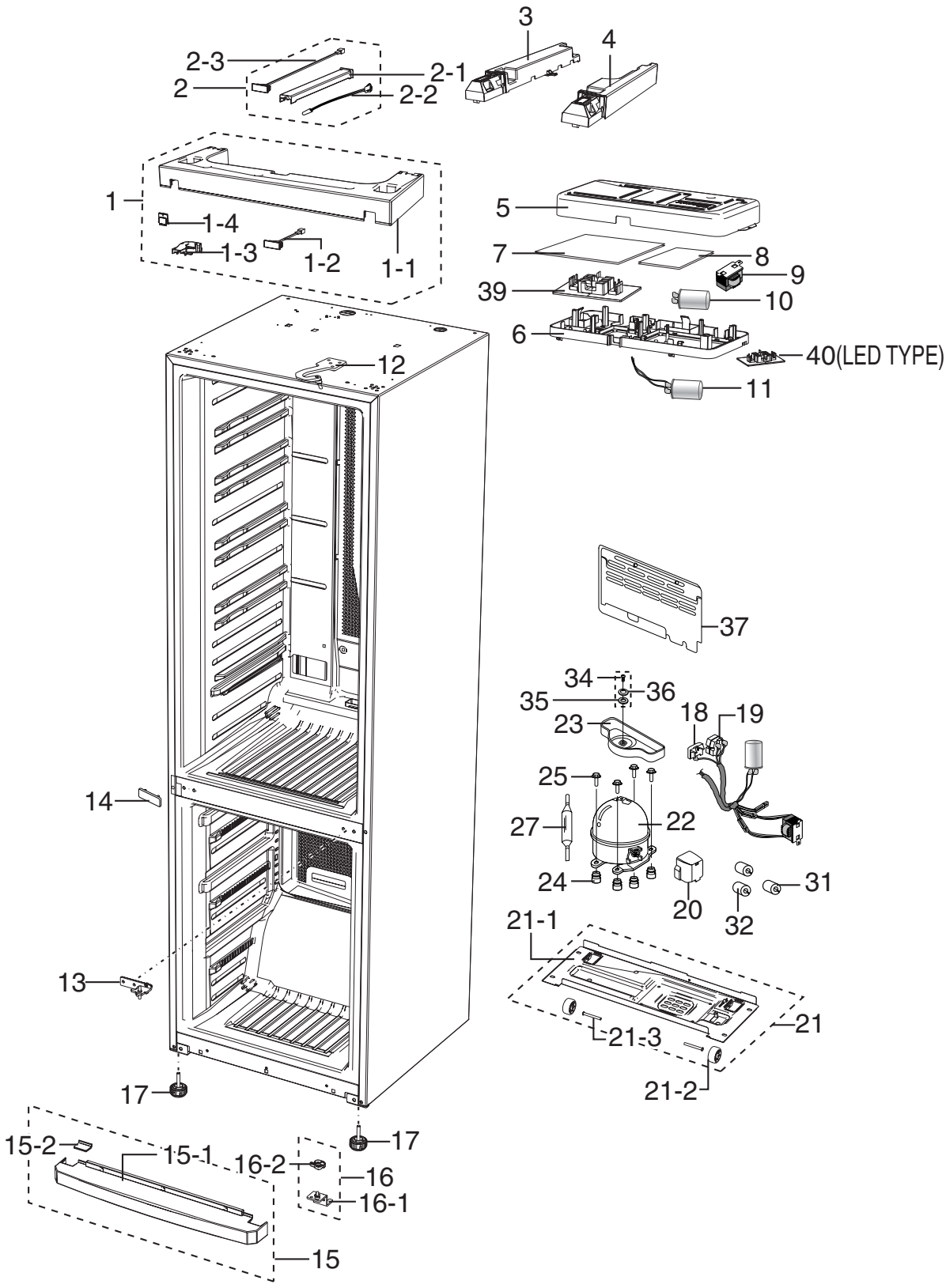
EXPLODED VIEW & PARTS LIST

■ Parts List of Fridge - RL38 MODEL (LED TYPE)

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL38H	RL38E	RL38S			
1	DA97-08250A	ASSY COVER MULTI		●		1	SA	LED TYPE
1-1	DA63-05277A	COVER-MULTI REF		●		1	SA	LED TYPE
1-2	DA62-02402A	INSULATION-MULTI REF A		●		1	SA	LED TYPE
1-3	DA62-01222A	INSULATION-MULTI REF B		●		1	SNA	LED TYPE
1-4	DA62-01229B	SEAL-COVER MULTI		●		1	SNA	LED TYPE
1-5	DA32-10105R	LOWSENSOR TEMP		●		1	SA	LED TYPE
1-6	DA31-00043F	MOTOR DC-MOTOR-DAMPER		●		1	SA	LED TYPE
2	DA63-04119A	COVER LED LAMP		●		1	SA	LED TYPE
3	DA41-00519A	LED LAMP		●		1	SA	LED TYPE
4	DA67-01446B	SHELF-REF		●		3	SA	NORMAL
5	DA67-01469A	SHELF-VEGETABLE		●		1	SA	
6	DA97-04150A	ASSY CASE VEG-LOW		●		1	SA	
6-1	DA61-02826B	GUIDE-VEG		●		1	SA	
6-2	DA61-02889A	CASE-VEG LOW		●		1	SA	
6-3	DA63-03170A	COVER VEG-LOW		●		1	SA	
7	6002-000216	SCREW-TAPPING		●		2	SA	

EXPLODED VIEW & PARTS LIST

5-9) Cabinet- LCD Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LCD MODEL

NO	CODE-NO	PART NAME	MODEL		Quantity	SA/SNA	Remark
			RL44Q	RL44F			
1	DA97-04803F	ASSY CAP-CABI LED	●		1	SA	RL****US
	DA97-04803G		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA97-04803H		●				RL****PS
1-1	DA67-01584F	CAP-CABI LED	●		1	SA	RL****US
	DA67-01584G		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA67-01584H		●				RL****PS
1-2	DA34-00043A	SWITCH REED-ASS'Y	●		1	SA	ALL
1-3	DA63-03029A	COVER-WIRE HINGE L	●		1	SA	RL****US
	DA63-03029B		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA63-03029C		●				RL****PS
1-4	DA67-01433G	CAP-HOLE HINGE UPP	●		1	SA	RL****US
	DA67-01433H		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA67-01433J		●				RL****PS
2	DA97-04064A	ASSY COVER-WIRE CABI	●		1	SA	ALL
2-1	DA63-03074A	COVER-WIRE CABI	●		1	SA	ALL
2-2	DA32-00011P	SENSOR TEMP-EXT	●		1	SA	ALL
2-3	DA96-00285B	ASSY W/HARNESS-DISPLAY	●		1	SA	ALL
3	DA97-05669F	ASSY CAP-CABI SIDE L	●		1	SA	RL****US
	DA97-05669G		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA97-05669H		●				RL****PS
4	DA97-05668F	ASSY CAP-CABI SIDE R	●		1	SA	RL****US
	DA97-05668G		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA97-05668H		●				RL****PS
5	DA63-03020B	COVER PCB-PANEL	●		1	SA	
6	DA61-02742A	CASE PCB-PANEL	●		1	SA	
7	DA41-00364C	PBA MAIN	●		1	SA	
	DA41-00364D			●	1		
8	DA41-00372A	PBA SMPS-LED SUB	●		1	SA	
9	DA26-00009K	TRANS POWER	●		1	SA	
10	DA27-00002A	COIL-NOISE FILTER	●		1	SA	
11	2501-001186	C-OIL	●		1	SA	
12	DA97-03899A	ASSY HINGE-UPP	●		1	SA	
13	DA97-03900A	ASSY HINGE-MID	●		1	SA	
14	DA67-00195A	CAP-HINGE HOLE-MID	●		1	SA	
15	DA97-03955F	ASSY COVER LEG FRONT	●		1	SA	RL****US
	DA97-03955G		●				RL****IS
			●				RL****IH
				●			RL****TB
	DA97-03955H		●				RL****PS
15-1	DA63-03031A	COVER LEG-FRONT	●		1	SA	RL****US

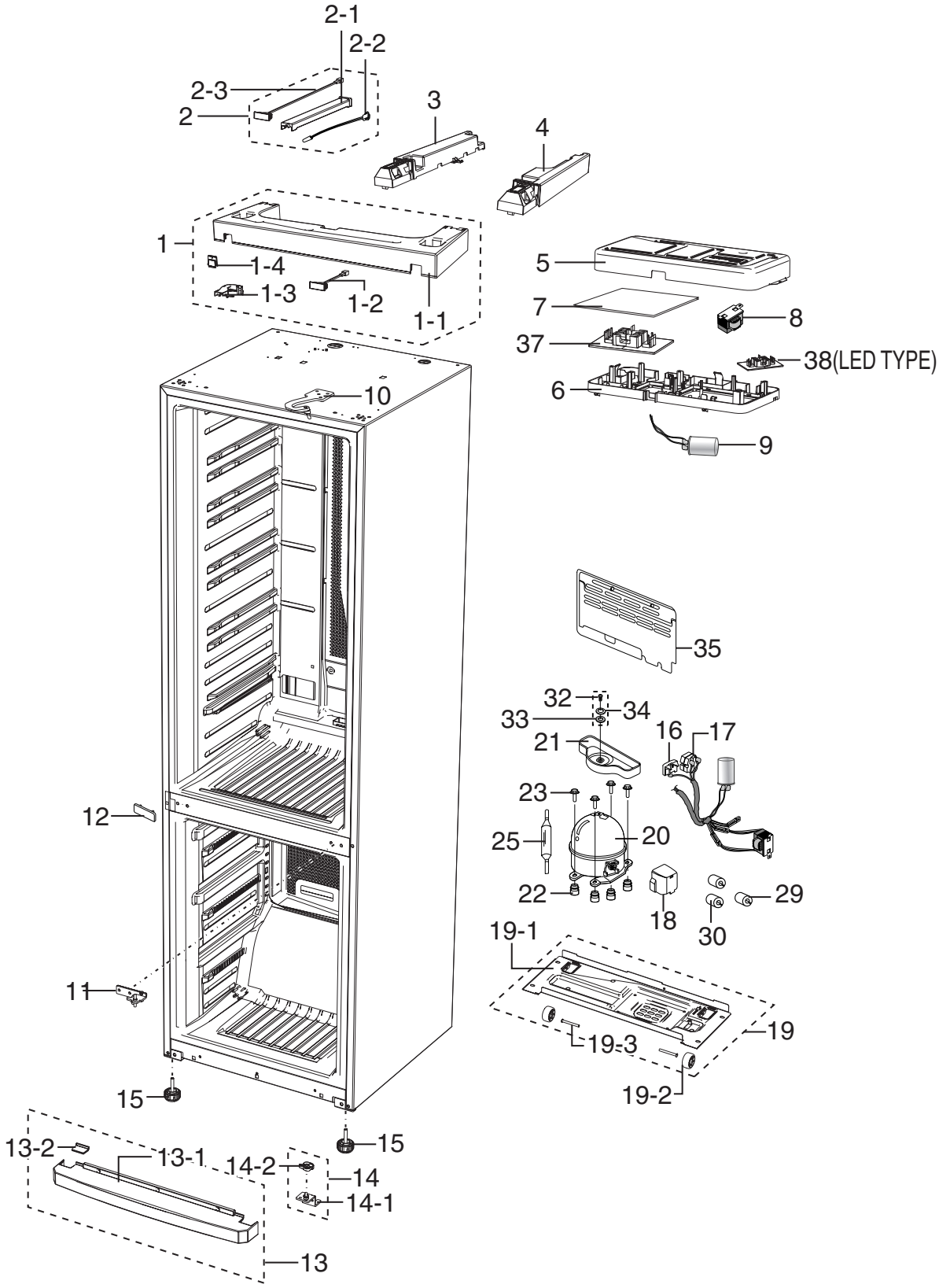
EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LCD MODEL

NO	CODE-NO	PART NAME	MODEL		Quantity	SA/SNA	Remark
			RL44Q	RL44F			
15-1	DA63-03031B	COVER LEG-FRONT		●	1	SA	RL****IS
			●				RL****IH
				●			RL****TB
	DA63-03031C		●				RL****PS
15-2	DA67-01434A	CAP-HOLE HINGE LOW		●	1	SA	RL****US
	DA67-01434B			●			RL****IS
			●				RL****IH
				●			RL****TB
	DA67-01434C		●				RL****PS
15-3	6002-000215	SCREW-TAPPING	●		2	SA	
16	DA97-03947B	ASSY HINGE-LOW	●		1	SA	
16-1	DA61-02753A	HINGE-LOW	●		1	SA	
16-2	DA61-02756B	GUIDE-AUTO CLOSE	●		1	SA	
16-3	6001-000039	SCREW-MACHINE	●		1	SNA	
17	DA61-00805A	FOOT-FRONT	●		2	SA	
18	DA34-10004A	RELAY PROTECTOR O/L	●		1	SA	
19	DA35-10013B	RELAY-PTC	●		1	SA	
20	DA63-01363B	COVER RELAY	●		1	SA	
21	DA97-03896A	ASSY CHASSIS-COMP	●		1	SA	
21-1	DA64-01806A	CHASSIS COMP	●		1	SNA	
21-2	DA61-40126B	CASTER-REAR	●		2	SA	
21-3	DA60-90146A	PIN-CASTER	●		2	SA	
22	MD4A1QL1U/E02	COMPRESSOR	●		1	SC	
23	DA63-01933C	TRAY DRAIN-WATER	●		1	SA	
24	DA63-02017A	GROMMET-COMP	●		4	SA	
25	DA60-20008A	BOLT-HEX	●		4	SA	
26	6011-001656	BOLT-HEX	●		4	SA	
27	DA62-01514A	DRYER	●		1	SA	
28	6002-000458	SCREW-TAPPING	●		1	SA	
29	DA60-10123E	SCREW-HEX	●		2	SNA	
30	6011-001656	BOLT-HEX	●		2	SA	
31	DA63-40171B	GROMMET-SUCT PIPE A	●		2	SA	
32	DA63-40171D	GROMMET-SUCT PIPE B	●		1	SA	
33	6002-000213	SCREW-TAPPING	●		9	SA	
34	6001-000033	SCREW-MACHINE	●		1	SNA	
35	DA60-00015A	WASHER-	●		1	SNA	
36	DA60-40104J	WASHER	●		1	SA	
37	DA97-03985B	ASSY COVER-COMP	●		1	SA	
38	6002-000213	SCREW-TAPPING	●		2	SA	
39	DA96-00628E	ASSY FUSE BLOCK	●		1	SA	Only for R600a Model
40	DA41-00372A	PBA SMPS-LED SUB	●		1	SA	LED TYPE

EXPLODED VIEW & PARTS LIST

5-10) Cabinet -LED Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LED MODEL

NO	CODE-NO	PART NAME	MODEL									Quantity	SA/SNA	Remark
			RL44E	RL44W	RL44P	RL41H	RL41E	RL41W	RL41P	RL38H	RL38E			
1	DA97-04803F	ASSY CAP-CABI LED	●			●						1	SA	RL****US
	DA97-04803G		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA97-04803H		●	●	●	●	●	●	●	●	●			RL****PS
	DA97-04803J		●	●		●	●	●	●	●	●			RL****SW
1-1	DA67-01584F	CAP-CABI LED	●			●						1	SA	RL****US
	DA67-01584G		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA67-01584H		●	●	●	●	●	●	●	●	●			RL****PS
	DA67-01584J		●	●		●	●	●	●	●	●			RL****SW
1-2	DA34-00043A	SWITCH REED-ASS'Y				●	●					1	SA	
1-3	DA63-03029A	COVER-WIRE HINGE L	●			●						1	SA	RL****US
	DA63-03029B		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA63-03029C		●	●	●	●	●	●	●	●	●			RL****PS
	DA63-03029D		●	●		●	●	●	●	●	●			RL****SW
1-4	DA67-01433G	CAP-HOLE HINGE UPP	●			●						1	SA	RL****US
	DA67-01433J		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA67-01433J		●	●	●	●	●	●	●	●	●			RL****PS
	DA67-01433K		●	●		●	●	●	●	●	●			RL****SW
2	DA97-04064B	ASSY COVER-WIRE CABI					●					1	SA	
2-1	DA63-03074A	COVER-WIRE CABI					●					1	SA	
2-2	DA32-00011P	SENSOR TEMP-EXT					●					1	SA	
2-3	DA96-00285A	ASSY W/HARNESS-DISPLAY					●					1	SA	
3	DA97-05669F	ASSY CAP-CABI SIDE L	●			●						1	SA	RL****US
	DA97-05669G		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA97-05669H		●	●	●	●	●	●	●	●	●			RL****PS
	DA97-05669J		●	●		●	●	●	●	●	●			RL****SW
4	DA97-05668F	ASSY CAP-CABI SIDE R	●			●						1	SA	RL****US
	DA97-05668G		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA97-05668H		●	●	●	●	●	●	●	●	●			RL****PS
	DA97-05668J		●	●		●	●	●	●	●	●			RL****SW
5	DA63-03020B	COVER PCB-PANEL					●					1	SA	
6	DA61-02742A	CASE PCB-PANEL					●					1	SA	
7	DA41-00362B	PBA MAIN			●				●			1	SA	
	DA41-00362L					●				●				
	DA41-00362M		●	●			●	●			●			
8	DA26-00009K	TRANS POWER	●	●	●	●	●	●	●	●	●	1	SA	220~240V
	DA26-00009J													115~127V
9	2501-001186	C-OIL	●	●	●	●	●	●	●	●	●	1	SA	220~240V/50Hz
	2501-001045													115~127V/60Hz
10	DA97-03899A	ASSY HINGE-UPP					●					1	SA	
11	DA97-03900A	ASSY HINGE-MID					●					1	SA	

EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LED MODEL

NO	CODE-NO	PART NAME	MODEL									Quantity	SA/SNA	Remark
			RL44E	RL44W	RL44P	RL41H	RL41E	RL41W	RL41P	RL38H	RL38E			
12	DA67-00195A	CAP-HINGE HOLE-MID					●					1	SA	
13	DA97-03955F	ASSY COVER LEG FRONT	●			●						1	SA	RL****US
	DA97-03955G		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA97-03955H		●	●	●	●	●	●	●	●	●			RL****PS
	DA97-03955J		●	●		●	●	●	●	●	●			RL****SW
13-1	DA63-03031A	COVER LEG-FRONT	●			●						1	SA	RL****US
	DA63-03031B		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA63-03031C		●	●	●	●	●	●	●	●	●			RL****PS
	DA63-03031D		●	●		●	●	●	●	●	●			RL****SW
13-2	DA67-01434A	CAP-HOLE HINGE LOW	●			●						1	SA	RL****US
	DA67-01434B		●	●		●	●	●		●	●			RL****IS
						●	●		●					RL****IH
			●	●		●	●	●		●	●			RL****TB
	DA67-01434C		●	●	●	●	●	●	●	●	●			RL****PS
	DA67-01434D		●	●		●	●	●	●	●	●			RL****SW
13-3	6002-000215	SCREW-TAPPING					●					1	SA	
14	DA97-03947B	ASSY HINGE-LOW					●					1	SA	
14-1	DA61-02753A	HINGE-LOW					●					1	SA	
14-2	DA61-02756B	GUIDE-AUTO CLOSE					●					1	SA	
14-3	6001-000039	SCREW-MACHINE					●					1	SA	
15	DA61-00805A	FOOT-FRONT					●					2	SA	
16	DA34-10004A	RELAY PROTECTOR O/L	●	●	●	●	●	●	●	●	●	1	SA	R600a,220~240V/50Hz
	DA34-10003K			●			●	●			●			R134a,220~240V/50Hz
	DA35-00043U		●	●		●	●	●						R134a,115~127V/60Hz
	DA34-10003F							●						R134a,220~240V/50Hz,*/XTL
17	DA35-00103D	RELAY-PTC			●				●			1	SA	
	DA35-10013B		●	●		●	●	●		●	●			220~240V/50Hz
	DA35-10013N		●	●			●	●						115~127V/60Hz
	DA35-10013E							●						220~240V/50Hz,*/XTL
18	DA63-01363B	COVER RELAY	●	●		●	●	●		●	●	1	SA	
	DA63-01866A				●				●					
19	DA97-03896A	ASSY CHASSIS-COMP					●					1	SA	
19-1	DA64-01806A	CHASSIS COMP					●					1	SNA	
19-2	DA61-40126B	CASTER-REAR					●					2	SA	
19-3	DA60-90146A	PIN-CASTER					●					2	SA	
20	MD4A1QL1U/E02	COMPRESSOR	●	●		●	●	●		●	●	1	SC	R600a,220~240V/50Hz
	MD4A1QL1U/E03				●				●					R600a,220~240V/50Hz
	MK172QL2U/E18						●	●			●			R134a,220~240V/50Hz
	MK162DL1U/E08		●	●			●	●						R134a,115~127V/60Hz
	MK172HL2U/E18							●						R134a,220~240V/50Hz,*/XTL
21	DA63-01933C	TRAY DRAIN-WATER					●					1	SA	
22	DA63-02017A	GROMMET-COMP					●					4	SA	
23	DA60-20008A	BOLT-HEX					●					4	SA	
24	6011-001656	BOLT-HEX					●					4	SA	
25	DA62-01514A	DRYER					●					1	SA	
26	6002-000458	SCREW-TAPPING					●					1	SA	
27	DA60-10123E	SCREW-HEX					●					2	SNA	
28	6011-001656	BOLT-HEX					●					2	SA	

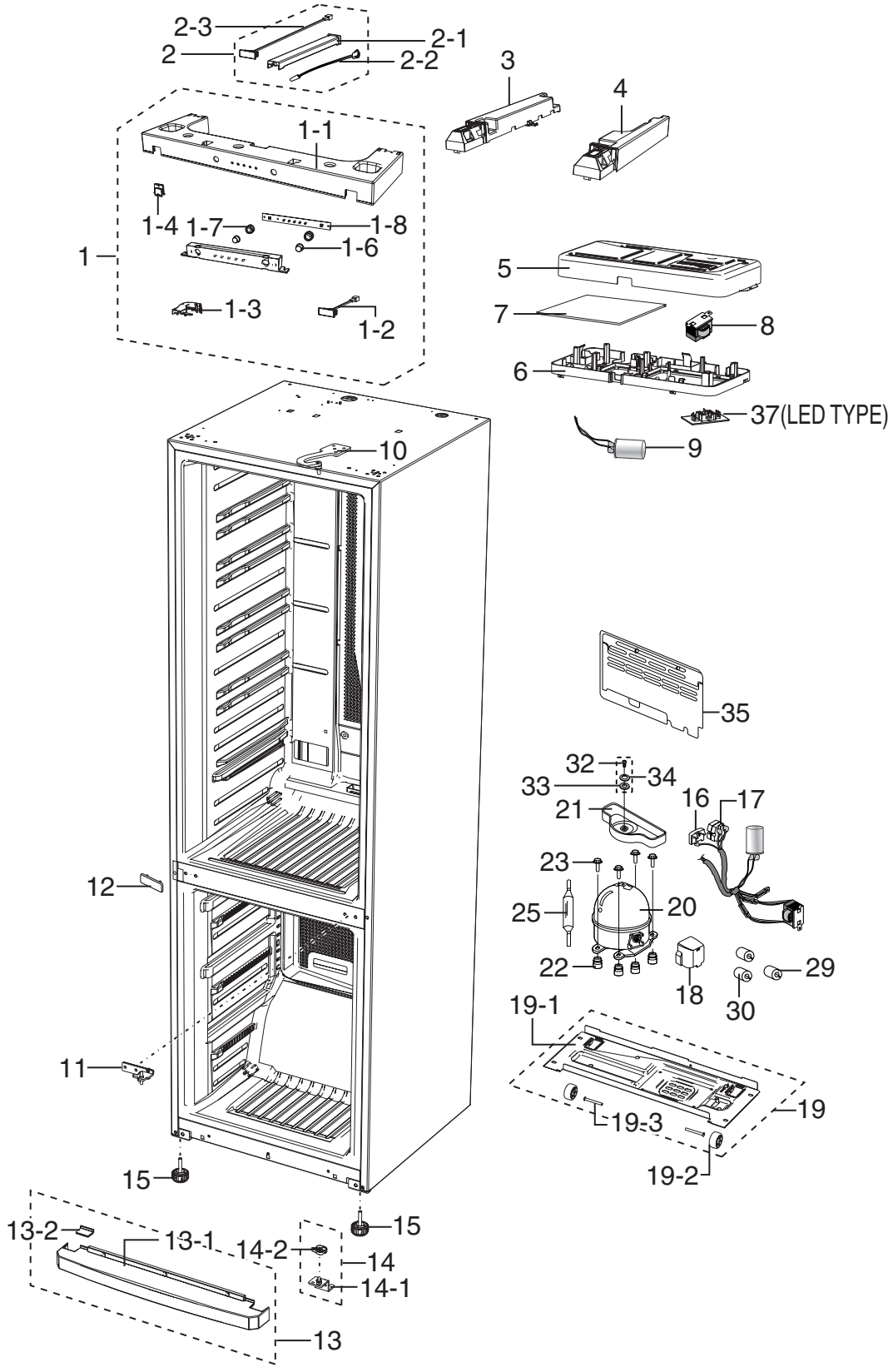
EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LED MODEL

NO	CODE-NO	PART NAME	MODEL									Quantity	SA/SNA	Remark
			RL44E	RL44W	RL44P	RL41H	RL41E	RL41W	RL41P	RL38H	RL38E			
29	DA63-40171B	GROMMET-SUCT PIPE A					●					2	SA	
30	DA63-40171D	GROMMET-SUCT PIPE B					●					1	SA	
31	6002-000213	SCREW-TAPPING					●					9	SA	
32	6001-000033	SCREW-MACHINE					●					1	SNA	
33	DA60-00015A	WASHER-					●					1	SNA	
34	DA60-40104J	WASHER					●					1	SA	
35	DA97-03985B	ASSY COVER-COMP					●					1	SA	
36	6002-000213	SCREW-TAPPING					●					2	SA	
37	DA96-00628E	ASSY FUSE BLOCK					●					1	SA	Only for R600a Model
38	DA41-00372A	PBA SMPS-LED SUB					●					1	SA	LED TYPE

EXPLODED VIEW & PARTS LIST

5-11) Cabinet - LED SEMI Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LED SEMI MODEL

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41S	RL38S			
1	DA97-04804H	ASSY CAP-CABI SEMI	●			1	SA	RL****PS
	DA97-04804J		●					RL****SW
	DA97-04804K			●	●			RL****IS
					●			RL****TB
1-1	DA67-01585E	CAP-CABI SEMI	●			1	SA	RL****PS
	DA67-01585F		●					RL****SW
	DA67-01585G			●	●			RL****IS
					●			RL****TB
1-2	DA34-00043A	SWITCH REED-ASS'Y	●			1	SA	
1-3	DA63-03029C	COVER-WIRE HINGE L	●			1	SA	RL****PS
	DA63-03029D		●					RL****SW
	DA63-03029B			●	●			RL****IS
					●			RL****TB
1-4	DA67-01433J	CAP-HOLE HINGE UPP	●			1	SA	RL****PS
	DA67-01433K		●					RL****SW
	DA67-01433H			●	●			RL****IS
					●			RL****TB
1-5	DA63-03079A	COVER-CONTROL SEMI	●			1	SA	
1-6	DA64-01824A	BUTTON	●			2	SA	RL****PS
	DA64-01824B		●					RL****SW
	DA64-01824C			●	●			RL****IS
					●			RL****TB
1-7	DA63-03080A	GASKET-BUTTON SEMI	●			2	SA	
1-8	DA41-00370A	PBA PANEL-SEMI	●			1	SA	
1-9	6002-000466	SCREW-TAPPING	●			2	SA	
2	DA97-04064C	ASSY COVER-WIRE CABI	●			1	SA	
2-1	DA63-03074A	COVER-WIRE CABI	●			1	SA	
2-2	DA32-00011P	SENSOR TEMP-EXT	●			1	SA	
2-3	DA96-00285C	ASSY W/HARNESS-DISPLAY	●			1	SA	
3	DA97-05669G	ASSY CAP-CABI SIDE L		●	●	1	SA	RL****IS
					●			RL****TB
	DA97-05669H		●					RL****PS
	DA97-05669J		●					RL****SW
4	DA97-05668G	ASSY CAP-CABI SIDE R		●	●	1	SA	RL****IS
					●			RL****TB
	DA97-05668H		●					RL****PS
	DA97-05668J		●					RL****SW
5	DA63-03020B	COVER PCB-PANEL	●			1	SA	
6	DA61-02742A	CASE PCB-PANEL	●			1	SA	
7	DA41-00362C	PBA MAIN-SEMI	●			1	SA	
8	DA26-00009K	TRANS POWER	●			1	SA	
9	2501-001186	C-OIL	●			1	SA	220-240V/50Hz
10	DA97-03899A	ASSY HINGE-UPP	●			1	SA	
11	DA97-03900A	ASSY HINGE-MID	●			1	SA	
12	DA67-00195A	CAP-HINGE HOLE-MID	●			1	SA	
13	DA97-03955G	ASSY COVER-LEG FRONT		●	●	1	SA	RL****IS
					●			RL****TB
	DA97-03955H		●					RL****PS
	DA97-03955J		●					RL****SW
13-1	DA63-03031B	COVER LEG-FRONT		●	●	1	SA	RL****IS
					●			RL****TB
	DA63-03031C		●					RL****PS

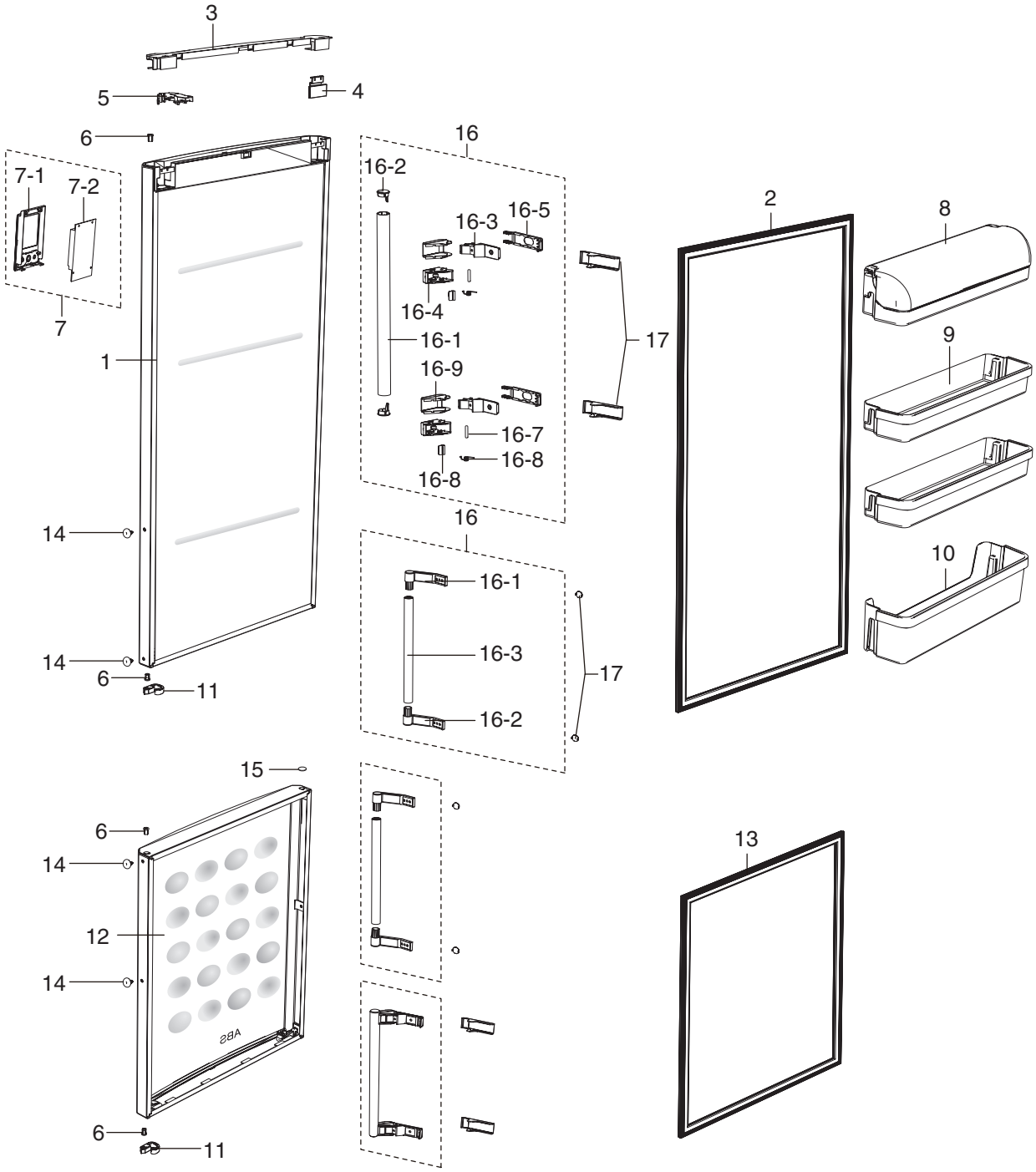
EXPLODED VIEW & PARTS LIST

■ Parts List of Cabinet & Unit - LED SEMI MODEL

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41S	RL38S			
	DA63-03031D			●				RL****SW
13-2	DA67-01434C	CAP-HOLE HINGE LOW		●		1	SA	
	DA67-01434D			●				
13-3	6002-000215	SCREW-TAPPING		●		1	SA	
14	DA97-03947B	ASSY HINGE-LOW		●		1	SA	
14-1	DA61-02753A	HINGE-LOW		●		1	SA	
14-2	DA61-02756B	GUIDE-AUTO CLOSE		●		1	SA	
14-3	6001-000039	SCREW-MACHINE		●		1	SA	
15	DA61-00805A	FOOT-FRONT		●		2	SA	
16	DA34-10004A	RELAY PROTECTOR O/L	●			1	SA	R600a
	DA34-10003K			●	●			R134a
17	DA35-10013B	RELAY-PTC		●		1	SA	
18	DA63-01363B	COVER RELAY	●			1	SA	
	DA63-01866A			●	●			
19	DA97-03896A	ASSY CHASSIS-COMP		●		1	SA	
19-1	DA64-01806A	CHASSIS COMP		●		1	SNA	
19-2	DA61-40126B	CASTER-REAR		●		2	SA	
19-3	DA60-90146A	PIN-CASTER		●		2	SA	
20	MD4A1QL1U/E02	COMPRESSOR	●			1	SC	R600a
	MK172QL2U/E18			●	●			R134a
21	DA63-01933C	TRAY DRAIN-WATER		●		1	SA	
22	DA63-02017A	GROMMET-COMP		●		4	SA	
23	DA60-20008A	BOLT-HEX		●		4	SA	
24	6011-001656	BOLT-HEX		●		4	SA	
25	DA62-01514A	DRYER		●		1	SA	
26	6002-000458	SCREW-TAPPING		●		1	SA	
27	DA60-10123E	SCREW-HEX		●		2	SNA	
28	6011-001656	BOLT-HEX		●		2	SA	
29	DA63-40171B	GROMMET-SUCT PIPE A		●		2	SA	
30	DA63-40171D	GROMMET-SUCT PIPE B		●		1	SA	
31	6002-000213	SCREW-TAPPING		●		9	SA	
32	6001-000033	SCREW-MACHINE		●		1	SNA	
33	DA60-00015A	WASHER-		●		1	SNA	
34	DA60-40104J	WASHER		●		1	SA	
35	DA97-03985B	ASSY COVER-COMP		●		1	SA	
36	6002-000213	SCREW-TAPPING		●		2	SA	
37	DA41-00372A	PBA SMPS-LED SUB		●		1	SA	LED TYPE

EXPLODED VIEW & PARTS LIST

5-12) Door - LCD Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LCD MODEL

NO	CODE-NO	PART NAME	MODEL		Quantity	SA/SNA	Remark
			RL44Q	RL44F			
1	DA91-02263M	ASSY DOOR FOAM REF	●		1	SA	RL****US
	DA91-02263B		●				RL****IS
	DA91-02263C		●				RL****PS
	DA91-02263J		●				RL****TB
	DA91-02263R		●				RL****IH
2	DA97-04097A	ASSY-GASKET DOOR REF	●		1	SA	
3	DA63-03045A	COVER-WIRE DOOR	●		1	SA	RL****US
	DA63-03045B		●				RL****IS
			●				RL****IH
			●				RL****TB
	DA63-03045C		●				RL****PS
4	DA67-01437A	CAP-SPACE DOOR	●		1	SA	RL****US
	DA67-01437B		●				RL****IS
			●				RL****IH
			●				RL****TB
	DA67-01437C		●				RL****PS
5	DA63-03030A	COVER-WIRE HINGE R	●		1	SA	RL****US
	DA63-03030B		●				RL****IS
			●				RL****IH
			●				RL****TB
	DA63-03030C		●				RL****PS
6	DA63-03046A	GROMMET-HINGE	●		4	SA	
7	DA97-04023H	ASSY COVER-CONTROL	●		1	SA	RL****US
			●				RL****IS
			●				RL****IH
	DA97-04023J		●				RL****PS
	DA97-04023K		●				RL****TB
7-1	DA97-04001H	ASSY COVER-CONTROL SUB	●		1	SA	RL****US
			●				RL****IS
			●				RL****IH
	DA97-04001J		●				RL****PS
	DA97-04001K		●				RL****TB
7-2	DA41-00371A	PBA PANEL-LCD	●		1	SA	
7-3	6002-000466	SCREW-TAPPING	●		4	SA	
8	DA97-03880A	ASSY GUARD-DAIRY	●		1	SA	
9	DA64-01900A	TRIM-GUARD VARIETY	●		2	SA	
10	DA64-01899A	TRIM-GUARD BOTTLE	●		1	SA	
11	DA61-02773B	STOPPER-DOOR	●		1	SA	
12	DA91-02262B	ASSY DOOR FOAM FRE	●		1	SA	RL****IS
	DA91-02262C		●				RL****PS
	DA91-02262E		●				RL****TB
	DA91-02262V		●				RL****US
	DA91-02262Z		●				RL****IH
13	DA97-04098A	ASSY-GASKET DOOR FRE	●		1	SA	
14	DA67-00859B	CAP-DOOR HANDLE	●		4	SA	RL****US
	DA67-00859C		●				RL****IS
			●				RL****IH
			●				RL****TB
	DA67-00859D		●				RL****PS

EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LCD MODEL

NO	CODE-NO	PART NAME	MODEL		Quantity	SA/SNA	Remark
			RL44Q	RL44F			
15	DA67-01612A	CAP-HINGE HOLE	●		1	SA	RL****US
	DA67-01612B		●				RL****IS RL****IH RL****TB
	DA67-01612C		●				RL****PS
EASY-HANDLE							
16	DA97-05332A	ASSY HANDLE-EASY	●		2	SA	RL***EUS RL***EIS
	DA97-05332D		●				RL***ETB
16-1	DA64-01974A	HANDLE-BAR	●		1	SA	RL***EUS RL***EIS
	DA64-01974E		●				RL***ETB
16-2	DA67-01452A	CAP-HANDLE SIDE	●		2	SA	RL***EUS RL***EIS
	DA67-01452D		●				RL***ETB
16-3	DA61-02912A	SUPPORT-HANDLE A	●		2	SNA	RL***EUS RL***EIS
	DA61-02912D		●				RL***ETB
16-4	DA61-03503A	SUPPORT-HANDLE B	●		2	SA	RL***EUS RL***EIS
	DA61-03503D		●				RL***ETB
16-5	DA61-02914A	SLIDER-HANDLE	●		2	SA	RL***EUS RL***EIS
	DA61-02914D		●				RL***ETB
16-6	DA61-02915A	SPRING ETC-HANDLE			2	SA	
16-7	DA66-00400A	SHAFT-HANDLE			2	SA	
16-8	DA63-03196A	COVER-SUPT HANDLE REAR	●		2	SNA	RL***EUS RL***EIS
	DA63-03196D		●				RL***ETB
16-9	DA63-03683A	COVER-SUPT HANDLE FRONT	●		2	SA	RL***EUS RL***EIS
	DA63-03683D		●				RL***ETB
16-10	DA97-03655A	ASSY-SCREW TAPPING	●		2	SA	
17	DA63-03197A	COVER-SLIDER HANDLE	●		4	SA	RL***EUS RL***EIS
	DA63-03197D		●				RL***ETB
18	6001-001767	SCREW-MACHINE	●		4	SA	
BAR HANDLE							
16	DA97-03953N	ASSY HANDLE	●		2	SA	ABS,RL***CUS ABS,RL***CIS
	DA97-03953Q		●				ABS,RL**CTB
	DA97-03953R		●				AL,RL***GIS AL,RL***GIH
	DA97-03953S		●				AL,RL***GTB
	DA97-03953T		●				AL,RL***GPS
16-1	DA61-02774A	SUPPORT-HANDLE UPP	●		1	SA	RL****US RL****IS
	DA61-02774B		●				RL****IH RL****PS
	DA61-02774D		●				RL****TB

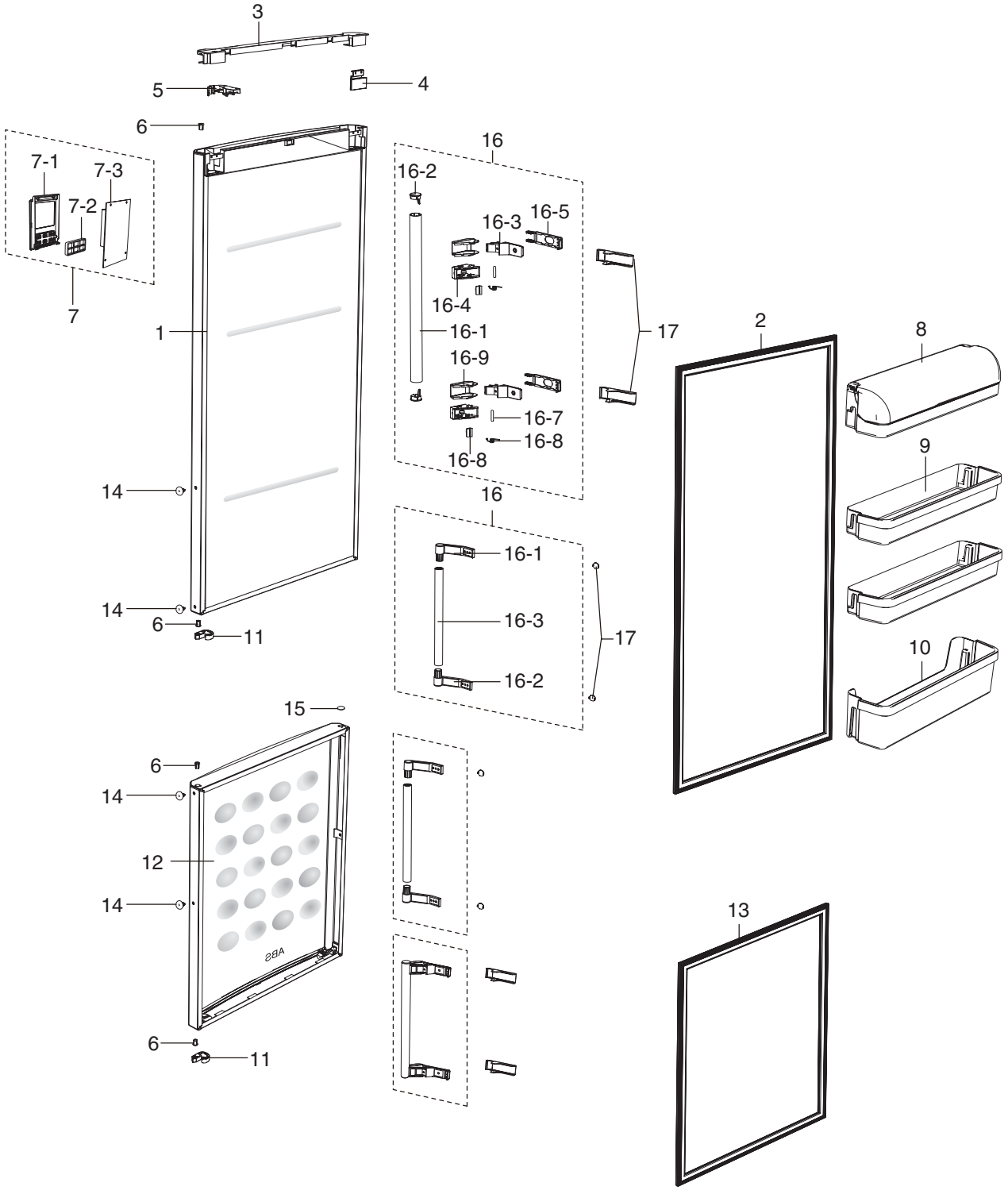
EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LCD MODEL

NO	CODE-NO	PART NAME	MODEL		Quantity	SA/SNA	Remark
			RL44Q	RL44F			
16-2	DA61-02775A	SUPPORT-HANDLE LOW		●	1	SA	RL****US
				●			RL****IS
			●				RL****IH
	DA61-02775B		●				RL****PS
	DA61-02775D			●			RL****TB
16-3	DA64-01815A	HANDLE-BAR		●	1	SA	ABS,RL***CUS
				●			ABS,RL***CIS
	DA64-01815B			●			ABS,RL***CTB
	DA64-01916A		●				AL,RL***GIS
			●				AL,RL***GIH
			●				AL,RL***GPS
	DA64-01916B		●				AL,RL***GTB
17	DA67-01438H	CAP-SCREW HANDLE	●		4	SA	RL****PS
	DA67-01438J			●			RL****US
				●			RL****IS
			●				RL****IH
	DA67-01438K			●			RL****TB
18	6001-001767	SCREW-MACHINE		●	4	SA	

EXPLODED VIEW & PARTS LIST

5-13) Door - LED Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Model

NO	CODE-NO	PART NAME	MODEL					Quantity	SA/SNA	Remark
			RL44E	RL41H	RL41E	RL38H	RL38E			
1	DA91-02263D	ASSY DOOR FOAM REF	●					1	SA	RL****IS
	DA91-02263E		●							RL****PS
	DA91-02263F		●							RL****SW
	DA91-02263K		●							RL****TB
	DA91-02263M		●							RL****US
	DA91-02324A			●						RL****US
	DA91-02324B			●	●					RL****IS
	DA91-02324C			●	●					RL****PS
	DA91-02324D				●					RL****SW
	DA91-02324E			●	●					RL****TB
	DA91-02324H			●	●					RL****IH
	DA91-02328A					●	●			RL****PS
	DA91-02328B					●	●			RL****SW
	DA91-02328C					●	●			RL****TB
	DA91-02328D					●	●			RL****IS
2	DA97-04097A	ASSY-GASKET DOOR REF	●					1	SA	
	DA97-04097B			●	●					
	DA97-04097C					●	●			
3	DA63-03045A	COVER-WIRE DOOR	●	●				1	SA	RL****US
	DA63-03045B				●					RL****IS
				●	●					RL****IH
					●					RL****TB
	DA63-03045C				●					RL****PS
	DA63-03045D		●		●	●	●			RL****SW
4	DA67-01437A	CAP-SPACE DOOR	●	●				1	SA	RL****US
	DA67-01437B				●					RL****IS
				●	●					RL****IH
					●					RL****TB
	DA67-01437C				●					RL****PS
	DA67-01437D		●		●	●	●			RL****SW
5	DA63-03030A	COVER-WIRE HINGE R	●	●				1	SA	RL****US
	DA63-03030B				●					RL****IS
				●	●					RL****IH
					●					RL****TB
	DA63-03030C				●					RL****PS
	DA63-03030D		●		●	●	●			RL****SW
6	DA63-03046A	GROMMET-HINGE			●			4	SA	
7	DA97-04022T	ASSY COVER-CONTROL	●	●				1	SA	RL****US
					●					RL****IS
				●	●					RL****IH
	DA97-04022U				●					RL****PS
	DA97-04022V				●					RL****TB
	DA97-04022W		●		●	●	●			RL****SW
7-1	DA97-04006S	ASSY COVER-CONTROL SUB	●	●				1	SA	RL****US
					●					RL****IS
				●	●					RL****IH
	DA97-04006T				●					RL****TB
	DA97-04006U				●					RL****PS
	DA97-04006V		●		●	●	●			RL****SW
7-2	DA63-03047A	GASKET-KNOB CONTROL			●			1	SA	

EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Model

NO	CODE-NO	PART NAME	MODEL					Quantity	SA/SNA	Remark
			RL44E	RL41H	RL41E	RL38H	RL38E			
7-3	DA41-00369G	PBA PANEL-LED			●			1	SA	
7-4	6002-000466	SCREW-TAPPING			●			4	SA	
8	DA97-03880A	ASSY GUARD-DAIRY			●			1	SA	
9	DA64-01900A	TRIM-GUARD VARIETY	●	●				2	SA	PREMIUM
	DA63-03034A	GUARD-VARIETY			●					NORMAL
10	DA64-01899A	TRIM-GUARD BOTTLE	●	●				1	SA	PREMIUM
	DA63-03033A	GUARD-BOTTLE			●					NORMAL
11	DA61-02773B	STOPPER-DOOR			●			1	SA	
12	DA91-02262B	ASSY DOOR FOAM FRE	●					1	SA	RL****IS
	DA91-02262C		●							RL****PS
	DA91-02262D		●							RL****SW
	DA91-02262E		●							RL****TB
	DA91-02262V		●							RL****US
	DA91-02262F			●						RL****US
	DA91-02262G			●	●					RL****IS
	DA91-02262H			●	●					RL****PS
	DA91-02262J				●					RL****SW
	DA91-02262K			●	●					RL****TB
	DA91-02629A			●	●					RL****IH
	DA91-02262L					●	●			RL****PS
	DA91-02262M					●	●			RL****SW
	DA91-02262N					●	●			RL****TB
	DA91-02262U					●	●			RL****IS
13	DA97-04098A	ASSY-GASKET DOOR FRE			●			1	SA	
14	DA67-00859B	CAP-DOOR HANDLE	●	●				4	SA	RL****US
	DA67-00859C				●					RL****IS
				●	●					RL****IH
					●					RL****TB
	DA67-00859D				●					RL****PS
	DA67-00859E		●		●	●	●			RL****SW
15	DA67-01612A	CAP-HINGE HOLE	●	●				1	SA	RL****US
	DA67-01612B				●					RL****IS
				●	●					RL****IH
					●					RL****TB
	DA67-01612C				●					RL****PS
	DA67-01612D		●		●	●	●			RL****SW
EASY-HANDLE										
16	DA97-05332A	ASSY HANDLE-EASY	●	●				2	SA	RL***EUS
				●						RL***EIS
	DA97-05332B				●					RL***ESW
	DA97-05332C				●					RL***EPS
16-1	DA64-01974A	HANDLE-BAR	●	●				2	SA	RL***EUS
				●						RL***EIS
	DA64-01974C				●					RL***ESW
	DA64-01974D				●					RL***EPS
16-2	DA67-01452A	CAP-HANDLE SIDE	●	●				2	SA	RL***EUS
				●						RL***EIS
					●					RL***EPS
	DA67-01452C				●					RL***ESW
16-3	DA61-02912A	SUPPORT-HANDLE A	●	●				2	SNA	RL***EUS
				●						RL***EIS
	DA61-02912C				●					RL***ESW
	DA61-02912B				●					RL***EPS

EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Model

NO	CODE-NO	PART NAME	MODEL					Quantity	SA/SNA	Remark
			RL44E	RL41H	RL41E	RL38H	RL38E			
16-4	DA61-03503A	SUPPORT-HANDLE B	●	●				2	SA	RL***EUS
				●						RL***EIS
	DA61-03503B				●					RL***ESW
	DA61-03503C				●					RL***EPS
16-5	DA61-02914A	SLIDER-HANDLE	●	●				2	SA	RL***EUS
				●						RL***EIS
	DA61-02914C				●					RL***ESW
	DA61-02914B				●					RL***EPS
16-6	DA61-02915A	SPRING ETC-HANDLE	●	●	●			2	SA	
16-7	DA66-00400A	SHAFT-HANDLE	●	●	●			2	SA	
16-8	DA63-03196A	COVER-SUPT HANDLE REAR	●	●				2	SNA	RL***EUS
				●						RL***EIS
	DA63-03196C				●					RL***ESW
	DA63-03196B				●					RL***EPS
16-9	DA63-03683A	COVER-SUPT HANDLE FRONT	●	●				2	SA	RL***EUS
				●						RL***EIS
	DA63-03683B				●					RL***ESW
	DA63-03683C				●					RL***EPS
16-10	DA97-03655A	ASSY-SCREW TAPPING	●	●	●			2	SA	
17	DA63-03197A	COVER-SLIDER HANDLE	●	●				4	SA	RL***EUS
				●						RL***EIS
	DA63-03197B				●					RL***ESW
	DA63-03197D				●					RL***EPS
18	6001-001767	SCREW-MACHINE	●	●	●			4	SA	
			BAR HANDLE							
16	DA97-03953K	ASSY HANDLE	●		●	●	●	2	SA	ABS,RL***CPS
	DA97-03953N		●	●						ABS,RL***CUS
			●	●	●	●	●			ABS,RL***CIS
				●	●					ABS,RL***CIH
	DA97-03953P		●		●		●			ABS,RL***CSW
	DA97-03953Q		●	●	●		●			ABS,RL***CTB
	DA97-03953R					●				AL,RL***GIS
	DA97-03953S			●	●	●	●			AL,RL***GTB
	DA97-03953T			●		●	●			AL,RL***GPS
	DA97-03953U					●	●			AL,RL***GSW
16-1	DA61-02774A	SUPPORT-HANDLE UPP	●	●				1	SA	RL****US
			●	●	●	●	●			RL****IS
				●	●					RL****IH
	DA61-02774B		●	●	●	●	●			RL****PS
	DA61-02774C		●		●	●	●			RL****SW
	DA61-02774D		●	●	●	●	●			RL****TB
16-2	DA61-02775A	SUPPORT-HANDLE LOW	●	●				1	SA	RL****US
			●	●	●	●	●			RL****IS
				●	●					RL****IH
	DA61-02775B		●	●	●	●	●			RL****PS
	DA61-02775C		●		●	●	●			RL****SW
	DA61-02775D		●	●	●	●	●			RL****TB

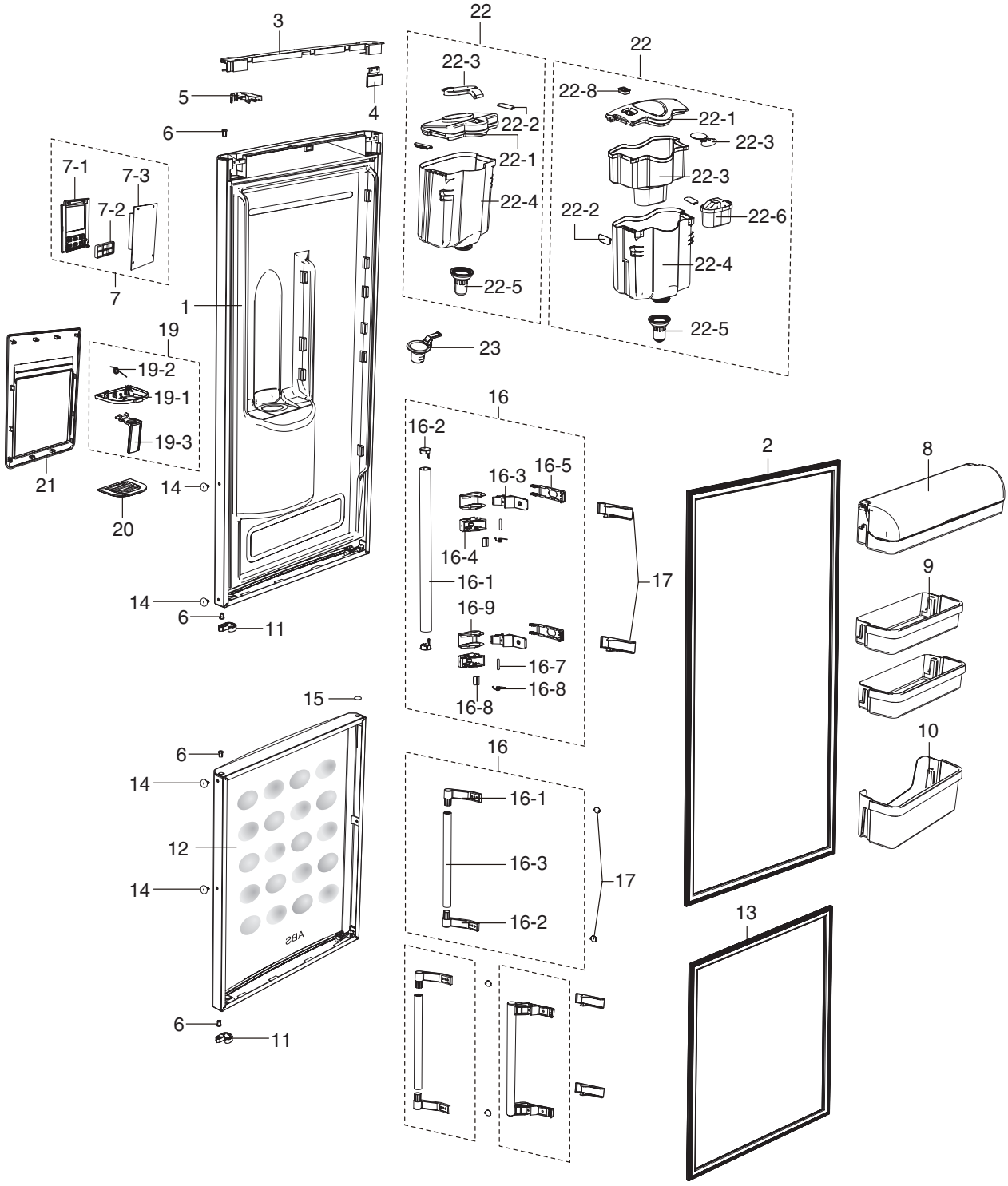
EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Model

NO	CODE-NO	PART NAME	MODEL					Quantity	SA/SNA	Remark
			RL44E	RL41H	RL41E	RL38H	RL38E			
16-3	DA64-01815A	HANDLE-BAR	●	●				1	SA	ABS,RL***CUS
			●	●	●	●	●			ABS,RL***CIS
				●	●					ABS,RL***CIH
	DA64-01815B		●	●	●		●			ABS,RL***CTB
	DA64-01815C		●		●	●	●			ABS,RL***CPS
	DA64-01815D		●		●		●			ABS,RL***CSW
	DA64-01916A					●				AL,RL***GIS
				●		●	●			AL,RL***GPS
	DA64-01916B			●	●	●	●			AL,RL***GTB
	DA64-01916C					●	●			AL,RL***GSW
17	DA67-01438D	CAP-SCREW HANDLE	●		●	●	●	4	SA	RL****SW
	DA67-01438H		●	●	●	●	●			RL****PS
	DA67-01438J		●	●						RL****US
			●	●	●	●	●			RL****IS
				●	●					RL****IH
	DA67-01438K		●	●	●	●	●			RL****TB
18	6001-001767	SCREW-MACHINE	●					4	SA	

EXPLODED VIEW & PARTS LIST

5-14) Door - LED Dispenser Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Dispenser

NO	CODE-NO	PART NAME	MODEL				Quantity	SA/SNA	Remark
			RL44W	RL44P	RL41W	RL41P			
1	DA91-02372B	ASSY DOOR FOAM REF	●	●			1	SA	RL****PS
	DA91-02372C		●						RL****IS
	DA91-02372D		●						RL****SW
	DA91-02372E		●						RL****TB
	DA91-02402B				●	●			RL****PS
	DA91-02402C				●				RL****IS
	DA91-02402D				●	●			RL****SW
	DA91-02402E				●				RL****TB
	DA91-02402H					●			RL****IH
2	DA97-04097A	ASSY-GASKET DOOR REF	●				1	SA	
	DA97-04097B				●				
3	DA63-03045B	COVER-WIRE DOOR	●		●		1	SA	RL****IS
						●			RL****IH
			●		●				RL****TB
	DA63-03045C		●	●	●	●			RL****PS
	DA63-03045D		●		●	●			RL****SW
4	DA67-01437B	CAP-SPACE DOOR	●		●		1	SA	RL****IS
						●			RL****IH
			●		●				RL****TB
	DA67-01437C		●	●	●	●			RL****PS
	DA67-01437D		●		●	●			RL****SW
5	DA63-03030B	COVER-WIRE HINGE R	●		●		1	SA	RL****IS
						●			RL****IH
			●		●				RL****TB
	DA63-03030C		●	●	●	●			RL****PS
	DA63-03030D		●		●	●			RL****SW
6	DA63-03046A	GROMMET-HINGE		●			4	SA	
7	DA97-04022T	ASSY COVER-CONTROL	●		●		1	SA	RL****IS
						●			RL****IH
	DA97-04022U		●		●				RL****PS
	DA97-04022V		●	●	●	●			RL****TB
	DA97-04022W		●		●	●			RL****SW
	DA97-04022X				●				RL****PS1/XTL
7-1	DA97-04006S	ASSY COVER-CONTROL SUB	●		●		1	SA	RL****IS
						●			RL****IH
	DA97-04006T		●		●				RL****PS
	DA97-04006U		●	●	●	●			RL****TB
	DA97-04006V		●		●	●			RL****SW
7-2	DA63-03047A	GASKET-KNOB CONTROL			●		1	SA	
7-3	DA41-00369G	PBA PANEL-LED			●				
	DA41-00369J				●		1	SA	RL****PS1/XTL
7-4	6002-000466	SCREW-TAPPING			●		4	SA	
8	DA97-03880A	ASSY GUARD-DAIRY			●		1	SA	
9	DA63-03313A	GUARD-VARIETY			●		2	SA	
10	DA63-03312A	GUARD-BOTTLE			●		1	SA	
11	DA61-02773B	STOPPER-DOOR			●		1	SA	
12	DA91-02262B	ASSY DOOR FOAM FRE	●				1	SA	RL****IS
	DA91-02262C		●	●					RL****PS
	DA91-02262D		●						RL****SW
	DA91-02262E		●						RL****TB
	DA91-02262G				●				RL****IS
	DA91-02262H				●	●			RL****PS

EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Dispenser

NO	CODE-NO	PART NAME	MODEL				Quantity	SA/SNA	Remark
			RL44W	RL44P	RL41W	RL41P			
	DA91-02262J	ASSY DOOR FOAM FRE			●	●	1	SA	RL****SW
	DA91-02262K				●				RL****TB
	DA91-02629A					●			RL****IH
13	DA97-04098A	ASSY-GASKET DOOR FRE		●			1	SA	
14	DA67-00859C	CAP-DOOR HANDLE	●		●		4	SA	RL****IS
						●			RL****IH
			●		●				RL****TB
	DA67-00859D		●	●	●	●			RL****PS
	DA67-00859E		●		●	●			RL****SW
15	DA67-01612B	CAP-HINGE HOLE	●		●		1	SA	RL****IS
						●			RL****IH
			●		●				RL****TB
	DA67-01612C		●	●	●	●			RL****PS
	DA67-01612D		●		●	●			RL****SW
EASY-HANDLE									
16	DA97-05332B	ASSY HANDLE-EASY			●		2	SA	RL*E**SW
	DA97-05332C				●				RL*E**PS
16-1	DA64-01974C	HANDLE-BAR			●		2	SA	RL*E**SW
	DA64-01974D				●				RL*E**PS
16-2	DA67-01452C	CAP-HANDLE SIDE			●		2	SA	RL*E**SW
	DA67-01452A				●				RL*E**PS
16-3	DA61-02912C	SUPPORT-HANDLE A			●		2	SNA	RL*E**SW
	DA61-02912B				●				RL*E**PS
16-4	DA61-03503B	SUPPORT-HANDLE B			●		2	SA	RL*E**SW
	DA61-03503C				●				RL*E**PS
16-5	DA61-02914C	SLIDER-HANDLE			●		2	SA	RL*E**SW
	DA61-02914B				●				RL*E**PS
16-6	DA61-02915A	SPRING ETC-HANDLE			●		2	SA	
16-7	DA66-00400A	SHAFT-HANDLE			●		2	SA	
16-8	DA63-03196C	COVER-SUPT HANDLE REAR			●		2	SNA	RL*E**SW
	DA63-03196B				●				RL*E**PS
16-9	DA63-03683B	COVER-SUPT HANDLE FRONT			●		2	SA	RL*E**SW
	DA63-03683C				●				RL*E**PS
16-10	DA97-03655A	ASSY-SCREW TAPPING			●		2	SA	
17	DA63-03197B	COVER-SLIDER HANDLE			●		4	SA	RL*E**SW
	DA63-03197D				●				RL*E**PS
18	6001-001767	SCREW-MACHINE			●		4	SA	
BAR HANDLE									
16	DA97-03953K	ASSY HANDLE	●		●	●	2	SA	ABS,RL**CPS
	DA97-03953N		●		●				ABS,RL**CIS
						●			ABS,RL**CIH
	DA97-03953P		●		●	●			ABS,RL**CSW
	DA97-03953R				●				AL,RL***GIS
	DA97-03953S		●		●				AL,RL***GTB
	DA97-03953T			●	●	●			AL,RL***GPS
	DA97-03953U				●				AL,RL***GSW
16-1	DA61-02774A	SUPPORT-HANDLE UPP	●		●		1	SA	RL****IS
						●			RL****IH
	DA61-02774B			●	●	●			RL****PS
	DA61-02774C		●		●	●			RL****SW
	DA61-02774D		●		●				RL****TB

EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Dispenser

NO	CODE-NO	PART NAME	MODEL				Quantity	SA/SNA	Remark
			RL44W	RL44P	RL41W	RL41P			
16-2	DA61-02775A	SUPPORT-HANDLE LOW	●		●		1	SA	RL****IS
						●			RL****IH
	DA61-02775B			●	●	●			RL****PS
	DA61-02775C		●		●	●			RL****SW
	DA61-02775D		●		●				RL****TB
16-3	DA64-01815A	HANDLE-BAR	●		●		1	SA	ABS,RL***CIS
						●			ABS,RL***CIH
	DA64-01815C		●		●	●			ABS,RL***CPS
	DA64-01815D		●		●	●			ABS,RL***CSW
	DA64-01916A				●				AL,RL***GIS
				●	●	●			AL,RL***GPS
	DA64-01916B		●		●				AL,RL***GTB
	DA64-01916C				●				AL,RL***GSW
17	DA67-01438D	CAP-SCREW HANDLE	●		●	●	4	SA	RL****SW
	DA67-01438H		●	●	●	●			RL****PS
	DA67-01438J		●		●				RL****IS
						●			RL****IH
	DA67-01438K		●		●				RL****TB
18	6001-001767	SCREW-MACHINE	●				4	SA	
19	DA97-04575B	ASSY LEVER DISP	●	●	●	●	1	SA	RL****PS
	DA97-04575C		●		●				RL****IS
						●			RL****IH
			●		●				RL****TB
	DA97-04575D		●		●	●			RL****SW
19-1	DA61-03041B	CASE-LEVER DISPENSER	●	●	●	●	1	SA	RL****PS
	DA61-03041C		●		●				RL****IS
						●			RL****IH
			●		●				RL****TB
	DA61-03041D		●		●	●			RL****SW
19-2	DA61-20146A	SPRING ETC-LEVER	●				1	SA	
19-3	DA66-00410A	LEVER-DISPENSER	●				1	SA	
20	DA63-03307B	TRAY-DISPENSER	●	●	●	●	1	SA	RL****PS
	DA63-03307C		●		●				RL****IS
						●			RL****IH
			●		●				RL****TB
	DA63-03307D		●		●	●			RL****SW
21	DA63-03306B	COVER DISPENSER	●	●	●	●	1	SA	RL****PS
	DA63-03306C		●		●				RL****IS
						●			RL****IH
			●		●				RL****TB
	DA63-03306E		●		●	●			RL****SW
WATER TANK Without FILTER									
22	DA97-02005A	ASSY TANK WATER		●		●	1	SA	
22-1	DA63-00240B	COVER TANK-WATER		●		●	1	SA	
22-2	DA65-20004B	CLAMPER BAG-CLAMP TANK		●		●	2	SNA	
22-3	DA67-30216C	CAP WATER TANK-WATER		●		●	1	SA	
22-4	DA74-00051B	TANK WATER-WATER		●		●	1	SA	
22-5	DA97-00217D	ASSY-COCK,DISPENSER		●		●	1	SA	

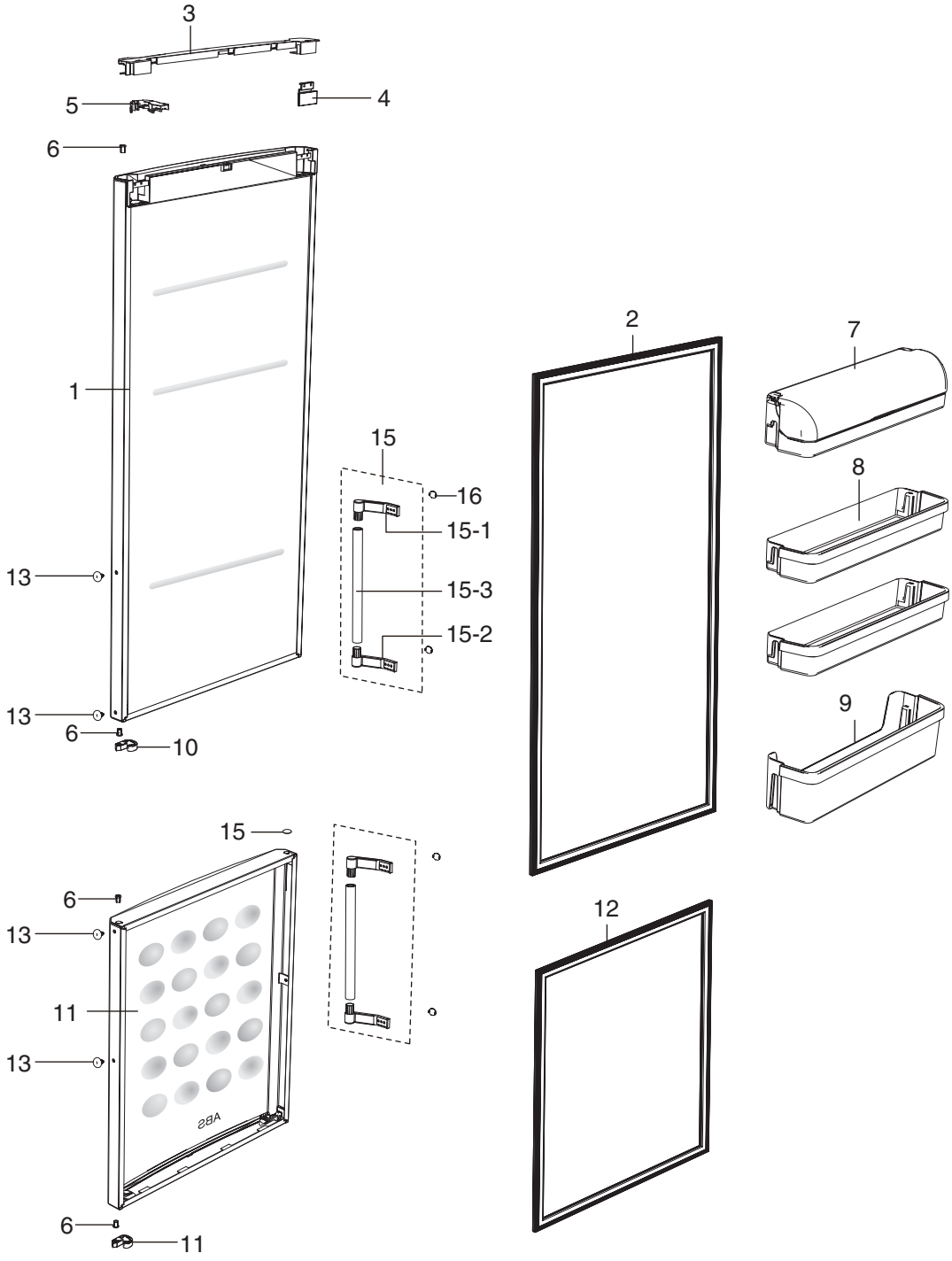
EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED Dispenser

NO	CODE-NO	PART NAME	MODEL				Quantity	SA/SNA	Remark
			RL44W	RL44P	RL41W	RL41P			
WATER TANK With BRITA FILTER									
22	DA97-05888A	ASSY TANK WATER		●		●	1	SA	
22-1	DA63-03993A	COVER TANK-WATER		●		●	1	SA	
22-2	DA65-20004B	CLAMPER BAG-CLAMP TANK		●		●	2	SNA	
22-3	DA67-01883A	CAP-COVER TANK		●		●	1	SA	
22-4	DA67-01884A	TANK WATER		●		●	1	SA	
22-5	DA97-00217D	ASSY-COCK,DISPENSER		●		●	1	SA	
22-6	DA29-00017A	FILTER WATER-ASSY		●		●	1	SA	
22-7	DA61-03989A	CASE-FILTER TANK		●		●	1	SA	
22-8	DA97-05895A	ASSY INDICATOR-FILTER		●		●	1	SA	
23	DA71-20155C	ASSY-FIXER CASE	●				1	SA	

EXPLODED VIEW & PARTS LIST

5-15) Door - LED SEMI Model



EXPLODED VIEW & PARTS LIST

■ Parts List of Door - LED SEMI Model

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41S	RL38S			
1	DA91-02263G	ASSY DOOR FOAM REF	●			1	SA	RL****PS
	DA91-02263H		●					RL****SW
	DA91-02326A			●				RL****PS
	DA91-02326B			●				RL****IS
	DA91-02326C			●				RL****SW
	DA91-02326D			●				RL****TB
	DA91-02329A				●			RL****PS
	DA91-02329B				●			RL****SW
	DA91-02329C				●			RL****IS
	DA91-02329D				●			RL****TB
2	DA97-04097A	ASSY-GASKET DOOR REF	●			1	SA	
	DA97-04097B			●				
	DA97-04097C				●			
3	DA63-03045B	COVER-WIRE DOOR		●	●	1	SA	RL****IS
				●	●			RL****TB
	DA63-03045C			●				RL****PS
	DA63-03045D			●				RL****SW
4	DA67-01437B	CAP-SPACE DOOR		●	●	1	SA	RL****IS
				●	●			RL****TB
	DA67-01437C			●				RL****PS
	DA67-01437D			●				RL****SW
5	DA63-03030B	COVER-WIRE HINGE R		●	●	1	SA	RL****IS
				●	●			RL****TB
	DA63-03030C			●				RL****PS
	DA63-03030D			●				RL****SW
6	DA63-03046A	GROMMET-HINGE		●		4	SA	
7	DA97-03880A	ASSY GUARD-DAIRY		●		1	SA	
8	DA63-03034A	GUARD-VARIETY		●		2	SA	
9	DA63-03033A	GUARD-BOTTLE		●		1	SA	
10	DA61-02773A	STOPPER-DOOR		●		1	SA	
11	DA91-02262C	ASSY DOOR FOAM FRE	●			1	SA	RL****PS
	DA91-02262D		●					RL****SW
	DA91-02325A			●				RL****PS
	DA91-02325B			●				RL****IS
	DA91-02325C			●				RL****SW
	DA91-02325H			●				RL****TB
	DA91-02325D				●			RL****PS
	DA91-02325E				●			RL****SW
	DA91-02325F				●			RL****IS
	DA91-02325G				●			RL****TB
12	DA97-04098A	ASSY-GASKET DOOR FRE		●		1	SA	
13	DA67-00859C	ASSY-GASKET DOOR FRE		●	●	4	SA	RL****IS
				●	●			RL****TB
	DA67-00859D			●				RL****PS
	DA67-00859E			●				RL****SW
14	DA67-01612B	CAP-HINGE HOLE		●	●	1	SA	RL****IS
				●	●			RL****TB
	DA67-01612C			●				RL****PS
	DA67-01612D			●				RL****SW

EXPLODED VIEW & PARTS LIST

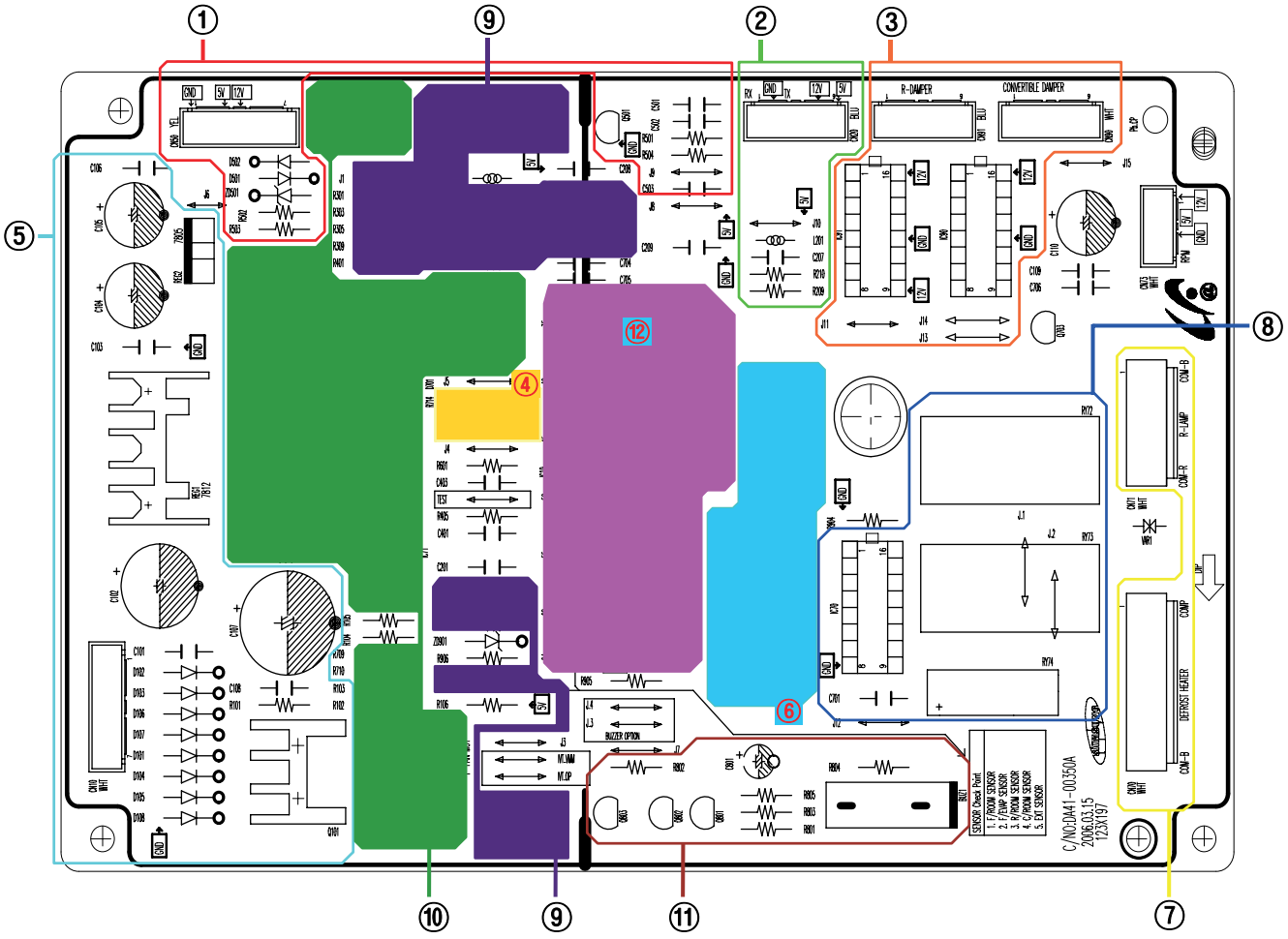
■ Parts List of Door - LED SEMI Model

NO	CODE-NO	PART NAME	MODEL			Quantity	SA/SNA	Remark
			RL44S	RL41S	RL38S			
15	DA97-03953K	ASSY HANDLE	●			2	SA	ABS,RL***CPS
	DA97-03953P		●					ABS,RL***CSW
15-1	DA61-02774B	SUPPORT-HANDLE UPP	●			1	SA	RL****PS
	DA61-02774C		●					RL****SW
15-2	DA61-02775B	SUPPORT-HANDLE LOW	●			1	SA	RL****PS
	DA61-02775C		●					RL****SW
15-3	DA64-01815C	HANDLE-BAR	●			1	SA	ABS,RL***CPS
	DA64-01815D		●					ABS,RL***CSW
16	DA67-01438H	CAP-SCREW HANDLE	●			4	SA	RL****PS
	DA67-01438D		●					RL****SW
17	6001-001767	SCREW-MACHINE	●			4	SA	

6. PCB DIAGRAM

6-1) PART ARRANGEMENT (Main Board)

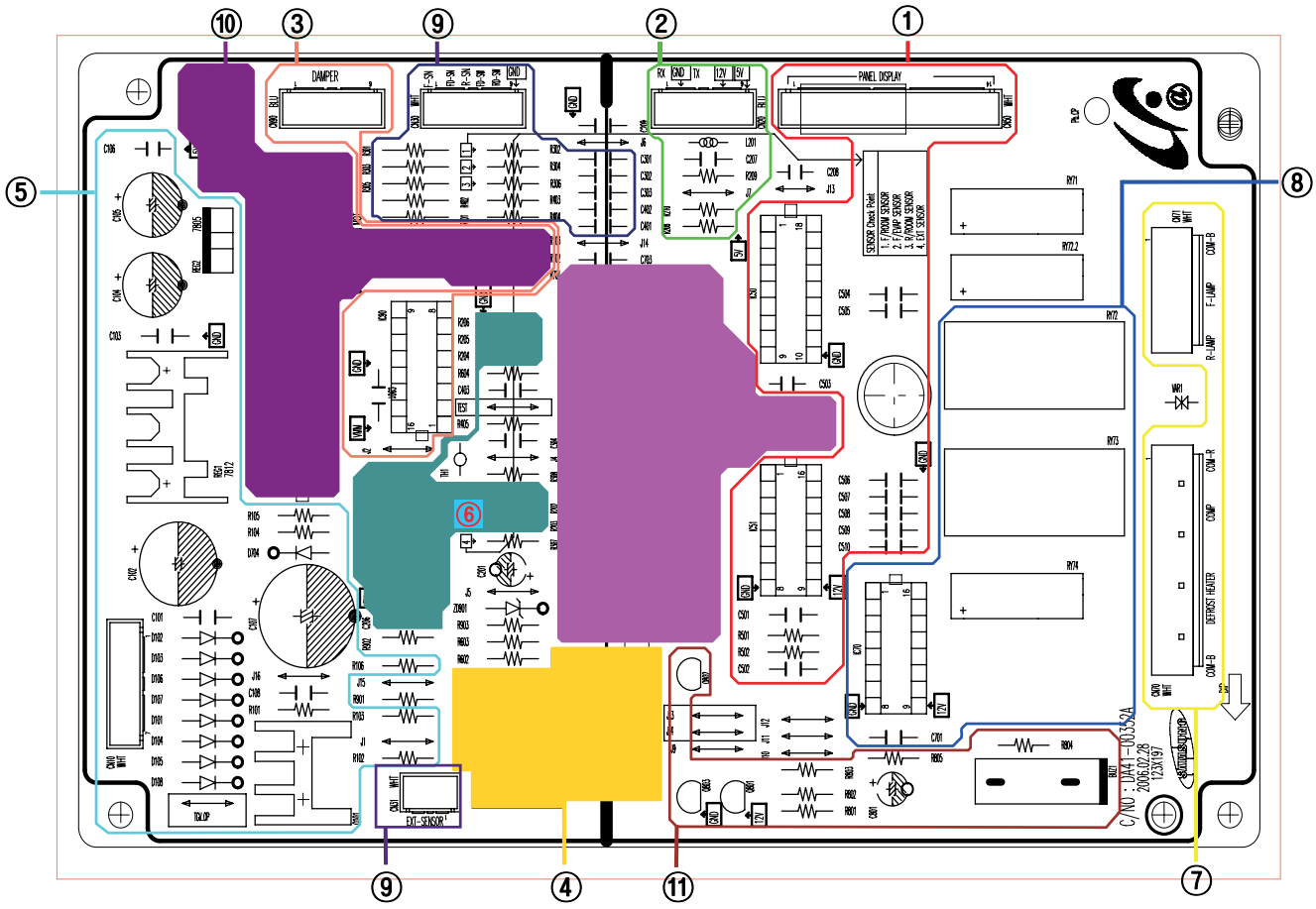
6-1-1) LCD MODEL



1. PERFORM THE ROLE OF MANAGING INTERFACE IN PANEL ↔ MAIN PCB COMMUNICATION SIGNAL (KEY INPUT AND DISPLAY INDICATION)
2. POWER LINE COMMUNICATION CIRCUIT (PLC INPUT/OUTPUT PART)
3. OPERATING ROLE OF COLD ROOM, COOLSELECT ZONE DAMPER AND COOLSELECT ZONE DAMPER EATER
4. DIODE OPTION SETTING PART FOR OPTION SETUP
5. PCB POWER TERMINAL TRANS INPUT AND MICOM POWER AND LOAD POWER TERMINAL SUPPLY (DAMPER HEATER) SUPPLY POWER FROM CN10 CONNECTOR
6. EEPROM: SAVE/WRITE EVERY DATA
7. CONNECTOR PART THAT CONNECTS AC LOAD
8. OPERATE RECEVING DRIVING SIGNAL OF MICOM THROUGH SINK IC BY CONTROLLING AC LOAD TO REPLAY PART
9. TRANSFER NOISE TO MICOM BY REMOVING AS RECEIVING INPUTS OF EVERY SENSOR SIGNALS AND SENSE DOOR OPEN OF COLD ROOM
10. SUPPLY POWER TO MOTOR BY TYPES OF MOTOR TILL 10V-12V OF FAN MOTOR DRIVING PART
11. BUZZZER ALARM PART (KEY INPUT & OPERATE ALARM IN CONSISTENT INTERVAL WHEN OPEING DOOR)
12. OCCURRENCE OF MICOM AND CLOCK & SOFTWARE RESET PART

PCB DIAGRAM

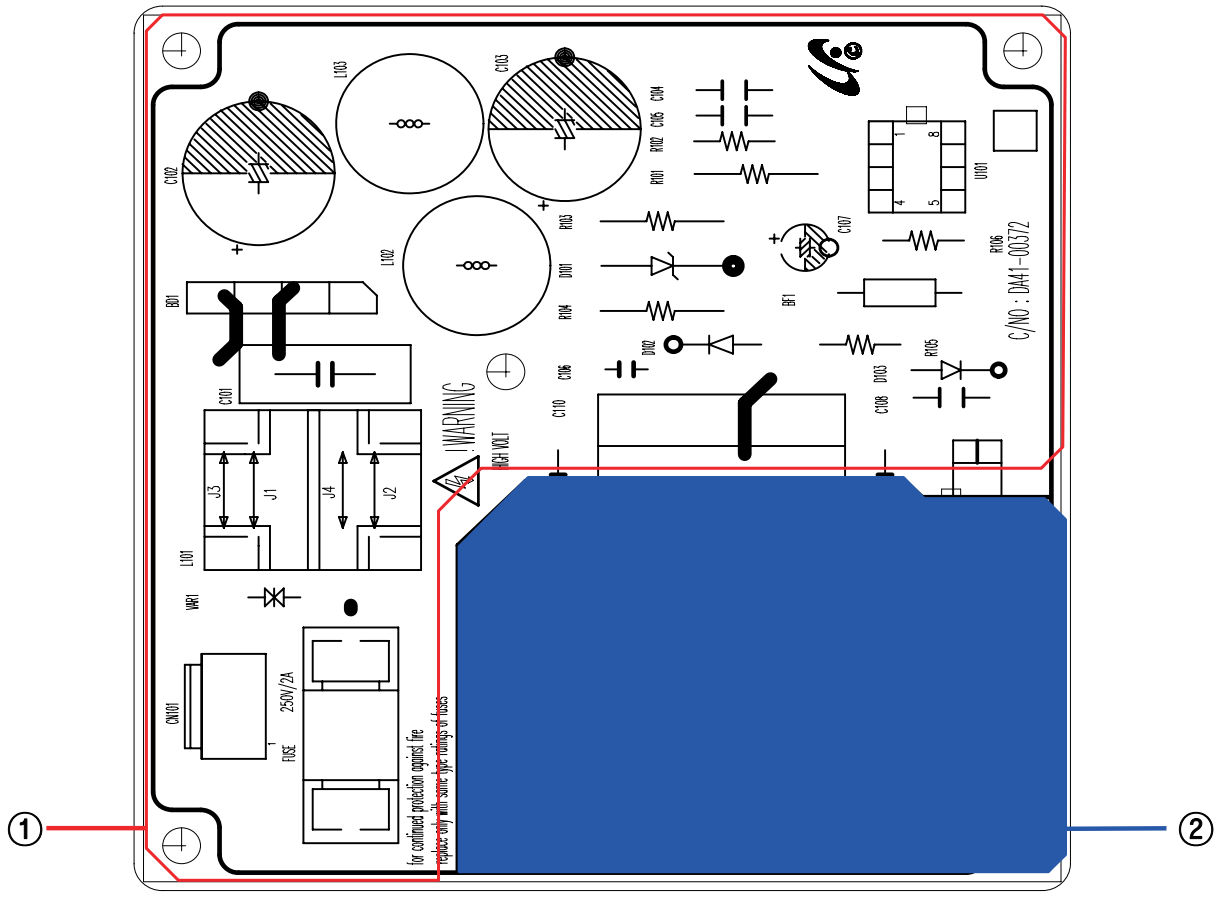
6-1-2) LED MODEL



1. PERFORM THE ROLE OF MANAGING INTERFACE IN PANEL ↔ MAIN PCB COMMUNICATION SIGNAL (KEY INPUT AND DISPLAY INDICATION)
2. POWER LINE COMMUNICATION CIRCUIT (PLC INPUT/OUTPUT PART)
3. OPERATING ROLE OF COLD ROOM DAMPER AND DAMPER HEATER
4. DIODE OPTION SETTING PART FOR OPTION SETUP
5. PCB POWER TERMINAL TRANS INPUT AND MICOM POWER AND LOAD POWER TERMINAL SUPPLY (DAMPER HEATER) SUPPLY POWER FROM CN10 CONNECTOR
6. EEPROM: SAVE/WRITE EVERY DATA
7. CONNECTOR PART THAT CONNECTS AC LOAD
8. OPERATE RECEVING DRIVING SIGNAL OF MICOM THROUGH SINK IC BY CONTROLLING AC LOAD TO REPLAY PART
9. TRANSFER NOISE TO MICOM BY REMOVING AS RECEIVING INPUTS OF EVERY SENSOR SIGNALS AND SENSE DOOR OPEN OF COLD ROOM
10. SUPPLY POWER TO MOTOR BY TYPES OF MOTOR TILL 1OV-12V OF FAN MOTOR DRIVING PART
11. BUZZZER ALARM PART (KEY INPUT & OPERATE ALARM IN CONSISTENT INTERVAL WHEN OPEING DOOR)
12. OCCURRENCE OF MICOM AND CLOCK & SOFTWARE RESET PART

PCB DIAGRAM

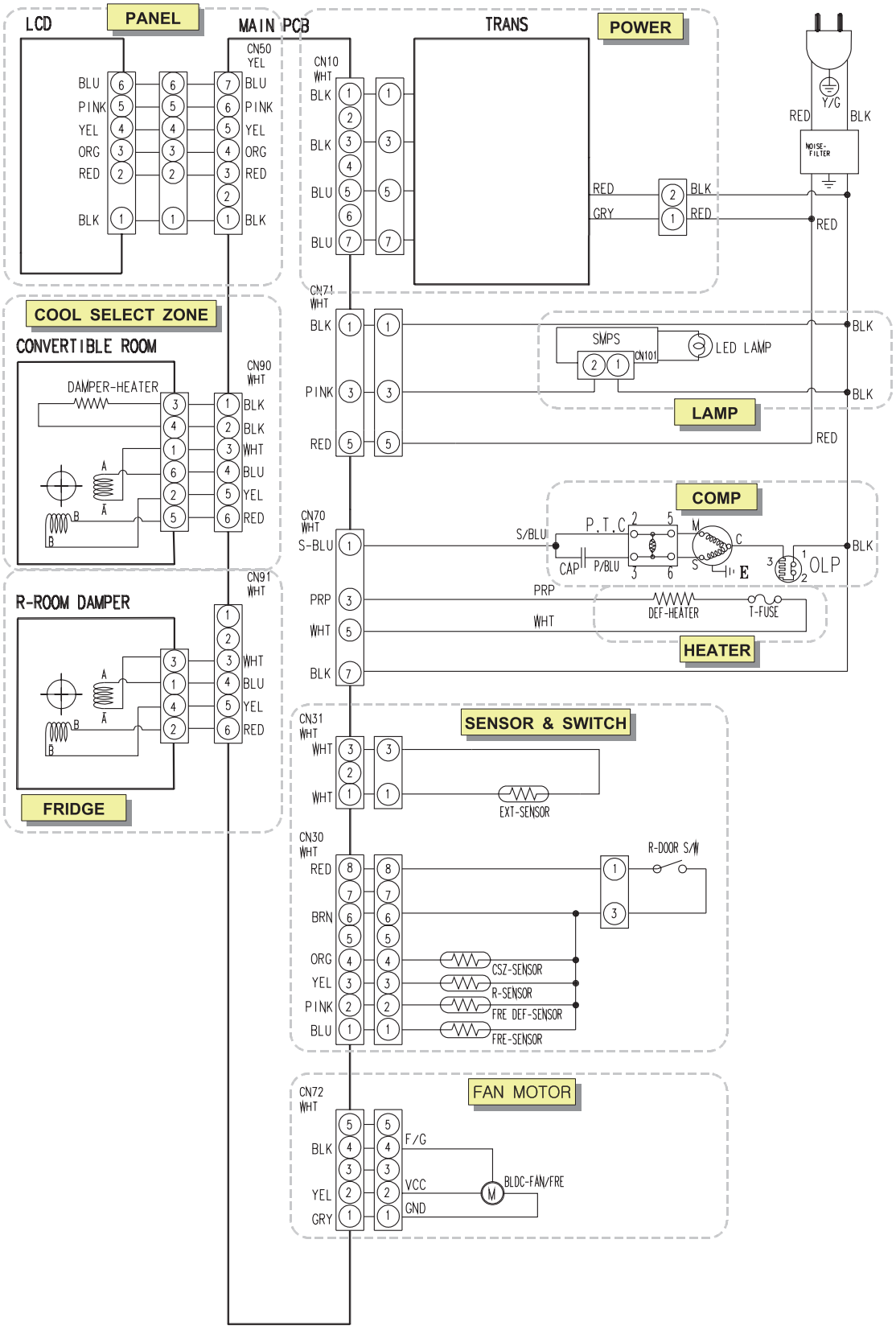
6-1-3) LCD MODEL (PBA SMPS-LED SUB) / OPTION



1. AC INPUT (IT'S OPTION SETTING AND POWER INPUT OF LED LAMP CONTROLLING. IT SUPPLIES INPUT POWER BY POWER SUPPLIED FROM PBA MAIN.
2. DC OUTPUT OUTPUT FOR LED LAMP POWER SUPPLY

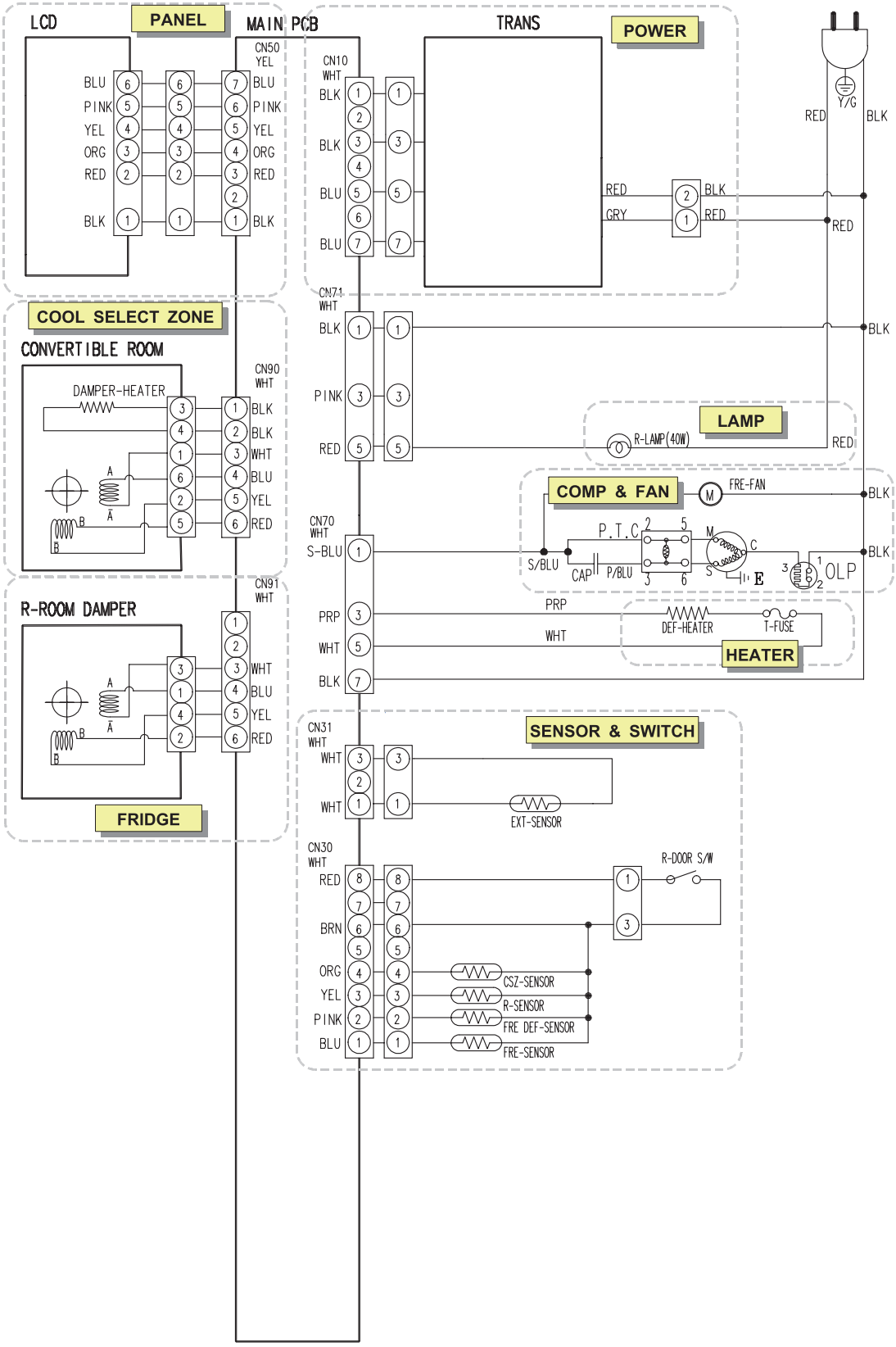
7. WIRING DIAGRAM

7-1) RL44Q***(LCD Display +BLDC Motor)



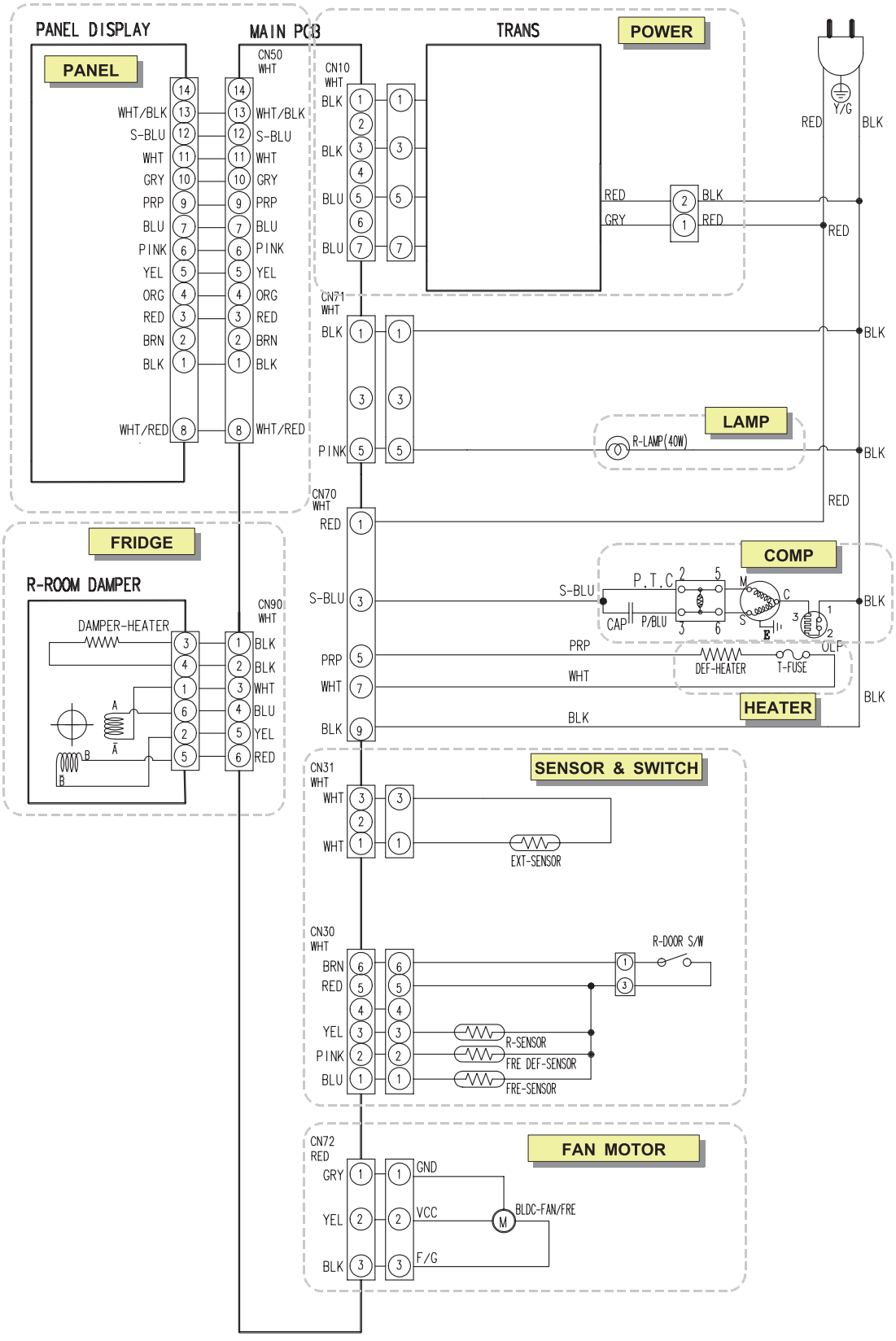
WIRING DIAGRAM

7-2) RL44/41F***(LCD Display + AC Motor)



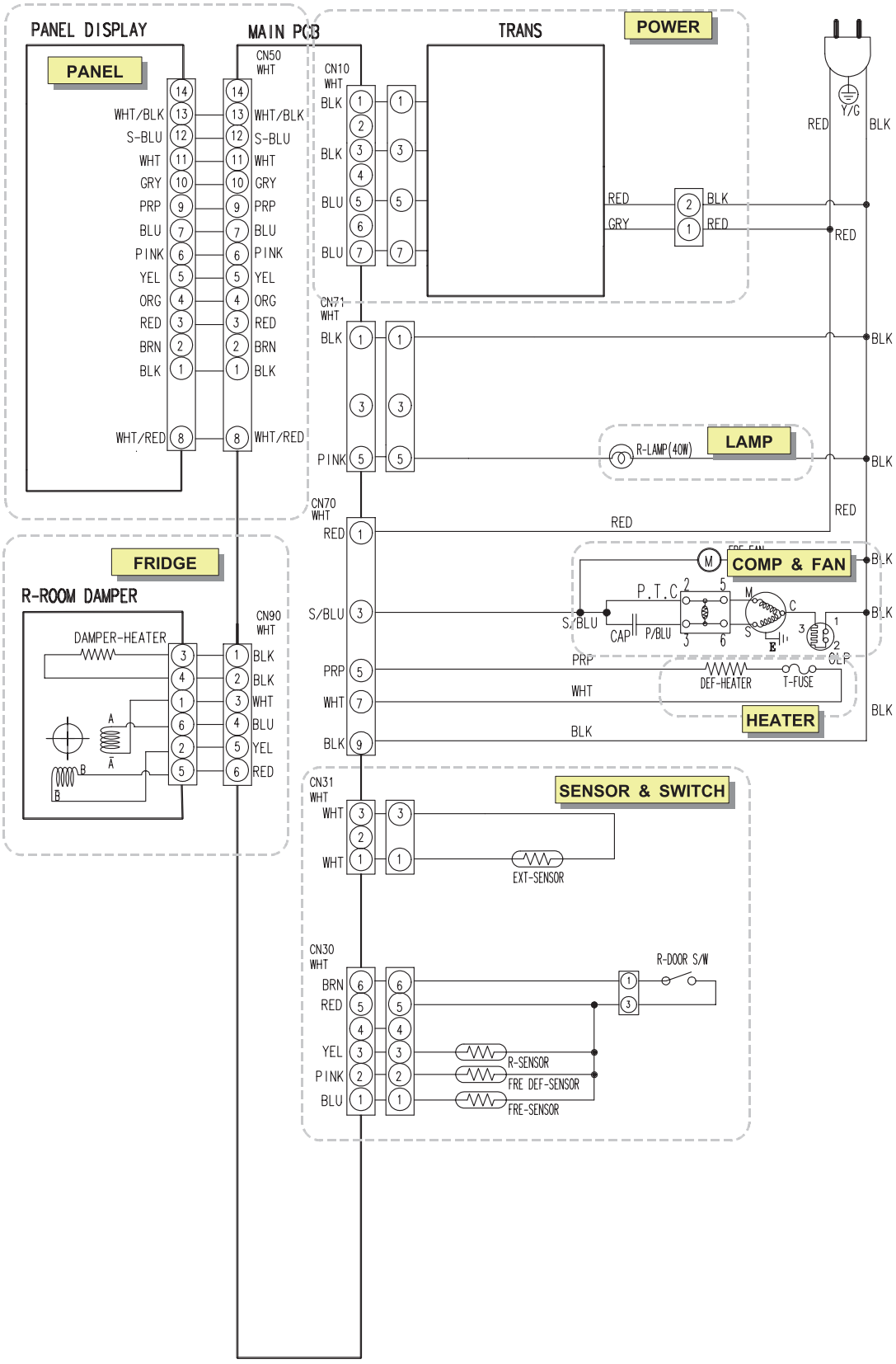
WIRING DIAGRAM

7-3) RL41/38H***(LED Display + BLDC Motor)



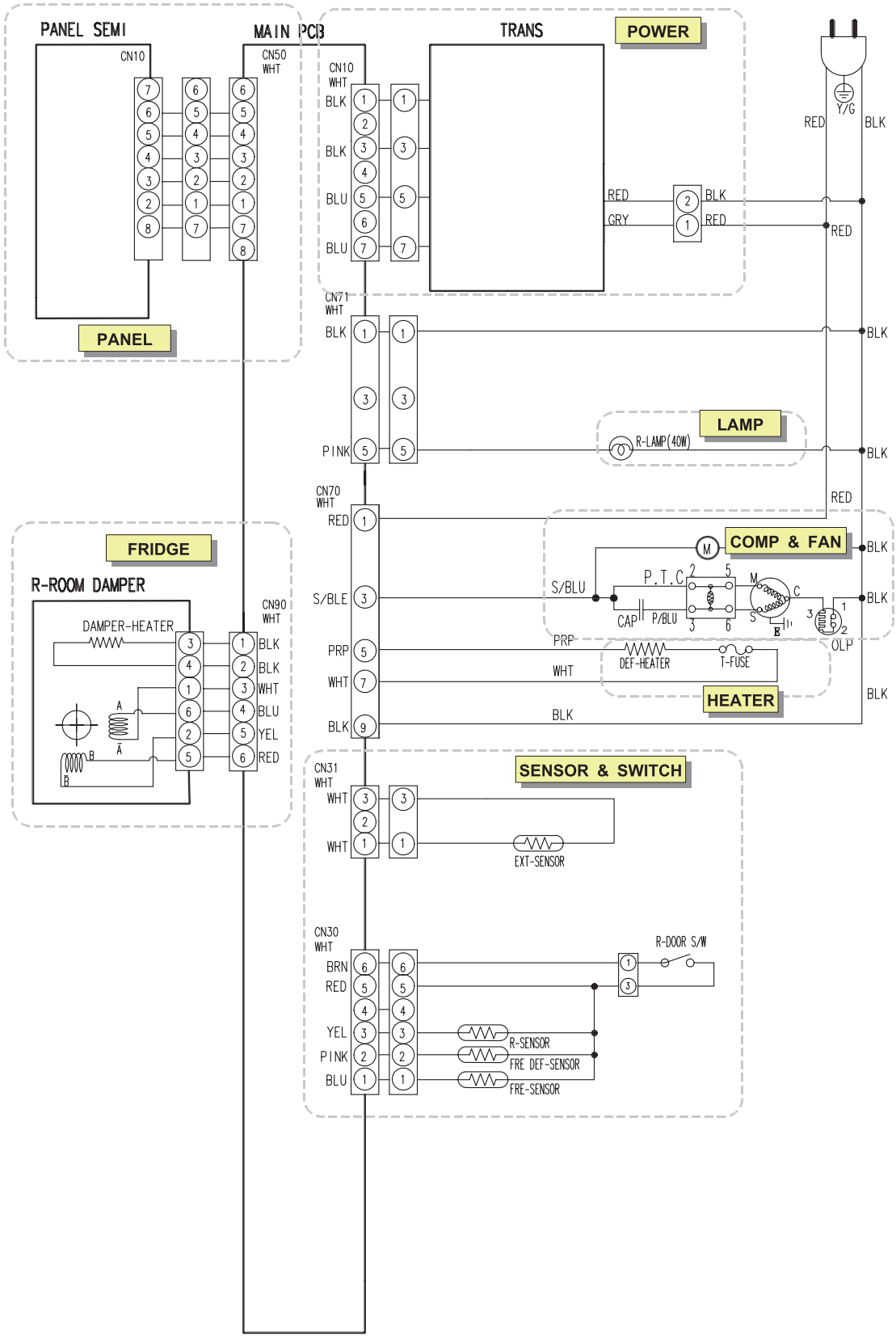
WIRING DIAGRAM

7-4) RL44(41, 38)E(W)***(LED Display + AC Motor)



WIRING DIAGRAM

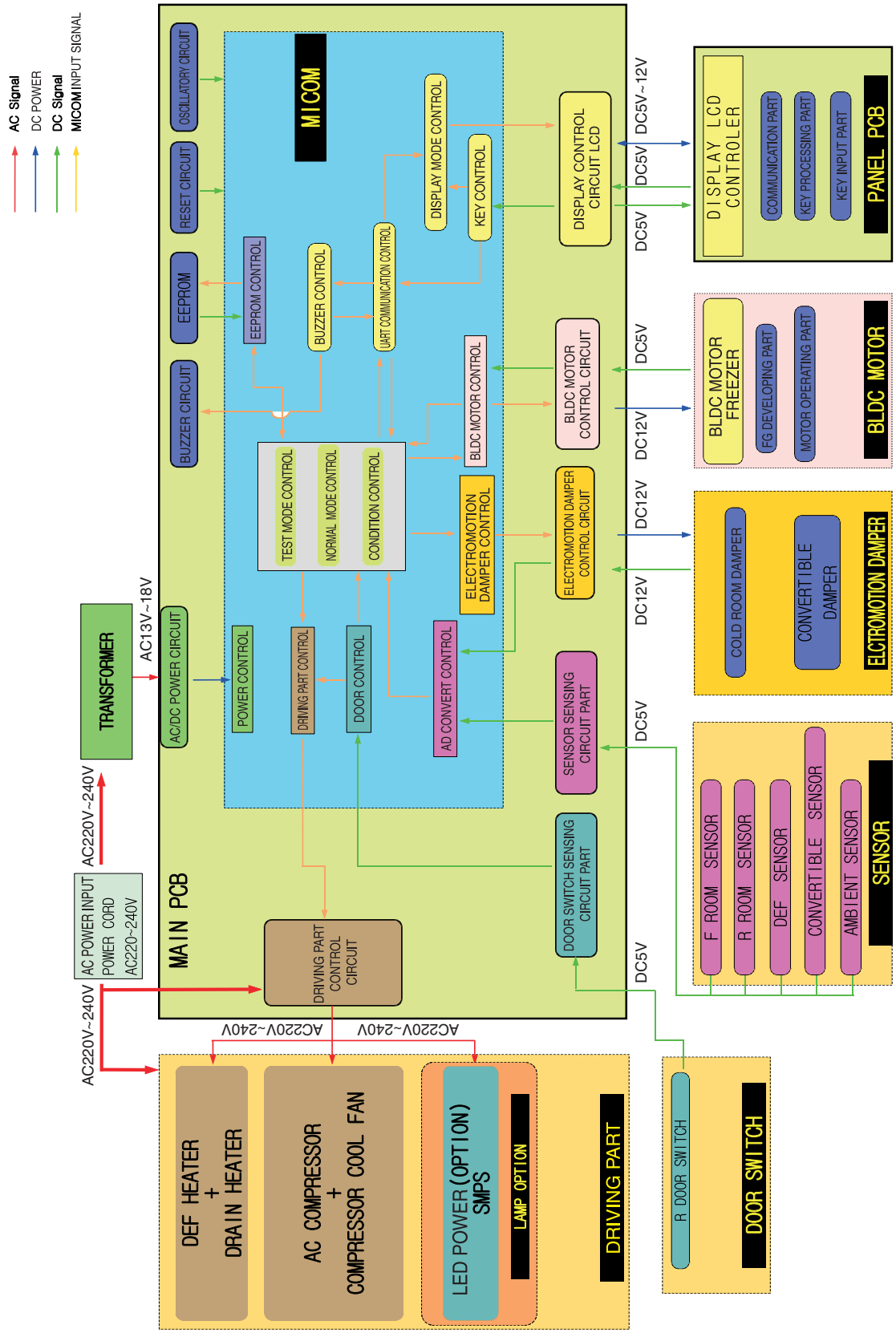
7-5) RL44(41, 38)S***(SEMI Display + AC Motor)



8. CIRCUIT DIAGRAM

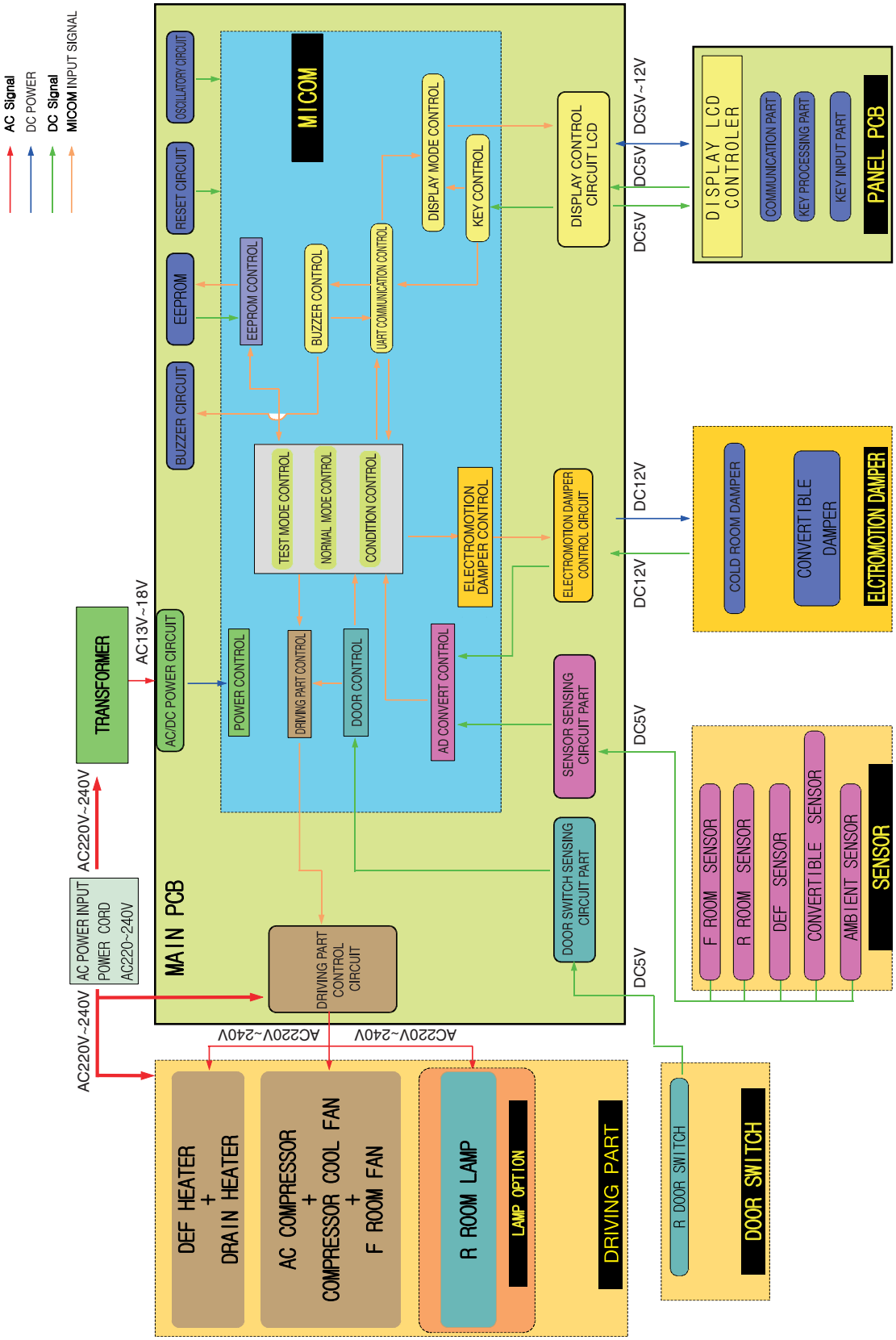
8-1) BLOCK DIAGRAM

8-1-1) RL44Q***(LCD Display +BLDC Motor)-BULB TYPE



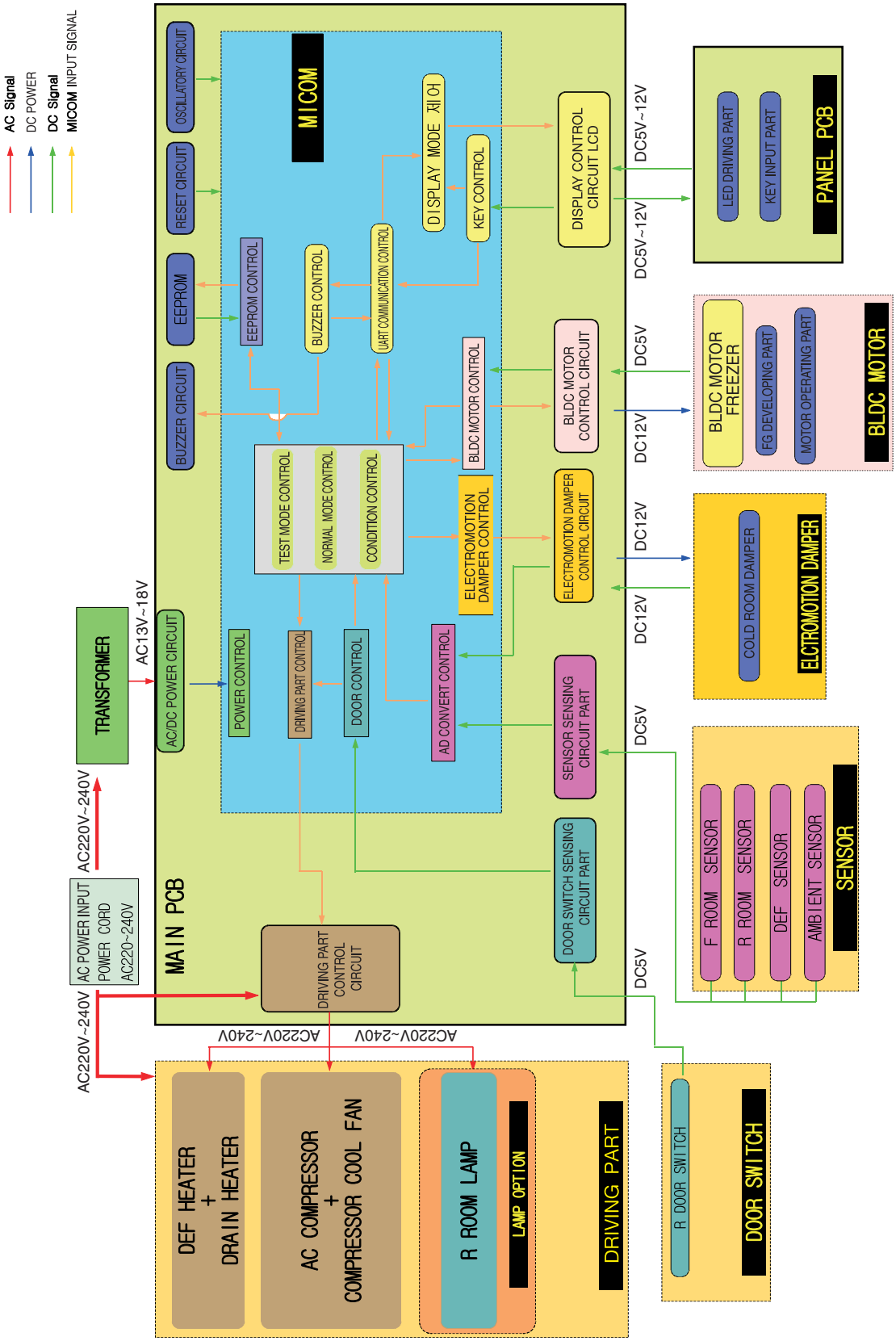
CIRCUIT DIAGRAM

8-1-2) RL44/41F***(LCD Display + AC Motor)-BULB TYPE



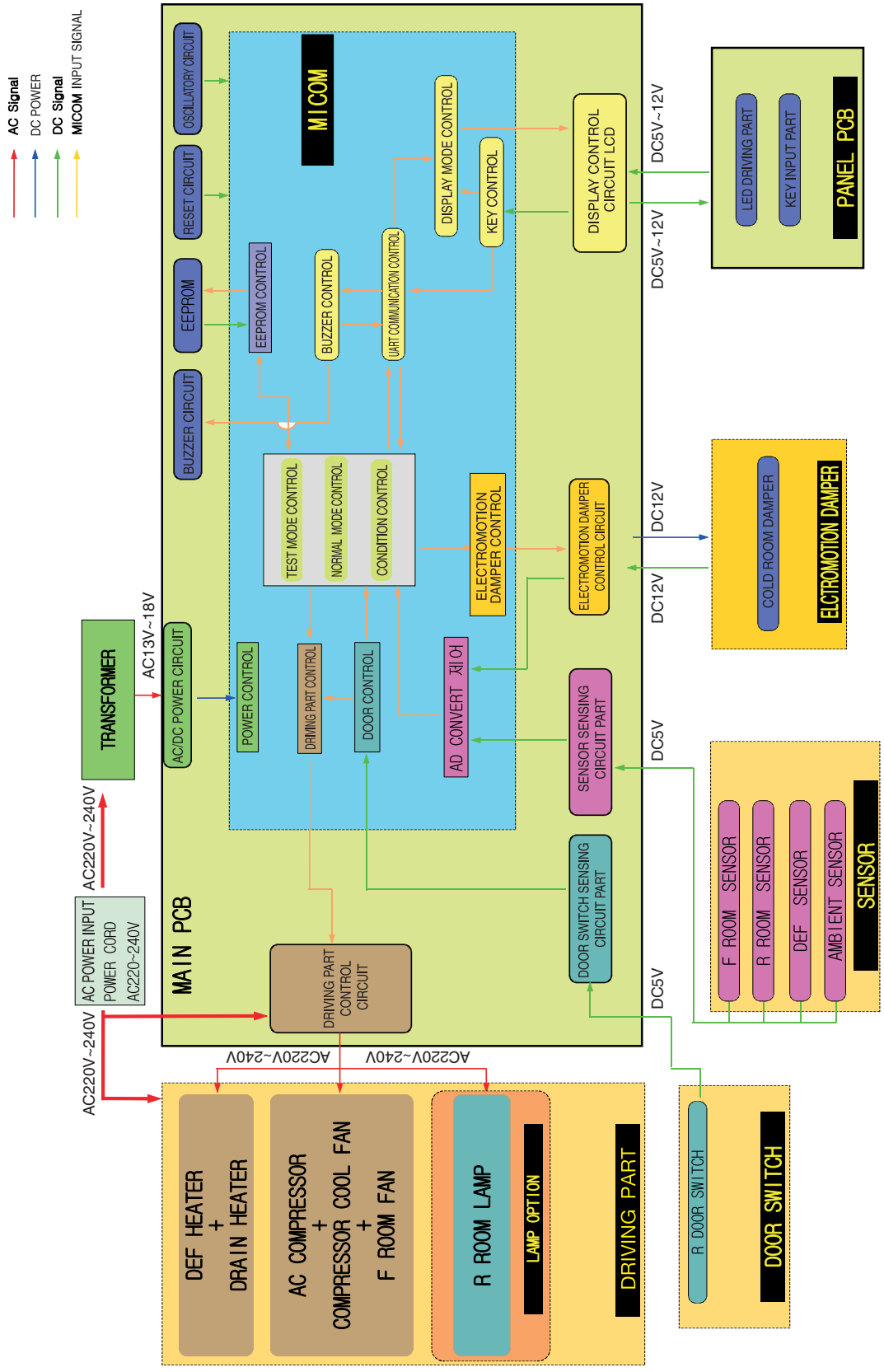
CIRCUIT DIAGRAM

8-1-3) RL41/38H,44/41P***(LED Display + BLDC Motor)-BULB TYPE



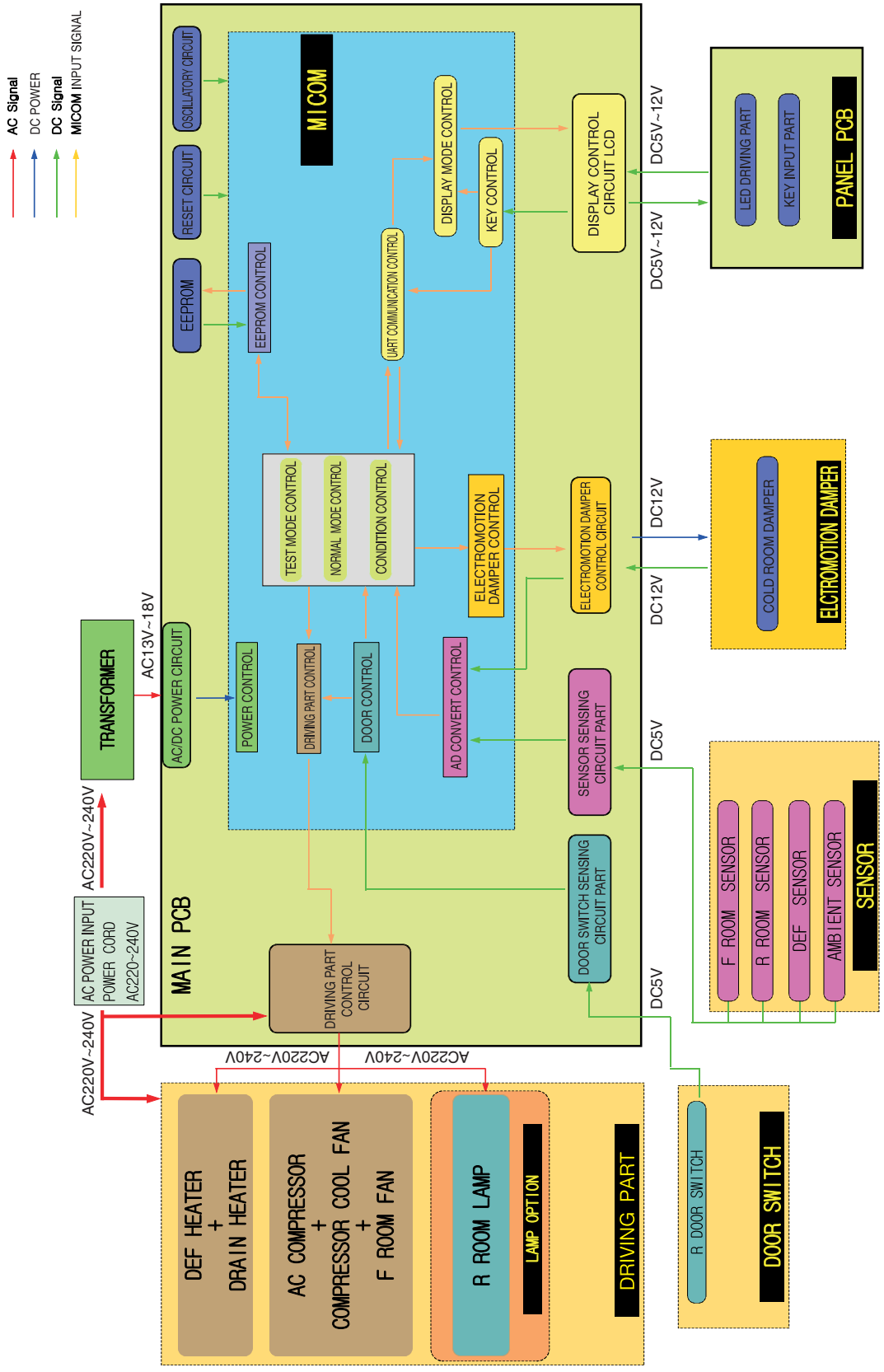
CIRCUIT DIAGRAM

8-1-4) RL44(41, 38)E(W)***(LED Display + AC Motor)-BULB TYPE



CIRCUIT DIAGRAM

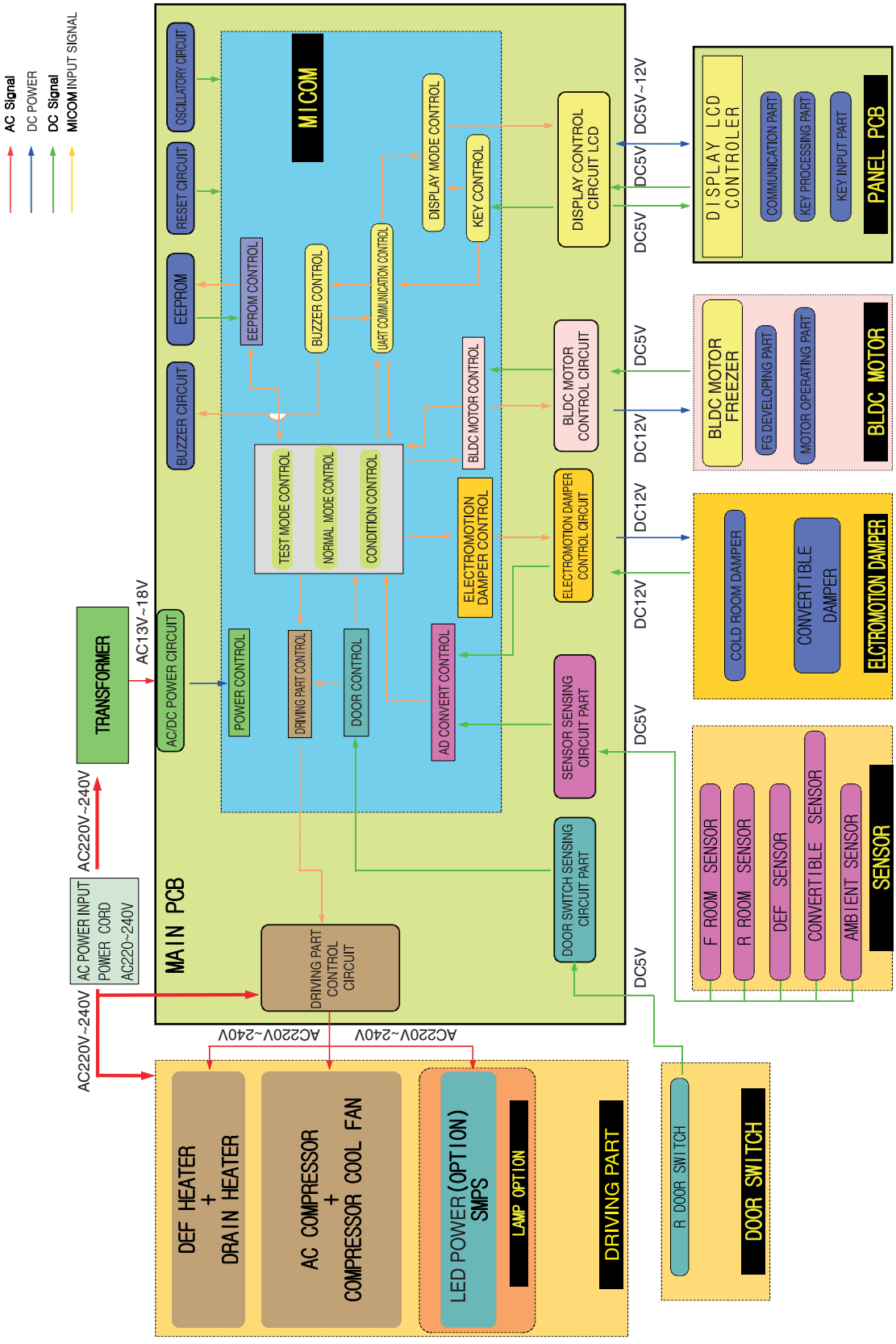
8-1-5) RL44(41, 38)S***(SEMI Display + AC Motor)-BULB TYPE



8. CIRCUIT DIAGRAM

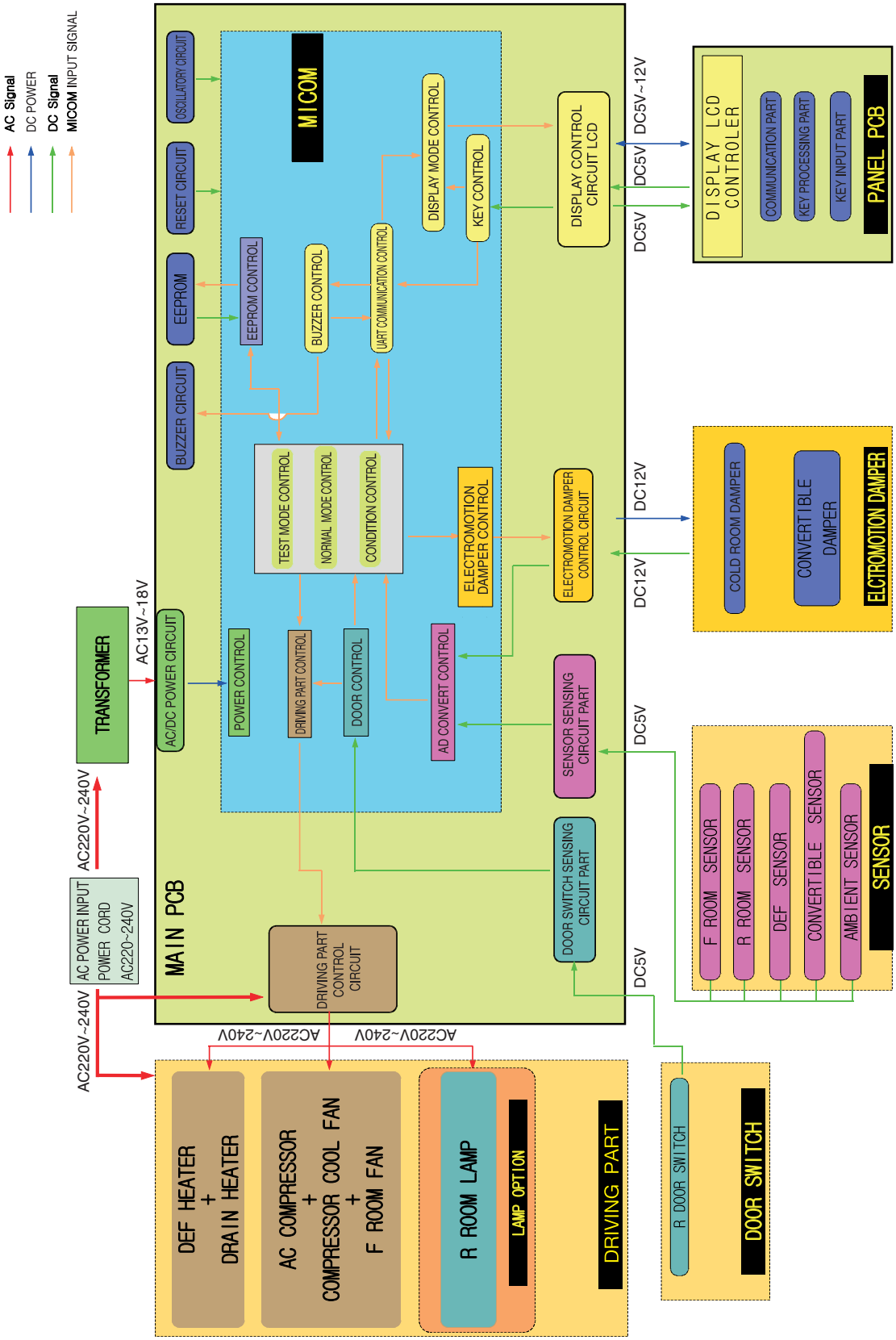
8-1) BLOCK DIAGRAM

8-1-1) RL44Q***(LCD Display +BLDC Motor)-LED TYPE



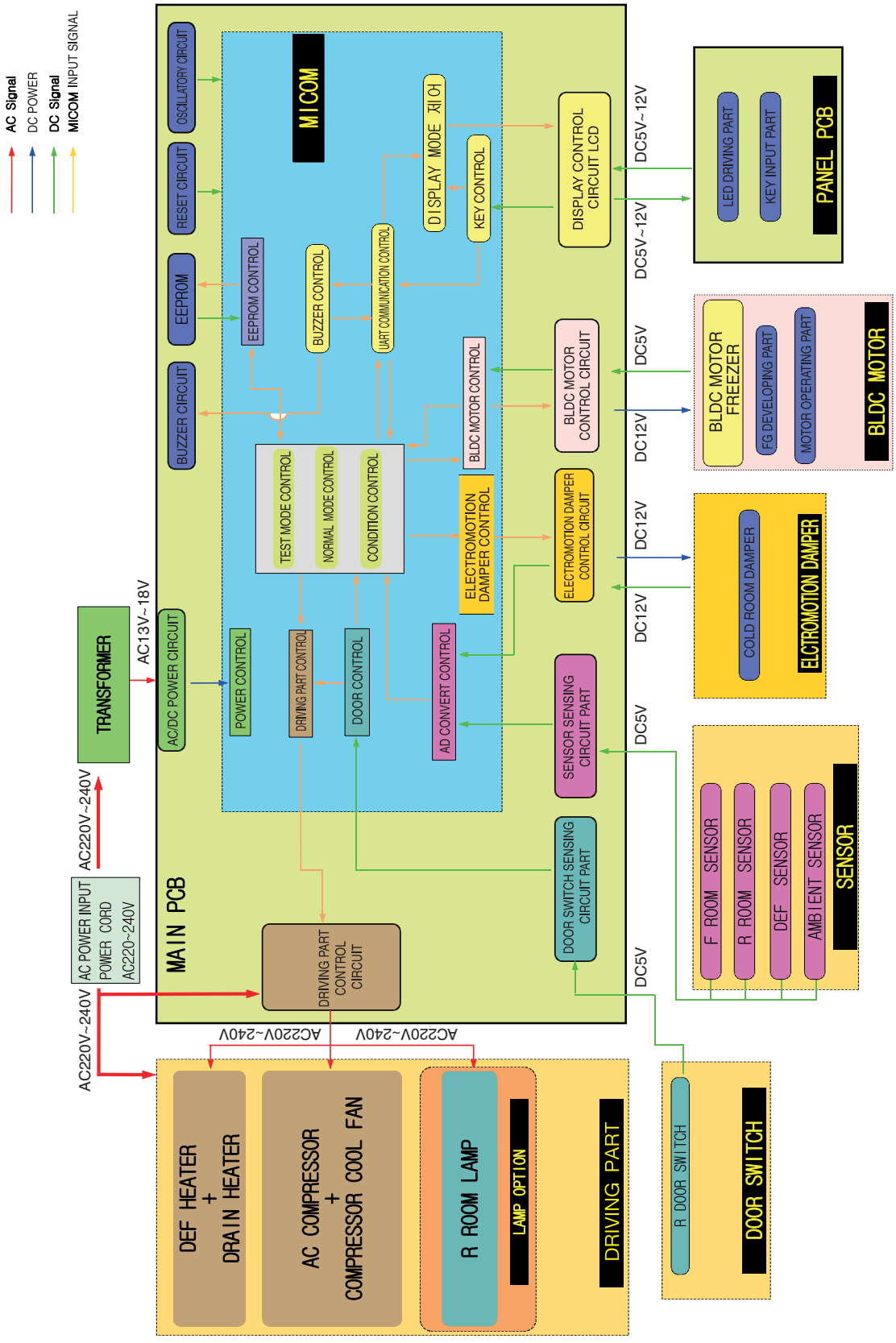
CIRCUIT DIAGRAM

8-1-2) RL44/41F***(LCD Display + AC Motor)-LED TYPE



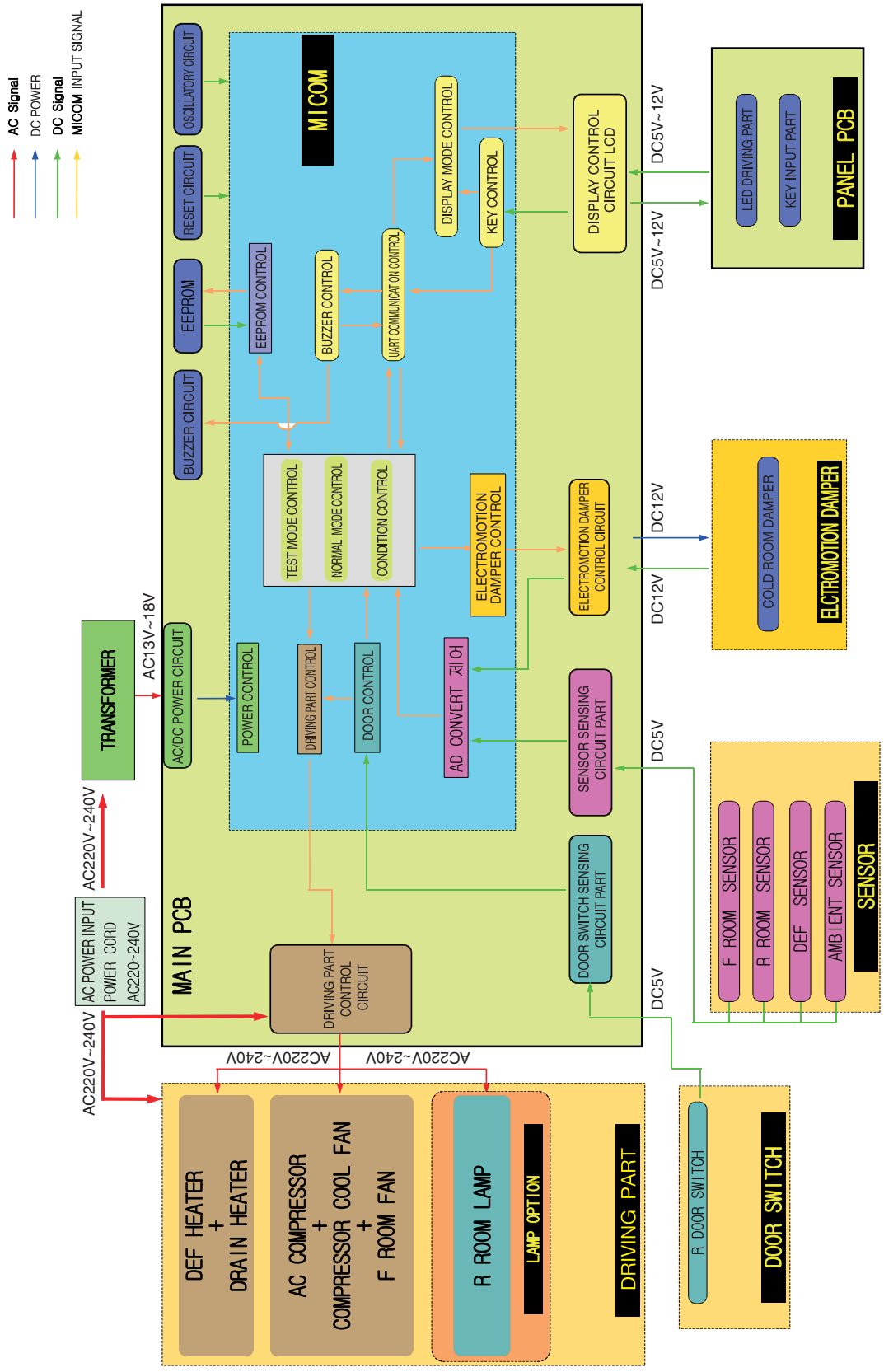
CIRCUIT DIAGRAM

8-1-3) RL41/38H,44/41P***(LED Display + BLDC Motor)-LED TYPE



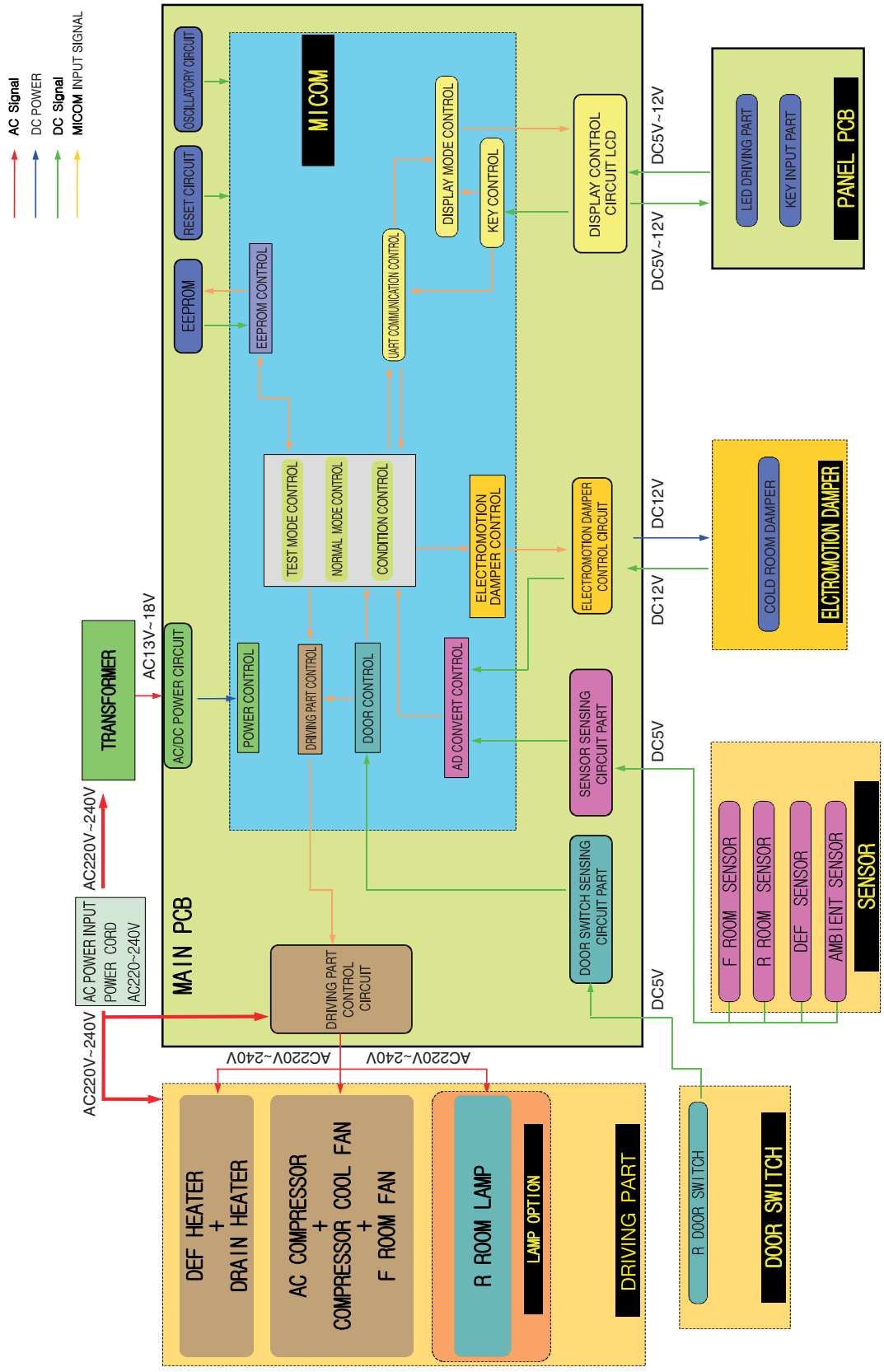
CIRCUIT DIAGRAM

8-1-4) RL44(41, 38)E(W)***(LED Display + AC Motor)-LED TYPE



CIRCUIT DIAGRAM

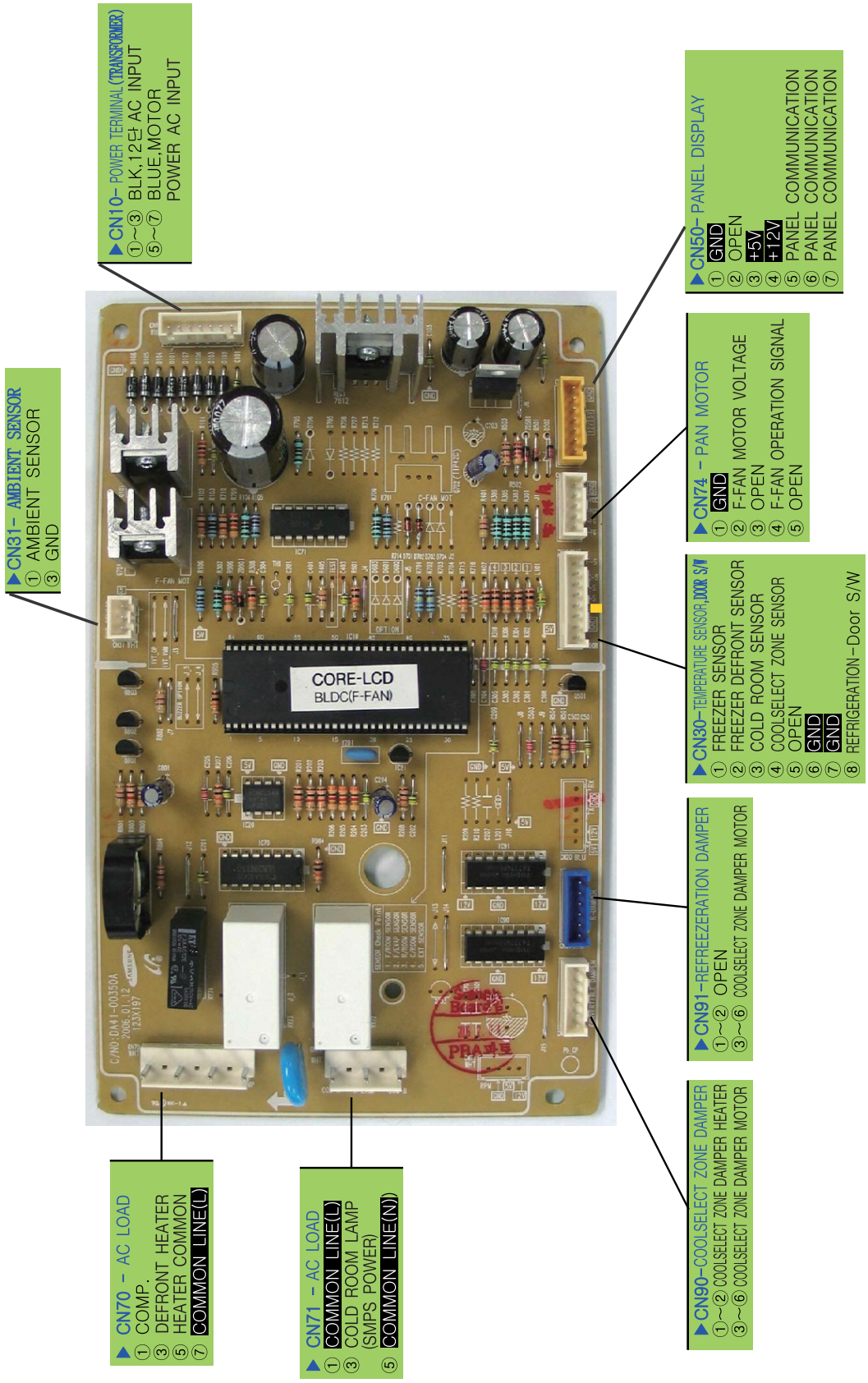
8-1-5) RL44(41, 38)S***(SEMI Display + AC Motor)-LED TYPE



CIRCUIT DIAGRAM

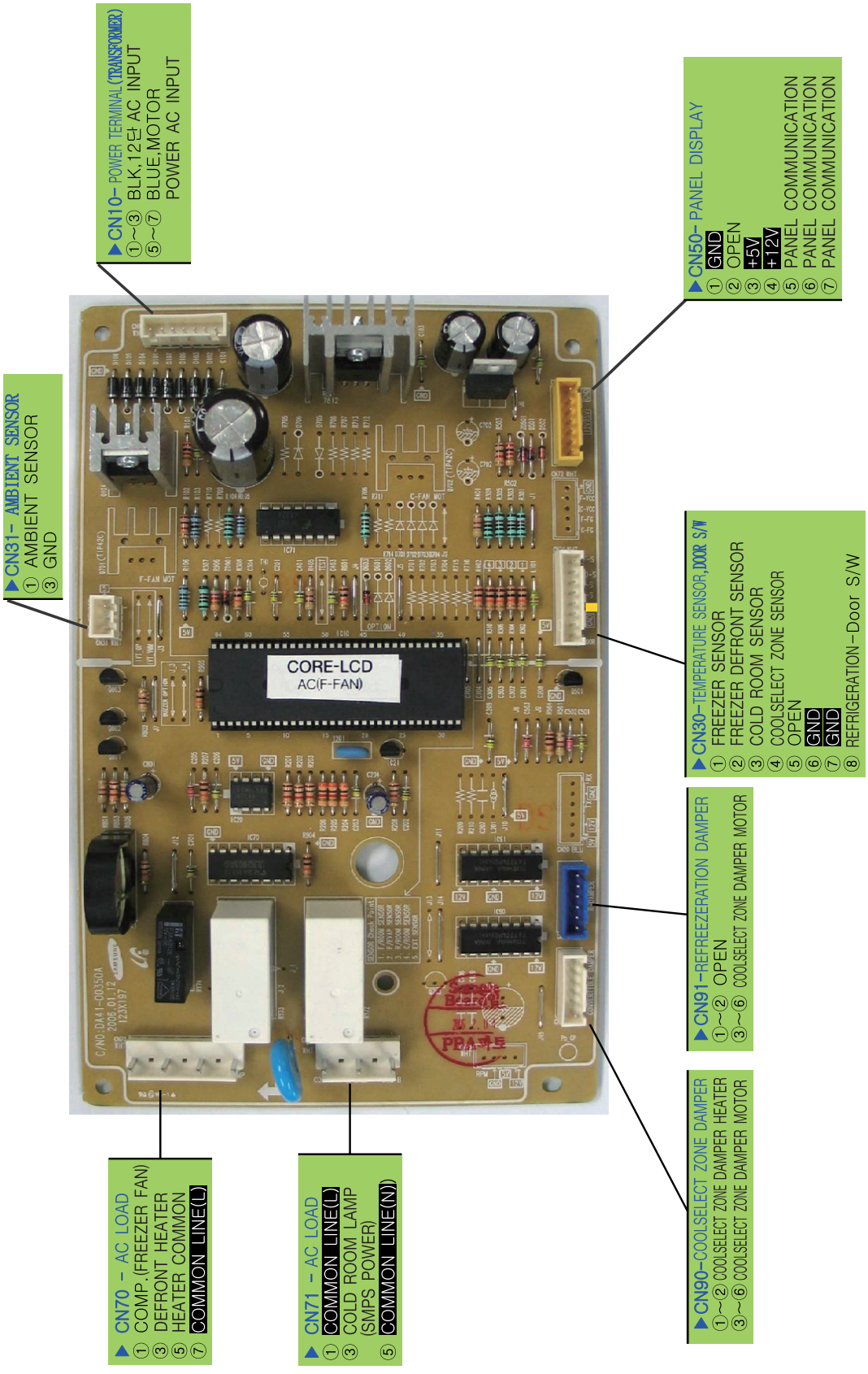
8-2) CONNECTOR ARRANGEMENT AND DETAIL EXPLANATION

8-2-1) BLOCK DIAGRAM - LCD Display + BLDC Motor



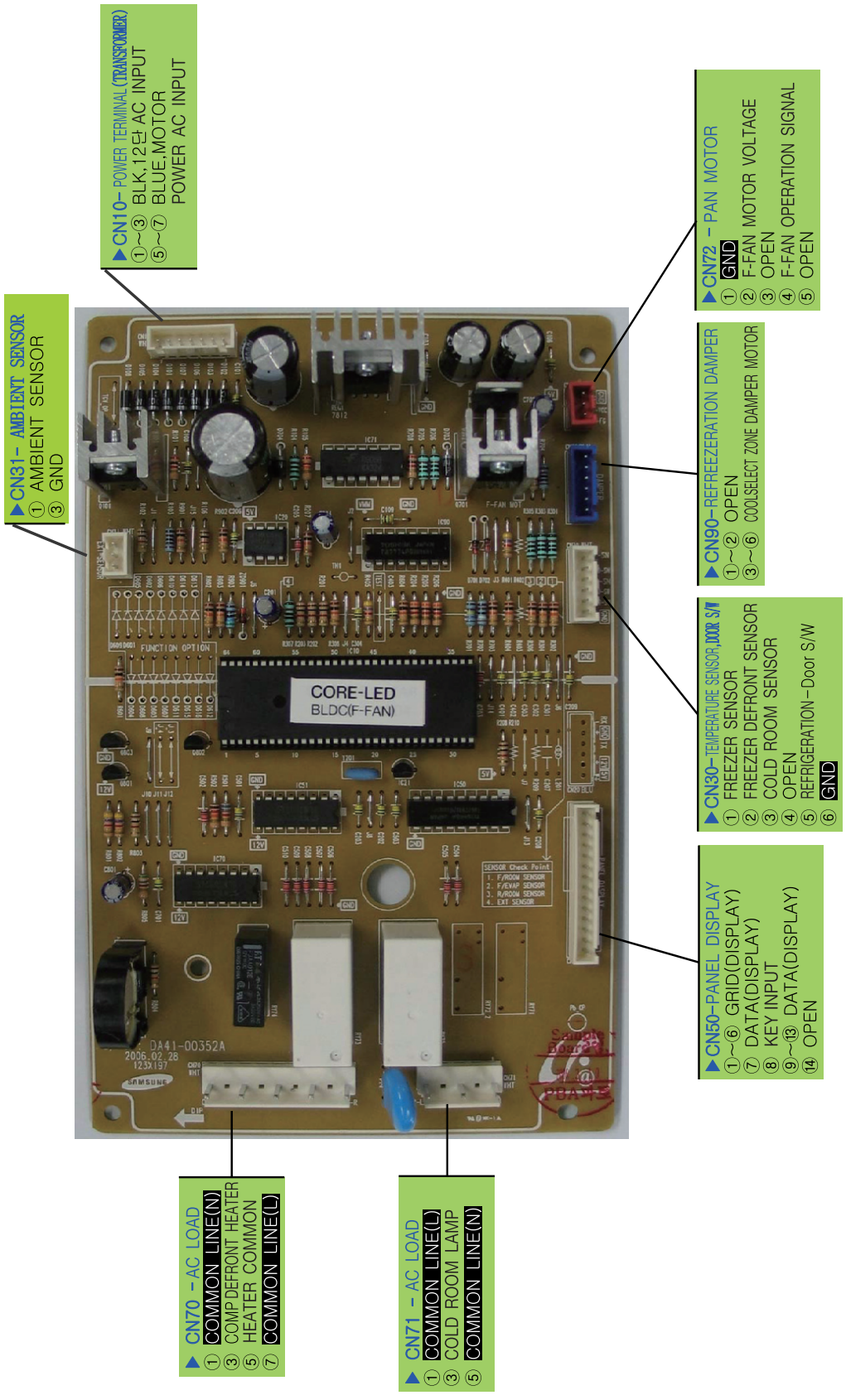
CIRCUIT DIAGRAM

8-2-2) BLOCK DIAGRAM - LCD Display + AC Motor



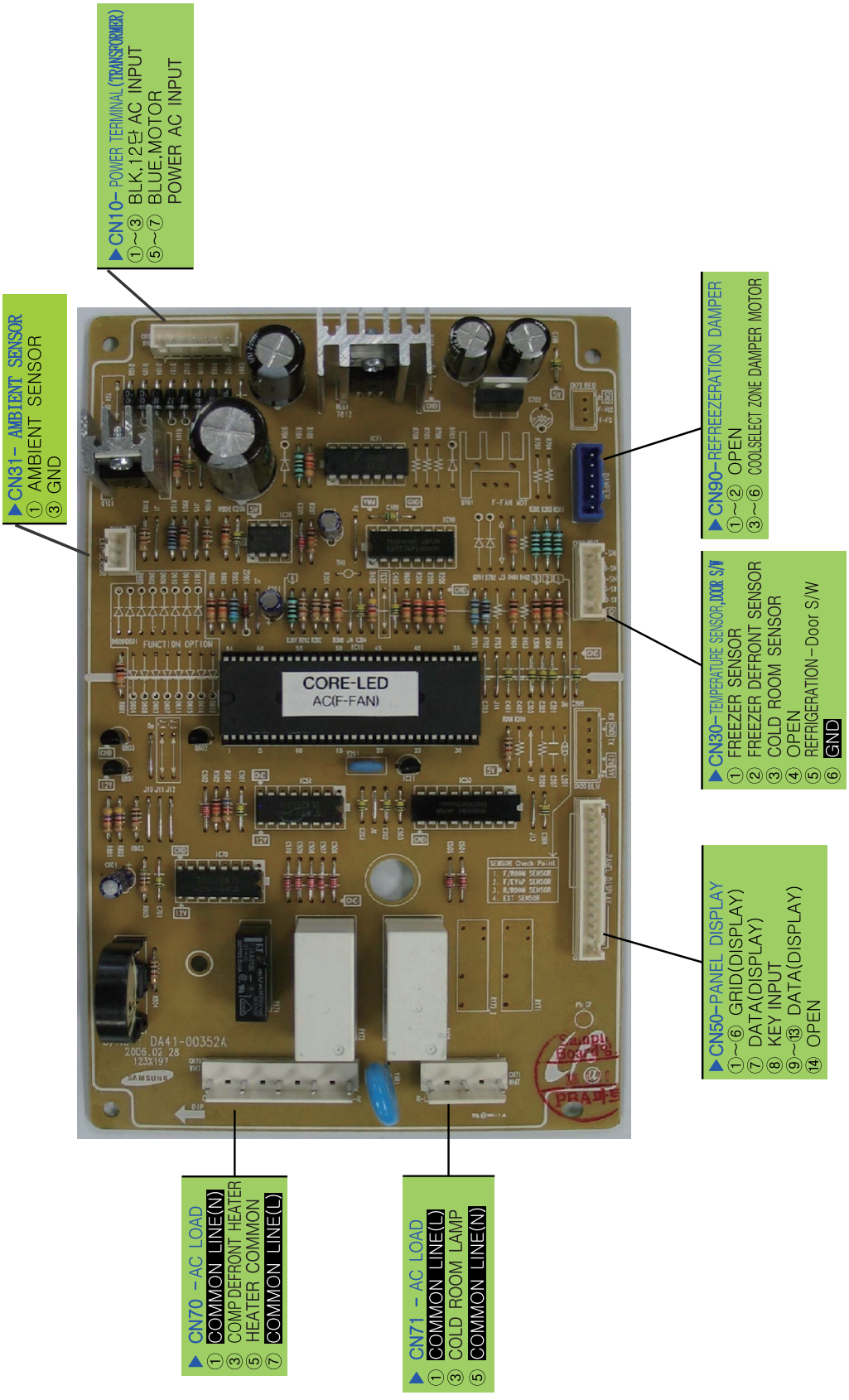
CIRCUIT DIAGRAM

8-2-3) BLOCK DIAGRAM - LED Display + BLDC Motor



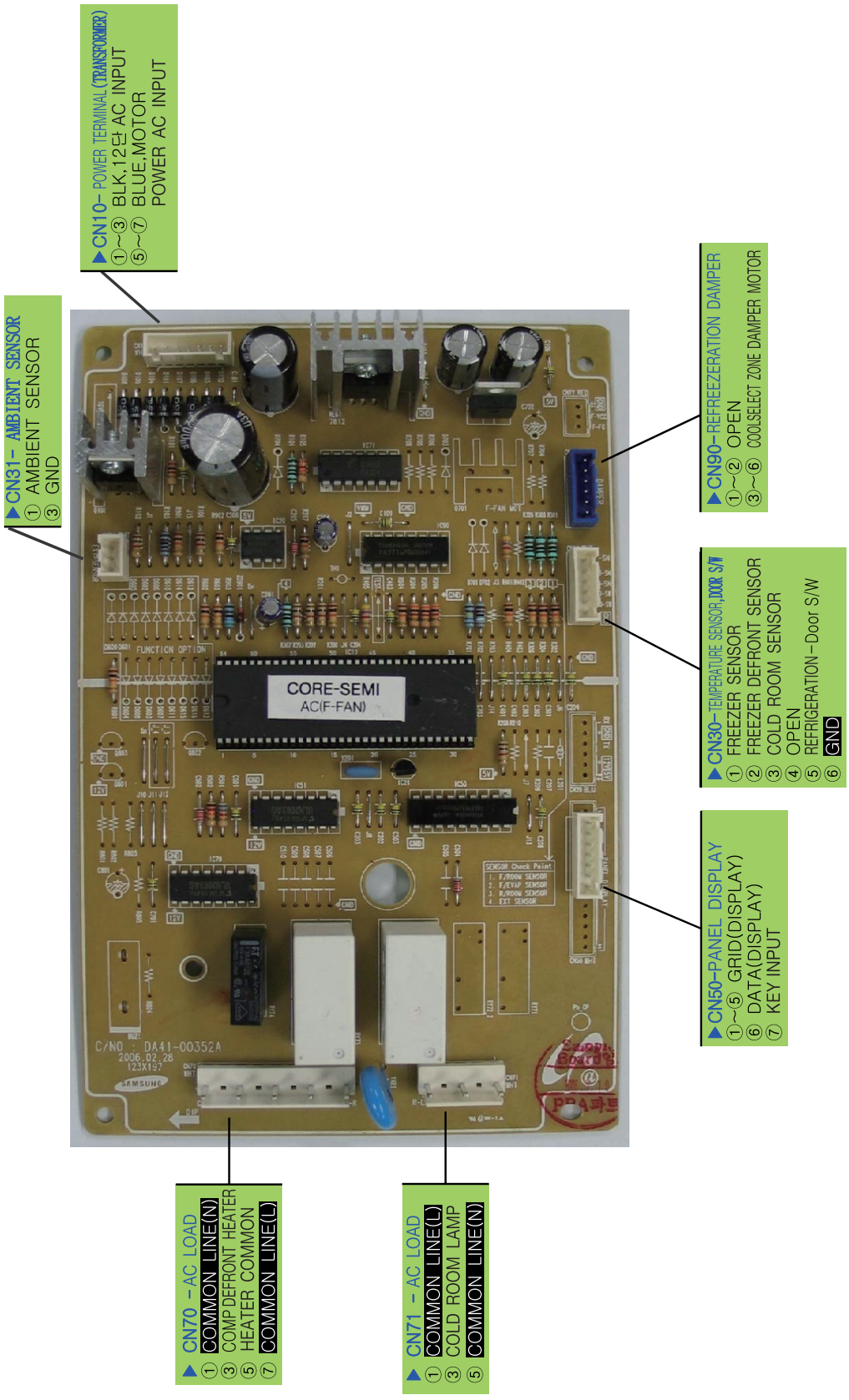
CIRCUIT DIAGRAM

8-2-4) BLOCK DIAGRAM - LED Display + AC Motor



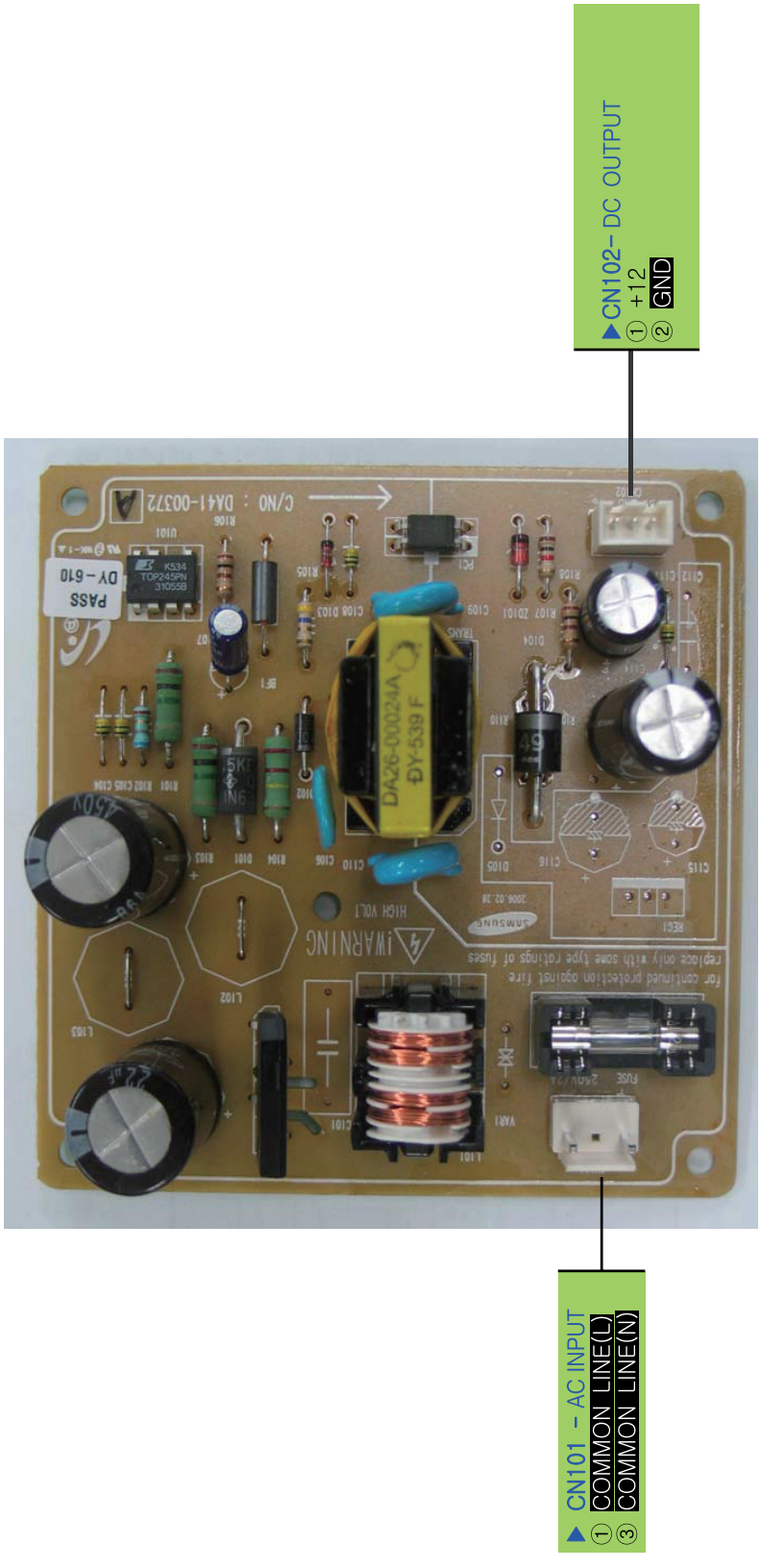
CIRCUIT DIAGRAM

8-2-5) BLOCK DIAGRAM - SEMI Display +AC Motor



CIRCUIT DIAGRAM

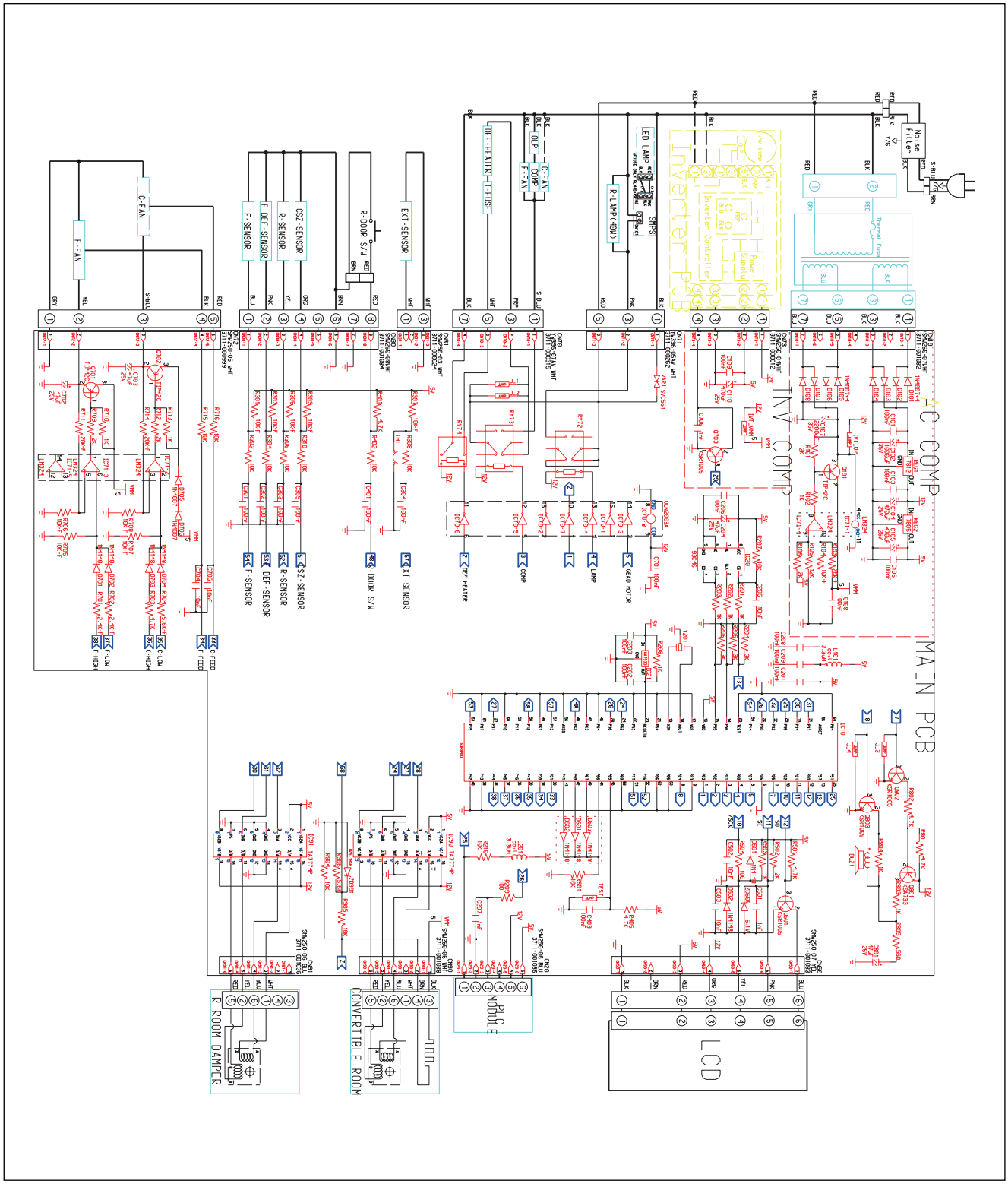
8-2-6) BLOCK DIAGRAM - PBA SMPS - LED SUB (OPTION)



CIRCUIT DIAGRAM

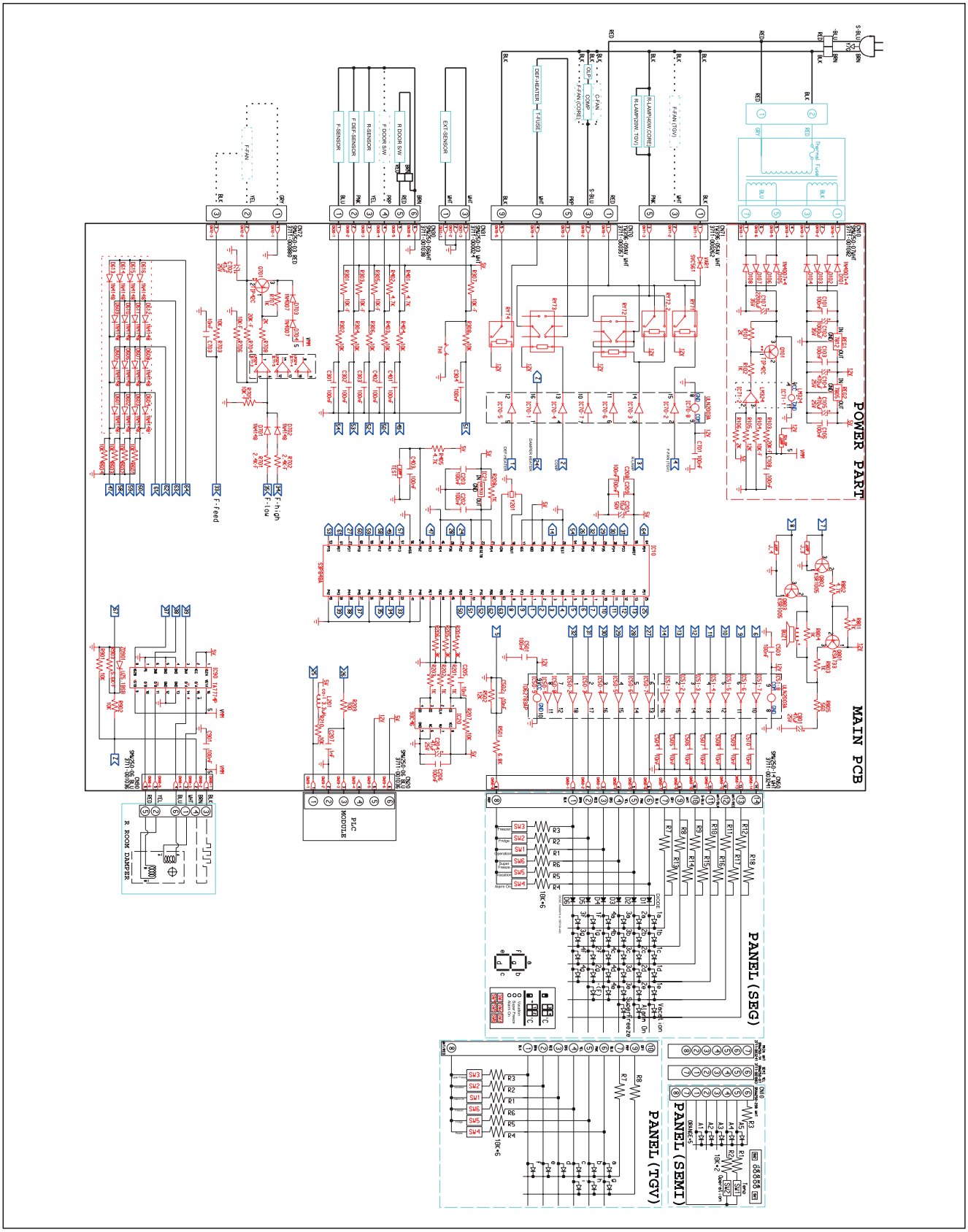
8-3) CIRCUIT DIAGRAM

8-3-1) LCD MODEL (BULB TYPE)



CIRCUIT DIAGRAM

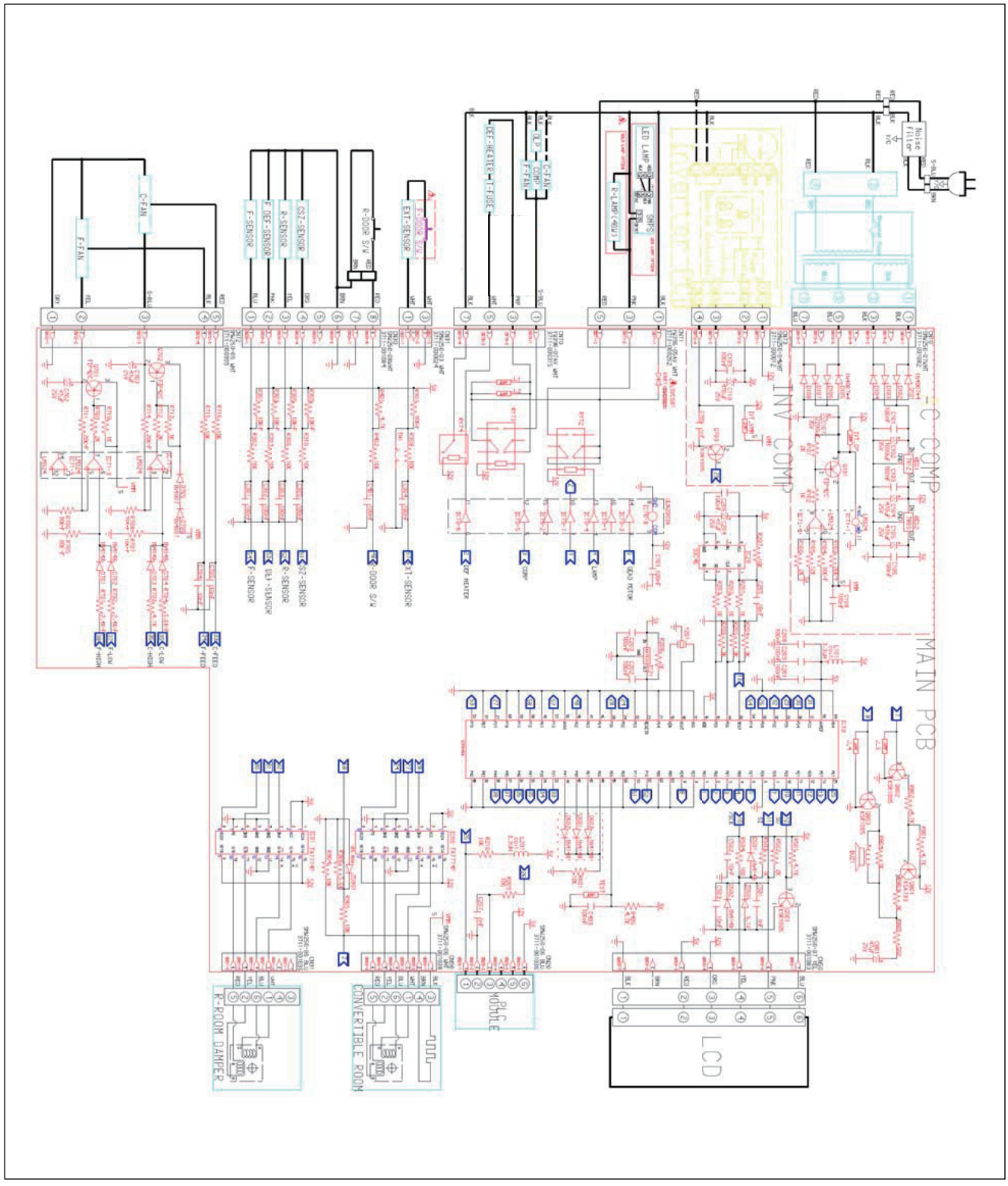
8-3-2) LED MODEL & SEMI MODEL (BULB TYPE)



CIRCUIT DIAGRAM

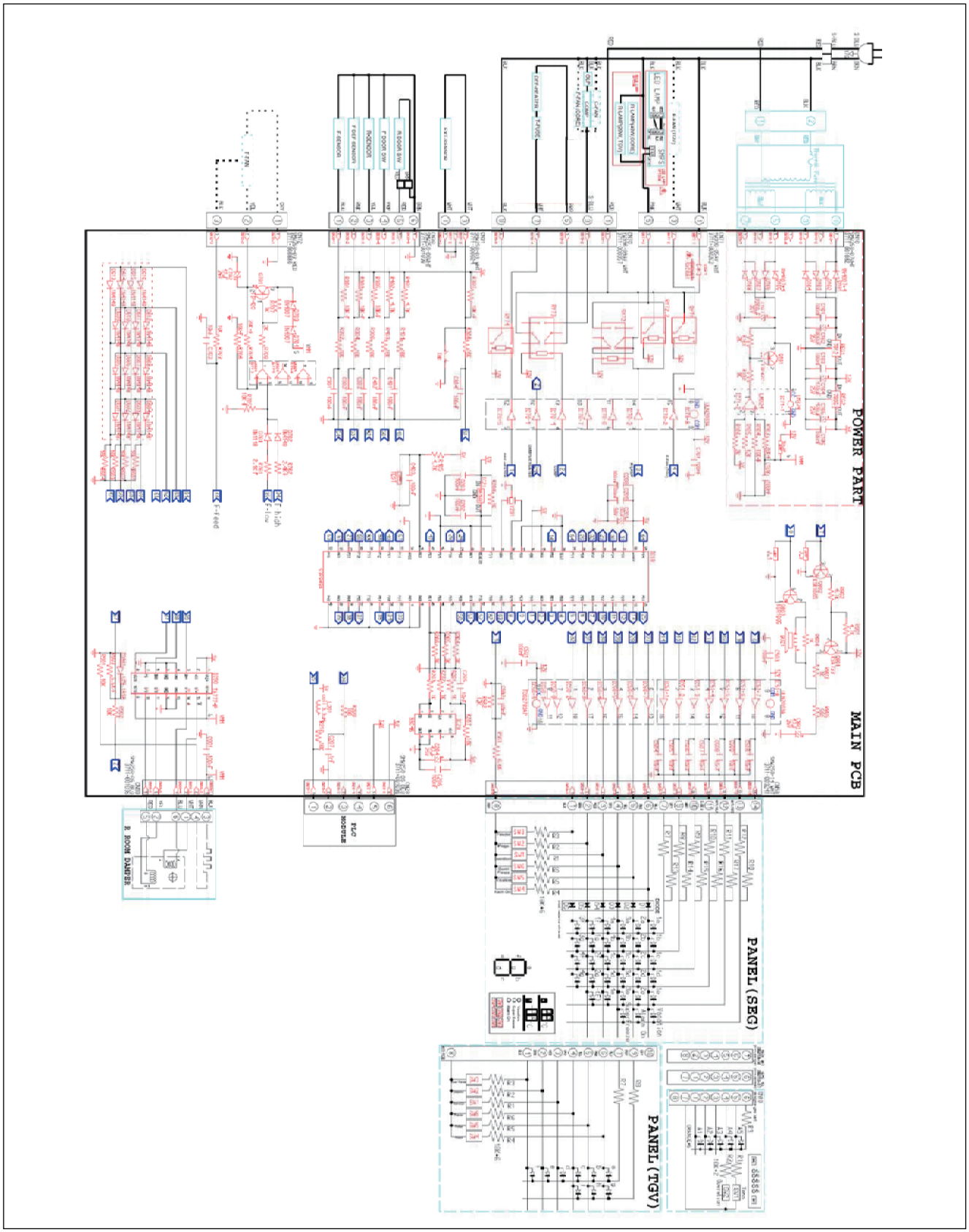
8-3) CIRCUIT DIAGRAM

8-3-1) LCD MODEL (LED TYPE)



CIRCUIT DIAGRAM

8-3-2) LED MODEL & SEMI MODEL (LED TYPE)



9. REFERENCE INFORMATION

9-1. REFRIGERATION CYCLE 162

9-2. FUNCTION & FEATURE 163

9-3. CIRCUIT DESCRIPTION 177

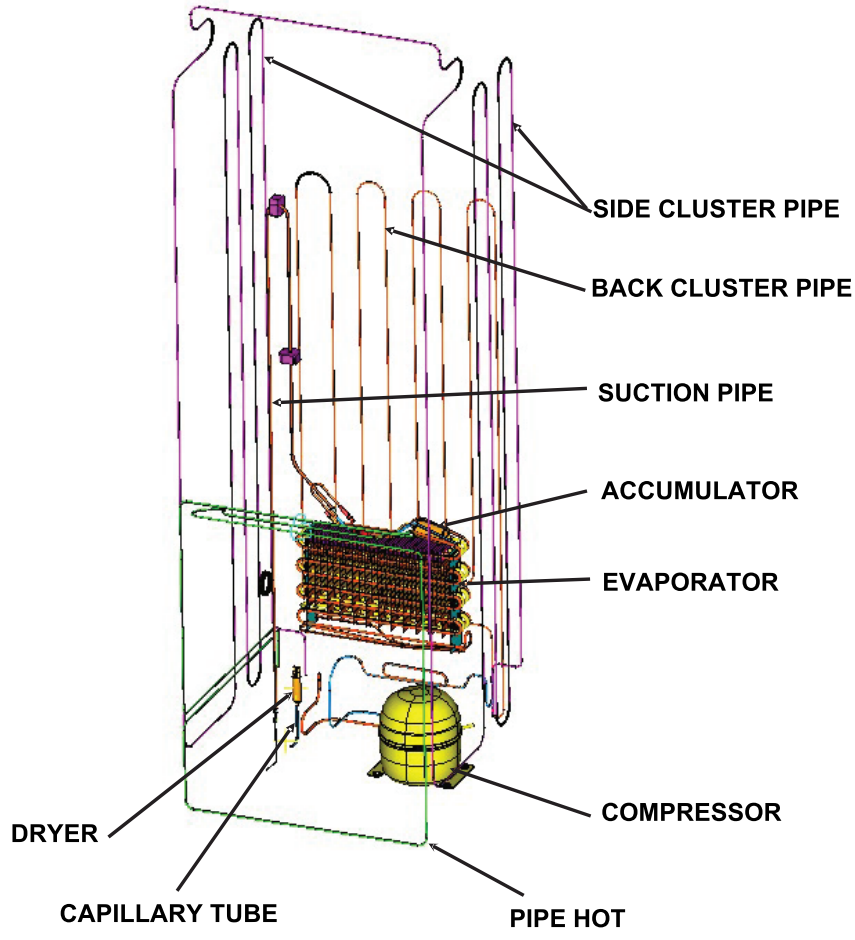
9-4. NOMENCLATURE 202

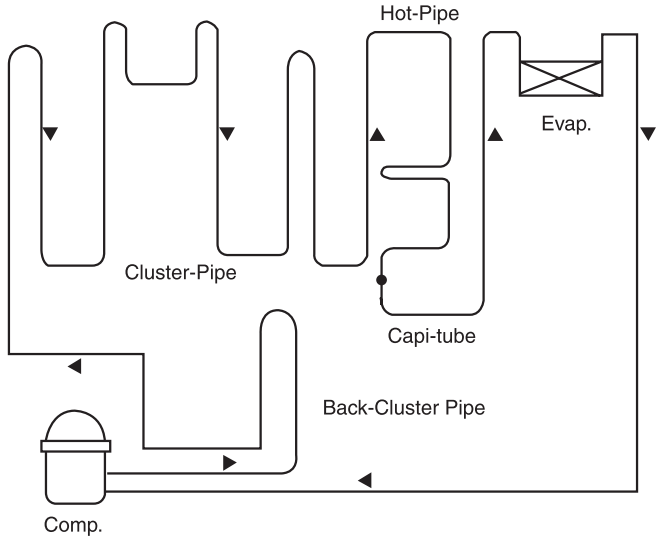
REFERENCE INFORMATION

9-1 Refrigeration Cycle

[Refrigerant cycle]

Compressor → (Back cluster) → Side cluster → Freezer Hot pipe → Dryer → Capillary tube → Freezer Evaporator → Suction pipe → Compressor





Note:

- No hot pipe for refrigerator
- For A grade model, back cluster pipe is not applied

REFERENCE INFORMATION

9-2-1 Function & Feature (LCD Model)

9-2-1-1) Display Design

Control Panel (LCD)Back-Light Illumination

1) Full Illumination (The Back-Light glows bright in the following conditions for 30 seconds)
   - When the unit is plugged into power
   - When any one of the control panel buttons is pressed
   - When opening any one of the Freezer doors
   - When the Power-Off function is released with the Operation button being pressed for 3 seconds

2) Half Illumination (The Back-Light glows dim in the following conditions)
   - In 30 seconds since the unit is plugged into power
   - In 30 seconds since any one of the doors (Fridge) is closed
   - When there is no button push after a button is pressed

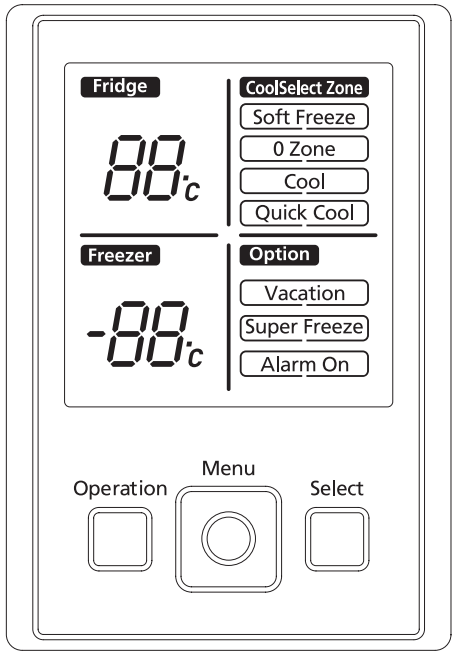
3) Back-Light Off
   - When the Power-Off function is selected with the Operation button being pressed for 3 seconds

** Black linear lines can be noticed on LCD. It is due to a mixture of static electricity and LCD characteristics.It goes away as time passes (not a fault).
(i.e. when brushing the LCD panel with a dry cloth or when operating the buttons under dry condition)

REFERENCE INFORMATION

Control Panel Button Selection

1) Press the Menu button repeatedly to select a compartment or the functions in the Option.
   A compartment or the functions in the Option can be selected as follows.
   -. Each time the Menu button is pressed,it will be selected in a sequence below, and the unit is ready to be customized.
   Freezer → Fridge → CoolSelect Zone → Vacation → Super Freeze → AlarmON → Freezer → Repeating
   -. When a compartment or the functions in the Option is selected, each one's sub-function part blinks (i.e. 7-segments with Fridge).
   But, if there is no button press within 5 seconds after the first step selection
   (i.e. Fridge, Freezer, etc), it will stop blinking.



2) After the first step selection, it can be set in detail with the Select button
   (i.e. Soft Freeze, 0 Zone, etc and Fridge / Freezer temperatures).

9-2-1-2) Temperature Control

1) Freezer Temperature Setting

1-1) When the unit is plugged into power, the Freezer and the Fridge compartments are to be set to -20 °C and 3 °C respectively.
At this time, the Fridge temperature showing on the display panel indicates its target temperature to reach. So, as its inside temperature goes down, the display temperature goes down until it gets down to its setting temperature. After this, it shows only the setting temperature.
(Temperature range to be set:Freezer Room (30 °C~-35 °C), Fridge Room (30 °C~-9 °C))

1-2) To set the Freezer temperature, press the Menu button and select the Freezer section.
Then, its temperature can be set to -14°C ~ -25°C with the Select button in the following order.

→ -20 °C → -21 °C..... → -25 °C → -14 °C → -15 °C → -16 °C... ↩

The temperature will circulate for selection.

2) Fridge Temperature Setting

2-1) To set the Fridge temperature, press the Menu button and select the Fridge section.
Then, its temperature can be set to 7 °C ~ 1 °C with the Select button in the following order.

Example : → 3 °C → 2 °C → 1 °C → 7 °C → 6 °C → 5 °C → 4 °C ↩

2-2) The Freezer / Fridge setting temperatures may show a little difference depending on the amount of food stocked inside and the ambient temperature. (When food is stored too close to the temperature sensors inside, it could cause inaccurate temperature sensing and result in insufficient or excessive cooling. So, make sure that the food is not placed too close the sensors.)

NOTE When there is a power failure, EEPROM stores its temperature setting. So, when the power comes back,it reads its Freezer temperature. And, when the Freezer temperature is lower than 5 °C, MICOM considers it as an instant power failure and displays the stored temperature settings.

9-2-1-3) Super Freeze &Vacation Function

1) Supper Freeze Function

1-1) To activate or deactivate, select the Super Freeze by pressing the Menu button and press the Select button.
When 'Super Freeze' is selected, its Indicator lamp lights up immediately but it starts operating in 10 sec.

1-2) When Super Freeze is selected, Compressor & Freezer Fan operates continuously for 2 and a half hours.

1-3) During Super Freeze, the Fridge compartment continues its previous operation.

1-4) After the termination of Super Freeze, its indicator lamp goes off automatically and the Freezer compartment operates according to the set temp.

1-5) When it becomes conditions for Defrost during Super Freeze, Defrost gets delayed and it starts operating as it completes Super Freeze.
When Super Freeze is selected during Defrost, its indicator lamp lights up immediately.
But, Compressor and Freezer Fan start operating when Defrost is completed.

2) Vacation Function

2-1) Press the Menu button and set it to the Vacation selection mode.
Then, press the Select button to activate or deactivate the Vacation function.
When the Vacation function is selected, both of the Fridge and the CoolSelect Zone indicator go off.
When it is set to the Fridge temperature shifting mode and there is a new setting during the operation of the vacation function, the Vacation function stops immediately.
When the vacation function is deactivated with the Select button, the Vacation indicator lamp goes off and the Vacation function stops operating immediately.

2-2) When the Vacation function is on, it is possible to shift the Freezer temperature.

2-3) When the vacation function is on, it is not possible to control the Fridge compartment and the Fridge damper is kept being closed.

2-4) When the vacation function is on, it is also not possible to control the Cool Select Zone and the Cool Select Zone Damper is kept being closed.

3) Dual Operation of Super Freeze &Vacation Functions

3-1) Each function operates independently. So, for the Super Freeze function, Compressor. and Freezer Fan (Freezer Fan)runs without stopping and for the Vacation function, both of the Fridge and the Cool Select Zone dampers are kept being closed.

4) Upon Initial Power-On

4-1) When the Freezer and the Fridge temperatures are higher than -10 °C and +10 °C respectively upon the initial power-on, the Super Freeze function shows a different operating pattern than the above.

4-2) At this time, when the Super Freeze function is selected, the Fridge Damper gets closed.
It happens only once at the initial power-on.

4-3) It is to expedite the cooling of a desired room when the temperature inside the unit is high and

9-2-1-4) Power OFF Function

- When the Operation button on the control panel is held down for 3 seconds, the panel backlight goes off.
  During the Power OFF function, all of the buttons but the Operation button do not work.
  -. When the Power OFF is on, the compressor, the Freezer fan, the Fridge lamps, heaters and dampers do not work.
- Press the Operation button for 3 seconds to turn off the Power OFF function. Then, the panel backlight lights back on again and all the buttons work normally.
  When the Power OFF function is released, the compressor and other components runs according to the status of the refrigerator. In other words, all of the components go back into their normal operational statuses.
  -. Use only if it is necessary.It can trigger non-sense calls from the customers.
  So, make sure it is not a problem.

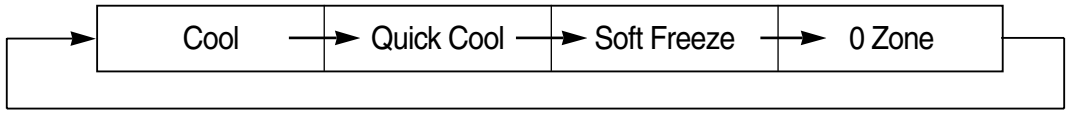
9-2-1-5) Alarm ON Function

- When the Freezer temperature is higher than 5 °C at the initial power on, the Alarm On lamp lights up and it is automatically set to the Alarm On mode to be triggered by the Fridge door open.
- After it is set to the Alarm selection mode by pressing the Menu button, the Alarm function can be activated and deactivated with the Select button.
- When the Alarm ON function is cancelled, the Alarm ON indicator lamp goes off.
  -. With the Alarm ON function deactivated, the alarm does not go off even under alarm triggering conditions by the door open duration.

9-2-1-6) Cool Select Zone Function

1) At the initial power on, the default setting of Cool Select Zone is Cool.

2) With the Cool Select Zone setting button, it can be set in the following order.



3) After it is set to the Cool Select Zone setting mode, the above sub-settings are to be selected with the Select button.

4) The Cool Select Zone operates as follows.

Classification	Description	Remark
Cool	Cool Select Zone runs at 2 °C	
0 Zone	Cool Select Zone runs at 0 °C	
Soft Freeze	Cool Select Zone runsat -5 °C	
Quick Cool	- The Cool Select Zone damper is kept being open for an hour. - After the 1-hour operation, it is set to Cool automatically.	

9-2-1-7) Defrosting function

1) Freezer defrost will be determined by the accumulated Compressor-On time.
2) With the initial power on, the unit carries out Freezer defrost when the accumulated Compressor-On times becomes 6 hours.
3) The defrost cycle varies from 6 to 19 hours.
4) The defrost cycle is to be decided depending on the ambient temperature, the number of the Fridge door openings and the duration of the Fridge door opening.

NO of Fridge Door Opening	Ambient Temp			Remark
	28 °C ↑	27°C ↓ ~ 23C ↑	22°C ↓	
	6 hrs	6 hrs	6 hrs	
Fridge : More than once	6 hrs	11 hrs	6 hrs	
Normal Load without Door Opening	Defrost without Delay	Defrost without Delay	Defrost without Delay	Minimum real time 5 hours Execute defrosting

Table 2-6. Defrost Cycle

5) It carries out the Precooling function when it becomes a time for defrosting with the ambient temperature of 18 °C or less.
   -. With the Precooling function, it does the heating after running the compressor and the Freezer Fan for 50 minutes.
6) Under the following multiple conditions, the defrost cycle will be set to 19Hr.
   -. No Fridge Door opening with the Ambient temperature range of 23 ~27 °C.
   -. The Fridge temperature does not exceed Trset_on+6 °C when the compressor starts running.
   -. The Freezer temperature does not exceed Trset_on+4 °C.
7) The D-Heater Off temperatures are as follows.

Classification	Freezer room	Remarks
General Defrost Conditions	15°C	
Defrost Mode	15°C	For A/S

NOTE The Defrost Off temperature can be changed for the purpose of performance enhancement without a notice.

9-2-1-8) Alarm Function

1) Button Touch Tone (Refer to Sound Table)

1-1) When the control panel buttons are pressed, it sends out touch tones as follows.

Classification	Sound Group	Tone Pattern
When selecting Super Freeze, Vacation and Alarm On	SUB ON (Selection)	▬▪▬
When cancelling Super Freeze, Vacation and Alarm ON	SUB OFF (Cancellation)	▬▪▬
When selecting Cool Select Zone functions	MODE (Function selecting tone "Ding")	▬
When setting the Fridge & the Freezer temperatures	VERTICAL (Temp Setting)	▬▪
When a door keeps being open	ALERT (Warning)	▬▬

1-2) When more than 2 or an inaccurate combination of buttons are pressed, it does not send out the above operational tones.

2) Door-Open Alarm Sound

2-1) When the Fridge door is kept being open for 2 minutes, it sends out alarm sounds 10 times.
2-2) After the above, it sends out alarm sounds for 10 times with a one-minute cycle if the door is not being closed.
2-3) It stops alarming immediately when the Fridge door is closed.

9-2-1-9) Communication Error Display Function

1) Indicating Communication Error between Display Panel ↔ MICOM

1-1) When there is no replying signal from MICOM on the panel PCB for 10 seconds after it has got a communication request, the entire display panel blinks until the Communication Error is wiped out (0.5 sec On &0.5 sec Off). But, "Pc-Er" lights up on the display panel for the Communication Error.

REFERENCE INFORMATION

9-2-2 Function & Feature (LED Model)

9-2-2-1) Display Design

KEY OPERATION

- **Operation**
- **Fridge**
- **Freezer**
- **Vacation**
- **Super Freeze**
- **Alarm On**

9-2-2-2) Temperature Control

When the unit is plugged into power, the Freezer and the Fridge compartments are to be set to - 20 °C and 3 °C respectively. At this time, the Fridge temperature showing on the display panel indicates its target temperature to reach. So, as its inside temperature goes down, the display temperature goes down until it gets down to its setting temperature. After this, it shows only the setting temperature. (Temperature range to be set : Freezer Room (30 °C ~ -35 °C), Fridge Room (30 °C ~ -9 °C))

1) Freezer Temperature Setting

1-2) To set the Freezer temperature, press the Menu button and select the Freezer section. Then, its temperature can be set to -14 °C ~ -25 with the Select button in the following order.

→ -20 °C → -21 °C..... → -25 °C → -14 °C → -15 °C → -16 °C...

2) Fridge Temperature Setting

2-1) To set the Fridge temperature, press the Menu button and select the Fridge section. Then, its temperature can be set to 7 °C ~1 °C with the Select button in the following order.

Ex : → 3 °C → 2 °C → 1 °C → 7 °C → 6 °C → 5 °C → 4 °C

2-2) The Freezer / Fridge setting temperatures may show a little difference depending on the amount of food stocked inside and the ambient temperature. (When food is stored too close to the temperature sensors inside, it could cause inaccurate temperature sensing and result in insufficient or excessive cooling. So, make sure that the food is not placed too close the sensors.)

NOTE When there is a power failure, EEPROM stores its temperature setting. So, when the power comes back, it reads its Freezer temperature.And,when the Freezer temperature is lower than 5 °C, MICOM considers it as an instant power failure and displaysthe stored temperature settings.

9-2-2-3) Super Freeze &Vacation Function

1) Supper Freeze Function

1-1) When button is pressed, the LED lamp will light up.
When “Super Freeze” is selected, its Indicator lamp lights up immediately but it starts operating in 10 sec.

1-2) When Super Freeze is selected, Compressor & Freezer Fan operates continuously for 2 and a half hours.

1-3) During Super Freeze, the Fridge compartment continues its previous operation.

1-4) After the termination of Super Freeze, its indicator lamp goes off automatically and the Freezer compartment operates according to the set temp.

1-5) When it becomes conditions for Defrost during Super Freeze, Defrost gets delayed and it starts operating as it completes Super Freeze.
When Super Freeze is selected during Defrost,its indicator lamp lights up immediately.
But, Compressor and Freezer Fan start operating when Defrost is completed.

2) Vacation Function

2-1) When button is pressed, the LED lamp will light up.
When the Vacation function is selected, the Fridge display will be off.
When setting the Fridge temperature, the Vacation function will stop immediately.
When the Vacation button is being pressed during the Vacation function, the LED lamp and the Vacation function will be off.

2-2) When the Vacation function is on, it is possible to shift the Freezer temperature.

2-3) When the vacation function is on, it is not possible to control the Fridge compartment and the Fridge damper is kept being closed.

3) Dual Operation of Super Freeze & Vacation Functions

3-1) Each function operates independently. So, for the Super Freeze function, Compressor. and Freezer Fan (Freezer Fan) runs without stopping and for the Vacation function, both of the Fridge damper is kept being closed.

4) INITIAL POWER ON

4-1) When the Freezer and the Fridge temperatures are higher than -10 °C and +10 °C respectively upon the initial power-on, the Super Freeze function shows a different operating pattern than the above.

4-2) At this time, when Super Freeze is selected, R-Damper will be closed and only the Freezer will be cooled down to the set temperature (It happens only once at the initial power-on.)

4-3) It is to expedite the cooling of a desired room when the temperature inside the unit is high and the unit is plugged in for the first time.

9-2-2-4) Power Off Function

- When the Operation button on the control panel is held down for 3 seconds, the panel backlight goes off and all of the buttons except the Power Off button won't work.
  -. When the Power OFF is on, the compressor, the Freezer fan, the Fridge lamps, heaters and dampers do not work. (All load does not work)
- Press the Operation button for 3 seconds to turn off the Power OFF function. Then, the panel LED lamp comes on again and all the buttons work normally.
  When the Power OFF function is released,the compressor and other components runs according to the status of the refrigerator.In other words,all of the components go back into their normal operational statuses.
  - Use only if it is necessary.It can trigger non-sense calls from the customers.
    So, make sure it is not a problem.

9-2-2-5) Alarm On Function

- When the Freezer temperature is higher than 5 °C at the initial power on, the Alarm On LED lamp lights up and it is automatically set to the Alarm On mode to be triggered by the Fridge door open.
- With the button, the Alarm function can be activated and deactivated.
- When the Alarm ON function is cancelled, the Alarm ON indicator lamp goes off.
  -. With the Alarm ON function deactivated, the alarm does not go off even under alarm triggering conditions by the door open duration.

9-2-2-6) Defrosting function

1) Freezer defrost will be determined by the accumulated Compressor-On time.
2) With the initial power on, the unit carries out Freezer defrost when the accumulated Compressor-On times becomes 6 hours.
3) The defrost cycle varies from 6 to 19 hours.
4) The defrost cycle is to be decided depending on the ambient temperature, the number of the Fridge door openings and the duration of the Fridge door opening.

NO of Fridge Door Opening	Ambient Temp			Remark
	28 °C ↑	27°C↓ ~ 23C↑	22°C ↓	
	6 hrs	6 hrs	6 hrs	
Fridge : More than once	6 hrs	11 hrs	6 hrs	
Normal Load without Door Opening	Defrost without Delay	Defrost without Delay	Defrost without Delay	Minimum real time 5 hours Execute defrosting

Table 2-6. Defrost Cycle

5) It carries out the Precooling function when it becomes a time for defrosting with the ambient temperature of 18 °C or less.
   -. With the Precooling function, it does the heating after running the compressor and the Freezer Fan for 50 minutes.
6) Under the following multiple conditions,the defrost cycle will be set to 19Hr.
   -. No R-Door opening with the Ambient temperature range of 23 ~27 °C.
   -. The Fridge temperature does not exceed Trset_on+6 °C when the compressor starts running.
   -. The Freezer temperature does not exceed Trset_on+4 °C.
7) The D-Heater Off temperatures are as follows.

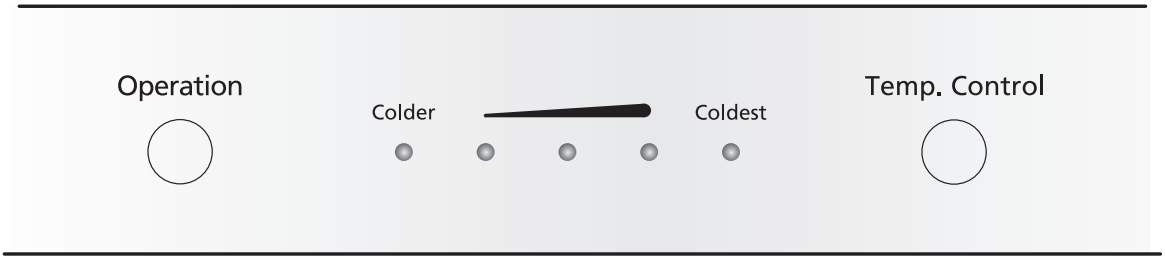
Classification	Freezer room	Remarks
General Defrost Conditions	12°C	
Defrost Mode	12°C	For A/S

NOTE The Defrost Off temperature can be changed for the purpose of performance enhancement without a notice.

REFERENCE INFORMATION

9-2-3 Function & Feature (SEMI LED Model)

9-2-3-1) Display Design



9-2-3-2) Temperature Control

When the unit is plugged into power, the Freezer and the Fridge compartments are to be set to -19 °C and 3 °C respectively. Temperature can be set with one button and it has 5 settings from Colder to Coldest. (But, when the temperature setting button is being used, the Fridge temperature moves at the same time)

1) Freezer Temperature Setting

1-2) The Freezer temperature is to be set in the following order by pressing the Temp. Control button.

(-19 °C) → (-22 °C) → Coldest (-25 °C) → Colder (-14 °C) → (-16 °C) → (-19 °C)

2) Fridge Temperature Setting

2-1) The Fridge temperature is to be set in the following order by pressing the Temp. Control button.

(3 °C) → (2 °C) → Coldest(1 °C) → Colder(7 °C) → (5 °C) → (3 °C)

2-2) The Freezer / Fridge setting temperatures may show a little difference depending on the amount of food stocked inside and the ambient temperature. (When food is stored too close to the temperature sensors inside, it could cause inaccurate temperature sensing and result in insufficient or excessive cooling. So, make sure that the food is not placed too close the sensors.)

NOTE When there is a power failure, EEPROM stores its temperature setting. So, when the power comes back, it reads its Freezer temperature. And, when the Freezer temperature is lower than 5 °C, MICOM considers it as an instant power failure and displayst he stored temperature settings.

9-2-3-3) Defrosting function

1) Freezer defrost will be determined by the accumulated Compressor-On time.
2) With the initial power on, the unit carries out Freezer defrost when the accumulated Compressor-On times becomes 6 hours.
3) The defrost cycle varies from 6 to 19 hours.
4) The defrost cycle is to be decided depending on the ambient temperature, the number of the Fridge door openings and the duration of the Fridge door opening.

NO of Fridge Door Opening	Ambient Temp			Remark
	28 °C ↑	27°C↓ ~ 23C↑	22°C ↓	
	6 hrs	6 hrs	6 hrs	
Fridge : More than once	6 hrs	11 hrs	6 hrs	
Normal Load without Door Opening	Defrost without Delay	Defrost without Delay	Defrost without Delay	Minimum real time 5 hours Execute defrosting

Table 2-6. Defrost Cycle

5) It carries out the Precooling function when it becomes a time for defrosting with the ambient temperature of 18 °C or less.
   -. With the Precooling function, it does the heating after running the compressor and the Freezer Fan for 50 minutes.
6) Under the following multiple conditions,the defrost cycle will be set to 19Hr.
   -. No R-Door opening with the Ambient temperature range of 23 ~27 °C.
   -. The Fridge temperature does not exceed Trset_on+6 °C when the compressor starts running.
   -. The Freezer temperature does not exceed Trset_on+4 °C.
7) The D-Heater Off temperatures are as follows.

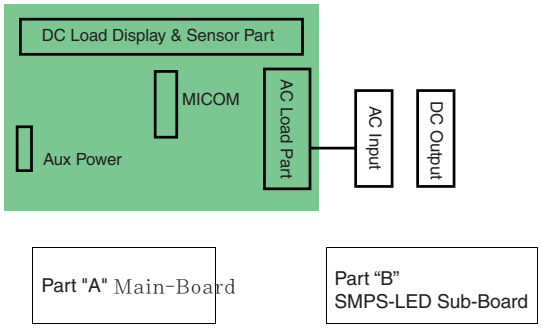
Classification	Freezer room	Remarks
General Defrost Conditions	15°C	
Defrost Mode	15°C	For A/S

NOTE The Defrost Off temperature can be changed for the purpose of performance enhancement without a notice.

REFERENCE INFORMATION

9-3-1) Circuit Description (LCD Model)

9-3-1-1) PCB ASS'Y (Control Board)

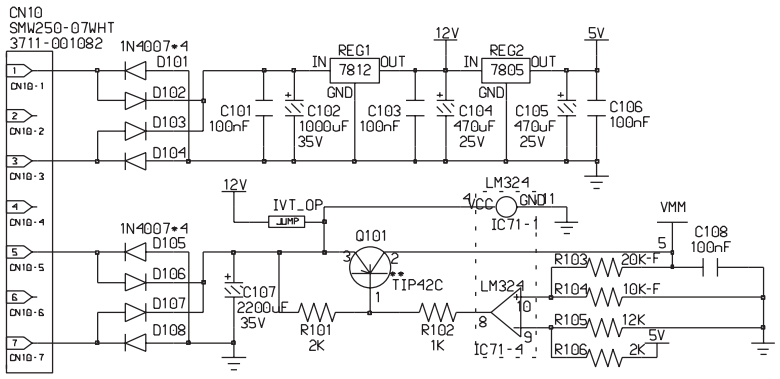


Part	Voltage	Driving Load
A Part	Input: 16,14 V/AC (Transformer) - 12VDC - 5VDC - 13.2VDC	Relay & Display, BLDC Fan Motor, Fridge & CoolSelect Zone Damper, Fridge MICOM, Sensor, Damper Heater
Part B	Input: Relay Output Output Volt: -12V/DC	LED Lamp Operation (Limited to Option LED)

1) It has two PCB ASS'Ys being controlled by a single MICOM and "B" is only for a select model to control the LED lamp.
2) Especially, "B" uses the SMPS power and when a door gets open, "A" supplies the input voltage and outputs DC +12V. (When the input is 200V/AC, rectified 300V/DC is to be used in PCB. So, it needs care to prevent electric shock.)
3) "A" controls the overall operation of the fridge as the previous MICOM.
4) "B" gets the lamp controlling signal (AC Power) and outputs +12V. (LED LAMP OPTION; Only to turn on and off the LED lamp.)
5) The fridge control MICOM controls various loads (F-FAN, R-DAMPER, CoolSelect Zone DAMPER, D-HEATER, LAMP ON/OFF, etc) and when MICOM senses an instant power failure, the five-minute COMP delay will be initiated. (When the power gets back on and the Freezer temp is lower than +5°C, it will be considered as an instant power failure, restoring all the previous settings.)
6) The default setting for the Freezer fan is the BLDC motor or the AC fan motor option. (The AC fan motor is assembled in connection with the compressor and the main MICOM does not control it separately)

※ Even though the unit is plugged out, the electrically charged condenser at "B" may cause electric shock. So, take care when handling "B". And, make sure to plug out the unit when replacing the PCB board.

9-3-1-2) Power Supplier (AC TRANSFORMER Method)

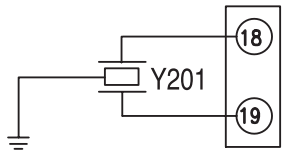


Power	Relevant Circuit
"A" 12VDC 5VDC	MICOM Peripheral Relay, Sensor Pick-Up, Display, Damper Controller (Fridge, CoolSelect Zone)
"B" 13.2DVC	BLDC Motor(F-FAN), CoolSelect Zone Damper Heater

1) On impression to power source “A”, the voltage across ①-③ of the CN10 is around 16VAC supplied from a stepped-down voltage on the secondary side of the transformer and this is rectified to DC voltage through a rectification circuit, Diode D101~D104. And then, an output of 12VDC made by REG1(7812) Regulator is supplied to the Relay, the Panel PCB, and the Motor-operated Damper, and an output of 5VDC made by REG2(7805) is supplied to the Refrigerator control MICOM and the Panel PCB. With these power, the whole PCB parts are properly operated.
2) On impression to power source “B”, the voltage across ⑤-⑦ of the CN10 is around 14VAC supplied from a stepped-down voltage on the secondary side of the transformer and this is rectified to DC voltage through a rectification circuit, Diode D105~D108. An output of around 13.2VDC is supplied to the Motor and the Damper.

※ The power of the power source “B” can vary according to the option specification.

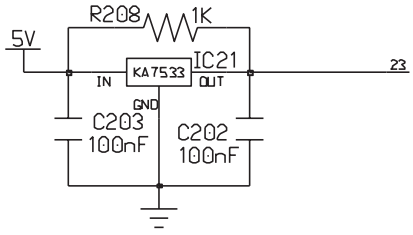
9-3-1-3) Oscillation Circuit



Terminal	Oscillating Frequency
Xin (#19)	8.0MHz
Xout (#18)	8.0MHz

1) This is the oscillation circuit to generate time synchronizing clock and to calculate time for the sending and receiving of information of the components in the MICOM.

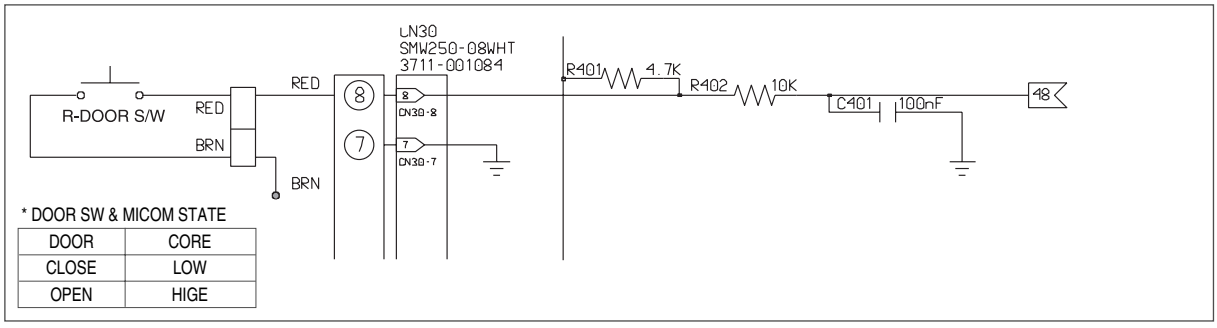
9-3-1-4) Reset Circuit Part



Terminal	Voltage
Vcc (IN)	DC 5V
Reset (OUT)	DC 5V

1) When the MICOM is on or re-energized after momentary interruption, the reset circuit initialize several parts in MICOM such as RAM in order that the whole program can be operated from the initial stage. On impression, comparing the Vcc(5VDC) of MICOM, the voltage across the reset terminal becomes “LOW” for several tens seconds and in normal operation, the voltage maintains “HIGH” (Vcc voltage) state.

9-3-1-5) The circuit for sensing the door switch



* DOOR SW & MICOM STATE

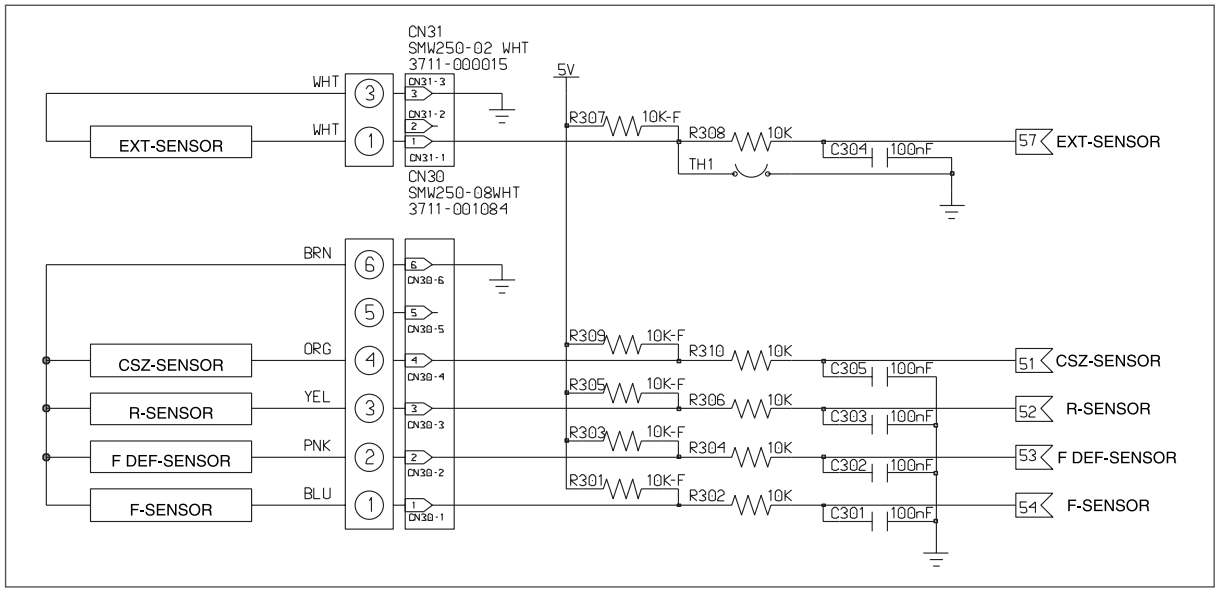
DOOR	CORE
CLOSE	LOW
OPEN	HIGE

1) The door position of the refrigerator is detected by Vcc(5VDC) supplied to ⑤ of CN30 through R401 and the contact of the door switch is connected to Gnd. As the contact is connected to Gnd according to the position of the door, “HIGH”(5V) or “LOW”(0V) signal is sent to the MICOM. MICOM detects the open/close position of the refrigerator door with this voltage change.

Note) If the door switch has a fault, the damper in the refrigerator compartment can be incorrectly operated or the alarm function is initiated. The door switch should be checked on after-sales service. If the door opens, the damper in the refrigerator compartment is closed, but on fault, even though the door is closed, MICOM judges the door open and closes the damper.

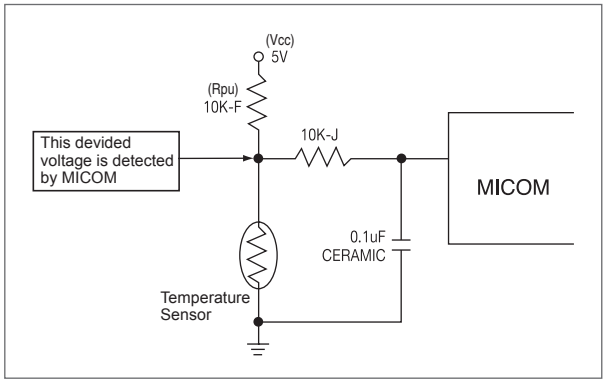
Terminal	Voltage	MICOM	MICOM PIN Number
F compartment	Door Closed	0V(LOW)	Number 48 or ⑤ of CN30
	Door Open	5V(HIGH)	

9-3-1-6) Temperature Sensing Circuit Part



< Fig.1-1 Circuit Diagram for sensor part >

1) Temperature sensing (sensor part) is described with Fig. 1-1.
2) Using the Thermistor(Sensor) which has temperature coefficient of the negative resistance, the higher temperature the resistance is reduced and reversely the lower temperature the resistance is increased.
3) Regarding Freezer sensor, if the voltage input into MICOM is Vf, Vf = (Rth X Vcc) / (Rpu(R301) + Rth) Rth is the resistance value of the thermistor corresponding to temperature. Refer to the table in this manual showing the resistance of the sensor corresponding to the temperature and the value converted to the voltage. As it also has the terminal voltage of the MICOM, refer to this on after sales service. (Rth is the resistance value of the sensor. As this value is changed by the temperature of the sensor, refer to the resistance value of the sensor corresponding to the temperature)
4) As all temperature sensors applied to the refrigerator are running in the way above, you can check the Sensors for the chammart compartment, defrosting, refrigerating, and the ambient temperature in the same way.



< Fig-2 The equivalent circuit of the sensor's action >

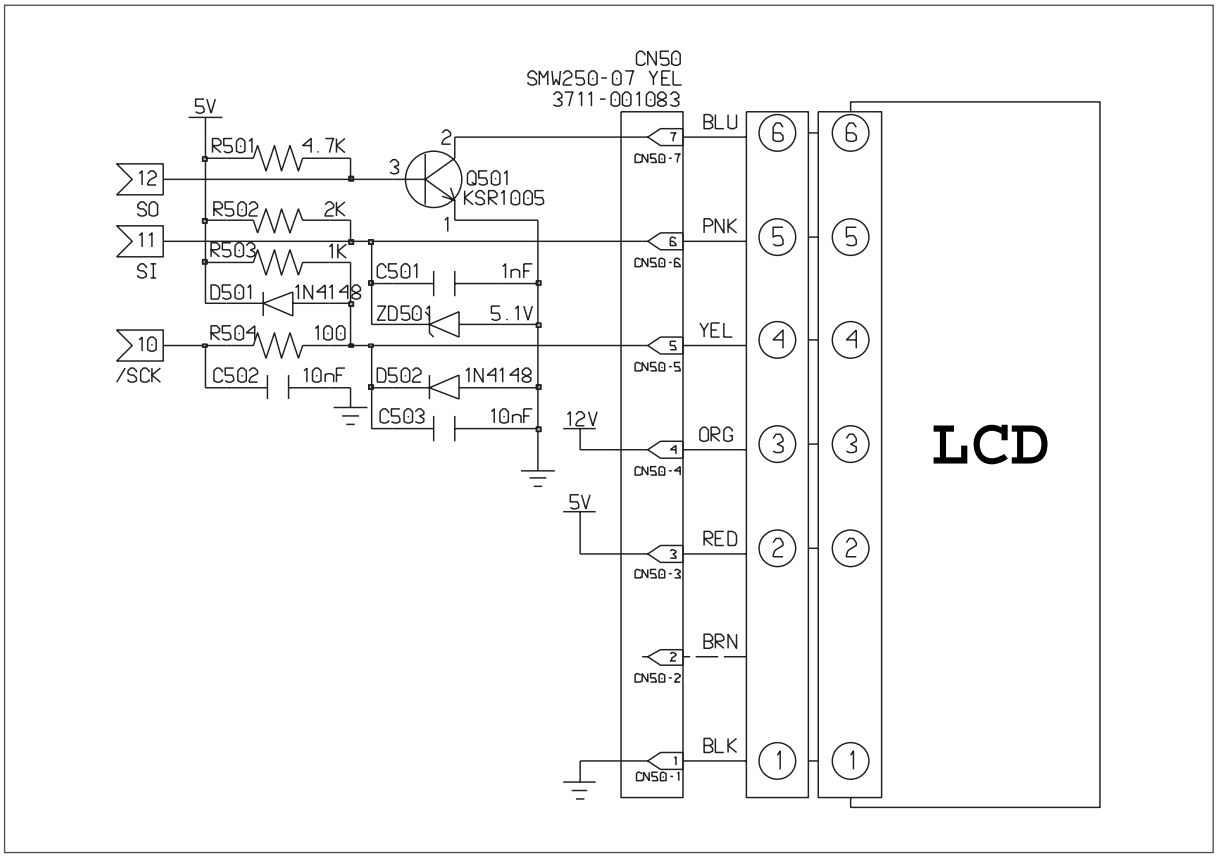
The terminals on the MICOM	Voltage
#54(Freezer sensor)	The change of the terminal voltage on MICOM corresponding to the temperature
#53(F-DEF-Sensor)	
#52(FRIDGE SENSOR)	
#51(Chammart Compartment-Sensor)	
#57(Ambient Temperature-Sensor)	

REFERENCE INFORMATION

- The Table for resistances & temperatures

Temp.(°F)	Temp.(°C)	Resistance(㏀)	Voltage(V)
-50	-58	4.694	153319
-49	-56.2	4.677	144794
-48	-54.4	4.659	136798
-47	-52.6	4.641	129294
-46	-50.8	4.622	122248
-45	-49	4.602	115631
-44	-47.2	4.581	109413
-43	-45.4	4.560	103569
-42	-43.6	4.537	98073
-41	-41.8	4.514	92903
-40	-40	4.490	88037
-39	-38.2	4.465	83456
-38	-36.4	4.439	79142
-37	-34.6	4.412	75077
-36	-32.8	4.385	71246
-35	-31	4.356	67634
-34	-29.2	4.326	64227
-33	-27.4	4.296	61012
-32	-25.6	4.264	57977
-31	-23.8	4.232	55112
-30	-22	4.199	52406
-29	-20.2	4.165	49848
-28	-18.4	4.129	47431
-27	-16.6	4.093	45146
-26	-14.8	4.056	42984
-25	-13	4.018	40938
-24	-11.2	3.980	39002
-23	-9.4	3.940	37169
-22	-7.6	3.899	35433
-21	-5.8	3.858	33788
-20	-4	3.816	32230
-19	-2.2	3.773	30752
-18	-0.4	3.729	29350
-17	1.4	3.685	28021
-16	3.2	3.640	26760
-15	5	3.594	25562
-14	6.8	3.548	24425
-13	8.6	3.501	23345
-12	10.4	3.453	22320
-11	12.2	3.405	21345
-10	14	3.356	20418
-9	15.8	3.307	19537
-8	17.6	3.258	18698
-7	19.4	3.208	17901
-6	21.2	3.158	17142
-5	23	3.107	16419
-4	24.8	3.057	15731
-3	26.6	3.006	15076
-2	28.4	2.955	14452
-1	30.2	2.904	13857
0	32	2.853	13290
1	33.8	2.802	12749
2	35.6	2.751	12233
3	37.4	2.700	11741
4	39.2	2.649	11271
5	41	2.599	10823
6	42.8	2.548	10395
7	44.6	2.498	9986
8	46.4	2.449	9596
9	48.2	2.399	9223
10	50	2.350	8867
11	51.8	2.301	8526
12	53.6	2.253	8200
13	55.4	2.205	7888
14	57.2	2.158	7590
15	59	2.111	7305
16	60.8	2.064	7032
17	62.6	2.019	6771
18	64.4	1.974	6521
19	66.2	1.929	6281
20	68	1.885	6052
21	69.8	1.842	5832
22	71.6	1.799	5621
23	73.4	1.757	5419
24	75.2	1.716	5225
25	77	1.675	5039
26	78.8	1.636	4861
27	80.6	1.596	4690
28	82.4	1.558	4526
29	84.2	1.520	4369
30	86	1.483	4218
31	87.8	1.447	4072
32	89.6	1.412	3933
33	91.4	1.377	3799
34	93.2	1.343	3670
35	95	1.309	3547
36	96.8	1.277	3428
37	98.6	1.253	3344
38	100.4	1.213	3204
39	102.2	1.183	3098
40	104	1.153	2997
41	105.8	1.124	2899
42	107.6	1.095	2805
43	109.4	1.068	2714
44	111.2	1.040	2627
45	113	1.014	2543
46	114.8	0.988	2462
47	116.6	0.963	2384
48	118.4	0.938	2309
49	120.2	0.914	2237
50	122	0.891	2167
51	123.8	0.868	2100
52	125.6	0.846	2036
53	127.4	0.824	1973
54	129.2	0.803	1913
55	131	0.783	1855
56	132.8	0.762	1799
57	134.6	0.743	1745
58	136.4	0.724	1693
59	138.2	0.706	1642
60	140	0.688	1594
61	141.8	0.670	1547
62	143.6	0.653	1502
63	145.4	0.636	1458
64	147.2	0.620	1416
65	149	0.604	1375
66	150.8	0.589	1335
67	152.6	0.574	1297
68	154.4	0.560	1260
69	156.2	0.546	1225
70	158	0.532	1190
71	159.8	0.519	1157
72	161.6	0.506	1125
73	163.4	0.493	1093
74	165.2	0.481	1063
75	167	0.469	1034
76	168.8	0.457	1006
77	170.6	0.446	978
78	172.4	0.435	952
79	174.2	0.424	926
80	176	0.414	902
81	177.8	0.404	877
82	179.6	0.394	854
83	181.4	0.384	832
84	183.2	0.375	810

9-3-1-7) Display Circuit Part

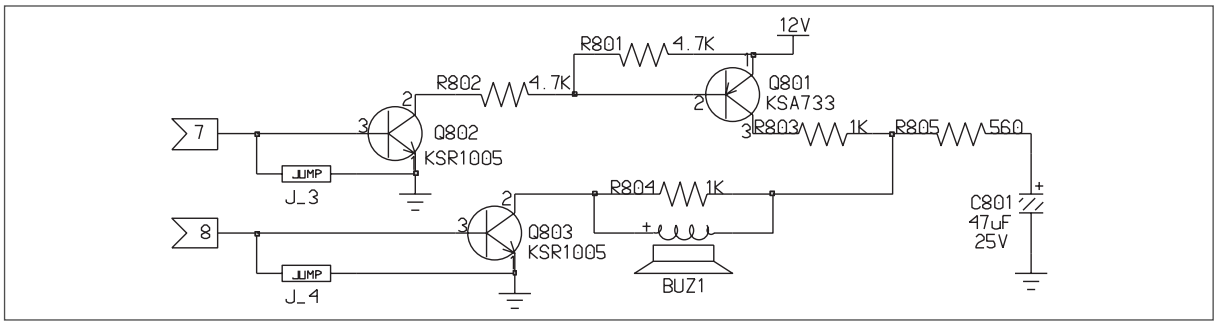


1) The panel pcb and the main pcb send and receive signals to each other.
2) The Model is distinguished by the display – LCD or LED. The panel of the LCD model communicates with Main PCB and MICOM. The communication ports are SI, SO, and /SCK, and if there is communication error on one of those, the error is indicated. If there is a communication failure between Panel and Main PCB, “Er - Pc” is flashing on the panel display until the communication error is clear.

Type of fault	Communication failure between Panel and Main PCB
Panel display	“Er – Pc”

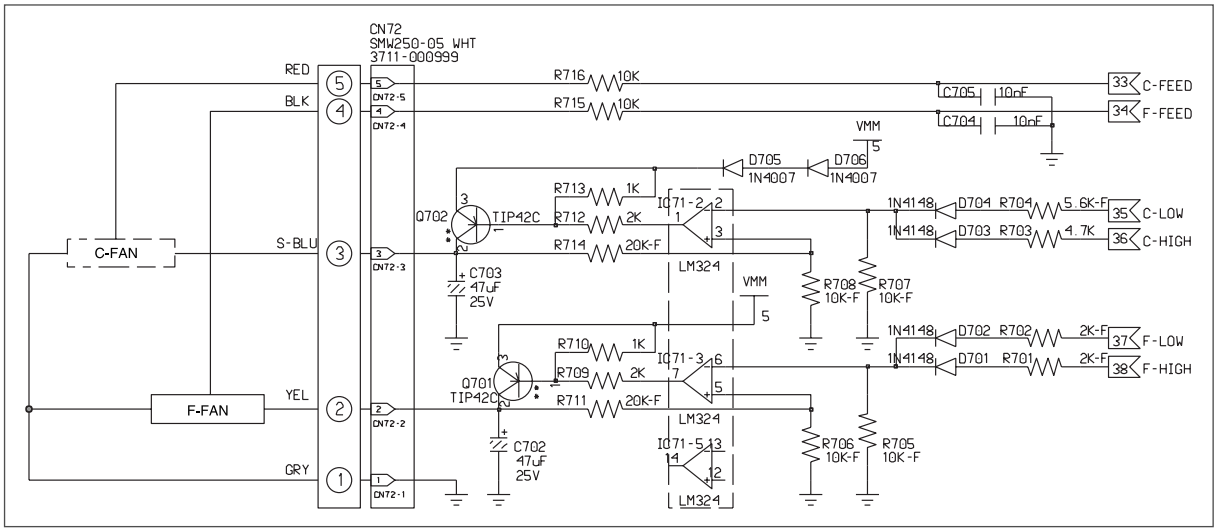
3) In this case, firstly check the cable housing and connection. Secondly, test the signals on the Display SI, SO, and /SCX. (An oscilloscope is need.)

9-3-1-8) Buzzer Circuit Part



1) The circuit is made up as above. Alarms are separately controlled in the MICOM and operated by sending different signals according to the setting value. (The several alarm levels can be made according to key control.) The power of 12V is steadily impressed to the circuit. When the MICOM sends an alarm signal to the transistor base, Q803, the transistor is turned on to apply a current of 12V to the Buzzer. The resistance of 1Kohm, R804, is used to get the better sound.

9-3-1-9) Fan Motor (BLDC) Driving Circuit Part



• Description of the motor driving circuit

1) To save power consumption, an BLDC Motor is used and this is only for the freezer compartment. (The motor driving circuit is commonly used for other models.) The circuit for the Condenser Fan is not applied but can be used in the future.

※ There is a LCD model which the BLDC Motor is not used but AC Motor is used. The LCD Model which AC MOTOR is used is described in the Load Driving Circuit Part.

2) Operating principle

The above circuit shows that each motor has a similar circuit. Let me explain about this with the Freezer Fan motor. The Fan motor is operated in High speed or Low speed by condition. To run the Freezer Fan, the constant voltage should be impressed to the OP-AMP No. 6 as shown in the Fig. The constant voltage impressed to OP-AMP No.6 depends on the action of MICOM No.38 (HIGH RPM) and No.37 (LOW RPM). The voltage impressed to the motor is around 3 times of this voltage (the Gain at the present setting value) If the voltage across OP-AMP No. 6 is 3.4V, the voltage impressed to the motor is 3.4V x 3 =10.2V

3) Comparison between High RPM and Low RPM

	The voltage impressed to the motor	Remark
	Freezer Fan	In normal operation of the motor, the constant frequency is input to the MICOM No. 34(F) and 33(C) (option), and with this signal MICOM checks whether the motor is in normal operation or not. (Frequency (Hz) X 15 = Motor rpm)
On HIGH PRM	10.86V	
On LOW RPM	10.86V	

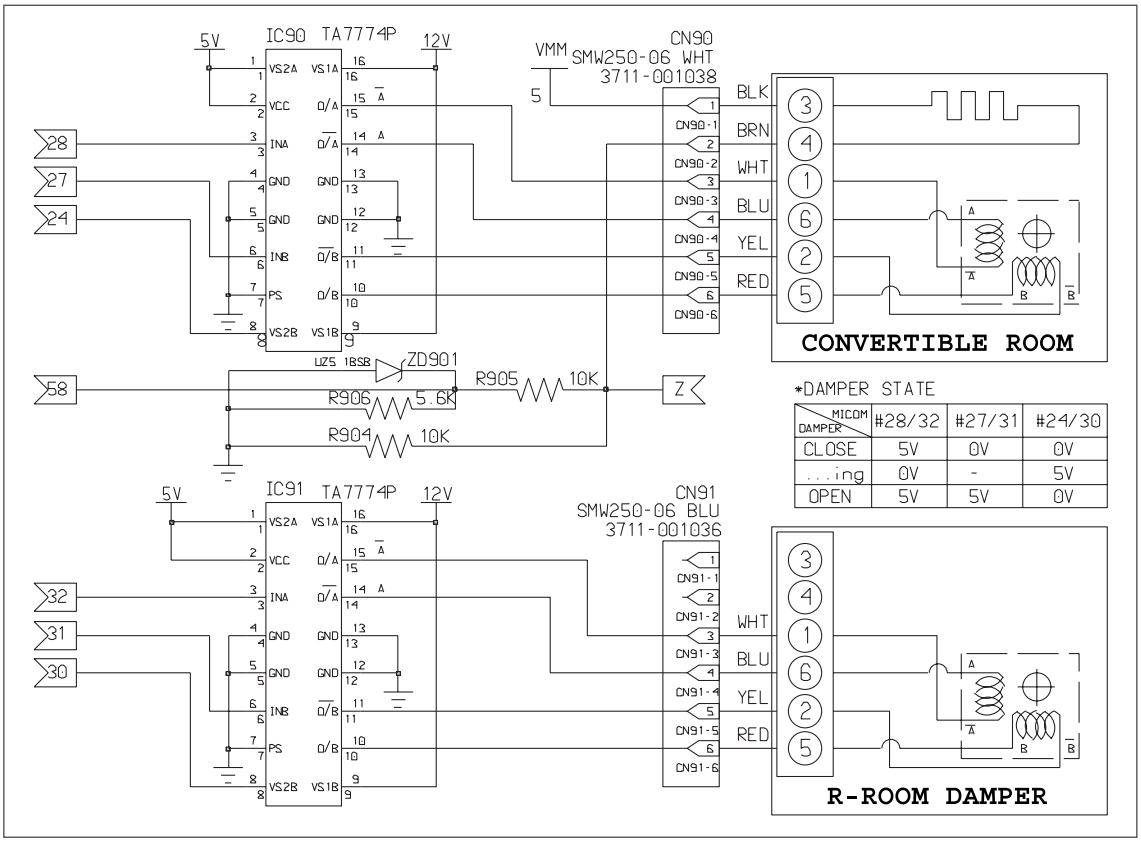
* The voltage error is less than +/-0.2V

<Note> While the fan motors in the freezer and the refrigerator compartments are running at high RPM or low RPM depending on the condition, the present model is set with one RPM. (To improve performance, the RPM, voltage, frequency, etc. of the motor can be changed without notice in advance.)

4) When the fault is detected on the motor (In case that the speed is lower than 600-700rpm), the motor stops and restarts after 10 seconds. At this time, if the motor is running with normal speed, the motor state is judged as normal. But, if the normal state is not input to the MICOM, the motor restarts after 10 seconds again. In case that the motor can not run at the normal speed even after restarting 5 times, the motor stops for 10 minutes. After 10 minutes, the restarting procedure is tried again in the way of 5-time restarting every 10 seconds and a stop for 10 minutes. If you make self-supervision function started by the front panel of the freezer, the LED related to the faulty motor is lit to indicate that fault. If you turn off the power, the fault recording data is deleted. You have to check first before turning it off when visiting a customer for service.

<Note> During maintenance work, if it is expected that there is an error on the fan motor or the motor is tripped, execute the self-supervision function to check the state of the refrigerator.

9-3-1-10) The driving circuit part for the dampers in the refrigerator and chammart compartment



1) The damper in the chammart compartment is controlled by MICOM. To check the damper heater on initial energizing, the voltage across MICOM 58 is checked. On initial energizing, as MICOM No. 1 is a LOW state and the heater is off, the voltage of around 12.6 V is impressed to R905 through the heater. So, the voltage divided by R905 and R906 (around 4.0 ~4.5V) is impressed to the MICOM No. 58. (Though the voltage can vary according to the input source due to AC Transformer, the voltage is detected in consideration of the voltage variation using MICOM port. (detecting only open position) After initial energizing, check whether the damper heater in the chammart compartment is disconnected or not.

Status of MICOM	On initial energizing	When the damper heater is off	When the damper heater is on
No.24	4.0 ~ 4.5V	4.0V ~ 4.5V	0V

* So, in case that the MICOM No. 58 detects 0V during self-supervision after initial energizing, the fault of the damper heater is indicated on the panel display. (The status of the heater is monitored only for the damper in the chammart compartment, and for the one in the refrigerator compartment, the heater's running and status are not monitored.)

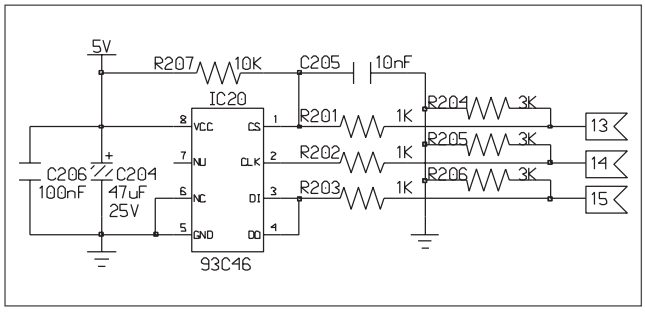
2) After the self-supervision process is finished, the dampers in the refrigerator and chammart compartment repeat opening and closing. (But, because the priority is given to the refrigerator compartment, the damper in the chammart compartment does not open until the temperature in the refrigerator compartment is adjusted in condition.) By IC90 and IC91, the electric power is supplied to the damper motor (stepping motor) through the 4 wires which are A, /A, B, and /B. The motor rotated forward and in reverse.

3) To check whether the damper motor has a fault or not, disconnect the connectors of CN90 (the damper in the chammart compartment) and CN91 (the damper of the refrigerator compartment) and measure the resistance values between ③ ↔ ④and between ⑤ ↔ ⑥. If the value is between 400~600 Ω, it is normal and if ∞Ω, it is that the wire is disconnected.
4) Regarding the damper heater, as HIGH(5V) signal comes out from MICOM No.1, the HIGH(5V) goes to IC70 and No. 10 is turned on by the characteristics of the IC, and the heater runs. The heater is on by the power impressed as 13.2V → CN90 ① → Damper Heater CN90 ② → IC70⑩ (GND).

※ The damper heater in the charmmart compartment is always on whenever the power is impressed.(under the condition that the temperature is between 23~27 °ΔC,and if the temperature in the freezer compartment is between Tfset on+2 and Tfset off-2 comparing the setting value of the temperature (based on MICOM),the heater is turned off)

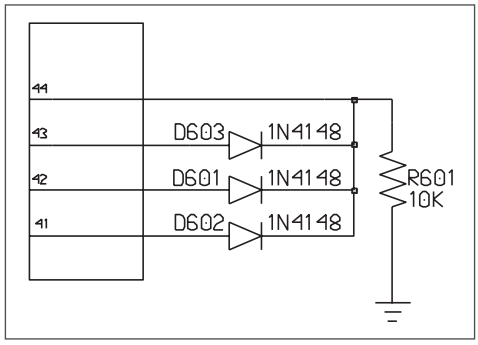
9-3-1-11) EEPROM Circuit Part

EEPROM is a semiconductor memory that data is not deleted even though the power is off. Using EEPROM, This model can save the data of the refrigerator which the customer has set even in the area that the electric power is not stable such as momentary interruption. This also has a function to conduct the input and output process for the data selected as options.



9-3-1-12) OPTION Circuit part

※ The specification for options can be changed.



D601	–	REMARKS
X	–	
●	–	

D602	TEMP. OPTION	REMARKS
X	℃	
●	℉	

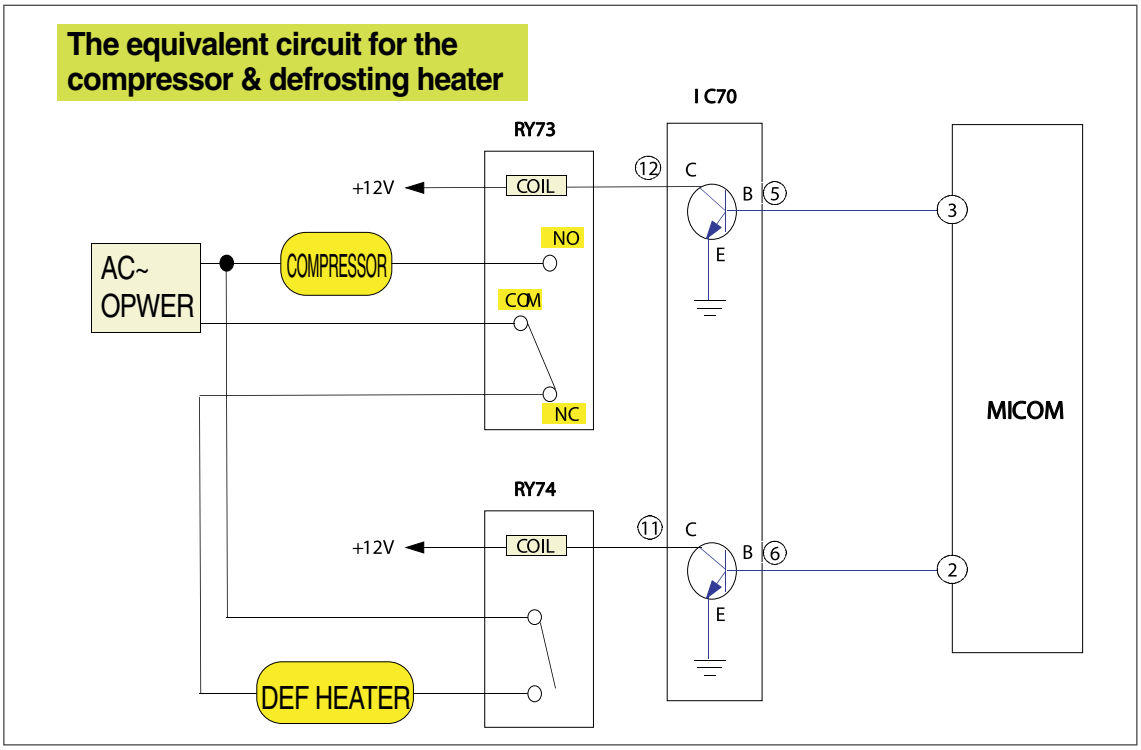
D603	FAN MOTOR	REMARKS
X	BLDC FAN	
●	AC FAN	
* ● Diode (1n4148) USE		

Using DIODE (1N4148), this circuit is checked on initial energizing.
When the option circuit is modified, the power should be off. After work, turn it on again.

The option is selected as shown in the table above. Except special situation, you are requested to operate as the specification when the product is shipped.

9-3-1-13) Load Driving Circuit Part

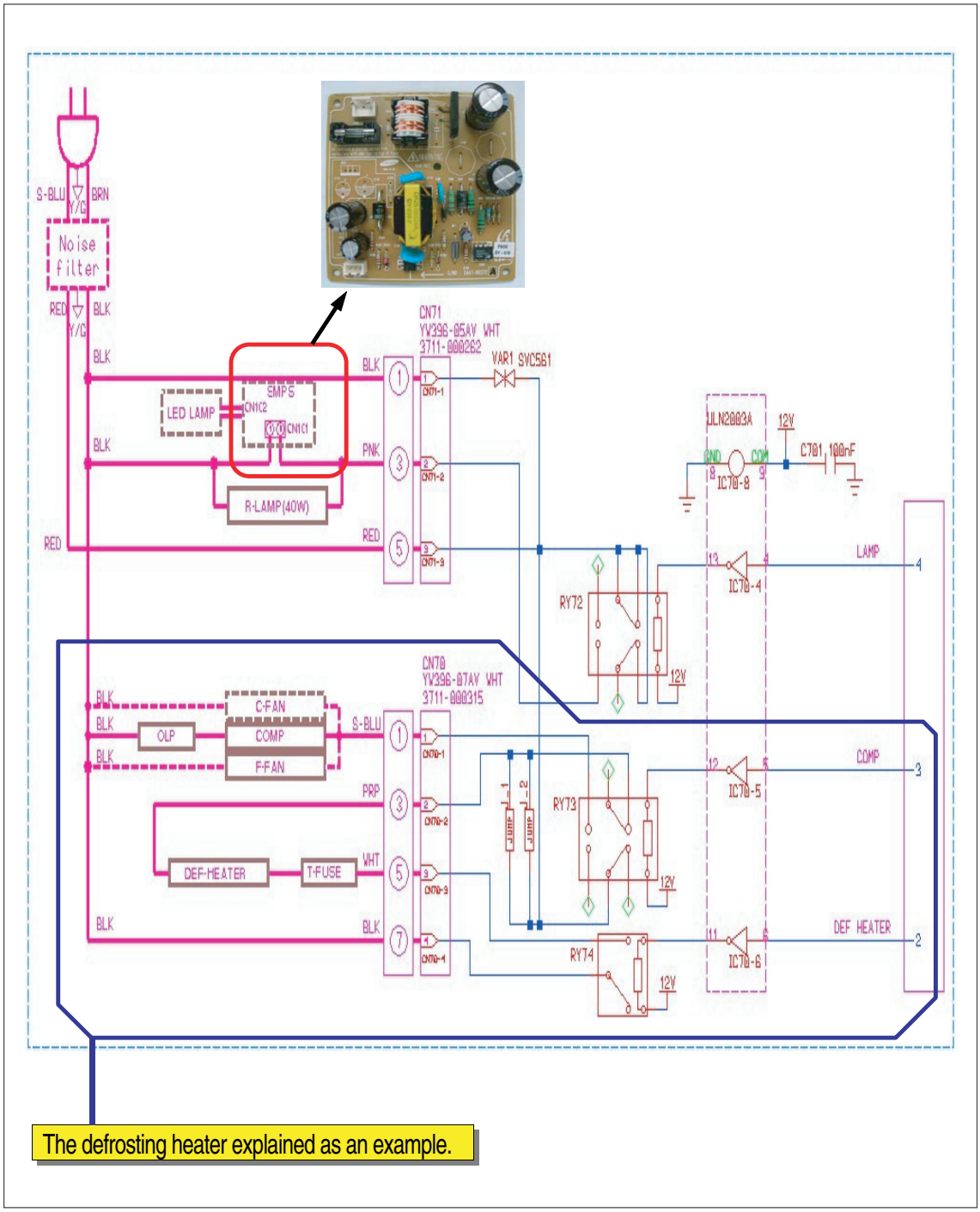
1) Most loads of the electronic type refrigerator are controlled by the main PCB.
2) The compressor (F FAN(option)), the defrosting heater, and the lamps in the refrigerator are controlled by the relay.
3) Let me explain about the defrosting heater as an example. To run the defrosting heater, the HIGH(5V) signal comes out from the Pin no. 2 of the MICOM. This signal goes to No. 6 of IC70 as an input. The Pin no. 6 of the IC70 is operated as a base of the NPN TR and the output terminal, Pin no.11 is operated as a collector of the TR. So, if the Pin no. 6 of the IC70 gets 5V input, the No.11 of the IC70 is turned on and conducted to the GND. The end of the RY74 COIL connected to the No. 11 of the IC70 becomes LOW(0V) and the power, +12 V, on the other end of the RY74 COIL flows to the GND through No.11 of the IC70. As magnetic lines of force (electromagnet) are generated during flowing current though the coil, the contact of the secondary side (load side) in the RY74 is closed and then, the AC input (220~240VAC) across the defrosting heater turns on the heater. In case that the Pin no. 2 of the MICOM becomes LOW(0V), the Pin no. 11 of the IC70 opens (Switch off state) and the power is off. So, the current on the relay RY74 is off, the magnetic lines (electromagnet) are disappeared, the contact of the secondary side opens, and the defrosting heater is off.



4) The other loads are operated in the same principle. (The compressor and the lamps in the refrigerator compartment)
5) AC Fan motor in the refrigerator compartment is an option. The model LCD display applied has two selections - BLDC motor or AC Fan motor. The AC Fan Motor is wired in link with the compressor. In case that the compressor is off, the fan is off. In case that the compressor is “on”, the fan is “on”

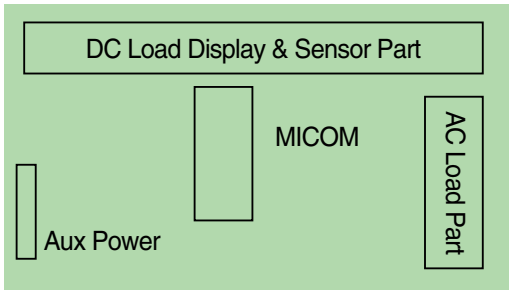
6) As the SMPS of the LED Lamp (option) control power source receives the power from the lamp control relay and simply supply 12VDC, check the input and the 12VDC output when the door opens. (Refer to the SMPS PBA picture in the driving circuit below)

Load Driving Circuit Part (PCB Circuit)



9-3-2 Circuit Description (LED Model & SEMI Model)

9-3-2-1) PCB Assembly Structure (Electronic Device Box)



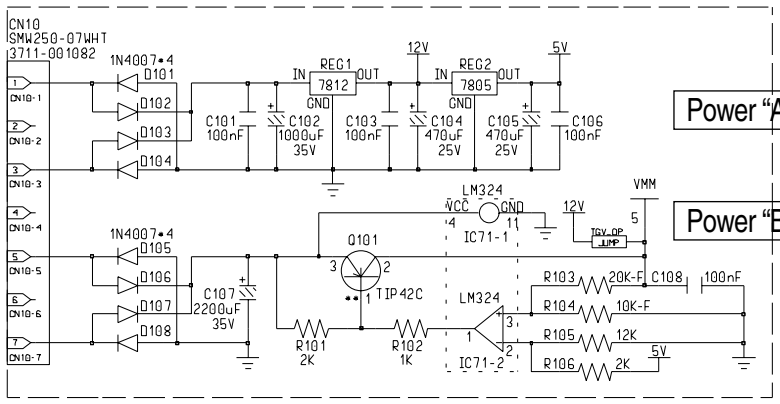
Part "A"
Main-Board

Part	Voltage	Driving Load
A Part	Aux. Power: 16, 14 VAC (Transformer) - 12VDC - 5VDC 13.2VDC	- Relay & Display - BLDC Fan Motor - Refrigerator Compartment Damper - Refrigerator MICOM - Sensor Part

1) There are one PCB Assembly operated by MICOM
2) The refrigerator control part, the part "A", controls the whole parts of a refrigerator as the earlier MICOM.
3) MICOM which is to control a refrigerator controls the loads (Freezer Fan, R-DAMPER, Chammart compartment, Defrosting damper, Lamp on/off, etc.) except the compressor, and the compressor is restarted after 5 minutes from tripping if it is momentary interruption. (The temperature in freezer compartment is measured when power is on, and if it is under +5°C, it is judged as a momentary interruption. In this case, all functions are restored to the operating status before momentary interruption.)
4) BLDC Motor or AC Fan Motor is, as an option, specified for the fan in the freezer compartment and it is applied on setting and assembling (AC Fan Motor is wired in link with the compressor and not controlled by the main MICOM)

※ For your safety in case that the refrigerator is plugged, you should be careful.
Ensure the appliance is unplugged before replacing the PCB board.

9-3-2-2) Power Supplier (AC TRANSFORMER Method)

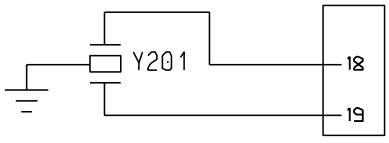


Power Source	Circuit
"A" 12VDC 5VDC	Peripheral Circuit of refrigerator control, MICOM Relay, Sensor part, Display part Motor-operated Damper control (Refrigerator and Chammart compartments)
"B" 13.2DVC	Power source for BLDC Motor (Freezer Fan)

1) On impression to power source "A", the voltage across ①-③ of the CN10 is around 16V/AC supplied from a stepped-down voltage on the secondary side of the transformer and this is rectified to DC voltage through a rectification circuit, Diode D101~D104. And then, an output of 12V/DC made by REG1(7812) Regulator is supplied to the Relay, the Panel PCB, and the Motor-operated Damper, and an output of 5VDC made by REG2(7805) is supplied to the Refrigerator control MICOM and the Panel PCB. With these power, the whole PCB parts are properly operated.
2) On impression to power source "B", the voltage across ⑤-⑦ of the CN10 is around 14V/AC supplied from a stepped-down voltage on the secondary side of the transformer and this is rectified to DC voltage through a rectification circuit, Diode D105~D108. An output of around 13.2VDC is supplied to the Motor and the Damper.

※ The power of the power source "B" can vary according to the option specification.

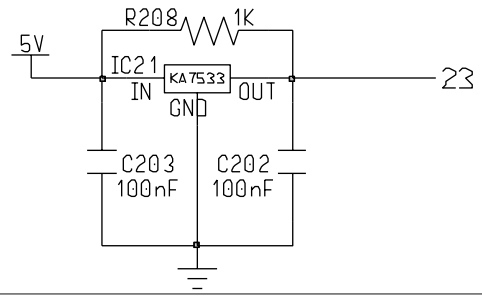
9-3-2-3) Oscillation Circuit



Terminal	Oscillating Frequency
Xin (#19)	8.0MHz
Xout (#18)	8.0MHz

1) This is the oscillation circuit to generate time synchronizing clock and to calculate time for the sending and receiving of information of the components in the MICOM.

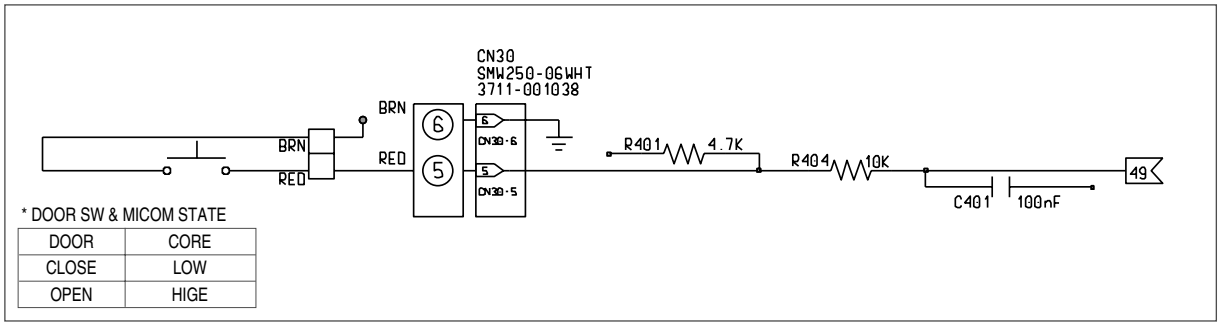
9-3-2-4) Reset Circuit Part



Terminal	Voltage
Vcc (IN)	DC 5V
Reset (OUT)	DC 5V

1) When the MICOM is on or re-energized after momentary interruption, the reset circuit initialize several parts in MICOM such as RAM in order that the whole program can be operated from the initial stage. On impression, comparing the Vcc(5VDC) of MICOM, the voltage across the reset terminal becomes “LOW” for several tens seconds and in normal operation, the voltage maintains “HIGH” (Vcc voltage) state.

9-3-2-5) The circuit for sensing the door switch



* DOOR SW & MICOM STATE

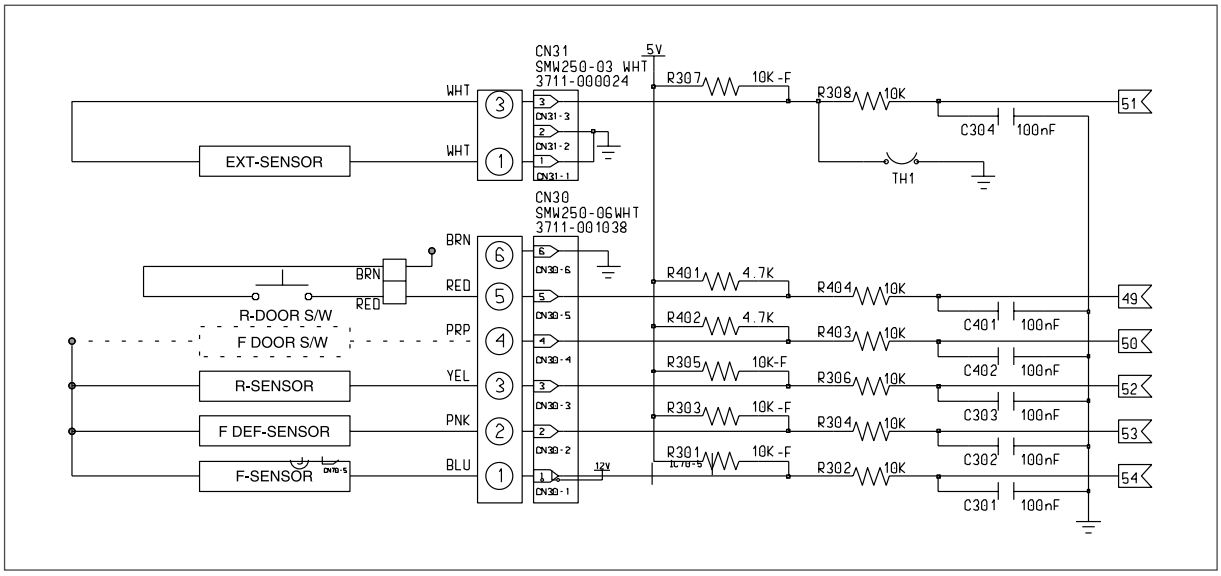
DOOR	CORE
CLOSE	LOW
OPEN	HIGE

1) The door position of the refrigerator is detected by Vcc(5VDC) supplied to ⑤ of CN30 through R401 and the contact of the door switch is connected to Gnd. As the contact is connected to Gnd according to the position of the door, “HIGH”(5V) or “LOW”(0V) signal is sent to the MICOM. MICOM detects the open/close position of the refrigerator door with this voltage change.

Note) If the door switch has a fault, the damper in the refrigerator compartment can be incorrectly operated or the alarm function is initiated. The door switch should be checked on after-sales service. If the door opens, the damper in the refrigerator compartment is closed, but on fault, even though the door is closed, MICOM judges the door open and closes the damper.

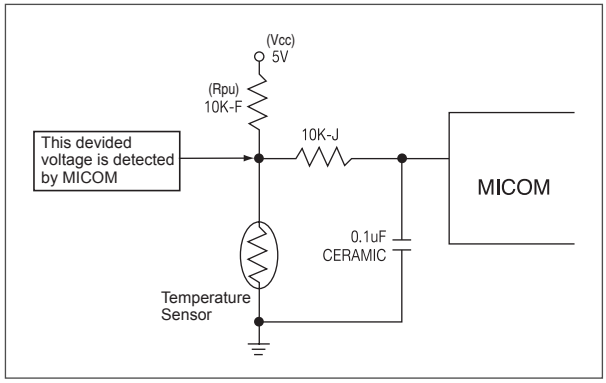
Terminal	Voltage	MICOM	MICOM PIN Number
F compartment	Door Closed	0V(LOW)	Number 49 or ⑤ of CN30
	Door Open	5V(HIGH)	

9-3-2-6) Temperature Sensing Circuit Part



< Fig.1-1 Circuit Diagram for sensor part >

1) Temperature sensing (sensor part) is described with Fig. 1-1.
2) Using the Thermistor(Sensor) which has temperature coefficient of the negative resistance, the higher temperature the resistance is reduced and reversely the lower temperature the resistance is increased.
3) Regarding Freezer sensor, if the voltage input into MICOM is Vf, Vf= (Rth X Vcc) / (Rpu(R301) + Rth) Rth is the resistance value of the thermistor corresponding to temperature. Refer to the table in this manual showing the resistance of the sensor corresponding to the temperature and the value converted to the voltage. As it also has the terminal voltage of the MICOM, refer to this on after sales service. (Rth is the resistance value of the sensor. As this value is changed by the temperature of the sensor, refer to the resistance value of the sensor corresponding to the temperature)
4) As all temperature sensors applied to the refrigerator are running in the way above, you can check the Sensors for the chammart compartment, defrosting, refrigerating, and the ambient temperature in the same way.



< Fig-2 The equivalent circuit of the sensor's action >

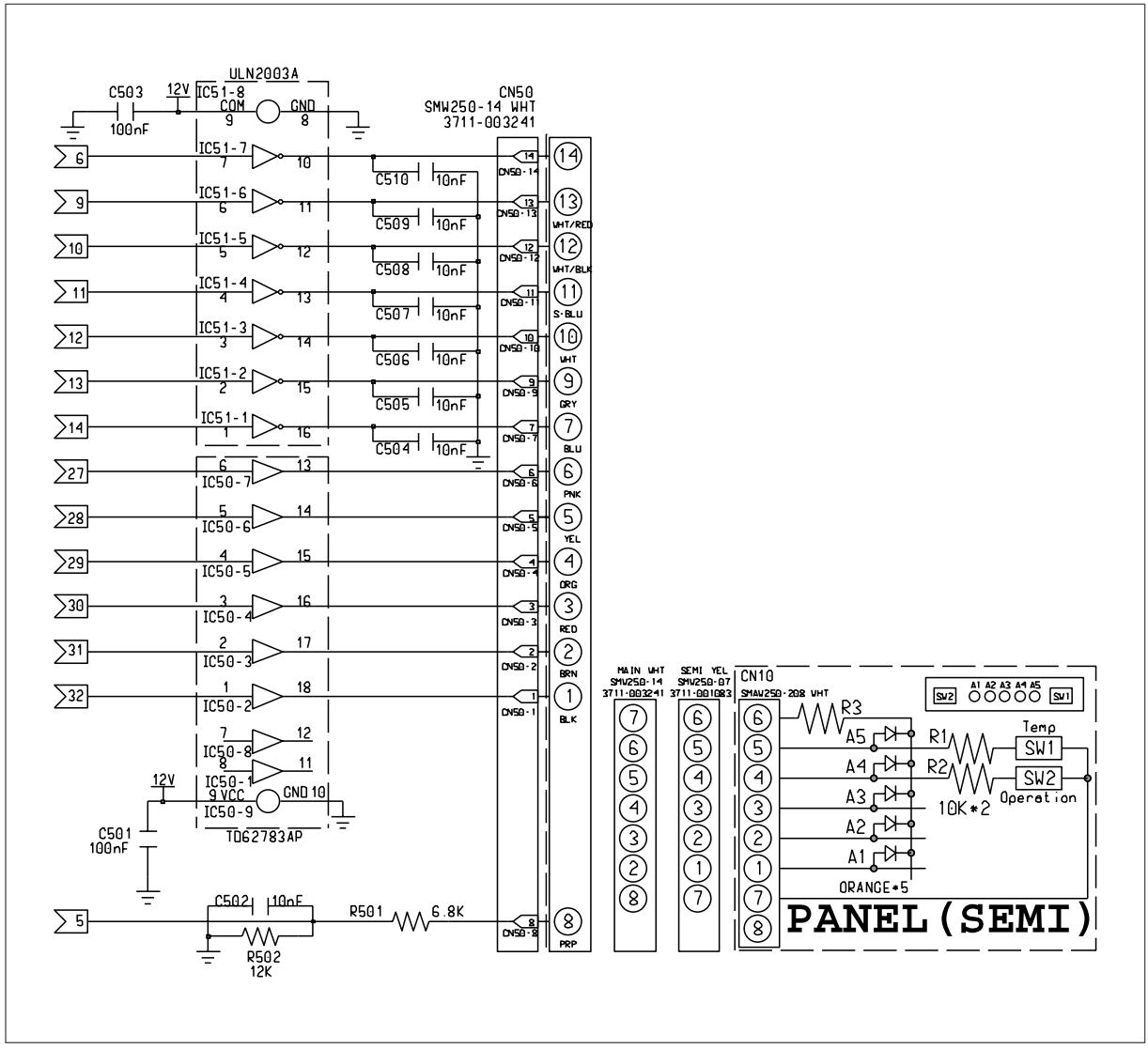
The terminals on the MICOM	Voltage
#54(Freezer sensor)	The change of the terminal voltage on MICOM corresponding to the temperature
#53(F-DEF-Sensor)	
#52(FRIDGE SENSOR)	
#51(Chammart Compartment-Sensor)	

REFERENCE INFORMATION

The Table for resistances & temperatures

Temp.(°F)	Temp.(°C)	Resistance(㏀)	Voltage(V)
-50	-58	4.694	153319
-49	-56.2	4.677	144794
-48	-54.4	4.659	136798
-47	-52.6	4.641	129294
-46	-50.8	4.622	122248
-45	-49	4.602	115631
-44	-47.2	4.581	109413
-43	-45.4	4.560	103569
-42	-43.6	4.537	98073
-41	-41.8	4.514	92903
-40	-40	4.490	88037
-39	-38.2	4.465	83456
-38	-36.4	4.439	79142
-37	-34.6	4.412	75077
-36	-32.8	4.385	71246
-35	-31	4.356	67634
-34	-29.2	4.326	64227
-33	-27.4	4.296	61012
-32	-25.6	4.264	57977
-31	-23.8	4.232	55112
-30	-22	4.199	52406
-29	-20.2	4.165	49848
-28	-18.4	4.129	47431
-27	-16.6	4.093	45146
-26	-14.8	4.056	42984
-25	-13	4.018	40938
-24	-11.2	3.980	39002
-23	-9.4	3.940	37169
-22	-7.6	3.899	35433
-21	-5.8	3.858	33788
-20	-4	3.816	32230
-19	-2.2	3.773	30752
-18	-0.4	3.729	29350
-17	1.4	3.685	28021
-16	3.2	3.640	26760
-15	5	3.594	25562
-14	6.8	3.548	24425
-13	8.6	3.501	23345
-12	10.4	3.453	22320
-11	12.2	3.405	21345
-10	14	3.356	20418
-9	15.8	3.307	19537
-8	17.6	3.258	18698
-7	19.4	3.208	17901
-6	21.2	3.158	17142
-5	23	3.107	16419
-4	24.8	3.057	15731
-3	26.6	3.006	15076
-2	28.4	2.955	14452
-1	30.2	2.904	13857
0	32	2.853	13290
1	33.8	2.802	12749
2	35.6	2.751	12233
3	37.4	2.700	11741
4	39.2	2.649	11271
5	41	2.599	10823
6	42.8	2.548	10395
7	44.6	2.498	9986
8	46.4	2.449	9596
9	48.2	2.399	9223
10	50	2.350	8867
11	51.8	2.301	8526
12	53.6	2.253	8200
13	55.4	2.205	7888
14	57.2	2.158	7590
15	59	2.111	7305
16	60.8	2.064	7032
17	62.6	2.019	6771
18	64.4	1.974	6521
19	66.2	1.929	6281
20	68	1.885	6052
21	69.8	1.842	5832
22	71.6	1.799	5621
23	73.4	1.757	5419
24	75.2	1.716	5225
25	77	1.675	5039
26	78.8	1.636	4861
27	80.6	1.596	4690
28	82.4	1.558	4526
29	84.2	1.520	4369
30	86	1.483	4218
31	87.8	1.447	4072
32	89.6	1.412	3933
33	91.4	1.377	3799
34	93.2	1.343	3670
35	95	1.309	3547
36	96.8	1.277	3428
37	98.6	1.253	3344
38	100.4	1.213	3204
39	102.2	1.183	3098
40	104	1.153	2997
41	105.8	1.124	2899
42	107.6	1.095	2805
43	109.4	1.068	2714
44	111.2	1.040	2627
45	113	1.014	2543
46	114.8	0.988	2462
47	116.6	0.963	2384
48	118.4	0.938	2309
49	120.2	0.914	2237
50	122	0.891	2167
51	123.8	0.868	2100
52	125.6	0.846	2036
53	127.4	0.824	1973
54	129.2	0.803	1913
55	131	0.783	1855
56	132.8	0.762	1799
57	134.6	0.743	1745
58	136.4	0.724	1693
59	138.2	0.706	1642
60	140	0.688	1594
61	141.8	0.670	1547
62	143.6	0.653	1502
63	145.4	0.636	1458
64	147.2	0.620	1416
65	149	0.604	1375
66	150.8	0.589	1335
67	152.6	0.574	1297
68	154.4	0.560	1260
69	156.2	0.546	1225
70	158	0.532	1190
71	159.8	0.519	1157
72	161.6	0.506	1125
73	163.4	0.493	1093
74	165.2	0.481	1063
75	167	0.469	1034
76	168.8	0.457	1006
77	170.6	0.446	978
78	172.4	0.435	952
79	174.2	0.424	926
80	176	0.414	902
81	177.8	0.404	877
82	179.6	0.394	854
83	181.4	0.384	832
84	183.2	0.375	810

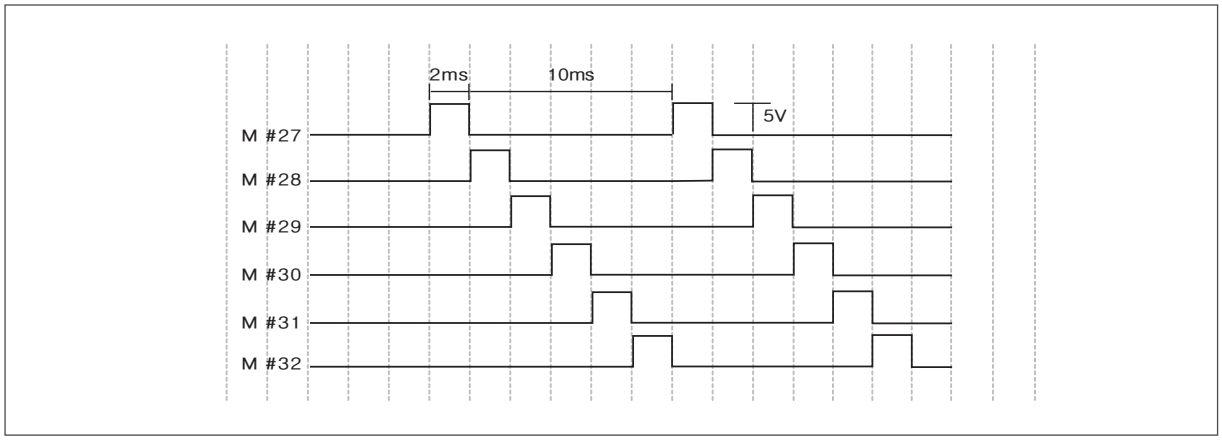
9-3-2-7) Display Circuit Part



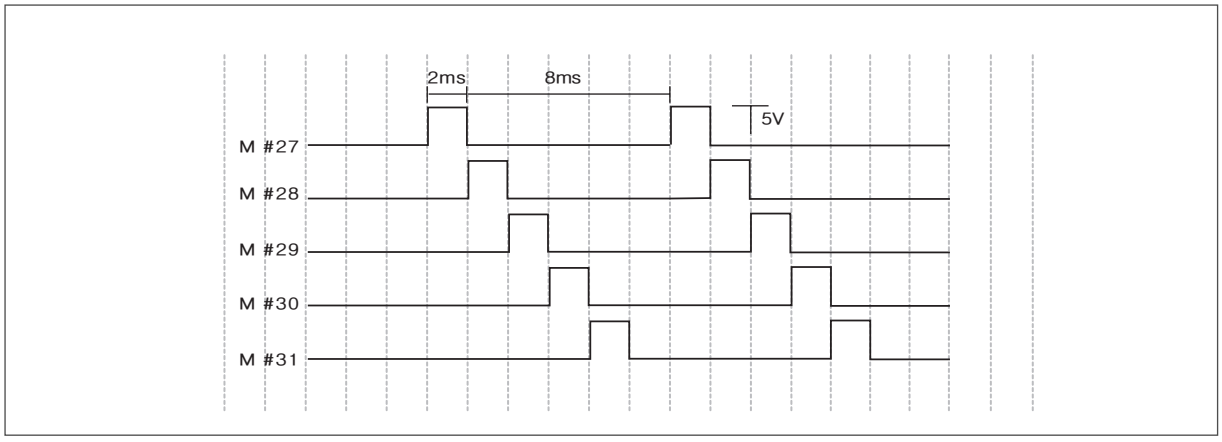
1) KEY SCAN and DISPLAY Driving Principle

As the waveforms of each part shown below, through the 6 terminals of the MICOM Port No. # 27, 28, 29, 30, 31, 32 (In case of the Semi Panel, using 5 terminals, #27, 28, 29, 30, 31), the MICOM sends “HIGH” output of 2ms plus in a 12ms by turns. These signals are sent to the output terminals through the input terminals of the IC50 (TD62783AP or KID65783AP). The square-wave voltage, which is a MICOM output, is around 5VDC and the below is the type of the output waveform. (Oscilloscope is need)

2) The output waveforms of MICOM
- The electronic type (Segment Type)

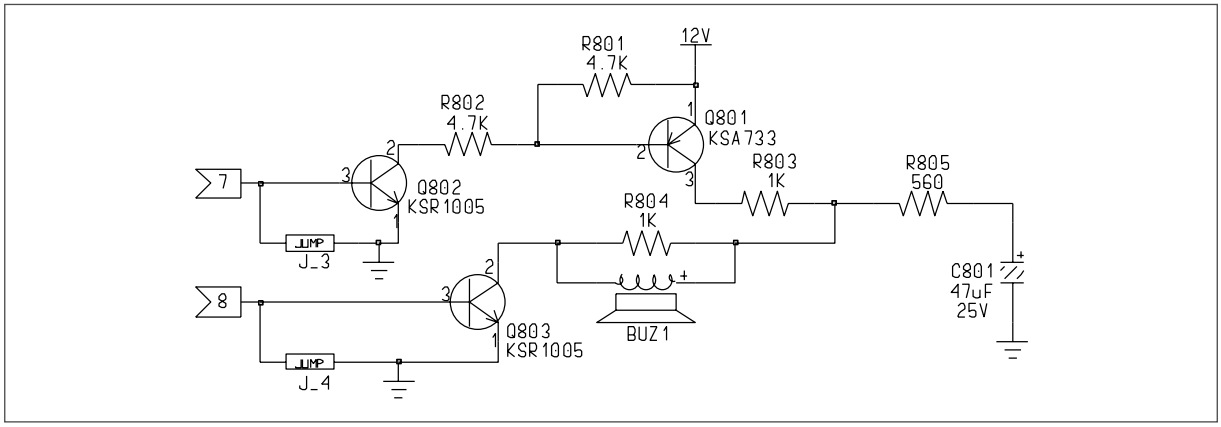


- The semi-electronic type (LED Bar Type)



※ As the display applied to the Semi LED type commonly uses the PCB Main, This type is produced with the specific terminals only for this and program modification

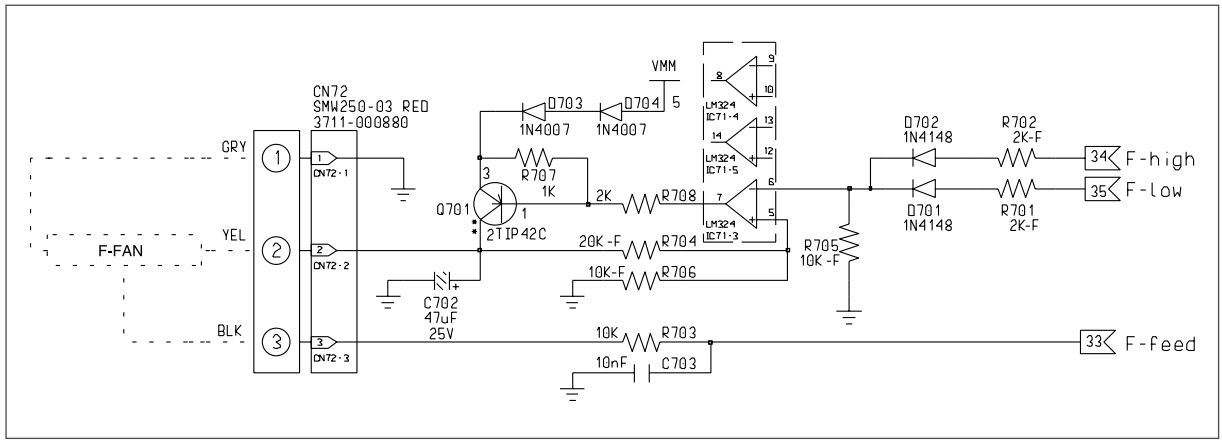
9-3-2-8) Buzzer Circuit Part



1) The circuit is made up as above. Alarms are separately controlled in the MICOM and operated by sending different signals according to the setting value. (The several alarm levels can be made according to key control.) The power of 12V is steadily impressed to the circuit. When the MICOM sends an alarm signal to the transistor base, Q803, the transistor is turned on to apply a current of 12V to the Buzzer. The resistance of 1Kohm, R804, is used to get the better sound.

※ The Semi LED Model does not have a buzzer. An alarm is not activated by Key setting)

9-3-2-9) Fan Motor (BLDC) Driving Circuit Part



■ Description of the motor driving circuit

1) To save power consumption, an BLDC Motor is used and this is only for the freezer compartment. (The motor driving circuit is commonly used for other models.)

※ There is a LED model which the BLDC Motor is not used but AC Motor is used. The LED Model which AC MOTOR is used is described in the Load Driving Circuit Part because it is operated in link with thecompressor.

2) Operating principle

The Fan motor is operated in High speed or Low speed by condition. To run the Freezer Fan, the constant voltage should be impressed to the OP-AMP No. 6 as shown in the Fig. The constant voltage impressed to OP-AMP No.6 depends on the action of MICOM No.34 (HIGH RPM) and No.35 (LOW RPM). The voltage impressed to the motor is around 3 times of this voltage (the Gain at the present setting value) If the voltage across OP-AMP No. 6 is 3.4V, the voltage impressed to the motor is 3.4V x 3 = 10.2V

3) Comparison between High RPM and Low RPM

	The voltage impressed to the motor	Remark
	Freezer Fan	In normal operation of the motor, the constant frequency is input to the MICOM No. 33(F) and with this signal, MICOM checks whether the motor is in normal operation or not. (Frequency (Hz) X 15 = Motor rpm)
On HIGH PRM	10.86V	
On LOW RPM	10.86V	

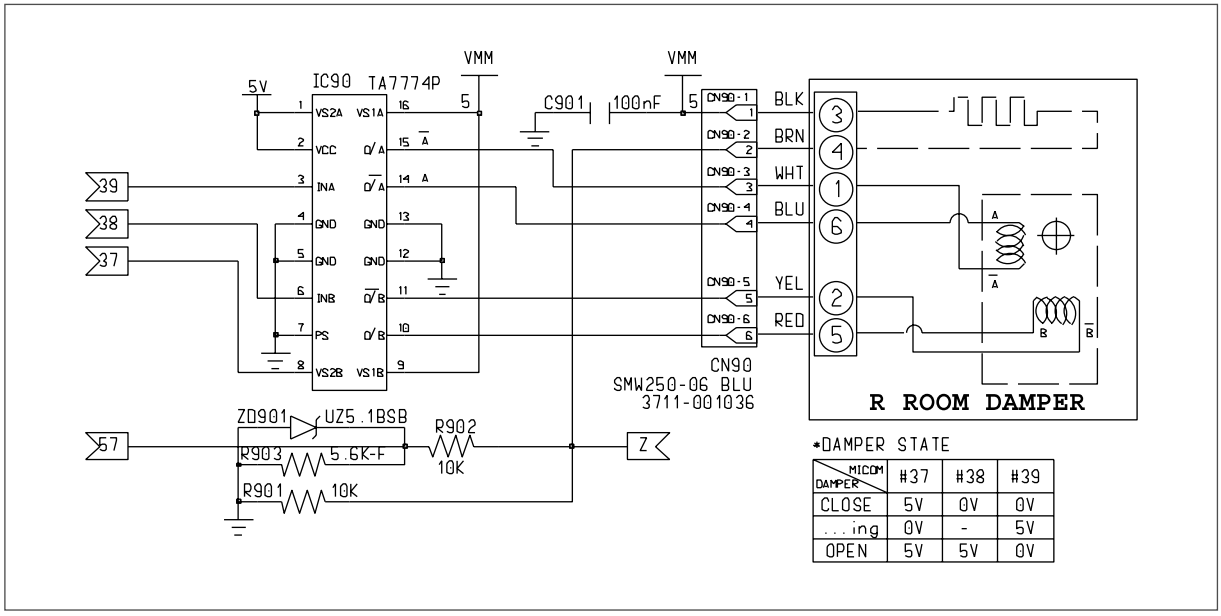
※The voltage error is lass than +/-0.2V

Note) While the fan motors in the freezer compartments are running at high RPM or low RPM depending on the condition, the present model is set with one RPM. (To improve performance, the RPM, voltage, frequency, etc. of the motor can be changed without notice in advance.)

4) When the fault is detected on the motor (In case that the speed is lower than 600-700rpm), the motor stops and restarts after 10 seconds. At this time, if the motor is running with normal speed, the motor state is judged as normal. But, if the normal RPM is not input to the MICOM, the motor restarts after 10 seconds again. In case that the motor can not run at the normal speed even after restarting 5 times, the motor stops for 10 minutes. After 10 minutes, the restarting procedure is tried again in the way of 5-time restarting every 10 seconds and a stop for 10 minutes. If you make self-supervision function started by the front panel of the freezer, the LED related to the faulty motor is lit to indicate that fault.
If you turn off the power, the fault recording data is deleted. You have to check first before turning it off when visiting a customer for service.

Note) During maintenance work, if it is expected that there is an error on the fan motor or the motor is tripped, execute the self-supervision function to check the state of the refrigerator.

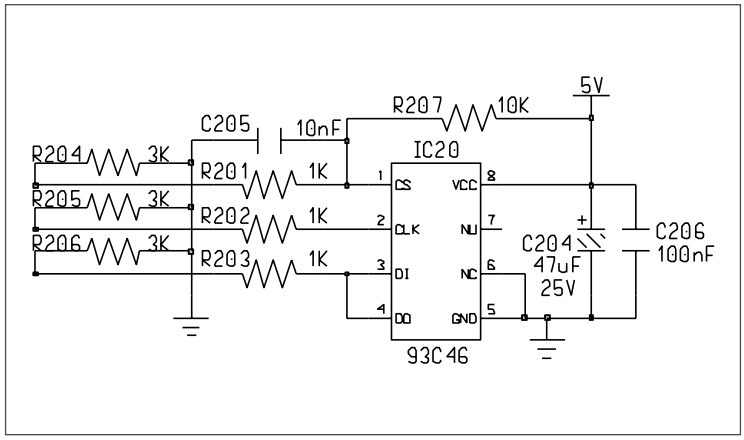
9-3-2-10) The driving circuit part for the dampers in the refrigerator and chammart compartment



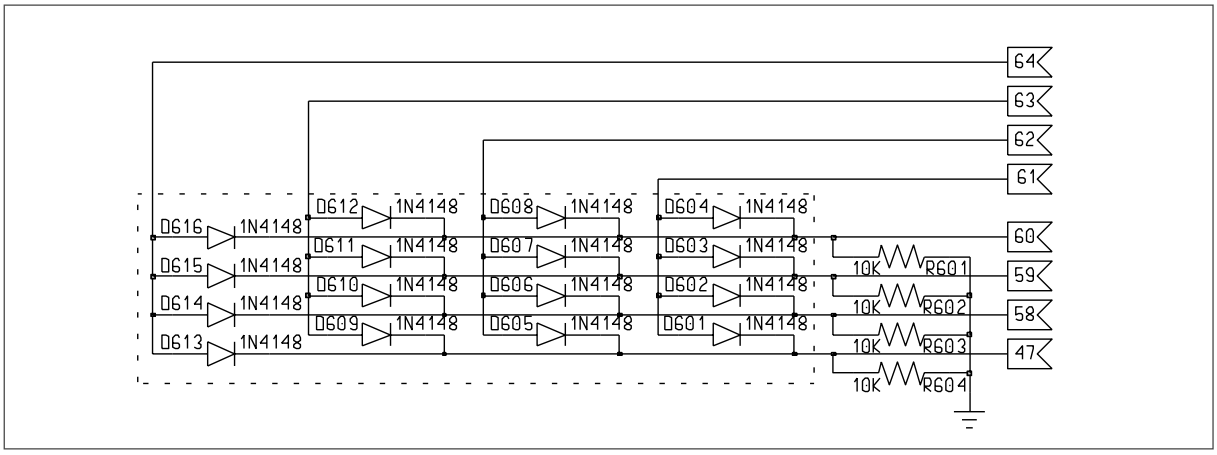
1) The damper in the chammart compartment is controlled by MICOM.
2) The damper in the refrigerator compartment repeats opening and closing. (But, because this is for the refrigerator compartment, the damper in the refrigerator compartment is operated until the temperature in the refrigerator compartment is adjusted in condition.) By IC90, the electric power is supplied to the damper motor (stepping motor) through the 4 wires which are A /A, B/B. The motor rotated forward and in reverse.
3) To check whether the damper motor has a fault or not, disconnect the connectors of CN90 (the damper of the refrigerator compartment) and measure the resistance values between ③-④ and between ⑤-⑥. If the value is between 400~600 Ω, it is normal and if ∞Ω, it is that the wire is disconnected.

9-3-2-11) EEPROM Circuit Part

EEPROM is a semiconductor memory that data is not deleted even though the power is off. Using EEPROM, This model can save the data of the refrigerator which the customer has set even in the area that the electric power is not stable such as momentary interruption. This also has a function to conduct the input and output process for the data selected as options.



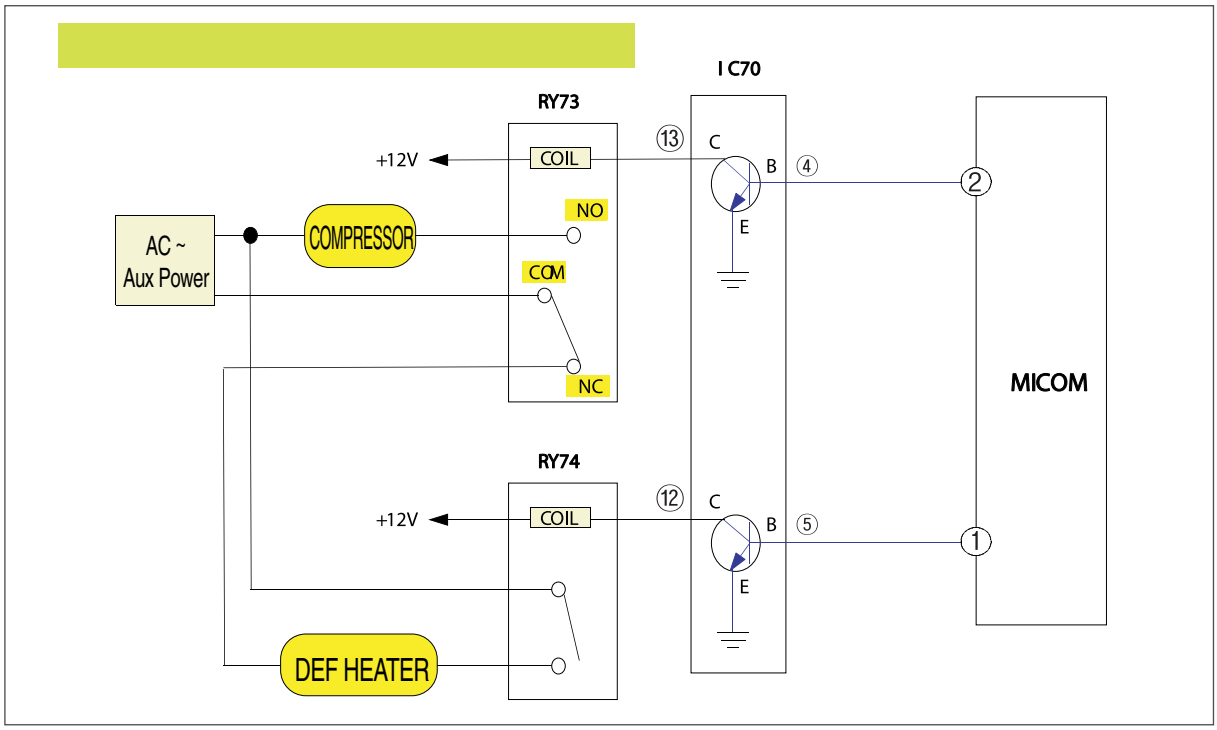
9-3-2-12) EEPROM Circuit Part



Using DIODE (1N4148), this circuit is checked on initial energizing.
When the option circuit is modified, the power should be off. After work, turn it on again.
The option is selected as shown in the table below. Except special situation, you are requested to operate as the specification when the product is shipped.
(※ At present, the standard options are under evaluation)

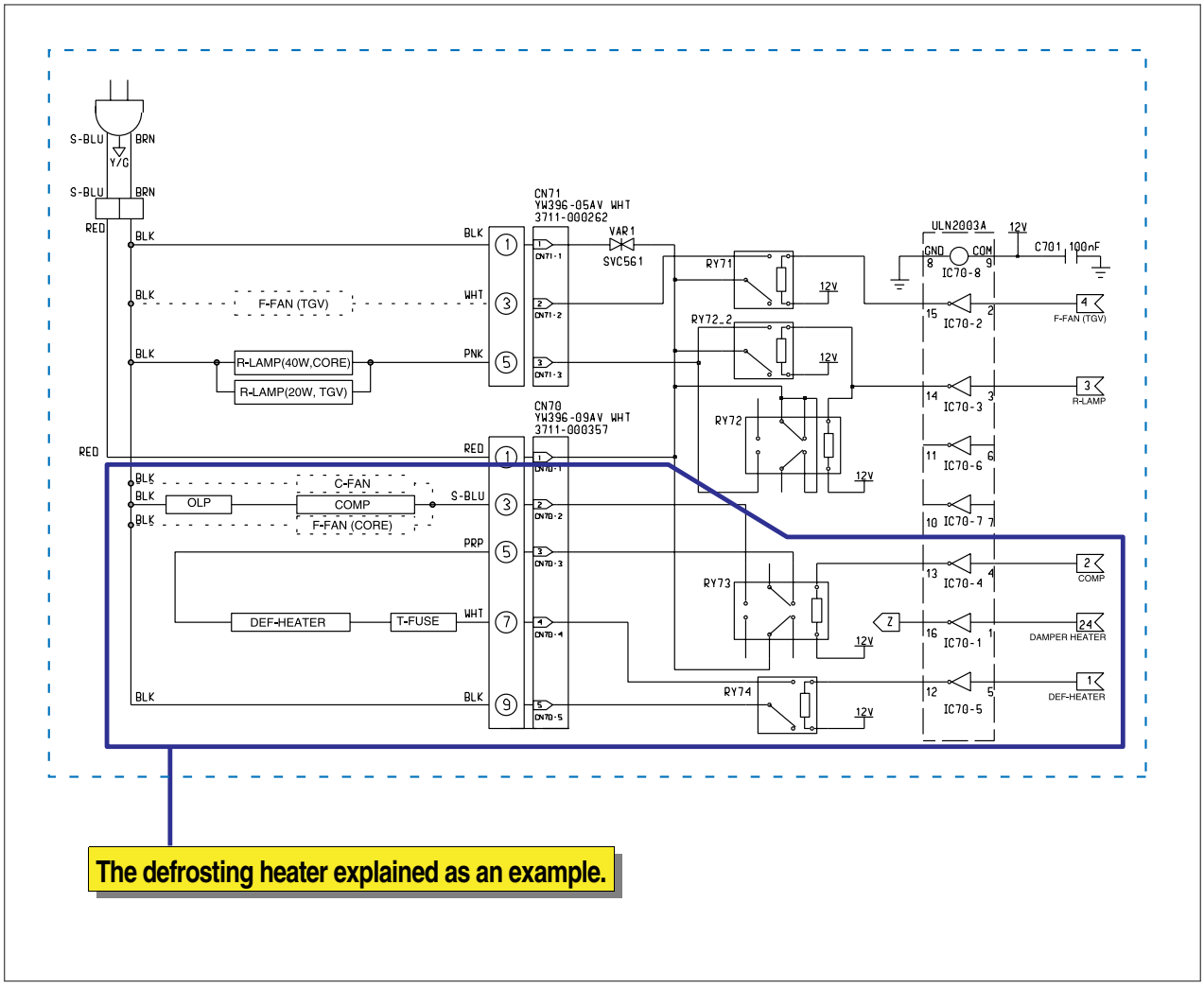
9-3-2-13) Load Driving Circuit Part

1) Most loads of the electronic type refrigerator are controlled by the main PCB.
2) The compressor (F FAN(option)), the defrosting heater, and the lamps in the refrigerator are controlled by the relay.
3) Let me explain about the defrosting heater as an example. To run the defrosting heater, the HIGH(5V) signal comes out from the Pin no. 1 of the MICOM. This signal goes to No. 5 of IC70 as an input. The Pin no. 5 of the IC70 is operated as a base of the NPN TR and the output terminal, Pin no.12 is operated as a collector of the TR. So, if the Pin no. 5 of the IC70 gets 5V input, the No.12 of the IC70 is turned on and conducted to the GND. The end of the COIL connected to the RY74 and the No. 12 of the IC70 becomes LOW(0V) and the power, +12 V, on the other end of the RY74 COIL flows to the GND through No.12 of the IC70. As magnetic lines of force (electromagnet) are generated during flowing current though the coil, the contact of the secondary side (load side) in the RY74 is closed and then, the AC input (220~240VAC) across the defrosting heater turns on the heater.
   In case that the Pin no. 1 of the MICOM becomes LOW(0V), the Pin no. 12 of the IC70 opens (Switch off state) and the power is off. So, the current on the relay RY74 is off, the magnetic lines (electromagnet) are disappeared, the contact of the secondary side opens, and the defrosting heater is off.



4) The other loads are operated in the same principle. (The compressor and the lamps in the refrigerator compartment)
5) AC Fan motor in the refrigerator compartment is an option. The model LED display applied has two selections - BLDC motor or AC Fan motor. The AC Fan Motor is wired in link with the compressor. In case that the compressor is off, the fan is off. In case that the compressor is “on”, the fan is “on”
6) As the lamp part is an option, the circuit was designed to be commonly used. The relay is designed to use both “Small” and “Large” in parallel. If the lamp is larger than 40W, the relay for “big” should be inserted in the socket. (RY72: Relay for large capacity, RY72-2: Relay for small capacity)

Load Driving Circuit Part (PCB Circuit)

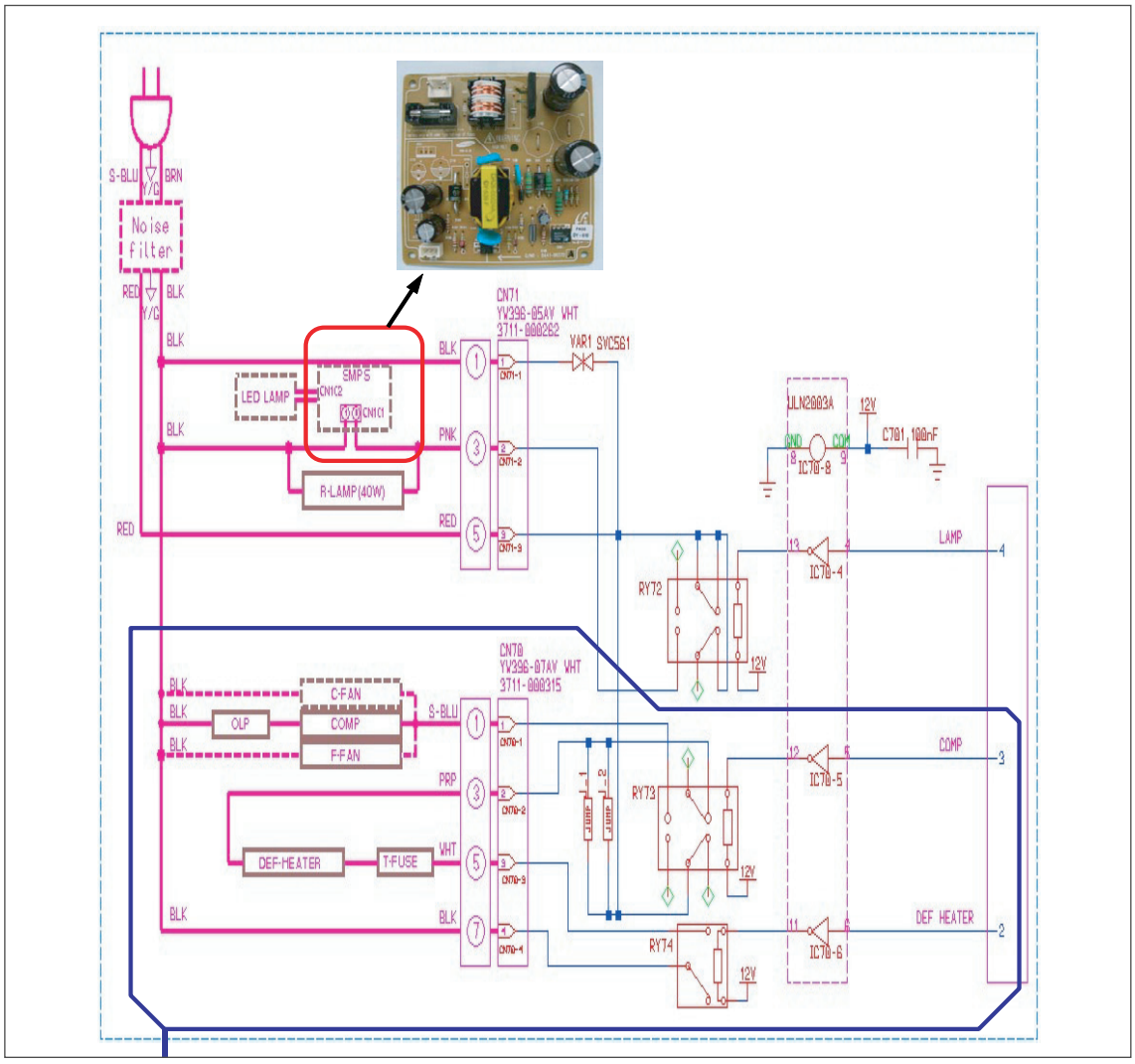


The defrosting heater explained as an example.

REFERENCE INFORMATION

9-4-1 Reference (LCD Model)

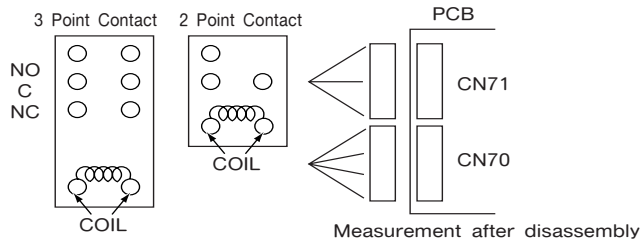
9-4-1-1) Reference (Measuring Load Terminal)



* Measure the following after plugging out the unit and MAIN PCB CN70 & 71 terminals.				
Load	**Terminal (Based on Counterpart #)**	**When measuring**	**Failure Item**	**Remarks**
Freezer defrost HEATER	Between CN70 ③ and ⑤	0 Ω	THERMISTOR, HEATER, WIRE-SHORT	Normal Heater Value (220V: 202ohm)
		∞ Ω	THERMISTOR, HEATER, WIRE-OPEN	
F FAN MOTOR (AC FAN MOTOR OPTION)	Between CN70 ① and ⑦	0 Ω	MOTOR, WIRE-SHORT	Normal Motor Value
		∞ Ω	MOTOR, WIRE-OPEN or SLIPPED-OUT HOUSING	
R LAMP (AC LAMP OPTION)	Between CN71 ① and ③	0 Ω	MOTOR, WIRE-SHORT	Normal Lamp Value
		∞ Ω	MOTOR, WIRE-OPEN or SLIPPED-OUT HOUSING	

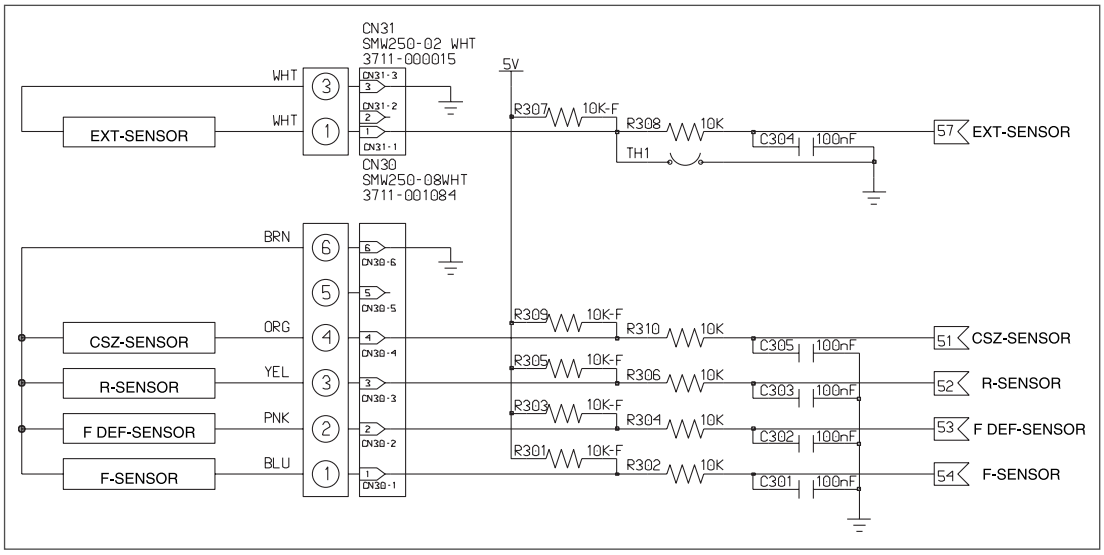
REFERENCE INFORMATION

* Turn on the unit and according to the load status, check the status of the relay and driver circuit as follows.



Operation Status	RELAY	Measurement Terminal(Target Material No. Standard)	Measurement Results	Determination when differing from the Measurement Results
Defrost & COMPRESSOR OFF	RY74	CN70 ⑤ - ⑦	Input Power	RY74 CONTACT SHORT or Defective Driver Circuit
	RY73	CN71 ⑤ - ⑦ - CN70 ①	Input Power	RY73 NO CONTACT SHORT or Defective Driver Circuit
COMPRESSOR Working (F FAN(OPTION))	RY73	CN71 ⑤ - ⑦ - CN70 ①	0V	RY73 NO CONTACT OPEN or Defective Driver Circuit
	RY74	CN70 ⑤ - ⑦	25 ~ 50V	Defective RY74, RY73 NC CONTACT SHORT or Defective Driver Circuit
Defrosting	RY74	CN70 ⑤ - ⑦	0V	Defective RY74, RY73 NC CONTACT SHORT or Defective Driver Circuit
	RY73	CN71 ⑤ - ⑦ - CN70 ①	Input Power	RY73 NO CONTACT SHORT or Defective Driver Circuit
R LAMP On	RY72	CN70 ③ - ⑤	0V	RY72 CONTACT OPEN or Defective Driver Circuit (DOOR SWITCH, DRIVER IC)

9-4-1-2) Reference (Measuring Sensor Terminal)

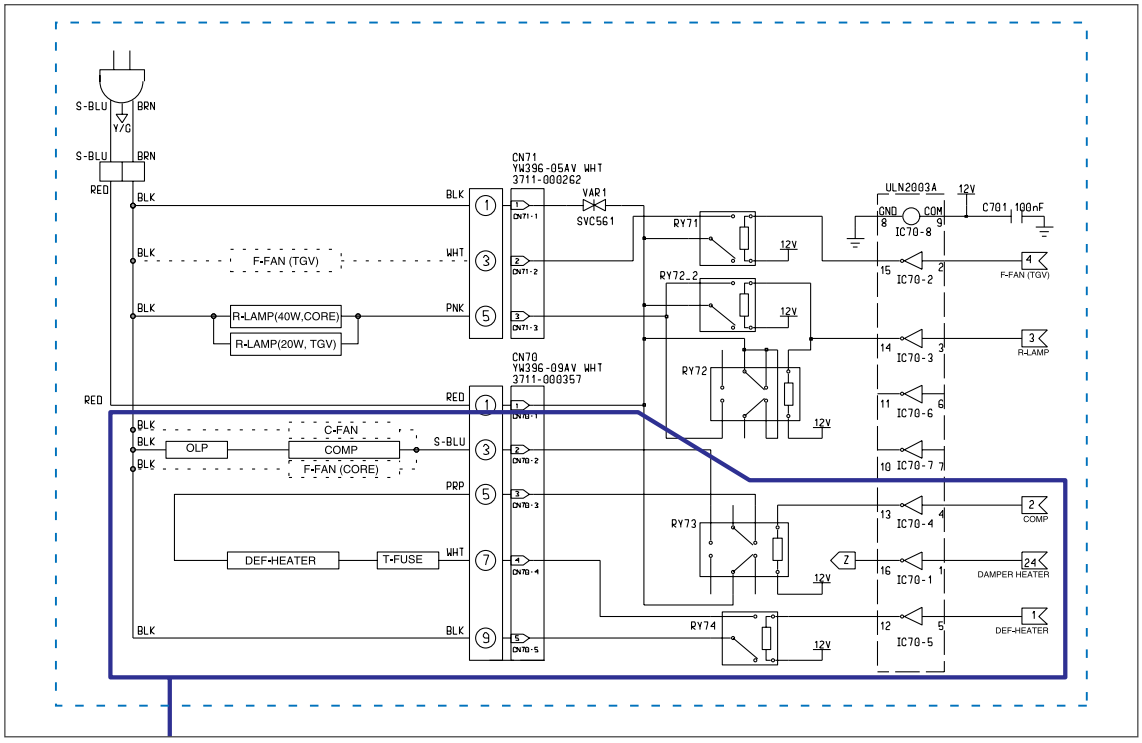


* Measure the following after plugging out the unit and MAIN PCB CN30 & 31 terminals. * When the temp increases, its resistance decreases (NTC TYPE Sensor).	1. Fridge Sensor: Measure between CN30 ③-⑥ 2. Freezer Sensor: Measure between CN30 ①-⑥ 3. Fre-D Sensor: Measure between CN30 ②-⑥ 4. CoolSelect Zone Sensor: Measure between CN30 ④-⑥ 5. Ambient Sensor: Measure between CN30 ①-③ 6. Compare the above values with them in 12. LCD Type 1-6. Temp-to-Sensor Resistance Table and evaluate them.

REFERENCE INFORMATION

9-4-2 Reference (LED Model)

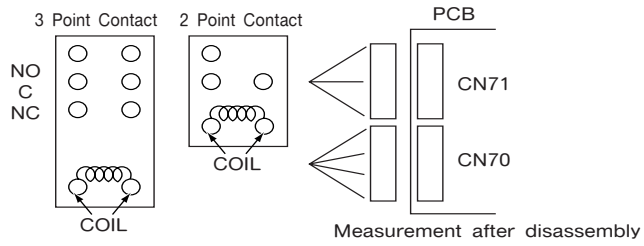
9-4-2-1) Reference (Measuring Load Terminal)



* Measure the following after plugging out the unit and MAIN PCB CN70 & 71 terminals.				
Load	**Measurement Terminal PCB MAIN**	**When measuring**	**Failure Item**	**Remarks**
Freezer defrost HEATER	Between CN70 ⑤ and ⑦	0 Ω	THERMISTOR, HEATER, WIRE-SHORT	Normal Heater Value (220V: 202ohm)
		∞ Ω	THERMISTOR, HEATER, WIRE-OPEN	
F FAN MOTOR (AC FAN MOTOR OPTION)	Between CN70 ③ and ⑨	0 Ω	MOTOR, WIRE-SHORT	Normal MOTOR VALUE
		∞ Ω	MOTOR, WIRE-OPEN or SLIPPED-OUT HOUSING	
R LAMP	Between CN71 ① and ⑤	0 Ω	MOTOR, WIRE-SHORT	Normal LAMP Value
		∞ Ω	MOTOR, WIRE-OPEN or SLIPPED-OUT HOUSING/LAMP	

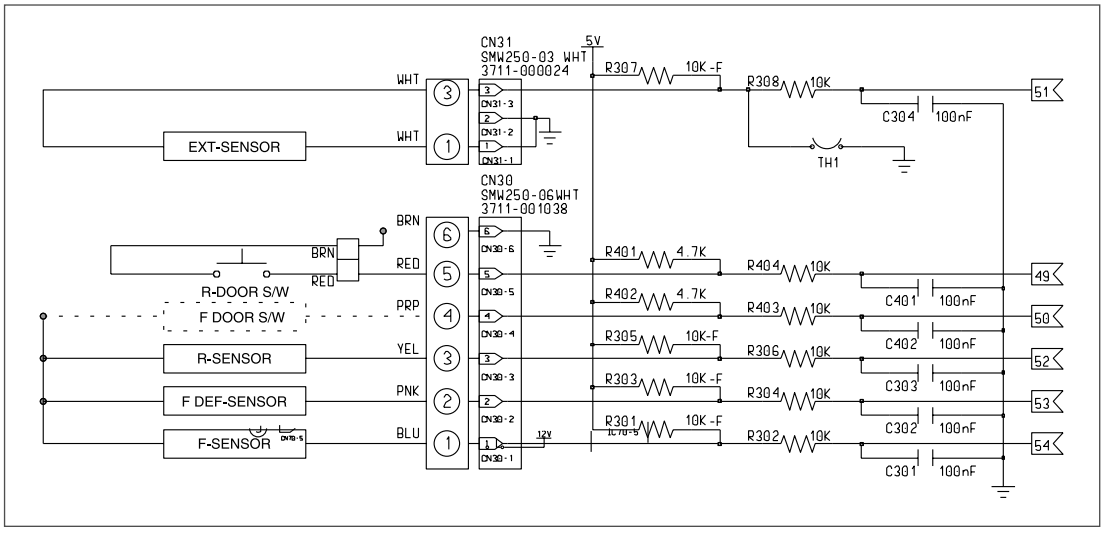
REFERENCE INFORMATION

* Turn on the unit and according to the load status, check the status of the relay and driver circuit as follows.



Working Status	RELAY	Measurement Terminal(Target Material No. Standard)	Measurement Results	Determination when differing from the Measurement Results
Defrost & COMPRESSOR OFF	RY74	CN70 ⑦ - ⑨	Input Power	RY74 CONTACT SHORT or Defective Driver Circuit
	RY73	CN70 ① - ③	Input Power	RY73 NO CONTACT SHORT or Defective Driver Circuit
COMPRESSOR Working (F FAN(OPTION))	RY73	CN70 ① - ③	0V	RY73 NO CONTACT OPEN or Defective Driver Circuit
	RY74	CN70 ⑦ - ⑨	25 ~ 50V	Defective RY74, RY73 NC CONTACT SHORT or Defective Driver Circuit
Defrosting	RY74	CN70 ⑦ - ⑨	0V	Defective RY74, RY73 NC CONTACT SHORT or Defective Driver Circuit
	RY73	CN70 ① - ③	Input Power	RY73 NO CONTACT SHORT or Defective Driver Circuit
R LAMP Working	RY72	CN71 ⑤ - CN70 ①	0V	RY72 CONTACT OPEN or Defective Driver Circuit (DOOR SWITCH, DRIVER IC)

9-4-2-2) Reference (Measuring Sensor Terminal)



* Measure the following after plugging out the unit and MAIN PCB CN30 & 31 terminals.
* When the temp increases, its resistance decreases (NTC TYPE Sensor).

1. Fridge Sensor: Measure between CN30 ③-⑥
2. Freezer Sensor: Measure between CN30 ①-⑥
3. Fre-D Sensor: Measure between CN30 ②-⑥
4. Ambient Sensor: Measure between CN30 ①-③
5. Compare the above values with them in 12. LED Type 2-6. Temp-to-Sensor Resistance Table and evaluate them.

9-4-2-3) Reference (Circuit Service Material LIST)

NO	Item	SPEC	CODE NO	Remarks
1	PBA MAIN	CORE LCD	DA41-00364A	BLDC MOTOR
		CORE LCD	DA41-00364B	AC MOTOR
		CORE LED	DA41-00362D	BLDC MOTOR(RL41H)
		CORE LED	DA41-00362H	BLDC MOTOR(RL38H)
		CORE LED	DA41-00362A	AC MOTOR(RL44/RL41)
		CORE LED	DA41-00362G	AC MOTOR(RL38)
		CORE SEMI LED	DA41-00362C	AC MOTOR(RL44/RL41)
		CORE SEMI LED	DA41-00362F	AC MOTOR(RL38)
2	PBA PANEL	CORE LCD	DA41-00371A	
		CORE LED	DA41-00369A	
		CORE SEMI LED	DA41-00370A	
3	PBA SMPS	LED SUB	DA41-00372A	LED LAMP power
4	TRANS DC	220~240V/50Hz	DA26-00009K	
5	SENSOR	Defrost Sensor	DA32-00006B	
		CoolSelect Zone Sensor	DA32-00011N	Only for LCD model
		Freezer Sensor	DA32-00006G	
		Fridge Sensor	DA32-10105R	
		True Taste Sensor	DA32-00011P	

❊ The final digit (DA41-XXXXX?) for MAIN PCB ASS'Y code subjects th change.
So, make sure you have the correct one."

REFERENCE INFORMATION

9-5 Nomenclatrue

R L 44 W C SW 1 / ***

BUYER NO.

EXTERIOR COLOR ;

SW-CABI : SNOW WHITE(PCM)	PS-CABI : TITAN GRAY(PCM)
DOOR : SNOW WHITE(PCM)	DOOR : PLATINM SILVER(PET)
IS-CABI : INOX(PCM)	TB-CABI : TITANIC BLACK
Door : INOX(Vertical H/L,VCM)	DOOR : TITANIC BLACK
US-CABI : VERSAILLES STS(PET)	IH-CABI : INOX(PCM)
DOOR : UNCOATED REAL STAINLESS	DOOR : INOX(Horizontal H/L,VCM)

HANDLE TYPE

B : RECESSED TYPE	C : SHORT BAR(ABS)
D : SHORT BAR (NORMAL)	E : EASY HANDLE
G: SHORT BAR(AL)	

Function

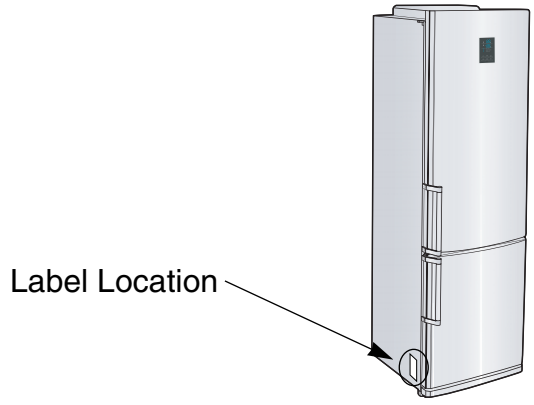
E : ELECTRONIC + LED	F : ELECTRONIC + LCD
S : SEMI ELECTRONIC	W : ELECTRONIC + DISPENSER+LED
Q : ELECTRONIC + LCD(ENERGY A+)	H : ELECTRONIC + LED(ENERGY A+)

P: ELECTRONIC+DISPENSER(BRITA Filter)+LED(ENERGY A+)

VOLUME CAPACITY
44 : 350L 41 : 330L 38 : 300L

CATEGORY
L : Low Mounted Freezer

BRAND : R-SAMSUNG REFRIGERATOR B-OEM REFRIGERATOR



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Refrigerator Division 2008. 03
Printed in Korea