Fast Track Troubleshooting

Models Covered:
RF197ACPN

French Door Refrigeration

IMPORTANT SAFETY NOTICE – "For Technicians Only" This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.

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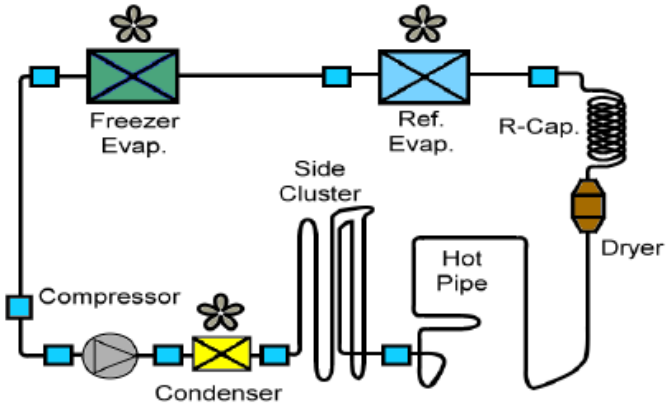
Self Diagnosis: Press the Pwr Freeze—Pwr Cool buttons simultaneously for 8-12 seconds (No sound when both buttons are pressed at the same time) until the display quits blinking. Release the buttons and read Fault Codes. This will also cancel the Fault Mode created by self-diagnosis at power up.

Forced Mode: Press the Pwr Freeze– Fridge buttons simultaneously for 8-12 seconds (No sound when both buttons are pressed at the same time) until the display beeps and goes blank.

Wait 5 seconds between button pushes

Forced Compressor	*Forced Defrost for Fridge*	*Forced Defrost both compartment*	*Cancellation, unplug unit*
Press the Freezer button one time at the Test Mode to Force Compressor Run. Measure fan and compressor voltage at main PCB.	Press the Freezer button a second time to Force Fridge Defrost. Measure defrost voltage at main PCB.	Press Freezer button a third time to Force Defrost for Fridge & Freezer, measure defrost voltages at main PCB	

Sealed System



Compressor → Condenser →Side Cluster → Hot Pipe→ Dryer → R Capillary → R Evaporator → F Evaporator → Suction Pipe → Compressor

Sales Mode, No Compressor Operation

Press Power Freeze & Freezer temp buttons simultaneously for 3 sec (you will hear a "Ding Dong") to remove or put into Sales Mode. When in the Sales Mode the Display will show "OF" "OF"

Removing power will not cancel this mode.

Component Value Chart

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	62.6Ω	230	120vac
Fridge Defrost Heater	120Ω	120	120vac
French Mullion Heater	2057Ω	7	120vac
Ice Duct Heater	2057Ω	7	120vac
Dispenser Heater	9000Ω	1.6	120vac
Damper	144Ω	1	12vdc
Sensors	2.5kΩ-89kΩ	N/A	1~4.5vdc
Fans	N/A	N/A	7~12vdc

Refrigerant Charge
R134a 5.64 oz.

DC FAN MOTORS

Brushless DC Fan motors are used to save energy. The fans operate at two speeds. Fan speed information is read by the Main PCB. If the fan speed exceeds 600 RPM or the speed is too slow, or stopped the fan drive circuit is disabled, After 10 seconds the circuit tries again with 3 seconds of DC voltage. If the fan continues this activity for 5 cycles, 10 seconds off 3 seconds on, the fan drive circuit is disabled for 10 minutes.

TO TEST THE FAN CIRCUIT VOLTAGE.

Power off and back on to check the DC voltage to the motor, wait from 10 to 60 seconds for the fan voltage to kick in, and then check fan voltage, the average reading is 9 VDC. If you get 3 seconds of voltage every 10 seconds for the 5 fan power up cycles, then the Main PCB is good.

NOTE: You may need to put unit in FORCED FREEZE mode to activate the fans/compressor.

If the fan blade is blocked by ice, then defrost and check the motor again, after removing power from the unit.

If the evaporator is ice blocked and thus blocking the air flow, the fan will over RPM and will be stopped. Remove ice and check the motor again. If everything is clear around the fan blade then the motor would be at fault. Continuous fan errors will be displayed on the front panel display. **PLEASE NOTE:** The door switches control the evaporator fan motors. Have them closed to test the motors. Delay time 10 – 60 seconds.

FLEX TRAY Ice Makers

When the initial power is applied, the ice tray will stand by for 2 hours. After the 2-hour standby time, the Ice Maker Sensor will check the temperature , when it is lower than 1.5°F for more than 5 minutes, it will do a harvest, with or without ice in the tray, then fill with water. 58 minutes after water is supplied to the Ice Tray, the Ice Maker Sensor temperature will be checked. When the Ice Maker Sensor maintains lower than 1.5°F for 5 minutes, it completes the harvest (if the ice bin is not sensed as full).

Filling the tray

After the water fill is completed, the ice maker sensor will evaluate the water volume one and a half minutes later. When it detects no or low water level, it will add more water. First supply time will be 1.5 sec, next one will be 1 sec and the last will be 2 sec.

FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

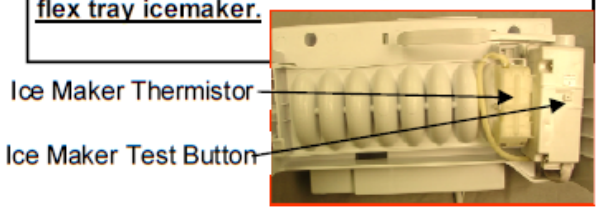
Interior Temperature of the freezer will be set to -14 degrees Fahrenheit until the ice bucket is full. When the ice bucket is full, the freezer will maintain original set temperature. Also, whenever the ice is used, the freezer will again set to -14 degrees Fahrenheit. Selecting "Ice Off" will allow the freezer to be controlled by the set temperature. If water is not hooked up, the freezer will always be at –14 unless "Ice Off" is selected.

Shattered Ice – Flex Tray

When all ice shatters, it's because of a bad tray or ice cube temp that is too cold (lower than -5 degrees). In some areas, there are water issues that can also cause shattered cubes. The temp in the freezer should not have any effect on this issue, as long as it's below 1.5 degrees F, as a properly installed sensor will not read the freezer temp, only the water/ice temp.

Check the Ice tray for defects in the plastic. Ice that is too cold will shatter during harvest. This can be from the (1) sensor not reading the correct temp (2) or the sensor not mounted correctly (3). By programming the ice-maker offset value to a lower number (4), the board not understanding the reading.

Please note, some shattering is normal for a flex tray icemaker.

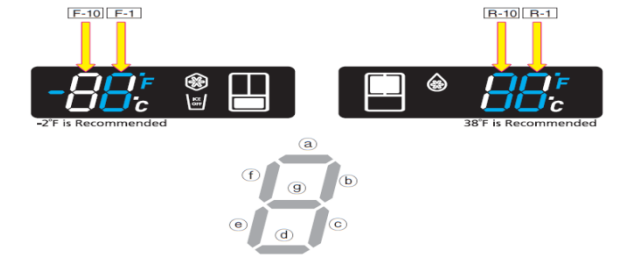


Temperature/Resistance/Voltage Chart for Samsung Refrigerators Sensors

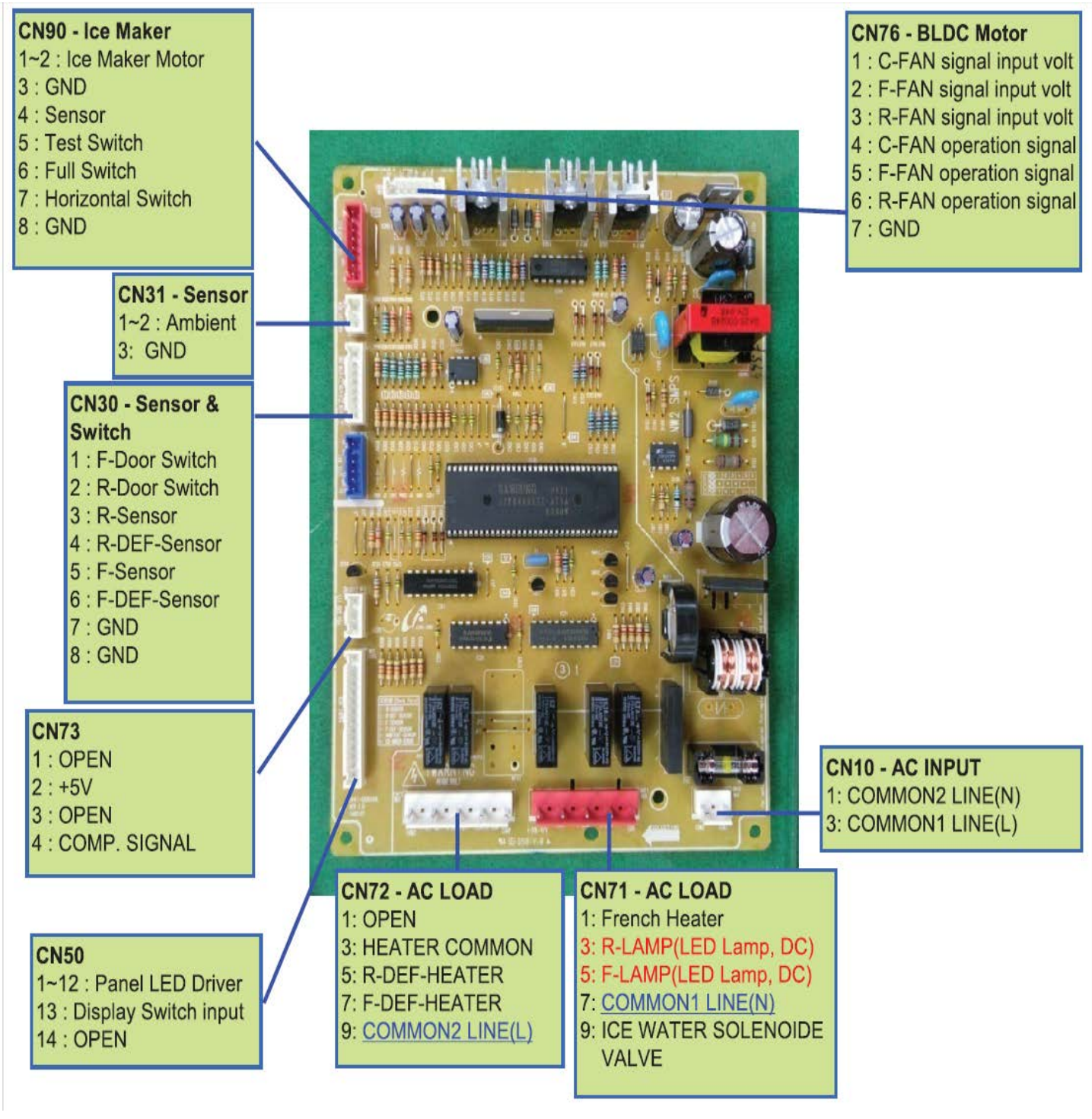
Temp.	(Ω)	Volts	Temp.	(Ω)	Volts	Temp.	(Ω)	Volts	Temp.	(Ω)	Volts
-29.2°F	64227	4.326	1.4°F	28021	3.685	32.0°F	13290	2.853	62.6°F	6771	2.019
-27.4°F	61012	4.296	3.2°F	26760	3.64	33.8°F	12749	2.802	64.4°F	6521	1.974
-25.6°F	57977	4.264	5.0°F	25562	3.594	35.6 °F	12233	2.751	66.2°F	6281	1.929
-23.8°F	55112	4.232	6.8°F	24425	3.548	37.4 °F	11741	2.7	68.0°F	6052	1.885
-22.0°F	52406	4.199	8.6°F	23345	3.501	39.2 °F	11271	2.649	69.8°F	5832	1.842
-20.2°F	49848	4.165	10.4°F	22320	3.453	41.0°F	10823	2.599	71.6°F	5621	1.799
-18.4°F	47431	4.129	12.2°F	21345	3.405	42.8°F	10395	2.548	75.2°F	5225	1.716
-16.6°F	45146	4.093	14.0°F	20418	3.356	44.6°F	9986	2.498	77.0°F	5000	1.675
-14.8°F	42984	4.056	15.8°F	19537	3.307	46.4°F	9596	2.449	78.8°F	4861	1.636
-13.0°F	40938	4.018	17.6°F	18698	3.258	48.2°F	9223	2.399	80.6°F	4690	1.596
-11.2°F	39002	3.98	19.4°F	17901	3.208	50.0°F	8867	2.35	86.0°F	4218	1.483
-9.4°F	37169	3.94	21.2°F	17142	3.158	51.8°F	8526	2.301	87.8°F	4072	1.447
-7.6°F	35433	3.899	23.0°F	16419	3.107	53.6°F	8200	2.253	89.6°F	3933	1.412
-5.8°F	33788	3.858	24.8°F	15731	3.057	55.4°F	7888	2.205	91.4°F	3799	1.377
-4.0°F	32230	3.816	26.6°F	15076	3.006	57.2°F	7590	2.158	95.0°F	3547	1.309
-2.2°F	30752	3.773	28.4°F	14452	2.955	59.0°F	7305	2.111	96.8°F	3428	1.277
-0.4°F	29350	3.729	30.2°F	13857	2.904	60.8°F	7032	2.064	100.4°F	3204	1.213

∗ Self-diagnostics check list

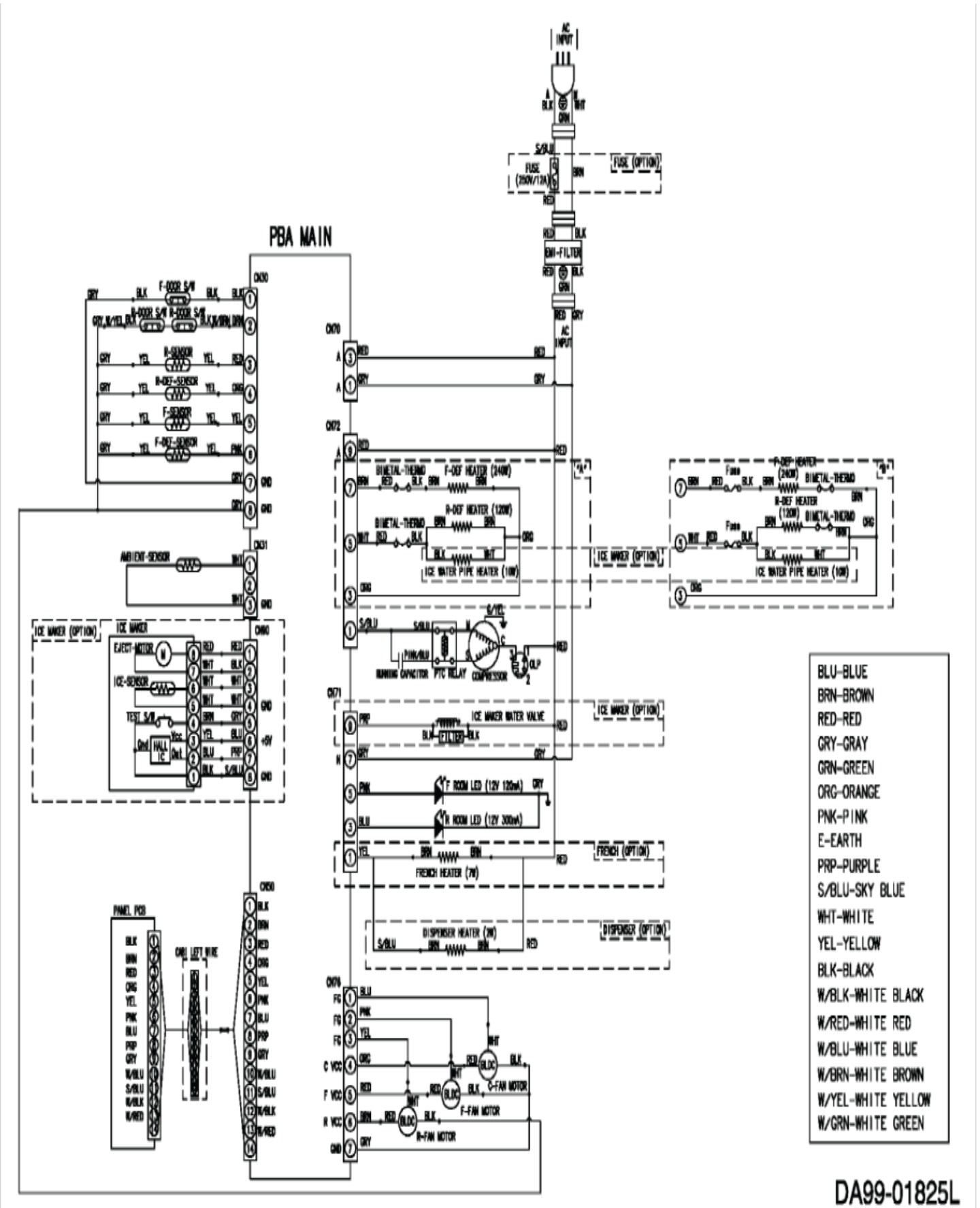
LED	Item	Trouble contents	Diagnostic method
R-1-ⓐ	Ice Maker Sensor Error	Display error : In case of Separation of sensor housing part, contact error, disconnection, short circuit. Display error by temperature : when the sensing temperature is more than 149°F (+65℃) or less than -58°F(-50℃).	When checking the voltage of MAIN PCB CN90 #3 ↔ #4 : Shall be between 4.5V~1.0V.
R-1-ⓑ	R-Sensor Error		When checking the voltage of MAIN PCB CN30 #3 ↔ #8 : Shall be between 4.5V~1.0V.
R-1-ⓒ	R-DEF-Sensor Error		When checking the voltage of MAIN PCB CN30 #4 ↔ #8 : Shall be between 4.5V~1.0V.
R-1-ⓓ	R-FAN Error	Display error : In case of Feed Back signal line contact error, separation of motor wire, motor itself error during operation of applicable fan motor.	Voltage of MAIN PCB CN76 Yellow ↔ Gray : Shall be between 7V~12V.
R-1-ⓔ	Ice Maker Error	Display error : When ice making kit is harvested more than 3times and level error. ** Only for the Ice Maker applied model.	After replacing ice maker, check the operation by turning the appliance ON again.
R-1-ⓖ	R-DEF. Error	**Fresh food Compartment** Display error : In case of separation of defrost heater housing, contact error, disconnection, short circuit, or temperature fuse error. Display error : If defrost does not finish though the defrost of fresh food compartment is heating continuously for more than 80 minutes.	After separating MAIN PCB CN72 wire from PCB, the checked resistance value of CN70 White ↔ Orange shall be 103/397ohm ±10% (Resistance value is varied by input power) ↔ Model without Ice maker (120ohm ± 10%) Check 0 Ohm for heater short, & ∞ Ohm for wire / bimetal Open.
F-1-ⓐ	Ambient-Sensor Error	Display error : In case of separation of sensor housing parts, contact error, disconnection, short circuit. Display error by temperature : When the sensing temperature is more than 149°F (+65℃) or less than -58°F(-50℃).	When checking the voltage of MAIN PCB CN31 #1 ↔ #3 : Shall be between 4.5V~1.0V.
F-1-ⓑ	F-Sensor Error		When checking the voltage of MAIN PCB CN30 #5 ↔ #8 : Shall be between 4.5V~1.0V.
F-1-ⓒ	F-DEF-Sensor Error		When checking the voltage of MAIN PCB CN30 #6 ↔ #8 : Shall be between 4.5V~1.0V.
F-1-ⓓ	F-FAN Error	Display error : In case of Feed Back signal line contact error, separation of motor wire, motor itself error during operation of applicable fan motor.	Voltage of MAIN PCB CN76 Pink ↔ Gray : Shall be between 7V~12V.
F-1-ⓔ	C-FAN Error	Display error : In case of Feed Back signal line contact error, separation of motor wire, motor itself error during operation of applicable fan motor.	Voltage of MAIN PCB CN76 Blue ↔ Gray : Shall be between 7V~12V.
F-1-ⓖ	F-DEF. Error	**Freeze Compartment** Display error : In case of separation of defrost heater housing, contact error, disconnection, short circuit or temperature fuse error. Display error : If defrost does not finish though the defrost of freeze compartment is heating continuously for more than 70 minutes.	After separating MAIN PCB CN72 wire from PCB, the checked resistance value of CN70 Brown ↔ Orange shall be 66/240 ohm ±10%. (Resistance value is varied by input power) Check 0 Ohm for heater short, & ∞ Ohm for wire / bimetal Open.



Main PCB


CN90 - Ice Maker
1~2 : Ice Maker Motor
3 : GND
4 : Sensor
5 : Test Switch
6 : Full Switch
7 : Horizontal Switch
8 : GND
CN76 - BLDC Motor
1 : C-FAN signal input volt
2 : F-FAN signal input volt
3 : R-FAN signal input volt
4 : C-FAN operation signal
5 : F-FAN operation signal
6 : R-FAN operation signal
7 : GND
CN31 - Sensor
1~2 : Ambient
3: GND
CN30 - Sensor & Switch
1 : F-Door Switch
2 : R-Door Switch
3 : R-Sensor
4 : R-DEF-Sensor
5 : F-Sensor
6 : F-DEF-Sensor
7 : GND
8 : GND
CN73
1 : OPEN
2 : +5V
3 : OPEN
4 : COMP. SIGNAL
CN10 - AC INPUT
1: COMMON2 LINE(N)
3: COMMON1 LINE(L)
CN50
1~12 : Panel LED Driver
13 : Display Switch input
14 : OPEN
CN72 - AC LOAD
1: OPEN
3: HEATER COMMON
5: R-DEF-HEATER
7: F-DEF-HEATER
9: COMMON2 LINE(L)
CN71 - AC LOAD
1: French Heater
3: R-LAMP(LED Lamp, DC)
5: F-LAMP(LED Lamp, DC)
7: COMMON1 LINE(N)
9: ICE WATER SOLENOIDE VALVE

Main PCB



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