Fast Track Troubleshooting

Model:
RF260BEA*

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.

Bulletins:

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Support Information:
HELP: 1-888-751-4086 (Tech Sup. – ASC/SSD)
1-866-894-0637 (Tech Sup. - FE/ME)
GSPN: http://gspn3.samsungcsportal.com/main.jsp
PLUS ONE: http://my.plus1solutions.net/clientPortals/samsung

Force Mode:

Press the Power Freeze and Fridge buttons simultaneously for 8 Seconds, until the display goes blank. Press any key within 15 seconds to cycle through the mode in the following order: Manual operation1(FF) Manual operation2(0F-r) -> manual defrost of fresh food compartments(rd) -> manual defrost of fresh and freezer compartments(fd) -> cancel(Display all off)

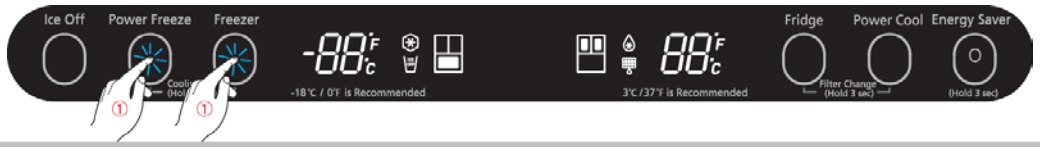
Self-Diagnostic Mode:

If Power Freezer key + Power Fridge key are pressed simultaneously for 8 seconds (including above 2 seconds), self-diagnostic function will be selected. At this moment, self-diagnostic function will be returned with buzzer sound 'ding-dong'. If there is an error, display of error will be operated for 30 seconds and then return to normal condition, whether problem is corrected or not. (Refer to self-diagnosis CHECK LIST) See error code list , page 3.

Load Mode:

① If Power Freezer key + Power Fridge key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 2 seconds.
② If take the finger off from above keys and press Fridge, load condition mode will be started. See Load Mode Check List, page 6.

Cooling Off Mode:



If Power Freeze key + Freezer key are pressed for 5 seconds, Cooling off mode will be started. If above Power Freeze key + Freezer key are pressed one more time, Cooling off mode will be canceled. If Cooling off mode is selected, blinks "OF-OF" on the temperature setting display the panel and it indicates the refrigerator has entered the Cooling Off mode.

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 is 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.

Heat Release Ice Makers

Heat Release Ice production Explanation

38 minutes after the water fill is complete, the control board will check the temperature of the eject Thermistor, on the Ice Maker Head, if the Thermistor reads a temperature lower than 18.5 degrees for more than 5 seconds, then the ice production process is completed. The Ice maker will harvest if the ice bucket is not sensed as full. If a Fault Mode is detected with the Ice Maker operation, the Ice Maker stops working for 3 hours. Which means, the Ice Maker checks the operation every 3 hours until it works properly.

Heat Release I/M Test Mode

Press and hold the ICE TEST S/W for at least 1.5sec, the harvest function will start. If the ice maker Thermistor is below 0 degrees the Ice maker heater turns on for about 2 minutes. If the temperature exceeds 0 degrees, Ice maker heater turns on for 30 seconds. After the Ice maker heater turns on for 30 seconds, the heater turns off and then Ice maker harvest motor turns on. The motor will rotate in right direction for about 3 minutes, after this, water supply valve is turned on, then the valve is turned off, the test mode is completed. If the above operation is not carried out within 6 minutes, it will go into a fault mode.

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.

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-diagnosis checklist

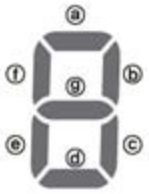
5-1. Function for failure diagnosis

* Self-diagnosis CHECK LIST

LED F	LED R	Item	Trouble contents	Diagnostic method
1	E	FZ-Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit. Display error of detecting temperature of sensor : more than 149℉(+65℃) or less than -58℉(-50℃)	When measuring the voltage between the Main PCB CN30-"4" ↔ CN76-"1", it should read between 4.5V~1.0V.
2		FF-Sensor Error		When measuring the voltage between the Main PCB CN30-"5" ↔ CN76-"1", it should read between 4.5V~1.0V.
4		FZ-DEF-Sensor Error		The voltage of MAIN PCB CN30- "5" ↔ CN76-"1": shall be between 4.5V~1.0V
5		FF-DEF-Sensor Error		When measuring the voltage between the Main PCB CN30-"8" ↔ CN76-"1", it should read between 4.5V~1.0V.
6		Ambient-Sensor Error		The voltage of MAIN PCB CN78- "8" ↔ CN78-"12": shall be between 4.5V~1.0V
7		Flex room-Sensor Error		The voltage of MAIN PCB CN78- "9" ↔ CN76-"1": shall be between 4.5V~1.0V
8		Ice Maker(FZ) Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit Display error of detecting temperature of sensor: more than 149(+65℃) or less than -58℉(-50℃)	The Voltage of MAIN PCB CN90 #8<->#9: Shall be between 4.5v ~ 1.0v
13	E	Humidity-Sensor Error	Separation of sensor housing part, contact error, disconnection, short circuit	When measuring the voltage between the Main PCB CN30-"3" ↔ CN76-"1", it should read between 4.5V~1.0V.
21		FZ-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN76- "3" (Yellow) ↔ CN76-"1"(Gray): shall be between 7V~12V
22		FF-FAN Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN76- "4" (Orange) ↔ CN76-"1"(Gray): shall be between 7V~12V
23		FZ-DEF Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	The voltage of MAIN PCB CN76- "5" (Sky-blue) ↔ CN76-"1"(Gray): shall be between 7V~12V

LED		Item	Trouble contents	Diagnostic method
F	R			
24	E	FZ-DEF Error	Separation of freezer compartment defrost heater housing part, contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though freezer compartment defrost is heating continuously for more than 80 minutes.	After separating MAIN PCB CN70 wire from PCB, resistance value between CN70 Brown ↔ CN70 Gray shall be 63(230) ohm ± 7%.(Resistance value is varied by input power) 0 ohm : heater short, ∞ ohm : wire/bimetal open (Must power off)
25		FF-DEF Error	Separation of fresh food compartment defrost heater housing part, contact error, disconnection, short circuit or temperature fuse error. Display error : the defrosting does not finish though fresh food compartment defrost is heating continuously for more than 80 minutes.	After separating MAIN PCB CN70 wire from PCB, resistance value between CN70 White ↔ CN70 Gray shall be 120(440) ohm±7%.(Resistance value is varied by input power) 0 ohm : heater short, ∞ ohm : wire/bimetal open (Must power off)
26	E	Ice Maker(FZ) Function Error	When the Freezer Ice Maker error occurs more than 3 times, the error will be displayed.	After replacing the Ice Maker, check if it operates normal.
27		"Flex Zone-Damper-Heater Error"	Display error when open error is detected by damper heater : separation of Damper Heater housing part, contact error, disconnection, short circuit.	After separating MAIN PCB CN77 wire from PCB, resistance value between Black ↔ Brown wire shall be 135 ohm± 7%. 0 ohm : heater short, ∞ Ohm : wire / bimetal Open.
33		FZ-Ice Pipe Heater Error	The error occurs when there is a wire connector slip-out of the Water Supply Pipe Heater, a contact error or a breakage in the wiring.	When measuring the resistance of the Main PCB CN79 Yellow-Pink wires, it should be within 102Ω ±7%. 0Ω : heater short, ∞Ω : Check for Wire Open or Connector Slip-out

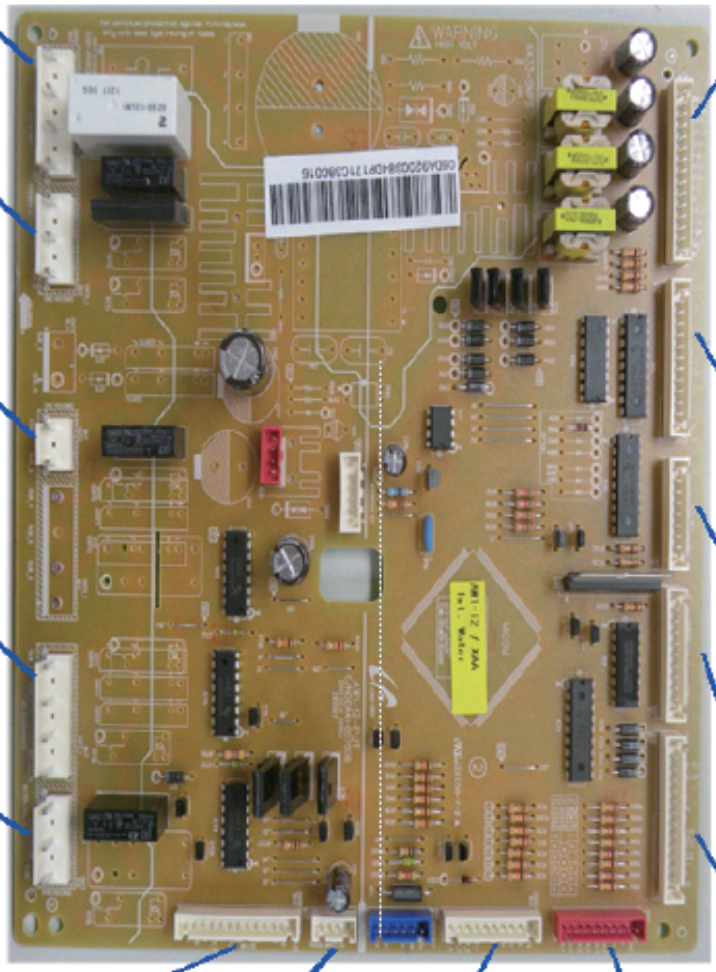
LED		Item	Trouble contents	Diagnostic method
F	R			
41	E	Panel ↔ Main Communication Error	Display pc - Er in the panel with alarm : MICOM MAIN ↔ PANEL communication error.	Actually, If there is not a problem, it is desirable to replace Main and Panel PCB With the oscilloscope after a cable problem confirming.
81		Comp starting Failure	When the Compressor fails starting	Check if there is a short between compressor terminals. Check IPM Voltage [Under 13.5V] Check if there is a short between IPM Pins [#1~33] Check the Compressor and the Cycle
82		IPM Fault	When there is a IPM Fault error	
83		Comp Abnormal current Detection	When there is abnormal current detected at the Compressor	Check the Compressor connections Check the voltage of Resistance of R308 [0.09Ohm] Check the Compressor and the Cycle
84		Motor Locked Over RPM	When there is a Compressor restriction error	Check the voltage of Resistance of R308 [Short/Open] Check the voltage of both of C103 terminals [Unstable Voltage] Check the Compressor and the Cycle
85	E	Comp under voltage	When there is a low voltage error	Check the voltage of Resistance of R513 [Short/Open]
86		Comp over voltage	When there is a over voltage error	Check the voltage of Resistance of R501, R505, R509 [Short/Open]



* Load mode Check list

Display LED	Display contents	Operation contents
R-1-ⓐ	R-FAN High	When FF compartment FAN operates with high speed, applicable LED ON
R-1-ⓑ	R-FAN Low	When FF compartment FAN operates with low speed, applicable LED ON
R-1-ⓒ	R-DEF Heater	When FF compartment defrost heater operates, LED ON
R-1-ⓓ	Start Mode	When refrigerator is plugged initially, LED ON
R-1-ⓔ	Overload condition	When ambient temperature is more than 93°F(34°C), LED ON
R-1-ⓕ	Low temperature condition	When ambient temperature is less than 72°F(22°C), LED ON
R-1-ⓐ,ⓕ ALL LED Off	Normal Condition	When ambient temperature is between 73°F(23°C) and 91°F(33°C)
R-1-ⓖ	Exhibition Mode	LED ON at the display mode.
F-1-ⓐ	COMP.	When COMP operates, applicable LED ON.
F-1-ⓑ	F-FAN High	When FZ compartment FAN operates with high speed, applicable LED ON.
F-1-ⓒ	F-FAN Low	When FZ compartment FAN operates with low speed, applicable LED ON.
F-1-ⓓ	F-DEF Heater	When FZ compartment defrost heater operates, LED ON
F-1-ⓔ	C-FAN High	When compressor FAN operates with high speed, applicable LED ON.
F-1-ⓕ	C-FAN Low	When compressor FAN operates with low speed, applicable LED ON.
F-10-ⓖ	French Heater	When French heater operates, applicable LED ON
R-10-ⓐ	Pantry Room Damper Open	When damper open, applicable LED ON
R-10-ⓔ	Ice maker full	When the Ice Maker's Bucket is full, applicable LED ON in FZ-room
R-10-ⓕ	More Heater	Add to Assy Water Pipe Heater in Fre-room

Connector Layout with part position (Main Board)



CN70 - AC LOAD
① : FF-DEF-HEATER
② : FZ-DEF-HEATER
ICE DUCT HEATER
⑤ : COMMON2 LINE(L)
⑦ : COMMON1 LINE(N)

CN70_1 - AC LOAD
① : Open
③ : Open
⑤ : FRENCH-HEATER
DISPENSER-HEATER

CN72 - AC LOAD
① : ICE WATER
SOLENOIDE VALVE(FZ)
② : COMMON1 LINE(N)

CN73_1 - AC LOAD
① : Open
③ : Open
⑤ : Open
⑦ : Open

CN73 - AC LOAD
① : Open
③ : Open
⑤ : WATER SOLENOIDE
VALVE

CN78 _ LAMP(LED)/Sensor
① : FZ LAMP(LED)
② : GND
③ : FF LAMP(LED)
④ : Open
⑤ : GND
⑥ : Open
⑦ : Open
⑧ : AMBIENT Sensor
⑨ : Open
⑩ : Open
⑪ : +5V
⑫ : GND
⑬ : +12V

CN75 _ Inverter
① : COMP. SIGNAL INPUT
② : +5V
③ : GND
④ : COMP. SIGNAL OUTPUT

CN50
① : LED PANEL TX
② : LED PANEL RX
③ : +12V
④ : +5V
⑤, ⑥ : GND
⑦ : WATER Switch
⑧ : Open
⑨ : Open
⑩ : Open

CN30 - Sensor
① : GND
② : +5V
③ : Humidity
④ : FZ-Sensor
⑤ : FZ-DEF-Sensor
⑥ : FF-Sensor
⑦ : IR-Sensor
⑧ : FF-DEF-Sensor
⑨ : Pantry Room_Sensor

CN76 _ BLDC Motor & door Switch
① : GND
② : Open
③ : FZ-FAN operation signal
④ : FF-FAN operation signal
⑤ : C-FAN operation signal
⑥ : Open
⑦ : FZ-FAN signal input volt
⑧ : FF-FAN signal input volt
⑨ : C-FAN signal input volt
⑩ : GND
⑪ : FZ-Door Switch
⑫ : FF-Door Switch
⑬ : Open
⑭ : Open
⑮ : Open

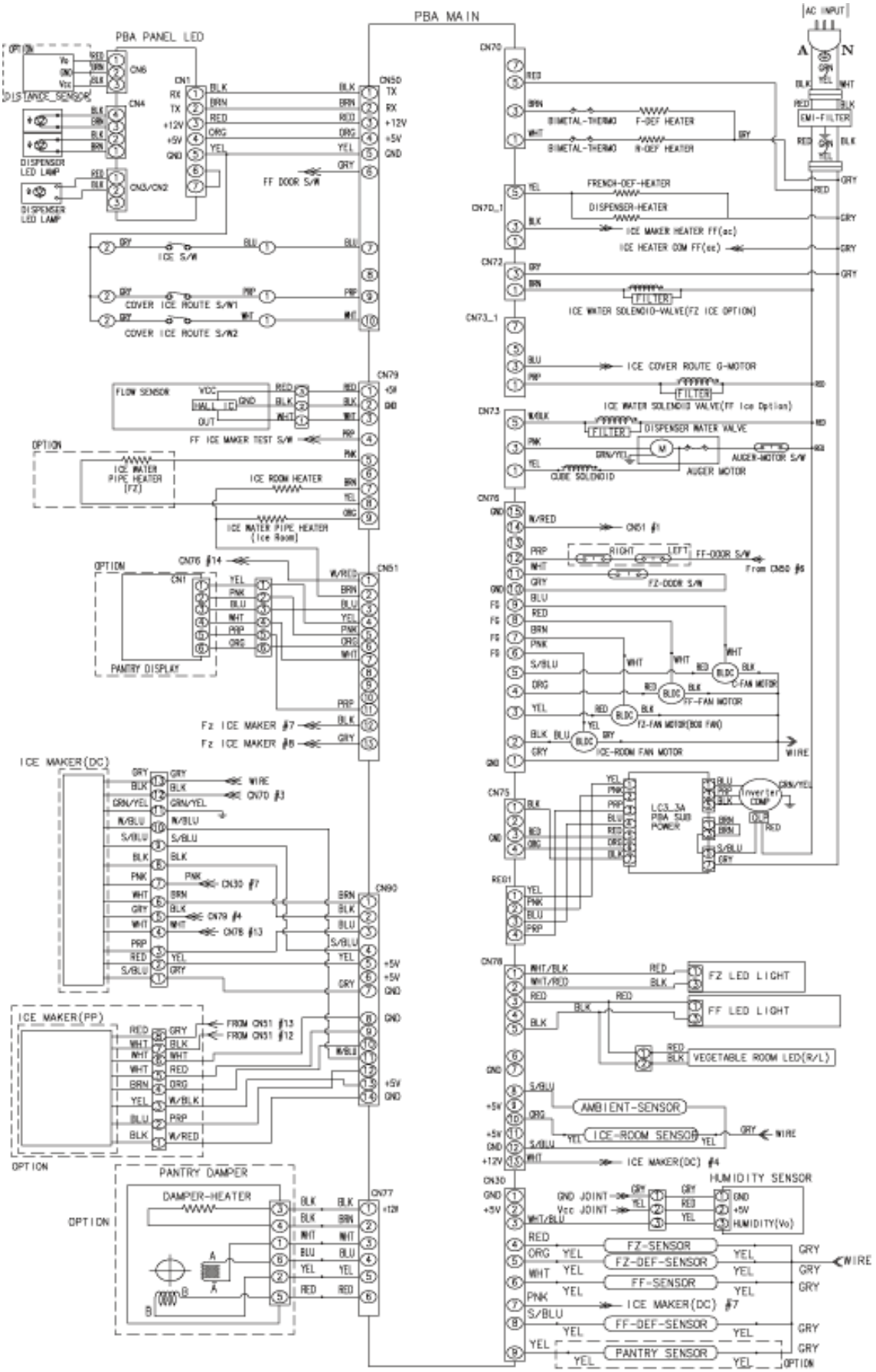
CN61 _ PANTRY ROOM Display
① : Open
② : Open
③~⑦ : Pantry Room LED Driver
⑧~⑨ : Open
⑩ : Pantry Room Switch
⑪ : ICE MAKER(FZ) MOTOR CCW
⑫ : ICE MAKER(FZ) MOTOR CW

CN79
① : +5V
② : GND
③ : F16W Sensor Out
④ : Open
⑤ : Ice Water Pipe Heater(FZ)
⑥ : Open
⑦ : Open
⑧ : +12V
⑨ : +12V

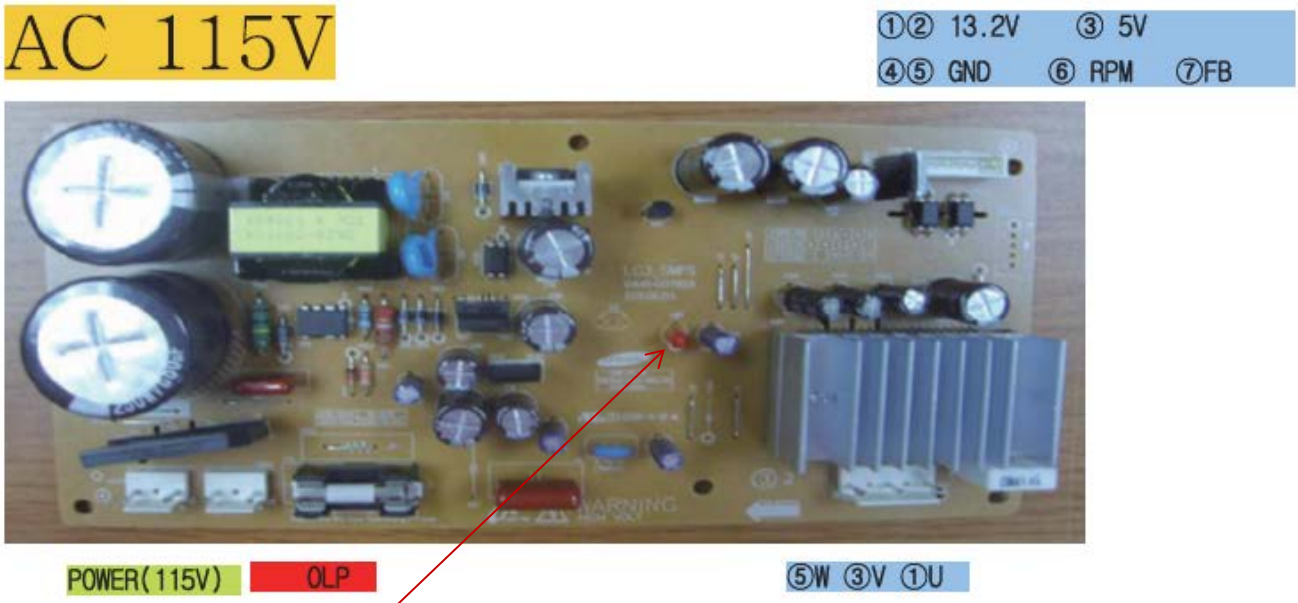
CN77 _ Damper & Valve
①~② : Damper Heater
③~⑥ : Damper Motor
⑦ : +12V
⑧~⑪ : Step Valve

CN90 - Ice Maker
① : Open
② : Open
③ : Open
④ : Open
⑤ : +5V
⑥ : Open
⑦ : GND
⑧ : GND
⑨ : Sensor(FZ)
⑩ : Test Switch(FZ)
⑪ : Open
⑫ : Hall IC Output
⑬ : +5V
⑭ : GND

Model : RF260B*,RF261B*



Connector Layout with part position (Inverter Board)



Protection Functions	LED Blinking Frequency	Test	Replace
Starting Failure	●	Check the Inverter PCB & Comp Relay Connectors	Connectors OK,replace Inverter PCB, if same, replace compressor
SPM Fault	● ●	If blinking after reset,	Check System for restriction & refrigerant, if OK replace Inverter, if same, replace compressor
Detecting Position Failure	● ● ●	Check Inverter Connectors,	Connectors measure OK, replace compressor, if same, replace Inverter PCB
Motor Locked	● ● ● ●	Compressor Locking	Compressor
Low Voltage	● ● ● ● ●	Compressor Locking, check input voltage	Replace Inverter PCB, if same, replace Compressor
Over Voltage	● ● ● ● ● ●	Compressor Locking, check input voltage	Replace Inverter PCB, if same, replace Compressor