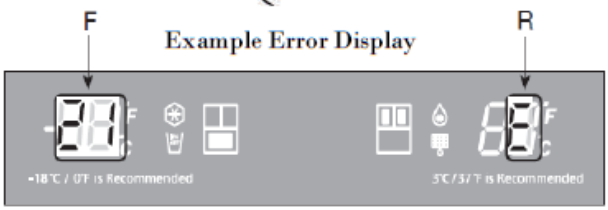
Fast Track Troubleshooting

Publication # APRF260BEAE Revision Date 6/25/13 Dr

Model Codes:
RF260BEAESR/AA
RF260BEAEBC/AA
RF260BEAESP/AA
RF260BEAEWW/AA

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.

Self Diagnosis: Press both buttons (**Freezer & Fridge**) *simultaneously* (No sound when both buttons are pressed at the same time) until the display quits blinking and beeps, 8-12 seconds, then release and read Fault Codes. This will also cancel the Fault Mode created by self-diagnosis at power up. See chart for code explanation.



Forced Mode: Press both buttons (**Power Freeze & Fridge**) *simultaneously* until unit beeps and display goes blank, 8-12 seconds. Then, press any button to cycle through the modes shown below. NOTE: Wait 5 sec. between presses. To cancel, press the button a "fifth" time.

Forced On: Freezer & Fridge

Forced On: Fridge Off (??)

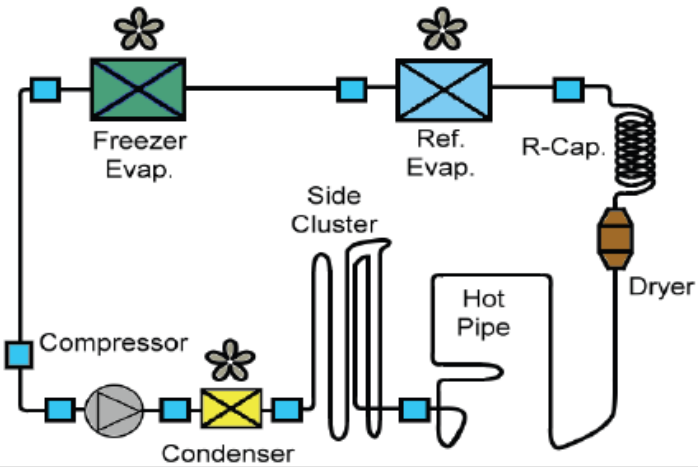
Fridge Defrost

Full Defrost

(NOTE: These 2 modes, Compressor only runs High speed)

Sealed System: Refrigerant Charge: R134a, 5.29oz., 160g

Compressor → Conden → Hot Pipe → Dryer → Capillary Tube → Refrigerator Evaporator → Freezer Evaporator → Suction Pipe → Compressor



Sales Mode: {No Compressor Operation}
Press ***Power Freeze*** & ***Freezer*** buttons simultaneously for 3 sec ("Ding Dong" is heard) to enter/exit 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	60Ω	220	115Vac
Fridge Defrost Heater	120Ω	110	115Vac
French Mullion Heater	1447Ω	9	115Vac
Ice Pipe Heater	75Ω	2	12Vdc
Damper Heater	678Ω	0.25	12Vdc
Sensors	2.5kΩ-89kΩ	N/A	1~4.5Vdc
Fans	N/A	N/A	7~12Vdc

Warranty Period:
Parts & Labor (Non-sealed system) - 1 Year
Parts & Labor (Sealed system only) - 5 Yrs. {Call 1-800 Samsung when in doubt.}

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.

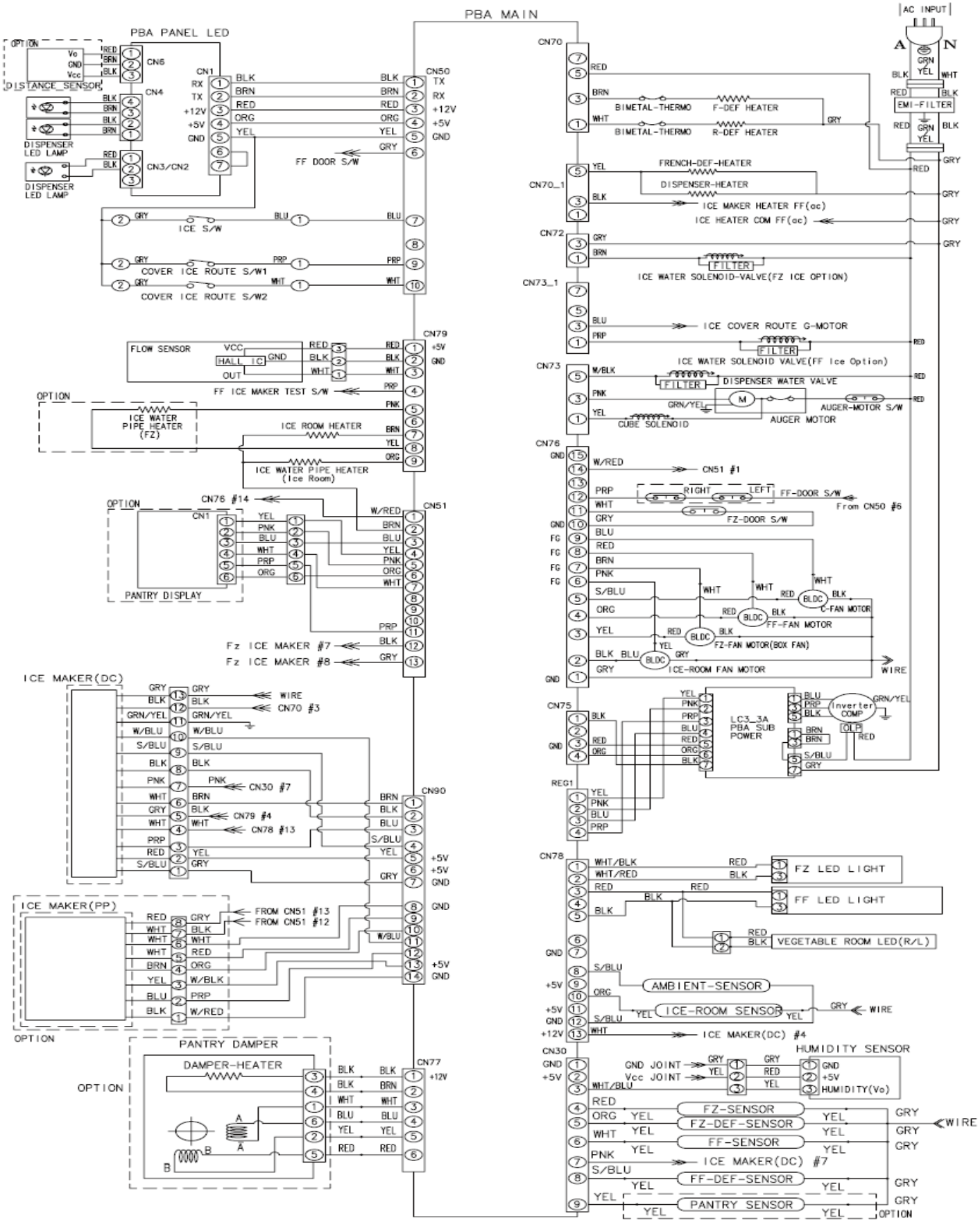
FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

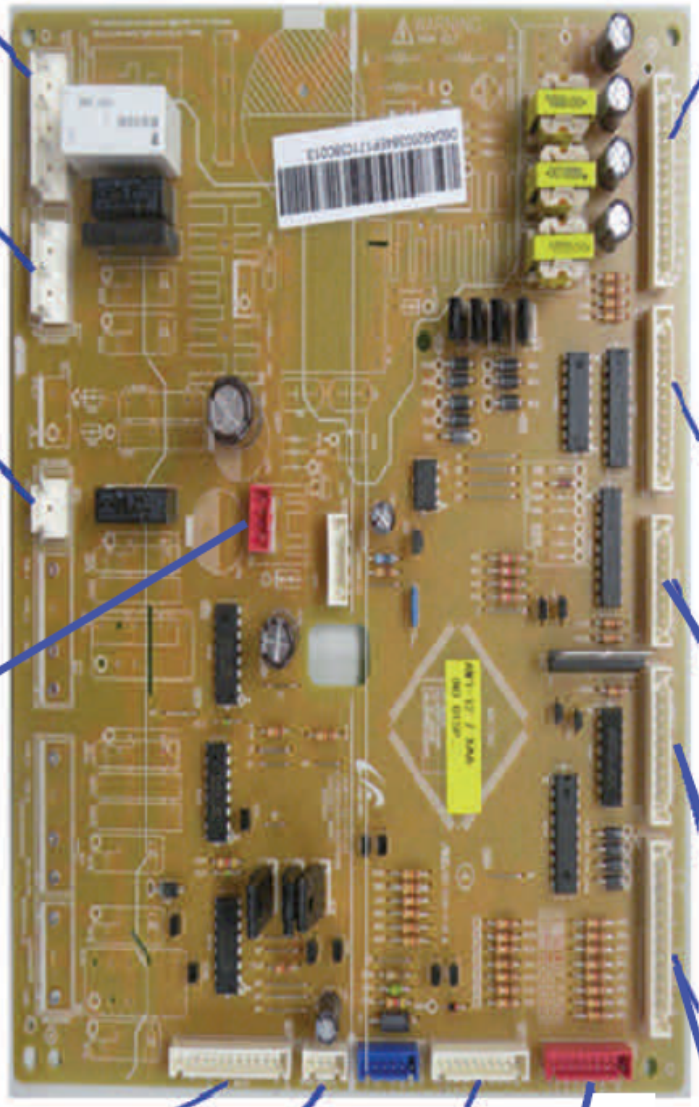
Interior Temperature of the freezer will be set to -14 degrees Fahrenheit until the ice bucket is full. When the ice bucket is full, the freezer will maintain original set temperature. Also, whenever the ice is used, the freezer will again set to -14 degrees Fahrenheit. Selecting "Ice Off" will allow 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

Model : RF260B* , RF261B*





CN70 - AC LOAD		
1	FF DEF HTR	WHT
2	N/C	
3	FZ DEF HTR	BRN
4	N/C	
5	LINE (L)	RED

CN70_1 - AC LOAD		
1	N/C	
2	N/C	
3	N/C	
4	N/C	
5	FF Mullion Htr	YEL

CN72 - AC LOAD		
1	ICE WTR VALVE	BRN
2	N/C	
3	Nuetral (N)	GRY

REG1		
1	13.2V	YEL
2	13.2V	PNK
3	GND	BLUE
4	5V	PRPL

CN78 - Lamp/Amb Sen		
1	FZ Lamp	WHT/BLK
2	GND	WHT/RED
3	FF Lamp	RED
4	N/C	
5	GND	BLK
6	N/C	
7	N/C	
8	Ambient	SKY BLU
9	N/C	
10	N/C	
11	N/C	
12	GND	SKY BLU
13	N/C	

CN75 - Inverter		
1	FB	BLK
2	N/C	
3	GND	RED
4	RPM	ORG

CN50 - PANEL PCB					
1	PANEL - TX	BLK	6	FF DOOR SW	GRY
2	PANEL - RX	BRN	7	N/C	
3	12V	RED	8	N/C	
4	5V	ORG	9	N/C	
5	GND	YEL	10	N/C	

CN30 - PANEL PCB		
1	GND	GRY
2	5V	BLK
3	HUMIDITY	WHT/BLU
4	FZ SEN	RED
5	FZ DEF SEN	ORG
6	FF SEN	WHT
7	N/C	
8	FF DEF SEN	SKY BLU
9	PANTRY	YEL

CN76 -BLDC MTR & DR SW		
1	GND	GRY
2	N/C	
3	FZ FAN MTR	YEL
4	FF FAN MTR	ORG
5	C-FAN MTR	S/BLU
6	N/C	
7	FZ FAN FG	BRN
8	FF FAN FG	RED
9	C-FAN FG	BLU
10	GND	GRY
11	FZ DR SW	WHT
12	FF DR SWs	PRP
13 - 15	OPEN	

CN51 - PANTRY PCB		
1	N/C	
2	N/C	
3	PAN DISP	BLU
4	PAN DISP	YEL
5	PAN DISP	PNK
6	PAN DISP	ORG
7	PAN DISP	WHT
8:10	N/C	
11	PAN SW	PRP
12	FZ I/M MTR	BLK
13	FZ I/M MTR	GRY

CN79 - I/M		
1 to 4	N/C	
5	Ice Pipe Htr	PNK
6	N/C	
7	N/C	
8	12V	YEL
9	N/C	

CN77 - DAMPER		
1	DAM HTR	BLK
2	DAM HTR	BRN
3	DAM MTR	WHT
4	DAM MTR	BLU
5	DAM MTR	YEL
6	DAM MTR	RED
7 to 11	N/C	

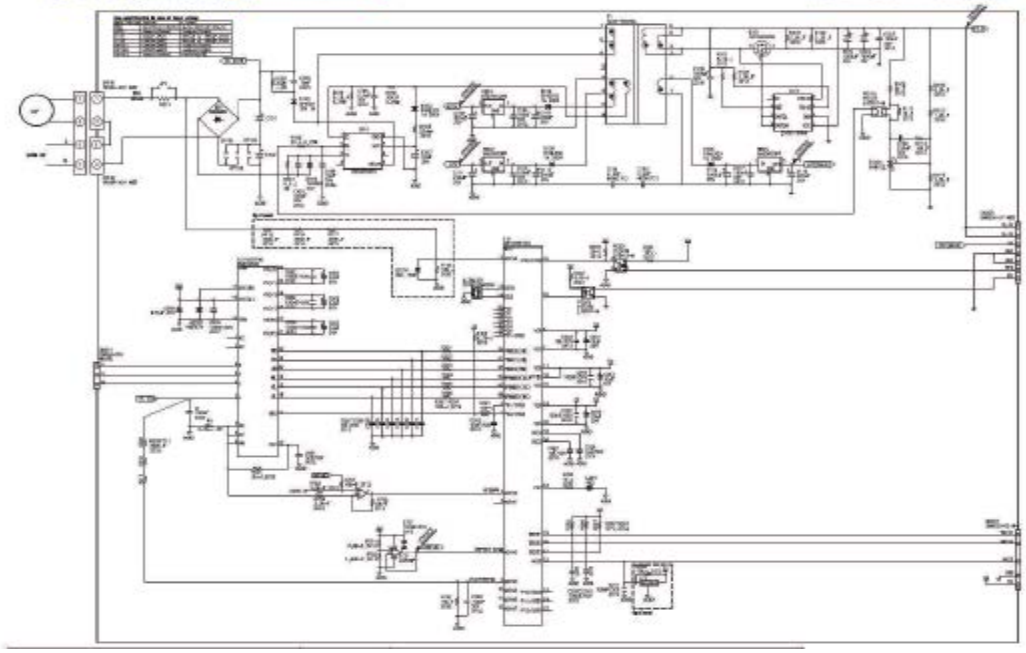
CN90 - I/M FZ		
1 to 7	N/C	
8	GND	WHT
9	I/M SEN	RED
10	TEST	ORG
11	N/C	
12	ICE LEVEL	PUR
13	5V	WHT/BLK
14	GND	WHT/RED

Inverter Board Troubleshooting

AC 115V

①② 13.2V ③ 5V
④⑤ GND ⑥ RPM ⑦FB

POWER(115V) OLP ⑤W ③V ①U



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

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

LED Blinking Frequency	Protecting Functions	Remarks
	Normal Operation	N/A
	Starting Failure	1. Short between COMP U,V, and W phase(CN04) 2. Short among IPM Pins(No. #1 ~ 26) 3. Drop the IPM operating Voltage under DC 13.5V 4. Other cases, check the COMP, cycle, etc.
	SPM Fault	
	Abnormal Current Detection	1. Open the COMP wire(CN04) 2. Bad condition of R1(ex. Bad soldering.) 3. Other cases, check the COMP, cycle, etc.
	Motor Locked / Over RPM	1. Operating the locked rotor COMP within 5 second. 2. Operating the COMP under 1000 RPM more than 5 second. 3. Occur the huge change of Input voltage in a moment. 4. Other cases, check the COMP, cycle, etc.
	Under Voltage	1. Drop the Input voltage under AC 53V 2. Short resistor R312 (DC link resistor)
	Over Voltage	1. Increase the Input voltage over AC 155V 2. Short resistor among R309, R310 and R311 (DC link resistor)

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

LED F	LED R	Item	Trouble contents	Diagnostic method
		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°F(+65°C) or less than -58°F(-50°C)	When measuring the voltage between the Main PCB CN30-"4" ↔ CN76-"1", it should read between 4.5V~1.0V.
		FF-Sensor Error		When measuring the voltage between the Main PCB CN30-"5" ↔ CN76-"1", it should read between 4.5V~1.0V.
		FZ-DEF-Sensor Error		The voltage of MAIN PCB CN30- "5"↔ N76-"1": shall be between 4.5V~1.0V
		FF-DEF-Sensor Error		When measuring the voltage between the Main PCB CN30-"8" ↔ CN76-"1", it should read between 4.5V~1.0V.
		Ambient-Sensor Error		The voltage of MAIN PCB CN78- "8"↔ CN78-"12": shall be between 4.5V~1.0V
		PANTRY-Sensor Error		The voltage of MAIN PCB CN78- "9"↔ CN76-"1": shall be between 4.5V~1.0V
		Ice Maker(F) Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit Display error of detecting temperature of sensor: more than 149°F (+65°C) or less than -58°F(-50°C)	The Voltage of MAIN PCB CN90 #8(-)#9: Shall be between 4.5v ~ 1.0v
		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.
		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
		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
		C-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- "5"(Sky-blue) ↔ CN76-"1"(Gray): shall be between 7V~12V
		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)
		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%.(Resistanc e value is varied by input power) 0 ohm : heater short, ∞ ohm : wire/bimetal open (Must power off)
		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.

LED		Item	Trouble contents	Diagnostic method
F	R			
29		"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.
39		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
41		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 Error	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 Fanlt Error	When there is a IPM Fault error	
83		Comp Abnormal current Detection Error	When ther is abnormal crrunt 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 Error	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		Comp under voltage Error	When there is a low voltage error	Check the voltage of Resistance of R513 [Short/Open]
86		Comp over voltage Eroor	When there is a over voltage error	Check the voltage of Resistance of R501, R505, R509 [Short/Open]

Support Information:

HELP: 1-888-751-4086 (Tech Sup. – ASC/SSD)
1-866-894-0637 (Tech Sup. - FE/ME)
GSPN: http://service.samsungportal.com/EP/web/portal/jsp/EP_Default1.jsp
PLUS ONE: http://my.plus1solutions.net/clientPortals/samsung

1) ICE Maker(FZ) Sensor has troubled

ERROR Code

- This refrigerator has Dual Ice Maker, so controlled two Ice Makers.

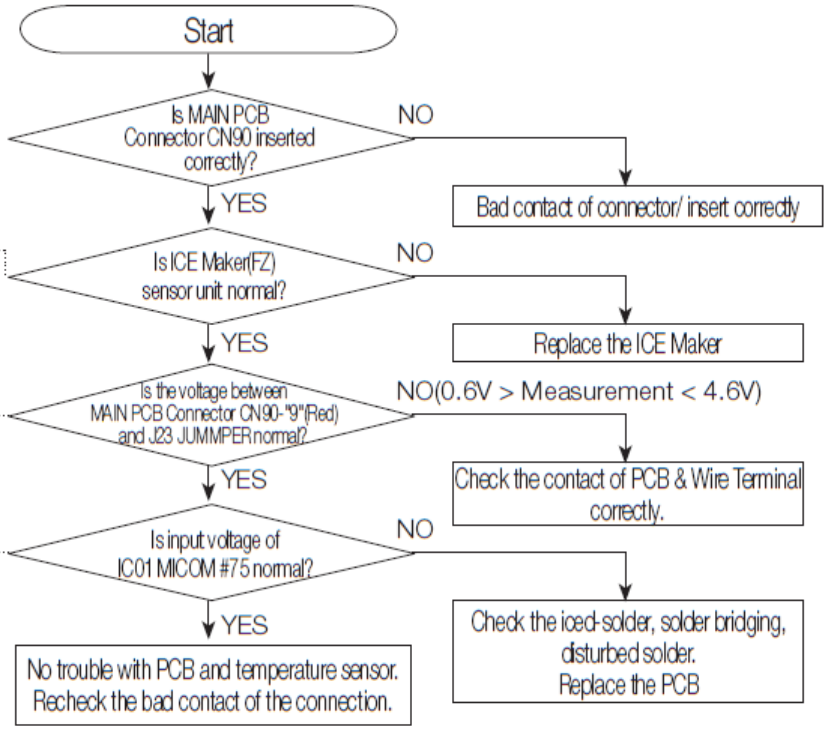
DATA1.
Temperature table

** Measuring point of resistance value according to Sensor **
ICE MAKER(FZ) : CN90 9 ↔ 8 measuring resistance value
** 0Ω : Short trouble / Ω∞ : Open trouble

Refer to circuit diagram in the manual

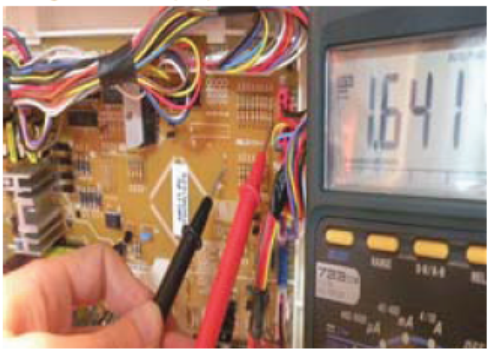
Sensor MICOM/Connector number	
ICE Maker(F)	Connector CN90-"9"(Red) and J23 JUMMPER PCB common Ground
Voltage measured between 4.6V ~ 0.6V.	

Measuring voltage of IC01 MICOM #75,
CN90-"9"(Red) and J23 JUMMPER PCB typical Ground part are similar.
→ Check the measure on the Resistance R904 due to the SMD MICOM.



☞ Checking Method of ICE MAKER(R) Senser resistance CN90 "9"(Red) ↔ 8"(White)
- Compare the temperature table after the measure.

☞ Checking method of ICE Maker Seneor
- Measure the voltage of Resistance R904(IC01 MICOM #75) or CN90-"9"(Red) ↔ J23 JUMMPER.
- Compare the temperature table after the measure. Measuring voltage of CN90-"9"(Red) ↔ J23 JUMMPER.



typical PCB Ground
J23 JUMMPER