



Fast Track Troubleshooting

Model:
RF4287HARS/XAA
RF4287HAPN/XAA
RF4287HABP/XAA
RF4287HAWP/XAA



Bulletins:

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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Support Information:

HELP: 1-888-751-4086 (Tech Sup. – ASC/SSD)

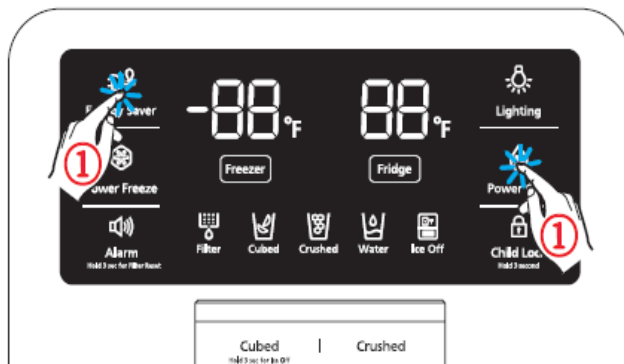
1-866-894-0637 (Tech Sup. - FE/ME)

GSPN: http://service.samsungportal.com/EP/web/portal/jsp/EP_Default1.jsp

PLUS ONE: <http://my.plus1solutions.net/clientPortals/samsung>

Force Mode:

Press the Energy Saver and Power Cool buttons simultaneously for 8-12 Seconds, until the display beeps and goes blank (Note: there will be no sound when both buttons are pressed at the same time)



Wait 5 Seconds between button pushes

Compulsion working 1 : 3600RPM



Compulsion working 2 : 2450RPM



Compulsion working 3 : 2200RPM



Press the power freeze button one time at the forced mode to force compressor on High Speed Run. Measure fan & compressor voltage at main PCB.

Press the power freeze button a second time to force mid speed run.

Press the power freeze button a third time to force low speed run.

Press the power freeze button a fourth time to Force Defrost of the Fridge & Freezer. Measure defrost voltage at main PCB.

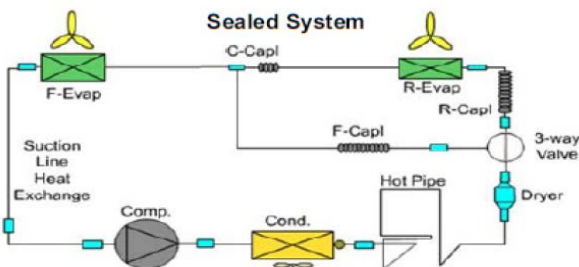
Press power freeze a 5th time until blank screen wait 30secs to exit

Sales Mode: No Heating or Cooling. No compressor Operation. Press Energy Saver and the Power Freeze buttons simultaneously for 3 seconds (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.



Self Diagnosis: Press Energy Saver and lighting buttons simultaneously for 8-12 seconds, until the display quits blinking and beeps, then release the buttons and read Fault codes. (Note: there will be no sound when both buttons are pressed at the same time) This will also cancel the fault code being displayed at start up if any.

(Refer to page 3 for Error code diagnosis)

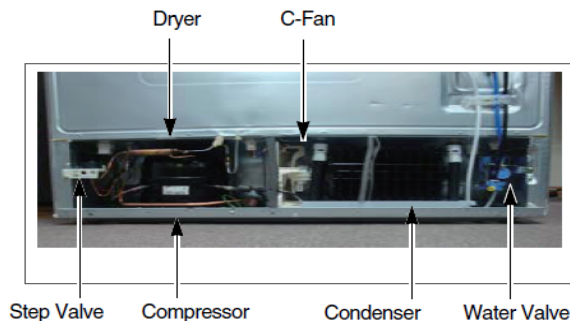


Component Value Chart

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	62.6Ω	230	120vac
Fridge Defrost Heater	120Ω	120	120vac
French Mullion Heater	1446Ω	10	120vac
Ice Duct Heater	2057Ω	7	120vac
Dispenser Heater	5760Ω	2.5	120vac
Ice Maker Heater	93Ω	156	120vac
Damper	680Ω	1	12vdc
Sensors	2.5kΩ-89kΩ	N/A	1~4.5vdc
Fans	N/A	N/A	7~12vdc

REFRIGERATION SYSTEM

Refrigerant Charge (R134a) 5.64 oz(160g)
MKV190C-L2B 1314 Btu/hr(0.385kw)
Compressor oil Freol α 15c
R Capillary tube(Dia, Length) 0.032", 118" (0.82mm, 3500mm)
F Capillary tube(Dia, Length) 0.032", 118" (0.82mm, 3500mm)



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

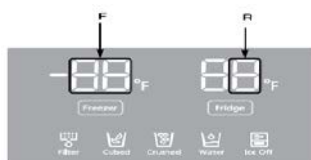
Press and hold the ICE TEST S/W for at least 1.5sec, the harvest function will start. If the ice maker Thermistor is below 0 degrees the Ice maker heater turns on for about 2 minutes. If the temperature exceeds 0 degrees, Ice maker heater turns on for 30 seconds. After the Ice maker heater turns on for 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-diagnostics check list

LED		Item	Trouble contents	Diagnostic method
F	R			
88	88	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℃) or less than -58° F(-50℃)	The voltage of MAIN PCB CN30- "3"↔N76-"1": shall be between 4.5V~1.0V
88		FF-Sensor Error		The voltage of MAIN PCB CN30- "6"↔N76-"1": shall be between 4.5V~1.0V
88		FZ-DEF-Sensor Error		The voltage of MAIN PCB CN30- "5"↔N76-"1": shall be between 4.5V~1.0V
88		FF-DEF-Sensor Error		The voltage of MAIN PCB CN30- "8"↔N76-"1": shall be between 4.5V~1.0V
88		Ambient-Sensor Error		The voltage of MAIN PCB CN78- "8"↔CN78-"12": shall be between 4.5V~1.0V
88		Flex room-Sensor Error		The voltage of MAIN PCB CN78- "9"↔CN76-"1": shall be between 4.5V~1.0V
88		Humidity-Sensor Error	Separation of sensor housing part, contact error, disconnection, short circuit	The voltage of MAIN PCB CN30- "1"↔CN30-"7": shall be between 4.5V~1.0V
88		Ice Maker(FF) Sensor Error	Display error : separation of sensor housing part, contact error, disconnection, short circuit.	The voltage of MAIN PCB CN90- "1"↔CN90-"7": shall be between 4.5V~1.0V
88		Ice Room Sensor Error	Display error of detecting temperature of sensor : more than 149° F(+65℃) or less than -58° F(-50℃)	The voltage of MAIN PCB CN78- "10"↔CN78-"1": shall be between 4.5V~1.0V
88		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
88		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
88		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
88		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 fresh food compartment defrost is heating continuously for more than 70 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	26	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)
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 35 ohm ± 7%. 0 ohm : heater short, ∞ Ohm : wire / bimetal Open.
28		Ice Maker(FF) Function Error	Display error when open error is detected by Heater : separation of Ice Pipe Heater housing part, contact error, disconnection, short circuit.	After changing the Ice Maker(R), plug the refrigerator power code again, and check the operation.
40		Ice Room-FAN Error	Display error when the Ice Maker(FZ) kit operate moving ice over 3 times or it is not leveled.	The voltage of MAIN PCB CN76-2"(Black) ↔ CN76-1" (Gray): shall be between 7V~12V
41		Panel ↔ Main Communication Error	Display "41 - E" in the panel with alarm : MICOM MAIN ↔ PANEL communication error. OP-Er is displayed when the Option is not equivalent with the right value.	Actually, If there is not a problem, it is desirable to replace Main and Panel PCE With the oscilloscope after a cable problem confirming.
81	86	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 FanIt	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		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]

Symptom:	Ice buildup on the Refrigerator Evaporator			
Solution:				
Step 1 of 5	Defrost the unit			
Step 2 of 5	Verify the refrigerator defrost sensor is not open or shorted, also measure the voltage at the main PCB. The voltage should be between 2.3V and 2.8V (assuming room temperature).			
Step 3 of 5	Move the defrost sensor	Original location: inlet line to the evaporator	New location: outlet side of the evaporator	
	from the inlet side of the refrigerator evaporator to the outlet side.			
Step 4 of 5	Make sure the wiring is routed properly and the sensor is firmly adhered to the evaporator line.			
Step 5 of 5	If the evaporator cover has been cracked or split by the ice buildup the cover must be replaced. If it is not damaged, make sure to firmly seat the cover against the rear wall with no gaps.			

Display Cover Removal/Install

Remove a screw under the display cover.



Remove the display cover by pushing it to the right side and pulling it up.



When assembling Cover-Display, first insert it from leftside and then assemble to rightside.(Check the wire inside.) and knock the display into the Case dispenser.



Mid-Drawer Removal



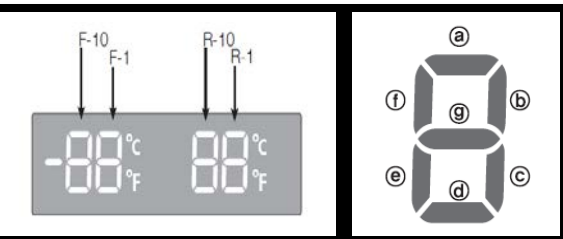
Remove the cover housing (2) by a flat-Blade screwdriver.
Disengage the housing (lamp).



Unscrew 4 bolts.
(2 bolts each on the both sides)



Lifting up the convertible door, remove the convertible door from the rail.

**LOAD MODE****HOW TO ENTER**

Step 1. Hold the top two buttons together until the display blinks.

Step 2. while the display is **blinking** let go of the top two buttons. After doing so tap on the Fridge button.. Load Mode will start

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 (35°C), LED ON
R-1-Ⓣ	Low temperature condition	When ambient temperature is less than 72°F (21°C), LED ON
R-1-Ⓢ,Ⓣ ALL LED Off	Normal Condition	When ambient temperature is between 73°F (22°C) and 91°F (34°C)
R1-Ⓠ	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
R-10-Ⓐ	Mide Drawer Room Damper Open	When damper open, applicable LED ON
F-10-Ⓐ	C-FAN High	When C-FAN operates with high speed, applicable LED ON
F-10-Ⓣ	C-FAN Low	When C-FAN operates with low speed, applicable LED ON
F-10-Ⓓ	Ice Room-FAN High	When Ice Room-FAN operates with high speed, applicable LED ON
F-10-Ⓑ	Ice Room-FAN Low	When Ice Room-FAN operates with low speed, applicable LED ON
F-10-Ⓔ	French Heater	When French Heater operates, applicable LED ON
R-10-Ⓓ	Ice maker ice full	When the Ice Maker's ice BUCKET is Full, applicable LED ON

Main PCB -

Version 00 RF4287HA**/XAA

CN76 F, R, C Fans & Door Sws

- 2-1 Ice Room Fan (Blk-Gry) 7-11vdc
- 3-1 F Fan (Yel-Gry) 7-11vdc
- 4-1 R Fan (Org-Gry) 7-11vdc
- 5-1 C Fan (S/Blu-Gry) 7-11vdc
- 6 Ice Room Fan FG(Pnk)
- 7 F Fan FG(Brn)
- 8 R Fan FG(Red)
- 9 C Fan FG(Blu)
- 11- Fz Door Sw
- 12- FF Door Sw
- 13- Mid Drawer door Sw

CN77 Stepper Motor

- 1-2 Damper Heater (Blk-Brn) 12vdc
- 7-(CN76-1) Diverter Valve (Org-Gry) 12vdc

CN30 Sensors & Switches

- 2-1 (Blk-Gry) 5vdc
- 3 Humidity Sensor (Brn)
- 4-(CN76-1) Fz Sensor (Red-Gry) 3.5~4.2vdc
- 5-(CN76-1) F Def Sensor (Org-Gry) 2.3~4.2vdc
- 6-(CN76-1) R Sensor (Wht-Gry) 2.4~2.8vdc
- 8-(CN76-1) R Def Sensor (S/Blu-Gry) 2~4.2vdc
- 9-(CN76-1) Mid Drawer Sensor (W/Blk-Gry) 2.6~2.8vdc

- CN79 Flow Sensor
- 7-Flow Sensor Out (Wht)
- 9-8 +5vdc (Red-Blk)

CN51 Mid Drawer Display

- CN90 Ice Maker
- 1-7 Sensor I/M eject (Brn-Gry)
- 2-7 Test Sw (Blk-Gry) 5vdc
- 3 Full Hall IC out (Blu)
- 4 Horiz Hall IC out (S/Blu)
- 5-7 (Yel-Gry) 5vdc

CN50 Display

- 3-5 (Org-Yel) 13vdc
- 4-5 (Yel-Yel) 5vdc
- 7-5 Ice Sw (Blu-Yel) 5vdc
- 8-5 Water Sw (Pnk-Yel) 5vdc
- 9-5 Ice Rte Sw 1 (Prp-Yel) 5vdc
- 10-5 Ice Rte Sw 2 (Wht-Yel) 5vdc

CN75 To Comp Inverter Board

- 2-(CN76-1) (Brn-Gry) 5vdc
- 4-(CN76-1) Comp control (Org-Red) 2.5vdc

CN71 All 120vac

CN70 All 120vac

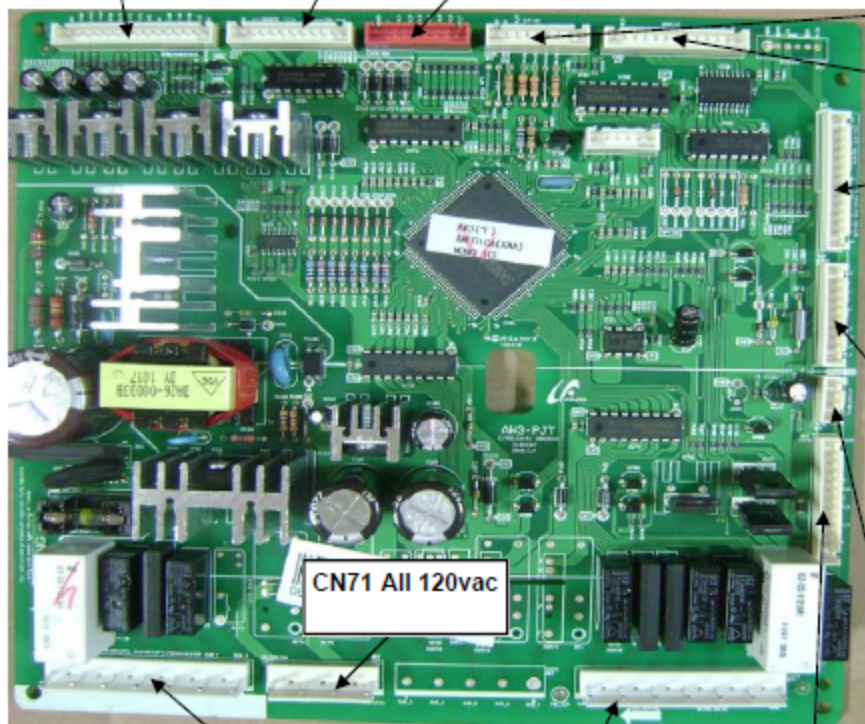
- 3-13 I/M Heater (Blk-Gry)
- 5-13 French & Disp Heater (Yel-Gry)
- 7-13 R Defrost (Wht-Org)
- 9-13 F Defrost/Ice Duct Htr. (Brn-Gry)
- 11- L1 (Red)
- 13- N (Gry)

CN73 All 120vac

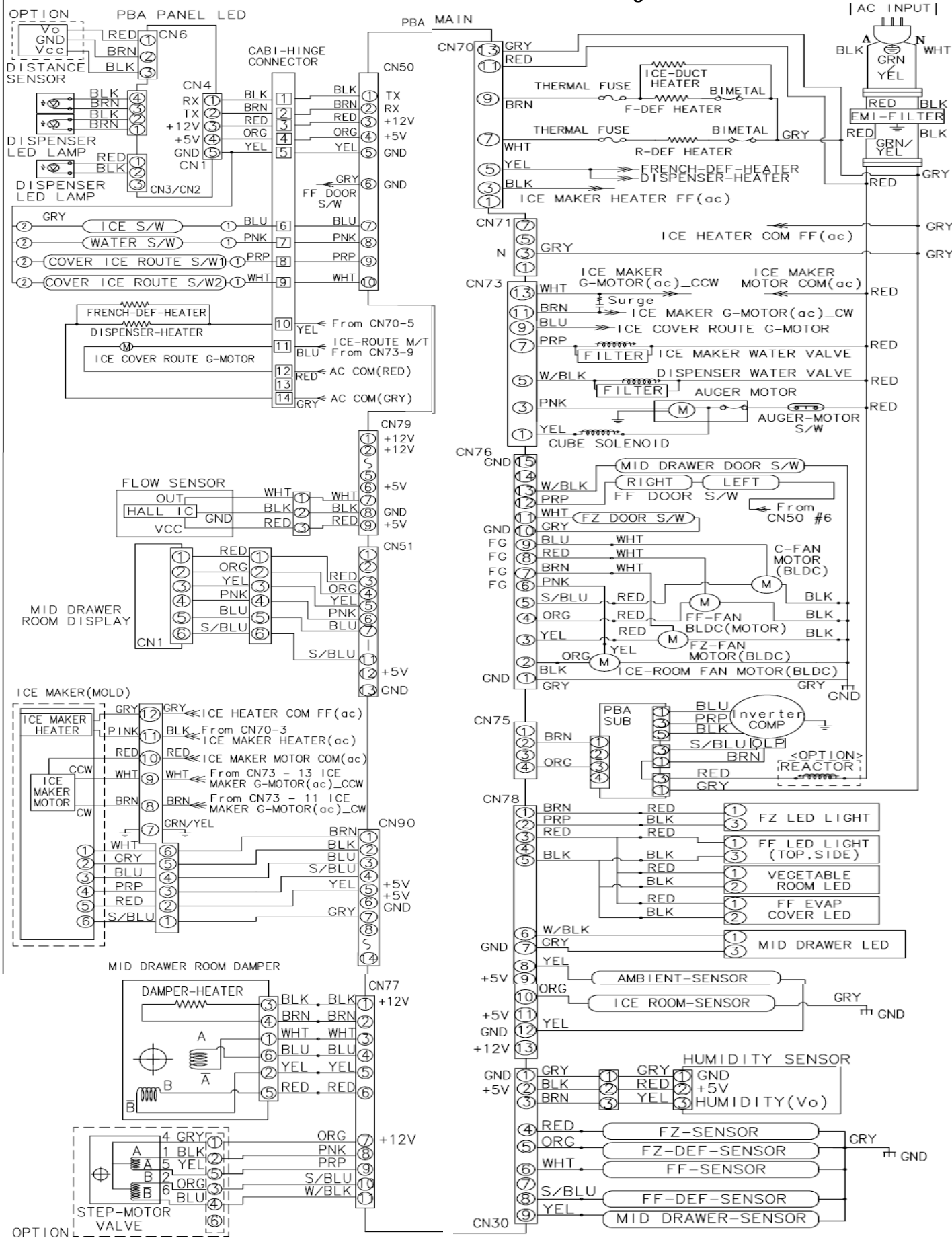
- 1-(CN70-11) Cube Solenoid (Yel-Red)
- 3-(CN70-11) Auger Motor (Pnk-Red)
- 5-(CN70-11) Dispenser Valve (W/Blk-Red)
- 7-(CN70-11) I/M Valve Fridge (Prp-Red)
- 9-(CN70-11) Ice Cover Route (Blu-Red)
- 11-(CN70-11) I/M Motor CW (R) (Brn-Red)
- 13-(CN70-11) I/M Motor CCW (R) (Wht-Red)

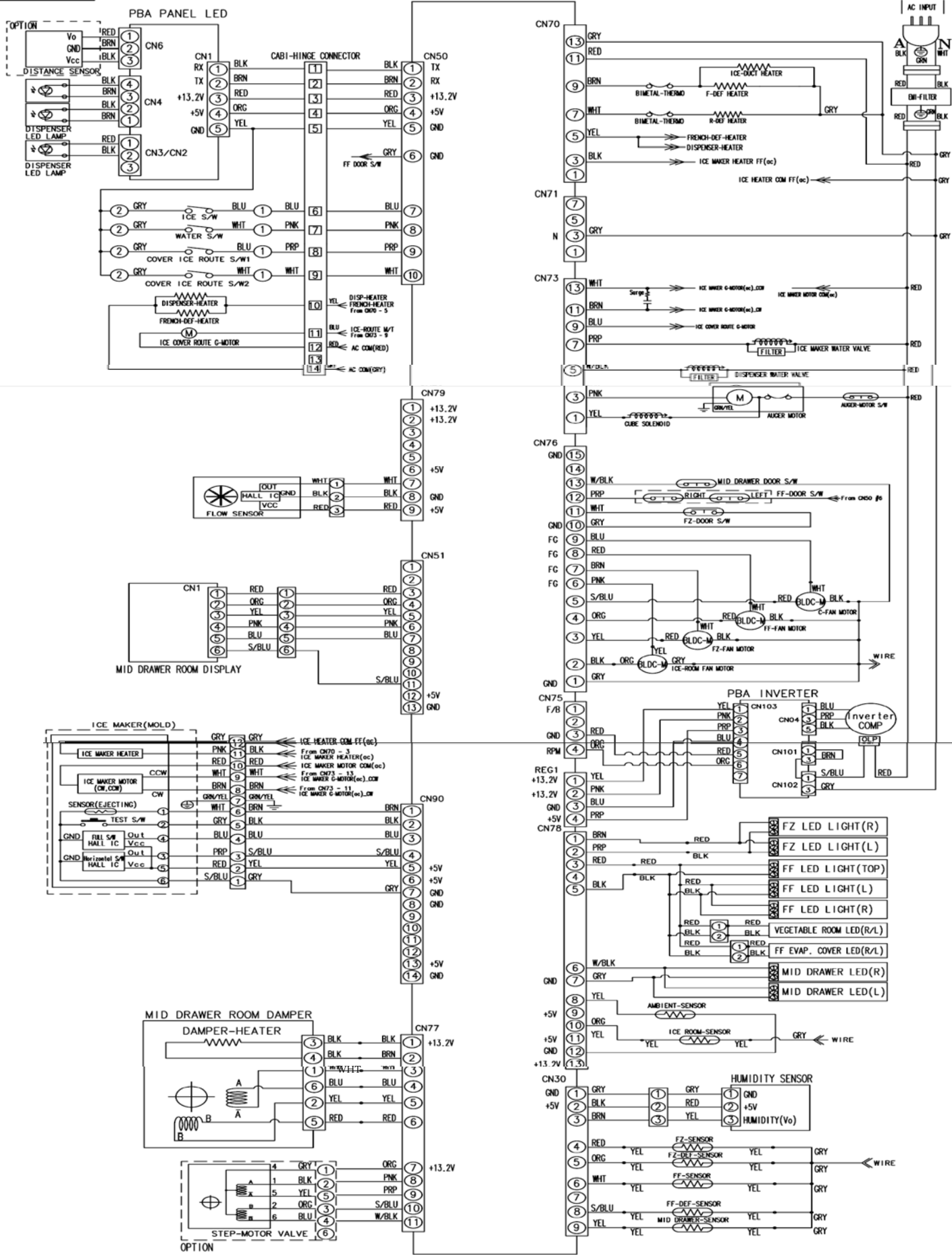
CN78 Lighting & Sensors

- 1-2 Fz LEDs (Brn-Prp)
- 3-5 FF LEDs (Red-Blk)
- 6-7 Mid Drawer LED (W/Blk-Gry)
- 8-12 Ambient Sensor (Yel-Yel) 1.2~2 vdc
- 10-(CN76-1) Ice Room Sensor (Org-Gry) 3~3.8vdc

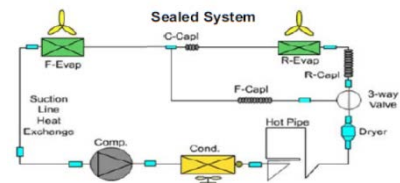


Wire Diagram Version 00





The Time Divided Multi-cycle (TDM) system (Stepper Valve) is used to switch refrigerant flow. This improves temperature control and energy efficiency. If its on the all evaporator mode it should work properly, Using slightly more energy. If its on the freezer evaporator only mode, there will be a Fridge no cool force on the fridge with the Power Cool option. Monitor the fridge evaporator (s) temp by using the Defrost Sensor(s). If the temp doesn't decrease, then suspect the Main PCB is not supplying signal to switch the diverter valve.



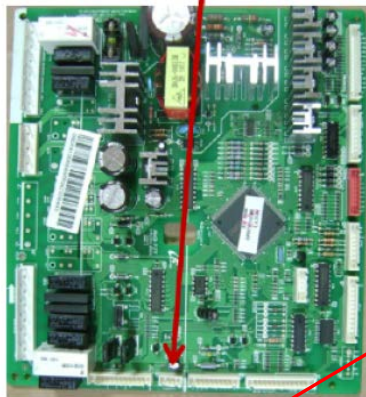
Compressor & System Operation Testing

TEST BEFORE INTERPRETING LED BLINKING FREQUENCY

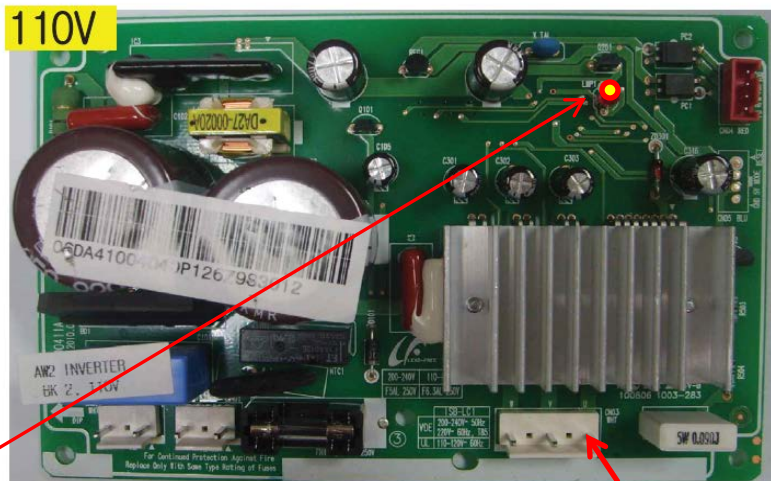
Compressor not running

1. Activate Forced Compressor Operation, wait 2 minutes (in case of high head pressure)
2. If compressor doesn't start, check CN75 for 2.5vdc (if not there replace Main PCB)
3. If voltage is OK, remove power, disconnect CN03 (Inverter PCB) and check resistance to the windings. Aproxametly 10 ohms. If not correct , inspect wire harness, if OK replace compressor.
4. Disconnect CN02 (SMPS PCB), check resistance to Overload , if open replace overload.
5. Now use Blinking Lamp to troubleshoot.

CN75 To Comp Inverter Board
2- (CN76-1) (Brn-Gry) 5vdc
4- (CN76-1) Comp control (Org-Gry) 2.5vdc



110V



POWER(110V)

OLP

CN03 Compressor Windings
1 Compressor (Blue)
3 Compressor (Prp)
5 Compressor (Wht)

- ①VDD
- ②VSS
- ③RPM
- ④FB

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