



Model: RF4289HARS/XAA

Bulletins:



Fast Track Troubleshooting

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.

Publication # Dr RF4289HARS Revision Date 9/17/13

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>

Engineer Mode

Function		How to operate	Use this functions...
System Information		Within 3 seconds, touch the "A" and "B" part as "A-B-A-B-A-B". 	To check the Model ID, App Version and Kernel Version.
Data Management	Software Upgrade(FORCE)		To upgrade the new software.
	User Data Backup to SD/MMC Card		To back up & restoration the user's data when update software and/or replace PBA panel.
	User Data Restore from SD/MMC Card		To initialize the panel software.
	Reset to Factory Default		To check the LCD Pixel failures.
Panel Function Test	LCD Pixel Check		To check the LCD brightness.
	Backlight Check		To check the NAND bad block.
	NAND Check		To check the wireless network status.
	WiFi Check		To check the failure modes.
Fridge Function Test	Self Diagnostics		To check the latest 5 errors.
	Error History Check		To check the present operating load of refrigerator.
	Load Status Check		To change the setting options about the refrigerator operating status. Need careful decision for option change.
	Refrigerator Option(Service Mode)		To set the forced operation and force defrost.
	Test Mode		

Engineer Mode

Forced Mode and Diagnostic Mode Operation: (1) within 3sec Press the upper left and upper right corners alternately (A-B-A-B-A-B) until “Engineer Mode Enabled”

Engineer Mode allows you to access both Diagnostic and Forced operation Modes. (2) Press the settings icon then scroll through the menus to the Engineer Mode sub menu. (3) Then select the Fridge Function Test, (4) Press the Test button. (5) Press the NEXT button to cycle through the different modes.

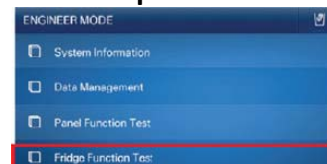
Step 1



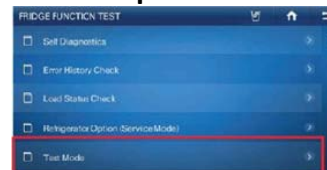
Step 2



Step 3



Step 4



Step 5



Forced Mode Operating Sequence -

Force Run 1 (RPM 3600) →

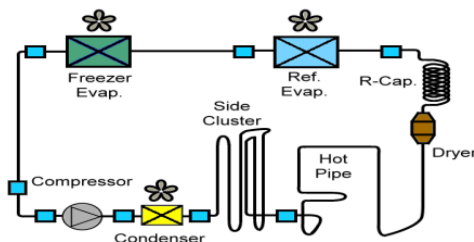
Force Run 2 (RPM 3600):(TDM F valve Fixed) →

Force R Defrost → Refrigerator Defrost Heater on

Force F/R Defrost → All heaters on

Test Cancel

In Force Run Mode the compressor will run at once cancelling defrost mode where applicable. Use care, as this can cause the compressor to overload.



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

Installation Note:

2" space required top and rear and 3 ¾"

Space required on sides

Sales Mode:

No compressor operation

Press the settings Icon on the screen, scroll to the second page of the menu and toggle the setting “Cooling Off”

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

Accessing Self Diagnostic Mode: Press the upper left and upper right corners alternately (A-B-A-B-A-B) until "Engineer Mode Enabled" is displayed on screen. Press the "Self Diagnostics" button on the screen. The display will show the currently detected errors on the left side of the display panel. Use the onscreen scroll buttons to access all the information

ERROR CODES

Error Code	Item	Trouble contents
1	FZ SENSOR ERROR	The applicable sensor reads open or shorted, verify the connections at the cabinet and at the Main PCB
2	R SENSOR ERROR	
4	FZ DEF SENSOR ERROR	
5	R DEF SENSOR ERROR	
6	AMBIENT-SENSOR ERROR	
7	FLEX SENSOR ERROR	
13	HUMIDITY-SENSOR ERROR	The humidity sensor reads open or shorted, verify the connection at the cabinet and at the Main PCB
14	IM SENSOR ERROR	The applicable sensor reads open or shorted, verify the connection at the cabinet and at the Main PCB
15	ICE RM SENSOR ERROR	
21	FZ FAN ERROR	The Freezer Fan has either stopped or there is an open connection
22	R FAN ERROR	The Refrigerator Fan has either stopped or there is an open connection
23	C-FAN ERROR	The Compressor Fan has either stopped or there is an open connection
24	FZ DEF FUNCTION ERROR	The Freezer defrost heater measures an open circuit or the defrost heater has remained ON for over 80 minutes. Check the connections to the defrost heater at the cavity and at the Main PCB.
25	R DEF FUNCTION ERROR	The Refrigerator defrost heater measures an open circuit or the defrost heater has remained ON for over 80 minutes. Check the connections to the defrost heater at the cavity and at the Main PCB.
39	IM FUNCTION ERROR	The Icemaker heater measures an open circuit.
40	ICE-ROOM-FAN ERROR	The Ice Room Fan has either stopped or there is an open connection
41	MAIN<->LCD COMM ERROR	Communication error displays with alarm when communication between MICOM MAIN and PANEL is not available for 10sec.
81	COMP STARTING FAILURE	The compressor did not start properly check for open windings at the compressor
82	COMP IPM FAULT ERROR	This is a fault in the Wireless circuit
83	COMP ABNORMAL CURRENT DETECTION	An over current condition was detected at the compressor, check for shorted windings.
84	COMP MOTOR LOCKED OVER RPM ERROR	The compressor is not pumping refrigerant properly check for a restriction in the sealed system
85	COMP UNDER VOLTAGE	The compressor is operating at a low voltage verify the DC voltage
86	COMP OVER VOLTAGE	The compressor is operating at a high voltage verify the DC voltage from the Main PCB to the Compressor

CN76 BLDC MTR & Door SW

1, 10; GRY. GND
 2, 1; BLK-GRY. Ice Rm Fan 7-11 Vdc
 3, 1; YEL-GRY. FZ Fan 7-11 Vdc
 4, 1; ORG-GRY. R Fan 7-11 Vdc
 5, 1; S/BLU-GRY. C Fan 7-11 Vdc
 6, 1; PNK-GRY. Ice Rm Fan FG
 7, 1; BRN-GRY. FZ Fan FG
 8, 1; RED-GRY. R Fan FG
 9, 1; BLU-GRY. C Fan FG
 11, 10; WHT-GRY. FZ Door SW
 12, CN50-6; PRP-GRY. R Door SW
 13. CN76-1; W/BLK-GRY. Flex Door SW
 14, 15; NC

CN51 Flex Display

1, 2, 8-10, 12, 13; NC
 3-7; Flex LED Driver
 11, 7; S/BLU-BLU. Flex SW

CN77 Flex Damper

1; BLK. 12 Vdc
 2, 1; BRN-BLK. Flex HTR
 3-6; Damper MTR
 7-11; NC

CN90 Ice Maker

1, 7; BRN-GRY. Eject Sensor
 2, 7; BLK-GRY. Test SW, 5 Vdc
 3, 7; BLU-GRY. Full Hall
 4, 7; S/BLU-GRY. Horiz Hall
 5-6; YEL. 5 Vdc
 7; GRY. GND
 8-14; NC

CN50 LCD Panel

1; BLK. Panel TX
 2; BRN. Panel RX
 3; RED. 12 Vdc
 4; ORG. 5Vdc
 5-6; YEL, GRY. GND
 7, 5; BLU-YEL. ICE SW
 8, 5; PNK-YEL. Water SW
 9, 5; PRP-YEL. Ice route 1
 10, 5; WHT, YEL; Ice route 2

CN79 Flow Sensor

1, 2; RED-BLK. 5 Vdc
 3, 2; WHT-BLK. Hall out

CN30 SENSORS

Use PCB Test points
 2, 1; BLK-GRY. 5Vdc

REG 1 From Inverter

1-2; YEL, PNK. 12 Vdc
 3; BLU. GND
 4; PRP. 5Vdc

RJ45

Smart Grid

CN75 Inverter

1, 3; BLK-RED. FBK
 2; NC
 3; RED. GND
 4; ORG. RPM

CN72 120 VAC

1-N/C
 2-LINE N

CN78 LED & Sensor

1, 2; BRN-PRP. FZ LED
 3-4, 5; RED-BLK. R LED
 6, 7; W/BLK-GRY. Flex LED
 8, 12; YEL-YEL. Ambient Sensor
 10; ORG. Ice Room Sensor
 9, 11, 13; NC

CN70 120 VAC

1, CN72-3; WHT-GRY.
 R-DEF HTR
 3, CN72-3; BRN-GRY.
 FZ DEF HTR
 5, CN72-3; RED-GRY.
 L1

CN70_1 120 VAC

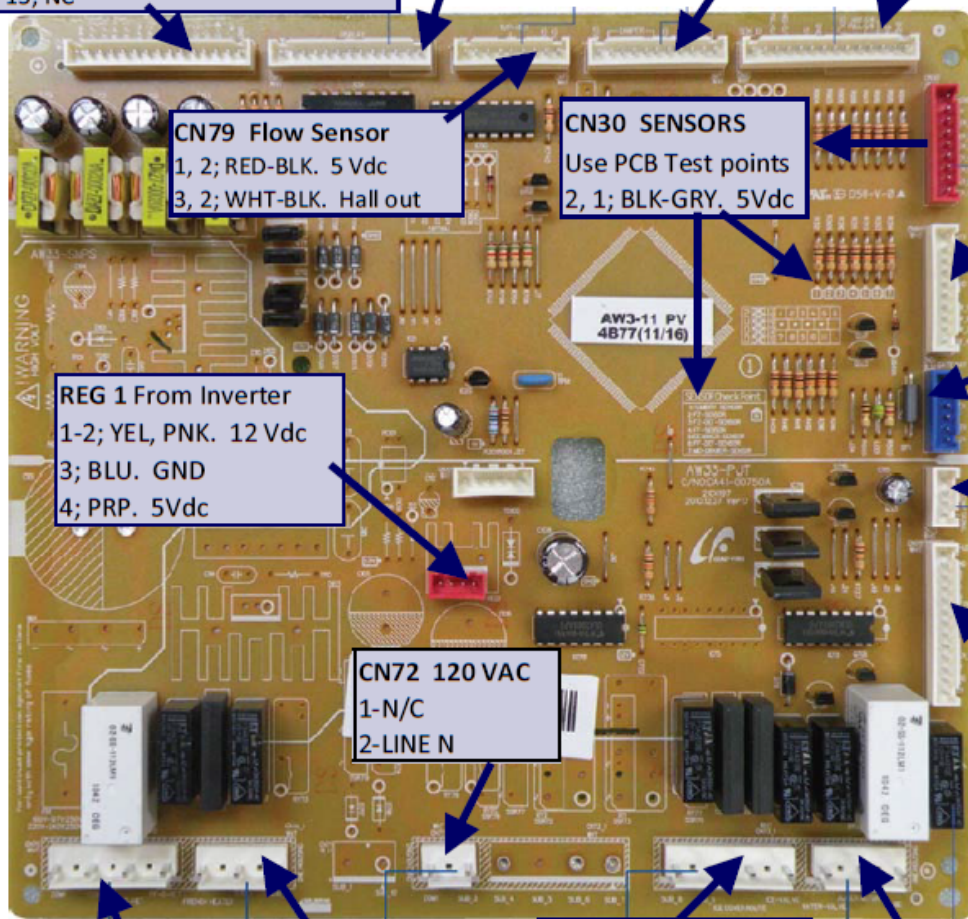
1; N/C
 3, CN72-3; BLK-GRY.
 R IM HTR
 5, CN72-3; YEL-GRY.
 French & Disp HTR

CN73_1 120 VAC

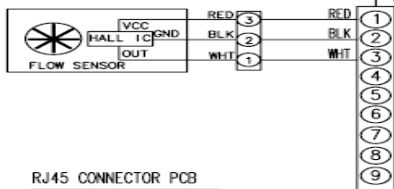
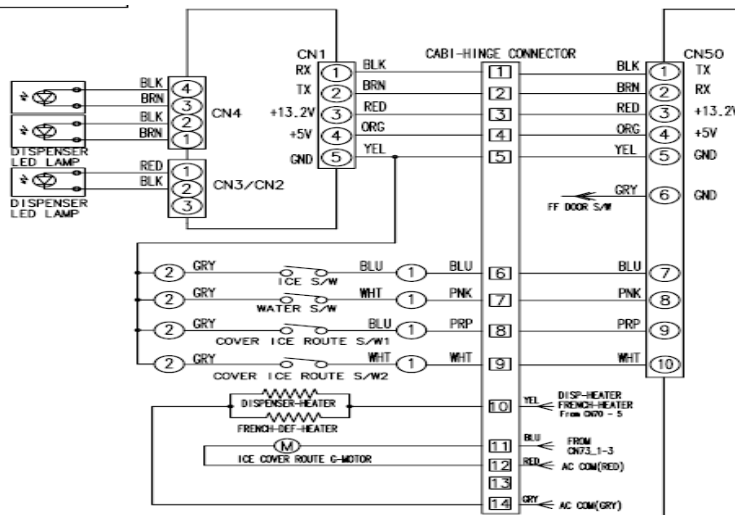
1, CN70-5; PRP-RED.
 IM Water Valve
 3, CN70-5; BLU-RED.
 Ice Cover Route
 5, CN70-5; BRN-RED.
 IM MTR CW
 7, CN70-5; WHT-RED.
 IM MTR CCW

CN73 120 VAC

1, CN70-5; YEL-RED.
 Cube MTR
 3, CN70-5; PNK-RED.
 Auger MTR
 5, CN70-5; W/BLK-RED.
 Water Valve

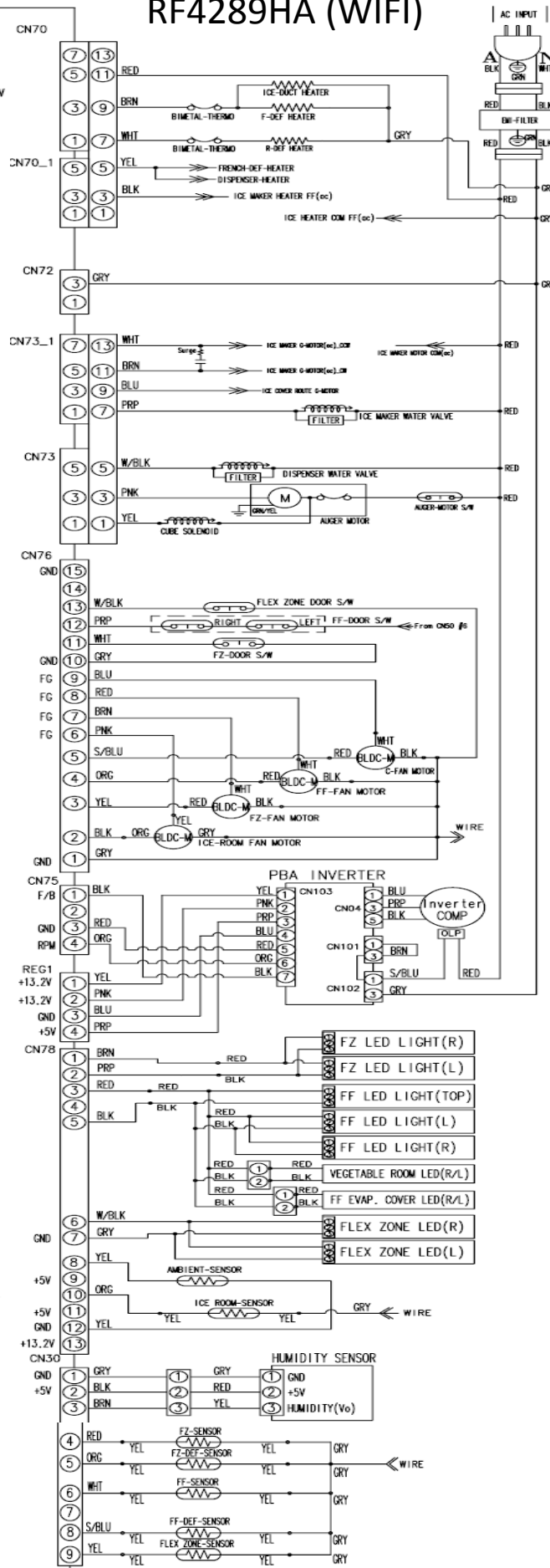
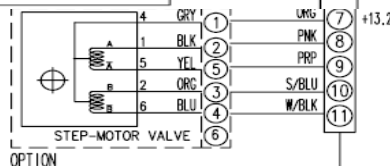
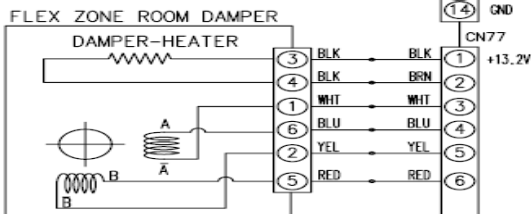
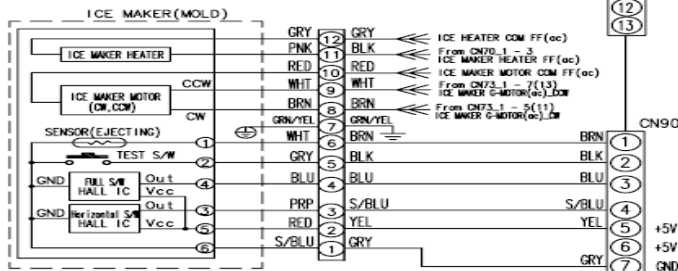
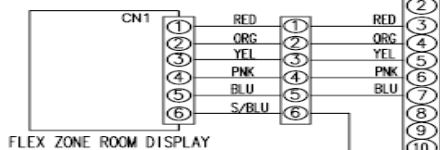
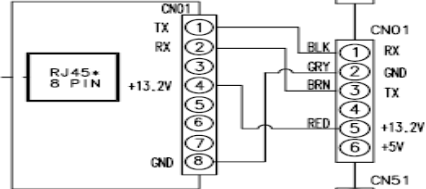


RF4289HA (WIFI)



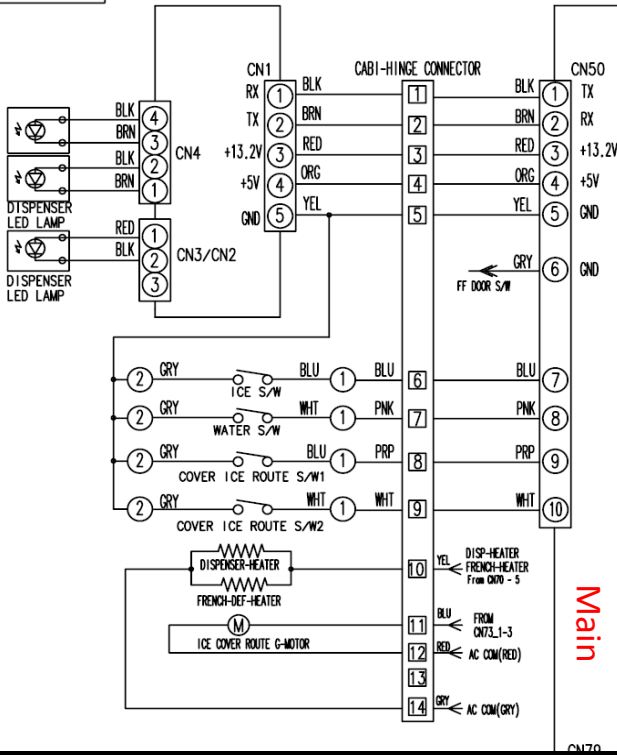
MODEM (OPTION)

RJ45 CONNECTOR PCB



A-4

8" LCD PANEL



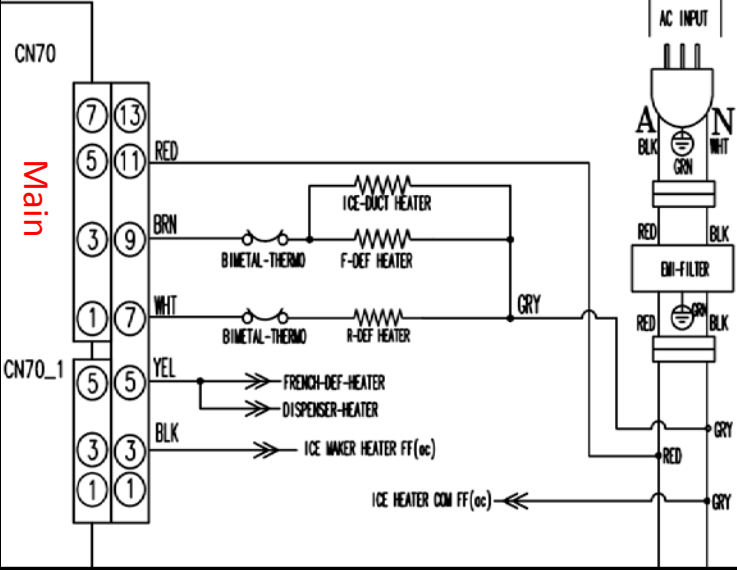
N

CN70

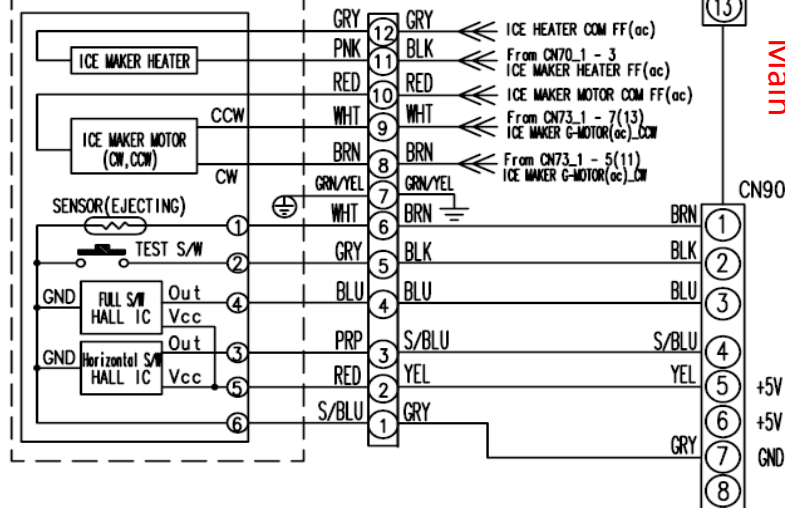
Main

CN70_1

Zoom View Wire Diagram

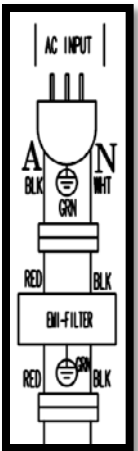


ICE MAKER(MOLD)

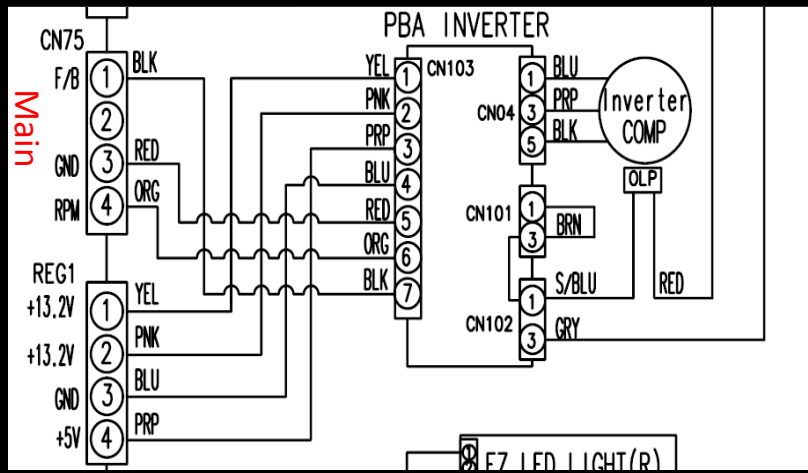


Main

CN90



Main

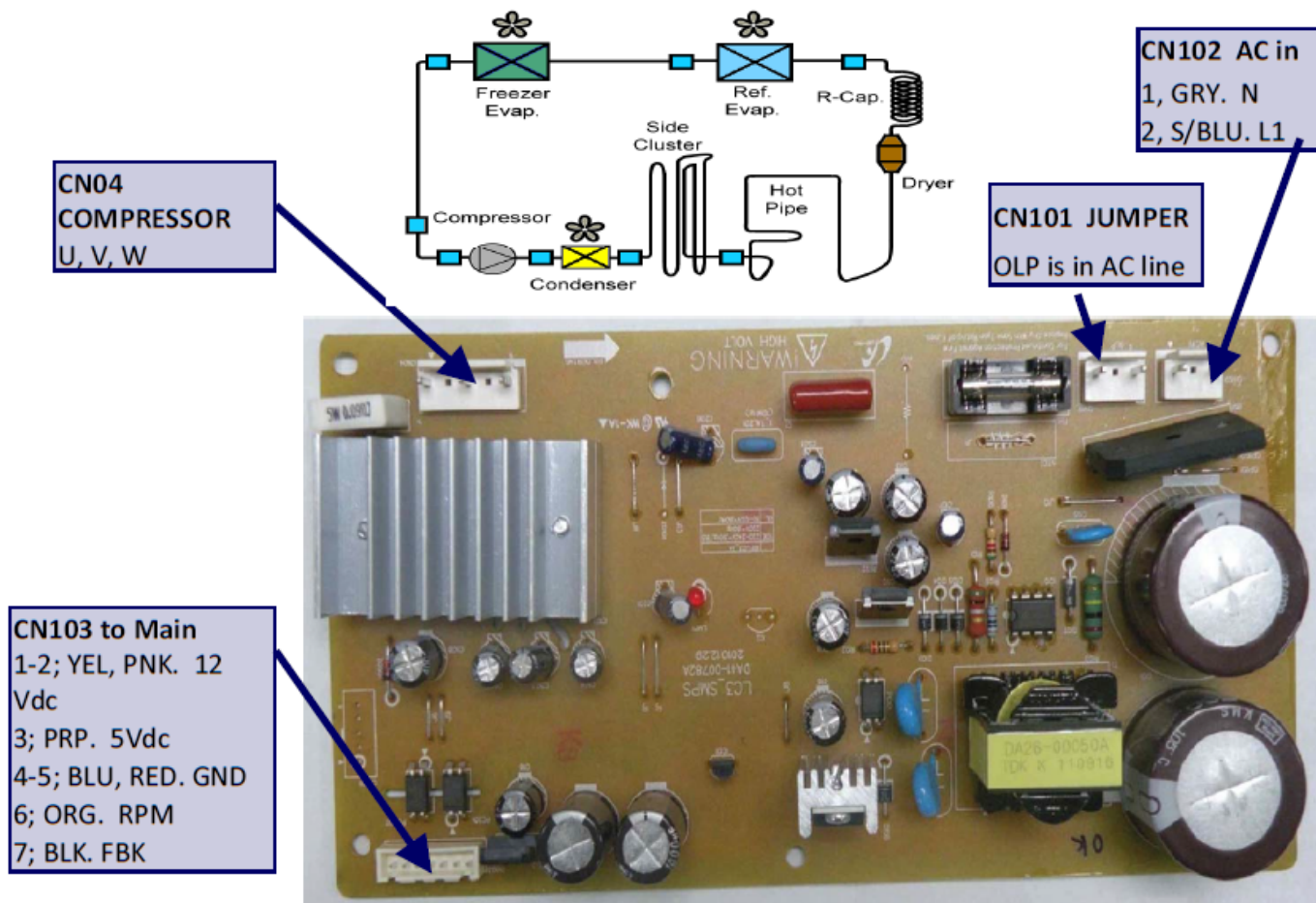


Compressor & System Operation Testing

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. Aproxametly10 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.



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

Display Cover Removal/Install

Remove a screw under the display cover.



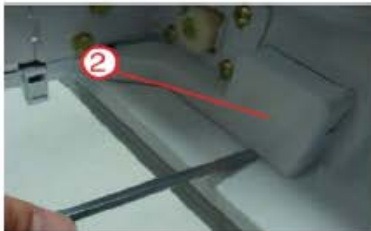
Remove the display cover by pushing it to the right side and pulling it up.



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.

