Fast Track Troubleshooting

Model:
RF24FSEDBSR

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

Hold Energy Saver and Fridge buttons together until you see a blank screen, press any button to start 1st process


The following will run during each mode:
1. **FF** - Compressor and Fan will run
2. **OF r** – Compressor will run but no fan


3. **Rd** will put the Fresh food area of your fridge into Defrost
4. **FD** will put the full fridge into defrost and all heaters will be on.
5. Blank Screen wait 30 seconds to exit

Error Check

Hold Energy saver and Lighting buttons together - let go when screen blinks

Unplug unit to reset

If you have an error it will be displayed on the screen (Refer to error chart page 5,6)

Blank screen means no errors

Demo Mode

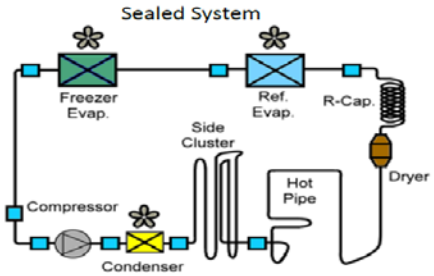
Enter Demo: hold Energy Saver and Freezer buttons together until O –FF is displayed. Repeat the same procedure to exit.

O- FF will indicate Demo Mode is on

In demo mode no heating or cooling elements will operate

Component Value Chart

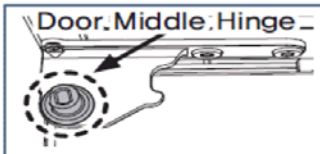
Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	62.6Ω	230	120vac
Fridge Defrost Heater	120Ω	120	120vac
French Mullion Heater	2057Ω	7	120vac
Ice Duct Heater	2057Ω	7	120vac
Dispenser Heater	9000Ω	1.6	120vac
Damper	144Ω	1	12vdc
Sensors	2.5kΩ-89kΩ	N/A	1~4.5vdc
Fans	N/A	N/A	7~12vdc

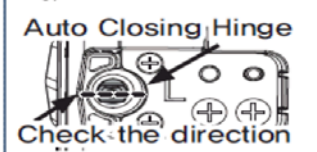


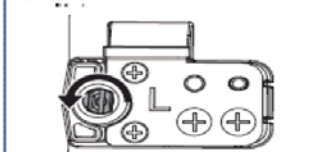
Refrigerant Charge R134a 5.64 oz

Door Removal:

- ❑ **Lift the door straightly up to remove while opening the door more than 90°.**
- ❑ **Do not use a flat head screwdriver to align the Auto close Hinge. It may get damaged. Use the Door middle Hinge instead.**







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°F for more than 5 seconds, the ice production process is complete. 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 that 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 Switch for at least 1.5 sec. and the harvest function will start. If the Ice Maker thermistor is below 0°F, the Ice Maker heater turns on for about two minutes. If the temperature exceeds 0°F, the Ice Maker heater turns on for 30 seconds. After the Ice Maker heater turns on for 30 seconds, the heater turns off and the Ice Maker harvest motor turns on. The motor will rotate in right direction for about 3 minutes, then the water supply valve is energized and then de-energized and the test mode is complete. If the above operation is not carried out within 6 minutes, the Ice Maker will go into a fault mode.

FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

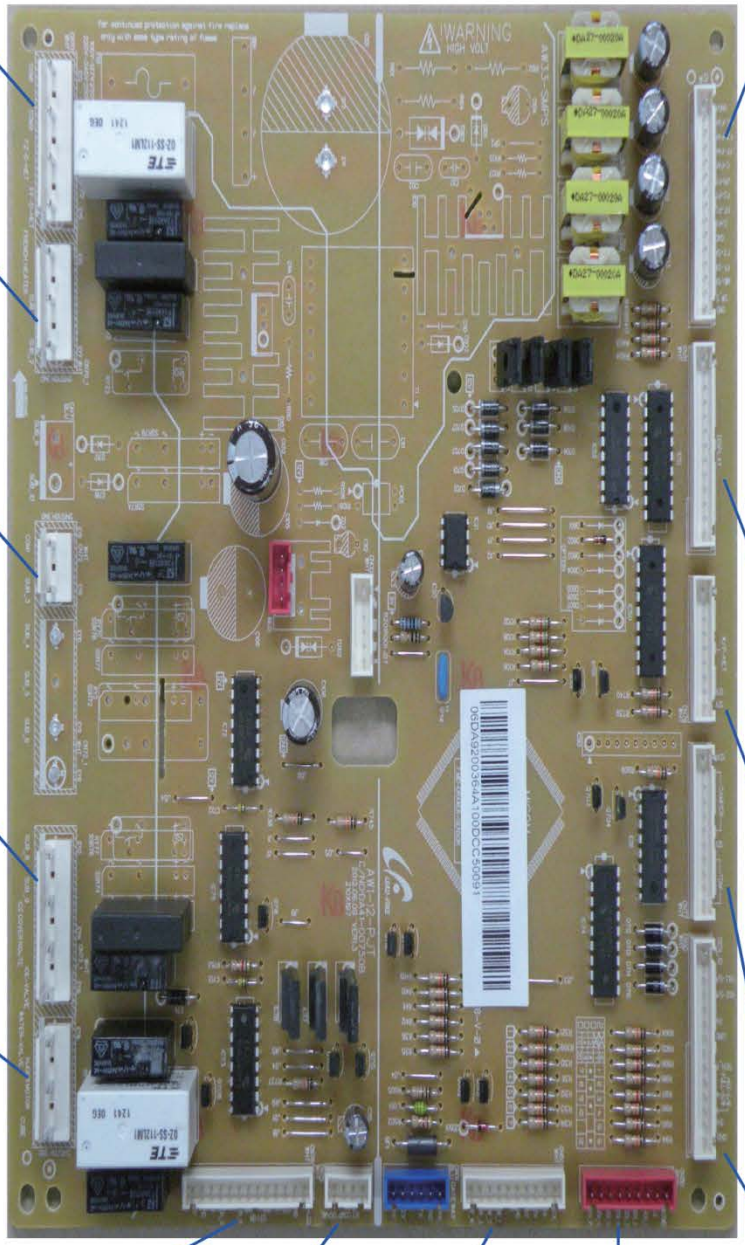
Interior Temperature of the freezer will be set to -14°F until the ice bucket is full. When the ice bucket is full, the freezer will maintain original set temperature. Also, whenever some ice is used, the freezer will again set to -14°F. Selecting "Ice Off" will allow the freezer to be controlled by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

LED		Item	Trouble contents	Diagnostic method
F	R			
		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)	The voltage of MAIN PCB CN30- "3" N76-"1": shall be between 4.5V~1.0V
		FF-Sensor Error		The voltage of MAIN PCB CN30- "6" N76-"1": shall be 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		The voltage of MAIN PCB CN30- "8" N76-"1": shall be between 4.5V~1.0V
		Ambient-Sensor Error		The voltage of MAIN PCB CN78- "8" CN78-"12": shall be between 4.5V~1.0V
		Flex room-Sensor Error		The voltage of MAIN PCB CN78- "9" CN76-"1": shall be between 4.5V~1.0V
		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
		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
		Ice Room Sensor Error	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 CN78- "10" CN78-"1": shall be between 4.5V~1.0V
		Sparkling-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 ASSY KIT PCB CN32- "1" CN32-"3": shall be 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 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)
		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)

LED		Item	Trouble contents	Diagnostic method
F	R			
		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.
		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.
		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
		Display ↔ Main Mycom Communication Error	Main mycom ↔ Display "41–E" message and make a buzzing sound when the communication between displays does not work.	Actually, If there is not a problem, it is desirable to replace Main and Panel PCB With the oscilloscope after a cable problem confirming.
		Ice Duct Heater Error	Display error when open error is detected by ice duct heater : separation of Ice Duct Heater housing part, contact error, disconnection, short circuit.	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)
		Ice Room Bucket Heater Error	Display error when open error is detected by ice room bucket heater : separation of Ice Room Bucket Heater housing part, contact error, disconnection, short circuit.	After separating MAIN PCB CN79 wire from PCB, resistance value between Yellow ↔ Pink wire shall be 135 ohm± 7%. 0 ohm : heater short, ∞ Ohm : wire / bimetal Open.
		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
		IPM Fault Error	When there is a IPM Fault error	
		Comp Abnormal current Detection Error	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
		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
		Comp under voltage Error	When there is a low voltage error	Check the voltage of Resistance of R513 [Short/Open]
		Comp over voltage Error	When there is a over voltage error	Check the voltage of Resistance of R501, R505, R509 [Short/Open]
		Sparkling Tank Overflow	Display error when open error is detected by sparkling tank overflow : separation of Sparkling Tank Overflow Sensor housing part, contact error, disconnection, short circuit.	The voltage of ASSY PCB KIT CN30– "1" CN30–"2": shall be over 4.5V
		Water Supply to Sparkling Tank Error	Display error when open error is detected by water supply to sparkling tank error : seperation of Sparkling Tank Water Level Sensor housing part, contact error, disconnection, short circuit.	The voltage of ASSY PCB KIT CN31– "1" CN31–"2": shall be over 4.5V



CN70 - AC LOAD
① : FF-DEF-HEATER
③ : FZ-DEF-HEATER
ICE DUCT HEATER
⑤ : COMMON2 LINE(L)
⑦ : COMMON1 LINE(N)

CN70_1 - AC LOAD
① : Main Valve
③ : ICE MAKER HEATER(FF)
⑤ : FRENCH-HEATER
DISPENSER-HEATER

CN72 - AC LOAD
① : OPEN
③ : COMMON1 LINE(N)

CN73_1 - AC LOAD
① : ICE WATER
SOLENOIDE VALVE(FF)
③ : ICE COVER ROUTE
⑤ : Open
⑦ : Open

CN73 - AC LOAD
① : CUBE SOLENOIDE
VALVE
③ : AUGER MOTOR
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 : ICE ROOM Sensor
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 : ICE Switch
⑧ : WATER Switch
⑨ : ICE Route Switch 1
⑩ : ICE Route Switch 2

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

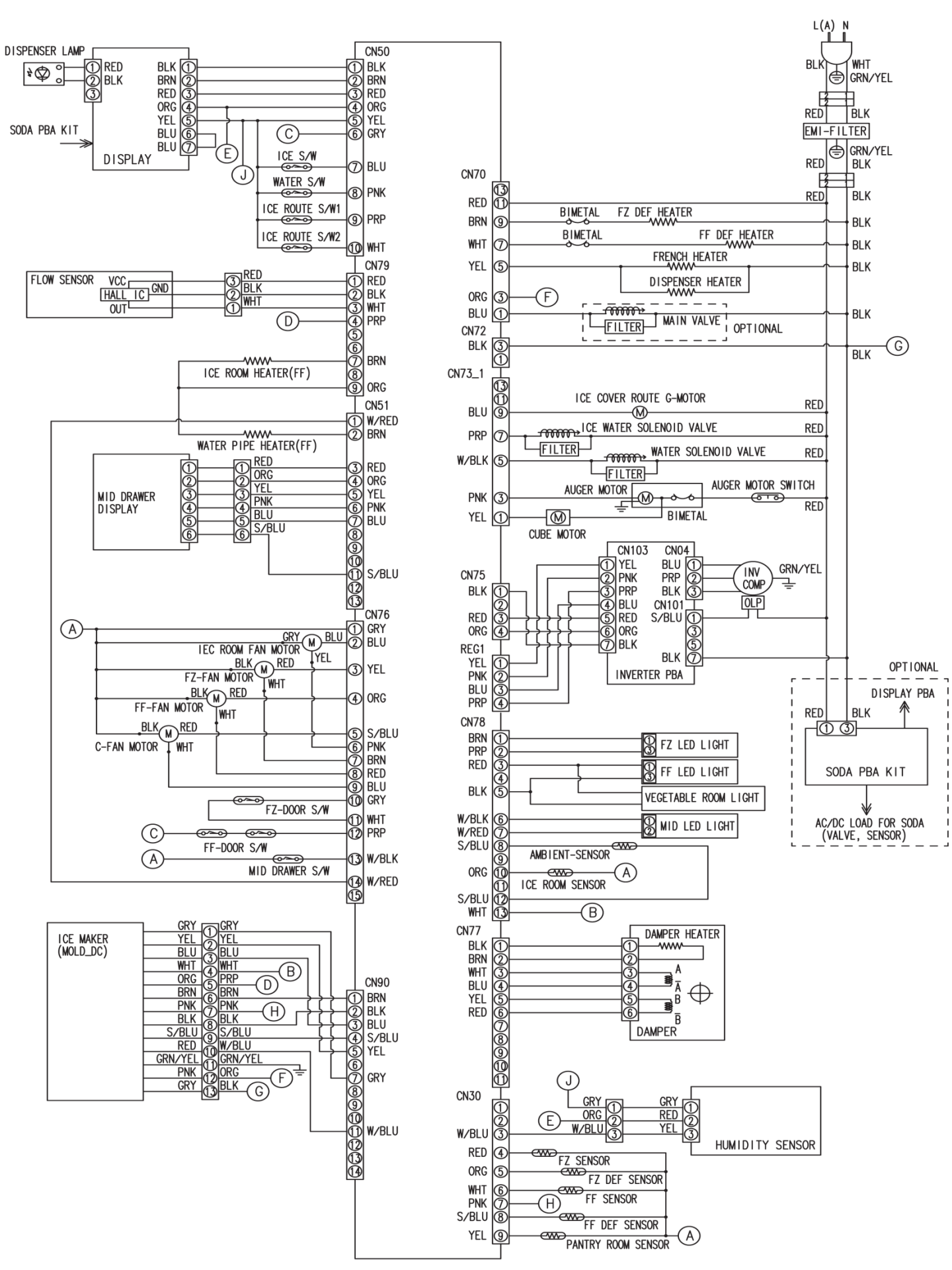
CN76 - BLDC Motor & door Switch
① : GND
② : Ice Room-FAN operation signal
③ : FZ-FAN operation signal
④ : FF-FAN operation signal
⑤ : C-FAN operation signal
⑥ : Ice Room-FAN signal input volt
⑦ : FZ-FAN signal input volt
⑧ : FF-FAN signal input volt
⑨ : C-FAN signal input volt
⑩ : GND
⑪ : FZ-Door Switch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

CN51 – MID DRAWER ROOM DISPLAY
① : ICE Pipe Heater(FF) F/B
② : ICE Water Pipe Heater (FF)
③~ ⑦ : Mid Drawer Room LED Driver
⑧~⑩ : OPEN
⑪ : Mid Drawer Room Switch
⑫ : OPEN
⑬ : OPEN

CN79
① : +5V
② : GND
③ : Flow Sensor Out
④ : Test Switch(FF)
⑤ : Ice Water Pipe Heater(FZ)
⑥ : Open
⑦ : Ice Room Heater
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 : Sensor(FF)
② : Motor Driver INB
③ : Horizontal Switch
④ : Motor Driver Vs2B
⑤ : +5V
⑥ : Open
⑦ : GND
⑧ : GND
⑨ : Sensor(FZ)
⑩ : Test Switch(FZ)
⑪ : Motor Driver INA
⑫ : Hall IC Output
⑬ : +5V
⑭ : GND


DISPENSER LAMP
SODA PBA KIT
DISPLAY
CN50
CN79
FLOW SENSOR
VCC
HALL IC
GND
OUT
ICE S/W
WATER S/W
ICE ROUTE S/W1
ICE ROUTE S/W2
ICE ROOM HEATER(FF)
CN51
WATER PIPE HEATER(FF)
MID DRAWER DISPLAY
CN76
IEC ROOM FAN MOTOR
FZ-FAN MOTOR
FF-FAN MOTOR
C-FAN MOTOR
FZ-DOOR S/W
FF-DOOR S/W
MID DRAWER S/W
ICE MAKER (MOLD_DC)
CN90
L(A) N
EMI-FILTER
CN70
BIMETAL
FZ DEF HEATER
FF DEF HEATER
FRENCH HEATER
DISPENSER HEATER
FILTER
MAIN VALVE
OPTIONAL
CN72
CN73_1
ICE COVER ROUTE G-MOTOR
ICE WATER SOLENOID VALVE
WATER SOLENOID VALVE
AUGER MOTOR
AUGER MOTOR SWITCH
CUBE MOTOR
CN75
REG1
CN103
CN04
CN101
INV COMP
OLP
INVERTER PBA
CN78
FZ LED LIGHT
FF LED LIGHT
VEGETABLE ROOM LIGHT
MID LED LIGHT
AMBIENT-SENSOR
ICE ROOM SENSOR
CN77
DAMPER HEATER
DAMPER
CN30
HUMIDITY SENSOR
FZ SENSOR
FZ DEF SENSOR
FF SENSOR
FF DEF SENSOR
PANTRY ROOM SENSOR
OPTIONAL
DISPLAY PBA
SODA PBA KIT
AC/DC LOAD FOR SODA (VALVE, SENSOR)