



MODEL CODE :
RS27FDBTNSR/AA

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.

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Support Information:

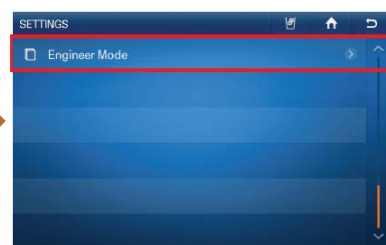
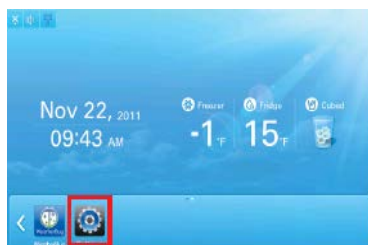
HELP: 1-888-751-4086 (Tech Sup. – ASC/SSD)

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>

Engineer Mode

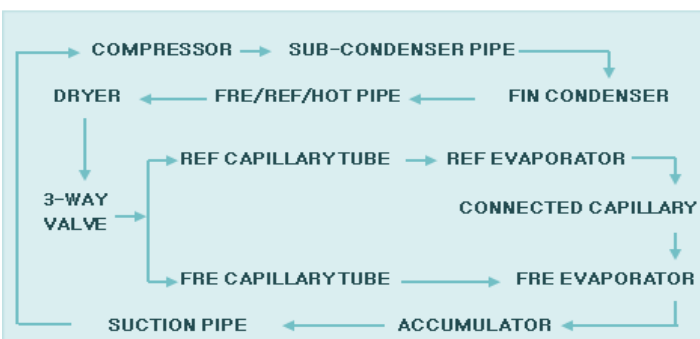


To Enter Engineer mode
Within 3 sec, tap the area as follows
"A-B-A-B-A-B". ("Engineer Mode enabled" message will be displayed for 1 sec.)

Enter Settings

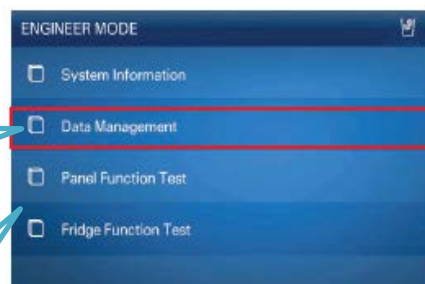
Enter Engineer mode to test
All functions / diagnostics / updates
After you exit Engineer mode will be disabled

Sealed System



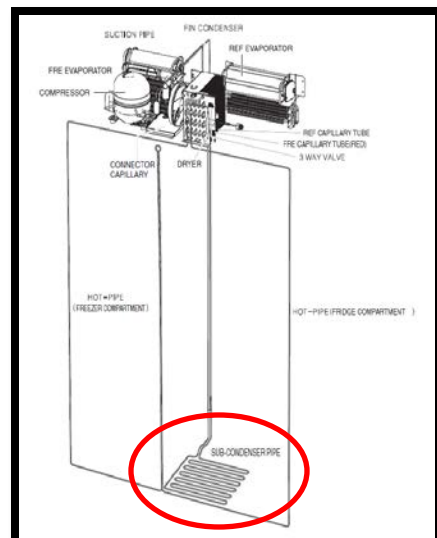
Save / Reload
customer data

Function tests
Used to check
Components



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



Do not use hand truck to move this unit
If so Sub Condenser pipe or drip tray might be damaged

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.

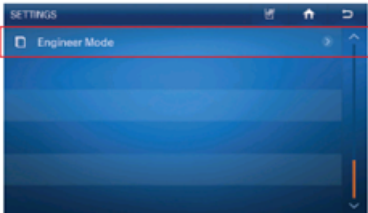
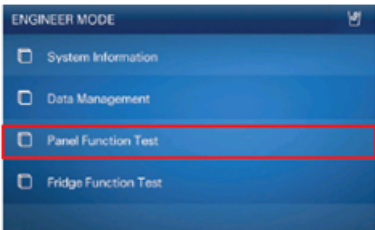
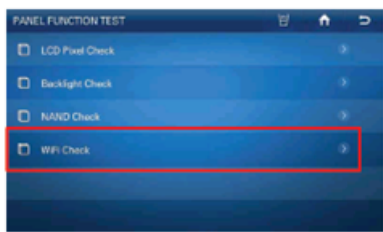
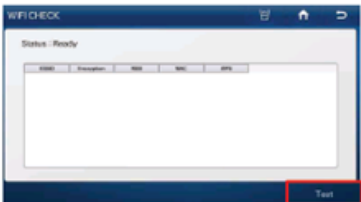
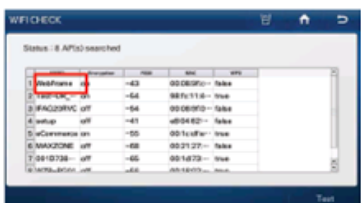
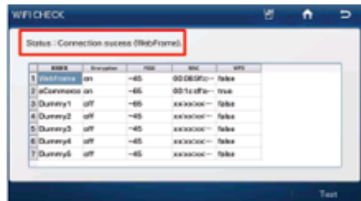
FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

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

WiFi(Wireless network) Check function

Sequence	Note
Choose the "Engineer Mode" button.	
Choose the "Panel Function Test" button.	
Choose the "WiFi Check" button.	
Choose the "Test" button.	
Choose the ESSID of searched wireless AP.	
You will see the "Connection success" message.	

Always confirm wireless signal strength
If the signal is weak, the unit might lose connection

TROUBLESHOOTING

※ Self-diagnostics check list

LED	Item	Trouble contents	Diagnostic method
1	F-Sensor Error	Slipped out Sensor Housing, Wire-Cut, Wire-Short, When the sensor pickup temp is over 122°F(+50°C) or under -58°F (-50°C), Error occurs.	The voltage between Case Connector CN2 #3 ↔ #5 should be within 4.5V~1.0V
2	R-Sensor Error		The voltage between Case Connector CN3 #10 ↔ #11 should be within 4.5V~1.0V
4	F-Def Sensor Error		The voltage between Case Connector CN2 #3 ↔ #6 should be within 4.5V~1.0V
5	R-Def Sensor Error		The voltage between Case Connector CN3 #10 ↔ #12 should be within 4.5V~1.0V
6	Ambient Sensor Error		The voltage between Case Connector CN6 #6 ↔ #9 should be within 4.5V~1.0V
13	Humidity Sensor Error		The voltage between Case Connector CN7 #13 ↔ #15 should be within 4.5V~1.0V
21	F-Fan Error	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage between Case Connector CN2 #2 ↔ #3 should be within 7V~12V
22	R-Fan Error		The voltage between Case Connector CN3 #9 ↔ #10 should be within 7V~12V
23	C-Fan Error		The voltage between Case Connector CN7 #11 ↔ #12 should be within 7V~12V
24	F-Defrost Error	Defrost Heater Related Wire Harness Slipped-Out, Contact Error, Wire Cut, Defect Temp Fuse. When the Freezer heaters keep being on after 50 minutes, error occurs.	Since the F-Defrost Heater is linked with the Drain Heater and the Sub Heater, it is not able to diagnose the part. So, check the status of the wire harness connection related to the F-Defrost Heater.
25	R-Defrost Error	Defrost Heater Related Wire Harness Slipped-Out, Contact Error, Wire Cut, Defect Temp Fuse. When the Fridge heaters keep being on after 50 minutes, error occurs.	Since the R-Defrost Heater is linked with the Drain Heater and the Ice Maker Pipe Heater, it is not able to diagnose the part. So, check the status of the wire harness connection related to the R-Defrost Heater.
41	Communication Error between Main ↔ Panel	When there is no communication between MICOM MAIN ↔ PANEL for more than 10 seconds, the MICOM MAIN ↔ PANEL Communication Error Window will show on the Display.	To check its defect, a Oscilloscope is needed. So, replace the MAIN PCB and check if the problem persists.
71	Abnormal High Temperature of Freezer	The error occurs when the Freezer temperature rises abnormally or when the Freezer Door remains open for a while while the unit's inside temperature is high.	When its Door remains open for an extended time or high temperature food is stored, close the Door or take out the hot food. Then, after a while, the error will disappear.

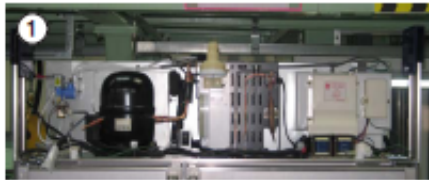
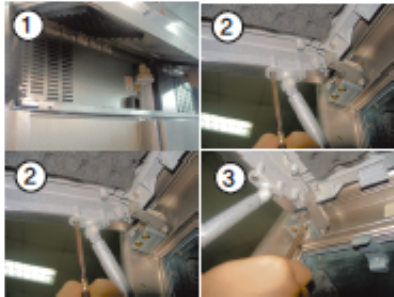
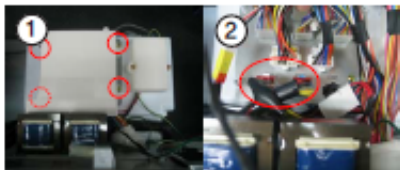
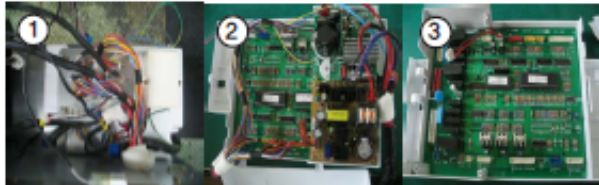
Error Codes

TROUBLESHOOTING

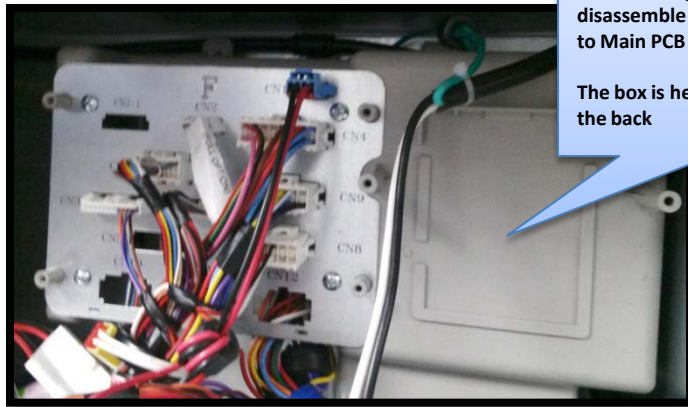
※ Self-diagnostics check list

LED	Item	Trouble contents	Diagnostic method
72	Abnormal High Temperature of Fridge	The error occurs when the Fridge temperature rises abnormally or when the Fridge Door remains open for a while while the unit's inside temperature is high.	When its Door remains open for an extended time or high temperature food is stored, close the Door or take out the hot food. Then, after a while, the error will disappear.
81	Comp Startup Failure	When the Comp Startup Failure is detected	1. Short between Comp. U/V/W (CN04) 2. Short between IPM PIN (#1~26)
82	Comp IPM Fault	When the Comp IPM Fault is detected	3. IPM Operation Voltage Dropdown (Lower than DC13.5V) 4. Check Comp and Cycle
83	Abnormal Current Pick-Up at Comp	When the Abnormal Current is pick-up at the Comp	1. Comp Connector Plugged Out (CN04) 2. R1 Defect or Assembly Defect 3. Check Comp and Cycle
84	Comp Motor Restriction	When the Comp Motor Restriction is detected	1. When the Comp is restricted for more than 5 seconds 2. When the Comp runs at lower than 1000RPM for over 5 seconds 3. R1 Short 4. Severe fluctuation of Input Voltage 5. Check Comp and Cycle
85	Comp Low Voltage	When the Low Voltage is detected at the Comp	1. Input AC Voltage 106V or lower 2. When R312 is short (DC Link Resistor)
86	Comp High Voltage	When the High Voltage is detected at the Comp	1. Input AC Voltage 310V or higher 2. When R309, R310 or R311 is short (DC Link Resistor)

Disassembly

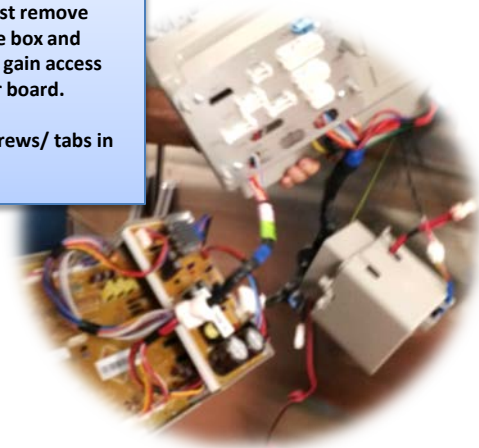
Part Name	How To Do	Descriptive Picture
MACHINE COMPARTMENT	① Right figure displays the Machine Compartment.	
ASSY-GRILLE, GAS SPRING	① Open the Assy-Grille and remove Assy-cover comp. ② Remove gas struts from the stud by loosening the clip of the strut with a screw driver. ③ Unscrew two screws off the gas struts and the other two screws from the hinge.	
DOOR SWITCH	① Disassemble Cover Grill, disassemble the Housing of the switch. ② Disassemble the switch pulling down by pushing the hook.	
TRANSFORMER	① After disassembling of the Cover Grill, disassemble the circled 4 screws for Housing Cover. ② Disassemble circled wire Housing of Transformer from the terminal block. ③ Pull out Transformer after disassembling 2 screws.	
PCB-BOX	① After disassembling the Transformer, first pull out Housing connected to the terminal block, second remove 2 screws, third disassemble ground wire and finally pull out PCBBOX Cover. ② After opening PCB-BOX Cover, pull out Housing and disassemble 4 screws to remove SMPS. ③ Disassemble Main PCB from PCB-BOX. ※ Main PCB should be fixed to a hook like figure.	

Main Board



The Main Board is located inside the connector box. You must remove connectors, pull out the box and disassemble the box to gain access to Main PCB and Driver board.

The box is held in by screws/ tabs in the back

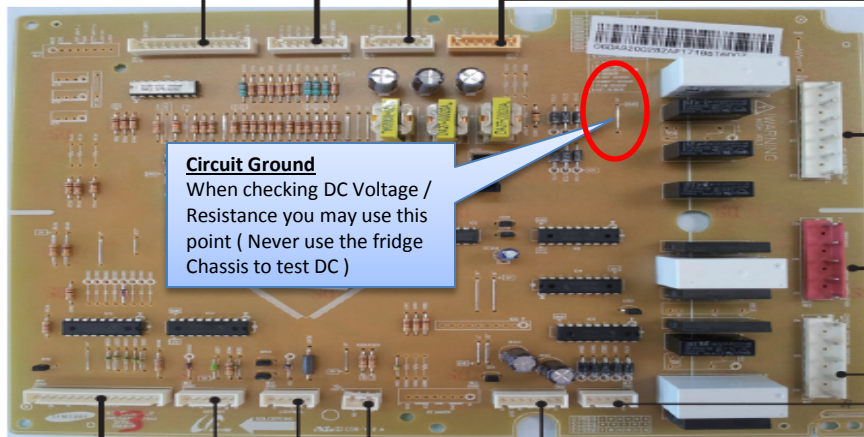


1. DAMPER HEATER
2. 13V
- 3-6. STEP VALVE
7. FRESH ISLAND BOX FAN
8. 13V
- 9-10. R-FAN MOTOR
11. GND
12. R-SENSOR
13. R-DEF-SENSOR

1. F-DOOR S.W
2. R-DOOR S.W
3. ICE RUTE S/W 1
4. ICE RUTE S/W 2
5. GND
6. DISPENSER S/W
7. HOMEBAR S/W
8. GND

1. EXT-SENSOR
2. F-DEF-SENSOR
3. F-SENSOR
4. CUBE SOLENOID-VALVE S/W
5. GND
- 6-7. F-FAN MOTOR

- 1-2. C-FAN MOTOR
3. GND
4. 5V
5. FLOW SENSOR GND
6. FLOW SENSOR VCC
7. FLOW SENSOR OUT



Circuit Ground
When checking DC Voltage / Resistance you may use this point (Never use the fridge Chassis to test DC)

1. NOT USED
3. F-DEF HEATER
5. COMMON
7. R-DEF HEATER
9. ICE-WATER SOLENOID-VALVE
11. WATER TANK HEATER

1. F-ROOM LAMP
3. DISPENSER HEATER
5. R-ROOM LAMP
7. HOMEBAR HEATER
9. NOT USED

1. COVER ICE MOTOR
3. WATER SOL VALVE
5. NOT USED
7. AUGER MOTOR
9. CUBE GEARED MOTOR

1. 13V
- 2-5. STEP MOTOR

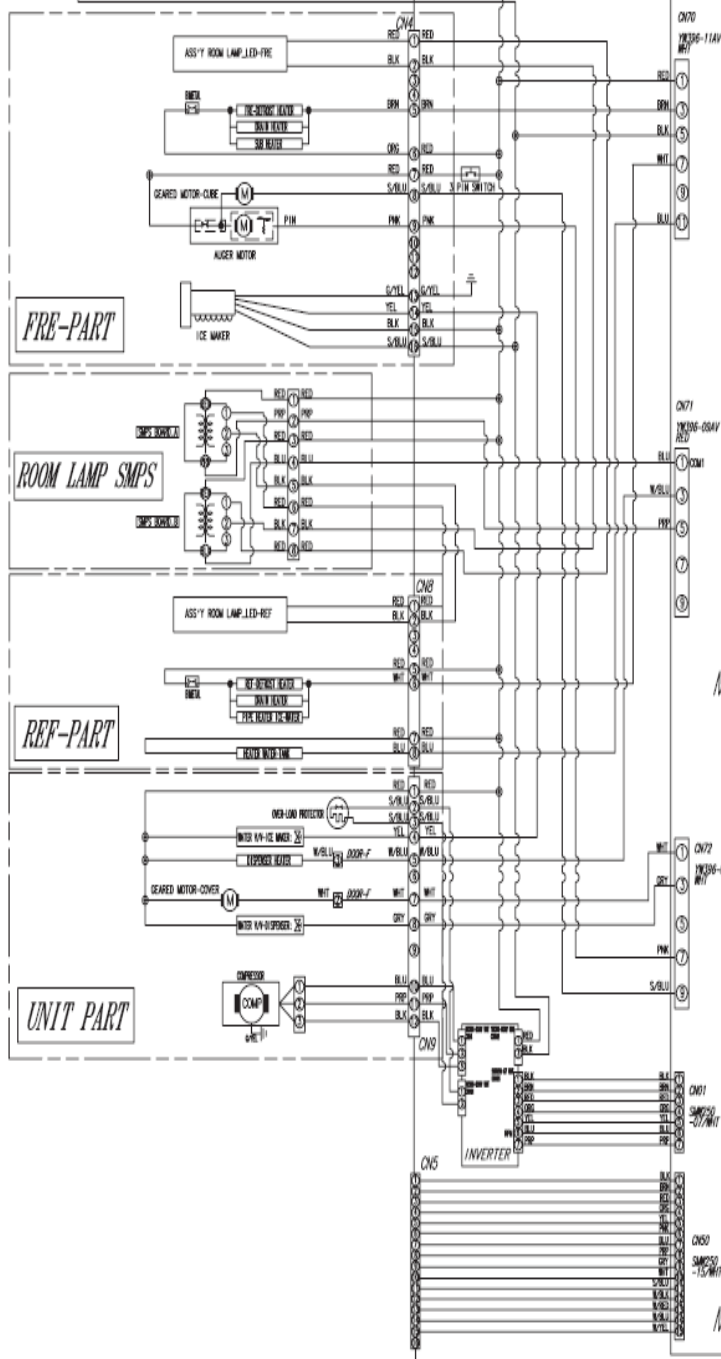
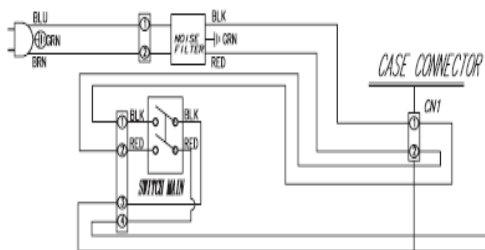
- 1-2. 13V
3. 5V
- 4-5. GND
6. COMP RPM
7. COMP FEEDBACK

- 1-5. FRESH ISLAND DATA
6. KEY IN
- 7-11. FRESH ISLAND GRID
12. 13V(ROOM LAMP)
13. FRESH ISLAND ROOM LAMP
14. GND
15. FRESH ISLAND ROOM SENSOR

- 1-2. LCD PANEL DATA
3. 13V
4. 5V
5. GND

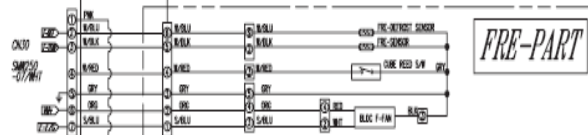
1. GND
2. 5V
3. HUMIDITY SENSOR

NOT USED

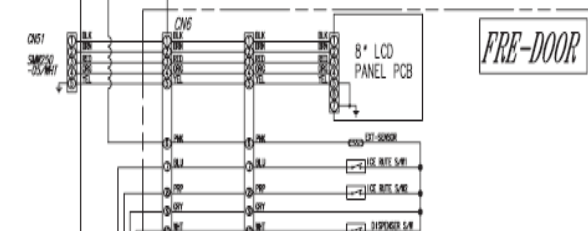


MAIN PCB

CASE CONNECTOR

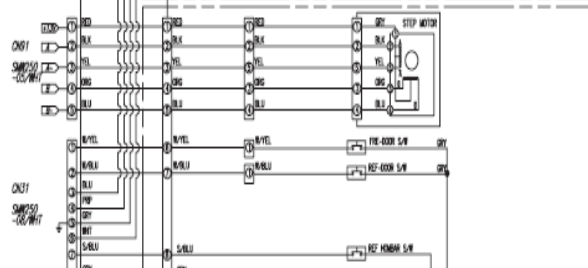


FRE-PART



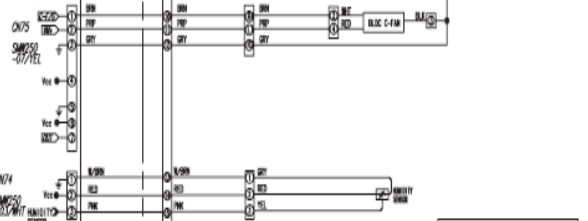
FRE-DOOR

MAIN PCB



UNIT PART

MAIN PCB



REF-PART