



Model:
RF31FMED**

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.

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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

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

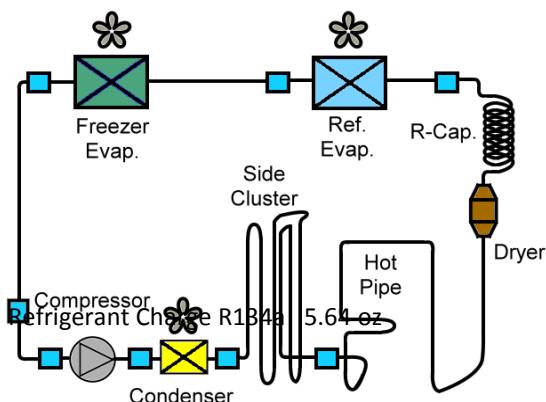


Enter Demo: hold Energy Saver and Freezer buttons together until O-FF is displayed. Repeat the same procedure to exit.

O- FF will indicate Demo Mode is on

In demo mode no heating or cooling elements will operate

Sealed System



When Removing or installing the doors make sure you remove them past 90 degrees. The door closing mechanism might lock if incorrectly removed or installed.

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

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

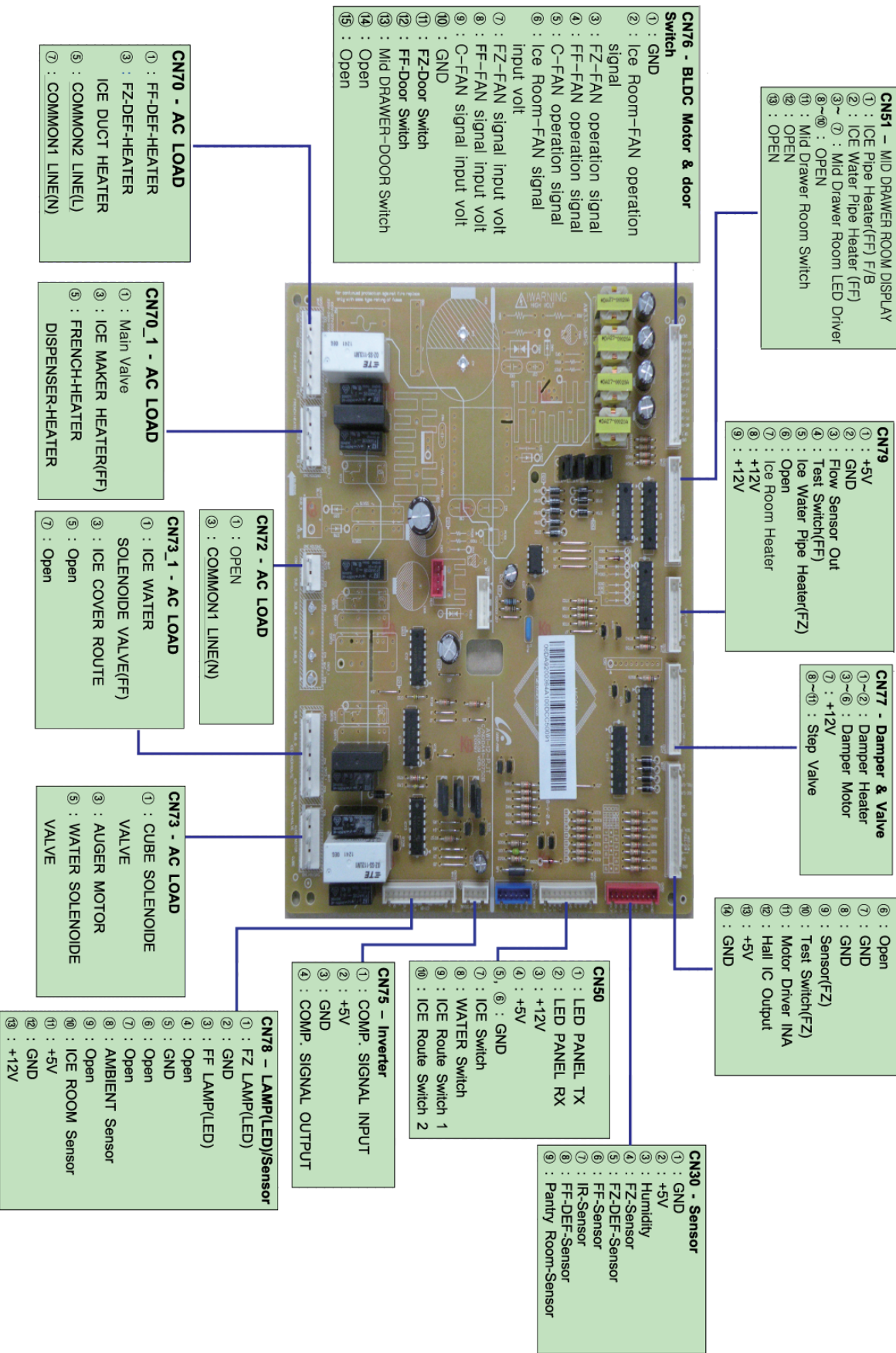
LED		Item	Trouble contents	Diagnostic method
F	R			
1	E	FZ-Sensor Error	Display error : Sensor Housing separation of sensor housing part, contact error, disconnection, short circuit. Display error of detecting temperature of sensor : more than 149°F(+65°C) or less than -58°F(-50°C)	Voltage - CN30- Pin"4"↔CN76-Pin"1" should read between 4.5V~1.0V .
2		FF-Sensor Error		Voltage - CN30- Pin"5"↔ CN76-Pin"1" should read between 4.5V~1.0V .
4		FZ-DEF-Sensor Error		Voltage - CN30- Pin "5"↔ CN76-Pin "1" should read between 4.5V~1.0V
5		FF-DEF-Sensor Error		Voltage - CN30-Pin"8"↔ CN76-Pin"1" , should read between 4.5V~1.0V .
6		Ambient-Sensor Error		Voltage- CN78- Pin"8"↔CN78-Pin "12" Should read between 4.5V~1.0V
7		Flex room-Sensor Error		Voltage- CN78-Pin "9"↔CN76-Pin "1" should read between 4.5V~1.0V .
13		Humidity-Sensor Error	Separation of sensor housing part, contact error, disconnection, short circuit	Voltage- CN30- Pin"3"↔ CN76-Pin"1" should read between 4.5V~1.0V .
23	E	FZ-DEF Error	Display error during operation of applicable fan motor : Feed back signal line contact error, motor wire separation, motor error	voltage : CN76- "5"(Sky-blue) ↔ CN76-"1"(Gray) Should be between 7V~12V
24		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.	Measure Resistance: Remove the cable CN70 from the Main PCB Resistance: CN70 Brown ↔ CN70 Gray Should be 63(230) ohm ± 7% 0 ohm: means - heater short ∞ ohm: means – wire or bimetal open (Must power off)
25		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.	Measure Resistance: Remove the cable CN70 from the Main PCB Resistance: CN70 White ↔ CN70 Gray Should be 120(440) ohm±7% 0 ohm: means - heater short ∞ ohm: means - wire/bimetal open (Must power off)
83	E	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 C103 terminals if (Voltage Unstable) Check the Compressor and the Cycle
85		Compressor 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]
93		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.	voltage of ASSY PCB KIT CN30-Pin "1" CN30-Pin"2" should be over 4.5V

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Fans	N/A	N/A	7~12vdc

RF31FMED**/RF24FS**

PCB DIAGRAM



Disassembly and Assembly

Ice-Maker

Part name	How to do	Descriptive Picture
Ice-Maker	1. When pressing the Energy-Saver and the Fridge buttons on the Display together for 8 seconds at the same time, it will convert to the Test Mode and the entire Display function will be off.	
	2. When pressing any button within 15 seconds after it is shifted to the Test Mode, its function will change in the following order. Manual operation1(FF) Manual operation2(0F-r) → manual defrost of fresh food compartments(rd) → manual defrost of fresh and freezer compartments(fd) → cancel(Display all off). ● Set unit to Fd for 5 minutes. This will allow for easy removal of the ice maker.	
	3. While pressing the tab on the top right side, lift up the Ice Bucket and pull it out	

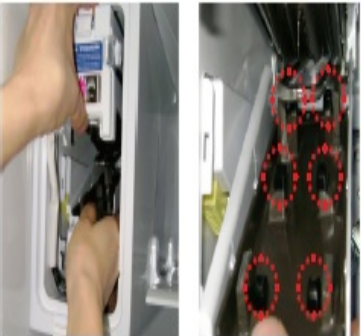
Disassembly and Assembly

Ice-Maker

Part name	How to do	Descriptive Picture
Ice-Maker	4. Remove the screw from the Wire Housing Cover.	
	5. Remove the Wire Housing Cover.	
	6. Disconnect the Ice Maker Housing Connector.	
Ice-Maker	7. Remove the screw from the Duct Tray-ice.	
	8. With a flat blade screwdriver, push the duct to the right and remove it from the locking tab. (Refer to the image.)	
	9. With a flat blade screwdriver, pry down on the refrigerant tube to separate it from the bottom of the ice maker. (Refer to the image.)	

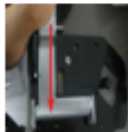
Disassembly and Assembly

Ice-Maker

Part name	How to do	Descriptive Picture
Ice-Maker	10. Push down the refrigerant pipe slightly and separate the refrigerant pipe and the Ice Maker Assembly completely.	
	11. While pressing the Hook, pull out the Ice Maker.	
	12. While pushing down the Duct-Tray-Ice, pull out the Ice Maker carefully and remove it. ※ When removing the ice maker, be careful not to damage the grommets on the tray or the refrigerant tube. (Refer to the dotted parts on the right side photo.)	

Disassembly and Assembly

Refrigerator Door

Part name	How to do	Descriptive Picture
Refrigerator Door	1. Remove the 3 screws holding down the Top Table and remove the Top Table (1)	
	2. Disconnect the electrical (2) above the upper left door hinge To disconnect the connector (2) more easily, press the end of the hook (3) and pull connector.  Make sure unit is unplugged.	
	3. As shown in the picture, Remove water tube from hinge (4) by holding at the both sides of the Tube Fitting and pulling it out. And, remove the Tube Fitting (5) by pulling the water hose after pushing in the locking ring tab at the end of the Tube Fitting.	
Refrigerator Door	4. After pulling the Hinge Lever, remove the Hinge.	
	5. Lift the door straightly up to remove while opening it more than 90°.  Be careful not to drop the door.	
	6. With a Philips head screwdriver, remove the screw (6) attached to the lower left and right door hinges. With a 0.4in Hex wrench, remove the 2 flat head screws (7) Remove the lower left and right door hinges (8).	
	7. With a Philips head screwdriver, remove the screw(9). After, With Flat Head Driver(10), Lift up and remove the Auto Hinge (11)	

6. WIRING DIAGRAM

6-1) Model : RF31FM*D** / RF24FS**

Common for All Models

