



Fast Track Troubleshooting

Model:
RS25H50



Bulletins:

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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>

Self-Diagnostics Function

Press both buttons simultaneously for 8 seconds



If any LEDs blink, the corresponding sensors and components must be checked for an error.

To select this function, press Lighting and Energy Saver buttons simultaneously for 8 seconds with an audible tone. In the self diagnostic mode, only corresponding LED segments will be illuminated (see the check list below) After a 30 second illumination of error signal, the system will return to the normal operation.

NO	Error	LED Display
①	ICE MAKER SENSOR	Right - ① LED ON
②	MAIN ↔ PANEL COMMUNICATION ERROR	Right - ② LED ON
③	COMP ERROR	Right - ③ LED ON
④	REFRIGERATOR SENSOR	Right - ④ LED ON
⑤	Damper Heater Error	Right - ⑤ LED ON
⑥	ICE MAKER FUNCTION ERROR	Right - ⑦ LED ON
⑦	EXIT-SENSOR	Left - ① LED ON
⑧	FREEZER SENSOR	Left - ② LED ON
⑨	FREEZER DEFROST	Left - ③ LED ON
⑩	FREEZER FAN ERROR	Left - ④ LED ON
⑪	CONDENSER FAN ERROR	Left - ⑤ LED ON
⑫	FREEZER DEFROST ERROR	Left - ⑦ LED ON

Force Mode:

Press both button for 8 seconds at the same time

- Press Energy Saver and Fridge buttons simultaneously for 8 seconds to get in the ready mode for a forced operation. (The below picture)
- The display panel will return to normal after 15 seconds in the ready mode.
- In the ready mode, press any button once to start a compressor on operation, twice for defrost cycle for the freezer, and finally three times for cancellation of this function
- Another way to cancel this function is to simply plug out the power cord and plug it back in.



Cooling Off Function (Demo Mode)

Old Style DEMO Activation or Deactivation



1 To select for the Cooling Off mode, press the top left and middle left buttons simultaneously for 5 seconds until a “ding-dong” sound is heard.

New Style DEMO Activation or Deactivation



1 For units produced June 2014 and later, to select for the Cooling Off mode, press the top left, middle left, and top right buttons simultaneously for 5 seconds until a “ding-dong” sound is heard.

2 To cancel this mode, press the same buttons again for 5 seconds until a “ding-dong” sound is heard.

Load Operation Check Function

- 1) In the normal operation, press Lighting and Energy Saver buttons simultaneously for 6 seconds, then the display panel will blink for 2 seconds.
- 2) Press Fridge Temp. button ④ to get into this check mode with an audible tone.
- 3) Each illuminating LED segment stands for the component which has an output signal from the control board.
- 4) This mode will terminate automatically after 30 seconds.

Press both buttons simultaneously for 6 seconds, all LED Lightings will be turned off. At this time press button ④.



- 1) Compressor on (Pull Down) mode
 - 1-1) In the ready mode, press any button once - then the buzzer will beep (ON for 1/2 second and OFF for 1/2 second) until this mode is cancelled.
 - 1-2) In this compressor on mode, the compressor will start immediately (No 7 minute delay) and if the system is in the defrost cycle, it will be cancelled right away.
- 2) Freezer-Defrost operation
 - 2-1) In the ready mode, press any button twice to begin the defrost cycle for the Freezer-Defrost.
 - 2-2) The beep sound continues for 3 second at the beginning, then ON for 3/4 seconds and OFF for 1/4 second until this mode ceases.
 - 2-3) After this operation, the system will come back to normal operation.
- 3) Cancellation
 - 3-1) In the F-Defrost mode, press any button again to return to a normal operation.
 - 3-2) Or, simply unplug the power cord, then plug it again to return to a normal operation.

NO	Error	LED Display
①	Damper	Right - ① LED ON
②	Overload mode	Right - ⑤ LED ON
③	Low-temperature mode	Right - ⑥ LED ON
④	Exhibition mode	Right - ⑦ LED ON
⑤	COMPRESSOR	Left - ① LED ON
⑥	FREEZER Fan highest	Left - ②, ③ LED ON
⑦	FREEZER Fan high	Left - ② LED ON
⑧	FREEZER Fan low	Left - ③ LED ON
⑨	FREEZER DEFROST heater	Left - ④ LED ON
⑩	CONDENSER Fan high	Left - ⑤ LED ON
⑪	CONDENSER Fan low	Left - ⑥ LED ON
⑫	Dispenser-heater	Left - ⑦ LED ON
⑬	FULL ICE	Ice Off LED ON
—	Normal condition	Right - ⑤, ⑥ LED ON LED All 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.

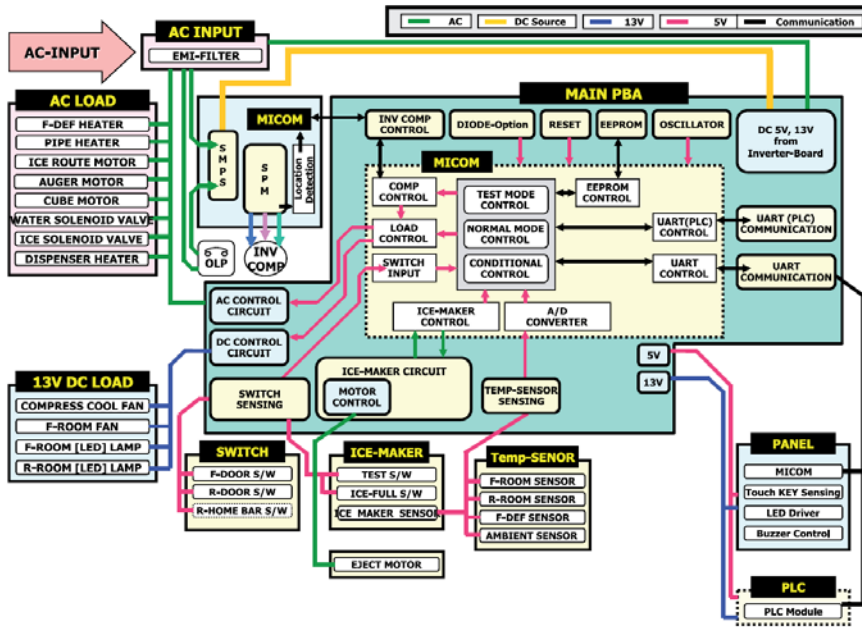
Temperature/Resistance/Voltage Chart for Samsung Refrigerators Sensors

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

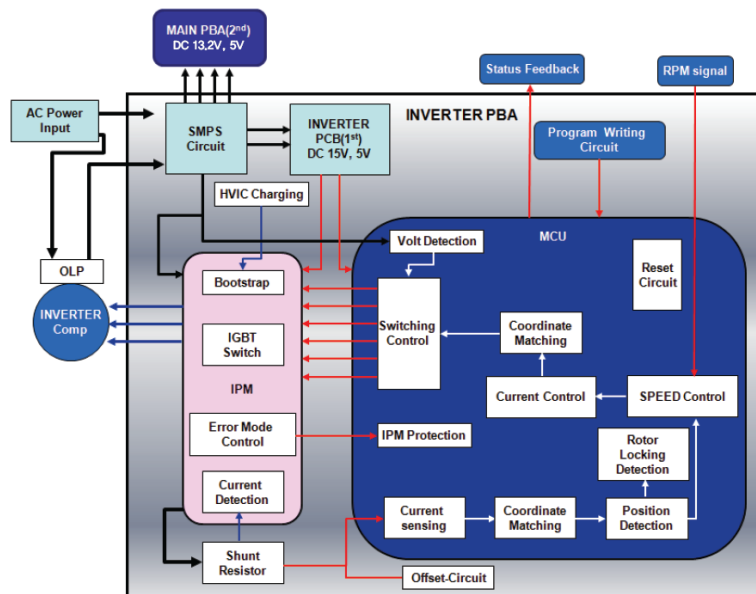
Error items of self-diagnostics

NO	Error items	Details	How to Self-Diagnose
01	ICE MAKER SENSOR	Ice Maker sensor connector missing; contact failure, electric wire cut, short-circuit; Ice Maker sensor failure; and so on	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN90 # 3 (WHITE) and # 8 (GRAY).
02	MAIN > PANEL COMMUNICATION ERROR	Blinking all panel icon with alarm. Communication Error between main micom and panel micom	It needs a Oscilloscope to do the error check. So, it is more realistic checking the error after replacing Main or Panel PCB.
03	Compressor Error	Compressor start, IPM Fault, Abnormal Current, Motor Locked Over RPM, Under Voltage, Over Voltage Error	
04	REFRIGERATOR SENSOR	Refrigerator sensor connector missing; contact failure, electric wire cut, short-circuit; Refrigerator sensor itself failure; and so on	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN40 # 8 (GRAY) and # 9 (BLACK).
05	Damper Heater Error	Damper Heater is sensed as open error due to Connector Slipped-Out or Open-Contact, Wire Cut.	Disconnect MAIN PCB CN76 from PCB, and read the resistance between Black and Brown wire terminals (Refer to the Wire Diagram for the resistance value). 0 Ohm ∞ Heater Short Ohm $\rightarrow$ Wire Cut or Slipped-out Terminal.
06	ICE MAKER function ERROR	Ice-ejector and level failed three times or more	Push the test button on an I/M Ass'y and It should work.
07	Ambient Air SENSOR	Air sensor connector missing; contact failure, electric wire cut, short-circuit; open air sensor itself failure; and so on	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN40 # 1 (YELLOW) and # 2 (YELLOW).
08	FREEZER SENSOR	Freezer sensor connector missing; contact failed, electric wire cut, short circuit; Freezer Room sensor itself failure.	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN40 # 4 (YELLOW) and # 5 (GRAY).
09	FREEZER DEFROST SENSOR	Freezer evaporator defrosting sensor connector missing; contact failed, electric wire cut, short circuit; sensor itself failure; and so on	The voltage should be within the range of 4.5V~1.0V between MAIN PCB CN40 # 4 (GRAY) and # 6 (BLUE).
10	FREEZER FAN ERROR	Freezer Fan motor operation failure; feedback signal line contact failure, motor's electric wire missing; and so on.	The voltage should be 7V~12V between MAIN PCB CN75 # 4 (YELLOW) and # 10 (GRAY).
11	CONDENSER FAN ERROR (COMP-FAN)	Condenser Fan motor operation failure; feedback signal line contact failure, motor's electric wire missing; and so on.	The voltage should be 7V~12V between MAIN PCB CN75 # 2 (S/BLUE) and # 10 (GRAY).
12	FREEZER DEFROST ERROR	In the freezer room, if frost removal mode is finished due to limited time of 70 minutes. Error is displayed	Read the resistance between the white and the orange wire terminals (the reading varies according to the basic Power Consumption). 0 Ohm ∞ Heater Short, Ohm $\rightarrow$ Wire Cut or Blown Thermo Fuse

Block Diagram (Main PBA)



BLOCK DIAGRAM (INVERTER PBA)



Connector Layout with part position (Main Board)

- 1: GND
- 2: VCC C FAN
- 3: VCC R FAN
- 4: VCC F FAN
- 5:
- 6: FG F FAN
- 7: FG R FAN
- 8: FG C FAN
- 9:

CN75

- 1: GND
- 2: EXT-SENSOR
- 3: F1 SENSOR
- 4: F1 DEF SENSOR
- 5: R1 SENSOR
- 6: R1 DEF SENSOR
- 7: GND
- 8: F2 SENSOR
- 9: HUMIDITY SENSOR
- 10: R2 SENSOR
- 11: GND
- 12: ICE ROOM 1 SENSOR
- 13: ICE ROOM 2 SENSOR

CN90

CN30

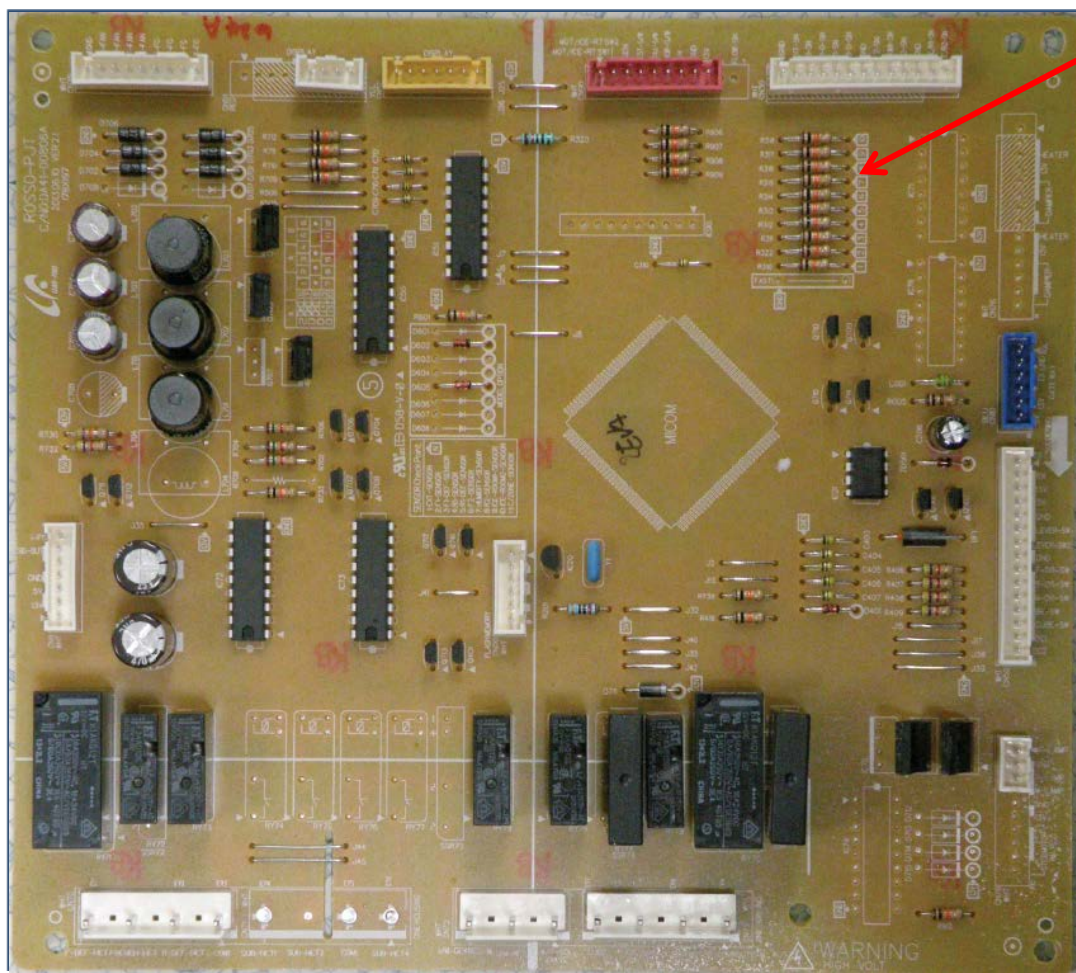
SENSOR Check Point	
1:EXT-SENSOR	N
2:F1-SENSOR	
3:F1-DEF-SENSOR	
4:R1-SENSOR	
5:R1-DEF-SENSOR	
6:F2-SENSOR	
7:HUMIDITY-SENSOR	
8:R2-SENSOR	
9:ICE-ROOM1-SENSOR	
10:ICE-ROOM2-SENSOR	
11:C/ZONE-SENSOR	

CN50

- 1: TX
- 2: RX
- 3: +13v
- 4: +5v
- 5: GND
- 6: LEVER SW
- 7: LEVER SW2
- 8: GND
- 9: F-DOOR SW
- 10: R-DOOR SW
- 11: R HB SW
- 13: CUBE SW

CN11

- 7: I-FG
- 6: SIG_OUT
- 5:
- 4: GND
- 3: +5v
- 2: +13v
- 1:



Connector Layout (Inverter Board)

CN103

- 7: I-FG
- 6: SIG_OUT
- 5:
- 4: GND
- 3: +5v
- 2: +13v
- 1:



LED blinking frequency depending on protecting functions

If Failure Condition is detected during compressor is operating, immediately stop Compressor operating and stand by 5 minutes. During this 5 minutes, RPM command signal is not available. It means it means, even if available RPM command signal is applied to the compressor, it does not work and keep standing by.

Blinking time is 1 second and dwell time is 2 seconds.

LED Blinking Frequency	Protecting Functions	Remarks
	Normal Operation	N/A
	Starting Failure	1. Check the COMP terminals short (U,V,W) 2. Check IPM Pins short of Inverter PBA
	SPM Fault	3. Check IPM operating Voltage (under DC 13.5V) 4. Other cases, check the COMP, cycle, etc.
	Abnormal Current Detection	1. Check COMP wire connections (U,V,W) 2. Check PCB Bottom side soldering state 3. Other cases, check the COMP, cycle, etc.
	Motor Locked / Over RPM	1. Check PCB Bottom side soldering state 2. Check Input voltage oscillation 3. Other cases, check the COMP, cycle, etc.
	Under Voltage	1. Check input voltage under AC53V(Input Power AC110~127V)or AC108V(Input Power AC220~240V) 2. Check PCB Bottom side soldering state
	Over Voltage	1. Check input voltage over AC155V(Input Power AC110~127V)or AC310V(Input Power AC220~240V) 2. Check PCB Bottom side soldering state

Model : RS25H50

RS5000HA-1EVAP (LABEL CODE:DA68-02985A)

