



Fast Track Troubleshooting

Model:
RS22HD



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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://gspn3.samsungcsportal.com/main.jsp>

PLUS ONE: <http://my.plus1solutions.net/clientPortals/samsung>

Cooling-Off Mode

- 1) If Power Freeze Key + Freezer Key are pressed simultaneously for 5 seconds during normal operation, Cooling Off mode will be started with buzzer sound(ding-dong).
- 2) If Power Freeze Key + Freezer Key are pressed one more time, Cooling Off mode will be canceled.
- 3) If Cooling Off mode is selected, blinks "O-FF" on the temperature setting display of the panel and it indicates the refrigerator has entered the Cooling Off mode.

Self Diagnosis:

Press Power Freeze and Lighting for 8 seconds

See chart starting page 3

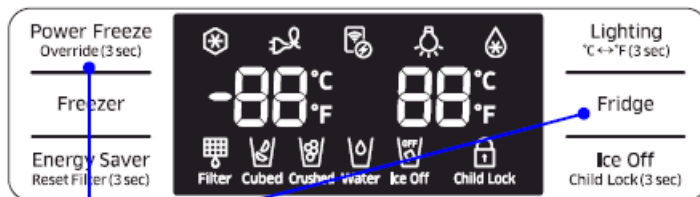


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When any of the above segments is blinking, it indicates its relevant sensor or part is defective.

Force Mode:



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Wait 5 Seconds between button pushes

Press the Power Freeze and the Fridge buttons for 8 seconds at the same time.

Press the Power Freeze and the Fridge buttons for more than 8 seconds at the same time. Then, the Freezer & Fridge temperature display will be turned off and the Test mode begins.

Forced Operation (FF) → R off Forced Operation (OF r) → Forced Fridge Defrost (rd) →

Forced Fridge/Freezer Defrost (Fd) → Cancelled (Normal Operation)

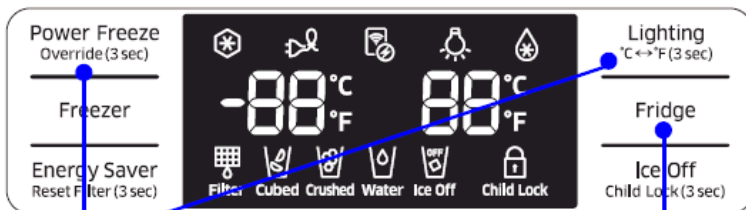
• The recommended way to cancel the Test function is turning off an on the unit.



Load Mode:

Press Power Freeze and Lighting for 6 seconds, until the display blinks. Then press Fridge.

See chart starting on page 5



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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

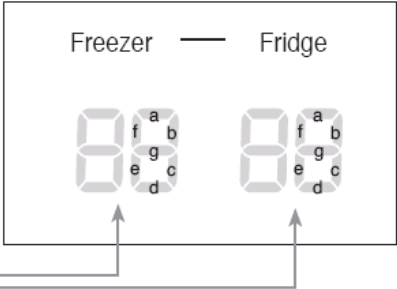
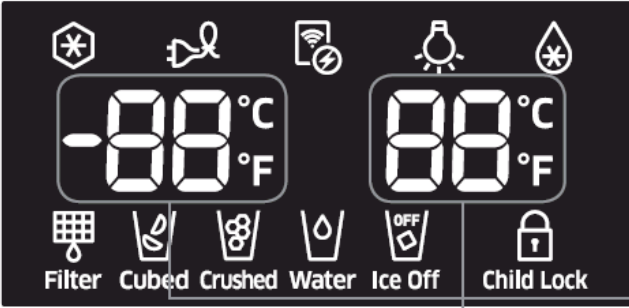
* Self-diagnosis checklist

Display		Item	Description	Operation condition during error					
Freezer	Fridge			F-FAN	R-FAN	Condenser Fan	F-Defrost Heater	R-Defrost Heater	DAMP ER
1	E	F-SENSOR	Open Short	O	O	O	O	O	O
2	E	R-SENSOR	Open Short	O	O	O	O	O	O
4	E	F-DEF-SENSOR	Open Short	O	O	O	O	O	O
5	E	R-DEF-SENSOR	Open Short	O	O	O	O	O	O
6	E	EXT-SENSOR	Open Short	O	O	O	O	O	O
13	E	HUMIDITY-SENSOR	Open Short	O	O	O	O	O	O
21	E	F-FAN Error	Freezer Fan Trouble	O	O	O	O	O	O
22	E	R-FAN Error	Freezer Fan Trouble	O	O	O	O	O	O
23	E	C-FAN Error	Condenser Fan Trouble	O	O	O	O	O	O
24	E	F-Defrost Error	Defrost Trouble(OverHeating)	O	O	O	O	O	O
25	E	R-Defrost Error	Defrost Trouble(OverHeating)	O	O	O	O	O	O
26	E	ICE MAKER Error	I/M Ice Ejection horizontal positioning error.	O	O	O	O	O	O

Display		Item	Description	Operation condition durind error					
Freezer	Fridge			F-FAN	R-FAN	Condenser Fan	F-Defrost Heater	R-Defrost Heater	DAMP ER
41	E	Communication Error Panel ↔ Main	Communication Trouble between Panel and Main	O	O	O	O	O	O
44	E	Communication Error Main ↔ Inverter	Communication Trouble between Main and Inverter	O	O	O	O	O	O
46	E	Communication Error I/O Expander	Communication Trouble between Micom and I/O Expander	O	O	O	O	O	O
71	E	The F compartment abnormal hightemperature indicator blinks	Freezer compartment temperature or door open error.	ON/OFF (When the door is opened)	O	O	O	O	O
72	E	The R compartment abnormal hightemperature indicator blinks	Fridge compartment temperature or door open error.	O	ON/OFF (When the door is opened)	O	O	O	O
81	E	Comp starting Failure Error	When the Compressor fails starting	O	O	O	O	O	O

Display		Item	Description	Operation condition durind error					
Freezer	Fridge			F-FAN	R-FAN	Condenser Fan	F-Defrost Heater	R-Defrost Heater	DAMP ER
82	E	Comp IPM Fault Error	When there is a IPM Fault error	O	O	O	O	O	O
83	E	Comp Abnormal current Detection Error	When there is abnormal current detected at the Compressor	O	O	O	O	O	O
84	E	Comp Motor Locked Over RPM Error	When there is a Compressor restriction error	O	O	O	O	O	O
85	E	Comp under voltage Error	When there is a low voltage error	O	O	O	O	O	O
86	E	Comp over voltage Error	When there is a over voltage error	O	O	O	O	O	O

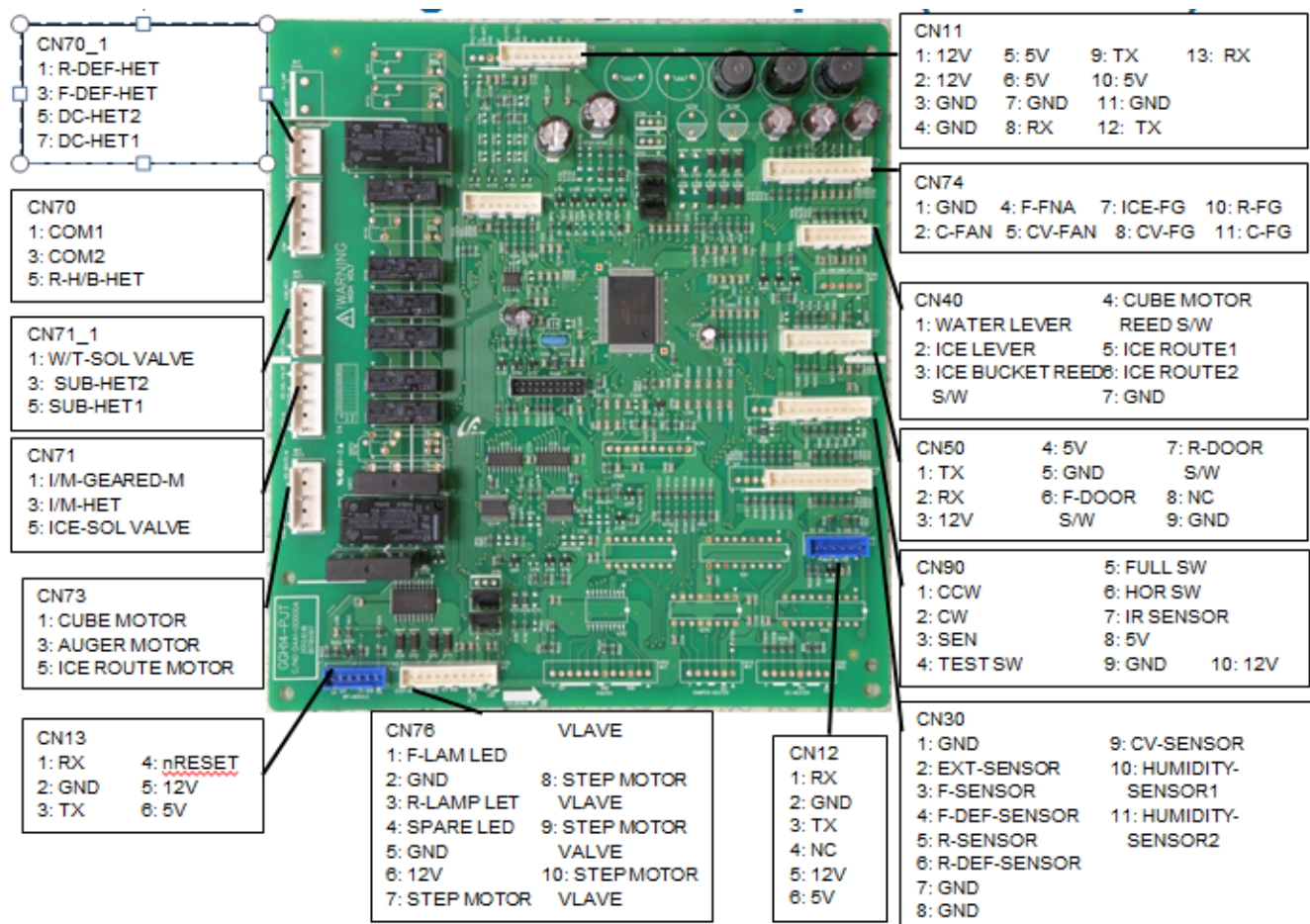
Load Mode Checklist



N O	Item	Description	Display	Digital no.
1	FRIDGE FAN HIGHEST	R-FAN HIGHESET RPM	Fridge second digit a, b	Fridge (second)
2	FRIDGE FAN HIGH	R-FAN HIGH RPM	Fridge second digit a	Fridge (second)
3	FRIDGE FAN LOW	R-FAN LOW RPM	Fridge second digit b	Fridge (second)
4	FRIDGE DEFROST HEATER	R-DEF HEATER ON	Fridge second digit c	Fridge (second)
5	OVER LOAD MODE	Over 34°C (93°F) Ambient Temp	Fridge second digit e	Fridge (second)

N O	Item	Description	Display	Digital no.
6	LOW TEMP MODE	Less than 21°C (70°F) Ambient Temp	Fridge second digit f	Fridge (second) 
7	EXHIBIT MODE	Exhibition Mode On	Fridge second digit g	Fridge (second) 
8	ICE FULL	Bucket Ice Full	Fridge second digit d	Fridge (second) 
9	COMPRESSOR	COMP On	Freezer second digit a	Freezer (second) 
10	FREEZER FAN HIGHEST	F-FAN HIGHEST RPM	Freezer second digit b, c	Freezer (second) 
11	FREEZER FAN HIGH	F-FAN HIGH RPM	Freezer second digit b	Freezer (second) 
12	FREEZER FAN LOW	F-FAN LOW RPM	Freezer second digit c	Freezer (second) 
13	FREEZER DEFROST HEATER	F-DEF HEATER ON	Freezer second digit d	Freezer (second) 
14	CONDENSER FAN HIGHEST	C-FAN HIGHEST RPM	Freezer second digit e, f	Freezer (second) 
15	CONDENSER FAN HIGH	C-FAN HIGH RPM	Freezer second digit e	Fridge (second) 
16	CONDENSER FAN LOW	C-FAN LOW RPM	Freezer second digit f	Freezer (second) 
17	DISPENSER HEATER	DISPENSER HEATER ON	Freezer first digit g	Freezer (first) 
18	WATER TANK HEATER	Fridge Water Tank Heater On	Freezer first digit a	Freezer (first) 
19	FREEZER VALVE	F Valve On	Freezer first digit b	Freezer (first) 
20	FRIDGE VALVE	R Valve On	Freezer first digit c	Freezer (first) 
21	NORMAL CONDITION	⑤ & ⑥ All Off (22~33°C 71~92°F)	Fridge second digit e, f LED all Off	Fridge (second) 

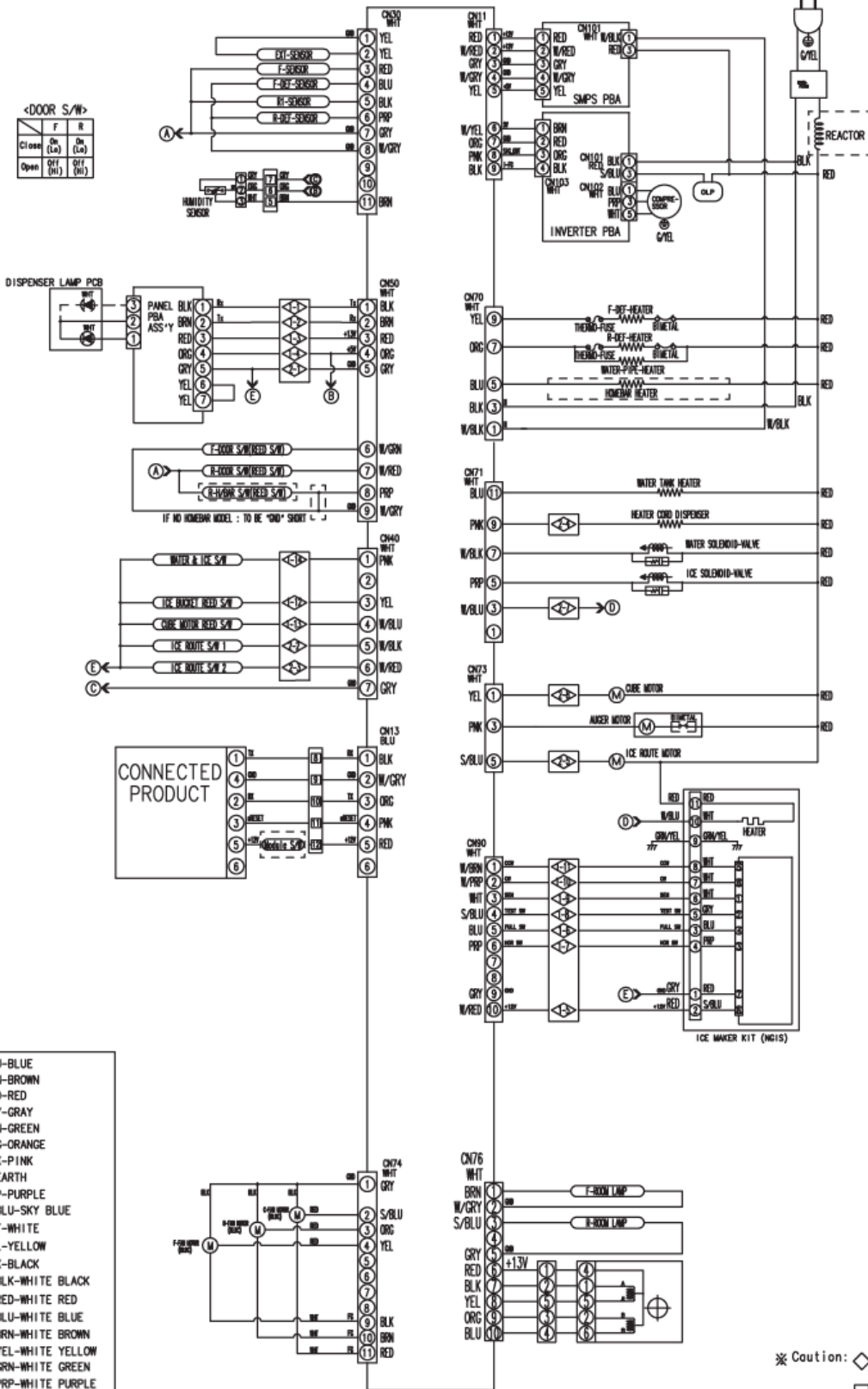
Connector Layout with part position (Main Board)



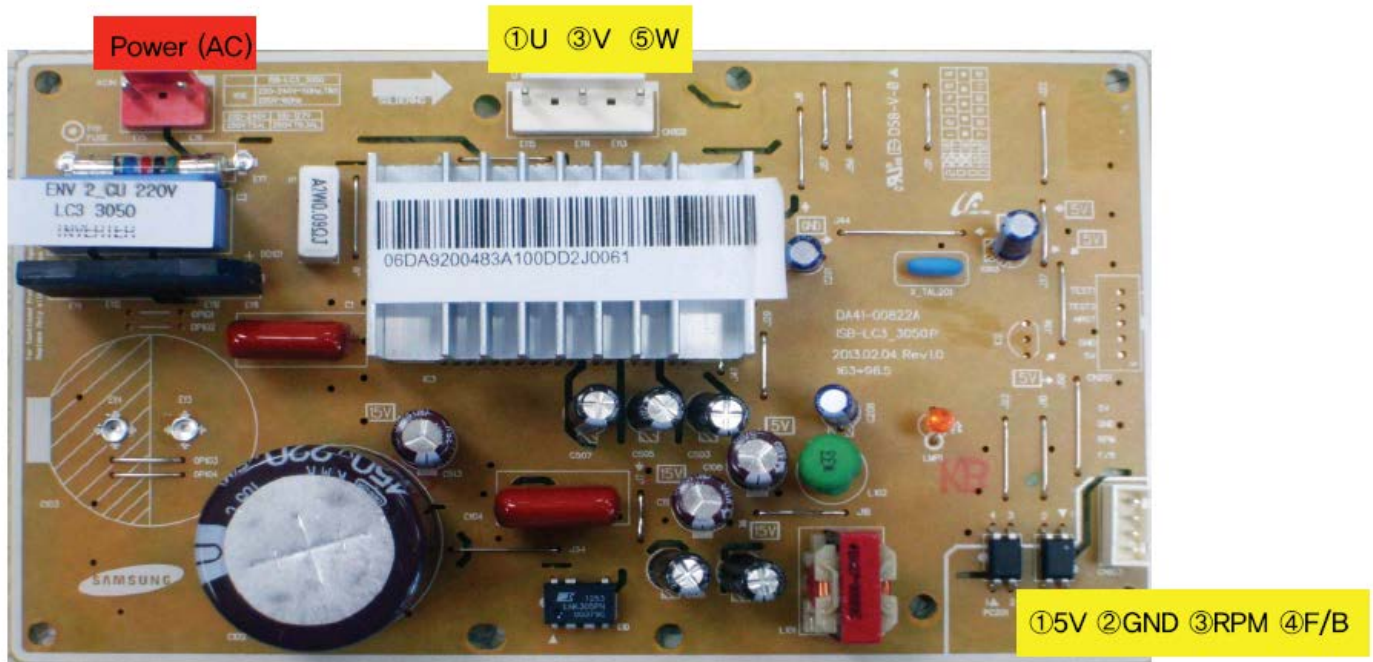
Model : RS22HD

<DOOR S/W>

	F	R
Close	On (L)	On (R)
Open	Off (H)	Off (H)



Connector Layout with part position (Inverter Board)



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