



Fast Track Trouble shooting

Model:

WF397UTPAGR



Bulletins:

ASC20140514001

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.

Publication # SM WF397

Production Date: 09/15/14

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>

WARNING!!!

ENTERING QUICK TEST MODE BEFORE ENTERING SERVICE MODE WILL DELETE STORED ERROR CODES

QUICK TEST MODE – PRESS:

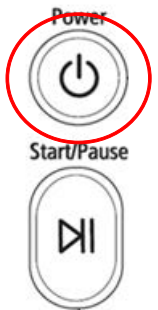
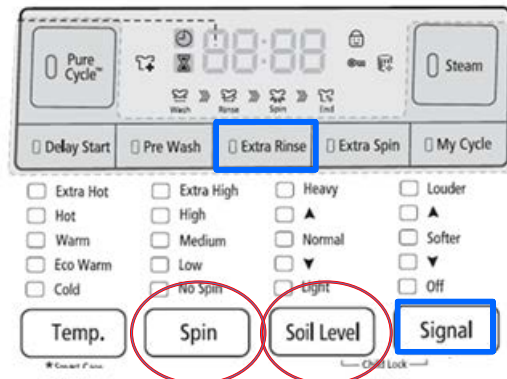
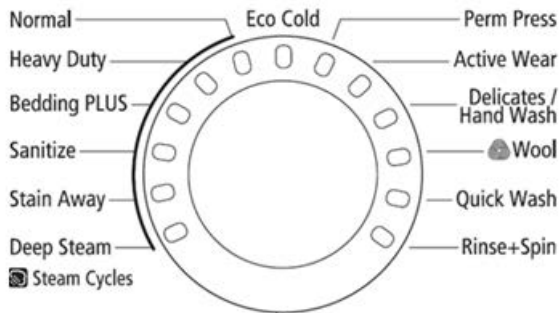
SPIN

**SOIL
LEVEL**

POWER

Together - 3 Seconds

WITH POWER OFF



SERVICE MODE – PRESS:

EXTRA RINSE

SIGNAL

Together - 3 Seconds

WITH POWER ON (& MACHINE IN USE)

QUICK TEST MODE

All LED's light up Beep Sound when entered.
Displays software version for a sec and Clear EEprom.
When the version is displayed, turn the Jog-Dial so that the version disappears.

Press the following keys to test the various components.

Temp Key

Water Valve Test

Spin Key

Door Lock/Unlock Test

Soil Key

Water Heater Test

Signal Key

Drain/Bubble Pump Test

SERVICE MODE

The washer must be on to go into the Service Mode.
The motor speed will be displayed when started
To exit Service Mode, press Signal + Extra Rinse Keys for 3 second again, or Power Key. If no key is pressed during service mode after 5 minutes, the machine will return to normal user mode.

Refer to page 2 for a list of checks available

SERVICE MODE

QUICK SPIN TEST - Press the PRE WASH + SOIL Level Keys for 3 seconds.
Cannot enter once the washing cycle has started (will not spin with water in tub).

Unit starts spinning and reaches to its maximum RPM then speed drops immediately.
To hold speed press the START PAUSE (will hold for 10 minutes then revert back to QUICK SPIN TEST MODE.
Exit test same way as entered.

CYCLE COUNT CHECK - Press the SIGNAL Key during Service Mode.

When the SIGNAL key is pressed, the total number of washings will light up and a signal LED will glow.
The maximum number of cycles will be 9999 before recounts. Exit test same way as entered

SOFTWARE VERSION CHECK - Press the SOIL LEVEL key during Service Mode

Example: AE49 (AE is Micom code, 49 is it's software version). Exit test same way as entered

FAST TIME DOWN - Press the TEMP key during Service Mode

To forward the program to the next cycle stage.

BOARD INPUT TEST - Press the EXTRA RINSE key during Service Mode

To display specific input data.
Turn the Jog-Dial to NORMAL WASH. Water Temperature will be displayed in Celsius.
Turn the Jog-Dial to HEAVY DUTY WASH. Water Temperature will be displayed in Fahrenheit.
Turn the Jog-Dial to PERMANENT PRESS. The door status will be displayed (OP if open, CL if closed).
Turn the Jog-Dial to SANITIZE. The Door Lock Switch status will be displayed (UL if unlocked, LO if locked).
Turn the Jog-Dial to BEDDING The Water Frequency will be displayed.
Turn the Jog-Dial to NIGHT WASH. The Silver-Care Status will be displayed.(default : "--")

DIAGNOSTIC CODE CHECK - Press the SPIN key during Service Mode

To display stored diagnostic codes. To cycle through the diagnostic codes (d1,d2,d3~d7), turn the Jog Dial in one direction (either Clockwise or Counterclockwise). It will then show the diagnostic codes from the latest (d1).
When turning it in the opposite direction, it shows the diagnostic codes in the reverse order.

DEMO MODE - Press the STEAM SIGNAL PURE CYCLE simultaneously for 5 seconds

Power on state only – must not be in use. Buzzer rings three (3) times “- - -” is displayed on display other LEDs are off.

Demo mode consists of WASH, SPIN and LED modes.

Press TEMP during Demo mode, “WASH” blinks on the display and the washing machine enters WASH mode.

Press START PAUSE in WASH mode, door is locked and motor rotates left and right at 45 RPM 7 sec on and 3 sec off cycle.

WASH mode continues up to 5 minutes once started. After the 5 minutes have elapsed, “- - -” is displayed.

Press START PAUSE during a WASH mode, “- - -” is displayed. DEMO MODE is maintained.

Press SPIN in Demo mode, “Spin” blinks on the 7 segment display and the washing machine enters SPIN mode.

Press START PAUSE in the SPIN mode, the door is locked (Door Lock) and a spin is operated at 1200 RPM.

When the speed reaches 0 RPM, the No Spin, Low, Medium, High, and Extra High LEDs are turned on.

During a spin, the No Spin LED turns on when the speed is lower than 400 RPM.

The Low LED turns on between 400 & 700 RPM. The Medium LED turns on between 700 & 900 RPM & High LED turns on between 900 & 1100 RPM. Extra High LED turns on at higher than 1100 RPM.

SPIN mode continues up to 4 minutes once started. After 4 minutes have elapsed, “- - -” is displayed on the display.

Press START PAUSE during a SPIN “- - -” is displayed on the display. DEMO MODE is maintained.

Press SOIL LEVEL during Demo mode, “LED” is displayed on the display and the washing machine enters LED mode.

Press START PAUSE in LED mode, all LEDs are turned on. The LED mode continues up to 30 seconds once started.

After 30 seconds “- - -” is displayed on the display. DEMO MODE is maintained.

Press START PAUSE during an LED mode operation, “- - -” is displayed on the display. DEMO MODE is maintained.

NO	Error Image	Description	Corrective Action
1	nd	The water level fails to drop below the Reset Water Level within 15 minutes.	Go to “Will Not Drain” Troubleshooting Section.
2	LO	Door fails to unlock after 7 attempts.	Go to “Will Not Unlock” Troubleshooting Section.
3	nF	When the filling continues for more than 40 minutes or there is no change of water level for 6 minutes.	Go to “No Water Fill” Troubleshooting Section.
4	FL	Door fails to lock after 7 attempts.	Go to “Will Not Lock” Troubleshooting Section.
5	LE	Water Level Sensor Trouble. A water level lower than the Reset water level is detected for 5 seconds during the wash /rinse cycle	Go to “No Water Fill” Troubleshooting Section.
6	OE	A fault is detected in the water level sensor. Data (frequency) shows the water level is at or above the overflow water level. (When this condition is detected, the machine will automatically start draining water until the water level falls below the overflow water level)	First check to see that all of water valves are not stuck. If water valves are OK, check water level sensor.

7	dc	Unbalance or cabinet bump is detected during final spin, which prevents the drum from spinning over 400 rpm. (Never exceeds 400 RPM due to unbalanced load)	Go to "Wet Clothes" Troubleshooting Section.
8	E2	Jammed Key. (When key input signals are coming out for more than 30 seconds, it is regarded as a jam.)	Check all of keys. If A key is sensed to be pressed, all keys will do not respond.
9	Hr	Heater Relay Failure (No Heater Relay Check Signal)	Replace PCB
10	<u>dL</u>	Door is detected as open when the motor is operating.	Check for loose wire connections. Go to "Quick Test Mode" and then do Door lock/Unlock Test and Motor Test.
11	<u>dS</u>	Door is detected as open while it is trying to lock the door.	Go to "Quick Test Mode" and then do Door Lock/Unlock Test
12	nF1	The hot/cold water hose connection is not correct.	Go to "Quick Test Mode" and then do Door Lock/Unlock Test
13	<u>tE</u>	Abnormal high/low temperature or resistance (Thermal sensor or PBA) resistance.	Go to " Board Input Test" and check Water Temperature. Check loose or pinched wires. Replace PCB or thermistor.
14	3E	MICOM is attempting to drive the motor but is not getting any response signals from the hall sensor. Visual check shows motor is not running. (Locked, Defective Hall Sensor or Overload)	Evaluate wire harness for loose or unhooked connections. Go to " Quick Test Mode" and test Motor.
15	<u>Sr</u>	System Relay (Main Relay) Failure. (PCB does not notice the relay operation when there should be.)	Replace PCB.

16	Hr	Heater Relay Failure (No Heater Relay Check Signal)	Replace PCB
17	AE	Communication error between SUB PBA and MAIN PBA	Check main PBA, SUB PBA & Wire harness. Replace PCB
18	2E	Voltage for motor control bus is over specified limit.	Replace PCB
19	LE(1E)	Water Level Sensor Trouble. (When the input signal from the water level sensor is out of range, the unit will send out beeping sounds and halts the cycle.)	Go to "No Water Fill" Troubleshooting Section
20	SUDS	Suds is detected during the washing session. ("SUDS" is not an error. If the washer is in suds period, "SUDS" will light up instead of remaining time.)	Guide a user to reduce amount of detergent usage.
21	SF	System error In case of EEPROM detected In case of PBA problem	Replace PCB

Problem	What To Do
Will Not Start	- Plug the unit into the wall outlet. Check for proper voltage. - Check fuse or reset circuit breaker. - Push any key to turn on the washer and press the Start/Pause key to run the washer. - Close door and push the Start/Pause key to run the washer. - Check if washer is in a pause, soak or suds process. Wait briefly and it may start. (If the washer is in suds period, Suds will light up instead of remaining time.) - Check for restricted drain system. (If there is electrical problem in drain system, "nd" error will occur after 15 minutes.) - Check Water Supply. - Check the line or water valve screen filter. - Check if PCB connectors are assembled properly. - Check if CN6 terminals on PCB are in good condition. (Refer to PCB Connector Check.) - Replace PCB.

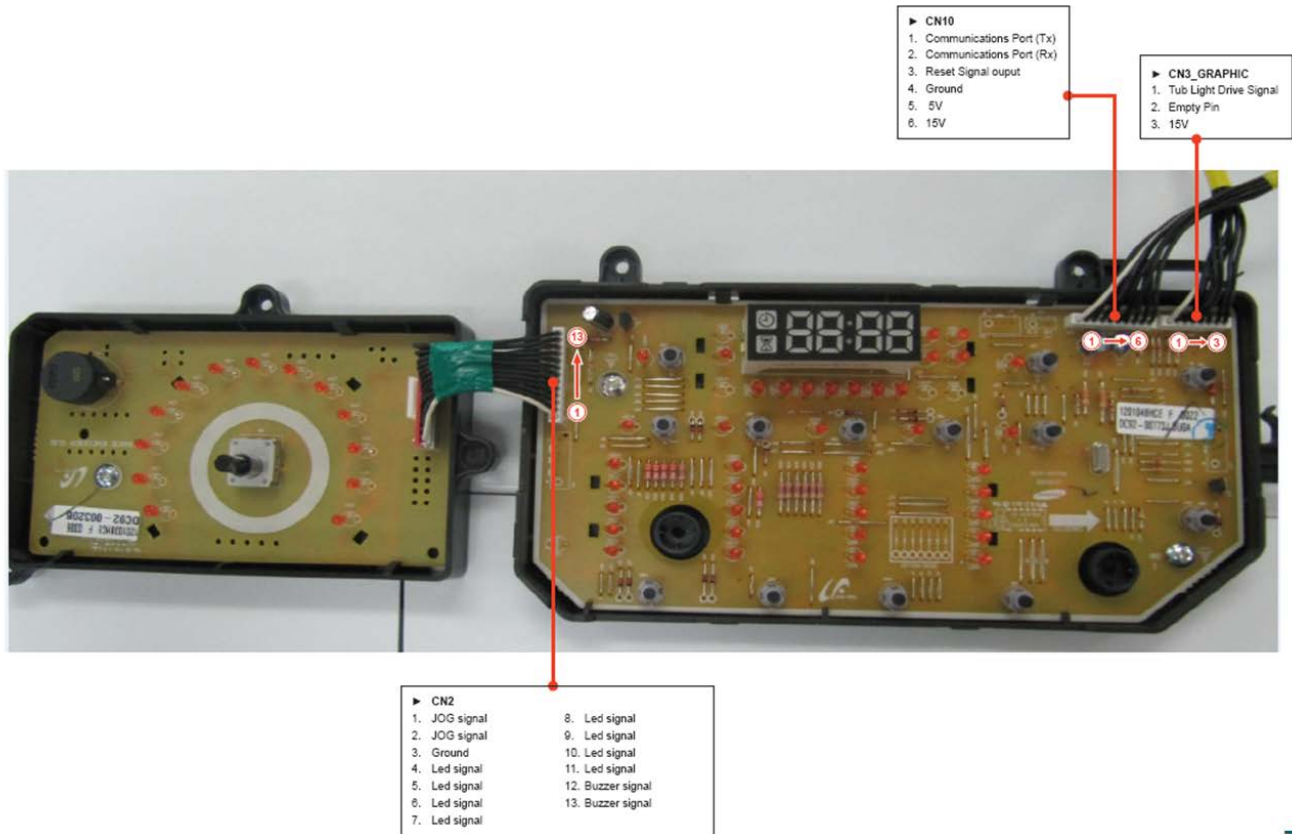
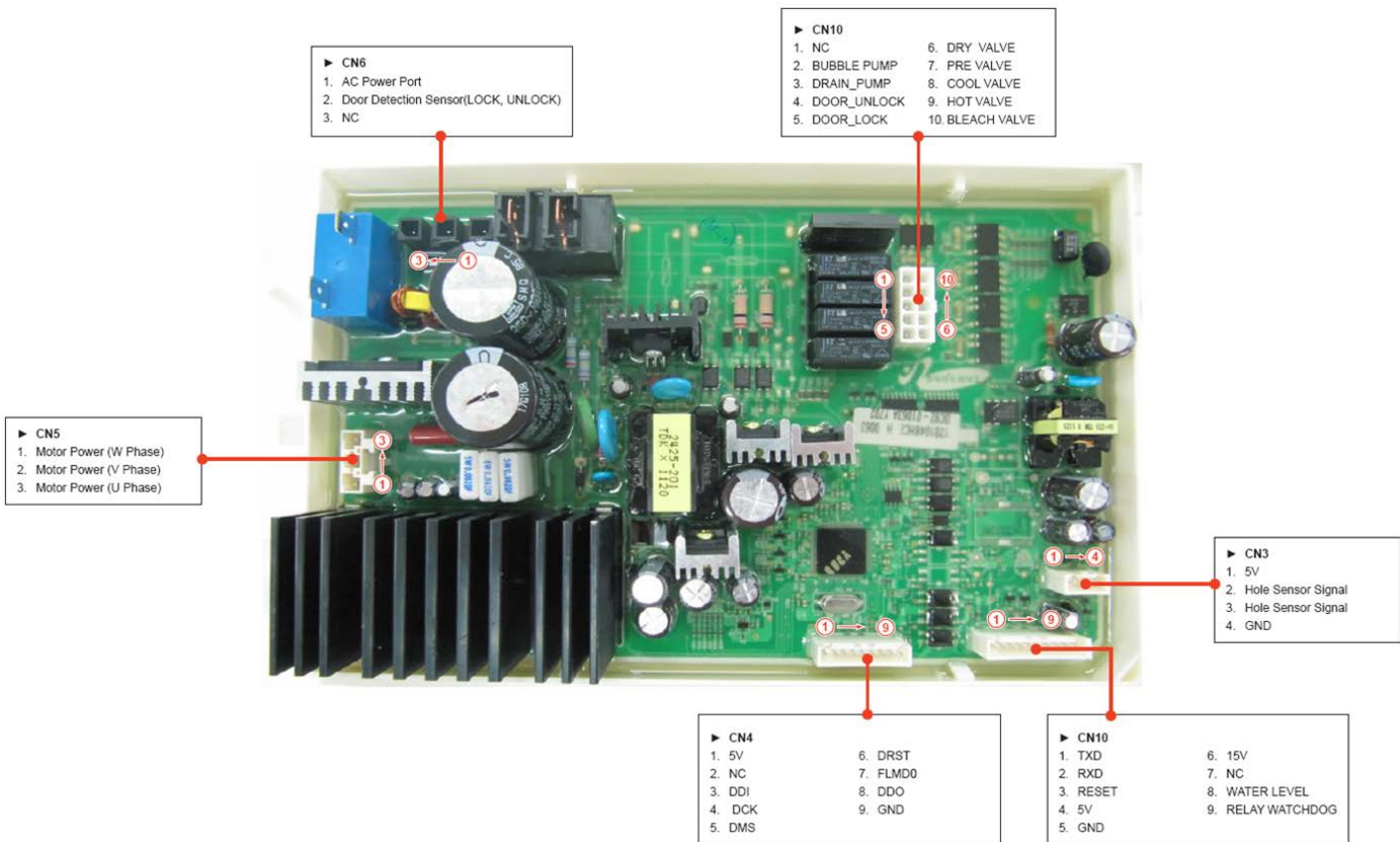
Problem	What To Do
Has no water Or not enough water..	- Perform Quick Test Mode. - Check all of Water Valves visually. - Or, check Water Valves with hands on them. - When they work, you can feel vibrations. If not, no vibrations. - Check if water taps are turned on fully. - Check Water Valves and Water Level Sensor (Refer to PCB Connector Check) - Check if there is any kink in inlet hoses. - Check if inlet screens are clogged up. - Check if water has enough pressure. If so, find out its contributors. - Check if there is any frozen area in the unit (Drain Hose, etc) - Measure the resistance of Water Valve Coil. (It should read 1.18K ohms. Check Pin#1 of CN5 and PIN#1,2,3,4 of CN10) - Check Pressure S/W and PCB for loose connections. (Refer to PCB Connector Check.)
Has detergent remains In the automatic dispenser After the wash cycle is complete.	- Make sure your Washer is running with sufficient water pressure. - Make sure the Detergent Selector dial is in the upper position when using granular detergent.
Vibrates or is too noisy	- Check if the washer is leveled and the lock nuts are tightened up on the bottom plate. - Check if all of the shipping bolts and spacers are removed from the back panel. - Check if load is big enough and there is no unbalance. - If there is not enough load, put in a few towels to balance it. - Check if the motor is fastened enough. - Remove various trouble contributors (such as dust coat on the floor). - Check if Washer is touching other object.
Stops	- Plug cord into live electrical outlet. - Check fuse or reset circuit breaker. - Close door and press the Cycle Selector dial to start your Washer. For your safety, your Washer will not tumble or spin unless the door is closed - Before your Washer starts to fill, it will make a series of clicking noises to check the door lock and do a quick drain. - There may be a pause or soak period in the cycle. Wait briefly and it may start. - Check screens on inlet hoses at the faucets for obstructions. Clean screens periodically.
Fills with the wrong temperature water.	- Turn both faucets on fully - Make sure temperature selection is correct. - Make sure hoses are connected to correct faucets. Flush water lines. - Check the water heater. It should be set to deliver a minimum 120°F(49°C) hot water at the tap. Also check water heater capacity and recovery rate. - Disconnect hoses and clean screens Hose filter screens may be plugged. - As your Washer is filling, the water temperature may change as the automatic temperature control feature checks incoming water temperature. This is normal. - While your Washer is filling, you may notice just hot and/or just cold water going through the dispenser when cold or warm wash temperatures are selected. This is a normal function of the automatic temperature control feature as your Washer determines the temperature of the water.

Will Not Unlock	• Check if the door is being pushed out, which may keep it from unlocking. • Door locks itself when the water level is too high (Drain the unit). • Check the following with Board Input Test Mode. Water Level (frequency): Over 23.80 KHz. → If so, refer to "Will Not Drain". Temperature (Inside Drum): Higher than 60°C/140°F. → If so, wait until it drops. When everything is normal, check PCB connectors and Door Lock Switch. • Drain manually after removing the plastic drain hose holder. • Display shows "LO". Turn off and on the unit. If "LO" keeps illuminating, check PCB and Door Lock Switch. • Perform Quick Test Mode. Check Door Lock. Check the output voltage of Door Lock Coil. If it reads 120V, change Door Lock Switch, and if not, change PCB. (Refer to PCB Connector Check.)
Will Not Lock	• Door is not aligned or closed properly. • Perform Quick Test Mode. Check Door Lock. Check the output voltage of Door Lock Coil. If it reads 120V, change PCB, and if not, change Door Lock Connector. (Refer to PCB Connector Check.) • Read Lock Switch and PCB (CN1). (Refer to PCB Connector Check.)
Will Not Spin	• Make sure to close the door completely. • Check for water left inside the washer. If so, go to "Will Not Drain". • Perform Quick Test Mode or Quick Spin Test. Does the washer spin? (Before the test, empty the unit inside.) If it doesn't tumble after the above, change PCB. When the problem persists, change the motor. • Check motor windings resistance. (CN8 Pin1&3 = 11.6 ohms (at $\pm 7\%$ 20°C/68°F), Pin1&2 = 11.6ohms (at $\pm 7\%$ 20°C), Pin2&3 = 11.6 ohms (at $\pm 7\%$ 20°C))
Will Not Drain	• Check for any kink on the drain hose. If any, straight it out. • Check for any restriction in the drain hose. • Close the door and press the Rotary Cycle Selector. For safety reasons, the washer does not tumble or spin with the door open. • When it is freezing outside, check if it is frozen inside the drain hose. • Check if the water level signal input is correct. Go to Board Input Test Mode. • Go to Quick Test Mode and do Drain Pump Test. • Check if there is any twist in the hose (the one between Tub and Drain Pump). • Check if it reads AC 120V at the pump when a spin cycle is selected. • Read the winding resistance of the pump motor. (14.2 $\pm$ 7% Ohms) • Check the pump at CN1(Pin3) on PCB. It should read AC 110~120V. (Refer to PCB Connector Check)

Load is too wet at the End of the cycle.	• Unbalance due to not enough load. Put additional load. • Due to excessive suds by using general detergent. Use HE (High-Efficiency) or reduce its quantity. • Low Spin Speed or Drain Only was selected. • Go to “Will Not Spin”.
Leaks water.	• Make sure there is no leakage in the inlet hose connections. • Check for rubber gasket damage due to over-tightening. • Check standpipe for leakage. Check if the standpipe contributes the leakage. If so, the standpipe is under-capacity. In this case, make sure to seal its opening tightly. • Check waster hose connections. (Water Supply/ Drain/ Dispenser Hose & Clamp) • Check if rubber boot is water-tight. • Check for any kink on the water hoses.
Excessive Suds	• Go to “Will Not Drain” and “Will Not Spin” and check the draining. • Check PCB and Drain Pump for any loose wire connection. • Perform Quick Test Mode or Board Output Test to drain. • Use HE (High-Efficiency) or low sudsing detergent specially formulated for front load washers. • Reduce the amount of detergent for that specific load size and soil level. Keep in mind that towel creates more suds generally. • Reduce the amount of detergent when water is soft, or laundry is small or lightly soiled. • Do one more washing cycle with cold water and a table spoon of salt without detergent.
No Key Operation	• Each washing selection deactivates some buttons. • Child Lock is being activated. To exit, hold down Soil Level Key and Signal Key simultaneously until it sends out a beeping sound. • When "End" illuminates on the display, only the Power button works.

MAIN PBA LAY OUT

Location	Part No.	Function	Description
1	CN6	PBA Power Supply	Supply 120V of AC power.
2	RY1	Main Relay	Be Supplied PBA power when the Power button is pressed.
3	RY13	Washing Heater Relay	The switch for the Washing Heater power.
4	CN5	Motor Power Supply Port	Supply the 3-phase drive voltage for the Washing Motor.
5	CN10	SUB PBA Connection Port	Supply power to the Sub PBA and provides a communications function.
6	IC10	Washing Motor Drive IC	Switches and supplies the voltages for the motor.
7	CN10	Each Load Connection Port	The port to supply power for each electric device.



SCHEMATIC DIAGRAM (POTOMAC)

SUB PCB(DIAPLAY)

43 1 2 3 4 5 6 7 8 9 WHT [10P]

WHT
BLU
YEL
BLK
ORG
BRN
PNK
SKYBLU
VIO

MAIN PCB

42 1 2 3 4 5 6 7 8 9 WHT [10P]

WHT [4P]

RED [2P]

WHT [3P]

RED

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT

BLU

ORG

BLU

RED

PNK

WHT