

4. Troubleshooting

4-1. Error Modes

► The following are the error modes for the washing machine.

Error Type	Drum			Full automated	Causes	Remarks
	Error Mode	Old Error Mode	For U SA			
Water Level Sensor	1E	1E, E7	LE	1E	<ul style="list-style-type: none"> - The part of the hose where the water level sensor is located is damaged (punctured). - The hose is clogged with foreign material. - The hose is folded. - Too much lubricant has been applied to the insertion part of the air hose. - Hose engagement error (disengaged) - Part fault (Faulty internal soldering) - The water level sensor terminal is disengaged. - Main PBA fault. 	
Motor Driving Error and Hall Sensor Error	3E	3E, EA, EB, 8E	3E	3E	<ul style="list-style-type: none"> - The PBA connector terminal is not connected. - The motor spin net is not engaged. - The motor's internal coil is damaged (short-circuited or cut) - The hall sensor terminal is not connected. - Foreign material (a screw) has entered the motor. 	For USA products, this error occurs because of restrained revolutions
	3E1	3E1	E3		<ul style="list-style-type: none"> - Motor overloaded due to too much laundry (Non-sensing) - The motor hall sensor terminal is not connected. - PBA fault 	For USA products, this error occurs when an interference is generated due to too much laundry, etc.
	3E2	3E2			<ul style="list-style-type: none"> - The motor driving error from the PBA is weak. : Unstable relay operation, etc. 	
	3E3	3E3	bE		<ul style="list-style-type: none"> - This occurs due to erroneous operating signals for the motor hall sensor. - The IPM terminal of the main PBA is not connected. - The DD motor cover is out of place. 	
	3E4	3E4			<ul style="list-style-type: none"> - The PCB housing terminal is not connected. - PBA fault - DD motor fault 	
Water Supply Error	4E	4E, E1	nF	4E	<ul style="list-style-type: none"> - Foreign material is entering the water supply valve. - The water supply valve terminal is not connected. (Wire disconnected) - The warm water and rinse connectors are wrongly connected to each other. - This occurs if the PCB terminal from the drain hose to the detergent drawer is not connected. Check whether the transparent hose is folded or torn. 	If this error occurs in the Wool course
	4E1	4Ed	-		<ul style="list-style-type: none"> - The cold and warm water supply hoses are wrongly engaged into each other. - The temperature of the water supplied through the dry valve during a dry cycle is sensed as higher than 70°C. 	During dry Amount of supplied water per minute (0.3 to 0.4L)
	4E2	E8	-		<ul style="list-style-type: none"> - The water temperature is sensed as higher than 50°C in the Wool or Lingerie courses. 	

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Error Type	Drum			Full automated	Causes	Remarks
	Error Mode	Old Error Mode	For U SA			
Drain Error	5E	5E, E5	nd	5E	<ul style="list-style-type: none"> - The pump motor impeller is damaged internally. - The wrong voltage (220V → 110V) is supplied to the parts. - Part fault - This occurs due to freezing in the winter season - The drain hose is clogged. (Injection error, foreign material) - Clogged with foreign material - The water pump terminal is not connected: rubber band, bills, cotton, hair pins, coins 	
Motor Error	8E		-	3E	<ul style="list-style-type: none"> - This occurs when motor driving is unstable because the motor hall sensor does not work. - This occurs when the PBA IPM operation is unstable or the control circuit has an error. - Check whether the wire connector is connected correctly or whether there is a contact error. 	
Power Error	9E1	PH1	2E	-	<ul style="list-style-type: none"> - Check the consumer's power conditions. : Make sure to check the operating voltage. Connect a tester to the internal power terminals during the Boil or Dry operations and observe the washing machine's operation carefully. : Check the voltages. (An error occurs when under or over voltage is supplied.) : Check whether a plug receptacle is used. When the connecting wire is 1m, a momentary low voltage may drop up to 10V - Main PBA fault (sometimes) 	For Full Automated products, no error code is displayed for a power error.
	9E2	Plo				
			PF			
Communication Error	AE	13E	-	-	<ul style="list-style-type: none"> - The signals between the sub and main PBAs are not sensed because of a communications error. - Check the connector connections between the sub and main PBAs carefully. → Check for incorrect or loose connections, etc. - Remove the sub PBA C/Panel and check for any faulty soldering. 	
Switch Error (Main Relay Error)	bE1	12E	E2	-	<ul style="list-style-type: none"> - The Power button is pressed continually (for more than 12 seconds). - The switch is pressed unevenly because of a deformation of the control panel. - This error may occur when the screws that hold the sub PBA in place are tightened too much. 	
	bE2	14E				
	bE3	18E	Sr			



Error Type	Drum			Full automated	Causes	Remarks
	Error Mode	Old Error Mode	For U SA			
COOLLING ERROR Cooling Error	CE	CE, cE	-	-	- This occurs when the temperature of the washing machine is more than 55° C and no drain is performed. (Reason: If a hot water comes into contact with the human body, it may cause a burn.)	If this error occurs for another reason, it is due to a washing heater sensor fault. Replace it.
DOOR ERROR Door Error	dE, door	dE, Ed, door	nS (Before operation)	dE	- A switch contact error because of a deformation of the door hook - When the door is pulled by force	When the door is not opened after the door open operation
			dL (During operation)		- This occurs in the Boil wash because the door is pushed due to a pressure difference from internal temperature changes	When the door is not locked after the door close operation
	dE1	dE1	LO (Unlock Fail)	-	- The door lock switch terminal is connected incorrectly. - The door lock switch terminal is broken.	
			FL (Lock Fail)		- This occurs intermittently because of an electric wire leakage - Main PCB fault	
dE2	dE2	-	-	- This occurs if the Power switch is turned on/off continually and too much heat is generated (This error is difficult to be reproduced.)		
Fan Error	FE	F, FE	-	-	- The start condenser terminal comes out of place when inserting the top cover. - The fan motor has a wire disconnected or the belt is out of place. Therefore, the fan does not start. - The cooling wings are restrained or stains have developed on the bearings. Therefore, the fan does not start. - Start condenser fault → In this case, you cannot detect it with a tester. Always replace the start condenser	
HEATER ERROR Heater Error	HE	HE, E5	Hr (Heater Relay)	-	- The washing heater is short-circuited or has a wire disconnected. - The washing heater in the tub has an error. (Contact error, temperature sensor fault) - If the water level sensor operates without water because water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150° C, the washing machine turns the input power off.	For USA products, if the heater has no error, this occurs because of a PBA relay malfunction.
	HE1	HE1, E1, Ec			- This error occurs when the red temperature sensor at the center of the dry heater operates (at a temperature higher than 145° C) : Corrective action – Press the button at the center lightly. The washing machine will operate normally. Alternatively, replace the temperature sensor if the temperature sensing is unstable because of functional degradation.	
	HE2	HE2			- This error occurs when the steam function does not operate normally. - This error does not occur in existing drum products. Check whether the product is a steam model	
	HE3	-				

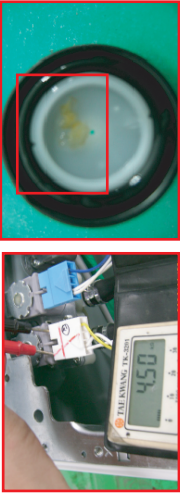


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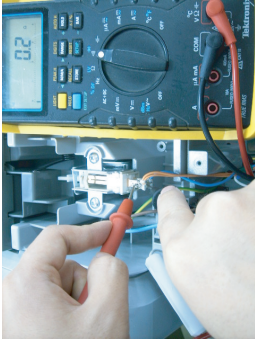
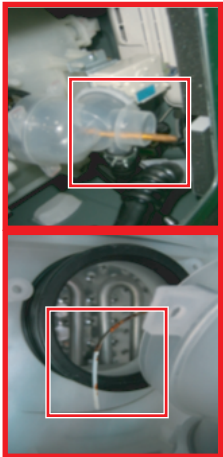
Error Type	Drum			Full automated	Causes	Remarks
	Error Mode	Old Error Mode	For U SA			
Water Leakage Error	LE	11E, E9	LE	LE	<ul style="list-style-type: none"> - Heater engagement fault (out of place) - The air hose is out of place and water leakage occurs during the spin cycle. - The tub back at the safety bolts fixing part is broken. - Water leakage occurs at the front with foaming because of too much detergent - Water leakage occurs because the connecting hose to the detergent drawer is connected incorrectly. - The drain pump filter cover is engaged incorrectly. - Water leakage occurs at the drain hose. - The duct condensing holding screws are worn. - The nozzle-diaphragm is engaged in the opposite direction or the rubber packaging is omitted. - Water leakage occurs because the screws that hold the tub back and front in place are fastened incorrectly. 	
Overflow Error	OE, OF	OE, OF, E3	OE	-	<ul style="list-style-type: none"> - Water is supplied continually because the water level detection does not work. - Because the drain hose is clogged and there is an injection error (at a narrow section), the water level detection does not work and water is supplied continually. - Water is supplied continually because of freezing or because there is foreign material in the water supply valve. - This error may occur when the water level sensor is degraded. 	For USA products, this error occurs because the water level sensor terminal is out of place.
Temperature Sensor Error	tE1	tE1, 6E	tE	-	<ul style="list-style-type: none"> - The washing heater in the tub has an error. (Contact error, temperature sensor fault) - The connector is connected incorrectly or is disconnected. - If the water level sensor operates without water because the water is frozen or for any other reason and the temperature sensor engaged at the bottom to prevent overheating for the washing heater detects a temperature of 100 to 150°C, the washing machine turns the input power off. 	Heater sensor fault : When the connector is connected incorrectly or has a wire disconnected or contact error
	tE2	tE2	-	-	<ul style="list-style-type: none"> - The temperature sensor for the duct assy fan housing is faulty. (A sensor fault such as an internal short-circuit or wire disconnection) - The connector is out of place or has a contact error. 	Duct condensing temperature sensor fault (for models before the silver nano function was applied) tteh foout of place or has a contact error.ng draly. h temperature sensor fault)
	tE3	tE3	-	-	<ul style="list-style-type: none"> - This occurs when the duct condensing temperature sensor is open. - This occurs when the duct condensing temperature sensor has a wire disconnected or is short-circuited. - The connector is out of place or has a contact error. 	Dry heater temperature sensor fault (for models before the silver nano function was applied)
UNBALANCE ERROR Unbalance Error	UE	UE, E4	dc	UE	<ul style="list-style-type: none"> - As laundry causes this error, check the laundry. - Find the reason for the unbalance and solve it as directed in the user manual. 	

Error Type	Drum			Full automated	Causes	Remarks
	Error Mode	Old Error Mode	For U SA			
Foaming Detected	-	-	SUDS	-	- This occurs when too much foaming is detected. It is also displayed while foaming is removed. When the removal is finished, the normal cycle proceeds. "SUDS" is displayed when too much foaming is detected and "End" is displayed when the removal of the foaming is finished. (This is one of the normal operations. It is an error for preventing non-sensing faults.)	
Mems PBA Error Detected	-	-	E8	-	- Error detected in the Mems PBA or data error detected. Check the wire connections. Replace if necessary. 1. Check the wire connections. 2. Replace the Mems PBA. 3. Main PBA wire connection error or PBA's silver nano part malfunction. Replace if necessary.	

4-2. Corrective Actions for Each Error Code

Symptom	Error Code	Countermeasure	Troubleshooting Procedure	Measurement Picture
Water Level Sensor Error	▶ 1E	Check if the water level sensor is defective.	<ul style="list-style-type: none"> • Check the water level sensor terminal connections. • Check the part code of the water level sensor, because if an incorrect part is used, an abnormal operation may occur. (Abnormal operation) • If the water level sensor is defective, replace it. • If no problems were found for all of the procedures above, replace the PBA. 	 <p>Measure the water level sensor frequency: Check when the water level sensor and the connector are connected.</p> <p>- Frequency Band: no-load status; approximately [26.4 KHz]</p>
		Check if the water level sensor terminal is properly connected.		
		Check if the water level sensor hose is broken.		
		This may occur when the main PCB is defective.		
Washing Motor Defect	▶ 3E	This may occur when the washing motor is defective.	<ul style="list-style-type: none"> • Check the motor connector terminal connections. • Check if the Motor Cover State is damaged. • Check if the coil is broken due to moisture from any alien substance. • If the PBA control circuit is defective, replace the PBA. 	 <p>Measure the resistance of the main wire motor and the resistance between the terminal and the motor: Approximately 13 ~ 15kΩ</p> <p>* Measure when the power is off.</p> <p>Measure the signal of the main PCB motor connector (220V)</p> <p>* Measure when the power is off.</p>
		Check if the washing Motor Rotor/ State is defective or not.		
		This may occur when the main PCB is defective.		

Symptom	Error Code	Countermeasure	Troubleshooting Procedure	Measurement Picture		
Water Supply Error	▶ 4E	This may occur when the water supply valve is defective.	<ul style="list-style-type: none"> • If the water supply valve is broken, replace the valve. • Check if the water supply is blocked due to an alien substance in the valve or check if the water is supplied to the machine. If a problem is found, take the appropriate countermeasure. • Check if the water supply is blocked due to the water being frozen. • If the PBA Relay malfunctions, replace the PBA. 	 <ol style="list-style-type: none"> 1. Measure the resistance of the water supply valve. Resistance: 4.0~5.0Ω between the water supply valve terminals. 2. Check if there is any alien substance in the Diaphragm inside the water supply valve. 		
		This may occur when the main PCB is defective.			<ul style="list-style-type: none"> • Check if there is any alien substance inside the draining pump motor. • Check the natural drain in the same manner. • Check if there are any incorrect connections or broken wires. • If the machine malfunctions intermittently when the wash tub water temperature is high, replace the pump. • If the motor stops due to the water being frozen in winter, remove the frozen water referring to the relevant repair procedures. 	 <p>Measure the resistance of the Drain Motor Resistance: The resistance between the water supply valve terminals should be approximately 6.3Ω.</p>
		This may occur due to frozen water.				
Draining Error	▶ 5E	This may occur when the drain pump is defective.	<ul style="list-style-type: none"> • Check if there is any alien substance inside the draining pump motor. • Check the natural drain in the same manner. • Check if there are any incorrect connections or broken wires. • If the machine malfunctions intermittently when the wash tub water temperature is high, replace the pump. • If the motor stops due to the water being frozen in winter, remove the frozen water referring to the relevant repair procedures. 	 <p>Measure the resistance of the Drain Motor Resistance: The resistance between the water supply valve terminals should be approximately 6.3Ω.</p>		
		This may occur due to frozen water.				
		Check if there is any alien substance inside the draining pump.				
		This may occur when the main PCB is defective.				

Symptom	Error Code	Countermeasure	Troubleshooting Procedure	Measurement Picture
Door Error	▲ dE	<p>This may occur when the door switch is defective.</p> <p>This may occur when the main PCB is defective.</p>	<ul style="list-style-type: none"> • Check if a dE error occurs during the boiling course. - Since this error occurs because the door is opened, close the door. • Since 220V power is connected directly, check if the power cord is disconnected or check the insulation status and repair it if necessary. • If only the door SAW part is defective, replace it. • If the main PBA door detection circuit is defective, replace it. 	 <p>Measure the door switch voltage after turning the power on. (Turn the power on and check the door switch without pressing any operating keys.)</p>
Water Leakage Error	▲ LE	<p>This may occur when an alien substance is in the DV Case.</p> <p>This may occur due to a defect of the product's internal hose or from the part assembly.</p>	<ul style="list-style-type: none"> • Since this occurs when an alien substance is in the Draining Bellows, for natural draining, remove the alien substance. • If the drain motor is defective, replace the motor. • Check if the water leaks from the tub connection part. 	 <p>Check if there is any alien substance in the Draining Bellows. * Check if there is any alien substance such as underwear wire, coins, etc.</p>
Unbalance Error	▲ UE	<p>This may occur due to the laundry being unevenly distributed.</p>	<ul style="list-style-type: none"> • Check the laundry type and check if the laundry load is unbalanced. - Make sure to check if there is any laundry present that absorbs a lot of water even if its volume is small and explain the problem comprehensively, if necessary. 	