SERVICE DATA SHEET

318204832 (1202) Rev. A

Appliance with Electronic Oven Control

NOTICE

This service data sheet is intended for use by persons having electrical and mechanical training and a level of knowledge of these subjects generally considered acceptable in the appliance repair trade. The manufacturer cannot be responsible, nor assume any liability, for injury or damage of any kind arising from the use of this data sheet.

SAFE SERVICING PRACTICES

To avoid the possibility of personal injury and/or property damage, it is important that safe servicing practices be observed. The following are some, but not all, examples of safe practices.

- 1. Do not attempt a product repair if you have any doubts as to your ability to complete it in a safe and satisfactory manner.
- 2. Before servicing or moving an appliance, remove power cord from electric outlet, trip circuit breaker to Off, or remove fuse.
- 3. Never interfere with the proper installation of any safety device.
- 4. USE ONLY REPLACEMENT PARTS SPECIFIED FOR THIS APPLIANCE. SUBSTITUTIONS MAY DEFEAT COMPLIANCE WITH SAFETY STANDARDS SET FOR HOME APPLIANCES.
- 5. GROUNDING: The standard color coding for safety ground wires is GREEN OR GREEN WITH YELLOW STRIPES. Ground leads are not to be used as current carrying conductors. IT IS EXTREMELY IMPORTANT THAT THE SERVICE TECHNICIAN REESTABLISH ALL SAFETY GROUNDS PRIOR TO COMPLETION OF SERVICE. FAILURE TO DO SO WILL CREATE A POTENTIAL HAZARD.
- 6. Prior to returning the product to service, ensure that:
 - All electric connections are correct and secure.
 - All electrical leads are properly dressed and secured away from sharp edges, high-temperature components, and moving parts.
 - All uninsulated electrical terminals, connectors, heaters, etc. are adequately spaced away from all metal parts and panels.
 - All safety grounds (both internal and external) are correctly and securely reassembled.
 - All panels are properly and securely reassembled.

IMPORTANT NOTES

- 1. This unit includes an EOC Relay Board and an EOC Display Board.
- 2. The included board is not field repairable.
- 3. The oven temperature can be calibrated, see Use and Care Manual.
- 4. The **■** pin on board connectors indicates pin number 1.

DATA SHEET ABBREVIATIONS AND TERMINOLOGY

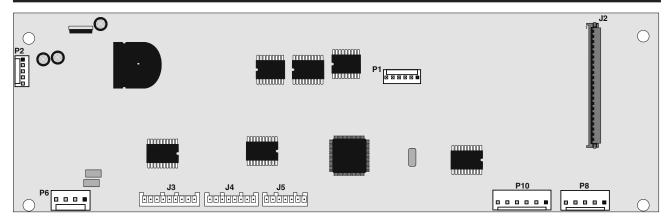
EOC: Electronic Oven Control LED: Light-Emitting Diode MDL: Motor Door Latch DLB: Double Line Break

RTD: Resistance Temperature Detector / Oven Probe

ILLUSTRATION OF OVEN CONTROLS



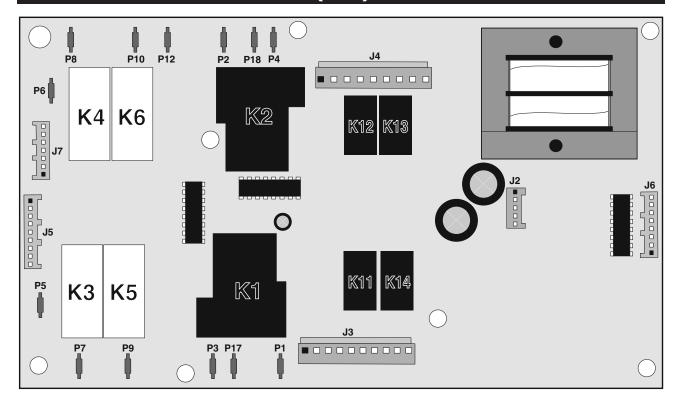
ELECTRONIC OVEN CONTROL (EOC) - DISPLAY BOARD



Display Board Legend:

- **J2** Keyboard connection.
- **P1** Micro programming (not used).
- **P2** DC power input.
- **J3** Relays control outputs (bake & broil elements, light, MDL, DLB) for upper oven.
- **J4** Relays control output (relay PWM).
- **J5** Relays control outputs (bake & broil elements, light, MDL, DLB) for lower oven.
- **P6** Temperature probe inputs.
- **P8** Door switch and MDL switch (some models) for upper oven.
- P10 Door switch and MDL switch for lower oven.

ELECTRONIC OVEN CONTROL (EOC) - RELAY BOARD



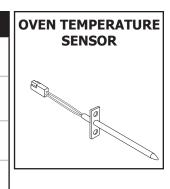
Relay Board Legend:

- **P1** Double line break (L2 out), upper oven.
- P2 Double line break (L2 out), lower oven.
- **P3** L2 in, upper oven.
- P4 L2 in, lower oven.
- **P5** L1, upper oven.
- P6 L1, lower oven.
- **P7** Broil, upper oven.
- **P8** Broil, lower oven.
- P9 Bake, upper oven.
- P10 Bake, lower oven.
- **P12** Not used.
- **P17** Not used.
- **P18** Not used.

- **K1** Double line break relay, upper oven.
- **K2** Double line break relay, lower oven.
- **K3** Broil relay, upper oven.
- **K4** Broil relay, lower oven.
- **K5** Bake relay, upper oven.
- **K6** Bake relay, lower oven.
- **K11** Motor door latch relay, upper oven.
- **K12** Motor door latch relay, lower oven.
- **K13** Oven light relay, lower oven.
- **K14** Oven light relay, upper oven.
- **J2** DC power output to display board.
- **J3** AC power outputs (motor door latch, light) for upper oven. L1 and Neutral input.
- **J4** AC power outputs (motor door latch, light) for lower oven. L1 and Neutral input.
- **J5** Relays control inputs (bake & broil elements, light, motor door latch, DLB) for upper oven.
- **J6** Relays control input (relay PWM)
- **J7** Relays control inputs (bake & broil elements, light, motor door latch, DLB) for lower oven.

RTD SCALE						
Temp. °F	Temp. °C	Resistance (ohms)				
32 ± 1.9	0.0 ± 1.1	1000 ± 4.0				
75 ± 2.5	23.9 ± 1.4	1091 ± 5.3				
250 ± 4.4	121.1 ± 2.4	1453 ± 8.9				
350 ± 5.4	176.7 ± 3.0	1654 ± 10.8				
450 ± 6.9	232.2 ± 3.8	1852 ± 13.5				
550 ± 8.2	287.8 ± 4.6	2047 ± 15.8				
650 ± 9.6	343.3 ± 5.3	2237 ± 18.5				
900 ± 13.6	482.2 ± 7.6	2697 ± 24.4				

ELECTRICAL	RATING
Upper Oven Broil	3000W /
Element Wattage	2253W
Upper Oven Bake	2200W /
Element Wattage	1653W
Lower Oven Broil	3400W /
Element Wattage	2554W
Lower Oven Bake	3000W /
Element Wattage	2253W
KW Rating	See serial
240/208V	plate



UPPER OVEN CIRCUIT ANALYSIS MATRIX						
		On Relay Board				On Display Board
	ELEM	ENTS				
	Bake P9	Broil P7	Oven Light J3-6	Door Mo- tor J3-5	DLB L2 out P1	Door Switch P8-3 / P8-5
Bake	Х	Х			Х	
Broil		X			Х	
Clean	Х	X			X	
Locking / Unlocking				Х		
Light			Х			
Door Open			Х			
Door Closed						Х

LOWER OVEN CIRCUIT ANALYSIS MATRIX						
		On Relay Board				On Display Board
	ELEMENTS		Oven	Door	DLB	Door Switch
	Bake P10	Broil P8	Light J4-7	Motor J4-6	L2 out P2	P10-3 / P10-6
Bake	Х	Х			Х	
Broil		X			Х	
Clean	Х	X			X	
Locking / Unlocking				X		
Light			X			
Door Open			Х			
Door Closed						Х

Relay will operate in this condition only

ELECTRONIC OVEN CONTROL (EOC) FAULT CODE DESCRIPTIONS

Note: Generally speaking "F1x" implies a control failure, "F3x" an oven probe problem, and "F9x" a latch motor problem.

Code	Condition / Cause	Suggested Corrective Action
Code	Control has sensed a potential	- Check RTD sensor probe and replace if necessary. If oven
F10	runaway oven condition. Control may have shorted relay, RTD sensor probe may have a gone bad.	is overheating, disconnect power. If oven continues to overheat when power is reapplied, replace the EOC-Display Board.
F11	Shorted Key: a key has been detected as pressed (for a long period) will be considered a shorted key alarm and will terminate all oven activity.	 Press CANCEL key. If fault returns, replace the keyboard (membrane). If the problem persists, replace the EOC- Display Board.
F13	Control's internal checksum may have become corrupted.	- Press CANCEL key Disconnect power, wait 10 seconds ad reapply power. If fault returns upon power-up, replace EOC-Display Board.
F14	Misconnected keyboard cable.	 Disconnect power. Verify the flat cable connection between the keyboard membrane and the EOC- Display Board on J2. If the problem persists, replace the EOC- Display Board. If the connection is good but the problem persists, replace the keyboard (membrane switch).
F15	Controller self check failed.	- Replace the EOC- Display Board.
F30	Open RTD sensor probe/ wiring problem. Note: EOC may initially display an "F10", thinking a runaway condition exists.	 Check wiring in probe circuit for possible open condition. Check RTD resistance at room temperature (compare to probe resistance chart). If resistance does not match the chart, replace the RTD sensor probe.
F31	Shorted RTD sensor probe / wiring problem.	Let the oven cool down and restart the functionIf the problem persists, replace the EOC- Display Board.
F62	Missing zero-cross signal.	 The 60Hz synchronization signal (zero-cross) is sent by the EOC-Relay Board to the EOC-Display Board. Verify first the connection between the EOC-Relay Board on connector J2 pin 5 and the EOC-Display Board on connector P2 pin 5 (check for continuity). If wiring is good, replace the EOC-Relay Board. If problem persists, replace the EOC- Display Board.
F90	Door motor mechanism failure. The controller does not see the motor rotating.	 Press CANCEL key. If CANCEL key does not eliminate problem, turn off power for 30 seconds, then turn on power. Check wiring of Lock Motor, Lock Switch and Door Switch circuits. Unplug the lock motor from the board and apply power (L1) directly to the Lock Motor. If the motor does not rotate, replace Lock Motor Assembly. Check Lock Switch for proper operation (do they open and close, check with ohmmeter). The Lock Motor may be powered as in above step to open and close Lock Switch. If the Lock Switch is defective, replace Motor Lock Assembly. If all above steps fail to correct situation, replace the EOC-Display Board or the EOC- Relay Board in the event of a motor that does not rotate.

139xx	L 2 OUT L 12 IN L 14 BROIL Upper BAKE Upper BAKE Upper	Motor Door Latch Upper * Motor Door Latch Upper * Oven Light Upper * * MDL upper not on all models	L2 OUT L1 IN BROIL Lower BAKELower	Neutral Motor Door Latch Lower Oven Light Lower
g Range Block Diagram ES61x Relay and Power Board 3164439xx	P1 = K1 DLB OUT 1 Relay P3/P17 = K1 DLB IN 1 Relay P5 = L1 IN P7 = K3 Relay P9 = K5 Relay	pin 1 = Neutral IN pin 2 = Not Used pin 3 = L1 IN pin 4 = Not Used pin 5 = K11 Relay pin 6 = K14 Relay pin 7 = Not Used pin 8 = Not Used pin 9 = Not Used pin 9 = Not Used pin 9 = Not Used pin 10 = Not Used	P2 = K2 DLB OUT 2 Relay P4/P18 = K2 DLB IN 2 Relay P6 = L1 IN P8 = K4 Relay P10 = K6 Relay P12 = Not Used	pin 1 = Neutral IN pin 2 = Not Used pin 3 = L1 IN pin 4 = Not Used pin 5 = Not Used pin 5 = Not Used pin 6 = K12 Relay pin 7 = K13 Relay pin 8 = Not Used pin 9 = Not Used
Jiagra d Pov	Fastons	J3 120VAC Relay Outputs	Fastons	J4 120VAC Relay Outputs
Block I elay an	J5 Upper oven relay controls	J6 Relay Controls	Lower oven relay controls	J2 Power Supply Output
tanding Range ES61x R	pin 1 = Oven Light 1 pin 2 = Latch Motor 1 pin 3 = Nat Used pin 4 = DLB 1 pin 5 = Not Used pin 6 = Bake Element1 pin 7 = Boil Element 1 pin 8 = Not Used pin 8 = Not Used pin 9 = Wiggler	pin 1 = Not Used pin 2 = Not Used pin 3 = Not Used pin 4 = Not Used pin 6 = Not Used pin 7 = Not Used pin 8 = PWM_relay	Pin 1 = Broll Lement 2 → pin 2 = Broll Lement 2 pin 3 = Not Used → pin 4 = DLB 2 pin 5 = Not Used → pin 6 = Latch Motor 2 → pin 7 = Oven Ligth 2	pin 1 = Ground
Electric Double Free-Standing Range Block Diagram 64438xx	pin 1 = Oven Light 1 pin 2 = Latch Motor 1 pin 2 = Latch Motor 1 pin 4 = DLB 1 pin 5 = Not Used pin 6 = Bake Element 1 pin 7 = Broil Element 1 pin 8 = Not Used pin 8 = Not Used	pin 1 = Not Used pin 2 = Not Used pin 3 = Not Used pin 3 = Not Used pin 4 = Not Used pin 5 = Not Used pin 6 = Not Used pin 7 = Not Used pin 8 = PWM_Relay	pin 1 = Broil Element 2 pin 2 = Bake Element 2 pin 3 = Not Used pin 4 = DLB 2 pin 5 = Not Used pin 6 = Latch Motor 2 pin 7 = Oven Light 2	pin 1 = pin 1 = Ground pin 2 = pin 2 = V, LED 8 V DC pin 3 = pin 3 = V, UR 16 V DC pin 4 = pin 4 = Not Used pin 5 = pin 5 = Zero Cross
_	J3 pin 2 Dipper pin 4 oven pin 5 relay pin 6 controls pin 7 pin 9	Din 1 = Din 2 = Din 3 = Din 3 = Din 4 = Din 4 = Din 6 = Din 7 = Din 8 = Din8	J5 pin 2 = Lower pin 3 = oven pin 4 = relay pin 6 = controls pin 7 =	P2 pin 1 = Power pin 3 = Supply pin 4 = Input pin 6 = Power pin 3 = Power pin 6 = Power pin 9 = Powe
Frigidaire Board 31	P8 Oven Switch Inputs O Oven Switch Switch Switch		Probe inputs L. J. Co	<u>a </u>
Frigidaire ES61x Display Board 31	Pin 1 = Switch Motor Door 1 Pe pin 2 = Not Used pin 3 = Switch Door 1 pin 3 = Switch Door 1 pin 4 = Not Used pin 5 = return Patch Switch pin 5 = return Patch Switch pin 2 = Not Used pin 2 = Not Used pin 3 = Switch Door 2 pin 4 = Not Used pin 4 = Not Used pin 5 = Switch Door 2 pin 6 = Not Used pin 7 = Not Used pin 8 = Not Used pin 8 = Not Used pin 9 = Not	Switch	pin 2 = Probe Oven 1 pin 3 = Probe Oven 2 pin 4 = Probe Oven 2 in 77 pins header	Oven 1 - upper oven
* upper MDL switch not on all models	Switch Motor Door 1 * Switch Door 1 Switch Motor Door 2 Switch Door 2	Oven Probe 1	Oven Probe 2 Keyboard ←	Note:

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