
SERVICE DATA SHEET

318047450 (0906) Rev. B

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.

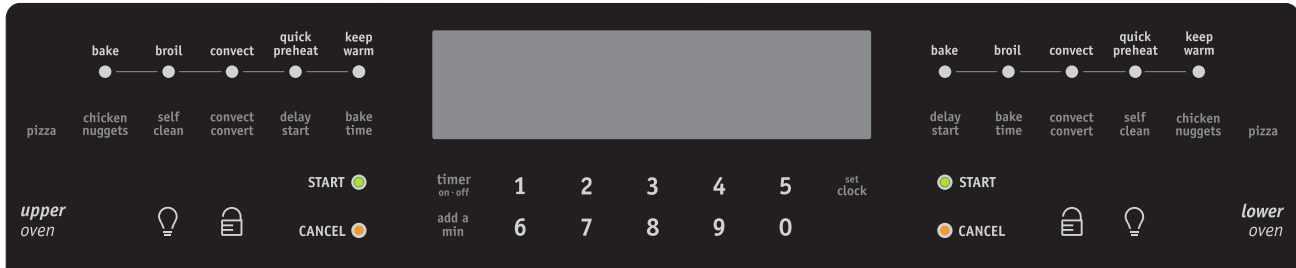
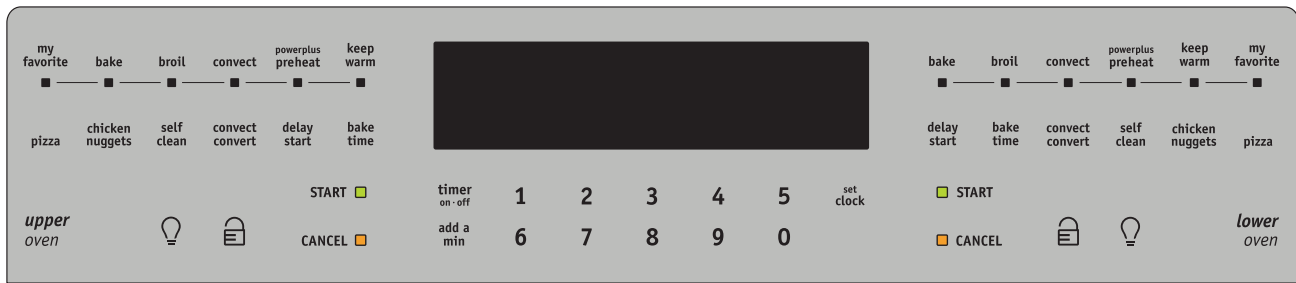
IMPORTANT NOTES

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.

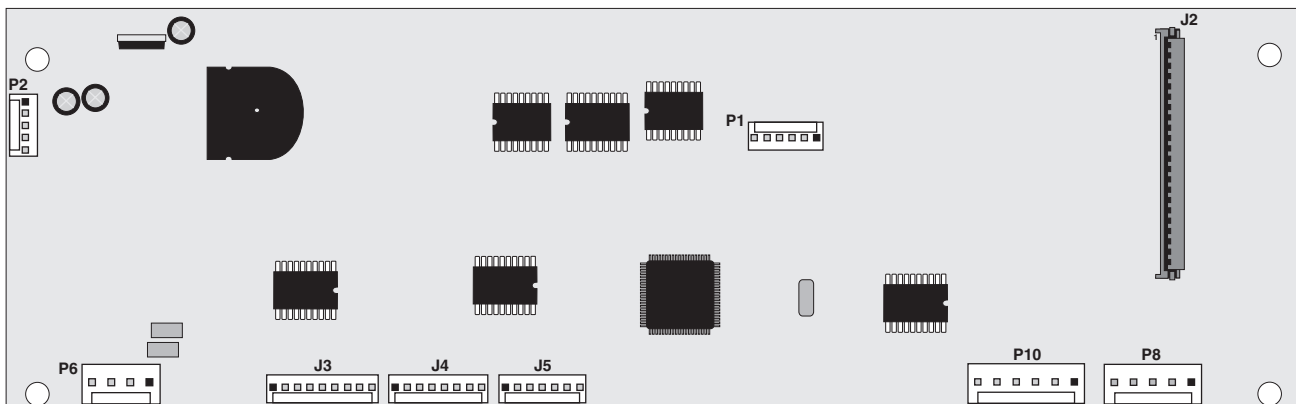
DATA SHEET ABBREVIATIONS AND TERMINOLOGY

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



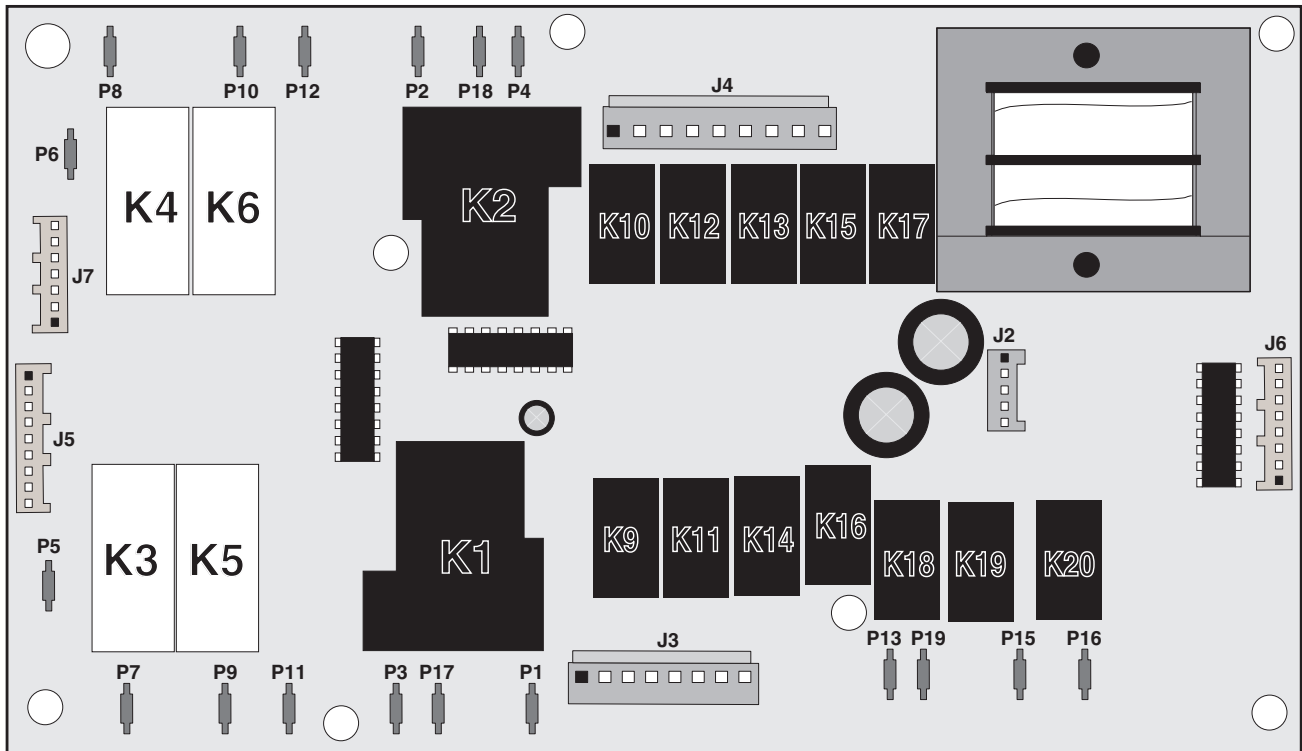
ELECTRONIC OVEN CONTROL (EOC) - DISPLAY BOARD



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, convection element, convection fan) for upper oven.
- J4** Relays control outputs (cooling fan) for both ovens.
- J5** Relays control outputs (bake & broil elements, light, MDL, DLB, convection element, convection fan for lower oven).
- P6** Temperature probe inputs.
- P8** Door switch and MDL switch for upper oven.
- P10** Door switch and MDL switch for lower oven.

ELECTRONIC OVEN CONTROL (EOC) - RELAY BOARD

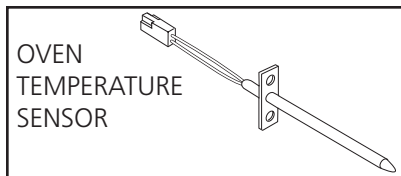


Relay Board Legend:

- | | |
|--|---|
| P1 Double line break (L2 out), upper oven. | K1 Double line break relay, upper oven. |
| P2 Double line break (L2 out), lower oven. | K2 Double line break relay, lower oven. |
| P3 L2 in, upper oven. | K3 Broil relay, upper oven. |
| P4 L2 in, lower oven. | K4 Broil relay, lower oven. |
| P5 L1, upper oven. | K5 Bake relay, upper oven. |
| P6 L1, lower oven. | K6 Bake relay, lower oven. |
| P7 Broil, upper oven. | K9 Convection fan, upper oven. |
| P8 Broil, lower oven. | K10 Convection fan, lower oven. |
| P9 Bake, upper oven. | K11 Motor door latch relay, upper oven. |
| P10 Bake, lower oven. | K12 Motor door latch relay, lower oven. |
| P11 Not used. | K13 Oven light relay, lower oven. |
| P12 Not used. | K14 Oven light relay, upper oven. |
| P13 Convection element, upper oven. | K15 Cooling fan, low speed relay, lower oven. |
| P15 L1 in | K16 Cooling fan, low speed relay, upper oven. |
| P16 Convection element, lower oven. | K17 Cooling fan, high speed relay, lower oven. |
| P17 Not used. | K18 Cooling fan, high speed relay, upper oven. |
| P18 Not used. | K19 Convection element, upper oven. |
| P19 Not used. | K20 Convection element, lower oven. |
| J2 DC power output to display board. | |
| J3 AC power outputs (motor door latch, light, cooling fan, convection fan) for upper oven. | |
| J4 AC power outputs (motor door latch, light, cooling fan, convection fan) for lower oven.
L1 and Neutral input. | |
| J5 Relays control inputs (bake & broil elements, light, motor door latch, DLB, convection fan) for upper oven. | |
| J6 Relays control inputs (cooling fan) for both ovens. Convection element upper / lower oven. | |
| J7 Relays control inputs (bake & broil elements, light, motor door latch, DLB, convection fan) 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		
	27" Model	30" Model
Broil Element Wattage	3400W / 2554W	4000W / 3004W
Bake Element Wattage	1450W / 1089W	2200W / 1652W
Convection Element Wattage	350W	350W or 500W♦
KW Rating 240/208V	See serial plate	



♦ Models with dual convection fans.

UPPER OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board									On Display Board
	ELEMENTS			Conv Fan J3-4	Oven Light J3-6	Door Motor J3-5	DLB L2 out P1	Cooling Fan Low Speed J3-7	Cooling Fan High Speed J3-8	Door Switch P8-3 / P8-5
	Bake P9	Broil P7	Conv P13							
Bake	X	X	X	X			X	X		
Broil		X					X	X	X	
Convection Bake	X	X	X	X			X	X		
Convection Roast	X	X	X	X			X	X		
Convection Broil		X		X			X	X	X	
Clean	X	X					X	X	X	
Locking / Unlocking						X				
Light					X					
Door Open					X					
Door Closed										X

LOWER OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board									On Display Board
	ELEMENTS			Conv Fan J4-5	Oven Light J4-7	Door Motor J4-6	DLB L2 out P2	Cooling Fan Low Speed J4-8	Cooling Fan High Speed J4-9	Door Switch P10-3 / P10-6
	Bake P10	Broil P8	Conv P16							
Bake	X	X	X	X			X	X		
Broil		X					X	X	X	
Convection Bake	X	X	X	X			X	X		
Convection Roast	X	X	X	X			X	X		
Convection Broil		X		X			X	X	X	
Clean	X	X					X	X	X	
Locking / Unlocking						X				
Light					X					
Door Open					X					
Door Closed										X

■ Relay will operate in this condition only

ELECTRONIC OVEN CONTROL (EOC) FAULT CODE DESCRIPTIONS

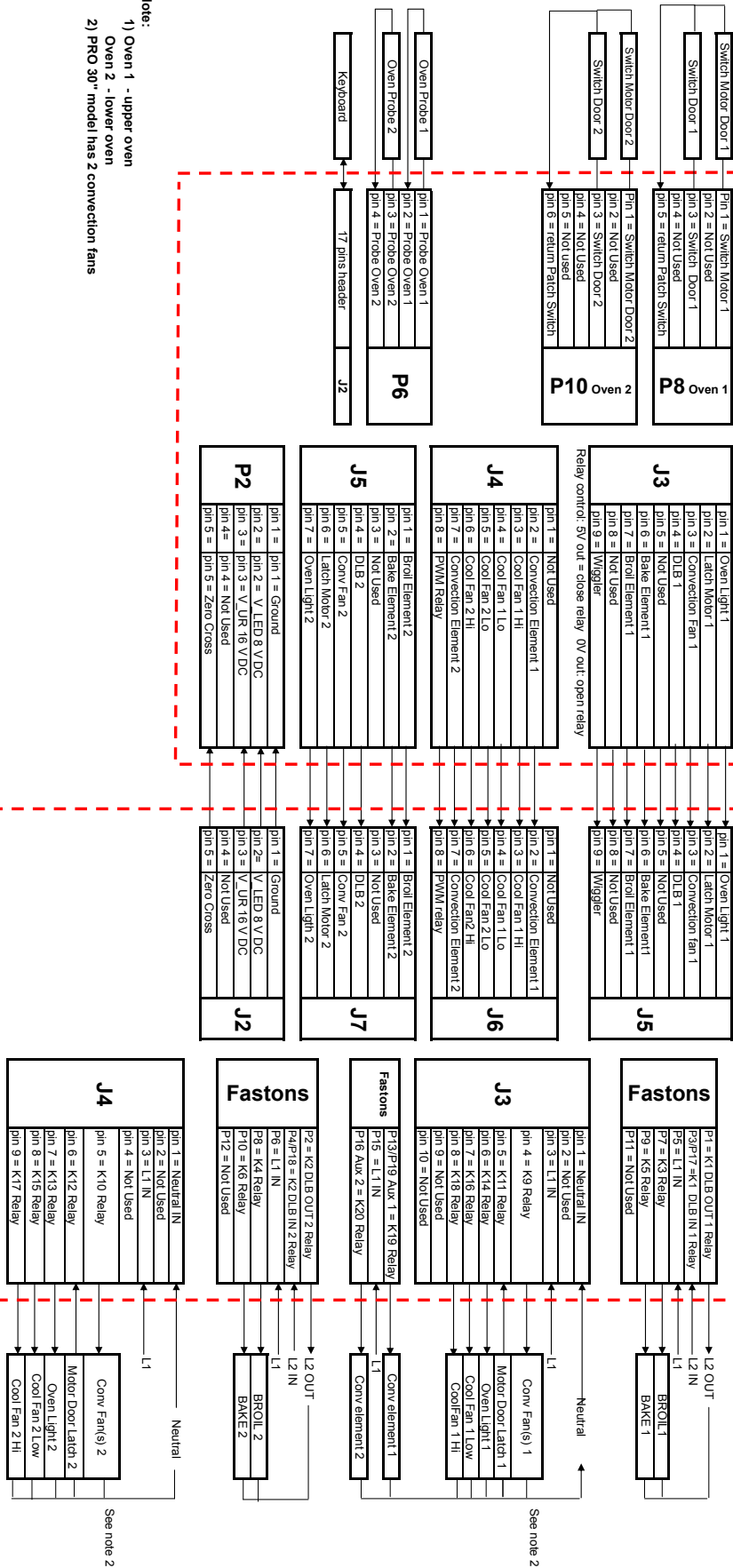
Note: Generally speaking "F1x" implies a control failure, "F3x" an oven probe problem, and "F9x" a latch motor problem.

Code	Condition / Cause	Suggested Corrective Action
F10	Control has sensed a potential runaway oven condition. Control may have shorted relay, RTD sensor probe may have a gone bad.	- Check RTD sensor probe and replace if necessary. If oven is overheating, disconnect power. If oven continues to overheat when power is reapplied, replace the <i>EOC-Display Board</i> .
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 Clear or Cancel key. - If fault returns, replace the keyboard (membrane). - If the problem persists, replace the <i>EOC- Display Board</i> .
F13	Control's internal checksum may have become corrupted.	- Press CLEAR key. - Disconnect power, wait 10 seconds and reapply power. If fault returns upon power-up, replace <i>EOC- Display Board</i> .
F14	Misconnected keyboard cable.	- Disconnect power. Verify the flat cable connection between the keyboard membrane and the <i>EOC- Display Board</i> on J2. - If the problem persists, replace the <i>EOC- Display Board</i> . - If the connection is good but the problem persists, replace the keyboard (membrane switch).
F15	Controller self check failed.	- Replace the <i>EOC- Display Board</i> .
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 function - If the problem persists, replace the <i>EOC- Display Board</i> .
F62	Missing zero-cross signal.	- The 60Hz synchronization signal (zero-cross) is sent by the <i>EOC-Relay Board</i> to the <i>EOC-Display Board</i> . Verify first the connection between the <i>EOC-Relay Board</i> on connector J2 pin 5 and the <i>EOC-Display Board</i> on connector P2 pin 5 (check for continuity). - If wiring is good, replace the <i>EOC-Relay Board</i> . - If problem persists, replace the <i>EOC- Display Board</i> .
F90	Door motor mechanism failure. The controller does not see the motor rotating.	- Press CLEAR key. - If CLEAR 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 <i>EOC- Display Board</i> or the <i>EOC- Relay Board</i> in the event of a motor that does not rotate.

OVEN BLOCK DIAGRAM FOR MODEL

ES61x Display Board 3164438xx

ES61x Relay and Power Board 3164439xx



Note:
 1) Oven 1 - upper oven
 Oven 2 - lower oven
 2) PRO 30" model has 2 convection fans

See note 2

See note 2

