SERVICE DATA SHEET 318204820 (1227) Rev. C

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*, an *EOC - Display Board*, an *ESEC-UIB*, an *ESEC-Relay Board* and an *ESEC-RHIB*.
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.

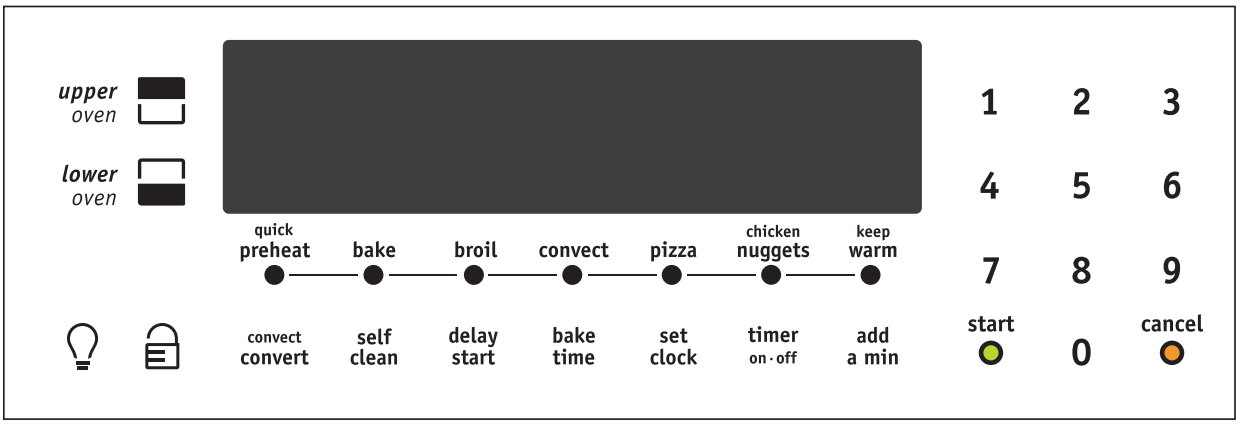
DATA SHEET ABBREVIATIONS AND TERMINOLOGY

EOC : Electronic Oven Control
LED : Light-Emitting Diode
MDL : Motor Door Latch
DLB : Double Line Break
RTD : Resistance Temperature Detector / Oven Probe

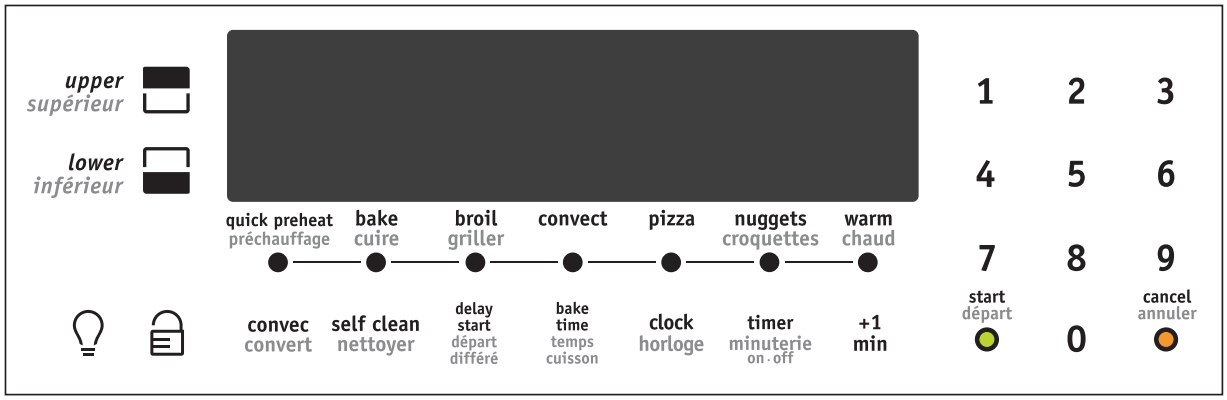
Printed in Canada

ILLUSTRATION OF OVEN CONTROLS

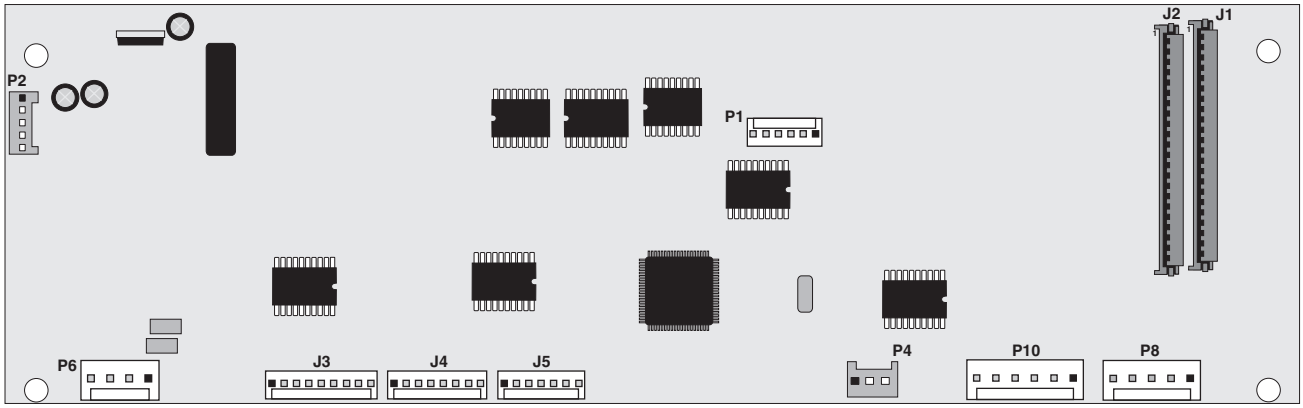
American Model



Canadian Model



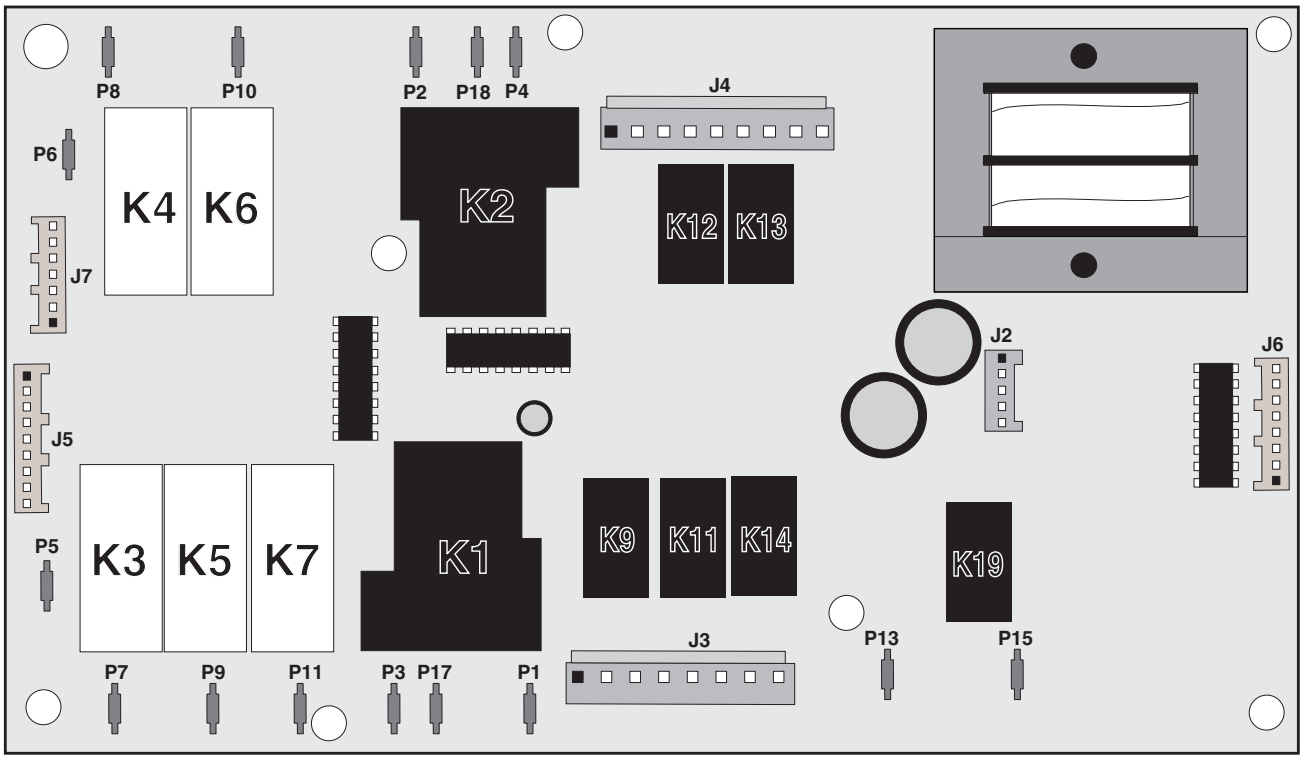
ELECTRONIC OVEN CONTROL (EOC) - DISPLAY BOARD



Display Board Legend:

J1 External LEDs connection.
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 outputs warmer zone element.
J5 Relays control outputs (bake and broil elements, light, MDL, DLB) for lower oven.
P4 Communication with the ESEC control (P7)
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) - DISPLAY BOARD



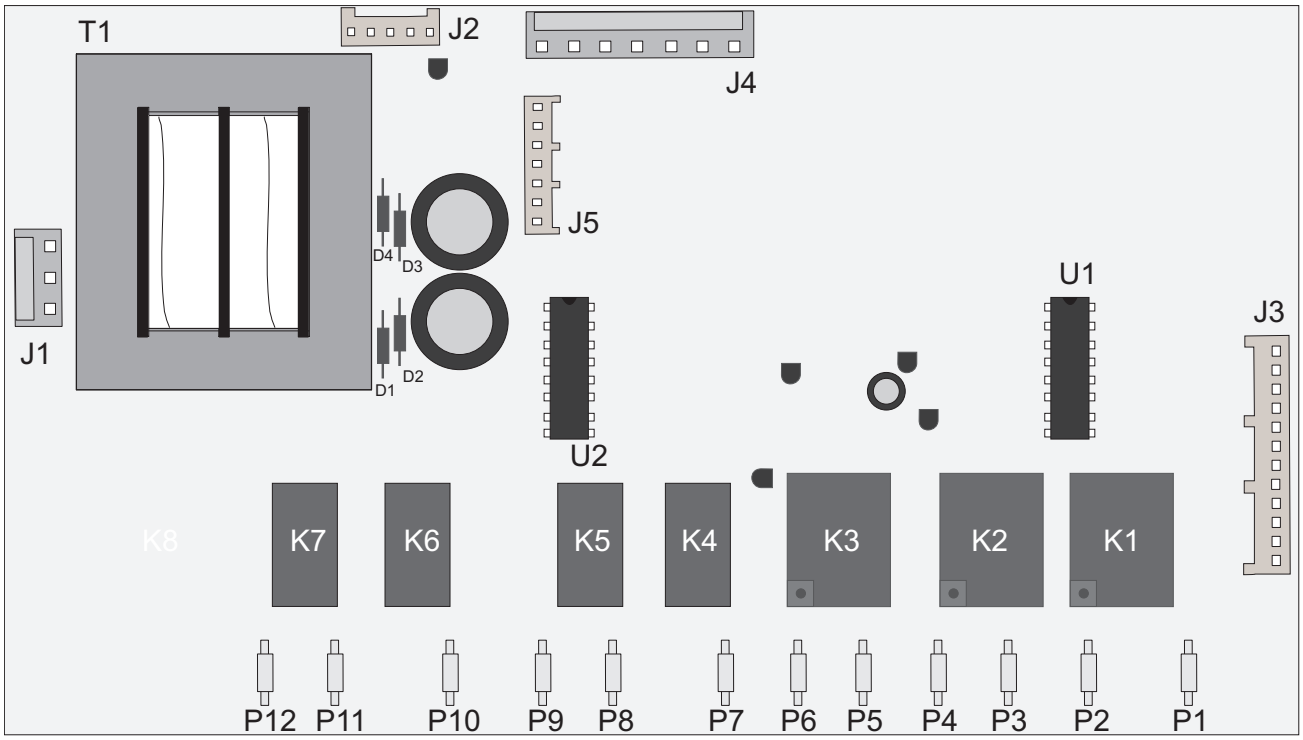
Relay Board Legend:

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.
P11 Convection element, upper oven.
P13 Warmer zone element
P15 L1 in, warmer zone
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.
K7 Convection element relay, upper oven.
K9 Convection fan, upper 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.
K19 Aux1 / Warmer zone relay.

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 inputs warmer zone element.
J7 Relays control inputs (bake & broil elements, light, motor door latch, DLB) for lower oven.

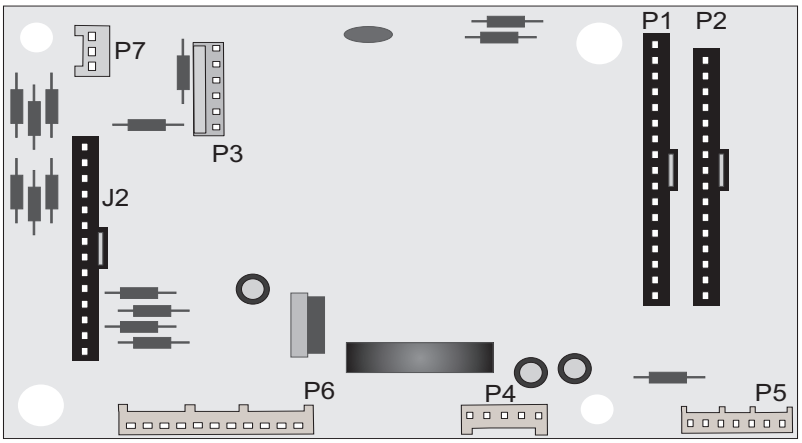
ELECTRONIC SURFACE ELEMENT CONTROL - RELAY BOARD



ESEC Relay Board Legend:

Connector	Description	Relay
P1	Right Front Inner Element Connection	K1
P2	L2 In	
P3	L2 In	
P4	Left Front Outer Element Connection	K2
P5	Left Rear Element Connection	K3
P6	L2 In	
P7	Right Front Outer Element Connection	K4
P8	L2 In	
P9	Not used	K5
P10	Right Rear Element Connection	K6
P11	L2 In	
P12	Left Front Inner Element Connection	K7
J1	Line Voltage Input (120V, Neutral)	
J2	Low Voltage Supply Output for UIB	
J3	Surface Element Relay Control Inputs	
J4	Hot Surface Inputs (from surface element)	
J5	Hot Surface Output to UIB	

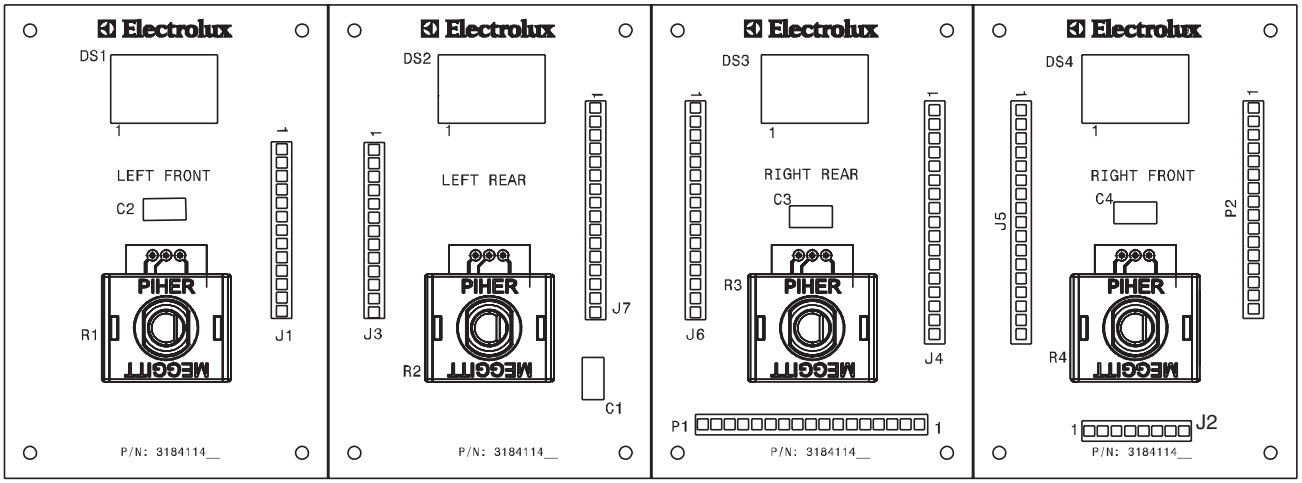
ELECTRONIC SURFACE ELEMENT CONTROL - USER INTERFACE BOARD



User Interface Board (UIB) Legend:

J2. Connector for Potentiometer read state on ESEC RHIB.
P1. Connector for left side LEDs and Display Indicators on ESEC RHIB.
P2. Connector for right side LEDs Display Indicators on ESEC RHIB.
P3. Micro Programming Header (Not Used)
P4. Power Supply Input
P5. Hot Surface Input
P6. Surface Elements Relay Controls
P7. Communication with EOC- Display Board (P4)

ELECTRONIC SURFACE ELEMENT CONTROL - ROTARY HUMAN INTERFACE BOARD



ESEC - Rotary Human Interface Board Legend:

J1. Connected to J3
J2. Connected to J2 - ESEC20 UIB
J3. Connected to J1
J4. Connected to J5
J5. Connected to J4
J6. Connected to J7
J7. Connected to J6

P1. Connected to P1 - ESEC20 UIB
P2. Connected to P2 - ESEC20 UIB

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		
	Lower Oven	**Upper Oven**
Broil Element Wattage	3400W/ 2553W	3400W/ 2553W
Bake Element Wattage	2500W/ 1878W	2500W/ 1878W
Convection Element Wattage	N/A	350W
KW Rating	See serial plate	

UPPER OVEN CIRCUIT ANALYSIS MATRIX

	On Relay Board							On Display Board
	ELEMENTS							
	Bake P9	**Broil P7**	**Conv Fan J3-4**	**Conv P11**	**Oven Light J3-6**	**Door Motor J3-5**	**DLB L2 out P1**	**Door Switch P8-3 / P8-5**
Bake	X	X	X*	X*			X	
Broil		X	X*				X	
Convection	X	X**	X	X**				
Clean	X	X					X	
Locking / Unlocking						X		
Light					X			
Door Open					X			
Door Closed								X

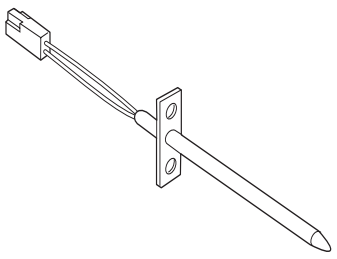
* When a convection mode is selected or in preheat mode.
** Broil & Conv. elements are not active at the same time.

LOWER OVEN CIRCUIT ANALYSIS MATRIX

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

Relay will operate in this condition only

OVEN TEMPERATURE SENSOR



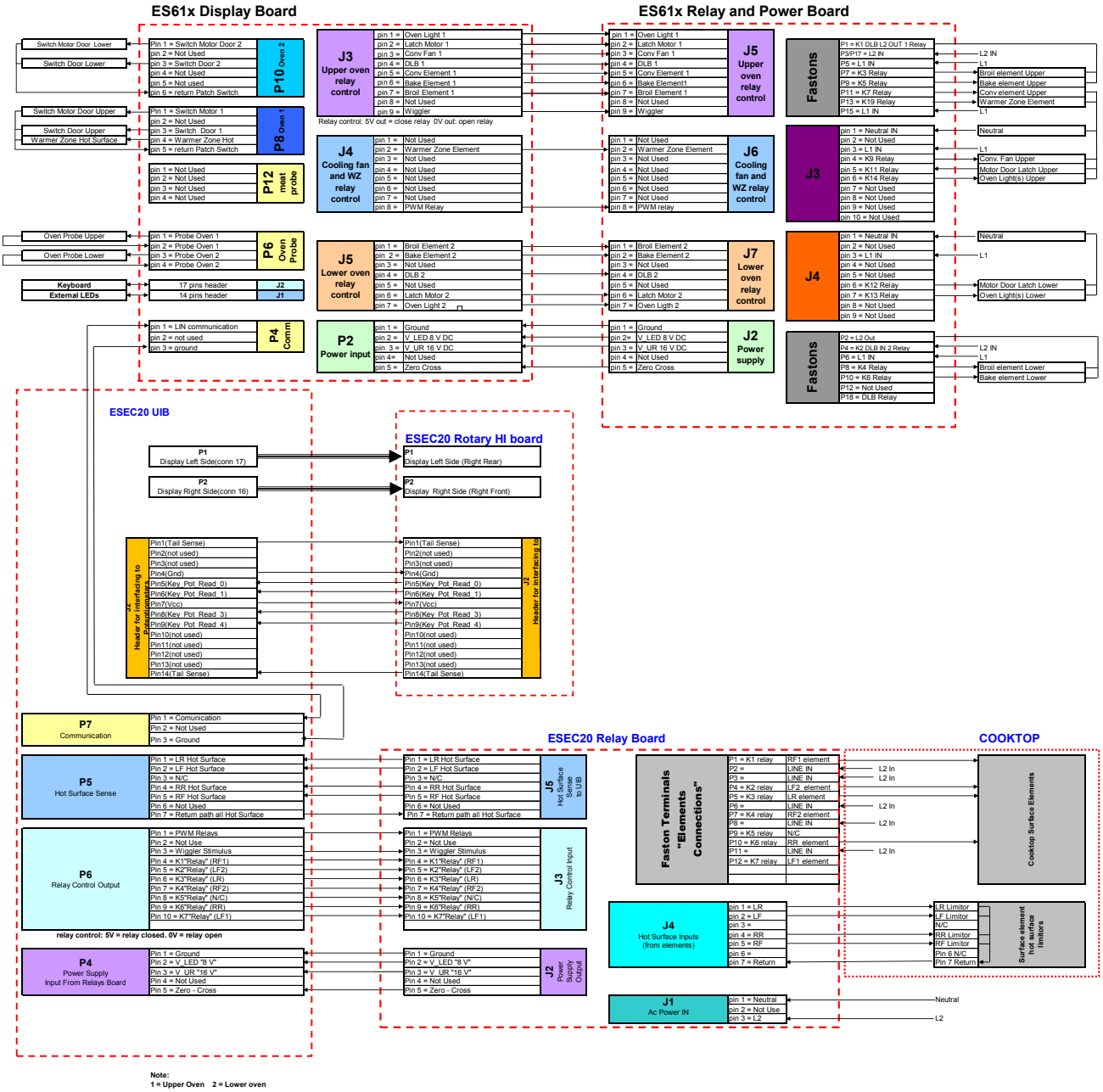
ELECTRONIC OVEN CONTROL (EOC) FAULT CODE DESCRIPTIONS

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.	**1)** 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 *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.	**1)** Press Clear or Cancel key. **2)** If fault returns, replace the keyboard (membrane). **3)** If the problem persists, replace the *EOC- Display Board*.
F13	Control's internal checksum may have become corrupted.	**1)** Press CLEAR key. **2)** Disconnect power, wait 10 seconds ad reapply power. If fault returns upon power-up, replace *EOC- Display Board*.
F14	Misconnected keyboard cable.	**1)** Disconnect power. Verify the flat cable connection between the keyboard membrane and the *EOC- Display Board* on J2. **2)** If the problem persists, replace the *EOC- Display Board*. **3)** If the connection is good but the problem persists, replace the keyboard (membrane switch).
F15	Controller self check failed.	**1)** Replace the *EOC- Display Board*.
F20	Control has detected a problem with the communication link with the ESEC.	**1)** Check connection between P4 on EOC and P7 on ESEC-UIB. **2)** If problem persist, replace ESEC-UIB. **3)** If all above steps failed to correct situation, replace EOC.
F30	Open RTD sensor probe/ wiring problem. Note: EOC may initially display an "F10", thinking a runaway condition exists.	**1)** Check wiring in probe circuit for possible open condition. **2)** Check RTD resistance at room temperature (compare to probe resistance chart). If resistance does not match the chart, replace the RTD sensor probe. **3)** Let the oven cool down and restart the function. **4)** If the problem persists, replace the *EOC- Display Board*.
F31	Shorted RTD sensor probe / wiring problem.	
F62	Missing zero-cross signal.	**1)** 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). **2)** If wiring is good, replace the *EOC-Relay Board*. **3)** If problem persists, replace the *EOC- Display Board*.
F90	Door motor mechanism failure. The controller does not see the motor rotating.	**1)** Press CLEAR key. **2)** If CLEAR key does not eliminate problem, turn off power for 30 seconds, then turn on power. **3)** Check wiring of Lock Motor, Lock Switch and Door Switch circuits. **4)** 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. **5)** 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. **6)** 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.

ELECTRONIC SURFACE ELEMENT CONTROL (ESEC) FAULT CODE DESCRIPTIONS

E013	Bad EEPROM.	Replace *ESEC-UIB*.
E014	Loss of Display tail #0.	Check connection P1 on *ESEC-UIB* and P1 on ESEC Rotary HI Board (RR).
	Loss of Display tail #1.	Check connection P2 on *ESEC-UIB* and P2 on ESEC Rotary HI Board (RF).
	Loss of Keyboard Tail.	Check connection J2 on *ESEC-UIB* and J8 (RF).
E015	ESEC self test failed.	An E015 error code may indicate the *ESEC-UIB* is not receiving a synchronization signal from the *ESEC-Relay Board*. Check first if J2 pin 5 on the *ESEC-Relay Board* is wired to P4 pin 5 on the *ESEC-UIB*. If wiring is good and the problem is still there, replace the *ESEC-UIB*. If the problem persists, replace the *ESEC-Relay Board*.

OVEN BLOCK DIAGRAM

FRIGIDAIRE 2011 Double Free-Standing Range Block Diagram and Interconnections
Use this as a complement to the wiring diagram to trouble-shoot an oven