



**Kit 9-274769 Installation
Instructions
FDC9100/L91 Replacement
for Protocol Plus or
Protocol3 Controls**

Safety First

- ITW EAE designs and builds machines with user safety as a high priority.
 - This instruction material is designed to assist the installer, however, it does not supersede safety precautions and guidelines, as specified within the ITW EAE equipment user manuals.
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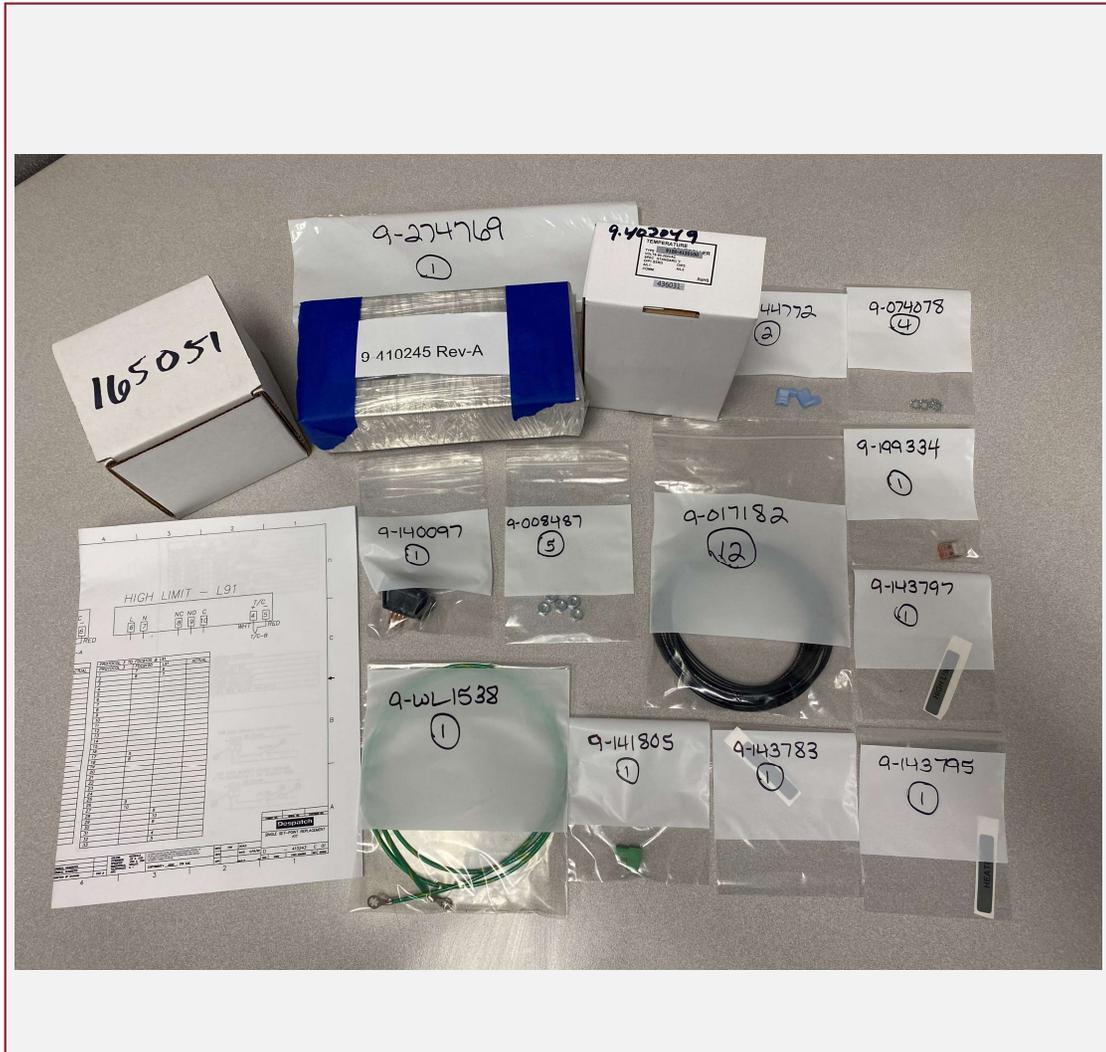
ATTENTION!

Operation of ITW EAE equipment exposes personnel to potential health and safety hazards. This install should only be performed by qualified technicians, trained on how to safely work on electrical equipment.

Materials:

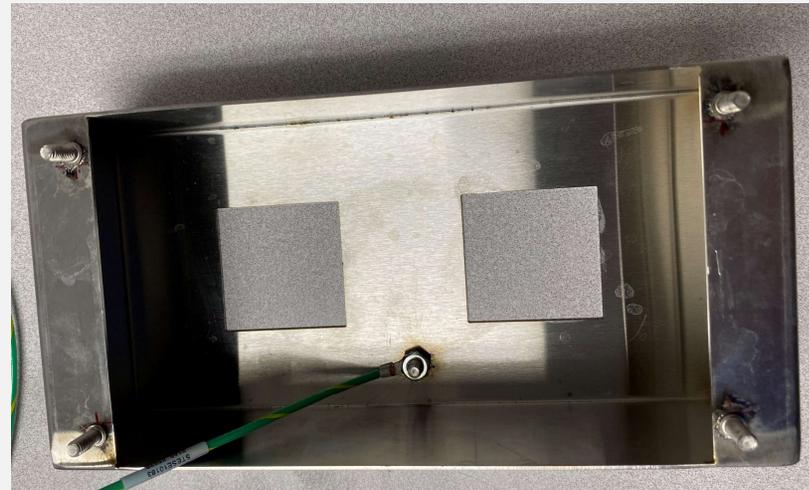
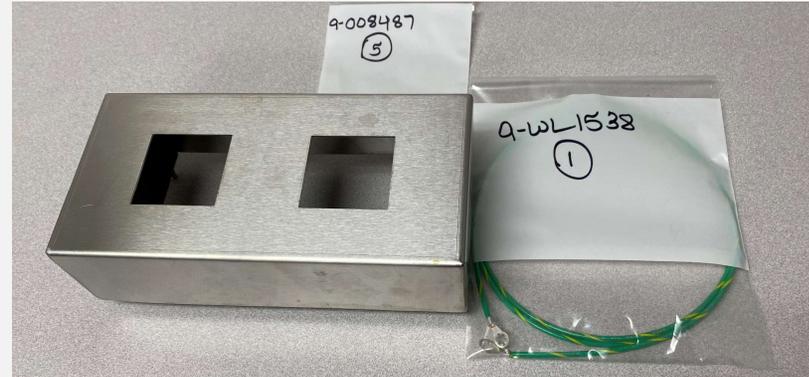
Kit part number 9-274769 includes the following

Part Number	Description	Qty
9-008487	NUT HX ZIN #10-32	5
9-017182	WIRE MTW 14GA BLKANIXTER 1015BC-14/19-0	12
9-074078	WSHR LK ZIN #10 SHKPRF EXT	4
9-140097	SW CRL TGCO401-TB-BDPST	1
9-141805	TERM BLK PHNX PLUGMSTB2.5/2-ST-5.08	1
9-143783	DECAL GRAY TEMP CONTROL	1
9-143795	DECAL GRAY HEATER	1
9-143797	DECAL GRAY HIGH LIMIT	1
9-144772	TERM FSTN ETC BB-2221 14-16GA*	2
9-165051	CTL HL FDESIGN L91-4110	1
9-199334	TERM BLK WAGO SPRING 2P 221-412, 28-12AWG	1
9-403049	CTL PID FDESIGN FDC9100-4120100	1
9-410243	KIT PROTOCOL REPLACEMENT 1SP & HL DWG	1
9-410245	PROTOCOL ADAPT PLT WDMT (2) 1.77SQ, 2.25" T	1
9-WL1538	WIRE LIST LAC/LBB CAB FAN GND WIRE	1



Step 1: Ground Wire Install

Locate the adapter weldment 9-410245, ground wire 9-WL1528, and one of the #10 nuts 9-008487. Attach the ground wire to the threaded stud inside the adapter weldment using the # 10 nut as shown. The other end of the ground wire will be connected to a ground terminal on the oven.



Step 2: Mounting the controls in the adapter weldment

Locate the FDC9100 control and L91 High Limit with associated mounting clamps.

Slide the control into the right hole in the adapter weldment from the front.

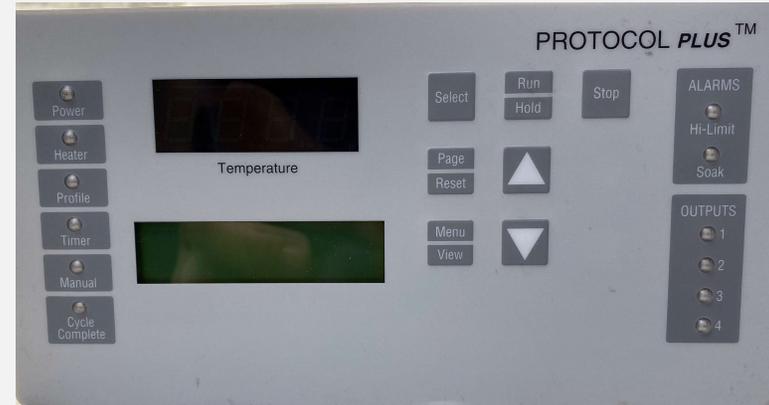
Slide the high limit into the left hole in the adapter weldment.



Step 3: Preparing for wiring

Identify what model control is being replaced, the Protocol Plus or the Protocol3.

Protocol Plus



Protocol3



Step 3 Continued: Preparing for wiring

Find the two tables in the instruction drawing.

The table on the left is used when replacing a Protocol Plus, and the table on the right is used when replacing a Protocol3.

Note: There may be additional wires connected to the Protocol Plus or Protocol3 controls that do not have terminations listed on the FDC9100 or L91 control. These wires would be for options of features that are not supported by the FDC9100 or L91. In most cases these wires will need to be isolated or removed. Contact technical support with your oven serial number if you have questions. Technical support email address dspsupport@itweae.com

PROTOCOL PLUS TO FDC9100 & L91			
PROTOCOL PLUS	FDC9100	L91	ACTUAL
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13	5		
14	6		
15		4	
16		5	
17	9		
18	10		
19		9	
20		10	
21		8	
22			
23			
24			
25			
26			
27			
28			
29			
30	7	6	
31	8	7	
32			

PROTOCOL 3 TO FDC9100 & L91			
PROTOCOL 3	FDC9100	L91	ACTUAL
1	7	6	
2	8	7	
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17	5		
18	6		
19			
20			
21			
22			
23			
24			
25			
26	9		
27	10		
28		9	
29		10	
30		8	
31			
32		4	
33		5	

Step 3 Continued: Preparing for wiring

For this example, we are replacing a Protocol3 control on a model LAC oven.

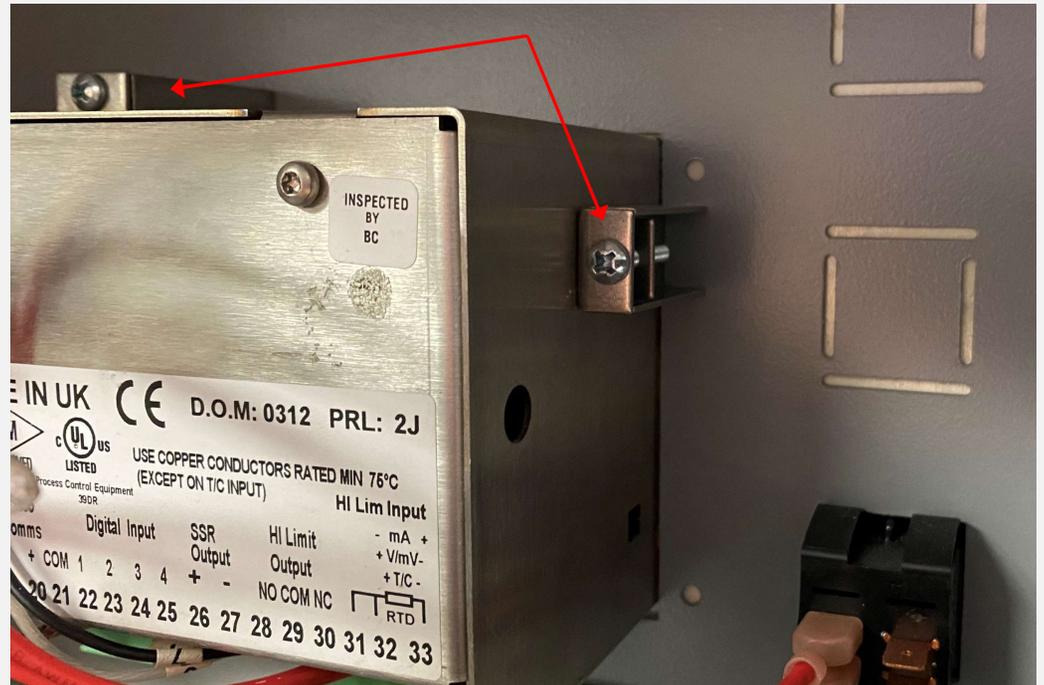
In the table shown, the wire numbers have been recorded in the actual column.

PROTOCOL 3 TO FDC9100 & L91			
PROTOCOL 3	FDC9100	L91	ACTUAL
1	7	6	4
2	8	7	2
3			G
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17	5		T/C W
18	6		T/C R
19			
20			
21			
22			
23			
24			
25			
26	9		35
27	10		36
28		9	8
29		10	15
30		8	21
31			
32		4	T/C W
33		5	T/C R

Step 4: Remove the Existing control from the panel

Unplug the wiring connectors from the back of the control

Remove the mounting clamps and slide the control out
the front of the control panel.



Step 5:

Adding a heater switch if needed

If your oven already has a heater switch, skip this step.

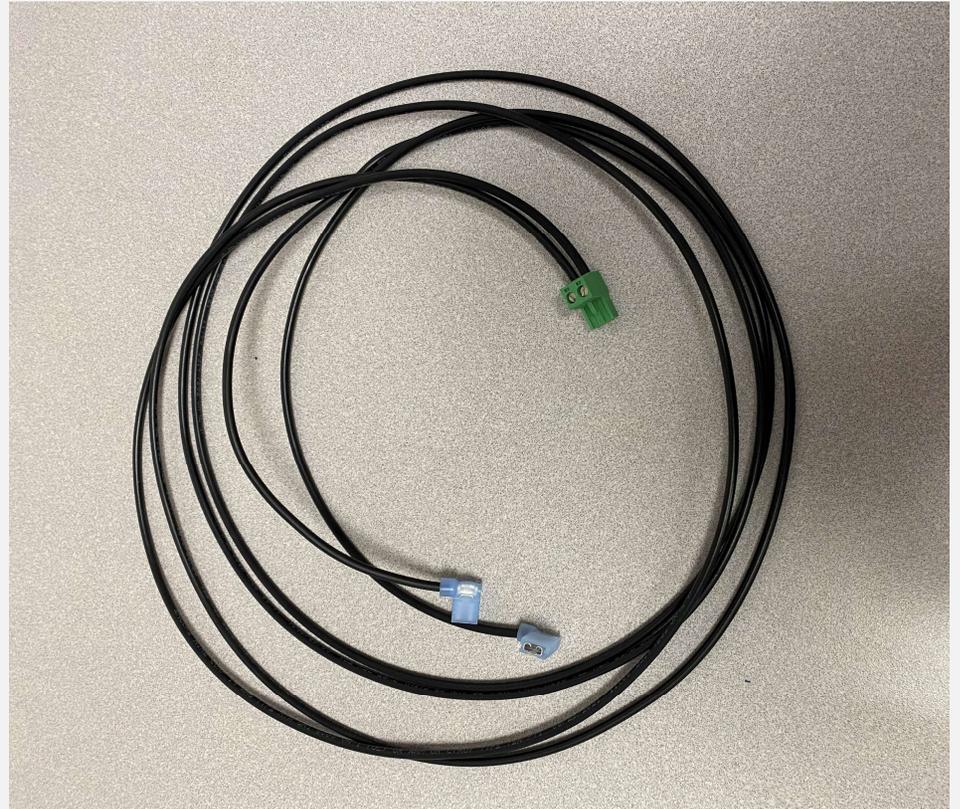
If your oven does not have a heater switch, then one needs to be added.

Locate the wire 9-017182, Female stake on terminals 9-144772, 2 position phoenix connector 9-141805, and switch 9-140097.

Cut qty 2, 10" piece of the wire off to be used later.

Cut the remaining wire into two equal lengths.

Strip both ends of both wires. Crimp a female stake on connector on one end of each wire and connect the other end of each wire into the two position Phoenix connector.



Step 5 Continued: Adding a heater switch if needed

Most control panels have holes partially cut out for mounting optional switches.

Complete the cut out of one of these mounting holes and mount the switch and wire pigtail in the panel.

Find terminals 8 and 9 on the short edge of the main circuit board.

If there is a jumper as shown on terminals 8 and 9, remove the jumper and terminal block, and insert the terminal block from the switch pigtail.



Step 5 Continued: Adding a heater switch if needed

If there is a terminal block with wires connected to terminals 8 and 9, the heater switch will need to be wired in series with the existing wires.

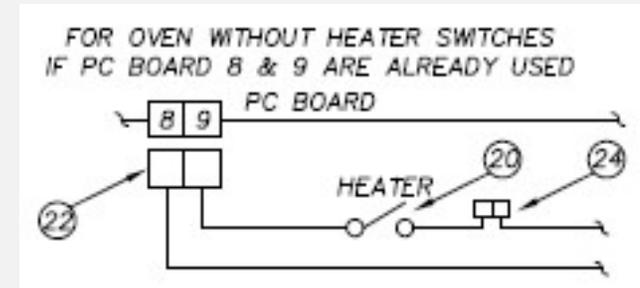
If this is the case, remove the phoenix connector from the heater switch pigtail.

Remove the wire from terminal 9 on the circuit board.

Connect one of the wires from the heater switch pigtail to terminal 9 on the circuit board.

Connect the wire that was removed from terminal 9 on the circuit board to the other wire on the heater pigtail using the two-position spring connector 9-199334.

Reference page 2 of instruction drawing.



Step 6:

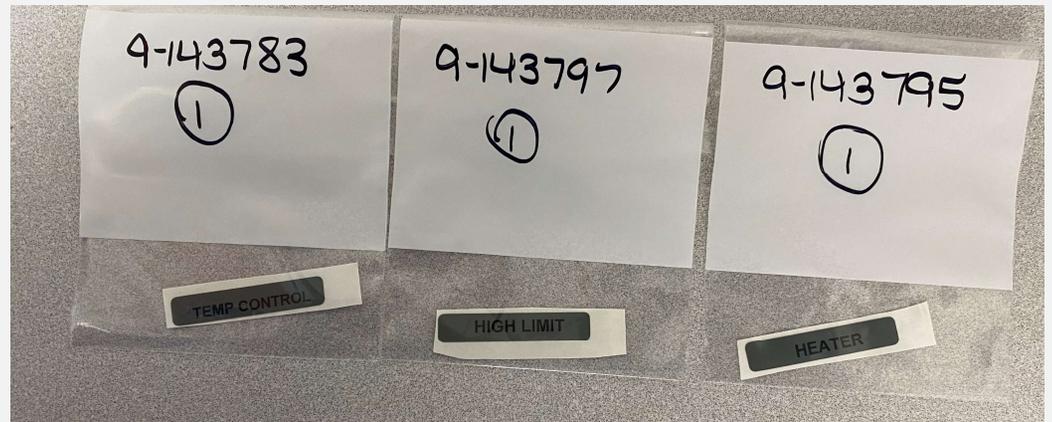
Install Control Adapter Assembly Into Panel

Mount the control/adapter weldment assembly into the control panel using the mounting tabs and #10 nuts and washers.



Step 7: Install Label Decals

Apply the adhesive decals to the front of the panel for the heater switch, control, and high limit.



Step 8:

Wiring the FDC9100 & L91 Control

Remove the wiring pigtail that is connected to the terminals on the back of the L91

Using the wiring table created in step 3, there are columns for the FDC9100 and the L91.

Move the wires that were connected to the old control to the terminals as shown in the table.

Note the power wiring from the old control needs to be connected to both the FDC9100 and the L91. See Red box to right.

Strip both ends of the 2 10-inch pieces of wire cut previously and use one wire to connect between terminal 7 on the FDC9100 to terminal 6 on the L91 and use the other wire to connect between terminal 8 on the FDC9100 to terminal 7 on the L91.

PROTOCOL 3 TO FDC9100 & L91			
PROTOCOL 3	FDC9100	L91	ACTUAL
1	7	6	4
2	8	7	2
3			G
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17	5		T/C W
18	6		T/C R
19			
20			
21			
22			
23			
24			
25			
26	9		35
27	10		36
28		9	8
29		10	15
30		8	21
31			
32		4	T/C W
33		5	T/C R

Step 9: Reinstall the oven control panel

Reinstall the control panel, power up the oven, and configure the controls.

See links to the right for instructions on how to configure the control and high limit.

[FDC9100 Configuration Instruction](#)

[L91 Configuration Instruction](#)