



# KilnMaster Relay Replacement

FOR MODELS: KM1218-3 1-PHASE 208/240 VOLT

This relay replacement kit is intended to replace three relays and all the necessary relay wiring in your kiln. It is absolutely necessary to install the entire kit including all relays and wiring for proper performance. Do not re-use any of the original black wiring.

Your new relay replacement kit consists of the following items:

1. Three relays with all of the necessary harness and control wires attached.
2. Two - three inch long white jumper wires with blue ring tongue connectors.
3. One relay adapter plate.

The tools necessary to install the relay replacement kit are a #2 Phillips screwdriver and a small slotted screwdriver.

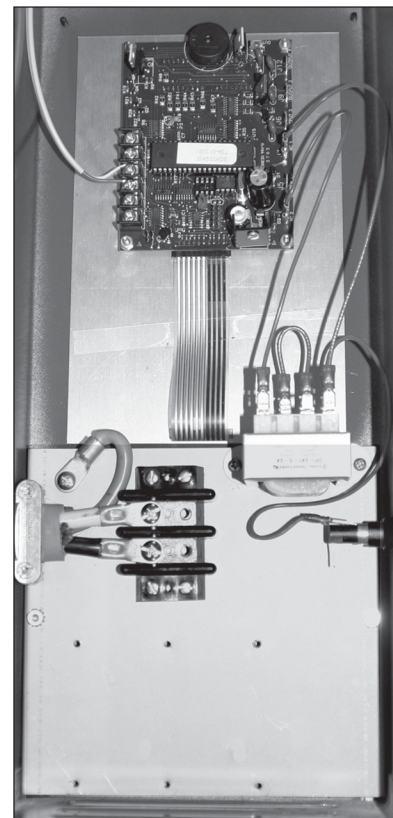
## STEP-BY-STEP INSTRUCTIONS:

Before beginning the actual replacement, it is strongly recommended to read through these instructions to familiarize yourself with the following procedures.

### RELAY AND WIRING REMOVAL

1. Unplug your kiln. Remove your control box from the kiln. Place the control box, face down on a flat surface. Protect the touchpad of your control box with a soft cloth or towel.
2. Remove the fiberglass lined heat baffle by removing the four sheet metal screws holding it in place. Carefully lift the heat baffle out of the control box, taking care not to stretch the attached wires on the underside.
3. Using the Phillips screwdriver, remove the six black wires and the two short jumper wires attached to the heat baffle terminal strip. Please note the location of the two short jumper wires on the terminal strip and the method of attachment. It will be necessary to install the new wiring in an identical manner. Save your screws. If you want to get the heat baffle entirely out of the way, remove the remaining red and yellow thermocouple wires.
4. Begin removal of the three old relays from the control box by removing the six sheet metal screws holding the relays in place. Save your screws. ALL wires, both black and red, connected to the relays will be removed. With the relays loosened, remove the two large screws on the terminal block holding the black relay wiring in place. The wires at this point should be crimped into two large silver connectors that also will contain one red wire each. Follow each red wire and remove the push-on connectors from the fuse holder and the transformer bottom tab. Use a gentle side to side rocking and pulling motion to remove these connectors. Be especially careful when removing the connector from the transformer to avoid damaging it. Remove the red connector from the top-center transformer tab also. Remove the top red wire connected to the circuit board labeled output 2. Remove the

PHOTO #1



(continued)

## RELAY REPLACEMENT CONTINUED

double red wire on the circuit board labeled center tap. Carefully pull the relays and all attached wires out of the control box.

5. Refer to photo #1 to ensure that all of the relays and proper wiring has been removed.

## RELAY INSTALLATION

1. Inspect the orientation of the new relays, wiring and metal adapter plate in its shipping cardboard. The relays will be installed in the control box with the same orientation. Remove the new relays, wiring and metal adapter plate from its packing material. Take care to keep the orientation of the new relays as packed to avoid twisting the wires. Locate the metal adapter plate; it will be installed first.
2. Install the metal relay adapter plate in the control box using 3 of the old relay screws. The silver colored spacers on the adapter plate should be placed directly against the metal chassis and screwed down lightly. Use the bottom set of existing holes in the metal chassis for mounting the adapter plate. Refer to photo #2 for the proper orientation of the metal adapter plate.
3. Place the 3 new relays and wiring harnesses in place on the metal chasses. Slide the bottom lip of each relay in its proper place. The plastic lip of the relays should slide underneath the top notched portion of the metal relay adapter plate.
4. Using the remaining 3 old relay screws, fasten down the remaining lips of the new relays using the existing holes in the metal chassis. Lightly tighten down all six screws holding the relays in place. Do not overtighten the screws as they may strip out.
5. Locate the two large silver ring tongue connectors that contain 3 white wires and one small red wire each and fasten to the terminal block securely. It makes no difference if the ring tongue connectors are switched in position on the terminal block. Tighten these screws VERY tight.
6. Locate the two small red wires mentioned above in step #5. Plug one red wire into the vacant bottom tab of the transformer and the other red wire into the fuse holder.
7. Locate the two long red wires attached to the black relays. One wire will have a double end. Plug the wire with the double lead into the circuit board in the position labeled center tap. Plug the loose end of this wire into the top center tab of the transformer. Plug the other single long red wire into the circuit board on the tab labeled output 2.
8. Find the two small 3" long white jumper wires in your kit. Attach one jumper wire from position #3 to position #5 on the terminal strip. Attach the other jumper wire from position #4 to position #6 on the terminal strip. Refer to the numbered strip on the other side of the heat baffle for proper wire position. Refer to photo #3 for proper positioning of the jumper wires. Locate the six, white, ten inch long wires attached to the relays that are labeled 1 through 6. Attach these six

PHOTO #2

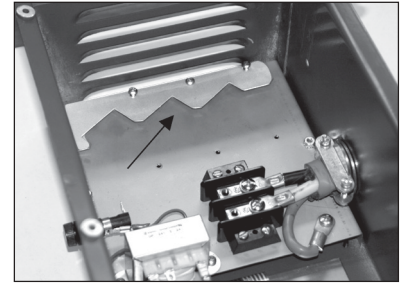
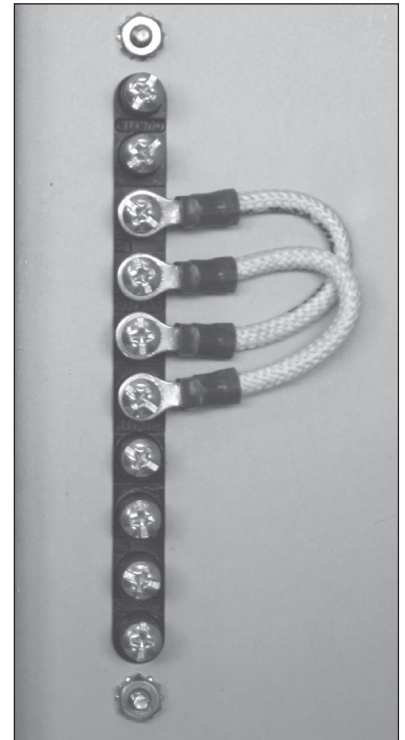


PHOTO #3



## RELAY REPLACEMENT CONTINUED

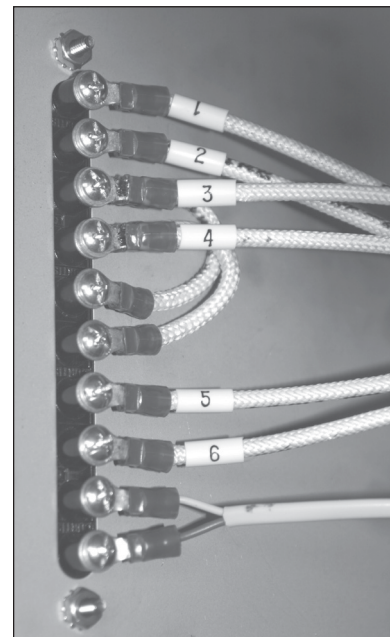
PHOTO #4

wires to the heat baffle terminal strip using the old screws. Attach wire #1 to position #1 on the terminal strip. Repeat until wire #4 is connected. Attach wire #5 to position #7 on the terminal strip. Attach wire #6 to position #8 on the terminal strip. Refer to photo #4 for proper connections. Ensure that these connectors are lined up nicely and all screws are securely tightened. Reconnect the red and yellow thermocouple wire if necessary. Make sure the red thermocouple wire is connected to the negative position of the terminal strip. This would be the end (or bottom) connector on the terminal strip. It is labeled “-” on the other side.

9. All of the wiring should be connected now. Check all wiring for any loose ends or unattached connectors. Refer to the photo #5, finished wiring, if necessary to determine proper connection points. Ensure that all wiring is neatly routed around components such as the transformer. Reroute the wiring as necessary to eliminate kinks or pinch points.
10. Reinstall the fiberglass lined heat baffle in place using the four sheet metal screws. When placing the heat baffle in place, ensure that no wiring is pinched or caught in the control box.
11. Reinstall the control box on your kiln. Ensure that all the white feeder wires are connected, that none of the tabs are loose and that the thermocouple push on connectors are connected to the proper polarity (red is negative “-”). Close the control box and secure using the six sheet metal screws.

Your installation should be complete!

12. An empty test firing of your kiln is strongly recommended before firing any valuable ware.





## RELAY REPLACEMENT CONTINUED

**PHOTO #5**