



# Type S Thermocouple Upgrade

The Type S Thermocouple is constructed of Platinum/Rhodium Alloy and enclosed in a thin walled, high temperature alumina sheath. It should not degrade like traditional type K thermocouples however it is extremely fragile and extreme care should be taken when loading ware or shelves around it.

It is imperative to use Type S Thermocouple wire with your Type S thermocouple. If you are upgrading to a Type S thermocouple and do not match the wire throughout the entire thermocouple circuit, you can severely over-fire your kiln.

## **Instructions for KilnMaster Kiln**

### Replace Thermocouple Brick or Pack Hole With High Temperature Fiber

The diameter of the S-Type thermocouple is smaller (1/4") than the current Type K thermocouple (1/2"). Therefore, it will be necessary to either replace the thermocouple brick or use high temperature fiber to pack around the thermocouple after it is inserted to prevent faulty temperature readings and heat radiating into the control box. If you are replacing the brick, download the Brick Replacement Instructions from the Resources/Repair section of the website. Be sure you ask for a Type S thermocouple brick.



### Remove Old Thermocouple

Unplug the kiln or turn off the circuit breaker if it is hard wired. Open your control box by removing the screws that secure it to the kiln. Disconnect the thermocouple wire from the terminal strip. Remove the old thermocouple and block from the kiln by removing the screws that hold the block to the kiln. Remove the baffle screws that secure heat baffle to the control box and fold the baffle over the edged of the box so you can see the inside. It is still connected to wires so be careful not to strain the connections. Remove the thermocouple wire that runs from the terminal strip to the controller.



### Install Jumper and Terminal Strip to Controller Thermocouple Wire

1. Install the black jumper block as shown to the controller. On newer boards the pin location will be labeled. On older boards you will need to consult the photo to locate the 2 pins the block fits over.
2. Use the green vinyl coated Type S wire and attach the end without the ring tongue connectors to the two center screws of the thermocouple connections on the lower left edge of the controller. The black wire (without a connector) connects to the spot marked with the yellow paint dot and the red wire (without the connector), connects to the spot marked with a red paint dot. Check to be sure no frayed wire is sticking out, the wires are securely under the screw and the screws are tight.



## TYPE S THERMOCOUPLE INSTALLATION CONTINUED

3. Attach the other end of the vinyl thermocouple wire to the correct locations on the terminal strip side that faces the interior of the control box. These locations are not marked. You will need to look at the opposite side of the terminal strip to see which location is marked positive (+) and which location is marked negative (-). Connect the black wire with ring tongue connector to the corresponding positive (+) position and the red wire to the corresponding negative position (-) on the terminal strip. Re-install the baffle.

### Install Type S Thermocouple and Terminal Strip to Thermocouple Block Thermocouple Wire

1. The thermocouple block is the same configuration as the block you are replacing so it mounts the same. Slide the thermocouple through the thermocouple brick hole and attach the block to the heat shield using the screws provided.
2. Hang the control box back on the hinges and use the green, cloth covered, Type S thermocouple wire to connect to the thermocouple block. Use the ends without the spade connectors. Place the black wire into the hole next to the black wire on the brass block and tighten down the screw. Take the red wire into the hole next to the red wire on the other brass block and tighten it down.
3. Attach the other ends with the spade connectors to the terminal strip which should be marked "+" and "-" just like the wires. Close the control box and reattach the screws.

### Set the Controller Software to Type S

1. With display showing "IdLE", press the MENU key four times until the display shows four dashes "----".
2. Press the numbers 443 (#4 key twice and #3 key once) and the display will show "TYPE" (type of thermocouple).
3. Press ENTER and the display will show "K-TC" (for type-K thermocouple).
4. Press the #1 key once and the display will change to "S-TC" (for type-S thermocouple).
5. Press ENTER and the display will return to showing "IdLE" and the current temperature of the kiln.

### Test Fire

Test fire the kiln empty using the instructions in your manual to ensure everything is working correctly.