



# 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 or unloading 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" or 6.4 mm) than the current Type K thermocouple (1/2" or 12.7 mm). 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 altering firing results. This also helps prevent excess heat radiating into the control box. If you are replacing the brick, download the Brick Replacement Instructions from the Resources/Repair section of the Skutt website. Be sure you ask for a Type S thermocouple brick.



### Remove Old Thermocouple

1. Unplug the kiln or turn off the circuit breaker if it is hard wired.
2. Open your control box by removing the screws on the left side that secure it to the kiln.
3. Disconnect the thermocouple wire from the terminal strip.
4. Remove the old thermocouple and block from the kiln by removing the screws that hold the block to the kiln.
5. Remove the baffle screws on the box exterior that secure heat baffle to the back of the control box and fold the baffle over the edge of the box so you can see the inside. It is still connected to wires so be careful not to strain the connections. For "PK" Production Kilns, contact Skutt for assistance.
6. 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.



## TYPE S THERMOCOUPLE INSTALLATION CONTINUED

2. Use the green vinyl coated Type S wire and attach the end without the ring tongue connectors to the two center screws in the group of six 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 (or white positive (+) symbol) 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.
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 with ring tongue connector 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 existing screws.
2. 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. Place 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. Restore power to the kiln control box.
2. With display showing "Idle", press the **MENU** key four times until the display shows four dashes "----".
3. Press the numbers **443** (#4 key twice and #3 key once) and the display will show "TYPE" (type of thermocouple).
4. Press **ENTER** and the display will show "K-TC" (for type-K thermocouple).
5. Press the **#1** key once and the display will change to "S-TC" (for type-S thermocouple).
6. Press **ENTER** and the display will return to showing "Idle" and the current temperature of the kiln.

### Test Fire

Test fire each of the different programs you will be using. Do this with only kiln furniture and witness cones in the kiln (can add test samples of glaze for glaze program) using the instructions in your manual to ensure everything is working correctly.