

Temperature Controller Replacement Model 2000

Applicable for Model 2000 Hybridization Incubators [Cat. #1040-50-1 and 1040-50-2]

Required part(s): Cat. #RP600-0146-04 — Replacement Temp Controller for Model 2000 Oven



Disconnect the power cord from the oven before making any repairs!

- 1) The wiring for the new temperature controller is accessible for repair and maintenance by removing the main panel assembly. There are two screws on each of the bottom sides of the Hybridization Incubator. There are also two screws on each side of the top panel. Remove a total of eight screws with a Phillips head screwdriver and carefully lift the entire panel from the oven.
- 2) Once the panel has been removed, locate the temperature controller on the front left hand side of the oven.
- 3) Using a small flat head screw driver release the wires connected to the old Watlow controller. Do this by rotating the internal screws of the controller counter-clockwise. Gently pull each wire free from the controller.

Previous Watlow Controller Wire Positions

Position	Wire Size	Wire Color	Location
1	small	red	RTD sensor
2	small	white	RTD sensor
3	large	red	
4	large	purple	
5	small	black	Alarm
6	small	red	Alarm
7	large	brown	
8	large	blue	

- 4) To remove the controller from the oven, place two flat head screw drivers along side the bottom and top of the clamp that holds the controller in place. Doing this step removes the tension of the clamp on the controller. Let the controller slide through the clamp and remove it from the oven.
- 5) Remove the round alarm located on the left hand side of the oven. There should be a small black and a red wire still connected. The other end of each wire should have already been released from the old Watlow temperature controller mentioned in Step 3. Unscrew the alarm from the oven using a 3/32" Allen Wrench and rotate it counter-clockwise to release. The new temperature controller does not have an alarm and there is no need to replace it.
- 6) Fit the new SD 31 temperature controller into the oven. Slide the controller through the oven panel and secure it by placing the clamp around the controller in the same manner it was removed.
- 7) Reattach the wires to the positions listed below:

New SD 31 Controller Wire Positions

Position	Wire Size	Wire Color	Location
1	large	blue	
2	large	brown	
5	large	purple	
6	large	red	
10	small	white	RTD sensor
11	small	red	RTD sensor

*Please note:
Positions 3, 4, 7, 8,
9 are open*

*See instructions for
Positions 10, 11*

- 8) With the wires exposed, insert each into the appropriate position of the SD 31 temperature controller. Using a small flat head screw driver fix the wires into place by rotating the internal screws of the controller clockwise. Gently pull on each wire to ensure they are connected. Do this for wire positions 1, 2, 5 and 6.
- 9) Position 10 and 11 are connected to the RTD sensor. To fix these wires into the new controller punch in the orange tab using a flat head screw driver. While the tab is depressed insert the wire and release the tab. Check to ensure the wire is connected.
- 10) Your new SD 31 temperature controller is now installed. Replace the main panel with the eight screws and tighten.
- 11) It is now safe to reattach the power cord and calibrate your new temperature controller.

Calibrating the SD 31 Temperature Controller

The temperature controller comes calibrated from the factory to provide accurate block temperatures from 35 to 99°C.

The temperature controller will require calibration only if:

When checking the block temperature with a calibrated digital thermometer, the block temperature differs by more than one degree (1°C) from the actual temperature shown on the controller display.

An NIST calibrated digital thermometer (sold separately, Cat. #1051-52-0) is required to calibrate the unit.

Follow these steps to adjust the controller to achieve accurate temperatures.

- 1) Set the temperature on the controller to 65°C and allow the temperature in the unit to stabilize.
- 2) Using the cable provided with the digital thermometer (SciGene Cat. #1051-52-0), plug one end into the blue receptacle found on the back panel of the unit and the other into the digital thermometer.
- 3) Turn on the thermometer using the ON/OFF button on the keypad. The temperature of the block will be displayed.
- 4) On the temperature controller, press the infinity key for three seconds until "OPEN" appears.
- 5) Press the down arrow four times until "Cal" appears.
- 6) Press and hold the set key. The existing offset value between the controller and digital thermometer is displayed.
- 7) Calculate the difference in the temperature shown on the controller and the digital thermometer; e.g. the controller displays 52.5°C and the digital thermometer displays 51.0°C, the difference is 1.5°C.
- 8) Press and hold the SET key and use the up and down arrows to enter the offset value calculated in Step #7. For example, if the controller displays a temperature that is 1.5°C higher than the digital thermometer, adjust the offset value to minus 1.5 (-1.5).
- 9) Press the Infinity Key (∞) to exit calibration. The block temperature is now calibrated for the set temperature you selected. Repeat the calibration process starting at Step 1 for the highest temperature for the range of temperatures you will be using.

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