American Hakko Products, Inc.

Hakko 192 Calibration Instructions

Revision 2003-01

Tools Required:

1 ea. Room Temperature Thermometer
1 ea. Yokogawa 2422 Calibrator or equivalent
1 ea. Yokogawa 2786 Decade Resistance Box or equivalent
1 ea. Phillips Head Screwdriver
1 ea. Calibration Trimpot Screwdriver

Temperature Measurement Calibration

IMPORTANT: Be sure to attach the thermometer reference junction temperature detection sensor (For Yokogawa the part number is RJ Sensor B9638CR). Failing to do so will result in a faulty calibration.

1. Attach the appropriate leads from the calibrator to the thermocouple posts on the Hakko 192.

2. Turn on the Hakko 192 and set the unit to measure temperature.

3. Turn the calibrator power ON but make sure the output voltage is set to OFF. The Hakko 192 display should read room temperature.

4. Se the calibrator for the output voltage corresponding to Type K thermocouples.

5. Set the output to -17.8°C.

6. Turn the output voltage ON and adjust trimpot VR1 until the Hakko 192 display reads -019°C or -002°F.

7. Set the output to 500°C and adjust trimpot VR2 until the Hakko 192 display reads 501°C or 934°F.

   NOTE: The reason the lower and upper end readings are slightly offset (-1.1°C on the lower end and +1.0°C on the upper end) is so the Type K thermocouple hysteresis will align more accurately to the most commonly used soldering temperature range of 250°C~450°C (482°F~842°F).

8. Set the output on the calibrator to 400°C and check to see that the reading on the Hakko 192 display is 400°C ±3°C or 752°F ±5°F.

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9. Set the output on the calibrator to 300°C and check to see that the reading on the Hakko 192 display is 300°C ±3°C or 572°F ±5°F.

10. If either reading falls outside the specifications, repeat steps 1 through 9 again.

11. Remove the leads of the calibrator from the Hakko 192.

Millivolt Leakage Measurement Calibration

1. Turn on the Hakko 192 and set the unit to measure leak voltage.

2. Using a standard alligator test lead, or a decade resistance box set to 0 ohms, short connector CN5 to the conduction plate.

3. Set switch S2 to the TEST position.

4. Adjust trimpot VR8 until a 00.0mV reading is obtained on the Hakko 192 display.

5. Set switch S2 to the side marked in white.

6. Adjust trimpot VR4 counter-clockwise until it stops. Then turn it clockwise until a 00.0mV reading is obtained on the Hakko 192 display.

   ⚠ **IMPORTANT:** There are two points on trimpot VR4 where a 00.0mV reading can be obtained. The correct point is the one encountered first when turning the trimpot clockwise from the starting point.

7. Set switch S2 back to the TEST position.

8. Set the calibrator for 100mV output using the RANGE button.

9. Remove the test lead from the conduction plate and connector CN5.

10. Connect the positive lead of the calibrator to the conduction plate and the negative lead to connector CN5.

11. Set the output for 90.0mV and turn the output ON.

12. Adjust trimpot VR3 until a 90.0mV reading is obtained on the Hakko 192 display.

13. Check the Hakko 192 display at output settings of 1.0mV, 2.0mV, and 3.0mV to see that it is accurately measuring the low end of the scale. If it does not, repeat steps 1 through 12 again.

14. Set switch S2 to the side marked in white.

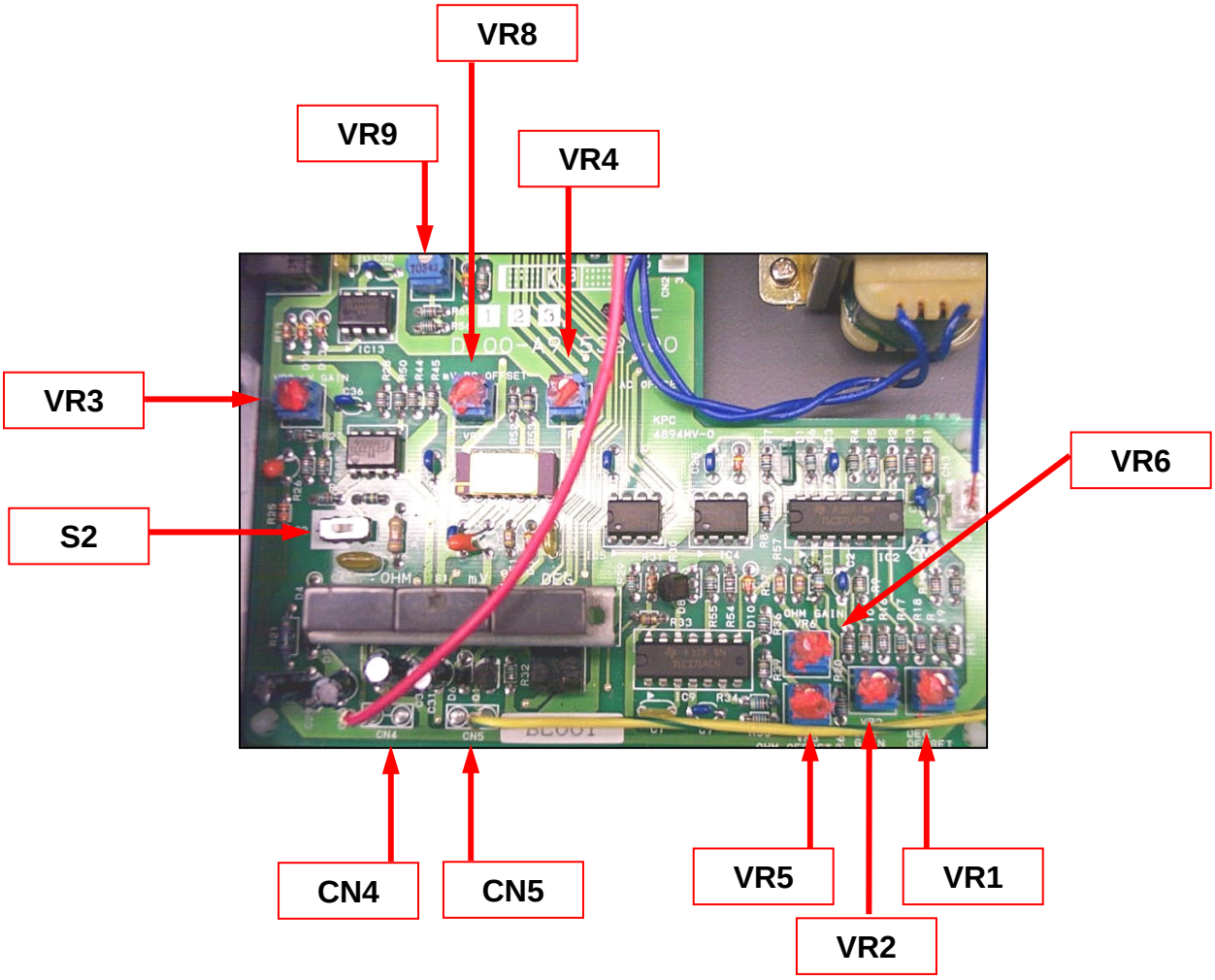
    ⚠ **IMPORTANT:** Do not forget this step, otherwise the Hakko 192 will not properly read RMS millivolt leakage.

15. Remove the leads of the calibrator from the Hakko 192.

Resistance Measurement Calibration

1. Turn on the Hakko 192 and set the unit to measure resistance.
2. Clip one lead from a decade resistance box to connector CN5 and the other lead to the conduction plate.
3. Set the decade resistance box to 0 ohms.
4. Adjust trimpot VR5 until a 00.0 ohms reading is obtained on the Hakko 192 display.
5. Set the decade resistance box to 90 ohms.
6. Adjust trimpot VR6 until a 90.0 ohms reading is obtained on the Hakko 192 display.
7. Check the Hakko 192 display at decade resistance box settings of 1 ohm, 2 ohms, and 3 ohms to see that it is accurately measuring the low end of the scale. If it does not, repeat steps 1 through 6 again.
8. Remove the decade resistance box leads from the conduction plate and connector CN5.

Hakko 192 PCB Layout



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