



PPMS Service Note 1070-305

Testing the Neck and Block Heater Resistances

If you experience heating-related problems with the PPMS, use this procedure to test the reliability of the heaters and diagnose the problem. This procedure also shows how to check the system thermometer resistance readings.

There are two heaters in the probe: a neck heater and a block heater. The block heater is located at the base of the sample chamber and is used to warm the immediate sample area. The neck heater is located about 13 cm (5") above the sample space and is used to minimize thermal gradients within the sample tube.

You will need a portable multimeter or ohmmeter to perform this procedure. To assist Quantum Design service personnel, please record the values requested in this service note. When you are done with the procedure, contact your local authorized Quantum Design service representative with the results of the test if your system displays any abnormal values.

Checking the Heater Resistances

1. Record the date you are performing this procedure: _____.
2. Record the present system temperature: _____.
3. Disconnect the black Lemo cable from the probe head.
4. Use your meter to measure the resistance across pins 1 and 2 on the black Lemo connector at the probe head. See Figure 1. The expected value is about 20 Ω -30 Ω . Record this value: _____.
5. Use your meter to measure the resistance across pins 7 and 8 on the black Lemo connector at the probe head. See Figure 1. The expected value is about 20 Ω -30 Ω . Record this value: _____.
6. Reconnect the black Lemo cable to the PPMS probe head.
7. Disconnect the black Lemo cable from the Model 6000 **P2-System Bridge** port on the rear of the Model 6000.

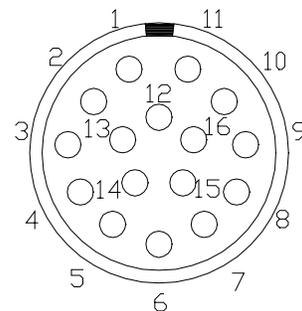


Figure 1. PPMS probe head black Lemo connector.

8. Use your meter to measure the resistance across pins 3 and 16 of the cable. See Figure 2. This value should match the value recorded in step 5. Record this value:_____.
9. Use your meter to measure the resistance across pins 4 and 17 of the cable. See Figure 2. This value should match the value recorded in step 4. Record this value:_____.

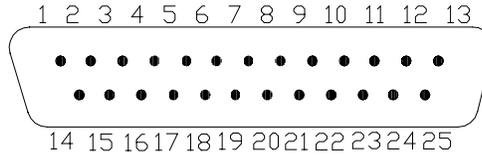


Figure 2. PPMS system bridge cable D-shell connector.

10. Reconnect the system bridge cable.

Checking the System Bridge Readings

Note: To check the status of the three system bridge channels and verify proper thermometer operation, you will have to use the system diagnostic tools to change the software configuration. Do not alter any settings other than those specified in these instructions.

1. Enter the Model 6000 diagnostics menu by selecting **Config, 5. Software..., 3. Diagnostics...**
2. Toggle the **Bridge Display chan** setting to read **System** by pressing the **Incr** key on the Model 6000.
3. Execute the change by pressing **Alt + Enter**.
4. Press the **Status** key three times to reach the **Status-Bridge** screen. The word System should appear on the top right of this screen.
5. Bridge channels 1, 2, and 3 should show active values. Record **all** of the displayed information for each bridge channel, including reading, calibration mode (F, S, H, s, or h), drive mode (AC(±) or DC (no designation)) and applied current.

	Reading	Cal. Mode	Drive Mode	Applied Current
Channel 1				
Channel 2				
Channel 3				

6. Return the bridge display channel to its original setting by selecting **Config, 5. Software..., 3. Diagnostics...**, toggling the **Bridge Display chan** setting back to **User** and pressing **Alt + Enter**.
7. Fax these results to your Quantum Design Service Center for evaluation.