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Service Note

97-017 Rev C
2 May, 2007

HOW TO TROUBLESHOOT PMT TEMP PROBLEMS IN M100A/M200A

I. PURPOSE:

Information on how to troubleshoot PMT temp problems in M100A/ M200A analyzers. This procedure is for the "new" style preamp, with two wires from the preamp to the cooler drive board.

II. TOOLS:

Philips head screwdriver
Pair of adjustable wrenches
Digital Voltmeter.

III. PARTS:

N/A

IV. PROCEDURE:

1. Take the cover off. Check if the LED is lit on the TEC Control card. If the LED is not lit, check the gray cable for the +15Vdc. If this test fails, check the voltage out of the power supply module. The problem is either with the cable or the power supply module. If the +15Vdc is good, go to step 2.
2. Under the PMT cooler Heat sink assembly there is a fan that blows air up across the heat sink. Put your hand on top of the heat sink assembly & check to see if the fan is blowing & there is air coming out of that hole. If you can not feel the air coming out, use a flashlight & look down into that hole & look to see if the fan is stopped. If the fan is stopped this is likely your problem. Put a meter into the connector that goes to the fan & ensure that there is +12 Vdc going to the fan. If the fan is dead, replace it & then check to ensure that the PMT temp goes down to the proper 7*C. it is possible that if the fan was broken for a long period of time that the TEC cooler might have burned out, so that you have two problems now.
3. Remove the gold cover on the preamp card and measure the voltage at U1-5; this voltage should always be 8 $\pm$ .5 Vdc. Measure the voltage at TP-18. This voltage should be approximately 14 volts with the PMT temp @ 15 deg C. If the TP-18 voltage is low, unplug the cable going to the cooler drive board (white and black wires, white three pin connector at cooler drive board) and recheck the voltage at TP-18. If the voltage at TP-18 is not 14 volts, go to step 5. If the voltage at TP-18 is 14 volts, go to step 4.
4. If the voltage at TP-18 is correct then the cooler drive board or the cooler itself is bad. Measure the voltage at TP-1 of the cooler drive board to ground. You should have approximately 12.75 $\pm$ .5 Vdc. If this voltage is incorrect, replace the cooler drive board. If this voltage is correct, measure the voltage from TP-1 to TP-2 on the cooler drive board. If this voltage is not approximately 350 $\pm$ 50 mVdc then the cooler is bad. Replace the cooler and restart the unit ensuring that the temp reads correctly.

5. Turn off the analyzer and unplug the seven wire connector going from the preamp board to the PMT sensor assembly. From pin one on the sensor assembly (the pin with the dot next to it), count clockwise to pins 4 and 5; these are the thermistor wires for the PMT. When the PMT is at ambient temp, the thermistor resistance should be approximately 30 k ohms.
6. If the thermistor resistance is correct then the preamp assembly is bad.
7. If the thermistor resistance is incorrect then the thermistor is bad.

Should you have questions, please do not hesitate to contact Teledyne API Customer Service.