Use this procedure along with the Excel Calibration Certificate for the ProHeat 35 Recorder (# 232171). Add your company name and address to the Certificate of Calibration as indicated. You may want to add your company logo. Once complete, you may protect the document using the lock feature in Excel. This only allows entries into those fields in yellow. You may want to keep a record of all calibration certificates so they may be obtained in the future. The procedure is listed step by step.

The following items are required for verifying calibration:

1 A Precision DVM accurate to thousandths.
(Agilent Multimeter Model #34401A or Hewlett Packard Multimeter Model #34401A) or equivalent

2 An adjustable DC Power Supply or
Three individual DC power supplies can be used at approximately 2.787, 6.013, and 9.239 VDC.

3 Blue Calibration labels – (# QCC306BU) or equivalent
http://www.q-cees.com/itemdetail.aspx?item=206

4 Recommended primary power for the Recorder and testing equipment.

To make the test more convenient a 5 foot interconnecting cable can be attached to the RC9 connector in the rear of the Recorder. It has leads that can be connected to a test board or a 6 position switch that can be set close to the front of the Recorder. This same cable can be used to verify the calibration of the ProHeat 35. Miller part #300168 can be purchased through our Sales Department.

1) Initial Excel Spreadsheet Setup (first time use)
   a) Open Excel ProHeat 35 and Recorder Calibration Verification Sheet.
   b) Select the appropriate tab (Recorder in °F or °C).
   c) Enter your company name and address in top right corner. Add your logo if you would like.
   d) Enter your company name in the certification statement (two places).
   e) Enter Calibrated Multimeter brand, model number and serial number.
   f) Protecting the spreadsheet from accidental editing in the wrong areas may be a desired option.

2) Initial Set-up
   a) Connect power to Recorder and DC voltage source.
   b) Connect Precision DVM in parallel with DC voltage source output.

3) Excel Spreadsheet
   a) Open Excel.
   b) Right click the tab for "Recorder in °F" or "Recorder in °C".
   c) Click on "Move or Copy…".
   d) In the pop up menu, highlight either "Recorder in °F" or "Recorder in °C" to be copied.
   e) Check the box labeled "Create a Copy".
   f) Click "OK".
   g) Right click the tab you just created. It can be identified by the "(2)" next to the description.
   h) Click "Rename".
   i) Rename the tab using the Recorder serial number and date as the tab name.
      i.e.: "LG030050G 012506" for January 25, 2006.
      This will be a copy for your records.
   j) Fill in Unit Model Number, Unit Serial Number, Calibration Date (Recalibration Date will auto-fill to 1 year later), and Certified By.

4) Getting information from Recorder.
   a) Touch top left key in corner "Logged out" or "Operator".
   b) Touch "Logged out" next to "User" or "User I.D".
   c) Select "Engineer" from the drop down menu.
   d) Touch box next to "Password"
   e) Touch "Numeric" tab.
   f) Touch "1" then "0".
   g) Touch "Ok".
   h) Touch key in bottom right corner (to access Root Menu).
   i) Touch "Operator".
   j) Touch "Network".
   k) Touch "Address" from the drop down menu.
   l) Enter the "Instrument number" in the Excel Spreadsheet.
   m) Enter the "MAC address" into the Excel Spreadsheet.

5) Set-up Recorder for Verification
   a) Touch key in bottom right corner (to access Root Menu).
   b) Touch home (to display trend graph).
   c) Touch bottom left key in corner (to display channels TC1-TC6).

6) Calibration Verification
   a) Connect voltage source to the RC9 14-pin connector on the rear of the Recorder. Red lead to pin 1 and black to pin 5.
   b) Set voltage source as close as possible to 2.787 Volts DC (must be set to read to 3 decimal positions) using your Precision DVM in parallel to measure output.
   c) Enter the achieved voltage below "Voltage In DC" in the Excel Spreadsheet. The associated temperature will appear to the right and in all of the columns below it. If you are creating your own spreadsheet the voltage to temperature calculation would be (DC voltage out × 155) – 50 = °F or (DC voltage out × 86.1) – 45.5 = °C.
   d) Verify a TC1 display value of 382.0 (±5) °F or 194.5 (±3) °C.
   e) Repeat steps a-d for TC2 – TC6 input jacks. The associated temperature will appear.
      i) For TC2 move red voltage source lead to RC9 pin 2.
      ii) For TC3 move red voltage source lead to RC9 pin 3.
      iii) For TC4 move red voltage source lead to RC9 pin 4.
      iv) For TC5 move red voltage source lead to RC9 pin 6.
      v) For TC6 move red voltage source lead to RC9 pin 7.
   f) Enter Recorder values into spreadsheet.
   g) Repeat steps a-f with voltage source set as close as possible to 6.013 Volts DC. Verify a display value of 882.0 (±5) °F or 472.2 (±3) °C.
   h) Repeat steps a-f with voltage source set as close as possible to 9.239 Volts DC. Verify a display value of 1382.0 (±5) °F or 750.0 (±3) °C.

7) Removal of test equipment and completion of forms.
   a) Disconnect power for recorder.
   b) Remove calibrated voltage source.
   c) Complete calibration label & place it on unit directly above TC1 display.
      I.D. No. (recorder serial number)
      By (your initials) Date (today's date)
      Due (date 1 year from today)
   d) Print a copy of the certificate to send with the Recorder.
   e) For Excel 2003, Click File and then Save on Spreadsheet and close.
      For Excel 2007, Click Office and then Save on Spreadsheet and close.