

Creating a Calibration Polynomial for dataTaker Scaling Using Excel

Using the Bestselling dataTaker Data Loggers

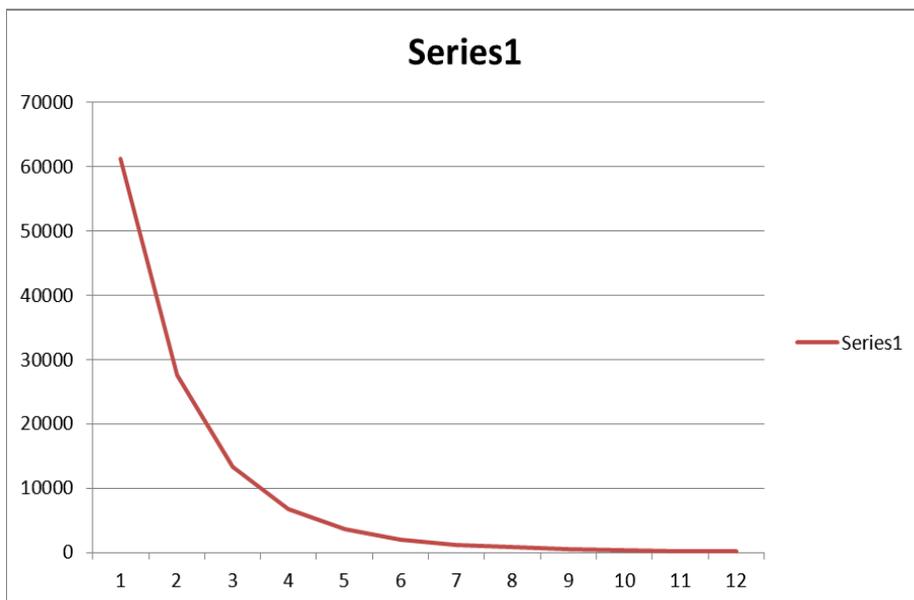
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Many measurement instruments do not have a linear measurement scale, and require a more complex equation to properly scale them to engineering units in a dataTaker data logger. However, you can use Microsoft Excel to create the correct polynomial equation using the calibration sheet included with these devices. All that's required is Microsoft Excel (or Openoffice.org Calc), and the calibration sheet for the measurement device, which in this case will be for a thermistor.

The calibration sheet that you receive will have a table of physical measurements and actual signal measurements that will look something like this:

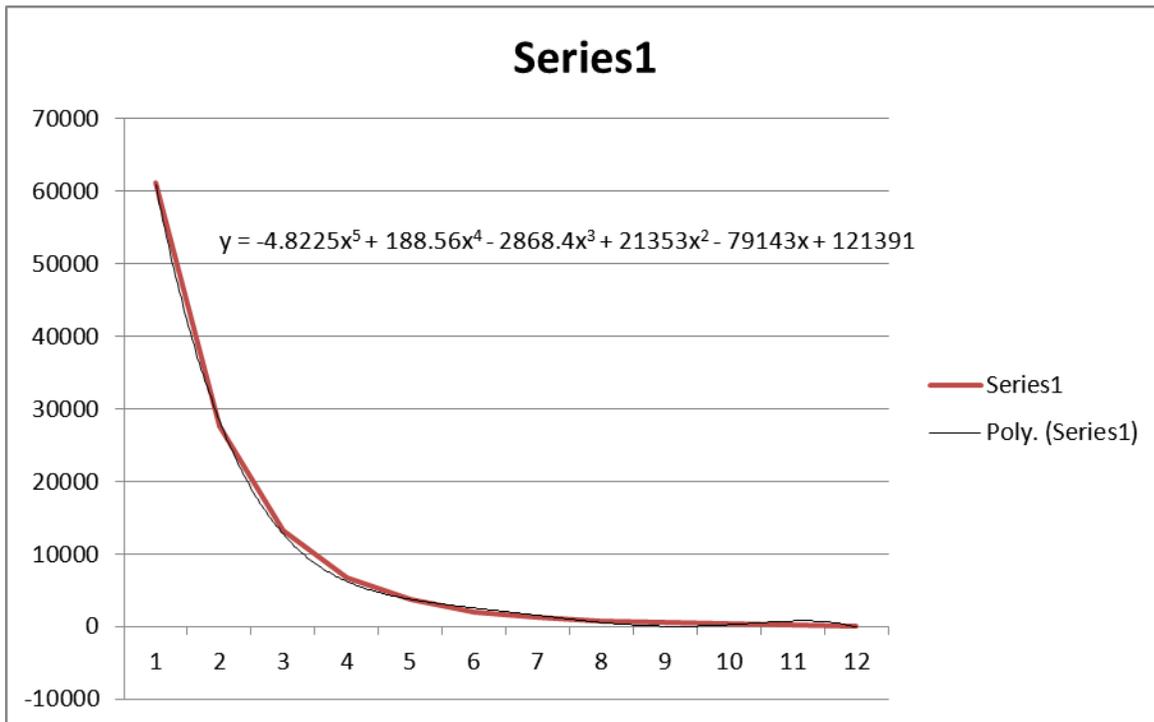
Degs F	-50	-25	0	25	50	77	100	125	150
Ohms	61200	27575	13260	6805	3678	2001	1241	765.5	489.8

Make sure that the data has been entered in the correct columns or the transfer function will be inverse. Enter these into Excel in this same format, with the physical measurement on top and the signal measurement on the bottom. Now create a new line chart in Excel and select this information as the data. The resulting graph will look like this:



Right-click on the trend line and choose 'Add Trendline'. In the box that pops up, choose 'Polynomial', set 'Order' to anything over 2 (5 is the highest order the dataTaker can accommodate, although using the highest order is not always the best idea) and check 'Display Equation on chart'. You may need to click and drag the equation into a more visible area of the chart.

The resulting chart will look like this:



After you have entered the correct type of signal into the DEX interface of the dataTaker, click on the 'Scaling' tab and choose 'Spans and Polynomials'. Click on 'Add' and select 'Polynomial'.

k0	<input type="text" value="0"/>	k1	<input type="text" value="0"/>	k2	<input type="text" value="0"/>
k3	<input type="text" value="0"/>	k4	<input type="text" value="0"/>	k5	<input type="text" value="0"/>

This screen shows where the coefficients from the equation will be entered. K5 is the coefficient for x^5 , K4 for x^4 , etc.

After this polynomial is properly entered, go back to the 'General' tab and make sure that 'Display Units' contains the correct engineering units. It is recommended that you increase the number of decimal places for the engineering units. Now you've finished creating your calibration polynomial for use in scaling.

For more information on the popular dataTaker intelligent data loggers, other data logging solutions measuring a broad range of parameters, or to find the ideal solution for your application-specific needs, contact a CAS Data Logger Applications Specialist at (800) 956-4437 or visit the website at www.DataLoggerInc.com.

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