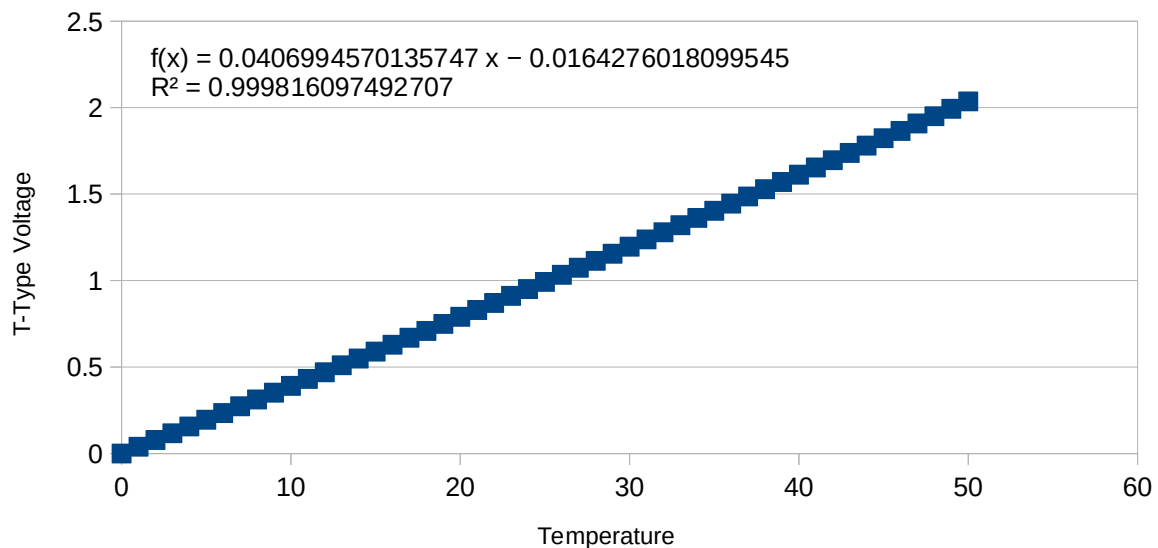


TCI-300T Thermocouple Monitor

Overview

The TCI-300 maps a temperature between 0-100°C from a T-Type thermocouple to a 10mV/°C analog output. The TCI-300T does not account for non-linearity in the thermocouple so you will need to calibrate it in Labscribe. Over a 50 degC range the output from a T-Type thermocouple is as shown

T-Type Thermocouple Output Vs Temperature



Specifications

Output per Degree Celcius	10mV
Error @25°C (excluding thermocouple nonlinearity)	+/-2.3°C
Low Pass Frequency Cutoff (-3db)	725Hz



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Calibration

Provided the range of temperatures you are measuring falls within the range you use to calibrate the TCI-300T, calibration only needs to be performed once every few months. A two point calibration is suitable for most users but if you are measuring a span greater than 50°C it is recommended you perform a three or more point calibration to account for non-linearity. Regardless of how many points you use to calibrate the thermocouple you need to select a lower and upper bound of the temperature range you want to measure. If the lower bound falls below room temperature you can use a slurry of ice water to calibrate the thermocouple to 0°C. You will need the following to complete calibration:

- A calibrated temperature monitor to serve as a reference (such as a TCS-100)
- A heat source or sink depending on your lower and upper bounds

Perform the following steps to complete calibration:

1. Connect a thermocouple to the TCI-300T and plug it into your acquisition system (IX-TA, IX-RA, etc.)
2. Adjust the heat source/sink to the lower temperature bound you wish to measure.
3. Place the calibrated temperature monitor and the TCI-300T's thermocouple directly next to each other on the heat source/sink.
4. In Labscribe, ensure you have enabled the TCI-300T channel by navigating to the preferences dialog (edit->preferences) and checking that it is enabled (the checkbox to the left of the channel name). Press 'OK'.
5. Start the recording.
6. There is a field toward the top of the window with the label 'Mark' where you will enter the temperatures reported by the temperature reference. Once the temperature has settled on the temperature reference enter the reported temperature into the 'mark' text field and press 'Enter'.
7. Adjust the temperature on the heat source/sink to the next point you wish to calibrate to. If the span you wish to measure is greater than 50°C this will be the midpoint between the lower and upper bound, otherwise it will be the upper bound.
8. Repeat step 6 and 7.
9. Once you have finished entering all calibration points press 'Stop' to halt the recording.
10. Press the 'fx' key on the TCI-300T channel and select 'MultiPoint Calibration'.
11. In the 'MultiPoint Units Conversion Dialog' move the cursors around the first mark in the recording and enter the temperature indicated by the mark (the temperature you entered during recording) in the 'to' field. You should also change the 'unit' field to whatever unit your temperature reference uses. Press 'Convert' to add the point to the calibration table.
12. Repeat step 11 for each mark you entered in the recording.
13. Press 'Ok' and your calibration is complete! The multipoint calibration will show up as a computed channel. Save the file as a settings file so you can easily retrieve your calibration at a later time.



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Intended Usage

iWorx Systems Inc. instruments, components, and accessories are designed for educational and research oriented life science applications and investigations. iWorx Systems Inc. does not condone the use of its instruments for clinical medical applications. Instruments, components, and accessories provided by iWorx Systems Inc. are not intended for the diagnosis, cure, mitigation, treatment, or prevention of disease.

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