



Objective

- A temperature transducer, also known as a temperature sensor, is a device that measures temperature and converts it into a usable output signal.
- Suppose we have an available temperature transducer with the characteristics shown in Figure 1.
- Design an OP AMP circuit to convert the transducer output for temperatures ranging from -20°C to 120°C to a ranging of 0 V to 3 V, respectively.
- Use a standard 2-V battery as the reference source for the required bias. Several designs are available.

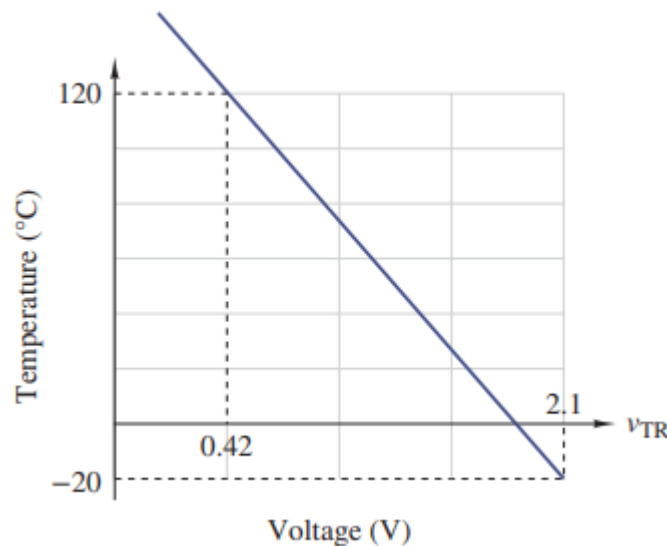


Figure 1

The transducer output voltage ranges for the temperature ranging from -20°C to 120°C

Procedure

1. Construct the interface circuit:

- a. Obtain the needed parts and build your circuit design. Remember that OP AMPS can be destroyed if they are wired incorrectly



Project

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b. Demonstrate the functioning prototype of your design to your lab instructor. Get your lab instructor's signature in your lab report that the design passed the critical design review

2. Record Data:

- a. As in any design project, your write-up should fully document the process of design. Include the Multisim design to relate your circuit in real -life.
- b. A simple PowerPoint presentation should be presented to summarize your work.

HINTS:

- You need to search how to design a subtractor – you can use 1 or 2 op-amps
- You need to get the gain K which is the ratio of the desired output voltage range to the available voltage range at the input transducer: $K = \frac{\text{Desired range}}{\text{Available range}}$