University of Connecticut Department of Electrical and Computer Engineering

ECE4901 - Fall 2017

Team 1817 (Hubbell): Electrical plug, connector, and receptacle temperature sensor

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Hubbell

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Statement of Need

The aim of this project is to design a miniature temperature sensing system that can monitor the temperature of multiple connectors. The design is to be flexible and adaptable to various environments and measurement targets.The system must also communicate the gathered measurements to the user.The device must be capable of measurements without direct contact.

Preliminary Requirements

The temperature sensing system must consist of at least 2 or more temperature sensors that do not require direct contact for measurement. The sensors must have a sensing range of -20°C to 80°C with a minimum accuracy of 1°C. The previously mentioned components, a microcontroller, and any supporting components must reside on a 1 inch by 1 inch (or equivalent component density) PCB assembly. The overall cost of components and PCB assembly should be between $6 to $8.

Basic Limitations

The component design is limited to the specifications discussed in the preliminary requirements. The major challenge is the total cost of this device being limited to 6 to 8 USD. The dimensions for this design may also be a concern since the temperature sensing system is limited to a 1 by 1 PCB assembly.

Other Data

Hubbell has specified that the application of this device be flexible. This includes location and materials for measurement (brass, aluminum, and copper). A suggestion of indirect measurement has been provided as direct measurement can be damaging to devices.

Questions

Preliminary questions from team discussions and meeting include what will be the power source for this component? What type of sensor will be used? Will the data be displayed on a monitor or wirelessly to a device? What is the process for acquiring funds for project resources?