



Mapúa University

School of Electrical, Electronics and Computer Engineering

Introduction to Embedded Systems COE185P/ E01

Temperature Sensor Experiment No.11

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I. Introduction

Temperature sensor that monitors the heat and cold of the environment and converts it to electrical signal. Temperature sensors are vital to a variety of everyday products that rely on temperature maintenance and control in order to function properly. Temperature control also has applications in chemical engineering. Examples of this include maintaining the temperature of a chemical reactor at the ideal set-point, monitoring the temperature of a possible runaway reaction to ensure the safety of employees.

II. Objectives

After completing the activities in this chapter, you will be able to:

1. Describe the continuous conversion, one-shot, and shutdown operating modes,
2. Configure the ALERT output polarity, comparator, and interrupt modes, and
3. Read and interpret the ambient temperature

III. Materials and Components

- Temperature Sensor
- Jumper wires
- NI myRIO
- MXP
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IV. PROCEDURE

Step 1. Open the Lab manual then follow the diagram for the connections

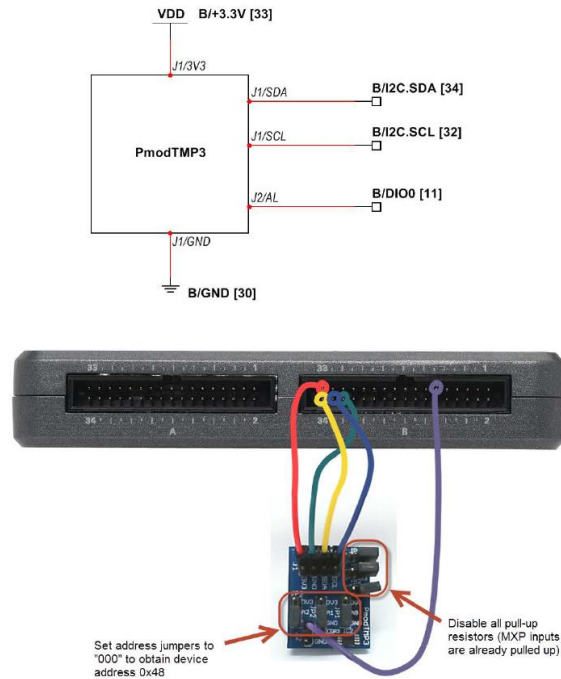


Figure 1. Connection Diagram for Temperature sensor and NI myRIO

Step 2. Open LabView and Temperature Sensor Demo

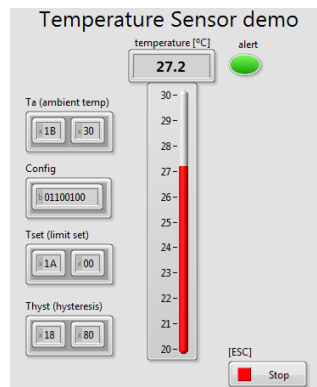


Figure 2. Temperature Sensor Front Panel



Step 3. Run the Demo

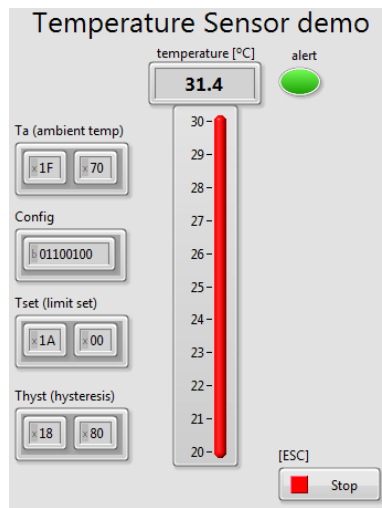
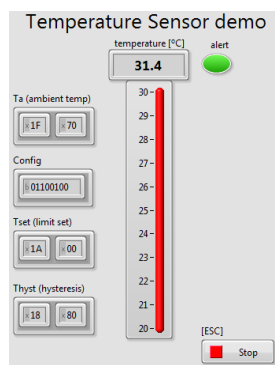


Figure 3. Testing and Running the Demo

V. Results and Discussion

In this part of the experiment the breadboard layout and the interface circuit were built based from the schematic diagram provided in the manual. As the Demo runned, the demo displayed the ambient temperature in degrees Celcius as measured by the microchip. The maximum and minimum values if the thermometer indicator changed its display range when it was clicked.



The temperature sensor was then hold to make it warm or blow air to make it cool, the temperature sensor sensed the change in temperature.



VI. Conclusion

A temperature sensor is a device that detects and measures hotness and coolness and converts it into an electrical signal. The digital temperature sensor has different operating modes such continuous conversion, one-shot, and shutdown mode. The ALERT output panel can configure to whether it will be enabled when certain condition has met. We also learn how to obtain and record the maximum and minimum temperature of the environment and reset these values to measure again.