LED Examples in LabVIEW

Hans-Petter Halvorsen

https://www.halvorsen.blog
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• We will show how to turn on/off a LED using an I/O Module/DAQ Device in LabVIEW
USB-6008
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Basic LED Example

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Basic LED Example

• We will turn on/off the LED by clicking on a Boolean button on the Front Panel
Hardware

- DAQ Device (e.g., USB-6008)
- Breadboard
- LED
- Resistor, $R = 270\,\Omega$
- Wires (Jumper Wires)
A breadboard is used to wire electric components together.
The Breadboard is used to connect components and electrical circuits. Make sure not to short-circuit the components that you wire on the breadboard.
Light-emitting diode - LED

[Diagram of LED with labels: Anode, Cathode, anode (+), cathode (-), flat side, short lead, circuit diagram, and LED orientation.]
Wiring

DO

$R = 270\Omega$
Hardware Setup

$R = 270\Omega$
LabVIEW Example
DAQ Settings
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Alarm LED Example

• We will turn on the LED when the temperature reach a specific Alarm Level
LabVIEW Example
LabVIEW Example
Temperature Sensor Example

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A Temperature sensor like TM36 use a solid-state technique to determine the temperature.

They use the fact as temperature increases, the voltage across a diode increases at a known rate.

https://learn.adafruit.com/tmp36-temperature-sensor
Necessary Equipment

- PC
- DAQ Module, e.g., USB-6008
- Breadboard
- TMP36
- Wires (Jumper Wires)
Here you see a wiring examples using Arduino. You make the same wiring using a DAQ device like USB-6008 or similar.
Linear Scaling

Convert form Voltage (V) to degrees Celsius

From the Datasheet we have:

\[(x_1, y_1) = (0.75V, 25^\circ C)\]
\[(x_2, y_2) = (1V, 50^\circ C)\]

There is a linear relationship between Voltage and degrees Celsius:

\[y = ax + b\]

This gives:

\[y - 25 = \frac{50 - 25}{1 - 0.75} (x - 0.75)\]

Then we get the following formula:

\[y = 100x - 50\]
We connect the TMP36 to LabVIEW using a USB DAQ Device from National Instruments, e.g., USB-6001, USB-6008 or similar. I have used a breadboard for the wiring.
LabVIEW Example
Temperature Sensor with Alarm Example

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- Breadboard
- TMP36
- LED
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Hans-Petter Halvorsen

University of South-Eastern Norway

www.usn.no

E-mail: hans.p.halvorsen@usn.no
Web: https://www.halvorsen.blog