

LM34 Temperature Sensor (#604-00011) Spin Demo



Please note: This demo was created to support the 2013 National microMedic Contest kits, which are no longer available.

The LM34 Temperature Sensor allows your project to take temperature measurements. The sensor's full range is -50° F to +300° F. However, the sensor's range in this demo is +5° F (-15° C) to +300° F (148.89° C) because of the simple way it is wired to the Propeller Board of Education. Consult the LM34's datasheet for information about how to wire the sensor for its full rated range. The sensor returns its readings as an analog voltage where a 1 degree Fahrenheit change in temperature results in a 1 mV change. Thus, to properly “read” the temperature from the sensor, you will need to make use of the Propeller Board of Education’s onboard ADC (Analog to Digital Converter) and do some math with the raw reading. This example reports the raw ADC readings and calculated temperature readings to both the serial terminal and to a VGA display.

Demo Part Requirements

- (1) Propeller Board of Education
(1) LM34 Temperature Sensor
(11) Jumper Wires
VGA Display

Note: In the code download, unzip the Spin archive folder before opening the program files.

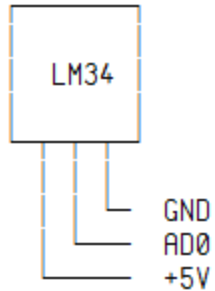
Connections

The connection diagram below shows how to connect the Propeller's I/O pins to the Propeller Board of Education's VGA header. The connection diagram also shows you how to connect the temperature sensor to the Propeller Board of Education's ADC input. The diagram can also be found in the source code file "LM34 Temperature Sensor DEMO.spin".

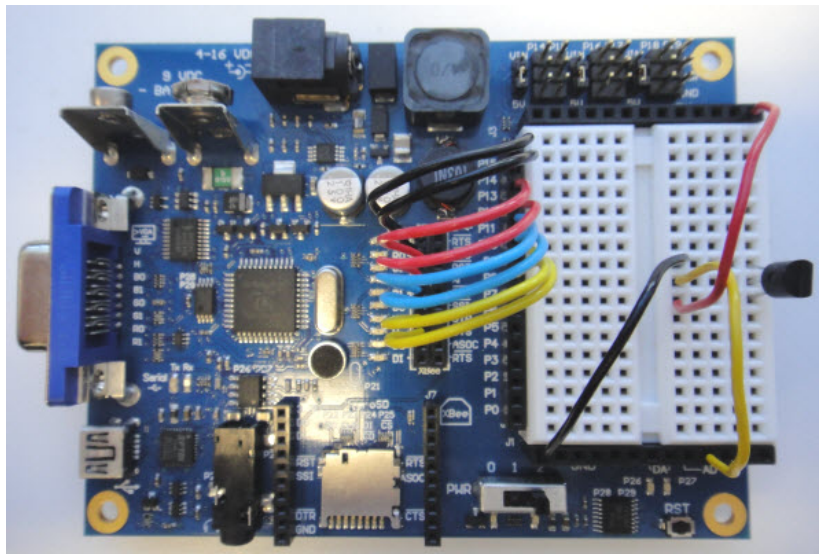
--- VGA Output Hookup ---

VGA Header		Propeller Pin Header
R1	←	P15
R0	←	P14
G1	←	P13
G0	←	P12
B1	←	P11
B0	←	P10
H	←	P9
V	←	P8

--- LM34 Sensor Hookup ---



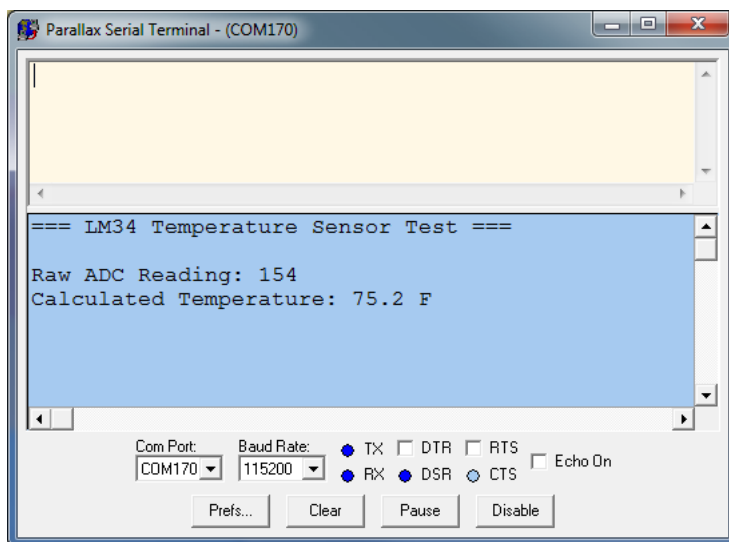
<--- Looking at the flat face of the sensor



Programming

Once you have correctly wired the jumper wires from the Propeller's I/O pins to the VGA header on the Propeller Board of Education and connected to the LM34 Temperature Sensor, download the demonstration program to the Propeller Board of Education. To do this, open the "LM34 Temperature Sensor DEMO.spin" source code file with the Propeller Tool. To download the program, click Run>>Compile Current>>Load RAM, or press the F10 key on your keyboard.

To see output on the Parallax Serial Terminal, open the Parallax Serial Terminal program, or press F12 on your keyboard. Then select the correct COM port and Baud Rate. The baud rate you select should match the PC_BAUD setting in the source code; the default baud rate in the source code is 115,200 baud.



To see output on a VGA monitor, connect a monitor to the VGA port on the back of the Propeller Board of Education.

