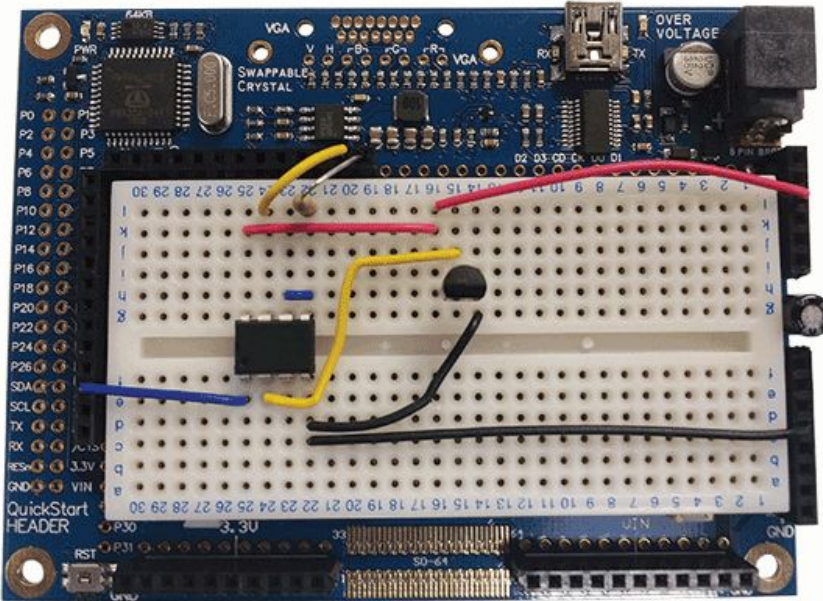


Spin Project: Temperature Measuring

LEVEL: Intermediate

SKILLS REQUIRED: Breadboard wiring, Spin Programming, circuit building, soldering

HOURS TO COMPLETE: 1-2 hours.



This project incorporates the LM34 Temperature sensor with an MCP3202 12-bit ADC and a Propeller Project board to make an accurate, low cost, simple thermometer. The LM34 is a temperature sensor rated to be accurate to within 1 degree, for operation between +32 to +212 degrees Fahrenheit. The LM34 outputs an analog voltage that corresponds to the current temperature of its environment.

In this application we are reading the current temperature and displaying it in the Parallax Serial Terminal. You can modify the program to display the data on an LCD, transmit it over an XBee network from a remote location to your house, or wherever you may need to display the data.

There have been numerous times when I have needed to add temperature monitoring, or to have temperature-based events triggered. If you are wanting to prevent pipes from freezing during the winter, you can have heating elements triggered when the temperature reaches 32 degrees Fahrenheit. If you need to keep a chicken coop cool during the summer, you could trigger a cooling system to turn on when the temperature in the coop gets to some maximum threshold value. With this simple circuit you will be able to have accurate temperature monitoring incorporated into your project, without spending a lot of time or money.

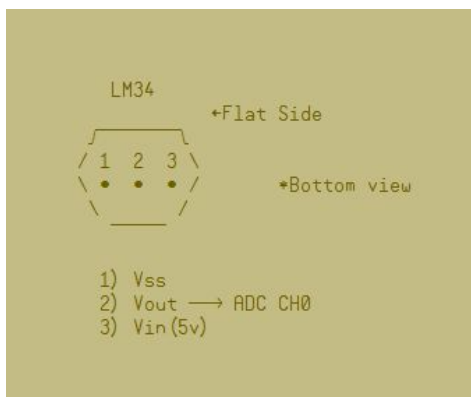
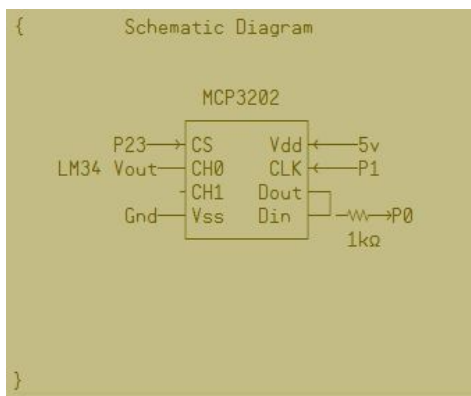
What's Needed:

- (1) Propeller Project Board (#32810)
- (1) Breadboard (#700-32023)
- Misc various-length SIP sockets for through-hole boards
- (1) MCP3202 12-bit ADC (#604-00060, discontinued)
- (1) LM34 Temperature Sensor (#604-00011, discontinued)
- (1) 220 ohm resistor (#150-02210)
- Misc jumper wires

Note: Many of these parts are discontinued for sale or manufacture by Parallax, but may be found through other retailers, or have suitable replacements available through Parallax or other retailers.

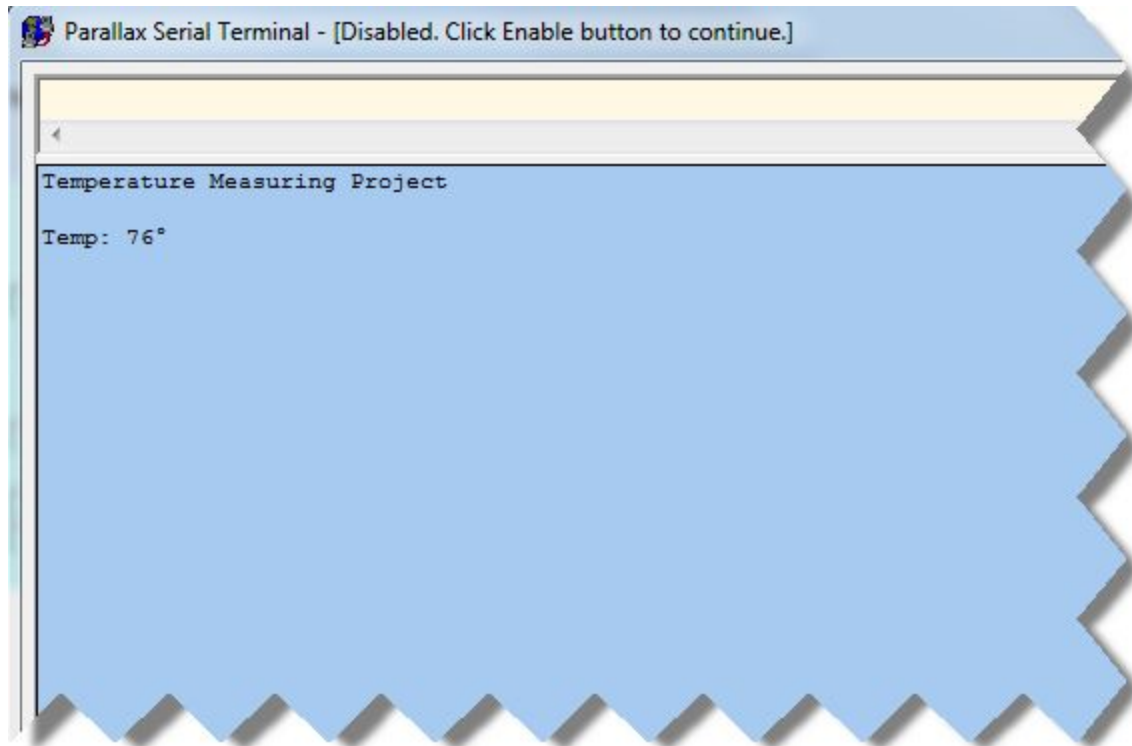
Build the Circuit

Using the schematic connections shown below and the project image at the beginning, build the circuit. You do not have to use the same Pin Numbers as I have, feel free to change those to what would work best for your setup. If you do decide to change what pins are used, remember to also change the Pin assignments in the code or you will get errors when trying to read the temperature.



Start Measuring Some Temperatures

Once you have your circuit built, you can load the example code from the project download and open the Parallax Serial Terminal (PST) to see the current temperature. If everything is working correctly, your PST will look something like the one below.



Now you can incorporate this design into your other projects!