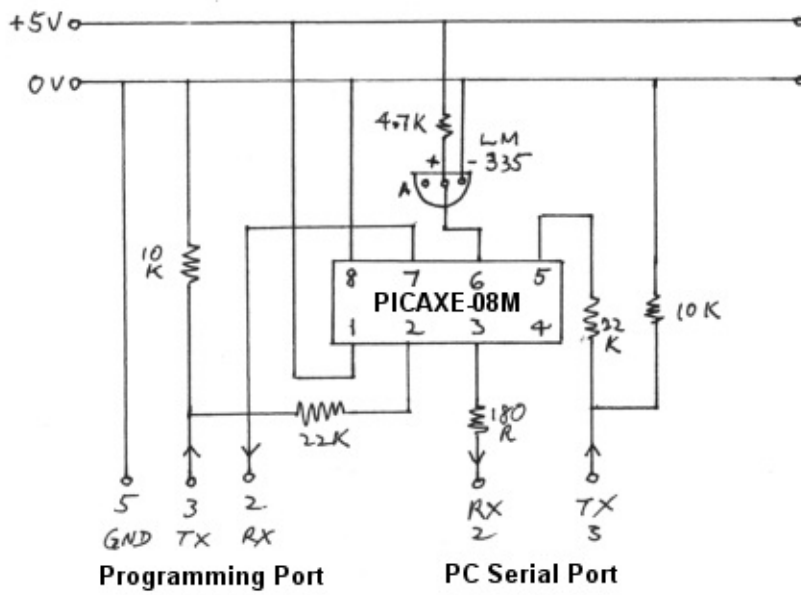


Temperature Sensor

This project measures temperature using a PICAXE-08M to read voltage output from an LM335 sensor. A PC program polls the PICAXE through the serial port for temperature readings and displays them in real-time on a GUI interface. Readings are also logged into a CSV file.

Schematic



PICAXE Code

'TempSensor.bas - Measure temperature by using a PICAXE-08M to read
'an LM335 sensor. The results are converted to Centigrade(ASCII) and se
'PC through an RS232 connection for display. The PC polls for values by :
'string SSSS to the PICAXE at regular intervals.

'COM port settings - 2400,N,8,1

Symbol ADVal=W0 'voltage from LM335
Symbol Sum=W1 'total readings
Symbol SensorOutput=W1 'LM335 output voltage
Symbol Fraction=W1 'eg: 8 in 10.8
Symbol Whole=W2 'eg: 10 in 10.8
Symbol factor=W4 'Kelvin to Centigrade conversion factor
symbol loop=b10 'loop counter

factor=273 '273k = 0c

main:

serin 2,n2400,b1,b2,b3,b4 'Wait for poll string from PC
if b1 = "S" then tempout 'got SSSS? send temperature
if b1 = "C" then calibrate 'got Cnnn? calibrate factor
goto main 'ignore anything else

tempout:

Sum = 0
For loop = 1 to 64 ' sum 64 readings
 ReadADC10 1, ADVal
 Sum = Sum + ADVal
Next
ADVal = Sum / 64 ' calculate the average

'The ADC has a resolution of 10 bits ie. it will return a value between 0 and
'the 5V power supply range ie. each value represents $5/1024 = 4.88$ mV. 1
'10mV/Kelvin rise hence - temp in Kelvin=total mV/10.

'Note: PICAXE does not support floating point maths hence, in a multiply c

'integer and fractions must be separately added together.

```
SensorOutput = ADVal * 4           'total mV=4.88 * ADVal  
SensorOutput = ADVal * 8 / 10 + SensorOutput 'add fraction  
SensorOutput = ADVal * 8 / 100 + SensorOutput 'LM335 output in mV  
Whole = SensorOutput / 10         'get Kelvin (10mV/Kelvin)  
Whole=Whole-factor                'get Centigrade (273k = 0c)  
Fraction = SensorOutput % 10      'fraction=10th of degree
```

```
SEROUT 4,n2400,(#Whole, ".", #Fraction, 13,10) 'send ASCII temp to
```

```
goto main                          'wait for next poll
```

calibrate: 'change value of factor. Useful if battery runs low.

```
factor=b2-48 *100                  'eg: ascii 216 -> bin 200  
factor=b3-48 *10 +factor           '200 + bin 10  
factor=b4-48 +factor               '210 + bin 6 = 216  
goto main
```

GUI Software

You can download the following software from www.autoitscript.com

- Autolt full installation.
- Autolt script editor (SciTE)
- Autolt Beta
- [Netcomm.OCX](#)
- [Resource hacker](#)