LM35 Temperature Sensor Interfacing with PIC18F4550

Overview of LM35

LM35 Temperature Sensor

LM35 is a temperature sensor that can measure temperature in the range of -55°C to 150°C.

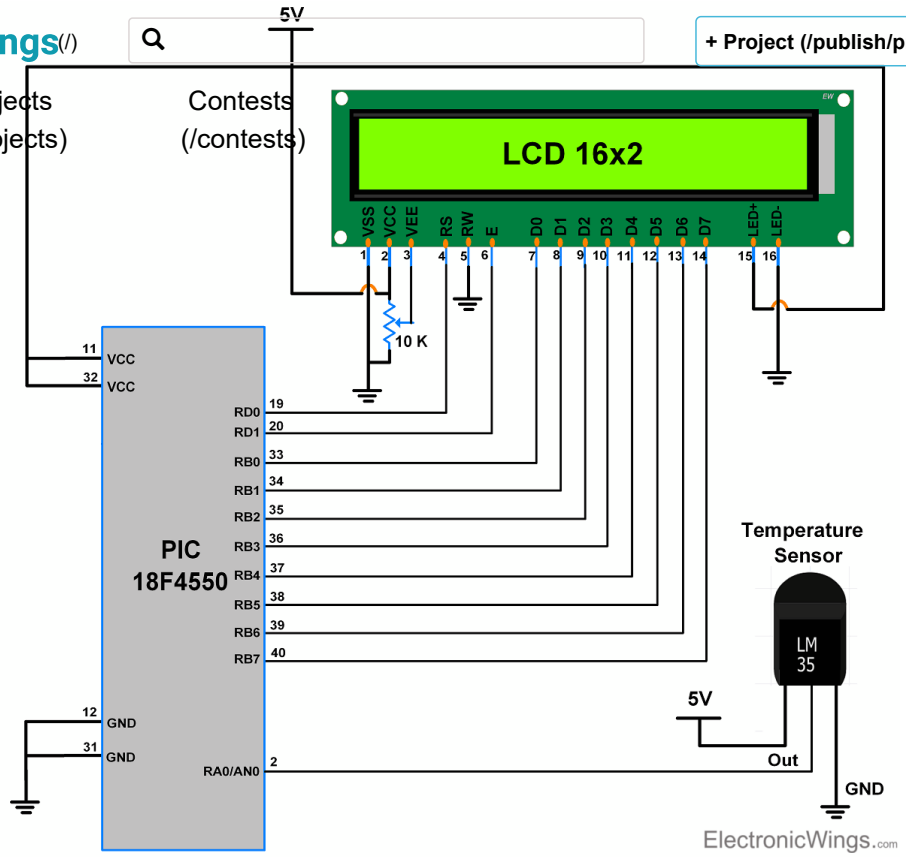
It is a 3-terminal device that provides an analog voltage proportional to the temperature. The higher the temperature, the higher is the output voltage.

The output analog voltage can be converted to digital form using ADC so that a microcontroller can process it.

For more information about LM35 and how to use it, refer to the topic LM35 Temperature Sensor (http://electronicwings.com/sensors-modules/lm35-temperature-sensor) in the sensors and modules section.

For information about ADC in PIC18F4550 and how to use it, refer to the topic ADC in PIC18F4550 (http://electronicwings.com/pic/pic18f4550-adc) in the PIC inside section.

Connection Diagram of LM35 temperature Sensor to PIC18F4550



LM35 Temperature Sensor Interfacing with PIC18F4550

Read Temperature using LM35 and Display on LCD16x2 using PIC18F4550

Let's interface the LM35 temperature sensor with PIC18F4550 and display the surrounding temperature on the LCD16x2 display.

LM35 gives output in the analog form so connect out pin of a sensor to one of the ADC channels of PIC18F4550.

LM35 Code for PIC18F4550

```
*LM-35 Temperature Sensor Interfacing with PIC18f4550
*http://www.electronicwings.com
*/

#include <stdio.h>
#include <string.h>
#include <p18f4550.h>
#include "Configuration_Header_File.h"        /* Header File for Configuration bits
#include "LCD_16x2_8-bit_Header_File.h"              /* Header File for LCD Functi
#include "PIC18F4550_ADC_Header_File.h"

void main()
{
    char Temperature[10];
    float celsius;
    int i;
    OSCCON=0x72;                  /* set internal Oscillator frequency to 8 MH
    LCD_Init();                   /* initialize 16x2 LCD*/
    ADC_Init();                   /* initialize 10-bit ADC*/

    while(1)
```

Video of Temperature Measurement using PIC18F4550

Components Used

Powered By (https://www.mouser.in?utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

LM35 Temperature Sensor LM35 is a sensor which is used to measure tempe...	X 1	(https://www.mouser.com/ProductDetail/Texas-Instruments/LM35DZ-NOPB?qs=QbsRYf82W3F5RpWTxhXHxA%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0) Datasheet (/components/lm35-temperature-sensor/1/datasheet)
LCD16x2 Display LCD16x2 Display	X 1	(https://www.mouser.com/ProductDetail/Adafruit/1447?qs=XAKIUOoRPe6AClmsjw7y7g%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0)

Components Used

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PIC18f4550 PIC18f4550	X 1	(https://www.mouser.in/ProductDetail/Microchip-Technology/PIC18F4550-I-P?qs=oKK8NaWdAJs8nLDXBGwMXw%3D%3D&utm_source=electronicswings&utm_medium=display&utm_campaign=mouser-componentslisting&utm_content=0x0) Datasheet (/components/pic18f4550/1/datasheet)

Downloads

PIC18F4550 Interfacing LM35 Project File	Download (/api/download/platform-attachment/165)
LM35 Datasheet	Download (/api/download/platform-attachment/166)

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celsius = (ADC_Read(0)*4.88);
celsius = (celsius/10.00);
Can u explain this step?
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1st line-This PIC has 10bit ADC so 2^10 is 1024 steps, then our maximum input is 5V right, So 5/1024 is 4.88mV which is 4.88mV per step, ADC_Read(0) gives the step count ,So multiplying step count with 4.88mV, You will get the input voltage in terms of mV , 2nd line-As LM35 gives 10mV per degree celcius so we are dividing the measured voltage in mV by 10mV to get the temperature in degree celcius.
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