

Digital Thermometer using Arduino and LM35 Temperature Sensor

ABSTRACT

Thermometers are useful apparatus being used since long time for temperature measurement. In this project we have made an Arduino based digital thermometer to display the current ambient temperature and temperature changes on a LCD unit in real time . It can be deployed in houses, offices, industries etc. to measure the temperature.

Working

This project is based on Arduino which communicates here with LM35 temperature sensor and a 16x2 display unit. We can divide this arduino based thermometer into three sections - The first senses the temperature by using temperature sensor LM 35, second section converts the temperature value into a suitable number in Celsius scale which is done by Arduino, and the last part of the system displays temperature on LCD.

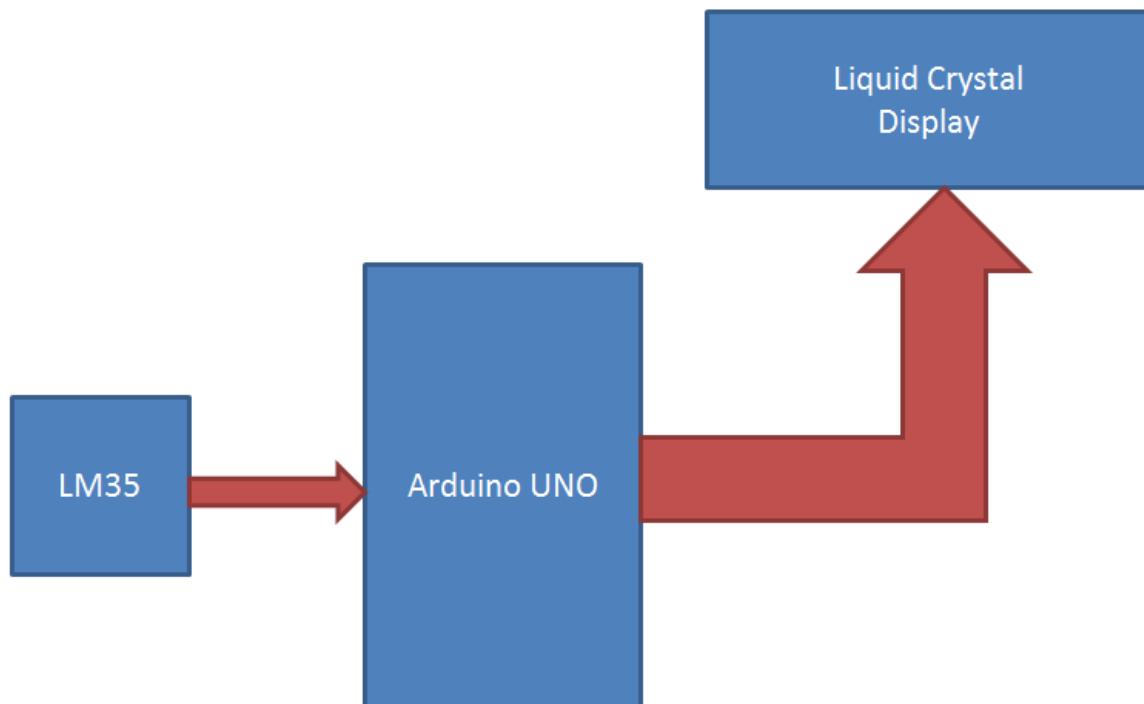
In this Arduino LM35 temperature sensor interfacing, Arduino Uno is used to control the whole process. An LM35 temperature sensor is used for sensing environment temperature which gives 1 degree temperature on every 10mV change at its output pin. You can easily check it with voltmeter by connecting Vcc at pin 1 and Ground at pin 3 and output voltage at pin 2 of LM35 sensor. For an example if the output voltage of an LM35 sensor is 250m volt, that means the temperature is around 25 degree Celsius.

Arduino reads output voltage of the temperature sensor by using Analog pin A0 and performs the calculation to convert this Analog value to a digital value of current temperature. After calculations arduino sends these calculations or temperature to the 16x2 LCD unit by using appropriate commands of LCD.

Components

- Arduino UNO
- LCD
- LM35 Temperature Sensor
- Power adapter

Block Diagram



Circuit Diagram

