

# **Digital Temperature Sensor**

## **Abstract**

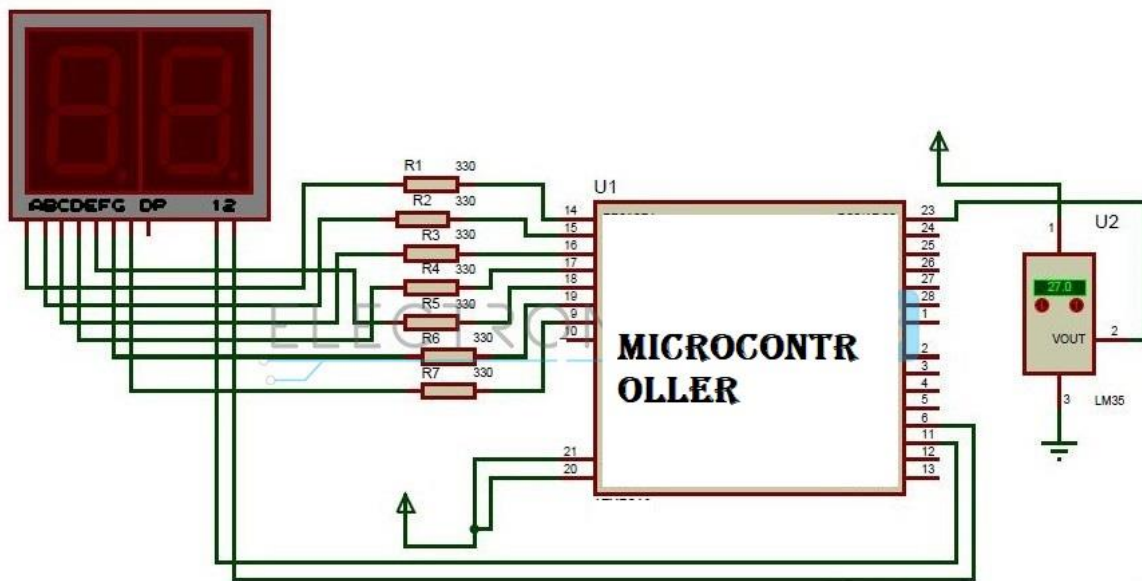
Temperature sensors are widely used in electronic equipment to display the temperature. You can see the digital clock displaying the room temperature value. It is due to the temperature sensor embedded in it. In this project, I will show you how to design a Digital Temperature Sensor Circuit. In the process. The temperature value is analog. Hence, it is converted to digital value using an Analog-to-Digital Converter (ADC) and then it is displayed. This Project describes the same, converting analog value to a digital value.

## **Introduction**

The main principle of this circuit is to take the analog temperature values, convert them into digital values and display the digital temperature value on LCD or 7-Segment Display.

Here microcontrollers are used. The Microcontroller has inbuilt analog to digital converter with six multiplexed channels of 10-bit resolution. This reduces interfacing of external analog to digital converter IC. The analog temperature value is directly applied to input ADC channels of microcontroller. Successive approximation method is used for Analog to digital conversion internally.

## **Block Diagram**



## Component

- Microcontroller
- 11.0592 MHz Crystal
- 2 X 33pF Capacitor
- 10 $\mu$ F/16V Capacitor
- 3 X 10K $\Omega$  Resistor
- 1K $\Omega$  x 8 Resistor Pack
- 10K $\Omega$  POT
- 16X2 LCD Display
- ADC0804
- LM35
- 150pF Capacitor
- 330 $\Omega$  Resistor
- Power Supply
- Connecting Wires
- Programmer

## Application

1. The digital temperature sensors are widely used in day-to-day life
2. They are used in environmental applications.
3. Digital temperature sensors can be found in air conditioners where it adjusts the temperature according to the room temperature.
4. They can be seen in digital clocks displaying room temperature along with time.
5. It can be used in dash boards in the car to display temperature of the engine, to avoid stopping suddenly due to overheat.
6. No need of external ADC IC for conversion