Touch Screen based Temperature monitoring and controlling system with graphical LCD

Temperature Monitoring systems are in huge requirement and we definitely can find their advantages in many industrial sector and also in residential sector. We can find many kind of temperature monitoring systems for different uses but the major challenge is to design a very simple, User-friendly and cost effective system. Keeping these in mind we designed a temperature monitoring system using a touch screen as user interface.

Touch screens provide fast access to any and all types of digital media, with no text-bound interface getting in the way. Faster input can mean better service. Using a touch interface can effectively increase operator accuracy, reduce training time, and improve overall operational efficiencies, thus keeping costs down, a properly designed touch interface can improve each operator's accuracy. Touch screens are practical in automation, which has become even simpler with touch screen technology. Owners familiar with the icon system appreciate touch screens that make automation systems user friendly. Our project employs 4-wire resistive touch screen module that takes the input from the user. User can update the temperature setting using the dynamically created keypad on Graphical LCD display.

We developed this project, which is relatively inexpensive to sense the temperature. The temperature is read by the ADC (Analog to Digital Converter) module of the microcontroller Unit. This ADC data is processed and converted into the actual temperature reading by the microcontroller. This processed data is sent to the Graphical LCD for user display. The temperature monitoring and display is updated at the intervals of (quarter second) 1/4 second.

Temperature monitoring is done by multiple electromagnetic relays operating in combination with series parallel combinations. Resistive Temperature coil is a high voltage driven (230volts).

There are four coils connected in series and parallel combinations. The temperature controlling is done based on the combination of four coils. If the coils are connected in series the resistance becomes more, this reduces the current flow through them. This makes the temperature low. If the coils are connected in parallel then the temperature becomes more (as current flows through is more). The microcontroller takes care of the operation of relays (series or parallel). The temperature control is done with the use of TouchScreen based input system. User can simply set the desired temperature with a gentle touch on touch screen.

The objectives of the project include:

1. Read the temperature in real-time.

2. Authentication for the operator.

3. User can set the temperature limits.

4. A buzzer for alerts.

5. Graphical LCD displays the alert messages based on the user requirements.

The project provides us exposure on:

1. Initialization of ADC module of microcontroller.

2. Embedded C program.

3. PCB designing.

4. Touch screen sensor.

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5. Interfacing touch screen to controller.

6. GLCD interfacing.

7. Temperature sensor.

The major building blocks of this project are:

1. Regulated power supply with voltage regulator.

2. Temperature sensor.

3. ADC module.

4. Microcontroller.

5. Touch screen sensor.

6. Graphical LCD.

Block diagram:

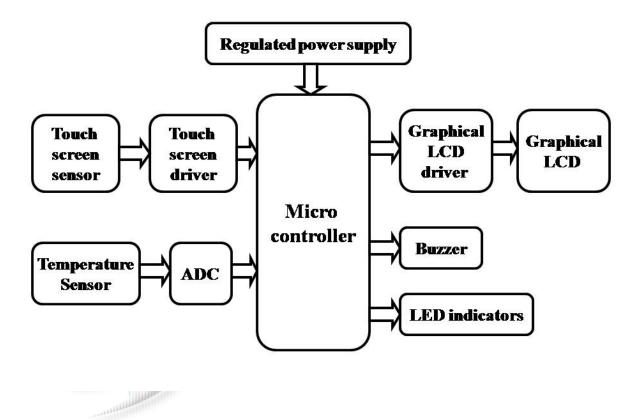www.mycollegeproject.com   Ph: +91 9490219339, 040-23731030

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