Overheat Detector

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ABSTRACT

Overheat detector is a device which has a huge range of application in industrial machineries and electronic products. They make use of sensors and machine states to indicate to end-users various information like diagnostics or need of maintenance or to put machines in a specific mode like shut-down when thermal protection is activated. More specifically, the alarms are often triggered based on comparing sensors data to a threshold defined in the controller's software. In batch production machines, triggering an alarm like thermal protection in the middle of a batch production is crucial for the quality of the produced batch and results into a high production loss. This situation can be avoided if the settings of the production machine is adjusted accordingly based on the temperature monitoring. In this device we are using the temperature sensor to detect the temperature and whenever it goes above the threshold value, it gives indication through buzzer and also it displays on LCD Screen so the things can be treated accordingly.

REQUIREMENTS

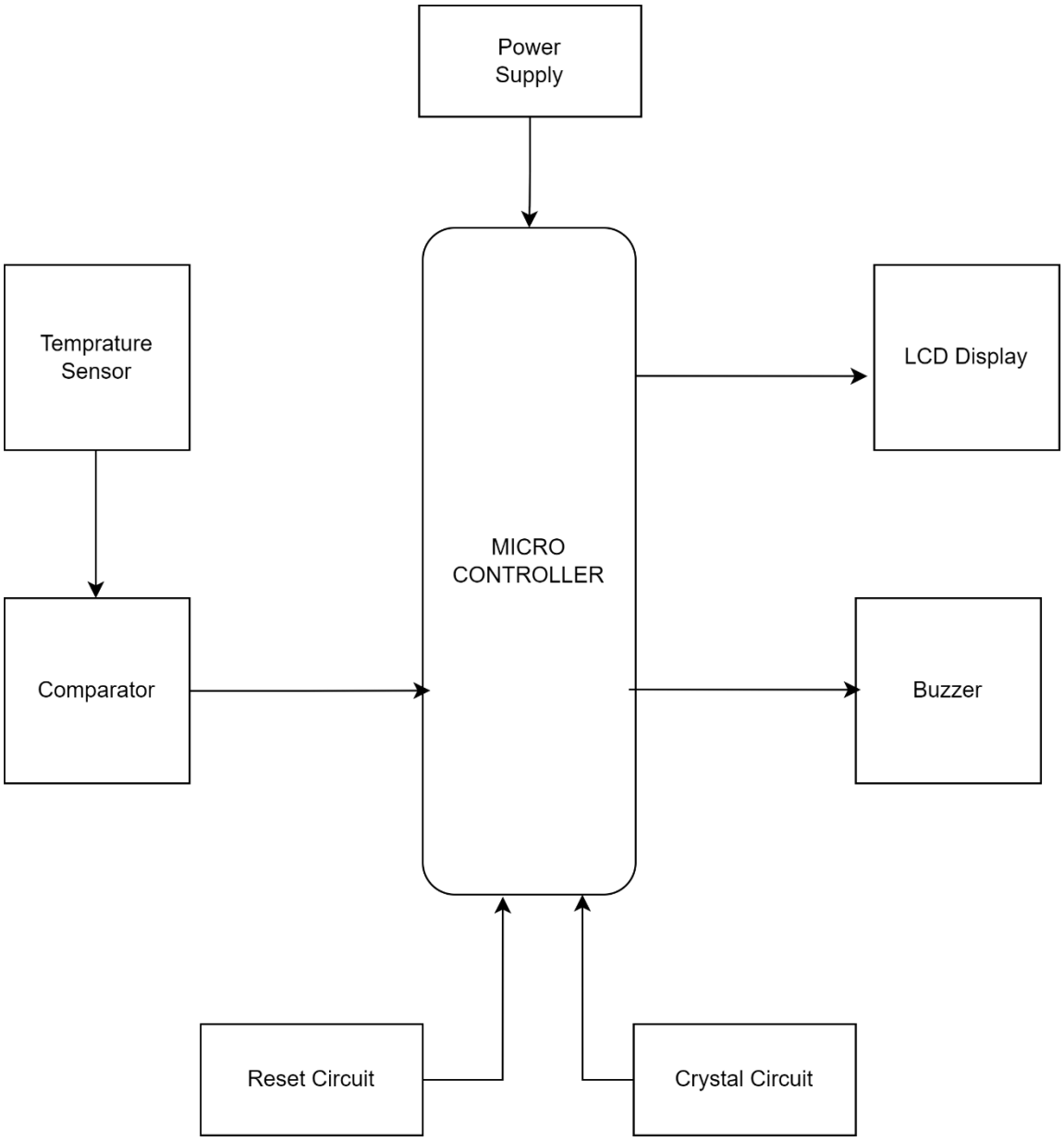
High Level Requirements

ID	Requirements
HLR1	System shall detect the temperature
HLR2	The output shall be displayed on LCD Screen
HLR3	Buzzer should produce noise when output is above threshold value.
HLR4	System shall reset when temperature again gets normal

Low Level Requirements

High Level ID	Low Level ID	Requirements
HLR1	LLR1	Temperature Sensor shall detect the temperature and send input to the system
	LLR2	The input shall be compared to the threshold temperature
	LLR3	The temperature shall be displayed on LCD Screen.
HLR2	LLR1	Whenever temperature reaches threshold value, it should display warning message
	LLR2	Whenever temperature goes above threshold value, it should display message
	LLR3	It shall display temperature at every moment
HLR3	LLR1	Buzzer shall work whenever the temperature passes threshold point.
	LLR2	Buzzer shall stop when the temperature again gets normal
HLR4	LLR1	The system should reset when the temperature get normal
	LLR2	The system shall reset automatically

BLOCK-DIAGRAM



Thermistor: It is a resistor whose resistance is dependent on temperature. It works as an temperature sensor. Here the change in temperature will cause change in voltage which will be taken as input to microcontroller.

Comparator: It is an electronic circuit, which compares the two inputs that are applied to it and produces an output. Here it will compare the input value with the threshold value and will produce the output to actuators.

Reset Circuit: It is used to reset the system when temperature gets normalised.

Actuators:

- **LCD Display:** It is used to display the output digitally.
- **Buzzer:** It is used to produce noise when the system will get overheated.

APPLICATIONS

- This product can be used at industries, companies and home to monitor high temperature conditions.
- It can be used in electronic appliances where the IC's get heated in order to protect the device.
- It can be used in automobiles for regularising engine temperature.
- It can be used at thermal power plants and sites where high heat is produced.

FUTURE SCOPE

- We can add exhaust fan to cool down system again.
- We can add more similar functionalities with more sensors and micro-controllers to make it a perfect industrial product.