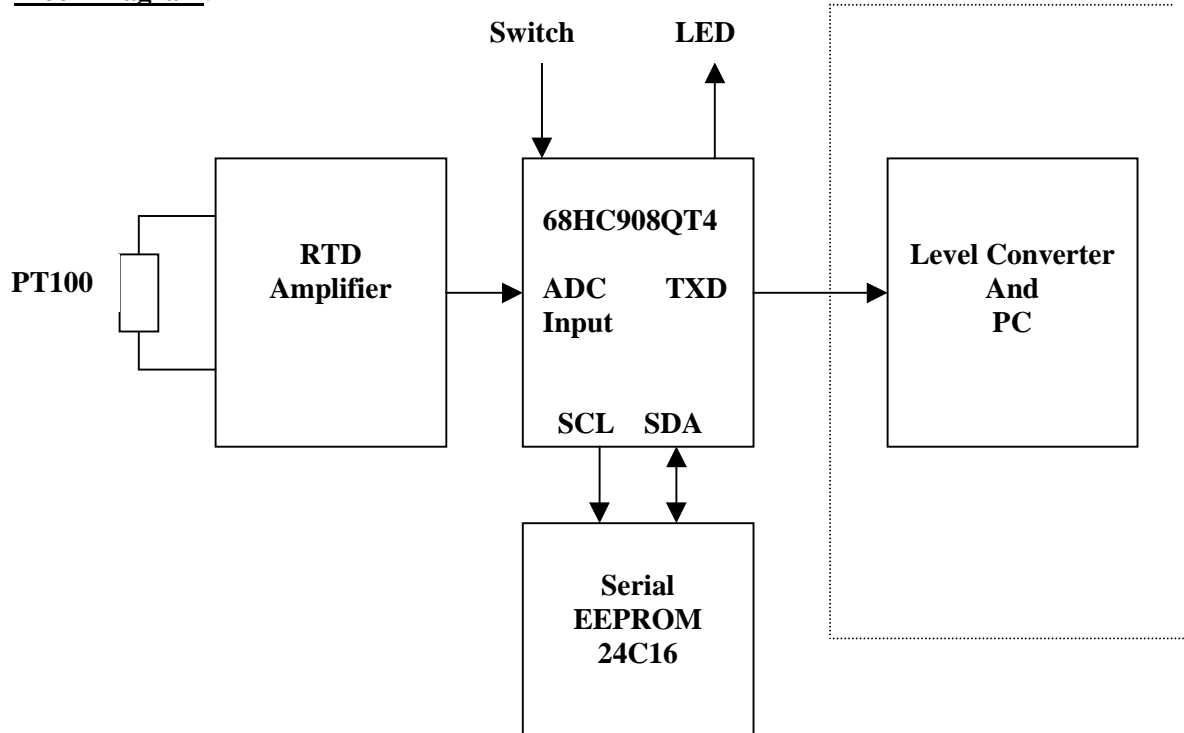


Temperature Logger

Abstract:

This project is a logger that measures temperature through a PT100 sensor and records the temperature in a serial EEPROM. When recording is done, the logger can be connected to a PC through a small converter circuit and the recorded temperature can be downloaded to the PC. A software running in Visual Basic receives the data and saves it in a text file for further reference.

Block Diagram:



The amplifier converts the resistance of the PT100 to voltage. For a temperature change of 0-255°C, the voltage varies from 0-5.0V that corresponds to 255 counts of ADC. So each ADC count is equal to 1°C of temperature.

The input voltage is measured by the 68HC908QT4 processor. This processor also interfaces with a 24C16 serial EEPROM, a switch and an LED. The switch is used to start / stop the process and to send the recorded data to the computer. When the recording is on, the LED flashes every 1sec, indicating that recording is in progress. The sampling time is set to 5 seconds in the project, but can be varied by changing a constant called sampleRate in the program.

The serial communication takes place at 2400 baud, 8 bits, no parity, one stop bit. During Read operation, the processor first reads the number of bytes to be transferred from the EEPROM and then sends the bytes one by one through the TXD pin. An RS232 converter connected externally (This is to minimize the size of the recorder) translates the TTL level signal from the controller to RS232 level. The software running on the PC receives all the bytes and writes them to a database with date, time and process description details.

