

MICROCONTROLLER BASED REAL TIME DATA ACQUISITION SYSTEM WITH PARAMETER ANALYZER USING MATLAB

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Abstract

Temperature and Humidity are the two most often-measured environmental quantities. This might be expected since most physical, electronic, chemical, mechanical and biological systems are affected by temperature and humidity. So an idea came to design a system which measures these two parameters using a sophisticated microcontroller based real time data acquisition system. This system also provides a flexibility to use for further eight different sensors at a time.

The hardware of this system has designed around the temperature sensor LM35, humidity sensor HS1100, the microcontroller AT89C52 and analog to digital converter ADC0809. The temperature sensor works in the range of 0°C to 150°C with an accuracy $\pm 1^\circ\text{C}$ and a humidity sensor works in measuring range from 0 to 99% with accuracy $\pm 2\%$. The microcontroller gives out signals for sampling the analog signal at specified intervals of time & transfers the data to the PC system in sequence. On the computer, another program using MATLAB developed for this system waits for data. This program is made to realize as a data analyzer for the received data and displaying the data as both in tabular form & in graphical form also. This paper describes the measurement of temperature and relative humidity of the atmosphere and also focuses on real time result.

Keywords: DAS, Relative Humidity, Accuracy, Data Analyzer, Data loggers.