

Web Based AVR Microcontroller Instrumentation System for Monitoring Frequency of the Noisy and Irregular Waveform of Electrical Signal

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Abstract—This paper describe the design and development of a prototype sytem for measurement of frequency of the noisy and irregular waveform of electrical signal. The prototype consisting of dedicated harware for signal conditioning circuit for removing noise and level translation, data acquisitions circuit based on atmel avr ATmega8 microcontroller, RS232 serial communication harware for networking, Personal Computer (PC) with the state of the art software for developing front end Graphical User Interface (GUI) for displaying data and storing data in MS Access 2010 database for future retrieval and analysis, a web application for monitoring the frequency remotely. The differential amplifier is used to remove the noise and comparator circuit is used to converted the signal into TTL Logic without any modification in the time period. In this way a noisy signal of irregular waveform converted into TTL signal which is further processed by microcontroller interfaced via timer pin. The GUI display continuously the frequency in Hertz in textbox as well as graphical plots with respect to time at which PC received the reading. The programme hosted in PC implemented in Visual Studio 2010, C# language and programme running in microcontroller written in C and Atmel Studio6.0 is used to compile and generate the Hex code. The Figure1 shows the snapshot of the Digital Storage Oscilloscope (DSO) displaying irregular waveform of the noisy electrical signal and output of the signal conditioner circuit which is purely TTL. The Figure2 shows the snapshot of monitoring PC GUI.

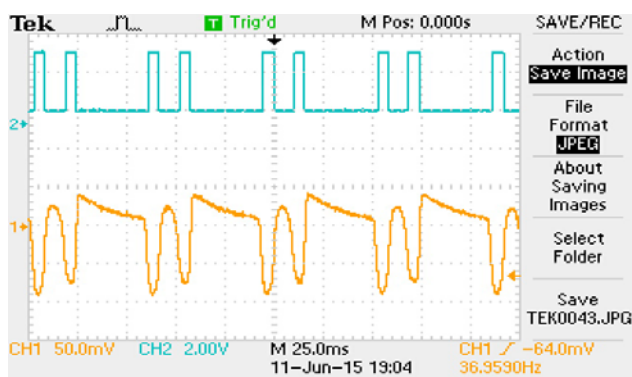


Fig. 1: Snapshot of DSO

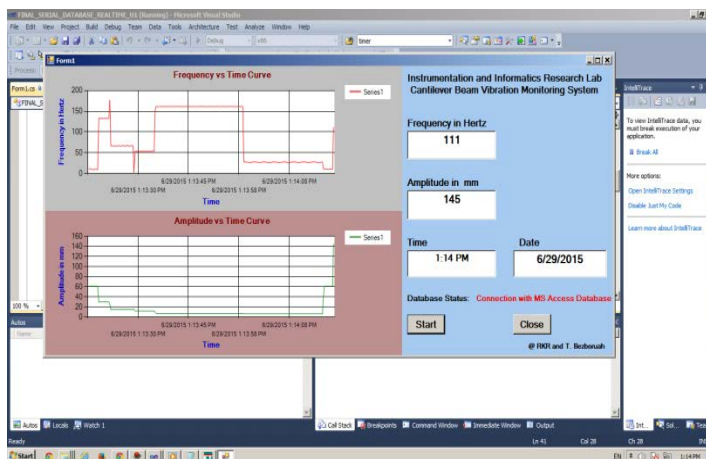


Fig. 2: Snapshot of monitoring PC GUI