

SYNOPSIS

The aim of this project is to generate various types of waveforms such as SAWTOOTH, STAIRCASE, TRIANGULAR, SQUARE, SINUSOIDAL, COSINE and EXPONENTIAL WAVEFORMS. In this project PC is used to synthesize the waveforms. By using software whose mathematical formula is known, the synthesized waveforms in digital form are converted to analog form by DAC 0800. The DAC is interfaced to PC using 25 pins D connector. The analog current out put of DAC that is proportional to the synthesized waveforms is converted to corresponding voltage by current to voltage converter. The compiled waveform can be viewed on the oscilloscope.

The project is titled "PC BASED FUNCTION GENERATOR" the heart of the project is the soft ware and hard ware comprising of DAC 0800 and op-amp LM 741.

INTRODUCTION

A function generator finds its use extensively in electronic equipments. It is a device, which generates various types of waveforms like sine wave, triangular wave, square wave, saw tooth wave, staircase wave, cosine wave. Normally analog circuitry is employed for the generation and shaping of waveforms. However, here a PC is used to emulate a function generator, which generates waveforms through the use of software.

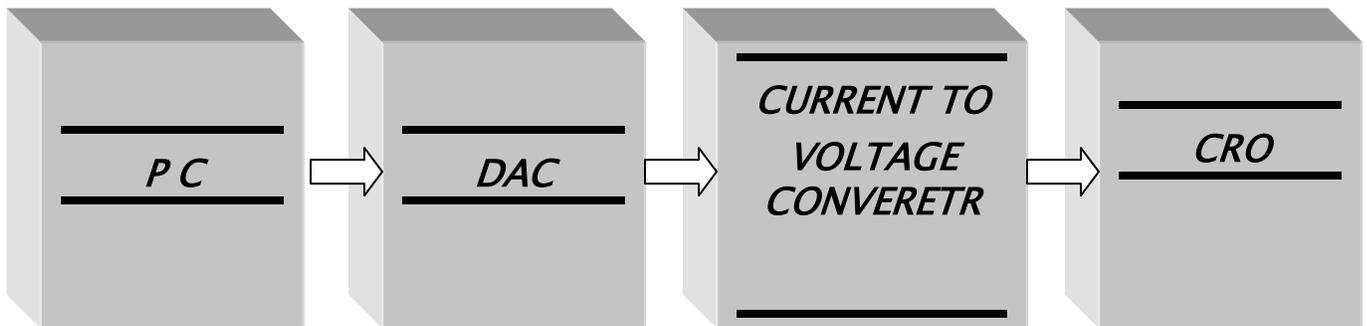
The software used here is a C++ program which is written so as to generate the required waveforms as generated by a function generator. Since the synthesized waveform produced by the PC is in digital form a small hardware circuitry is designed. It consists of a DAC, which converts the waveforms from its digital to analog form. [This is done to enable us to view the waveform on oscilloscope]. The output of DAC is in current form which is converted into voltage form by an op-amp IC 741 which acts as current to voltage converter. The output that is now in the form of voltage can be viewed on the oscilloscope.

The PC BASED FUNCTION GENERATOR has an increased order of flexibility and control over the output. In place of complex hardware circuitry software is used. Another important advantage is that the use of software enables us in the generation of any type of waveform whose mathematical formula is known which is not possible in the case of a normal function generator. Hence the output waveform of any signal whose trigonometric or algebraic formula can be obtained using a PC based function generator.

BLOCK DIAGRAM

The aim of the project –PC BASED FUNCTION GENERATOR is to generate signals as generated by normal function generator. The block diagram of PC BASED FUNCTION GENERATOR is as shown in figure.

A PC is nothing but a personal computer. A PC with an operating system that supports C++ language is selected. C++ program is written so as to generate wave forms like **sine, square, saw tooth, staircase, triangular, and cosine** wave forms.



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