
Lab 6

Simple Pulse-wave Generator



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1 Objective

The objective of this experiment is to generate a pulse-wave signal with given characteristics.

2 Introduction

The pulse-wave (rectangular-wave) is a periodic signal with a train of pulses. Two characteristics identify the pulse-wave:

1. The period of the wave.
2. The duty cycle: The time that the signal is high with respect to the period of the signal.

3 Procedure

3.1 Delay subroutine

Write a procedure that takes a number n in R16 and generates a delay $0.0001n$ sec.

3.2 Testing using switches

Write a code that will continuously take a three-bit number m from the switches and generate a pulse-wave output on a selected pin. The pulse-wave will have a period of 0.02 Sec. The width of the pulse with respect to m is defined according to this table:

m	Pulse-width (Sec)
0	0.0005
1	0.001
2	0.0013
3	0.0017
4	0.002
5	0.004
6	0.008
7	0.012

Connect the output of the pin to the oscilloscope and check if the output is correct.

Hint: Utilize the subroutine from the previous step.

3.3 LED Output

Instead of the oscilloscope, connect the output to a LED circuit and check the results.

