

ECE 4175

Project Eight

RPG Control of Stepping Rate

Complete by:
Wednesday February 27th for an A+

Reference:
Chapter 10 Rotary Pulse Generator

Overview

For this project you are to control the stepper motor's stepping rate with the RPG. Beginning from a default rate of 100 steps/second (i.e., half a revolution per second), you are to change the stepping rate by an amount that depends upon not only the number of RPG increments but also by the rate at which those increments occur.

For more than one increment during a loop time, change by 16 steps/second (increasing the rate for CW changes, decreasing the rate for CCW changes).

For an increment in each of two successive loop times, change by 8 steps/second.

For two increments three successive loop times apart, change by 4 steps/second.

For two increments four successive loop times apart, change by 2 steps/second.

For two increments more than four successive loop times apart, change by 1 step/second.

Use Timer1 and the 32.768 kHz watch crystal oscillator to produce 10 ms loop times.

Blink the Alive LED every second for 0.01 second.

Update and display the step rate only once every 0.1 second.

Toggle RB0 with each step, to permit the measurement of the step rate.

Sleep when not doing useful work and do whatever you can to minimize the average current draw on the coin cell.

Program Code

Remove extraneous stuff from your program code, paring it down to just that code needed here.

Then generate not only the files used by QwikBug but also the qwik.lst file to be printed out using Andrew Ray's utility. The command for this is: pql

If you are in the lab when Andrew is there, ask him about Peter Lerup and his PrintFile utility.