DTEK0068

Embedded Microprocessor Systems

Tachometer

Project Report

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Optical tachometer-functionalities

ATMega 4809-based optical tachometer uses a LED and a Photoresistor to detect a plastic blade that's run by a 5.5V DC-motor from the board. It counts rounds per minute of the blade and displays it on a 16x2 LCD screen, which is connected to the board.

The photoresistor is connected to the board with a voltage divider connection. It measures the voltage going to the board-PIN and determines actions based on that voltage. If photoresistor doesn't get light it gives maximum value of ADC which is 1023. When the LDR does get light the ADC-value goes near 0. So, we gave configured If-statement which compares ADC-values and counts the rounds per minute. By using an RTC it updates LCD-screen once per second and updates the RPM.

Testing

We tested the program straight with the LCD-screen, at first, we had some problems initializing the screen, so we used PuTTy to test where the problem was.

Programming practices

Program was coded with C. Implementing the coding standard of BARR-C:2018, which was used on the whole duration of the course.

User guide

Program is very easy to use, if you have all the parts connected only thing you need to worry about is the right PINs when connecting. After that just build the code to your device, motor and LED turns on, and LDR start's measuring RPM's.

Link to Github

https://github.com/rvpout/optical_Tachometer