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Optical tachometer

EMBEDDED MICROPROCESSOR SYSTEMS COURSE PROJECT

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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.

Used parts

ATMega4809 Curiosity Nano board, DC-motor, 3D-printed propeller, 10k potentiometer, L9110 motor driver, LCD-screen, green LED, phototransistor and few resistors and wires.

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.

Libraries

Besides from the help of our teachers we also used: https://github.com/MicrochipTech?utf8=%E2%9C%93&q=atmega4809