1 Abstract

The inductance of the two motors controlling the pan-tilt system gets determined.

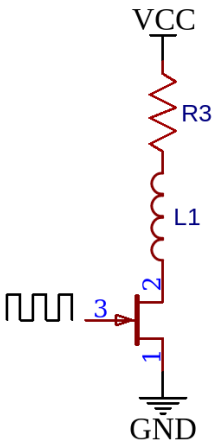
2 Introduction

The electrical inductance of the motors are gets determined in this jounal. Every constant concerning the motor of the topframe is denoted A_t while constants for the buttom frame is denoted A_b.

3 Materials and Methods

To determien the electrical inductance of the two motors, the timeconstant method is used.
firstly the motor, illustrated as a coil, is linked in series with a resistor and s PWM controlled MOSFET. This can be seen on figure (**??**). By rapidly switching the MOSFET on and off the coil inside the motor will be charged and discarged along with current flowing through the resistor. This will cause a wave pattern to show the voltage across the coil. Using an oscilloscope the time from the wave starting to the top of the wave is given as:

$$\tau = \frac{L}{R}$$



By apllying this method the timeconstant is determined to be $\tau = 17.5 \cdot 10^{-6}s$. Thus the inductance with a resistor of size 22Ω gets determined to be.

$$L = 17.5 \cdot 10^{-6}s \cdot 22\Omega = 3.85 \cdot 10^{-4}H$$

The timeconstant was measured to be approximitly equal, and this therefore the case that the following is true:

$$L_b = L_t = 3.85 \cdot 10^{-4}H$$

4 Results

The result of this experiment is as follows.

$$L_b = 3.85 \cdot 10^{-4}H$$

$$L_t = 3.85 \cdot 10^{-4}H$$

5 Conclusion

The electrical inductance of the motor controlling the top frame is $L_t = 3.85 \cdot 10^{-4}H$ and the resistance of the motor controlling the buttom frame is $L_b = 3.85 \cdot 10^{-4}H$.