

Rancang Bangun Sistem Pengukuran Arus, Tegangan dan Posisi Rotor Pada Inverter Kontrol Motor = Design and Development Of Current, Voltage and Rotor Position Measurements in Inverter Motor Control

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Abstrak

Dilakukan perancangan dan pengembangan sistem pengukuran arus inverter 3 fasa, tegangan DC-Link, posisi sudut rotor, dan kecepatan sudut rotor menggunakan modulator sigma-delta terisolasi, absolute encoder, dan incremental encoder. Dilakukan perbandingan hasil pembacaan arus dan tegangan oleh sensor yang dikembangkan dengan arus dan tegangan yang didapatkan dari osiloskop. Didapatkan MAEArusFasaA = 0.510594 A, MAEArusFasaB = 0.71434 A, MAEArusFasaC = 0.710017 A, dan MAETeganganFasaA-N = 30.35317 V. Meskipun tidak dapat diimplementasikan ke dalam sistem, algoritma pembacaan sudut as menggunakan absolute encoder berhasil melakukan pembacaan sudut as, dibuktikan dengan perbandingan grafik sudut as yang dibentuk oleh incremental encoder. Dikemukakan pula kemungkinan alasan kegagalan integrasi absolute encoder tersebut pada bagian analisis.

.....Design and development of a 3-phase inverter current measurement, DC-Link voltage, rotor angular position, and rotor angular speed system using isolated sigma-delta modulator, absolute encoder, and incremental encoder has been conducted. The results of current and voltage readings by the developed sensor modules are compared with the current and voltage obtained from the oscilloscope. Performance parameters is obtained with MAEArusFasaA = 0.510594 A, MAEArusFasaB = 0.71434 A, MAEArusFasaC = 0.710017 A, dan MAETeganganFasaA-N = 30.35317 V. Although it cannot be implemented into the system, the algorithm for reading the shaft angular position using an absolute encoder in reading the angular position has been performed as showed by the comparison of angular position graph generated by the incremental encoder. The possible reasons for the failure of the absolute encoder integration has been proposed in the analysis section.