

ANALISA DAN RANCANG BANGUN SISTEM PROTEKSI MOTOR LISTRIK 3 PHASA MENGGUNAKAN *PHASE FAILURE RELAY*

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Abstrak

Pada sesuatu jaringan listrik dasar, mutu distribusi tenaga listrik sangat dibutuhkan. Ada pula kendala dalam penyaluran tenaga listrik bisa pengaruhi apalagi merusak sistem tenaga listrik, yaitu hilang salah satu fasa, fasa terbalik, *overvoltage*, dan *undervoltage*. Bila kendala tegangan ini terhubung ke perlengkapan listrik ataupun elektronik serta melebihi batas toleransi tegangan nominalnya, hingga perihal itu bisa mengganggu kinerja peralatan tersebut ataupun bisa merusaknya. Dari pengujian alat *Phase Failure Relay* yang dilakukan dapat disimpulkan bahwa alat *Phase Failure Relay* dirancang dan dibuat dapat memproteksi rangkaian dengan baik, dalam arti alat ini dapat mendeteksi adanya hilang salah satu fasa, fasa terbalik, *overvoltage* sebesar +5% dan *undervoltage* -10% dari tegangan nominal dan mengaktifkan lampu *alarm* saat gangguan terdeteksi. Waktu gangguan dapat diatur dalam waktu 1,5 detik sampai 4 detik untuk *overvoltage* dan 2 detik sampai 9 detik untuk *undervoltage*. *alarm* saat gangguan terdeteksi.

Kata Kunci : Memproteksi, *Phase Failure Relay*, Hilang Salah Satu Fasa, Fasa Terbalik, *Overvoltage*, *Undervoltage*

ANALYSIS AND DESIGN OF 3 PHASE ELECTRIC MOTOR PROTECTION SYSTEM USING PHASE FAILURE RELAY

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Abstarct

In a basic electricity network, the quality of electric power distribution is very much needed. There are also obstacles in the distribution of electric power that can affect or damage the electric power system, namely missing one of the phases, reversed phase, overvoltage and undervoltage. If this voltage barrier is connected to electrical or electronic equipment and exceeds its nominal voltage tolerance limit, then it can interfere with the performance of the equipment or can damage it. From testing the Phase Failure Relay tool, it can be concluded that the Phase Failure Relay tool is designed and made to protect the circuit properly, in the sense that this tool can detect the presence of a missing phase, reversed phase, overvoltage of +5% and undervoltage of -10% of nominal voltage and activates an alarm lamp when a fault is detected. The fault time can be set within 1.5 seconds to 4 seconds for overvoltage and 2 seconds to 9 seconds for undervoltage. alarm when a disturbance is detected.

Keywords : Protecting, Phase Failure Relay, Missing One of the Phases, Reversed Phase, Overvoltage, Undervoltage