

PERANCANGAN AUTOMATIC MAIN FAILURE DAN AUTOMATIC TRANSFER SWITCH DI LENGKAPI DENGAN 10 KONDISI DISPLAY DAN 4 KONDISI BACKLIGHTING MENGGUNAKAN ZELIO LOGIC SMART RELAY (SR)

Jagra Bagus Haryanto^{*1}, Ir. Tejo Sukmadi, MT, dan Karnoto, ST., MT.

Jurusan Teknik Elektro, Fakultas Teknik – Universitas Diponegoro
Jln. Prof. Sudharto, SH, Kampus UNDIP Tembalang, Semarang 50275, Indonesia

^{*}JE-mail : jagraharyanto@gmail.com

ABSTRAK

PLN (Perusahaan Listrik Negara) adalah penyedia energi listrik utama untuk pelanggan. Pelanggan dapat mengalami pemadaman listrik apabila terjadi gangguan pada sistem transmisi atau sistem distribusi jaringan PLN. Untuk mengantisipasi pemadaman tersebut, pada tugas akhir dibuatlah sebuah desain kontrol otomatis Automatic Main Failure (AMF) dan Automatic Transfer Switch (ATS) pada genset atau yang dikenal sebagai Sistem Interlock PLN dengan ketentuan setiap 1 hari sekali dilakukan warming up genset yang bertujuan untuk perawatan aki dan sirkulasi oli pada genset. Zelio Logic Smart Relay merupakan jenis smart relay yang sederhana karena tidak memerlukan banyak piranti pendukung dan digunakan untuk mengontrol genset sebagai sumber listrik cadangan bagi rumah tangga. Hasil rancangan program dalam Smart Relay menghasilkan 10 kondisi dan 4 backlighting yang berguna untuk mempermudah pengawasan dalam penggunaan. Genset dengan tegangan keluaran 220 V membutuhkan waktu selama 3 detik untuk mensuplai beban. Ketika suplai utama PLN hidup kembali, genset akan memutus suplai selama 60 detik. Pada saat yang sama Fuel Pump akan memutus suplai pada genset, saat itulah genset akan berhenti beroperasi. Tampilan display "Start Failure" pada smart relay akan berkedip disertai bunyi alarm pada saat genset berhenti bekerja atau trip saat terjadi gangguan. Hasil pengujian yang demikian menunjukkan bahwa perancangan yang dilakukan sudah sesuai dengan yang diharapkan.

Kata kunci : automatic main failure (amf), automatic transfer switch (ats), zelio logic smart relay (SR)

ABSTRACT

PLN (Perusahaan Listrik Negara) is a major provider of electricity to customers. Customers will experience a power outage caused from interference on the transmission system or distribution system. In anticipation of the outage, the final project create an automatic control design called Automatic Main Failure (AMF) and Automatic Transfer Switch (ATS) applied at genset which is known as PLN-Genset Interlock Systems, additionally warming up generator is necessary to keep the battery maintenance and the oil circulation in the generator. Zelio Logic Smart Relay is a simple relay because it does not require a lot of supporting tools and can be applied to control the generators as a backup power source for home needs. The designed program by the Smart Relay provides 10 conditions and 4 backlightings which is very useful for user control. The test result Genset with 220 V output voltages takes 3 seconds to supply the load. When the main supply PLN is back On, generator disconnects the supply in 60 seconds. At the same time Fuel Pump will disconnect the supply from generators, and that means generator stop to operate. The display "Start Failure" on smart relay be viewed as flashes while the alarm signal ring at the same time when the generator stop working during disturbances. Therefore results that explained above means that the control design is well working.

Keywords : automatic main failure (amf), automatic transfer switch (ats), zelio logic smart relay (SR)

1. Pendahuluan

1.1 Latar Belakang

Seiring dengan kemajuan teknologi di segala bidang, maka satu daya utama PLN sangat berpengaruh terhadap penyediaan energi listrik bagi layanan publik,

baik itu daya besar maupun daya kecil. Akan tetapi suplai daya utama yang berasal dari PLN tidak selamanya kontinu dalam penyalurannya. Pada suatu saat pasti terjadi pemadaman total yang dapat disebabkan oleh gangguan pada sistem pembangkit, atau gangguan pada sistem transmisi dan sistem distribusi. Sedangkan suplai energi listrik sangat

¹¹Mahasiswa Jurusan Teknik Elektro Undip

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Table of Contents Perancangan Automatic Main Failure Dan Automatic Transfer

1. Understanding the eBook Perancangan Automatic Main Failure Dan Automatic Transfer
 - The Rise of Digital Reading Perancangan Automatic Main Failure Dan Automatic Transfer
 - Advantages of eBooks Over Traditional Books
2. Identifying Perancangan Automatic Main Failure Dan Automatic Transfer
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Perancangan Automatic Main Failure Dan Automatic Transfer
 - User-Friendly Interface
4. Exploring eBook Recommendations from Perancangan Automatic Main Failure Dan Automatic Transfer
 - Personalized Recommendations
 - Perancangan Automatic Main Failure Dan Automatic Transfer User Reviews and Ratings
 - Perancangan Automatic Main Failure Dan Automatic Transfer and Bestseller Lists
5. Accessing Perancangan Automatic Main Failure Dan Automatic Transfer Free and Paid eBooks

- Perancangan Automatic Main Failure Dan Automatic Transfer Public Domain eBooks
- Perancangan Automatic Main Failure Dan Automatic Transfer eBook Subscription Services
- Perancangan Automatic Main Failure Dan Automatic Transfer Budget-Friendly Options
- 6. Navigating Perancangan Automatic Main Failure Dan Automatic Transfer eBook Formats
 - ePub, PDF, MOBI, and More
 - Perancangan Automatic Main Failure Dan Automatic Transfer Compatibility with Devices
 - Perancangan Automatic Main Failure Dan Automatic Transfer Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Perancangan Automatic Main Failure Dan Automatic Transfer
 - Highlighting and Note-Taking Perancangan Automatic Main Failure Dan Automatic Transfer
 - Interactive Elements Perancangan Automatic Main Failure Dan Automatic Transfer
- 8. Staying Engaged with Perancangan Automatic Main Failure Dan Automatic Transfer
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Perancangan Automatic Main Failure Dan Automatic Transfer
- 9. Balancing eBooks and Physical Books Perancangan Automatic Main Failure Dan Automatic Transfer
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Perancangan Automatic Main Failure Dan Automatic Transfer
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Perancangan Automatic Main Failure Dan Automatic Transfer
 - Setting Reading Goals Perancangan Automatic Main Failure Dan Automatic Transfer
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Perancangan Automatic Main Failure Dan Automatic Transfer
 - Fact-Checking eBook Content of Perancangan Automatic Main Failure Dan Automatic Transfer
 - Distinguishing Credible Sources
- 13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development

- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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