

ABSTRAK

RANCANG BANGUN *AUTOMATIC TRANSFER SWITCH* (ATS) DAN PROTEKSI TEGANGAN BERBASIS MIKROKONTROLER ARDUINO PADA GENSET ELEKTRIK STARTER (2026 : xvii + 85 halaman + gambar + tabel + lampiran)

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Ketersediaan energi listrik yang kontinu diperlukan untuk menjaga operasional peralatan listrik. Pemadaman listrik dari PLN menyebabkan perlunya sumber listrik cadangan berupa genset. Penelitian ini bertujuan merancang dan membangun Automatic Transfer Switch (ATS) dan proteksi tegangan berbasis Arduino Uno R3 pada genset electric starter. Sistem menggunakan sensor ZMPT101B, modul relay, kontaktor, dan LCD 16×2 I2C. Hasil pengujian menunjukkan sistem mampu mengalihkan beban secara otomatis dari PLN ke genset saat pemadaman dan mengembalikannya ke PLN ketika tegangan normal. Sistem juga berhasil memberikan proteksi terhadap kondisi under voltage dan over voltage, sementara Mini-UPS menjaga sistem kontrol tetap aktif saat sumber utama terputus. Sistem yang dirancang mampu meningkatkan keandalan dan kontinuitas suplai listrik.

Kata kunci: *Automatic Transfer Switch* (ATS), Arduino Uno R3, Genset Electric Starter, Proteksi Tegangan, ZMPT101B.

ABSTRACT
DESIGN OF AUTOMATIC TRANSFER SWITCH (ATS)
AND VOLTAGE PROTECTION BASED ON ARDUINO
MICROCONTROLLER FOR ELECTRIC
GENSET STARTER
(2026 : xvii + 86 pages + figures + tables + appendices)

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A continuous supply of electrical energy is essential for maintaining the operation of electrical equipment. Power outages from the utility grid (PLN) necessitate a backup power source, such as a generator. This study aims to design and construct an Arduino Uno R3-based Automatic Transfer Switch (ATS) and voltage protection system for an electric-start generator. The system utilizes a ZMPT101B sensor, a relay module, a contactor, and a 16×2 I2C LCD. Test results demonstrate that the system can automatically transfer the load from the grid to the generator during an outage and switch it back to the grid when voltage levels normalize. The system also successfully provides protection against under-voltage and over-voltage conditions, while a Mini-UPS keeps the control system active during main power interruptions. The designed system enhances the reliability and continuity of the power supply.

Keywords: *Automatic Transfer Switch (ATS), Arduino Uno R3, Genset Electric Starter, Voltage Protection, ZMPT101B.*