

ABSTRAK
RANCANG BANGUN *AUTOMATIC TRANSFER SWITCH* (ATS)
BERBASIS MIKROKONTROLER ARDUINO PADA
GENSET ELEKTRIK STARTER
(2026 : xvii halaman 81 + gambar + tabel + lampiran)

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Ketergantungan pada suplai PLN sering terkendala pemadaman, sementara pemindahan daya ke genset secara manual dinilai kurang efisien. Penelitian ini bertujuan merancang sistem *Automatic Transfer Switch* (ATS) dan proteksi tegangan berbasis mikrokontroler Arduino Uno R3 pada genset elektrik starter. Sistem ini menggunakan sensor ZMPT101B untuk monitoring tegangan, kontaktor Schneider sebagai sakelar pemisah, dan Mini-UPS 12V sebagai daya cadangan rangkaian kontrol. Hasil pengujian menunjukkan saat PLN padam, genset menyala otomatis dengan waktu tunda 18,92 detik. Ketika PLN kembali stabil, beban dialihkan ke PLN dalam 8,40 detik dan genset mati dalam 5,03 detik. Sistem proteksi juga berhasil memutus aliran (trip) saat kondisi over voltage (242 V) dan under voltage (198 V), dengan ketahanan baterai Mini-UPS selama 2 jam 15 menit hingga 3 jam 20 menit. Sistem ATS ini terbukti bekerja secara andal, aman, dan responsif.

Kata Kunci: *Automatic Transfer Switch* (ATS), Arduino Uno R3, Sensor ZMPT101B, Proteksi Tegangan, Genset.

ABSTRACT
DESIGN OF AUTOMATIC TRANSFER SWITCH (ATS)
BASED ON ARDUINO MICROCONTROLLER FOR ELECTRIC GENSET
STARTER
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Dependence on PLN supplies is often constrained by power outages, while manual power transfer to a genset is inefficient. This study aims to design an Automatic Transfer Switch (ATS) and voltage protection system based on an Arduino Uno R3 microcontroller for an electric starter genset. The system uses ZMPT101B sensors for voltage monitoring, Schneider contactors as transfer switches, and a 12V Mini-UPS for backup control power. Test results show that when PLN fails, the genset starts automatically with an 18.92-second delay. When PLN stabilizes, the load transfers back to PLN within 8.40 seconds and the genset shuts down in 5.03 seconds. The protection system successfully trips during over-voltage (242 V) and under-voltage (198 V) conditions, with Mini-UPS battery endurance lasting 2 hours 15 minutes to 3 hours 20 minutes. This ATS system operates reliably, safely, and responsively.

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