

ABSTRAK

ANALISIS PERUBAHAN BEBAN *MAIN DISTRIBUTION PANEL* (MDP) MENGUNAKAN SISTEM AKUISISI DATA BERBASIS PROTOKOL MODBUS DAN NODE-RED PADA GEDUNG H JURUSAN TEKNIK ELEKTRO UNIVERSITAS LAMPUNG

Oleh:

Muhammad Tegar Sabilillah

Gedung H Jurusan Teknik Elektro Universitas Lampung memiliki peran penting dalam mendukung operasional dan akademik mahasiswa, dosen dan civitas Jurusan Teknik Elektro. Sebagai salah satu gedung perkuliahan di lingkungan kampus, Gedung H membutuhkan pasokan energi listrik yang andal, efisien dan aman agar seluruh aktivitas dapat berjalan tanpa hambatan. Salah satu solusi yang dapat diterapkan untuk mendukung hal tersebut adalah membuat sistem akuisisi data yang dapat memantau dan menganalisis beban listrik secara *real time*. Penelitian ini bertujuan untuk merancang sistem akuisisi data berbasis protokol Modbus RS485 to Ethernet yang telah menjadi standar industri, serta menggunakan platform Node-RED sebagai sistem pengelolaan dan visualisasi data. Pengujian yang dilakukan menunjukkan galat antara sistem akuisisi data dengan *Power Quality Analyzer* (PQA) tegangan sebesar 0.302% dan galat arus sebesar 0.310%, serta presentase keberhasilan pengambilan data selama tujuh hari sebesar 99.17%.

Kata Kunci: Akuisisi Data, Grafana, *Main Distribution Panel*, Modbus RS485 to Ethernet, Node-RED,

ABSTRACT

ANALYSIS OF LOAD VARIATION IN MAIN DISTRIBUTION PANEL (MDP) USING DATA ACQUISITION SYSTEM BASED ON MODBUS PROTOCOL AND NODE-RED IN BUILDING H, DEPARTMENT OF ELECTRICAL ENGINEERING, UNIVERSITY OF LAMPUNG.

By:

Muhammad Tegar Sabilillah

Building H of the Department of Electrical Engineering, University of Lampung, has an important role in supporting the operations and academics of students, lecturers, and the Electrical Engineering Department community. As one of the lecture buildings on campus, Building H requires a reliable, efficient, and safe supply of electrical energy so that all activities can run without a problem. One solution that can be applied to support this is to create a data acquisition system that can monitor and analyze electrical loads in real time. This research aims to design a data acquisition system based on the Modbus RS485 to Ethernet protocol, which has become an industry standard. It uses the Node-RED platform as a data management and visualization system. The tests carried out show the error between the data acquisition system and the Power Quality Analyzer (PQA) voltage of 0.302% and current error of 0.310%, and the percentage of successful data collection for seven days is 99.17%.

Keywords: Data Acquisition, Main Distribution Panel, Modbus RS485 to Ethernet, Node-RED, Grafana