

ABSTRAK

RANCANG BANGUN SISTEM MONITORING DAN DETEKSI DINI ANOMALI SUHU BERBASIS IOT REAL-TIME

**(2026: xiv + 64 Halaman + 36 Gambar + 16 Tabel + Daftar Pustaka +
Lampiran)**

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JURUSAN TEKNIK ELEKTRO

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Monitoring suhu secara manual menyebabkan perubahan suhu sulit terdeteksi secara dini. Penelitian ini merancang sistem monitoring dan deteksi dini anomali suhu berbasis IoT *real-time* menggunakan sensor DS18B20 dan mikrokontroler ESP32. Data suhu ditampilkan melalui LCD 16×2, dikirim ke Blynk dan Google Sheets, serta disimpan lokal pada Micro SD Card. Sistem diujikan pada panel surya monokristalin 100Wp dan motor induksi 3 fasa conveyor BC03 PT. Bukit Asam Tbk Kertapati Port, dengan batas anomali masing-masing 85°C dan 105°C. Hasil pengujian menunjukkan sistem mampu bekerja dengan baik dan tidak ditemukan kondisi anomali termal pada kedua objek selama periode pengujian.

Kata Kunci: Monitoring suhu, IoT, DS18B20, ESP32, Deteksi Anomali, Panel Surya, Motor Induksi, Blynk, Google Sheets.

ABSTRACT

DESIGN AND DEVELOPMENT OF A REAL-TIME IOT-BASED SYSTEM FOR MONITORING AND EARLY DETECTION OF TEMPERATURE ANOMALIES

(2026: xiv + 82 Pages + 36 Figures + 16 Tables + References + Appendices)

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ELECTRICAL ENGINEERING

STUDY PROGRAM OF ELECTRONICS ENGINEERING

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Manual temperature monitoring makes it difficult to detect temperature changes at an early stage. This study designs an IoT-based real-time temperature monitoring and early anomaly detection system using DS18B20 sensors and an ESP32 microcontroller. Temperature data is displayed on a 16×2 LCD, transmitted to Blynk and Google Sheets, and stored locally on a Micro SD Card. The system was tested on a 100Wp monocrystalline solar panel and a three-phase induction motor on conveyor BC03 at PT. Bukit Asam Tbk Kertapati Port, with anomaly thresholds of 85°C and 105°C respectively. Results show the system performed well with no thermal anomaly detected on either object throughout the testing period.

Keywords: *Temperature monitoring, IoT, DS18B20, ESP32, anomaly detection, solar panel, induction motor, Blynk, Google Sheets*