

ABSTRAK

RANCANG BANGUN TIMBANGAN DIGITAL DENGAN SENSOR LOAD CELL DAN HX711 MENGGUNAKAN ARDUINO NANO

(2026 : xiv + 72 Halaman + Daftar Pustaka + Lampiran)

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PROGRAM STUDI DIII TEKNIK ELEKTRONIKA

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Perkembangan teknologi mikrokontroler mendorong pengembangan sistem pengukuran digital yang lebih akurat dan efisien dibandingkan timbangan konvensional. Penelitian ini bertujuan merancang dan membangun timbangan digital menggunakan sensor Load Cell, modul HX711, dan Arduino Nano sebagai pengendali utama. Metode yang digunakan meliputi studi literatur, perancangan sistem, perakitan alat, kalibrasi, dan pengujian. Pengujian dilakukan terhadap kemampuan sensor dalam mendeteksi berat, kestabilan hasil pengukuran, serta tegangan kerja setiap komponen. Hasil pengujian menunjukkan bahwa sensor Load Cell yang dipadukan dengan modul HX711 mampu mendeteksi perubahan berat dengan baik, sedangkan Arduino Nano berhasil mengolah data dan menampilkan hasil pengukuran secara real-time pada LCD. Selain itu, seluruh komponen bekerja sesuai dengan tegangan operasinya sehingga sistem dapat berfungsi dengan baik. Dengan demikian, timbangan digital yang dirancang berhasil diimplementasikan sebagai alat ukur berat yang akurat, stabil, dan mudah digunakan.

Kata kunci: Timbangan digital, Load Cell, HX711, Arduino Nano.

ABSTRACT

DESIGN AND DEVELOPMENT OF A DIGITAL WEIGHING SCALE USING A LOAD CELL SENSOR AND HX711 WITH ARDUINO NANO

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The advancement of microcontroller technology has encouraged the development of digital measurement systems that are more accurate and efficient than conventional weighing scales. This study aims to design and develop a digital weighing scale using a Load Cell sensor, an HX711 module, and an Arduino Nano as the main controller. The research method includes literature study, system design, hardware assembly, calibration, and system testing. The tests were conducted to evaluate the sensor's ability to detect weight, the stability of measurement results, and the operating voltage of each system component. The test results indicate that the Load Cell sensor integrated with the HX711 module is capable of accurately detecting weight changes, while the Arduino Nano successfully processes the data and displays the measurement results in real time on the LCD. Furthermore, all system components operate according to their specified operating voltages, enabling the system to function properly. Therefore, the developed digital weighing scale has been successfully implemented as a measuring device that is accurate, stable, and easy to operate.

Keywords: Digital Weighing Scale, Load Cell, HX711, Arduino Nano