

Design and Development of an IoT based Intelligent Energy Meter using Less Expensive Controller Unit

Publisher: IEEE

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23
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Abstract

Document Sections

- I. Introduction
- II. Related Study
- III. Methodology
- IV. Results and Discussions
- V. Conclusion

Authors

Figures

References

Keywords

Metrics

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Abstract:

With an eye towards improving the efficacy of energy monitoring and management, this research offers a thorough approach for the creation of an Intelligent Energy Metre that is based on the Internet of Things. A key component of the system is the use of specialized sensors to continuously measure electrical characteristics like voltage and current. These sensors generate analog signals, which are conditioned, digitized, and processed by a microcontroller. Algorithms within the firmware/software calculate energy consumption metrics, which are transmitted wirelessly to a central server or cloud platform using secure communication protocols. The collected data is then stored and analyzed to provide insights into energy usage patterns, facilitating informed decision-making for optimizing energy efficiency and reducing costs. The methodology encompasses various stages, including market research, hardware and software development, integration, testing, deployment, and maintenance. Through the implementation of this methodology, a robust and scalable IoT-based energy monitoring system can be developed, empowering users to make informed decisions for sustainable energy management.

Published in: [2024 International Conference on Intelligent Systems for Cybersecurity \(ISCS\)](#)

Date of Conference: 03-04 May 2024

DOI: [10.1109/ISCS61804.2024.10581094](#)

Date Added to IEEE Xplore: 12 July 2024

Publisher: IEEE

► **ISBN Information:**

Conference Location: Gurugram, India

Authors



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