

Smart Energy Meter with IoT - Based Power Theft Detection and Usage Monitoring

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Abstract: *Objective: Replace traditional energy meters with an IoT-based smart meter for accurate, real-time power monitoring. Components: Uses current sensor (CT), voltage sensor, and microcontroller (ESP32) to measure electricity usage. Theft Detection: Detects tampering, bypassing, or unauthorized usage by analyzing abnormal power patterns. Remote Monitoring: Data is uploaded to cloud platforms (MQTT) for access via mobile/web apps. Benefits: Prevents revenue loss due theft. Improves billing accuracy. Helps users track and optimize energy consumption. Outcome: A cost-effective, automated and secure energy management system*

Keywords: ESP32, Arduinouno, Voltage Sensor, Current Sensor, Relay

