SMART METER WITH GATEWAY COMMUNICATION

23MC411- PROJECT WORK

submitted by

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in partial fulfillment for the award of the degree

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in

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BONAFIDE CERTIFICATE

Certified that this project report **"SMART METER WITH GATEWAY COMMUNICATION"**is the bonafide work of "**JAWAHAR R (23205024)"** who carried out the project work under my supervision during the **Academic Year 2024 – 2025.**

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Examiner – 1 **Examiner – 2**

DECLARATION

I, **JAWAHAR R** hereby declare that the project report titled **“SMART METER WITH GATEWAY COMMUNICATION"** done by me under the guidance of **Mrs. Muthulakshmi,** at **Rathinam Technical Campus** is submitted in partial fulfilment of the requirements for the award of Master of Computer Applications. Certified further that to the best of my knowledge the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

The Smart Energy Meter Gateway is an innovative IoT solution designed to enable real-time monitoring, analysis, and optimization of energy usage in industrial settings. It serves as a central hub, connecting voltage and current sensors to an STM32F446RE microcontroller, which processes the energy data and transmits it to the rugged A5D2X board via USART communication. The rugged board then displays the data locally on an LCD screen while also transmitting it to the cloud for remote monitoring and analytics. This seamless integration allows industries to track power consumption in real time, improving visibility and control over energy usage.

Built with scalability and reliability in mind, the system supports a range of industrial applications such as manufacturing, energy management, and smart grid implementation. Its ability to generate real-time alerts enables proactive responses to abnormal power usage, reducing downtime and supporting predictive maintenance efforts. By combining IoT connectivity, cloud integration, and efficient data processing, the Smart Energy Meter Gateway helps industries make data-driven decisions, boost operational efficiency, and move toward more sustainable and intelligent energy management practices.

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Jawahar R

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IOT	Internet Of Things
MQTT	Message Queuing Telemetry Transport
LCD	Liquid Crystal Display
I2C	Inter-Integrated Circuit
GPIO	General-Purpose Input/Output
USART	Universal Synchronous/Asynchronous Receiver-Transmitter

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