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Web-Enabled IoT Smart Water Meter for Real-Time Usage Monitoring

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Abstract: *This paper presents a Web-Enabled IoT Smart Water Meter designed for real-time monitoring and efficient management of water usage. The system comprises a transmitter unit based on the ATMEGA328P microcontroller, which collects data from water level sensors and transmits it wirelessly via the LoRa SX1278 module. A receiver unit featuring the ESP8266 microcontroller receives this data, processes it alongside input from a water flow sensor, and displays it on an OLED screen. Additionally, it enables motor control through a relay and uploads real-time usage data to cloud platforms such as Blynk and ThingSpeak, allowing users to access insights via mobile or desktop interfaces. This solution facilitates remote monitoring, promotes water conservation, and supports smart city infrastructure through low-power, long-range communication and seamless cloud integration*

Keywords: IoT, Smart Water Meter, LoRa Communication, Real-Time Monitoring, ESP8266

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