

## Abstract

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# Integrating Prepaid Customers into AMI: A Solution Using Keypad Meters and Standardized Protocols for PLN in Indonesia

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### Abstract

Perusahaan Listrik Negara (PLN), Indonesia's state-owned electricity company, continue to deploy advanced metering infrastructure (AMI) for their customers. In 2023, PLN passed a significant milestone, installed 1.2 million meters in selected cities in Indonesia. However, the current implementation of AMI is limited to postpaid plans due to constraints in the service system and meter design features. This has led to a focus on migrating postpaid customers to AMI, while prepaid customers have been left behind due to customer resistance. Meanwhile, to fully obtain the benefits of the AMI system, all customers need to be integrated into the AMI system. This paper proposes a novel solution for integrating prepaid customers into the AMI system. The proposed design leverages keypad prepaid meters that communicate using both DLMS/COSEM and STS protocols. DLMS/COSEM ensures compatibility with existing data management systems, while STS maintains the convenience of token-based payment for customers while ensuring high encryption security. This paper details the standardized meter design required for implementation. This design includes specifications for the hardware interfaces, such as the keypad and communication port. Additionally, it outlines the key features necessary for seamless integration with existing AMI data management systems. These key features encompass meter functionality requirements, data structure, data collection definition, special objects for token-based management, and daily energy profile. Furthermore, the paper outlines the management of payment metering interfaces to ensure the DLMS/COSEM protocol can effectively accommodate the STS protocol. By implementing this solution effectively, PLN can transition prepaid customers who were previously unreachable into AMI customers, and can enable the full benefits of AMI.