A ZigBee and PLC Based System for Home Automation and Networking in Smart Grid

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Smart Grid (SG) is a new technology for the future electric power network. It is a digitally enhanced version of the traditional electric grid. Smart grid employs an intelligent overlay of advanced communications, electronics and computing technologies. It provides us the communication capabilities to monitor and control the national electrical delivery system. Generally, smart grid is a data communications network integrated with the electrical grid that collects and analyzes data captured in near-real-time about generation, power transmission, distribution, and consumption. In this paper we propose a ZigBee and PLC based system for home automation and networking in the smart grid. The proposed architecture consists of two different gateways to connect the ZigBee network to the public and utility networks for Advance Metering Infrastructure (AMI) applications. We estimate the bandwidth requirement for AMI system using fluid flow approximation.

Keywords: Smart Grid; Communication Networks; Home Automation; ZigBee; PLC

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