

## Chapter 29

# A Reliable, Low-Cost, and Low-Power Base Platform for Energy Management System

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**Abstract** In this project, a prototype of low-cost, low-power energy management system that can control lights and AC has been developed. This system has multi-master, multi-slave controller module that use wireless communication link for ease of installation on building. This system can be accessed remotely by user in intranet and/or internet network by implementing an embedded web server that letting users to control the devices and showing the status of the controlled devices. This system has been tested at home and office buildings. As results, the system can work well at home buildings less than 180 m<sup>2</sup> area and less than 350 m<sup>2</sup> area of three-floor office building. The best installation for office building of this system is the slave controllers should be installed at one upper and one lower floor relatively to master controller position. To extend the range of communication between controllers, multi-master wireless communication system can be implemented. This implementation has been tested as well and it works without problems.

**Keywords** Energy management system · Wireless communication · Multi-master · Multi-slave

### 29.1 Introduction

The background of this project is our observations in energy usage at home, office, and campus building. Energy is waste in daily life due to incorrect planning and implementation of electrical devices. This finding inspired us to develop a reliable, low-cost, and low-power base platform to monitor and control building resources, such as lights and ACs, in proper usage.

Our focus on this project is helping people to have awareness and manage the energy usage in their daily life at home and office. We designed the platform for

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