

Development of a prototype for remote current measurements of PV panel using WSN

ABSTRACT

Sensing, monitoring, actuating and information retrieving are expected to play a key role in smart grid energy management strategy. For energy consumption metering, power measurement systems generally implement transformers contactless current sensors but also have a wide variety of technologies especially for integrating renewable generations. One of the key problems of future smart grid is to develop data communication system for distributed intermittent renewable generations to build an efficient energy management and demand response system. In this paper, a test bed has been developed using Wireless Sensor Network (WSN) based on IEEE 802.15.4 standard for remote real time monitoring of current production in a distributed Photovoltaic (PV) plant. ZigBee based WSN is integrated with Arduino microcontroller and current sensor to sense produce current by PV at every moment and forward this data to control unit instantaneously. In the control unit, a LabVIEW based program is developed to receive the data and store in to a database for further processing of energy management by the control unit.

Keyword: Hall effect sensor; Photovoltaic; ZigBee communication