REMOTE MONITORING OF PHOTOVOLTAIC SYSTEMS USING EMBEDDED SYSTEM CLUSTERS

Remote monitoring of photovoltaic systems is critically important for the users. The performance of each component existing in these systems should be observable. In this study, a cheap and easily mountable remote monitoring design for low cost photovoltaic systems located near urban areas is proposed. With this design, it is aimed to transmit collected information at the remote solar energy station with MPI (Message Passing Interface). A design has been done for a remote monitoring of a 1kW photovoltaic system. With this design, panel and battery voltages, temperature and humidity can be observed remotely. An embedded system cluster consisting of single-board computers has been used in the design. This cluster is composed of a center single-board computer and remote node single-board computers as many as the photovoltaic system count. Collected information is broadcasted over internet using the single-board computer at the center.