International Journal of ChemTech Research
CODEN(USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.14, pp 249-252,2017

Environmental Monitoring System With Wireless Mesh Network Using Zigbee

B. Manjurega,M.Priyadharsini*, T.Poovika, S.Sanjeevi, P.Rooban

Depertment of Electronics And Communication Engineering, K.S. Rangasamy College of Technology,Tiruchengode, Tamilnadu, India

Abstract: Communication has become easier via many wireless technologies. With the advancement in sensor technology a wireless environmental monitoring system in mesh network has been built to monitor the temperature, humidity and the gas present in the observed environment. The sensor system is developed using Zigbee module with the competence of mesh networking. The sensors are distributed in the different nodes that constitute a wireless sensor network, which is capable of monitoring, processing and communicating the continuously sensed data as packets in regular intervals to the overall controller. The processes that are taking place in the system are data acquisition, data processing and filtering, data storage and sending. The system consists of a PIC 16F877A microcontroller based measuring units that collects the value of temperature, humidity and the pollution causing gases and finally the results are sent to PC where data is stored and displayed in numeric form. The system contains four nodes connected in mesh network. The main advantage is data routing, that is, the collected data will be routed to the other node and thentransmitted without any interruption even any one of the nodes in between gets failed.The system is combined with high reliability and performance. The system is also helpful in the implementation of monitoring applications without the technical hitches of complex wireless networking.

Keywords :Zigbee, wireless sensor network, data routing, mesh network, PIC 16F877A microcontroller.

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