

一种无线传感器网络分布式测试系统

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摘要:

从实验室研制出的无线传感器网络(WSNs)设备在走向实际应用之前往往没有进行相关的测试工作,这就增加了WSNs工作时的不确定性。为了对开发出来的WSNs设备的性能参数进行测试,研究出了一个测试系统。系统采用了一种分布式的结构,以ARM处理器为测试板核心,使用CAN总线作为系统的测试总线和PC机进行数据交互,实现了对节点进行大规模并行在线的BSL编程,并采集各节点的能耗数据以及监控节点工作状态信息,通过PC机软件综合处理,以分析它的性能。

关键词: 无线传感器网络; 能耗监测; BSL编程; 性能测试

A Distributed Testing System of Wireless Sensor Networks

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Abstract:

The wireless sensor network (WSNs) devices developed from the laboratory always haven't being tested before they are used for practical application, and this will bring the uncertainty of their performance when they work. To do performance testing for the WSNs devices when they are developed, a kind of testing system has been developed. This system, using a distributed structure, takes the ARM processor as the core of the test-board, and realizes data exchange with PC by using CAN bus as the testing bus of the system, and it can do the BSL in system program for the large number of the nodes at the same time. Also it can collect the data of energy consumption of the nodes, and monitor the information of its working condition. Finally it can analyze the performance of the WSN after processed by the software on PC.

Keywords: wireless sensor network; energy consumption; BSL program; performance testing

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