

自动化

RuBee技术简介及其在电力物联网中的应用

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摘要:

标识技术是电力物联网的关键技术之一, 是实现物品可视化管理的重要技术手段。RuBee(IEEE Std 1902.1—2009)定义了一种采用电感耦合方式传输信号的特殊的标识技术, 具有功耗低、体积小、穿透力强等优点。从电感耦合传输原理、信号传输衰减特性方面入手, 对RuBee技术原理进行了理论分析与仿真, 证明RuBee 技术具有高可靠、高保密、易操作、适应性强的特性, 并且信号能够穿透金属、水、混凝土等介质而可靠传输, 具有很强的抗干扰能力, 非常适合于电力系统高压、高温、潮湿等恶劣环境的应用, 可以解决复杂、恶劣、强干扰工业环境下电力设施的标识识别与信息通信问题。探讨了RuBee技术在地理电力电缆位置标识、路径辨识, 及高压设备运行管理、维修记录、安全跟踪等全寿命周期管理方面的应用, 展望了该技术在电力物联网中的应用前景。

关键词:

An Introduction to RuBee and Its Application in Electric Internet of Things

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Abstract:

Identification technology is one of the key technologies of electric internet of things, and is also an important technological measure to implement visualized management of things. As defined in IEEE Std. 1902.1-2009, RuBee is a special identification technology that transmits signals by inductive coupling mode. RuBee possesses following advantages: low power consumption, small size and high penetrability. Based on the transmission principle of induction coupling and transmission attenuation characteristics of signals, the theoretical analysis and simulation of RuBee are performed, and it is proved that RuBee possesses the properties of high reliability, high security, easy to operate and high adaptability, and signals can reliably transmitted via such mediums as metal, water, concrete and so on. Due to its strong anti-interference capability, RuBee is very suitable to be applied in high voltage, high temperature and high humidity environment of power system to distinguish identifications of power system and power system communication in complex, harsh, strong-interferential Industrial environment. The application of RuBee technology in the identification of buried position and path of power cables and in the whole life-cycle management, such as the identification of operation management, maintenance records and security tracing of HV equipments, are discussed. Finally, the application of RuBee in electric internet of things is prospected.

Keywords:

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