

自动化

低压电力线载波通信技术研究进展

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摘要:

阐述了低压电力线载波通信技术研究的主要方向, 概括了国内外学者在阻抗特征、信号衰减特性、噪声特性、信道模型等方面的研究成果和相应解决策略。针对电力线通信的调制解调技术和组网技术等方面进行了分析。其中, 调制解调技术主要包括当前热点研究的正交频分复用(orthogonal frequency division multiplexing, OFDM)相关技术以及跳频调制/解调技术, 组网技术则主要分析考虑网络有效性和服务需求的蚁群优化路由算法。对国内外电力线标准的最新研究工作进行了总结。最后, 结合低压电力线载波通信技术现状和发展要求, 对低压电力线载波通信的技术研究方向和发展潜力进行了展望和探讨。

关键词:

Advances of Research on Low-Voltage Power Line Carrier Communication Technology

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Abstract:

The major research directions of low-voltage power line carrier communication technology, including the research achievements in impedance characteristics, attenuation characteristic of signal, noise characteristic and channel models as well as corresponding solving strategies home and abroad, are expounded. The modulation-demodulation technology and networking technology, in which the former mainly includes the related technology of orthogonal frequency division multiplexing (OFDM), that is regarded as the research highlight at present, and the frequency-hopping modulation/ demodulation technology and in the latter the ant colony optimization routing algorithm considering network availability and service requirements of power line carrier communication networks is investigated, are analyzed. The newest results of the research on the specification for power line carrier communication home and abroad are summarized. Finally, according to its present technical condition and the requirements of its development, the research direction and development potential of power line carrier communication technology are discussed and prospected.

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