

继电保护、通信及自动化

双向工频通信下行信号系统的准最优控制方法

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摘要: 双向工频通信系统(two way power frequency automatic communication system, TWACS)下行信号系统的特性由调制信号特性、配电变压器的传输特性和线路的传输特性决定, 通过下行调制回路和传输通道幅频特性、相频特性的分析对比, 提出各频率特性有效频带的协调配合问题, 传输通道的相频特性起决定性作用。推导出在下行调制回路中串入电阻和串入阻容串联电路的调控方法。给出1阶系统电阻的选取公式和2阶系统电阻及电容的选取公式。在满足IEEE暂态电能质量条件下, 实现下行信号系统准最优控制。

关键词: 双向工频通信 传输特性 幅频特性 相频特性 准最优控制

Method of Suboptimal Control for Two-way Power Frequency Automatic Communication System Inbounds Signal

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Abstract: The characteristics of the two way power frequency automatic communication system (TWACS) inbound signal system are decided by the characteristics of modulation loop, distribution transformer and lines. This paper proposed the coordination between different effective frequency bandwidths by comparing to the frequency characteristic of modulation loop and transmission channel. The phase-frequency characteristics of transmission channel play the decisive role in this system. The regulation method which adds series-resistance and RC series circuit to modulation loop is proposed. The selected formula for the resistance of first-order system, and for the resistance and the capacitor of the second-order system are given. The suboptimal controlling method which meets the requirement of IEEE transient power quality is given.

Keywords: two way power frequency automatic communication system (TWACS) transmission characteristic amplitude-frequency characteristic phase-frequency characteristic suboptimal control

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