

电力系统

配电系统电压跌落状态估计中的不良数据辨识

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摘要:

SSE(sag state estimation)算法是一种用于电压跌落状态估计的二阶曲线拟合算法, 其精度受监测数据精度影响严重, 若监测关键点存在不良数据会导致整个配电网电压跌落状态的估计错误。基于此, 提出了电压跌落状态估计不良数据检测算法, 并构造了修正不良数据的数学模型。算例结果证明, 该算法能够有效识别不良数据, 提高电压跌落状态估计精度。

关键词:

Bad Data Identification in Voltage Sag State Estimation of Distribution System

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Abstract:

Sag state estimation (SSE) algorithm is a second-order curve fitting algorithm for voltage sag state estimation and the accuracy of state estimation is seriously affected by the accuracy of monitoring data, so the voltage sag state estimation will be wrong if there were bad data in the monitoring data of key point. For this reason, a detection algorithm for bad data in voltage sag state estimation is proposed and a mathematical model to modify bad data is constructed. Results of calculation example show that the proposed algorithm can effectively identify bad data, so the accuracy of voltage sag state estimation can be improved.

Keywords:

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参考文献:

[1] 莫俊雄, 汪志东, 徐义. 关于电能质量监测网的若干问题探讨[J]. 电网技术, 2001, 25(7): 77-79. Mo Junxiong, Wang Zhidong, Xu Yi. Discussions on monitoring network of electric power quality[J]. Power System Technology, 2001, 25(7): 77-79(in Chinese). [2] 毛传洲, 周英树. 城市配电系统自动化的规划[J]. 电网技术, 2001, 25(7): 72-76. Mao Chuanzhou, Zhou Yingshu. Planning of urban distribution automation[J]. Power System Technology, 2001, 25(7): 72-76(in Chinese). [3] 林海雪. 现代电能质量的基本问题[J]. 电网技术, 2001, 25(10): 5-12. Lin Haixue. Main problems of modern power quality[J]. Power System Technology, 2001, 25(10): 5-12(in Chinese). [4] 肖先勇, 王希宝, 薛丽丽, 等. 敏感负荷电压凹陷敏感度的随机估计方法[J]. 电网技术, 2007, 31(22): 30-33. Xiao Xianyong, Wang Xibao, Xue Lili, et al. A method to stochastically estimate voltage sag sensitivity of

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