

论文

智能变电站同步相量测量装置研制

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摘要:

同步相量测量装置因测量精度高、数据具有精确时标等特点已成为电网的重要监测设备,但目前在智能变电站中应用不多,还处于探索阶段。提出应用于智能变电站的同步相量测量装置,该装置采用嵌入式软硬件平台,在实现传统同步相量测量装置相量计算、故障录波、实时纪录分析、实时通信等功能的基础上,实现了符合IEC 61850标准的设备建模、采样值报文接收和解析、与站内监控及其他智能电子设备数据共享等功能。

关键词:

Development of Synchronized Phasor Measurement Units for Smart Substations

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Abstract:

Synchronized phasor measurement units (PMUs) have become the important monitoring devices in power networks for high precision and accurate time tag of measurement data, but the applications of PMUs in smart substation are relatively seldom and tentative. The PMUs suitable for smart substation are presented, which adopt embedded software-hardware platform, not only demonstrate the functions of common PMUs, i.e. phasor calculating, fault recording, real-time record analyzing and real-time communication, but also have the capabilities up to IEC 61850 standard of modeling equipment, receiving and processing of sampling data message, sharing data with supervisory devices and other intelligent electronic devices in smart substation.

Keywords:

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参考文献:

[1] 庄黎明, 戚宏伟. 同步相量测量技术在变电站间隔层中的应用[J]. 华东电力, 2006, 34(10): 90-92. Zhuang Liming, Qi Hongwei. Application of synchronous phasor measurement technology to bay levels of substations[J]. East China Electric Power, 2006, 34(10): 90-92(in Chinese). [2] IEC. IEC 61850-7-4—2003 Communication networks and systems in substations[S]. Geneva: IEC, 2003. [3] IEEE. IEEE Std c37.118—2005 Synchrophasors for power systems [S]. California: IEEE, 2006. [4] 任雁铭, 操丰梅, 秦立军, 等. MMS技术及其在电力系统通信协议中的应用[J]. 电力系统自动化, 2000, 24(19): 66-68. Ren Yanming, Cao Fengmei, Qin Lijun, et al. Application of MMS technology In power system[J]. Automation of Electric Power Systems, 2000, 24(19): 66-68(in Chinese). [5] 陈里, 焦继乐, 邓拯宇, 等. 嵌入式系统MMS发送简化过程研究与实现[J]. 计算机系统应用, 2009(8): 93-96. Chen Li, Jiao Jile, Deng Chengyu, et al. Research and implementation of simplified MMS sending procedure for embedded systems[J]. Application of Computer, 2009(8): 93-96(in Chinese). [6] 左群业, 张永利. IEC 61850 规约测试技术研究及应用[J]. 继电器, 2000, 35(2): 68-71. Zuo Qunye, Zhang Yongli. Study and application of IEC61850 protocol test technology[J]. Relay, 2000, 35(2): 68-71(in Chinese). [7] 高翔. 数字化变电站应用技术[M]. 北京: 中国电力出版社, 2008: 70-73. [8] 谭文恕. 电力

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