中国电机工程学报 2008, 28(27) 114-119 DOI: ISSN: 0258-8013 CN: 11-2107/TM

电机与电器

基于DSP的多采样率直接转矩控制系统研究

蔡华斌 肖建 严殊

西南交通大学电气工程学院 西南交通大学电气工程学院 西南交通大学电气工程学院

摘要： 基于多采样率控制理论，提出一种多采样率磁链计算新方法，该方法对电机电压电流的测量与逆变器开关的控制采用不同的周期，磁链的计算是静态的，无初值和误差累计问题。基于实际控制系统，以Matlab和DSP为工具，提出2种检验方法，相互印证，检验了该算法的正确性。针对实验中出现的磁链波动问题，提出一种幅值补偿的磁链改进算法。将检验后的磁链算法运用于直接转矩控制系统中，构造了基于TMS320F240的多采样率直接转矩控制系统并成功进行了控制实验。计算机仿真与实验表明磁链计算新方法的正确性和可行性。

关键词： 多采样率控制 直接转矩控制 感应电机 磁链计算

Multirate Direct Torque Control Based on DSP

CAI Hua-bin XIAO Jian YAN Shu

Abstract: Based on multirate digital control theory, a novel method to calculate stator flux of induction motor is proposed. This novel method uses different time intervals between sampling of stator currents and voltages and switching operations of inverter devices. The flux computation is a static process without problems such as initial values and error accumulation. Two testing plans are put forward to verify the flux calculation that is based on Matlab and DSP. However, there is a phenomenon of flux fluctuation. In order to overcome this problem, an improved algorithm is presented to compensate for the stator flux amplitude. The multirate direct torque control system for induction motor is set up based on TMS320F240. Computer simulation and experimental results demonstrate the effectiveness and feasibility of the proposed method.

Keywords: multirate digital control direct torque control induction motor flux calculation

收稿日期 2007-05-22 修回日期 1900-01-01 网络版发布日期

DOI:

基金项目:

通讯作者: 蔡华斌

作者简介:

作者Email: caihuabin0712@163.com

参考文献：

本刊中的类似文章