
低压系统动态无功补偿控制器的设计

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摘 要：低压系统动态无功补偿控制器的设计是用来提高电力网运行时的功率因数，减少无功损失及线损。毕业设计以 STC89C52RC 单片机为控制芯片，人机交互的功能。以 ATT7053BU 为功率芯片来实现自动采样、计算各个参数数据，投切装置采用 TLP521-1 光电耦合器件实现强电与弱电的隔离。系统能通过过零投切电路能够实现无功进行平滑的补偿。系统遵循“先投先切”的原理，来保证电容器的利用率。LCD 液晶显示装置能够展现电压、电流、无功、功率因素。通过对并联电容的投切完成无功补偿，来提高低压系统的功率因数，减少变压器和输送线路的电能损耗，这样电容器就不会受到损坏。以 51 单片机为控制器设计的自动无功补偿装置的无功补偿控制器具有这四种优点：操作方便、成本低、低功耗、实用性强。

关键词：低压系统；动态无功补偿器；无功补偿器

Design of Dynamic Reactive power Compensation Controller for Low Voltage System

Abstract: The design of dynamic reactive power compensation controller in low voltage system is used to improve the power factor when the power network is running and reduce the reactive power loss and line loss. In the graduation design, stc89c52rc single chip is used as the control chip, att7053bu is used as the power chip to realize the automatic sampling and calculation of each parameter data. Tlp521-1 optocoupler is used in the switching device to realize the isolation of strong current and weak current. The system can realize the smooth compensation of reactive power through the zero crossing switching circuit. LCD display device can display voltage, current, reactive power and power factors. The reactive power compensation is completed by switching the shunt capacitor to improve the power factor of the low-voltage system and reduce the power loss of the transformer and transmission line, so that the capacitor will not be damaged. The reactive power compensation controller of automatic reactive power compensation device based on 51 single chip microcomputer has three advantages: convenient operation, low cost and strong practicability.

Key Words: low voltage system; dynamic var compensator; VAR compensator

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