A Power Monitoring System of Machine Tool

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This paper completes a design of power monitoring system of machine tool based on MSP430F149 microcontroller. This system is mainly divided into four modules: the electric energy information input and processing module, electric energy metering operation processing module, Single-Chip Microcomputer system internal data processing module, and PC memory module, respectively. The voltage transformer and current transformer collect voltage signal and current signal respectively, which were inputted deferentially to the ATT7022A voltage channel and current channel, to achieve electric energy information input and processing. The special measure chip ATT7022A measures the three-phase active power, reactive power, apparent power, active energy and reactive energy to meter and operate electric energy. MCU system processing module communicates with ATT7022A chip via the SPI bus interface by using the 16 bit MSP430F149 microcontroller. The establishment of database model and database table using the relatively practical method of entity-relationship achieves PC internal data memory module. In addition, the fabrication of PCB circuit board and software writing are also introduced in detail in this paper.

Keywords: machine tool, power monitoring system, MSP430F149

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