

DATA ACQUISITION, MONITORING AND CONTROL WITH COMMUNICATION CONTROLLERS

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Problems of Computer Automation of Experimental Area require development of distributed microcomputer systems with flexible modular structure of interconnections. The position of Experimental Area is between Accelerator Control and Physics Research Equipment, and is specific for distributed Automation requirements, including Data Acquisition, Monitoring and Control. Microelectronics technologies open new possibilities to construct compact embedded microsystems on the base of new single-chip Microcomputers and Communication Controllers (CC) with power Microprocessor inside. Modern CC are compared for selection to subsystems interconnected by Ethernet. One of the most popular is Motorola's QUICC and Power QUICC families. The first more cheaper family includes 32-bit CPU+ (8.3MIPS, 680xx compatible processor), which supports 8 memory banks (DRAM or SRAM), and RISC Controller (7 serial channels, 14 serial DMA, 2 independent DMA), supporting IEEE 802.3 Ethernet. The second family Power QUICC or MPC86 (53MIPS at 40MHz and 300 mW at 25 MHz) is the first industry's Embedded Power PC Architecture for Data communications and Internet working. It's one of the best platform for future Distributed IP-controllers Subsystem with 10 Mbit/s Ethernet, which should be the same for Monitoring and Control in Technology Area and for Slow Control in Experimental Area. Some new approaches to Modular System Architecture and distributed subsystem development are proposed and discussed.