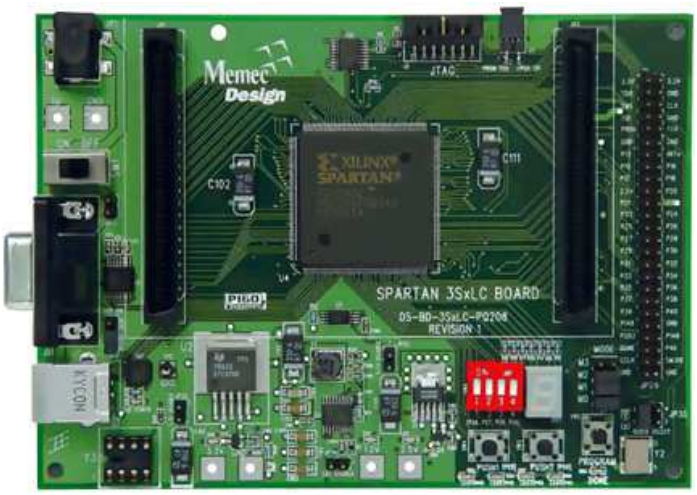
Automatic control system module

Completed project - April 2006



The module is designed for reception, analysis and control of incoming data from various user transducers – up to 300 (weight, temperature, humidity, intensity of illumination, vibration, angularity, magnetic field and etc.).

Memec (Avnet) debugging boards, user-defined daughterboard with DAC/ADC devices were applied for the controller implementation. The system includes the Microblaze soft-processor core. It exchanges data via BRAM with four Picoblaze cores which preprocessing data from the appropriate sensors.

Hardware IP cores are realized as well as embedded ucLinux Web-server with direct access through CGI interface to configuration parameters of the sensors.

Specifications

FPGA-type	Xilinx Spartan3-700A
Employed buses and FPGA interfaces and memory	LMB, OPB, FSL SDRAM, PLM Flash, Toshiba Flash
Employed connectivity interfaces	• Ethernet 10/100 • GPIO • USB 1.1 • UART • JTAG
Developed IP cores	• IIC • Flash memory controller • Application-specific IP cores
Peculiarities	• Processor Microblaze-80 MHz • Four processors Picoblaze -80 MHz • ucLinux operating system
Design tools	ISE Xilinx, EDK, ChipScope Pro, gcc, Crosscompiler Toolchain Microblaze, CGI, Picoblaze assembler
Lead time	3 months

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