E1-543: Development of microcontroller based high capacity standalone data acquisition systems

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A low cost, user-friendly data acquisition (DAQ) system was built using a microcontroller of the PIC family. The developed DAQ system consists of four separate ports to acquire data from external sensors, namely, a port with 8-analogue channels for direct coupling (above 1Mbps), a serial port for serial data input (33600bps), a port with six I2C channels for I2C data input and an 8-bit port for digital input. The acquired data through this system can be stored either in a hard disk or in a Flash card interfaced through an IDE controller. In the present design, two 18F452 microcontrollers, one to function as the IDE controller and the other to manipulate input/output data were used. DS1275 real time clock IC was used to generate date and time accurately. The system can display necessary information and messages on a liquid crystal display or on a computer monitor. Data recorded in this DAQ system can be transferred to a PC through a serial port or through a network interface using RTL8019AS chip.