

**Parallel Processing Using the  
PC4000-RISC System**

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**Abstract**

A high performance parallel processing system can be configured with multiple PC4000 plug-in processor boards using the PC/XT or AT as the host I/O server. Each PC4000 uses a Novix NC4016 Forth engine as its CPU. A six PC4000 board parallel processing system delivers speeds in the 30 MIPS range.

Coordination of the PC4000 processors is carried out using PCX, a multitasking control and communications system written in Forth and running on the host. PCX supplies each PC4000 processor with keyboard sensing, screen output, disk access, and processor program loading. Using PCX, up to six PC4000s can operate in parallel with each other while running concurrently with the host with minimal host performance degradation. Multiple PC4000 boards can each support a common application or each PC4000 can support an individual applications under PCX.

PCX allows fast convenient switching between the host and PC4000 which speeds up program development turnaround. For example, the PCX host editor allows a programmer to test a section of code without leaving the PCX editor. This is done by switching to the PC4000 directly from the editor, loading and running the new code, then switching back to the editor to make code adjustments.

Applications that can be partitioned easily and that require intensive calculations like the Mandelbrot fractal program are well suited for this kind of parallel processing environment.