

3400 EPC Compact PCI/PXI Embedded PMC Carrier Board

Hardware Features

- ◆ AMCC 440GX PowerPC 800MHz system on a chip
- ◆ 3U Compact PCI/PXI form factor
- ◆ 133MHz 64-bit host PCI-X interface
- ◆ 133MHz 64-bit local PCI-X PMC interface
- ◆ 512kB boot flash
- ◆ 32MB code flash
- ◆ Up to 512MB DDR SDRAM using a standard SODIMM
- ◆ 4 User defined front panel LED states
- ◆ IPMI system bus communication support
- ◆ EPC-to-EPC communication

Software Features

- ◆ Embedded Linux (TimeSys® GPL)
- ◆ PCI driver with streaming capabilities
- ◆ GNU toolchain
- ◆ Full support for LabVIEW® Embedded
- ◆ IEEE compliant Floating Point Emulation optimized for the AMCC 440GX

Advantages

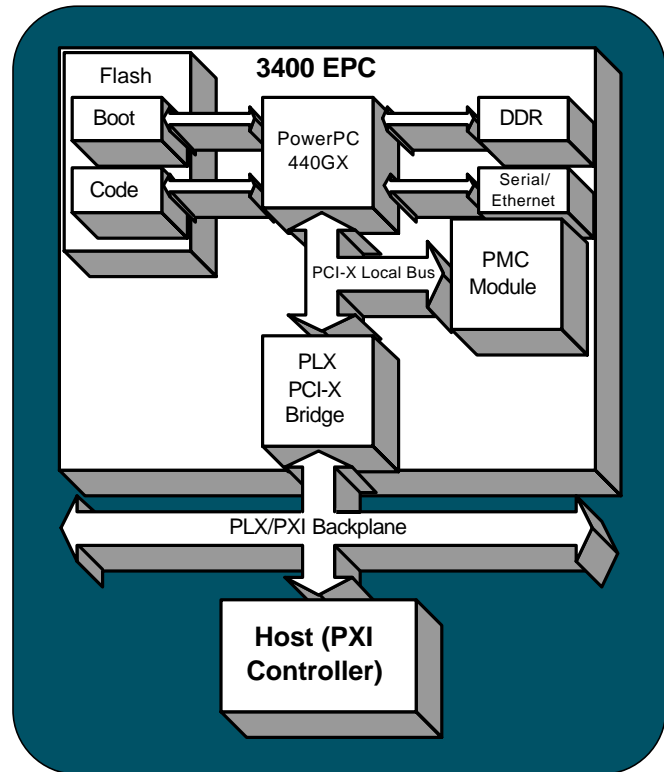
- ◆ Flexible I/O via the PMC interface
- ◆ Process complex algorithms without host CPU
- ◆ High speed bus (1064 MB/s) between acquisition and processing
- ◆ Rapid development via LabVIEW Embedded
- ◆ Turns existing systems into superscalar platforms

PMC Technology

PCI Mezzanine Card: an industry standard PCI based subsystem in which mezzanine cards are connected to a carrier board by means of a local bus.

For more PMC information visit:
www.compactpci-systems.com/products/guides/pmc

Functional Block Diagram



Overview

The DAQTron 3400 Embedded PMC Carrier module provides a fast and efficient way to reduce the processing load from the main system controller. This is accomplished by performing application specific processing locally on the board; reducing unnecessary PCI backplane traffic and maximizing realtime processing capabilities.

Taking advantage of the PCI-X interface, the PowerPC processor can communicate with the PMC module at throughputs up to 1064MB/s. This on-board PMC site makes the DAQTron 3400 EPC ideal for various communications and data acquisition applications.

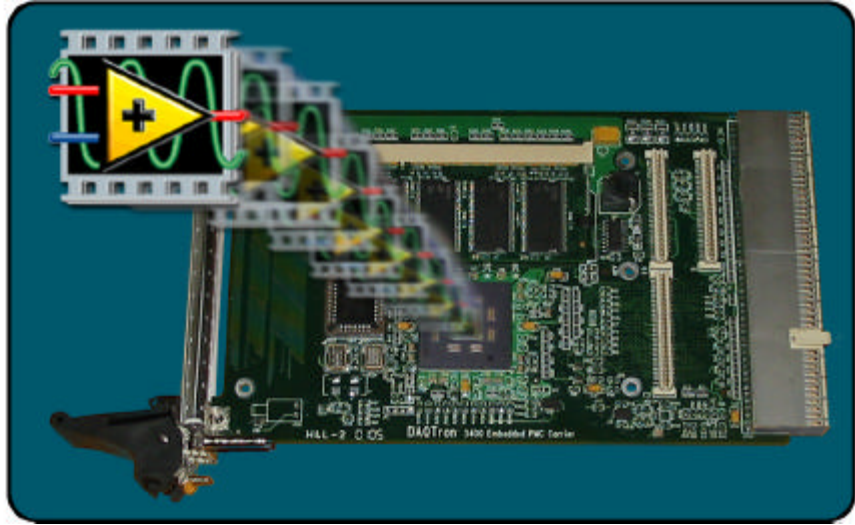
Typical PMC functionality:

- ◆ Parallel processing (processor, FPGA, DSP)
- ◆ Interface (Ethernet, ATM, serial, etc)
- ◆ Data acquisition and generation (analog, digital)
- ◆ Peripherals (video controller, mass storage, SCSI, etc)

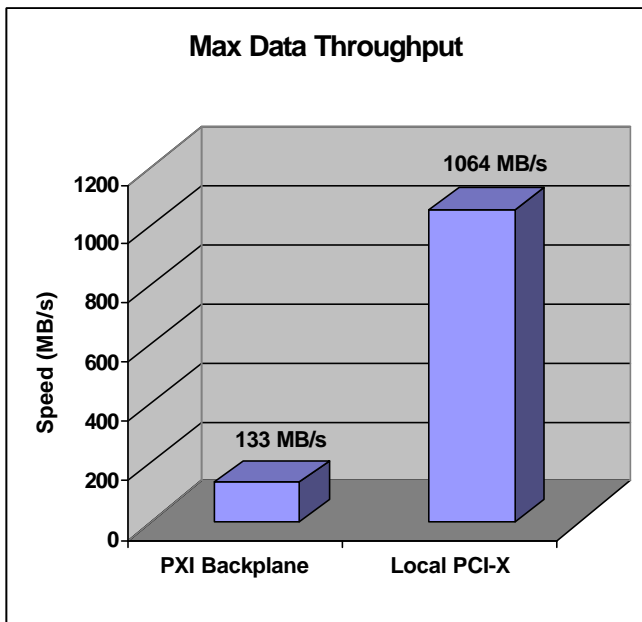
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Embedded Programming Made Easy

One of the largest barriers to creating embedded systems is the steep learning curve of the development process. DAQTron's 3400 EPC was designed to break down those barriers. The most impressive part of this product is its flexibility. Every developer has their own favorite programming language or development environment, and the EPC supports many of these languages. The GNU toolchain has been ported to the EPC, allowing more traditional embedded development in C and C++. Most any scripting language (TCL, Perl, etc) that has been ported to Linux can be used to create embedded applications on the EPC.



DAQTron has worked closely with NI to add support for LabVIEW Embedded to the EPC. With this revolutionary new product, the world of embedded programming is now opened to all LabVIEW programmers. Even better is the fact that most existing LabVIEW code can be converted to an embedded application at the click of a button. Add to that the LabVIEW development environment which allows for rapid code development, and you have an embedded system with an unprecedented ease of use. By combining LabVIEW Embedded and DAQTron's EPC; creating high performance, highly specialized instruments to meet specific industry needs has never been as affordable, quick, or easy.



Moving the Analysis to the Measurement

Data acquisition and generation rates continue to rise. As these rates rise, the system buses can become overloaded. These buses are responsible for taking data to/from its point of exit/entry in the measurement system. To overcome these bottlenecks, computations need to be made as close to the point of exit/entry as possible; therefore by-passing many bottlenecks.

DAQTron's 3400 EPC does this by running the complex computational algorithms on an 800 MHz AMCC440GX. While the system PCI bus might be limited to 32-bit and 33 MHz (133 MB/sec max), the EPC is connected through a backwards compatible PCI-X bus which allows data transfers up to 64-bit and 133 MHz. This increases the bandwidth between the generation/acquisition hardware to the computational algorithms by a factor of 8 (1064 MB/sec max).