



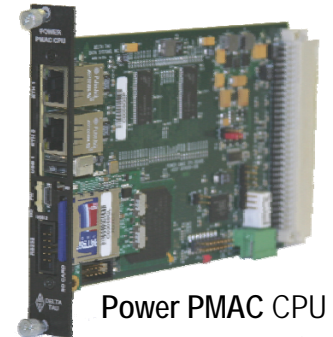
DELTA TAU

Introducing the Power PMAC

The Motion Computer

That provides the A to Z for going from A to B!

Designers and sophisticated motion and control systems have long faced a difficult choice: a dedicated controller that makes executing basic tasks easy but can limit the sophistication of what can be accomplished, or a general-purpose computing engine that permits the use of the full sophistication of modern programming languages but make it very difficult just to get from Point A to Point B, and to do simple I/O operations.



Power PMAC CPU

Delta Tau Data Systems' new Power PMAC controller allows designers an escape from this difficult choice. The Power PMAC is a full-fledged general-purpose computing engine with a true real-time multi-tasking operating system. However, it comes embedded with Delta Tau's latest motion and machine-control programming environment, built on over 25 years of experience in producing state-of-the-art controllers that are easy to use.

This gives machine control designers the best of both worlds. In virtually all aspects of the machine control, users have the choice between using the built-in motion and PLC algorithms and providing their own software written in C or C++ and compiled with the public domain GNU compiler.

Not only does the Power PMAC provide a complete motion and I/O solution, but it is also the integration of a complete P.C. in the controller rack because it allows the operation of a hard disk, a video card for driving a monitor as well as a keyboard. This is a complete control system.

Want the controller to execute a complex "G-code" motion sequence generated by an industry-standard CAD/CAM program? Just download the program file to the Power PMAC and let the built-in interpreter and automatic motion sequencer take over.

Want to use object-oriented C++ code to govern the overall machine "PLC" logic on the same machine? Write the code in industry-standard language in a sophisticated integrated development environment (IDE), cross-compile it with the public-domain GNU compiler, and download it to the Power PMAC. Alternatively, create the logic graphically in one of the resident IEC-11631 standard forms that automatically generates C code, then run the resulting code. Do the same with programs such as "EPICS" that can simply be loaded into and executed in the CPU.

Happy with the built-in servo algorithms? Just set a few gain terms with the sophisticated automatic or interactive tuning utilities. Have a special servo algorithm you need implemented? Either write it directly in C or use a tool like Matlab's Simulink and Real Time Workshop to generate the C code, cross-compile it and download it to the Power PMAC.





Need to create a custom motion profile or trajectory with your own C software? Build it up segment by segment, handshaking with the built-in cubic interpolation function according to some simple rules to keep continuous motion going.

Not a real programmer yourself but need to get a complex machine going? Use Power PMAC's built-in script language for both motion sequences and general machine and I/O logic. The script language automatically takes care of many issues that a standard language such as C does not: proper timing and pipelining of move sequences, simple or complex, automatic type matching of different variables (short-word and long-word, fixed-point and floating-point). Keep the advanced tools of a good IDE – editors, debuggers, project managers – that standard programming languages have.

Like to be able to command and query the controller quickly and directly with short typed commands for commissioning for troubleshooting? The Power PMAC keeps the rich set of “on-line” commands of earlier PMAC's, permitting easy interaction with the controller.

Want to access the controller from any computer anywhere in the world? Power PMAC's built-in web server allows any computer equipped with a web browser to communicate with the Power PMAC, whether directly (an on-site technician's laptop), through the company's network, or over the internet. Both HTTP and FTP protocols are supported.

The Computing Engine

The Power PMAC uses the latest generation of embedded Power PC processors. As embedded processors, most require no active cooling, improvement cost, size, and reliability. Still, these processors are lightning-fast, with hardware implementation of 64-bit floating-point mathematics. This automatically provides the required resolution and range for virtually any motion-control application imaginable, without hurting computational efficiency.

The processors can support gigabytes of solid-state memory, both active and non-volatile. The base configuration provides 512 MB/1 Gig/2 Gig of DDR active memory, with error correction; 512 MB of user flash memory; USB memory sticks and NAND-flash “camera cards” can be used as well. Even applications that require multiple days to execute a motion sequence can now be accomplished without real-time streaming of the data.

Efficient 100-Base-T or 1000 Base-T Ethernet along with USB2 interfaces are built directly into the processors permitting data transfer rates close to the theoretical maximum bit rates. This eliminates the need for an awkward backplane-bus (e.g., PCI) interface in virtually all applications, even those requiring the streaming of thousands of motion blocks per second.

Machine Interfaces

The Power PMAC CPU section is compatible with existing PMAC-family interface circuitry, both for motion and I/O. For example, a Power PMAC CPU board can replace a Turbo PMAC CPU board in a UMAC rack-mounted controller and use all of the interface accessory boards in the rack.





But the Power PMAC will also support the next generation of high-speed interface circuitry built around the new PMAC3-family ASIC. This new ASIC, three years in development, pushes the envelope of ASIC technology to provide unprecedented performance. Operating frequencies are 2-5 times greater than those of the still market-leading PMAC2-family ASICs, providing higher performance and resolution.

Many more features, such as serial and sinusoidal sensor interfaces, plus resolver excitation generation, are integrated into the new ASIC, providing more compact, cost-effective solutions. Certain complex calculations, such as the trigonometry necessary to process sinusoidal feedback, are incorporated into the ASIC, offloading the central processor for other critical tasks.

Built-In Algorithms

The Power PMAC incorporates all of the features of the market-leading Turbo PMAC, enhanced to make these features more powerful, flexible, and easy to use. In addition, a whole new set of features has been added.

Release Dates

- Pre-Production Release is scheduled for August 2008
- Production Release is scheduled for December 2008

About Delta Tau Data Systems

Delta Tau Data Systems is the technology leader in high-performance machine control products. By developing and manufacturing a full range of digital signal processor-based motion control products and accessories, Delta Tau delivers motion control solutions that solve from the simplest to the most complex positioning applications. Products are marketed through a worldwide distribution network. Application engineers are located globally to provide competent and timely customer support. Delta Tau Data Systems, 21314 Lassen Street, Chatsworth, CA 91311, PH: (818) 998-2095, FX: (818) 998-7807, e-mail: sales@deltatau.com.



Power UMAC
Controlling 8 Axes and I/O



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