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DELTA TAU
Data Systems, Inc.



NEW IDEAS IN MOTION...

BOARD LEVEL



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PMAC PCI

8 Axis +/-10V Controller

Part Number: 400-603588-10x

The PMAC PCI is a member of the PMAC family of boards optimized for interface to traditional servo drives with single analog inputs representing velocity or torque commands. Its software is capable of eight axes of control. It can have up to either eight or four channels of on-board axis interface circuitry.

The PMAC-PCI is a full-sized PCI-bus expansion card, with a small piggyback board containing the CPU board. While the PMAC-PCI is capable of PCI bus communications, with or without the optional dual-ported RAM, it does not need to be inserted into an PCI expansion slot. Communications can be done through an RS-232 or RS-422 serial port; standalone operation is possible.

[Features](#)

[Options](#)

[Accessories](#)

[Manuals](#)

Hardware Features

- 40 MHz DSP563xx CPU
- 128k x 24 0-wait-state flash-backed SRAM
- 512k x 8 flash memory for firmware and user backup
- 2k x 8 EEPROM memory for setup variable backup
- Latest released firmware version
- RS-232/422 serial interface, PCI (PC) bus interface
- Four channels axis interface circuitry, each including:
 - 16-bit +/-10V analog output
 - 3-channel differential/single-ended encoder input
 - Four input flags, two output flags
 - Interface to external 16-bit serial ADC
- Display, control panel, muxed I/O, direct I/O interface ports
- Buffered expansion port
- Clock crystal with +/-100 ppm accuracy
- PID/notch/feedforward servo algorithms
- 1-year warranty from date of shipment

Software Features

- **Trajectory Generation Features**
 - Linear interpolation mode with S-curve accel/decel
 - Circular interpolation mode with S-curve accel/decel
 - Rapid point-to-point move mode
 - Cubic B-spline interpolation mode
 - Cubic Hermite-spline (PVT) interpolation mode
 - Automatic move-until-trigger functions with hardware capture
 - Interactive jog moves
 - Optional multi-move lookahead for velocity and acceleration limiting
- **Servo Features**
 - Standard digital PID feedback filter
 - Velocity, acceleration, and friction feedforward
 - 2nd-order notch/low-pass filter
 - Gains changeable at any time
 - Programmable input, integrator, and output limits
 - Optional 35-term "pole-placement" servo filter
- **Commutation Features**
 - Sinusoidal commutation of AC servo motors
 - Vector control of AC induction motors
 - Digital current-loop closure with direct PWM output (PMAC2)
- **Compensation Features**
 - Position compensation tables (1D & 2D)
 - Torque compensation tables
 - Backlash compensation
 - Tool radius compensation
- **Safety Features**
 - Hardware and software overtravel limits
 - Amplifier enable/fault handshaking
 - Following error limits
 - Integrated current limit
 - Encoder loss detection (some versions)
 - Watchdog timer
 - Program and communications checksums
- **Computational Features**
 - Real-time multi-tasking operating system
 - 48-bit floating-point math for user programs
 - Trigonometric and transcendental functions
 - Automatic type-matching of different variable types
- **Feedback sensor types that can be processed**
 - Digital quadrature encoders
 - Sinusoidal encoders, interferometers
 - Resolvers
 - Potentiometers
 - LVDTs, RVDTs
 - Parallel-format encoders, interferometers
 - MLDTs
 - Serial absolute encoders (e.g. SSI)
- **Coordination and Master/Slave Features**
 - User-defined coordinate systems for automatic coordination of axes
 - Separate coordinate systems for independent motion of axes
 - Multi-motor axis support (e.g. gantries)
 - Dynamic axis transformations (e.g. offsets, rotations, mirroring)
 - Electronic gearing (no programming required)
 - Electronic cams with programmable profiles
- **Motion Program Features**
 - High-level programming language
 - Automatic sequenced execution of moves
 - Calculations and I/O synchronous to motion

- Axes programmed in user engineering units
- Motion values as constants or expressions
- Automatic coordination of multiple axes
- Ability to execute G-code programs
- **PLC Program Features**
 - Execution asynchronous to programmed motion
 - I/O control as in hardware PLC
 - Executive functions for standalone applications
 - Safety and status monitoring
 - Servo gain scheduling
 - Data reporting functions
 - Access to all registers in controller



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