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Turbo PMAC-Lite PCI, 4-axis with ±10V Servo Outputs PCI Board

Recommended for applications with three or four ±10V channel requirements in either a PCI-PC based or stand alone environment. The term "*Lite*" stands for the limitation of only one DSPGATE Gate-Array IC on board. In comparison with the non-Turbo version, this board provides better velocity and acceleration control algorithms (lookahead) and an overall improved firmware. The number of channels can always be expanded, from 4 to 12, through the use of an ACC-24P.



Part Number

400-603657-TRx

Number of Channels

The Turbo PMAC-Lite PCI can have only one on-board DSPGATE that provides four channels axis interface circuitry, each including:

- 16-bit ±10V differential analog output
- Differential/single-ended encoder input with 'A', 'B' quadrature channels and 'C' index channel
- Four input flags, two output flags
- Interface to external 16-bit serial ADC

CPU and Memory

The Turbo PMAC-Lite PCI is provided with an 80 MHz DSP56303 CPU (120 MHz PMAC equivalent) and flash memory. Any variable change in a flash type memory needs to be saved manually in Turbo PMAC for it to be retained on a power-up\reset cycle. Therefore, if machine parameters like parts counters or state variables are required, the Option-16A battery-backed parameter RAM is suggested.

- Option-5C0: this is the standard CPU and memory configuration. It is provided automatically if no Option-5xx is specified. It provides an 80 MHz DSP56303 CPU (120 MHz PMAC equivalent), 128k x24 of compiled/assembled program memory, 128k x 24 of user data memory, and a 1M x 8 flash memory.
- Option-5C3: it provides an 80 MHz DSP56303 CPU (120 MHz PMAC equivalent) with 8k x 24 of internal memory, an expanded 512k x 24 of compiled/assembled program memory, an expanded 512k x 24 of user data memory, and a 4M x 8 flash memory.
- Option-5D0: it provides a 100 MHz DSP56309 CPU (150 MHz PMAC equivalent) with 34k x 24 of internal memory, 128k x 24 of compiled/assembled program memory, 128k x 24 of user data memory; and a 1M x 8 flash memory.
- Option-5D3: it provides a 100 MHz DSP56309 CPU (150 MHz PMAC equivalent) with 34k x 24 of internal memory, an expanded 512k x 24 of compiled/assembled program memory, an expanded 512k x 24 of user data memory, and a 4M x 8 flash memory.
- Option-5E0: it provides a 160 MHz DSP56311 CPU (240 MHz PMAC equivalent) with 128k x 24 of internal memory, 128k x 24 of compiled/assembled program memory, 128k x 24 of user data memory; and a 1M x 8 flash memory.
- Option-5E3: it provides a 160 MHz DSP56311 CPU (240 MHz PMAC equivalent) with 128k x 24 of internal memory, 512k x 24 of compiled/assembled program memory, 512k x 24 of user data memory; and a 4M x 8 flash memory.
- Option-16A: 32Kx24 SRAM battery-backed parameter memory





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Communications

The Turbo PMAC-Lite PCI can communicate either through the PCI bus or through the RS-422 serial interface using the optional ACC-3D flat cable. All communication ports in a Turbo PMAC are independent of each other allowing multiple devices communicating with it at any given time.

- Option-2: The 8Kx16 Dual Ported RAM provides a method of sharing memory between PMAC and the host computer for very fast interchange of data. The Option-2 is installed on-board of the PMAC.
- Option-9T: Auxiliary RS-232 serial port. This option is installed in the CPU piggyback board and connects to the computer through the optional ACC-3L flat cable.

Firmware Version

PMAC is provided with the latest firmware revision with the regular servo algorithm.

- Option-10: Through this option an older than the latest firmware released version could be ordered on-board. When possible, use the same firmware revision for similar machines, and this is important in cases where the new PMAC is a replacement in an already existing machine or a new machine using same existing programs is developed.

Miscellaneous

The following ports are provided standard in any PMAC:

- Display port for the connection to a vacuum fluorescent or liquid crystal display
- JOPTO Port: this port provides eight general-purpose digital inputs and eight general-purpose digital outputs at 5 to 24 VDC levels and a maximum of 100 mA per output. This 34-pin connector was designed for easy interface to OPTO-22 or equivalent optically isolated I/O modules when different voltage levels or opto-isolation to the PMAC board is necessary.
- Multiplexer Port providing eight input lines and eight output lines at TTL levels. When using the PMAC ACC-34x type boards these lines allow multiplexing up to 1024 I/O lines on the port.
- Control panel port with dedicated control inputs, dedicated indicator outputs, a quadrature encoder input, and an analog input (requires PMAC OPT-15).

Most options to the PMAC board are only possible to install in factory whereas most accessories for PMAC can be ordered and installed at a later stage. Therefore, it is important to order all the necessary options at the time when PMAC is ordered.

- Option-7: Plate mounting for standalone applications. PMAC is mounted in an aluminum plate allowing its installation as a stand-alone controller.
- Option-8A: The standard clock crystal in PMAC has ±100 ppm accuracy. Through this option a high-accuracy clock crystal (±15 ppm) is installed instead. This option is required only for an accurate synchronization and velocity accuracy for long-term applications. Generally, this will be noticeable only if a continuous move sequence lasts more than 10 minutes.
- Option-12: 8-channel on-board 12-bit A/D converter. With this option extra components are added on the PMAC board for eight analog-to-digital converters with 12-bits resolution and 0-5 or ±2.5V range. Typically this option is used for analog sensors reading but not used regularly for analog sensors feedback devices.
- Option-12A: Extra 8-channel on-board 12-bit A/D converter. This option requires Option-12 and provides a total of 16 analog-to-digital converters with 12-bits resolution and 0-5 or ±2.5V range.
- Option-15: Voltage to frequency (V-to-F) converter to use control panel port analog input. This feature uses one of the encoder channels in PMAC to provide a low-resolution method of a single analog input interface.
- Option-18A: Electronic board identification number module. This option could be used to let a host computer program identify the Turbo PMAC board connected to the machine.





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