

C-843

Servo Motion Controller/Driver PCI Board for 2 / 4 Axes

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C-843.41 DC-motor controller board with M-110.DG linear stage, M-235.5DG heavy duty linear actuator, M-511.DD direct drive translation stage and M-501.1DG vertical stage. No external amplifier is required to drive any of these or other PI stages. Small motors are driven through the C-843's onboard linear amplifiers, direct-drive PI stages (e.g. M-511.DD) employ ActiveDrive™ controlled off the C-843's PWM outputs.

- Two and Four Axis Versions
- Very Cost-Effective: Servo Amplifiers On-Board
- Additional PWM Outputs for High-Power Motors
- Trapezoidal Curve, S-Curve and Velocity Contouring
- 64 kSamples RAM for High-Speed Trace Operations
- Hardware Interrupts for Process Control
- 16 I/O Lines for Flexible Automation
- Electronic Gearing
- Motor-Brake Control Output
- Extensive Software Support
- General Command Set (GCS) Compatible (see p. 9-28)

The new C-843 PCI motion controller card drives up to 4 axes of micropositioning equipment. Because there is no need for external servo-amplifiers, this new card is a very cost-effective, easy-to-set-up solution.

On-Board Servo Amplifiers

Unlike other PCI controller cards, the new C-843 comes with on-board, low-noise linear amplifiers for the small DC motors used in most compact micropositioning stages and actuators.

In addition, PWM outputs are available to drive more powerful equipment (all direct-drive translation and rotation stages

from PI feature the integrated ActiveDrive™ PWM amplifiers, and also connect to the C-843 with no external power amplifiers).

The PWM mode and linear amplifier mode can be programmed individually for each of the 4 (or 2) channels.

High-Performance PID Control

The C-843 employs a fast DSP (digital signal processor) providing high-performance PID motion control with many options for trajectory generation and filter settings for superior positioning and tracking accuracy. Position, velocity, acceleration and several other motion parameters can be pro-

grammed individually for each axis on-the-fly. High-bandwidth counters (5 MHz) support differential encoder feedback (incremental rotary encoders or linear scales) for fast and accurate positioning.

I/O for Flexible Automation

In addition to 3 TTL inputs per channel for limit and reference signals, 16 more I/O lines are available for flexible automation tasks (trigger functions, etc.). The C-843 also features motor-brake output lines (e.g. for M-531.DDB stages).

High-Speed Tracing

The integrated 64 k-samples trace memory allows online tracing of up to four independent system variables (positions, velocities, internal register contents, etc.) at integer multiples of the servo-loop time.

Easy-to-Use Software / General Command Set (GCS)

For ease of operation, the C-843 is compatible with the PI General Command Set, designed to allow flexible combinations with other PI motion controllers (fiber aligners, stepper-motor controllers and piezo controllers for ultra-fast, sub-nanometer motion control). For more information on GCS, see p. 9-28.

Communications to/from the board consist of packet-based messages passed via memory access. An interrupt line is provided so that the chipset can signal the PC when special conditions arise, such as reception of an encoder index pulse.

In addition to an ample array of software tools, such as LabView™ drivers and DLL libraries, the C-843 comes with the PISmart operating software

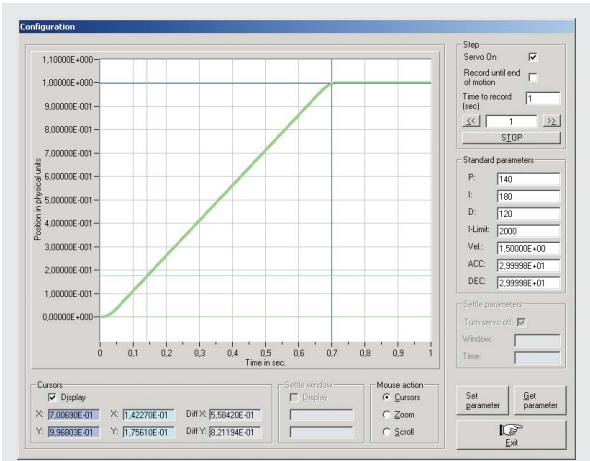
Ordering Information

- C-843.21**
DC-Motor Controller PCI PC Board, 2-Axis
- C-843.41**
DC-Motor Controller PCI PC Board, 4-Axis
- C-843.JS**
Joystick and PCI Interface Board for C-843 Motor Controller

providing all functions for single command execution as well as macro command facilities.

To facilitate setup, any supported PI Micropositioning system just needs to be selected from a PISmart menu and all default control parameters will be set.

For system integration, the C-843 offers full access to the motion DSP via a PCI bridge.



C-843 QuickRun integrates a function for acquiring and displaying step and settle data of micropositioning systems.

PI General Command Set permits consistent programming of a wide variety of PI motion systems.

PISmart software is easy to use.

Technical Data

Models	C-843
Function	PC plug-in DC-Servo-Motor Controller Board, 32-bit plug-and-play PCI-bus, supported by main boards with 3.3 V and 5 V PCI bus connectors (universal card)
Axes	2 (C-843.21); 4 (C-843.41)
Servo characteristics	Programmable PID V-ff filter, parameter changes on-the-fly
Profile modes	Trapezoidal, S-curve, velocity profile; electronic gearing
Output power / resolution	Analog 5 watts/channel (drawn directly from PC power supply), 12-bit D/A converters, PWM 10-bit, 24.5 kHz
Current limitation	250 mA per channel (short-circuit-proof)
Encoder input	AB (quadrature) differential TTL signals, 5 x 10 ⁶ counts/s
Stall detection	Servo off, triggered by programmable position error
Limit switches	2 TTL / axis (active high/low, programmable)
Origin switches	1 TTL / axis (active high/low, programmable)
I/O ports	8 TTL inputs, 8 TTL outputs
Motor connectors	15-pin (f) sub-D per channel (2 on board + 2 on bracket for C-843.41)
Interface/communication	PC PCI bus
Command set	PI General Command Set (see p. 9-28)

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