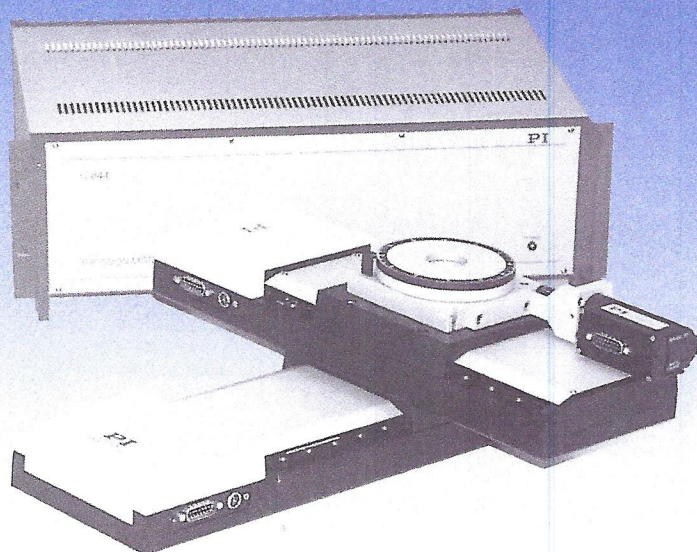


## C-844

# Multi-Axis Precision DC-Motor Controllers



C-844 DC-Motor Controller with  
M-500 series micropositioning stages.

## Ordering Information

### C-844.20

DC Motor Controller, 2 Axes,  
19" Rackmount, RS-232 and  
IEEE 488

### C-844.40

DC Motor Controller, 4 Axes,  
19" Rackmount, RS-232 and  
IEEE 488

### Options

#### C-819.10

Analog Joystick

- **Simultaneous Control of up to 4 DC Servo-Motors**
- **Fast 32-Bit Digital PID V-ff Servo Loop**
- **Integrated Linear Power Amplifiers (12-bit) and PWM Outputs**
- **Trapezoidal Curve, S-Curve & Velocity Contouring**
- **LabView™ Drivers, Libraries for C, PASCAL etc.**
- **IEEE-488.2 and RS-232 Interfaces**
- **SCPI Command Language**
- **Non-Volatile Macro-Command Storage**
- **16 I/O Lines for Flexible Automation**
- **4 Analog Input Lines**
- **12 TTL Inputs for Limit & Origin Switches**
- **Electronic Gearing**
- **Programmable Torque Limit**

The C-844 is a flexible, multi-purpose, rackmount positioning and motion controller for DC servo-motors. It is designed for general positioning tasks in research and industry.

### Multi-Processor Architecture

The C-844 is based on a multi-processor architecture. It includes a fast DSP motion-control chip set (providing trajectory generation and closed-loop digital servo-control based on position information supplied by incremental encoders) and a host processor for communication and command handling.

The host processor provides flexible and fast high-level-command handling and has advanced features such as stackable macro commands (up to 16 macros with up to 100 commands per macro in non-volatile storage). The command language complies with the SCPI (standard commands for programmable instruments) standard, which is a user-friendly, tree-structured language reflecting the device's functionality. The C-844 comes prepared for future firmware updates via the RS-232 interface.

The C-844 offers advanced features such as S-curve profile generation, electronic gearing, velocity contouring, real-time origin position capture and fast 32-bit PID + V-ff servo-control (parameters can be changed on-the-fly).

### Integrated Drivers

Integrated, low-noise, 15-watt linear power amplifiers allow operation of any PI micropositioning system without additional external amplifiers, reducing costs and simplifying the setup.

In addition to the analog motor output, PWM (pulse width modulation) output signals are available to drive PI micropositioning stages equipped with ActiveDrive™ motors (e.g. M-511.DD, M-126.PD) or external PWM power amplifiers from other manufacturers.

### SCPI Command Language

C-844 motor controllers are computer controlled using the SCPI (standard command language for programmable instruments) language. This language is well established for instruments such as oscilloscopes, signal generators, programmable power supplies, etc. and saves valuable programming time by its simple and easy-to-remember structure.

### Partial Command Listing:

#### TARG 5000

Moves motor to position 5000

#### TARG:RPOS 250

Moves 250 counts relative to current position

#### OUTP:SERV ON

Activates the servo loop

#### TARG?

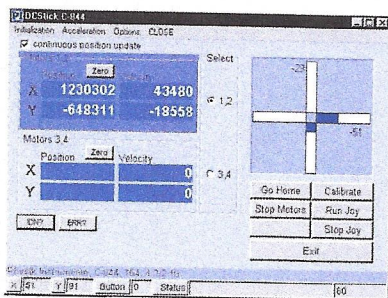
Reports the target position

#### MVEL 75000

Sets the maximum velocity to 75000 c/s

#### MVEL?

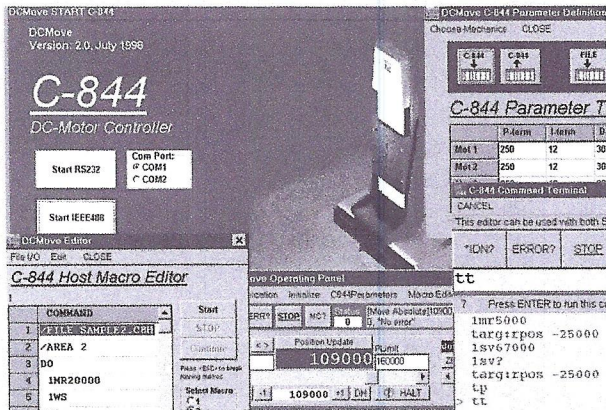
Reads programmed maximum velocity



DC Stick software allows joystick  
operation of the C-844 motor controller  
from any PC.



## Software Included with C-844



DCMove screen showing the macro editor, an operating panel for one axis, the parameter-setting window and the terminal window.

### DCMove Interactive Operating Program

DCMove is a general purpose operating program for positioning tasks. It provides a set of mnemonic short-form commands for easy parameter setting and operation. A variety of push buttons, slide bars and parameter tables controls all motors by a mouse click. Online status displays and position displays offer a comprehensive view of the overall positioning system.

DCMove allows single-command execution and macro command file handling for coordinated multi-axis motion. Complex positioning procedures can be programmed using stackable macro command loops.

DCMove runs under Windows™.

### DCStick Joystick Software

The DCStick software allows joystick operation of the C-844 motor controller from any PC through the game port. Requires the C-819.10 joystick.

### WinTerm Terminal Program

WinTerm is a Windows™ terminal program providing both RS-232 and IEEE 488 communication. All commands can be edited in a terminal window, responses sent by the motor controller are displayed in an output window.

### Dynamic Link Libraries

16- and 32-bit DLL Libraries are provided for easy communication with the C-844. They also provide compatibility with programs written for the C-842 motor-controller card and former PI DC-motor controllers, such as C-832.

PZT Flexure NanoPositioners
PZT Active Optics / Steering Mirrors
Tutorial: Piezoelectrics...
Capacitive Position Sensors
PZT Control Electronics
MicroPositioners / Hexapod Systems
Photonics Alignment & Packaging Systems
Motor Controllers
Index

<http://www.pi.ws>  
[info@pi.ws](mailto:info@pi.ws)

### C-844.LV LabView™ Drivers

A comprehensive set of virtual instruments offers LabView™ programmers access to the functions of the C-844. Serial and IEEE 488 communication are supported.

## Technical Data

Model	C-844
Function	Rack-mountable DC-servo-motor controller
Channels	4 (C-844.40), 2 (C-844.20)
Servo characteristics	32-bit programmable PID V-f filter, 100 µs/ enabled axis; parameter changes on-the-fly
Profile modes	Trapezoidal, S-curve, velocity contouring, electronic gearing
Output power / resolution	Analog H-bridge ± 12 V, 15 watts/channel, 12-bit D/A converters, optional output for PWM drivers (10 bit, 24 kHz)
Current limitation	1.8 A peak (short-circuit proof)
Encoder input	AB (quadrature) TTL signals (single-ended or RS-422 differential mode), max. 10° counts / sec
Stall detection	Motor stop, servo on, triggered by programmable position error
Limit switches (per axis)	2 TTL (pull-up/ pull-down, programmable), programmable soft limits
Origin switches (per axis)	1 TTL (pull-up/ pull-down, programmable), real-time position capture
I/O ports	8 TTL inputs, 8 TTL outputs (pull-up)
Analog input	4 channels, 5V unipolar, 10 bit ADC
Motor brake output	15 V, software controllable
Trajectory monitor output	Encoder frequency/voltage conversion (0 to 12 V) for settling analysis purposes, etc.
Interface / Communication	RS-232 (cable included), IEEE 488.2
Command Set	> 100 SCPI commands, ASCII format, firmware updates by RS-232 possible
Macro command capability	16 stackable macros in non-volatile RAM, up to 100 commands per macro
Motor connectors (per axis)	15-pin (f) sub-D
Output safety options	Amplifier enable/disable (by software)
Internal safety options	Servo-amplifier over-temperature shutdown
Heat sink	Internal heat channel with temperature-controlled fan
Operating voltage	90 to 264 VAC, 50 to 60 Hz, wide range P/S
Dimensions	288x450x158 mm (19" rack mountable)
Weight	6.7 kg