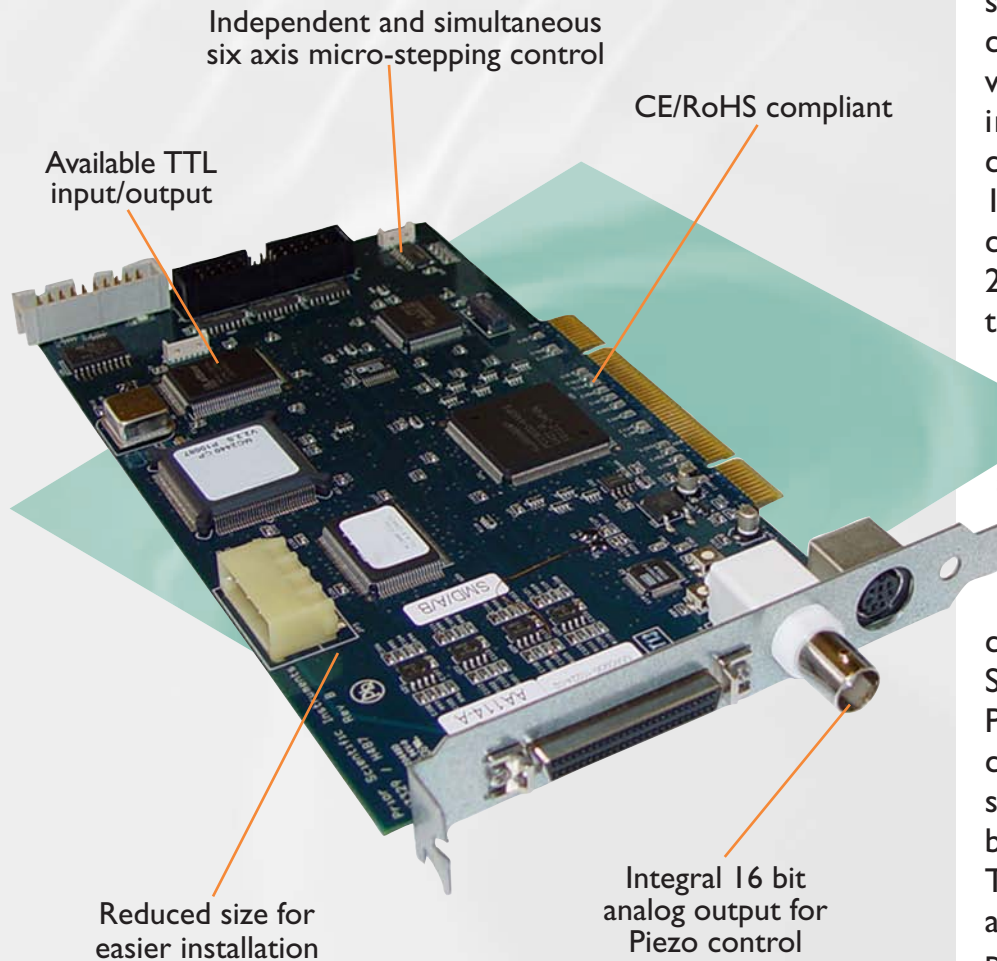


PriorPCI²

High Speed Stepper Motor Controller

Features



The PriorPCI² High Speed Stepper Motor Controller controls your microscope stage, focus motor, filter wheels and shutters - all from within your PC. The PCI card is installed directly into the standard PCI slot, eliminating the need for a controller box and saving valuable workspace. The PriorPCI² incorporates a 32 bit BUS that communicates at speeds of 133Mbps. This yields a communication response time of less than 250 nanoseconds - over 100 times faster than standard RS232 communications. The PriorPCI² controller is capable of driving the stage at step sizes as small as 0.01 microns for X,Y and 0.002 for Z movement. The card comes with a 32 bit DLL (Dynamic Link Library) which is compatible with all existing Prior Scientific products, including the ProScanTMII and OptiScanTMII controllers. The DLL is the complete set of functions and data which can be accessed by a Windows application. The PriorPCI² also has the ability to accept encoder inputs in order to provide the ultimate in positional accuracy for the most critical applications. The PriorPCI² card is fully CE and RoHS compliant.

General Specifications

STEPPER PERFORMANCE

Type of Stepper Motor	2 phase bipolar
Axes	6 (independently controlled) axes can be vectored if required
Micro-step Resolution	Microstep any value between 1/2 to 1/256
Maximum Speed	5,000,000 microsteps per sec*
Minimum Speed	<1 microsteps per second
Maximum Motor Current	1.2A peak current per phase
Maximum Motor Supply Voltage	40VDC using external PSU
Minimum Motor Supply Voltage	12V
Command Overhead (Move X,Y,Z)	<10 us
Controller Response Time (Move X,Y,Z)	<20 us
Acceleration/Deceleration Profiles	Maximum speed, acceleration and rate of acceleration (S-Curve) user programmable
Position Counter Accuracy	32 bit
Maximum Move Size	2 ³² microsteps or pulses

GENERAL

Processor (DSP)	Digital Signal Processor (DSP)
Processor Clock Frequency	40 Mhz
Non-volatile Memory	Uses PC Disk Drive
Switch-on time	Requires PC to boot

BUS INTERFACE

Type	PCI 2.2 Compliant
Bus-master	No
Operating Frequency	to 22 MHz

SYSTEM SAFETY

Drive Current Limit	High side and cross conduction to give short circuit and thermal protection
Drive Current Limit Response Time	< 4 ms (typical)
Thermal Shutdown	Yes
Temperature Monitor	Yes
Drive Voltage Monitor	Yes
Hardware Limit Switch Inputs	2 limits per axis N/O or N/C mechanical limit switches N/H or N/L TL opto/hall switches N/H or N/L open collector opto/hall switches
Software Limits	User defined

INPUT/OUTPUT

Encoder Inputs	Differential (RS422) quadrature encoder inputs (including position reference signal) +5V output power for the endcoder is provided. (See Prior options)
Maximum Count Rate	5M pulses per second. Internal counting circuitry counts each transition state

INPUT/OUTPUT (continued)

Home Input (filter wheel)	Hall effect (Open Collector)
General Purpose I/O	4 lines TTL in/ 4 lines TTL out
+5V	Provided for limit switches
Analog Port	Used for mechanical joystick option (see Prior options). Joystick also offers digipot control for Z. Connector is 8 way Mini-Din.
Phase-quadrature I/P	See above
Analog Output	16 bit for Piezo control

POWER REQUIREMENT

5V (+/- 5%)	1.2A
+12V (+/- 5%)	10mA
-12V (+/- 5%)	10mA
11-40V (motor supply)	Allow 5 Watts per motor (0.4A@12VDC). Average current from PSU will be inversely proportional to its voltage. Integral fan fitted allows all axes to drive motors at current (1.2A) and maximum voltage (+40 VDC).
PC Power Supply	PC power of 250W or higher is required

CONNECTORS

Internal Power Connector	Via PCI bus
Motor Power	Additional power supply connection on break out box
Stage/Filter Wheel Connector	26 way female high-density D-type with screw fittings for stage and filter wheel
Joystick Connector	Mini-din for joystick with digipot
Encoder Connector	Additional power supply connection on optional shutter/encoder slot board
Shutter Connector	Control for 3 shutters
TTL Connector	4 TTL I/O on optional TTL slot board

PHYSICAL DIMENSIONS

Length/Height (excluding connectors)	175mm X 106.68mm
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ENVIRONMENT

Operating Temperature	0 to 35 degrees Celsius (ambient)
Storage Temperature	0 to 70 degrees Celsius

CE CERTIFICATION

	EN1326-1:1996 Class B and Industrial Location Immunity
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*See ProScan™II stage specifications for actual stage speed
 • Specifications subject to change without notice.