Automation 3200-OEM/Nservo-OEM

32-Axis Motion, Vision, Robotics, and I/O Platform

Complete motion capabilities include: point-to-point; linear, circular, helical, and spherical interpolation; velocity profiling; electronic gearing; on-the-fly trajectory modification; high speed I/O; camming

1 to 32 axes of scalable, synchronized motion

Utilizes the power of the PC to increase performance and capabilities

Programmable in native RS-274 (G-code), AeroBASIC™, C, .NET, or LabVIEW®

8 kHz servo update rate for 1 to 32 axes provides consistent performance regardless of axis count

Each axis has up to a three-phase ±10 volt output to drive any amplifier in any mode

Software configurable for brush, brushless, and stepper motor operation

CE approved; follows the 2011/65/EU RoHS 2 Directive

Aerotech's Automation 3200 – OEM/Nservo-OEM package.

OEM Solutions

A3200-OEM packages Aerotech's flagship Automation Machine Controller software with an OEM-style control card for a cost-effective solution in high-volume applications.

High Performance 32-Axis Motion, Vision, Robotics, and I/O Platform

Aerotech's ground-breaking motion, vision, robotics, and I/O platform, the Automation 3200, is used in many applications in semiconductor, data storage, medical laser processing, automotive and machine tool industries. The system features a high-performance, software-only controller (Motion Composer) that offers 32 axes of synchronized motion control. It is the successor to Aerotech's performance-leading and widely utilized UNIDEX 500 and 600 PC-based motion controllers. Motion Composer retains the best features of these previous controllers and combines them with an advanced, high-performance distributed control architecture to produce a truly state-of-the-art motion, vision, robotics, and I/O platform.

The Digital Automation Platform: Automation 3200

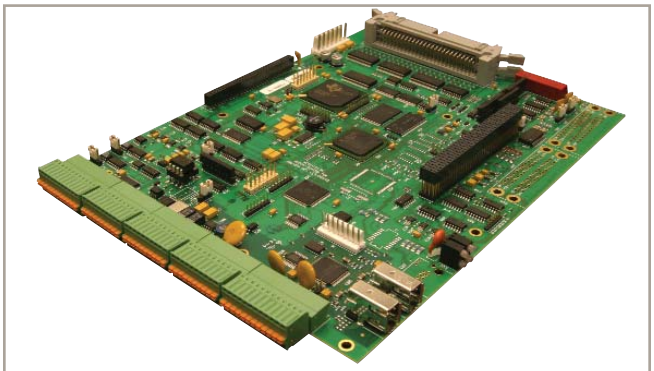
The Automation 3200 digital automation platform represents a revolutionary advancement over traditional PC-bus-based motion controllers. The A3200 is software-based (no PC slots required) and marries a robust, high performance motion engine with vision, robotics, and I/O in one unified programming environment. The A3200 utilizes the industry standard super-high-performance FireWire® (IEEE-1394) network to provide from 1 to 32 axes of

synchronized control with no degradation in performance as the axis count increases.

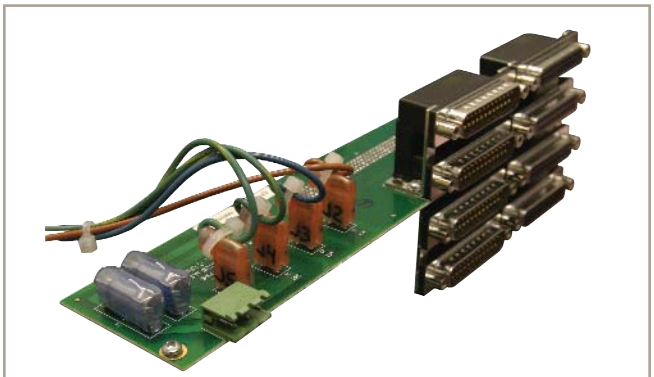
The A3200 software consists of a development environment, Motion Composer, and a runtime. Motion Composer contains extensive tools for program development, debug, and machine setup such as encoder calibration, time and frequency-based tuning tools, loop transmission, autotuning, and system configuration. Comprehensive C# and C libraries are provided for motion and system status of all axes.

The integration of multiple common automation tools into a single platform provides users the ability to integrate, develop, and maintain the system faster, with lower cost than ever before. For instance, coupling a vision module with the motion system that coordinates a cutting process (laser, drill, mill, etc.) provides the ability to identify the workpiece and its position, and to adjust the position and signal to the cutter all within one system. By adding Aerotech's Nmark, a user can fully coordinate the motion of a galvo scanner with the motion of a servomotor to allow for laser marking or processing with an unlimited field of view. This integration dramatically reduces wiring, software development and the necessary components, which not only lowers integration and setup cost but also increases reliability.

A3200-OEM is a digital 2- or 4-axis (position and velocity) servo controller with 8 kHz sample rate. It is compatible with square-wave encoders and provides a ±10 V three-phase command to any amplifier. With 11 digital inputs, 8 digital outputs, 4 analog inputs, 2 analog outputs (in addition to the 8 analog outputs that drive the amplifier) and expandable I/O, A3200-OEM will accommodate most system I/O requirements. Only a single FireWire® cable is needed to communicate with the motion generator on the PC. Other features include limits, ESTOP, brake, auxiliary feedback input, high-speed latching inputs, and Ethernet.



A3200-OEM control board (2 or 4 axis).



Optional 4 axis.

Optional power supply.

Automation 3200 – OEM/Nservo-OEM SPECIFICATIONS

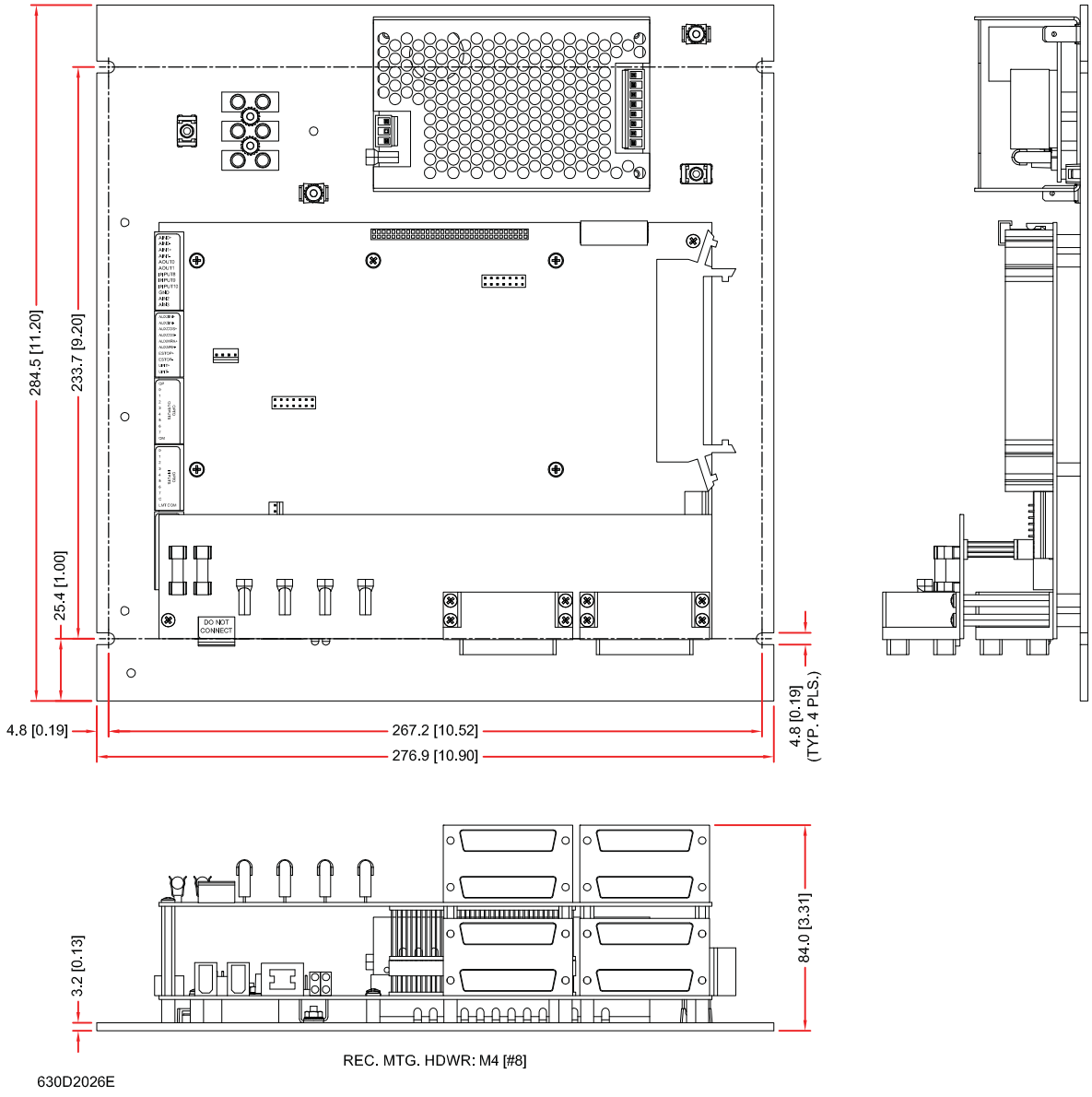
Motion Composer Specifications		
Axes		32 Axes
Driver Type Compatibility		±10 V output
Position Feedback		5 V TTL quadrature encoders; max 40 MHz input 1 Vp-p sine-wave encoders; max 250 kHz input; requires external MXH box
Position Modes		Absolute, incremental, dynamic trajectory correction
Motion Types	**Independent Motions**	Point-to-point incremental; target position or velocity; velocity profiles; time based; free run
	Coordinated Motions	RS-274 standard G-code motion including linear, circular, helical and spherical interpolation, cutter compensation, normalcy, parts rotation, mirroring, path retrace, polar transformations and cylindrical transformations, scaling
	Electronic Gearing	Electronic master/slave gearing, cam profiling with cubic splining
	Advanced Features	High-speed registration, multi-dimensional error mapping and orthogonality correction, autotuning, backlash compensation, gantry algorithms
Range Limits	**Position**	$\pm 2^{52}$ cnt
	Velocity	8×10^{9} cnt/second
Acceleration Profiles		Linear and modified sine
Programmable Multitasking		4 tasks standard; 32 tasks available with Professional Edition
Programming		Native G-code programming with AeroBasic™ extensions, .NET, C#, C, LabVIEW®
Advanced Functionality		Three-dimensional Position Synchronized Output, kinematics, Dynamic Controls Toolbox, Enhanced Throughput Module (ETM), Galvo API, Motion Designer
Minimum PC Requirements		The Automation 3200 platform works with most modern Windows/Intel-based desktop PCs. Please refer to the Aerotech website for complete specifications
Standards		CE approved, 2011/65/EU RoHS 2 Directive

Automation 3200 – OEM/Nservo-OEM Control Board FEATURES

Feature Summary
Supports 2 (standard) or 4 closed-loop servo (position and velocity) axes
Each axis has three-phase ±10 volt outputs. Two outputs are driven directly by DACs and the third output will be a summation of the first two outputs to provide third phase generation for commutated motors.
Up to 5 channels of 40 MHz line driver quadrature encoder inputs
24-volt tolerant opto-isolated CW, CCW, home and drive fault inputs per axis powered by either an internal 5 V or external power supply
24-volt tolerant drive enable output per axis (open collector transistor, single ended, polarity selectable)
11 digital inputs (8 optically isolated)
8 opto-isolated digital outputs (sinking and sourcing; 5-24 V)
Four 16-bit analog inputs; two are differential with x1, x2.5, x4, x10 input gains
Two 16-bit analog outputs
Opto-isolated Position Synchronized Output (PSO) (opto-coupled, open collector, differential)
All I/O connections via easily removable connectors
Two FireWire® ports
Dedicated Emergency Stop sense input standard
Power supply (optional)
Equivalent software functionality (less current loop support) to the Ndrive, Npaq, etc.
Software configurable for brush, brushless and stepper motor operation
Fail-safe brake control output (open collector)
High-speed position latching input
48 bits of programmable I/O, user definable as input/output by byte
Optional Ethernet port for I/O expansion

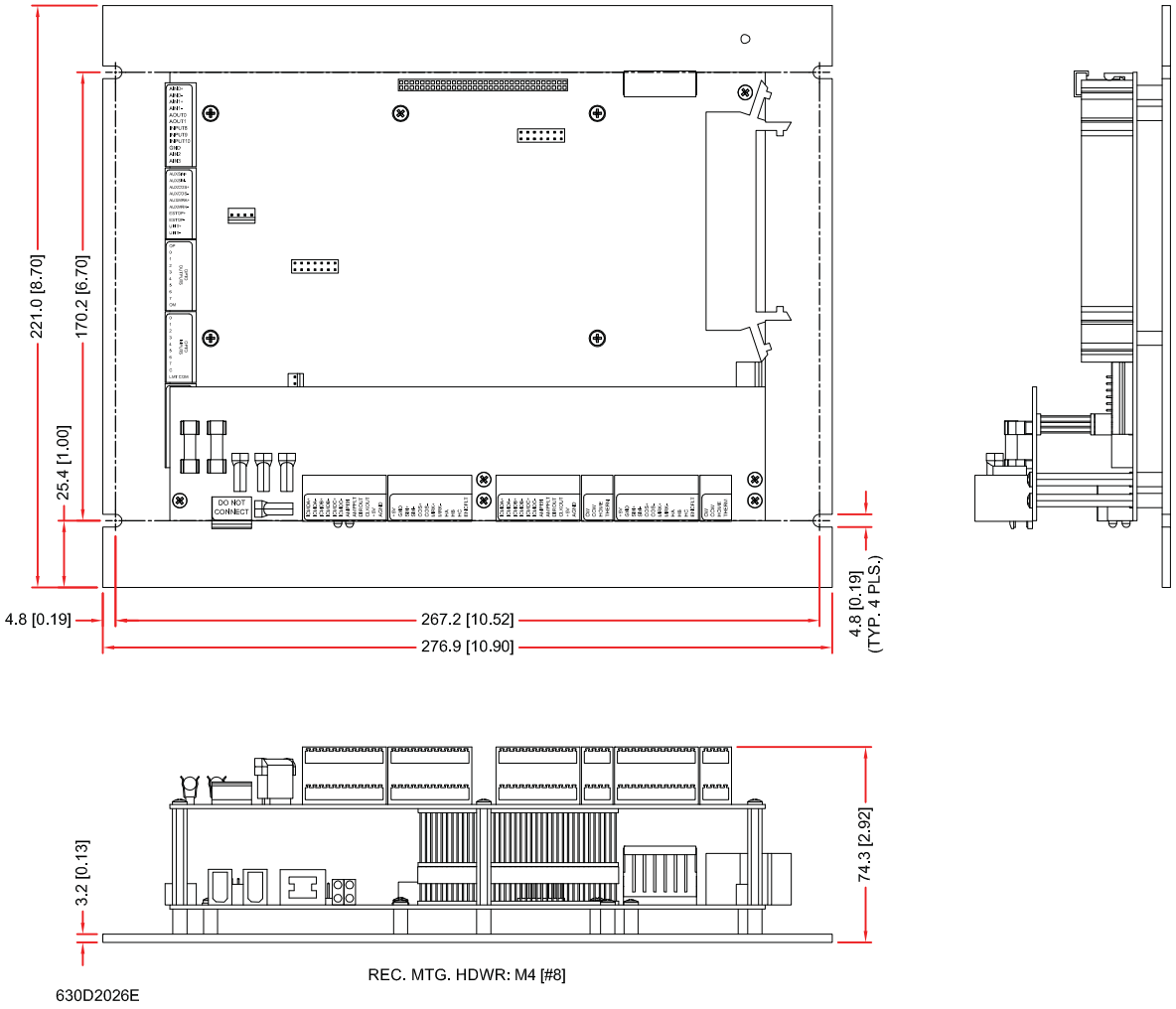
Automation 3200 – OEM/Nservo-OEM DIMENSIONS

Nservo-PS Mounting Dimensions



Automation 3200 – OEM/Nservo-OEM DIMENSIONS

Nservo-NPS Mounting Dimensions



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Automation 3200 – OEM/Nservo-OEM ORDERING INFORMATION

A3200-IA License

MACHINE	Machine license
MACHINE UPGRADE	Machine license upgrade – LicenseID extended attribute required
MACHINE MIGRATION	Migration of a machine license from 3.xx or previous
MACHINE DOWNLOAD	Machine download (no CD shipped)
MACHINE ADDITION	Add machine seat – LicenseID extended attribute required
LICENSE EXTENSION	Extend maintenance on existing license
CD ONLY	Make a CD – LicenseID extended attribute required

Axes

2 AXES	2 axes of control
4 AXES	4 axes of control
6 AXES	6 axes of control
8 AXES	8 axes of control
10 AXES	10 axes of control
12 AXES	12 axes of control
14 AXES	14 axes of control
16 AXES	16 axes of control
32 AXES	32 axes of control

Control Options

FIVE AXIS CONTOURING	Allows five or more axes of contoured motion
GALVO VCT AND GRC	Support for the VCT and GRC galvos
DYNAMIC CONTROLS TOOLBOX	Dynamic Controls Toolbox
ENHANCED THROUGHPUT MODULE	Enhanced Throughput Module
PROFESSIONAL	Professional option
CNC	CNC option including CNC functionality and documentation

MC Options

LABVIEW	LabVIEW® VI's
CNC OPERATOR INTERFACE	CNC interface
MOTION DESIGNER	Motion Designer
MOTION SIMULATOR	Motion Simulator
REMOTE	Ability to use in Client-Server

Maintenance

MONTH	One month of maintenance
YEAR	One year of maintenance
NONE	No maintenance

Version

CURRENT	Current software

FW Cable

NCONNECT-900-66	FireWire® cable 900 mm (3 ft) 6P to 6P
NCONNECT-1800-66	FireWire® cable 1.8 m (6 ft) 6P to 6P
NCONNECT-3300-66	FireWire® cable 3 m (9.8 ft) 6P to 6P
NCONNECT-4500-66	FireWire® cable 4.5 m (15 ft) 6P to 6P
NO CABLE	No FireWire® cable

Automation 3200 – OEM ORDERING INFORMATION

NSERVO-OEM Package

-PS	Power supply option
-NPS	No power supply option

Base Model

-DB2	2 axis D connector (no options)
-DB4	4 axis D connector (no options)
-ENET-DB2	2 axis D connector (Ethernet)
-ENET-DB4	4 axis D connector (Ethernet)
-TB2	2 axis terminal block (no options)
-TB4	4 axis terminal block (no options)
-ENET-TB2	2 axis terminal block (Ethernet)
-ENET-TB4	4 axis terminal block (Ethernet)

PSO Options

-DPSO	Dual axis PSO firing
-TPSO	Triple axis PSO firing
-OPTO2	PSO OPTO2 option
-OPTO3	PSO OPTO3 option
-OPTO4	PSO OPTO4 option

Options

-LMT5V	For non-opto isolated limits
-SE	For single-ended analog inputs
-NOLMT5V	No limit +5 V