HEX RC

Multi-Axis Robotic Controller

- 4U high, rack-mount, six-axis controller for brush, brushless, and stepper motors
- Ideal for controlling six-axis robotic systems like hexapods
- Real-time A3200 distributed control architecture allows synchronized motion on up to 32 axes
- FireWire® or ASCII command interface via TCP/IP
- Optional integrated encoder multipliers for high-resolution positioning and reduced integration complexity
- Part-Speed Position Synchronized Output (PSO)
- Optional six-axis jog pendant
- CE approved; follows the 2011/65/EU RoHS 2 Directive
- Program in native RS-274 G-code, AeroBasic command set, C, C++/CLI, .NET, MATLAB®, or LabVIEW® for the ultimate in programming flexibility

The HEX RC is ideal for controlling six-axis robotic systems like the Aerotech HexGen series hexapods.

Aerotech's HEX RC is a high-performance, 6-axis motion controller ideal for controlling robotic systems like hexapods. The HEX RC is 4U high, rack-mountable, and compatible with the Automation 3200 (A3200) motion platform. A high-performance processor provides the intense computing power needed to run up to 32 axes, perform complex, synchronized motion trajectories, manipulate I/O, and collect data at high speeds.

Powerful Control Architecture

The HEX RC features 6-axes of drives capable of controlling any combination of brush, brushless, or stepper motors. The HEX RC performs both current loop and servo loop closures digitally to ensure the highest level of positioning accuracy and performance. With the A3200 distributed control architecture, the HEX RC connects and controls up to 26 additional axes of servo, stepper, or piezo-driven stages.

Interface and Design Options

The HEX RC is designed with an ASCII command interface over TCP/IP for control in applications such as beamlines. Alternatively, the HEX RC can act as a master controller and control other A3200 external drives via the FireWire interface.

The HEX RC accepts amplified-sine or digital encoders. With optional integrated encoder multipliers up to X4096, high-resolution positioning is assured.

An optional 6-axis jog pendant adds easy, manual control of the positioning system. In safety critical applications, an emergency stop option with redundant safety relays can be added.

Flexible Programming Environment

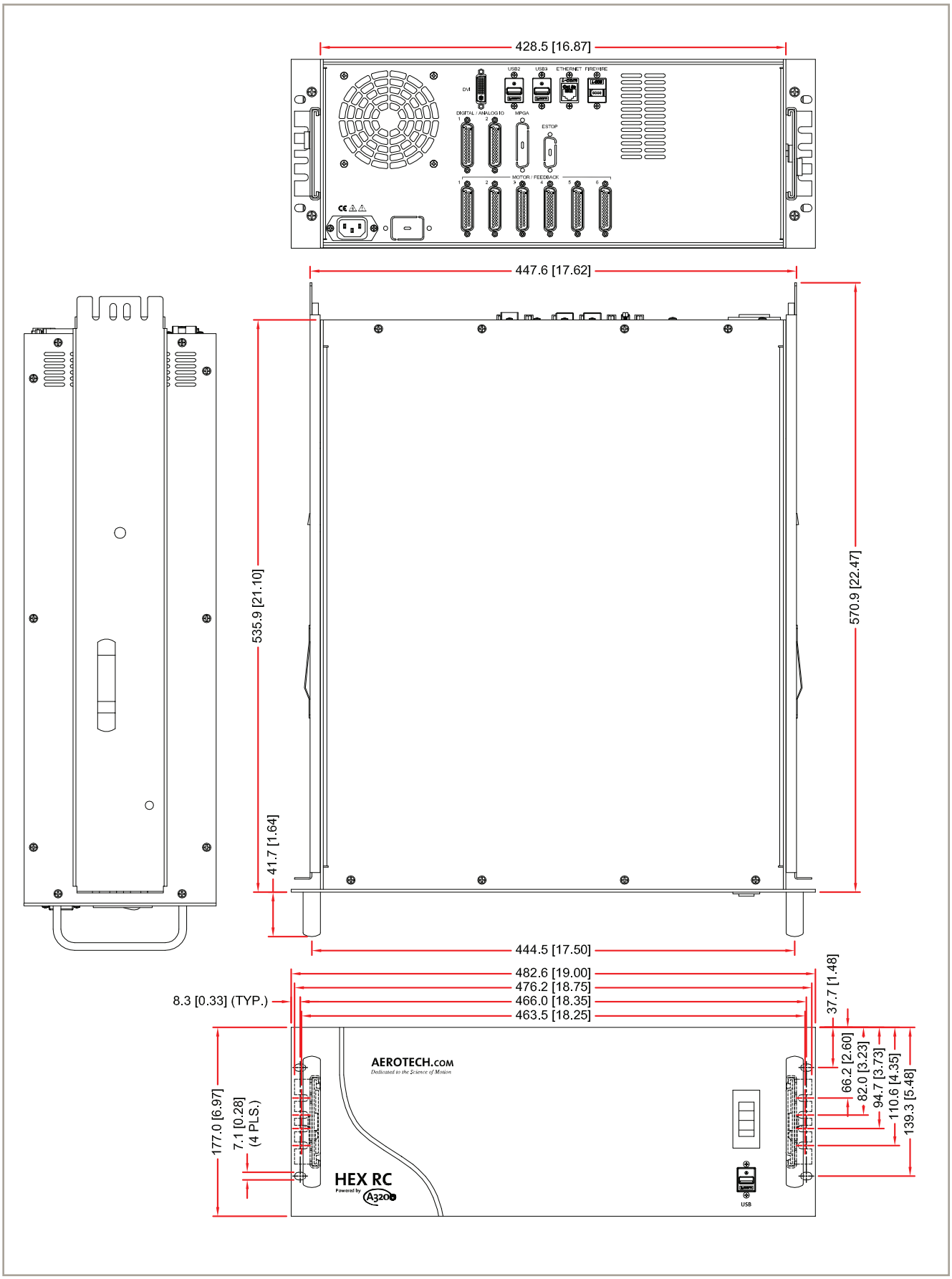
Aerotech's A3200 focuses on ease of use for the programmer, shortens development time compared with other tools, and provides the flexibility to use the tools or controller most familiar to programmers. A complete Integrated Development Environment and a comprehensive .NET motion library provide classes for motion, I/O, status, and diagnostic information. Program in Visual Studio and use the .NET library, or use the Motion Composer (IDE) to develop code with AeroBasic™ commands or G code. A LabVIEW® VI library is available for NI users, while a complete C library is available for those using Visual Basic, C++, or C.

HEX RC SPECIFICATIONS

Specifications	HEX RC
Processor	Intel i7 multi-core processor; 8 GB memory
Number of Axes	Six
Encoder Inputs	Six (1 Vpp or TTL)
Motor Style	Brush, Brushless, Stepper
Power Supply	Single-Phase 100-240 VAC; 50/60 Hz (Factory Configured)
Power Output	600 W Continuous
Bus Voltage	80 VDC
Peak Output Current (1 sec)(1)	10 A_{pk}
Continuous Output Current(1)	5 A_{pk}
Digital Inputs	16; Opto-Isolated
Digital Outputs	16; Opto-Isolated
Analog Inputs	Eight Total; ±10 V; 12-Bit Differential One on Each I/O Connector; One on Each Axis Connector
Analog Outputs	Two; ±5 V; 16-Bit
High-Speed Data Capture	Yes (50 ns Latency)
Emergency Stop (ESTOP)	Optional
Primary Encoder Input Frequency (1 Vpp)	200 kHz Sine Wave
Primary Encoder Input Frequency (TTL)	10 MHz Square Wave/40 MHz Count Rate
Interfaces	ASCII Command Interface via TCP/IP; FireWire®
Fieldbus	Modbus TCP on PC
USB Ports	Three; Used for Peripheral Device Connection; Two USB 3.0; One USB 2.0
Video Port	One; DVI-I
Jog Pendant	Optional; Six-Axis
Encoder Multiplication	Optional; x4096
Position Synchronized Output (PSO)	Standard: One-axis PSO (includes one-axis Part-Speed PSO) Optional: • Two-axis Part-Speed PSO • Three-axis Part-Speed PSO
Current Loop Update Rate	20 kHz
Servo Loop Update Rate	8 kHz
Power Amplifier Bandwidth	Selectable Through Software
Minimum Load Inductance	0.1 mH
Operating Temperature	0 to 50°C
Storage Temperature	-30 to 85°C
Weight	25 kg
Standards	CE approved, NRTL safety certification, EU 2015/863 RoHS 3 directive

Note:
1. Peak value of the sine wave; rms current for AC motors is 0.707*A_{pk}.

HEX RC DIMENSIONS



HEX RC ORDERING INFORMATION

HEX RC Multi-Axis Robotic Controller

HEX RC	Rack-mount, six-axis, robotic controller with FireWire® with TCP/IP ASCII interfaces; 100-240 VAC single-phase power supply. Includes: - Intel i7 multi-core processor; 8 GB memory - Supports brush, brushless, or steppermotor types - 5 A continuous/10 A peak current per axis - 16 digital I/O, eight analog outputs, two analog inputs - Single-axis position synchronized output (PSO)

Line Voltage (Required)

-A	115 VAC line
-B	230 VAC line
-C	100 VAC line
-D	200 VAC line

Feedback and Jog Pendant Configuration (Required)

-FC1	Standard TTL encoder feedback
-FC2	Amplified sine encoder feedback with programmable encoder multiplier up to x4096
-FC3	Standard TTL encoder feedback and connector interface for six-axis jog penant (MPG); jog pendant must be ordered as a separate line item
-FC4	Amplified sine encoder feedback with programmable encoder multiplier up to x4096 and connector interface for six-axis jog penant (MPG); jog pendant must be ordered as a separate line item.

Line Cord (Optional)

-LC1	US 115 VAC line cord
-LC2	US 230 VAC line cord
-LC3	UK compatible line cord
-LC4	German compatible line cord
-LC5	Israel compatible line cord
-LC6	India compatible line cord
-LC7	Australian compatible line cord

PSO

-PSO1	One-axis PSO (default)
-PSO5	Two-axis Part-Speed PSO
-PSO6	Three-axis Part-Speed PSO

Options (Optional)

-EST3	ESTOP3 – controller stops motion, then disables servo control; internal positive guided relays with monitor contact disconnect AC power source from motor (uses two relays for redundancy); contains one-second bus discharge resistors; operator risk assessment is the responsibility of the end user or integrator
-SL1	Rack-mount slides

Accessories (Ordered as Separate Line Items)

MPG	Six-axis jog pendant