

Aximaster 9000D



The Aximaster 9000D is a full function Digital Motion Controller with integrated Brushless Servo Amplifier and Power Supply.

GENERAL FEATURES

This easy-to use and versatile controller can be quickly configured to provide a variety of single and multi-axis control solutions over a broad power range. With Aximaster 9000D, you can choose any one of these full-featured operating modes:

1. Full Function Motion Controller
2. Digital Servo Control
3. Stepper Replacement

The Aximaster has fast set-up and installation, exceptional accuracy/repeatability and low cost. In addition to these features, an open architecture gives the ability to face future challenges with standard or customized plug-on option boards.

APPLICATIONS

Flying Shear: Aximaster's high response and repeatable accuracy lets you increase line speeds and lower scrap rates.

Absolute Indexing: Aximaster provides precise position control relative to a home reference position.

Feed to Length: Aximaster offers low overshoot and low settling time delays at higher hit rates than other controllers.

Packaging: Aximaster provides accurate feeding of packaging material and precise coordination with operations such as cutting, perforating, filling, sealing, labeling, etc.

SOFTWARE

Aximax software allows off-line programming, auto-tuning, extensive diagnostics, I/O control, multi-program storage, math functions, digital parameter setting, program branching and much more. Aximax is designed to help you maximize the full potential of the Aximaster 9000D's leading edge hardware. It's a comprehensive menu-driven communications and program development software tool for your IBM compatible computer. This powerful package includes extensive context sensitive on-line help.

PERFORMANCE SPECIFICATIONS

Continuous Power Range: 0.5 to 6.6 kW

Continuous Torque: 6 to 375 lb. in.

Peak Torque: Up to 950 lb. in.

Speed Range: Up to 6,000 RPM

Input Power: 115/230, 1 or 3 ϕ , 50/60Hz

Dimensions: 5.2" W x 14.5" H x 11" D

GENERAL SPECIFICATIONS

<ol style="list-style-type: none"> 1. Types of Motion <ol style="list-style-type: none"> a. Incremental b. Absolute c. Simple and Complex profiling d. Programmable Jerk Limited or Linear acceleration profiles e. Coordinated motion (Time and I/O) f. Registration g. Master/Slave synchronization, Encoder (1MHz max input speed per channel) or Resolver (with option board) h. Ratio and Draw control (with Option Board) i. Jog function j. Home function 2. User Memory <ol style="list-style-type: none"> a. 32k bytes non-volatile (for up to 16 user programs) b. Expandable to 224k bytes 3. User Definable Units <ol style="list-style-type: none"> a. Position b. Velocity c. Acceleration d. Jerk limiting ("S" accel & decel curves) 4. Hardware <ol style="list-style-type: none"> a. Motorola MC68332 32 bit embedded Controller b. 128k ROM, Operating System c. 16.6 MHz CPU clock speed 5. Operating Modes <ol style="list-style-type: none"> a. Programmable motion Position controller b. Pulse Follower controller <ul style="list-style-type: none"> - Pulse/Pulse or Pulse/Direction - User scaling to 25,000 pulse/revolution - 1 MHz maximum pulse rate c. Digital Velocity controller <ul style="list-style-type: none"> - ± 10Vdc differential command input with 13 bit (8192 counts) resolution 6. Communications <ol style="list-style-type: none"> a. RS-232 serial port, full duplex b. Baud rate: 300-19,200 (auto baud) c. 8 data bits, 1 start bit, 1 stop bit, even parity d. XON / XOFF flow control e. 512 character serial input buffer 7. Positioning Accuracy and Range <ol style="list-style-type: none"> a. Position accuracy: ± 15 arc minutes b. Position resolution: 1.32 arc minutes c. Position range: $\pm 8,388,608$ (23 bits) d. Position repeatability: ± 2 arc minutes 8. Feedback Interface <ol style="list-style-type: none"> a. Resolver Input <ul style="list-style-type: none"> - 14 bits resolution (1.318 arc minutes) - ± 7 arc minutes resolver accuracy 9. I/O Capability <ol style="list-style-type: none"> a. 7 digital outputs (open collector) b. 15 digital inputs (optically coupled) c. 3 analog inputs (13 bit plus sign) d. 1 high speed registration input (5μs min. pulse width) e. OPTO\circledR 22 compatible f. Pulse/Pulse or Pulse/Direction inputs (1 MHz max., 5μs min. pulse width) 	<ol style="list-style-type: none"> 10. Weight - 18.5 lbs. (8.4kg) 11. AXIMAX Communications Program <ol style="list-style-type: none"> a. IBM\circledR compatible, operates within MS-DOS\circledR environment b. Poll-down menu driven operator prompts, on-line help c. Full screen text editor d. Compiler with syntax checker e. Auto/Manual tuning f. I/O configuration/monitoring g. Program upload/download utilities h. Program maintenance (archive, copy, delete, print, rename) 12. AXIBASIC Programming Language <ol style="list-style-type: none"> a. Program names up to 8 characters b. User labels up to 32 characters c. Variable types <ul style="list-style-type: none"> - Integer - Single precision floating point (10 \pm 19 range) d. Math functions <ul style="list-style-type: none"> - Algebraic (+, -, *, /) - Logical (AND, OR, NOT, XOR) - Trigonometric (sine, cosine, tangent, arctan) - Square root - Exponential (base e) - Natural Log e. Program branching (multi-level) <ul style="list-style-type: none"> - IF / THEN / ELSE - FOR / NEXT - WHILE / WEND - Subroutine calls f. Print / Input via serial port 13. Multitasking <ol style="list-style-type: none"> a. 1 Position loop/ Logic/ Diagnostics task (2ms) b. 1 Commutation/ Current regulator/ Communications task (250μs) c. Operating system task (sequential) d. 8 User defined program tasks <ul style="list-style-type: none"> - Can be individually specified as timed or sequential tasks - Timed tasks have settable scan rate of 2 to 510ms in 2ms increments 14. Operating and Storage <ol style="list-style-type: none"> a. Temperature: <ul style="list-style-type: none"> - Operating 0$^{\circ}$C to 45$^{\circ}$C - Storage -20$^{\circ}$C to 70$^{\circ}$C b. Relative humidity <ul style="list-style-type: none"> - 10 to 90% non-condensing 15. Electrical Noise Immunity <ol style="list-style-type: none"> a. NEMA ICS 2.230.40 random spark gap noise injection on ac line b. Surge withstand ANSI C-37.90A and IEEE 472 c. 5 watt transmitter located one foot away, 27-450MHz d. Electrostatic spark discharge at 15,000 volts into ground plane of controller 16. Vibration (3 axis) <ol style="list-style-type: none"> a. 5 to 10Hz, 0.2 in. (5mm) displacement point-to-point b. 10 to 200Hz at 1G peak c. MIL-STD 810C 17. Certification - ol 508 pending
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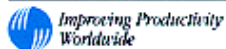
Aximaster 9000D Brushless Amplifier

Parameter	A9106D	A9112D	A9120D
Output Current (Sinewave Peak @45 $^{\circ}$ C amb.) Continuous(1) 3 Δ E input 1 Δ E input Peak (2 sec)	6A 12A	12A 11A 24A	20A 11A 40A
MAX. Output Power (300Vdc bus @45 $^{\circ}$ C): Continuous(1) Peak (2 sec)	1.44kVA 2.87kVA	2.87kVA 5.75kVA	4.79kVA 9.58kVA
INPUT POWER @ Max. Output Power(2) Continuous	2.02kVA	4.02kVA	6.71kVA

Peak (2 sec)	4.02kVA	8.05kVA	13.41kVA
PWM Frequency ($\pm 10\%$)	4.0kHz	4.0kHz	4.0kHz
Form Factor	≤ 1.01	≤ 1.01	≤ 1.01
Maximum Cable Length: Power Module to Motor	150 feet	150 feet	150 feet
Notes: (1) Derate linearly to 80% at 55°C ambient. (2) Power Input is approximately (1.4)x(Power Output).			

Aximaster 9000D Power Supply

Parameter	Units
DC bus Supply: AC Input Voltage Phase (1Æ requires current derating) Frequency	115/230Vac +10%; -15% 1Æ or 3Æ 47 - 63Hz
Control Supply: AC Input Voltage Phase Frequency ± 12 Vdc Supply Capacity ± 12 Vdc Supply -12Vdc Supply	115/230Vac +10%; -15% 1Æ 47 - 63Hz 500mA 250mA
DC Bus Output Voltage: Minimum (97Vac input) Nominal (230Vac input) Maximum ($\pm 3\%$)	137Vdc 325Vdc 390Vdc
SHUNT REGULATOR POWER: Continuous (internal resistors, fan cooled, 55°C ambient) Peak (100 msec)	95W 23.4kW
SHUNT RESISTOR: Standard (internal) Minimum (external)	20W 6.5W
Peak Shunt Regulator Current	60A



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