Apollo

Smart High Performance
PWM motion controller/driver

MAIN FEATURES

- Up to 30A/100V
- Can drive wide range of motors: DC Brushless, DC Brush, Stepper, Voice coil motors.
- Supports wide range of absolute and incremental encoders.
- Simultaneous processing of up to 3 encoders in multi-loop control.
- Can be used in Gantry system applications by using two Apollo modules.
- Clock synchronization of distributed control systems by external Mega-Fabs EtherCAT Master controller in multi axis applications.
- Safe Torque-Off (STO) protection

Apollo is a Mega-Fabs compact single axis motion controller and driver, using most advanced technology, featuring sophisticated drive and control capabilities.

Apollo as all other Mega-Fabs motion controllers is fully supported by visual WizAlg Studio development tool for easy integration and adaptation to the motion system, and for data collection and monitoring tasks.

Apollo includes three communication channels, allowing independent capability to run axis while monitoring and collecting data continuously (limited only by main computer memory).

Apollo supports EtherCAT and CANopen networking standards, enabling precise, cost-effective multi-axis control solution.

MEGA-FABS MOTION SYSTEM LTD.
6 Hayozma St. Industrial Park, P.O. Box 540 Yokneam 2069206, Israel
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Power Specification

Supply voltage	12 – 100 Vdc
Output current, continuous/peak	Up to 15A/30A
PWM type	Center aligned
PWM Frequency	20 kHz
PWM command resolution	18 bits

Control Specification

Sample Rate	20 kHz
Standard control algorithms	• Cascaded position-velocity-current loop • Velocity and acceleration feed-forward. • Loop shaping by lead, lag, and bi-quad filters. • DCBL motor Space Vector current control. • DCBL start up motionless commutation algorithm.
Gantry control	Two drives can be configured for driving gantry stage. Standard control algorithm – average and difference, based on two encoders.
Motion profile	• S-curve – jerk, acceleration and velocity are user defined. • Target position, velocity, acceleration and deceleration can be changed on the fly.
User defined control algorithms	User control algorithms can be implemented, tested and loaded by Mega-Fab WizAlg Studio - a graphical visual development tool

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Feedback Encoder Interface

Absolute encoder	• Tamagawa • Nikon	Full support
	• EnDat 2.0 synchronous serial. • BiSS synchronous serial. • SSI synchronous serial.	HW ready, S/W support by request
	• Electrical interface. • Data/clock rate.	RS485 10MHz
Digital incremental AqB&I encoder	• Interface. • Maximum counting frequency.	RS422 20MHz
Analog incremental Sine-Cos encoder	• Sin-Cos interface • Index interface • Maximum interpolation factor • Maximum input frequency	1V ptp differential RS422 40,000 10 MHz
Encoder supply	+5Vdc / 0.5A	

Inputs and Outputs

Digital Inputs	• 6 opto-isolated open anode/open cathode • 1 differential RS422
Digital Outputs	4 opto-isolated open collector/open emitter
Dedicated digital I/O	1 RS422 fast multifactional capture input for timing measurement. 1 RS485 fast user defined input or output for position capture or event generation
Analog Inputs	2 differential inputs +/-10V, 16 bit resolution.
Analog Outputs	2 differential outputs +/-10V, 12 bit resolution.
Hall sensors	3.3…5V logic input.

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Safe Torque Off (STO) Inputs and Output

STO1, STO2 inputs	Differential opto-isolated.
EDM output	Open emitter/open collector opto-isolated.

Communication Interface

Channel 1	• Slave mode EtherCAT 100M • Mega-Ulink protocol
Channel 2	Ethernet 10/100M.
Channel 3	Mini USB 2.0.

S/W tools and libraries

WizAlg Studio Features	• Set-up and operation. • Visual pick-and-place tool for user custom designed control algorithms. • Frequency domain control analysis tools - Bode, Nyquist, Nichols charts. • Real life scope. • Advanced data collection and analysis tools.
Process Description Language, PDL	• Powerful and C-like language for user programs running in the controller. • Full support for editing, compilation, and source-level debug
MPI DLL MPI SO	DLL Windows and SO Linux libraries for user S/W application

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Diagnostic and Protection

Driver	• Over-current • Over-Temperature • Short circuit • Power supply over and under voltage
Motor	• Over-temperature • motor coil short • motor presence
Others	• DC bus regeneration protection (with external resistor). • Encoder power supply malfunction indication. • Static and dynamic following position and velocity error protection.

Mechanics

Dimensions, mm (inch)	115 x 85 x 30 (4.55” x 3.25” x 1.15”)
Weight	275g

Contact Mega-Fabs specialists for more information and consultation for other available configurations and ordering information.

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