Mega_F
Motion Systems,Ltd.

4-Axis Motion Controller MC-804

MC-804 is a Floating Point DSP based 4-Axis Motion Controller intended for stand-alone or host-interfaced operation

Supported by Mega-Fabs development, programming, analyzing and tuning tools.

Supported Motors:

DC Brushless / AC Servo, AC Induction, DC Brush, Voice Coil, Ceramic, Hydraulic, Stepper and Micro Stepper, P/D, CW/CCW and DC Vector

Supported Encoders:

Analog Sine/Cosine
Digital A quad B
Options: Resolvers and Absolute Encoders

Supported Links:

10/100 BaseT Ethernet
USB, CAN and RS 232

MC-804 Motion Control Features

Unprecedented Accuracy:

Sub nanometers Analog Encoders Interpolation, Amplitude, Offset and Phase compensation, 2D Error Mapping

- 40 kHz (25 µsec) total update rate for position, velocity and torque control, independent of the number of axes
- Six Analog Sine/Cosine encoders interfaces, 14 bit resolution, deep over sampling, sine frequency up to 9 MHz, Interpolation factor up to 32,000
- Four Digital A quad B encoders interfaces, 32 MHz maximum frequency
- Two per axes Analog Command Outputs, true differential, 16 bit resolution
- Nested algorithmic structures with nested antiwindup correction, dual loop structures, velocity and acceleration feedforward and shaping filters, non linear filters
- Six Bi Quad filters in velocity and position loops, each one for notch, lead, lag and more filters implementation
- Trapezoidal and S-curve profiles generation: Target , Velocity, Acceleration and Deceleration may be changed "On the Fly"; High order motion profiles; Parabolic profile for high power applications
- SW Sine Commutation for DC Brushless motors using incremental encoders only
- Various types of interpolation between all axes, including 'On the Fly' polynomial interpolation
- 64 bit position range, modulo 'n' positioning for rotary motors
- 4 general purpose analog outputs, true differential, 16 bit resolution
- 8 fast I/O's for Position Capture and Position Events Generation
- 16 general digital I/O's, optoisolated; Powerful PLC operation; Fast serial interface for I/O's extension
- Analog Joystick and Trackball interfaces
- C/C++/VB Library support for Windows 98/NT/2000/XP, COM libraries for Visual Basic, LabView and more
- Powerful Multitasking Programming Language (Mega-Fabs PDL, Process Description Language)
- Errors protection including position error, HW and SW limits, i^2t protection, user defined protection routines
- Comprehensive 'Built-In-Test" (BIT) covers all analog and digital interfaces of the controller
- Power Supplies: +/- 5VDC, +/- 12VDC
- Dimensions: 230 x 111.76 x 50.6 (3U/10HP), Option 220 x 111.76 x 20.32 (3U/4HP)

Mega-Fabs Motion Systems, Ltd.,
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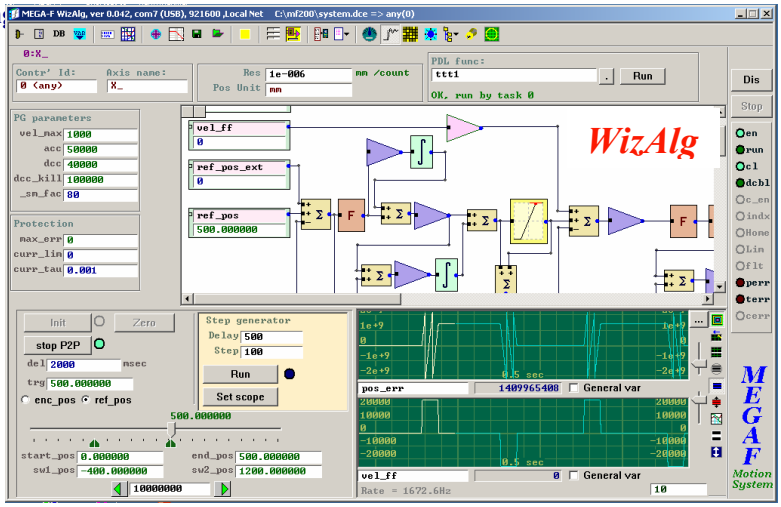
Mega-Fabs Motion Development and Analyzing Tools



- ***Vars*** *utility - simultaneous monitoring of any number of system and user Variables and States in real time*
- ***Data Collection*** *and* ***Processing*** *– for any 8 variables simultaneously; Includes Zoom, Statistics, FFT*
- ***Scope*** *utility - visual monitoring of any two variables simultaneously*
- ***Motion Analyzer*** *– step response, move and settle time, position jitter and velocity ripple testing*
- ***Frequency Analyzer*** *– Bode and Nichols plots of any part of the system, merging of actual data plots and 'plots by formula' (filters) for algorithms fine tuning*
- ***WizAlg*** *- a simple graphical utility for algorithms development and tuning (Algorithms Wizard)*

Mega-Fabs Process Description Language (Mega-Fabs PDL) //User Language

- 512 Kbytes memory for user programs, 32,000 @ 32 bit system and user variables
- System and user defined variables , arrays, routines and procedures; Any 'names' up to 24 letters
- Assignment and mathematics instructions; Deep nesting for CALL, RUN, IF(ELSE), TILL, WHILE, LOOP instructions, Various format PRINT instructions
- Variables SAVE/LOAD to internal Flash memory or to Files
- Up to 40 tasks MULTITASKING; Powerful tasks management (RUN, KILL, STOP, PAUSE) both by external commands and from user's programs
- 5 µsec instructions execution rate
- Friendly Mega-Fabs Compiler and Source Level Debugger

MC-804 Processing Chips-Set

MAC-2xx

The control power of MC-804 Controller is based on the core module MAC-204, which is a 4-axis member of Mega-Fabs family of **M**ulti-**A**xis **C**ontrol modules MAC-2xx. (This module plugged in the MC-804 controller is outlined by red on the front page picture).

Main Chips-Set: ***Analog Devices Floating Point 200 MHz DSP, SHARC ADSP-21262***
Altera FPGA Cyclone device 6K/12K
AMD 1Mbyte Flash Memory

The module is plugged to the mother board (Application Board) via two back-side connectors
The total number of pins - 160, where each of them can be programmed as I/O port to various control functions

Customization Options

As all other Mega-Fabs motion control products, the MC-804 controller is characterized by its unprecedented flexibility. Various control algorithms, filters, I/O's options can be chosen by the customer via the controller configuration software.
The MC-804 provision for installing extension daughter boards allows implementation of a variety specific OEM's systems requirements.
Along with this Mega-Fabs as the world leader in the "Customized-off-the-Shelf" technology gives for OEM's machines builders a unique opportunity to get the optimal cost-productivity control solutions. For details contact us at Mega-Fabs Motion Systems.

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