

ServoWorks™ MC-Quad™ :



Dynamic 4-Axis General CNC Solution

Overview

ServoWorks™ MC-Quad™ is an innovative PC-based motion control product for 4-axis general CNC applications. Designed as a controller for machines requiring CNC features but not requiring spindle functions, MC-Quad can be used for welding machines, milling machines and laser cutting machines, and can be customized for bending, punching, forming, measuring and EDM.

Tool Compensation Features

- Tool offset compensation: geometry and wear offsets
- 256 pairs of tool offsets

Display Features

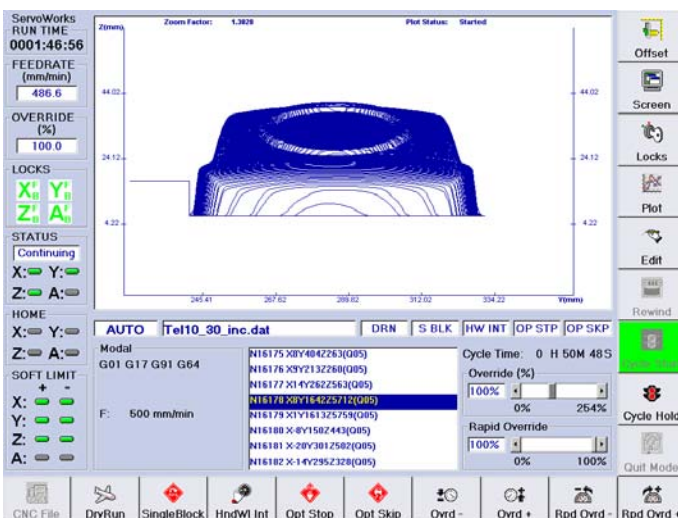
- Simple, colorful CNC-like GUI – will seem familiar because it is Windows-based
- Full-screen, single window with static display areas, permanently anchored toolbars and easy-to-use soft buttons for giving commands and accessing information
- Displays position data, plot, I/O status, servo status, NC status and motion monitoring
- Real-time program execution, position display and plotting
- Real-time I/O, servo, NC status and motion monitoring
- Data display is configurable on-the-fly, in terms of what position types are displayed

Product Features

- 1000 cycle three-dimensional dynamic look-ahead contour control (3D-DLACC) with pre-interpolation acceleration for high-speed, high-precision machining [VersioBus II interface system: one second look-ahead for 1 ms position feedback rate]
- Corner deceleration control for sharper corners while maintaining high feedrates away from corners
- Complete dual-axis synchronous control (for gantry control)
- Provides powerful, automatic execution of motion (part programs, processing up to 1000 blocks per second)
- Linear scale feedback control
- 6 workpiece coordinate systems
- Maximum positioning speed: 300 M/min
- High-speed cutting function: 60 M/min
- Operates with or without a touch panel
- Can be used with a manual pulse generator (handwheel)
- Includes the ServoWorks MotionLite application for servo setup, configuration and tuning
- Can operate on the EtherCAT, VersioBus™ II, Panasonic Realtime Express™ or MECHATROLINK™ communication platforms
- Available for GUI display in English, Japanese, Korean or Simplified Chinese

PLC Features

- Integrated soft motion and soft PLC
- Includes LadderWorks PLC, an independent PLC package including a real-time soft PLC Engine and the LadderWorks Console – a Win32 application with a user-friendly ladder editor for editing, monitoring, debugging and compiling PLC sequence programs



Consult the [ServoWorks CNC Product Parts List](#) or your Soft Servo Systems sales representative regarding standard and optional features for this product.

Basic G Codes*

- G00 Rapid traverse
- G00.1 Rapid traverse with programmable acceleration/deceleration
- G01 Linear interpolation
- G02, G03 CW/CCW circular or helical interpolation
- G02.3, G03.3 Positive/negative exponential interpolation
- G04 Dwell
- G05, G08 Dynamic look-ahead contour control on/off
- G10 Program data input
- G17-G19 XY/ZX/YZ plane selection
- G20, G21 Inch/metric data input
- G28, G29 Automatic return to/from reference point
- G30 Automatic return to 2nd, 3rd, 4th reference points
- G31 Skip cutting
- G40-G42 Tool radius compensation cancel/left/right
- G43, G44 Positive/negative tool length compensation
- G49 Tool length compensation cancel
- G50, G51 Scaling off/on
- G50.1, G51.1 Mirror image off/on
- G52 Local coordinate system selection
- G53 Machine coordinate system selection
- G54-G59 Workpiece coordinate system 1-6 selection
- G61 Exact stop check mode
- G64 Continuous cutting mode
- G64.1 Continuous cutting mode with block rollover
- G65 Simple macro call
- G68, G69 Coordinate system rotation on/cancel
- G90 Absolute command programming
- G91 Incremental command programming
- G92 Workpiece coordinate programming
- G310, G311 Linear interpolation feedrate include/exclude rotary axes

*ServoWorks MC-Quad can be customized to include additional G codes.

Macro Functions

- Supports local, global, permanent, and system variables (including symbolic global variables)
- Unlimited nesting of branching and repetition conditional statements
- Extensive math operations

Interface Features

- Simple and intuitive HMI – easy to learn and easy to use
- Icon- and soft keys-based operation for manual data input
- Manual NC modes:
 - 1) Jog Mode
 - 2) Home Mode
 - 3) Rapid Mode
 - 4) Position Mode
 - 5) MDI Mode
 - 6) HandWheel Mode (manual jog with a pulse generator)
- Auto Mode: real-time monitoring of G-code execution, with a part counter and a cycle timer
- 800 user configurable alarm messages programmable through PLC
- Password protection for parameter settings
- Easy connection of equipment to business-oriented applications running on the network
- The ServoWorks MC-Quad Windows HMI application can be fully customized by using the ServoWorks Development Kit (SDK)

The screenshot displays the ServoWorks HMI interface. At the top, it shows 'ServoWorks RUN TIME: 0001:48:40'. Below this is a table for 'Machine Pos', 'Program Pos', 'Relative Pos', and 'Servo Lag'. The 'FEEDRATE (mm/min)' is set to 493.7. The 'OVERRIDE (%)' is at 100.0. A 3D model of a part is shown in the center. To the right, there are controls for 'Part Counter' (Part No. 2, Lot Size 100) and 'Axes Status' (X, Y, Z, A). The bottom section shows 'Modal G01 G17 G91 G64' and 'F: 500 mm/min'. The bottom toolbar includes icons for 'CNC File', 'DryRun', 'SingleBlock', 'HndWl Int', 'Opt Stop', 'Opt Skip', 'Ovr', 'Rpd Ovr', and 'Rpd Ovr'.

The screenshot displays the ServoWorks HMI interface. At the top, it shows 'ServoWorks RUN TIME: 0000:01:34'. Below this is a table for 'Machine Pos', 'Program Pos', 'Relative Pos', and 'Servo Lag'. The 'FEEDRATE (mm/min)' is set to 2000.0. The 'OVERRIDE (%)' is at 100.0. A 2D plot of a line is shown in the center. To the right, there are controls for 'Part Counter' (Part No. 2, Lot Size 100) and 'Axes Status' (X, Y, Z, A). The bottom section shows 'Modal G01 G17 G91 G64' and 'F: 500 mm/min'. The bottom toolbar includes icons for 'CNC File', 'DryRun', 'SingleBlock', 'HndWl Int', 'Opt Stop', 'Opt Skip', 'Ovr', 'Rpd Ovr', and 'Rpd Ovr'.



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Revised May 31, 2012

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