Complete CNC Solutions for Mills:

ServoWorks™ S-100M™/S-120M™/S-140M™

Soft Servo SYSTEMS, INC

Overview

ServoWorks™ S-100M™, S-120M™ and S-140M™ are innovative PC-based industrial CNC controllers for mills and machining centers. ServoWorks S-100M controls 4 axes: 3 coordinated CNC axes plus a spindle. ServoWorks S-120M controls 7 axes plus a spindle: 4 coordinated CNC axes and three axes that can be used for PLC axes or for synchronous control. ServoWorks S-140M controls 7 axes plus a spindle: 5 coordinated CNC axes and two axes that can be used for PLC axes or for synchronous control.

The S-100M, S-120M and S-140M can be used for three–, four– or five–axis mills and machining centers; laser, plasma and waterjet cutting machines; EDM machines; grinding and shearing machines, etc.

Product Features

- Complete dual-axis synchronous control (S-120M and S-140M)
- 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
- 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 VersioBus™ II, Panasonic Realtime Express™, MECHATROLINK™ or Mitsubishi SSCNET™ communication platforms
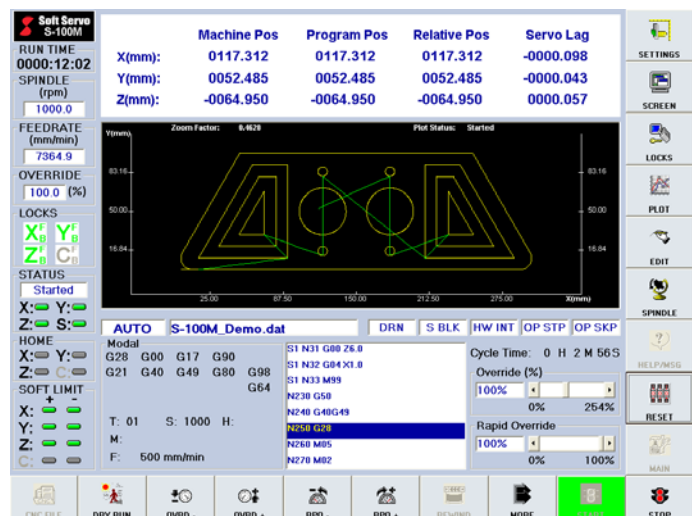
PLC Features

- PLC axes for independent, individual positioning (ServoWorks S-120M and ServoWorks S-140M)
- Integrated soft motion and soft PLC (ideal for high-speed milling)
- 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.
- 800 user configurable alarm messages programmable through PLC

CNC Milling Functions

- 3 axes (S-100M), 4 axes (S-120M) or 5 axes (S-140M) simultaneous control, plus a C axis (spindle) for tapping and positioning capability
- Rigid tapping
- Split (dual) axis for gantry type control (S-120M and S-140M)
- Corner deceleration control for sharper corners while maintaining high feedrates away from corners
- 1000 cycle three–dimensional dynamic look-ahead contour control (3D-DLACC) with pre-interpolation acceleration for high-speed, high-precision milling [VersioBus II interface system: one second look-ahead for 1 ms position feedback rate]
- High-speed / high-precision machining: 60 m/min (2400 in/min)
- Complete drilling and boring canned cycles

Spindle Control Features

- Manual spindle control
- Spindle CW (M03), spindle CCW (M04), spindle stop (M05)
- Spindle speed override (50 – 120%)
- Actual spindle speed measurement and display
- Spindle orientation
- C axis control

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

Supported G Codes

G00	Rapid traverse
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 the reference point
G30	Automatic return to the 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
G54.1	Additional workpiece coordinate system selection
G61	Exact stop check mode
G64	Cutting mode
G64.1	Continuous cutting mode
G65	Simple macro call
G68, G69	Coordinate system rotation on/cancel
G73	High speed peck drilling cycle
G74	Counter tapping cycle
G76	Fine boring cycle
G80	Canned cycle cancel
G81	Drilling cycle, spot boring
G82	Drilling cycle (dwell)
G83	Peck drilling cycle
G84	Tapping cycle
G85	Boring cycle
G86	Boring cycle (spindle stop)
G87	Back boring cycle
G89	Boring cycle (dwell)
G90, G91	Absolute/incremental command programming
G92	Workpiece coordinate programming
G94	Feed per minute mode
G95	Feed per revolution mode
G98, G99	Return to initial point / R point in canned cycle
G310, G311	Linear interpolation feedrate include/exclude rotary axes

Tool Compensation Features

- Tool offset compensation: geometry and wear offsets

- 256 pairs of tool offsets

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 Continuous Mode
    2) Jog Incremental Mode
    3) Rapid Mode
    4) MDI Mode
    5) Home Mode
    6) HandWheel Mode (manual jog with a pulse generator)
    7) Spindle Mode

- Auto Mode: real-time monitoring of G-code execution, with a part counter and a cycle timer

- Easy connection of equipment to business-oriented applications running on the network

- Password protection for parameter settings

- The ServoWorks S-100M, S-120M and S-140M Windows HMI applications can be fully customized by using the ServoWorks Development Kit (SDK)

Display Features

- Simple, user-friendly colorful 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