



WinMotion® V2.3

WinMotion soft motion PLC is built on the same production-proven technology that is the foundation of MDSI's groundbreaking OpenCNC® software. Combining soft motion, a soft PLC, and a data server in one integrated application, WinMotion's open, modular, all-software architecture provides motion control, connectivity to the network and easy integration of third-party software—all from software. Think of the time and money you'll save by having the PLC *already integrated*. No proprietary hardware or motion control cards, this ends hardware obsolescence issues once and for all. Plus, it gives you the freedom to rapidly integrate third-party applications such as vision systems, sensors, or laser test equipment. Contact MDSI to find out how our customers have increased productivity, streamlined manufacturing processes, and reduced machine tool control costs.

FEATURES

- Common soft motion PLC control across a full range of general motion applications, including material handling systems, semiconductor manufacturing equipment, printed circuit board manufacturing equipment, packaging machines, and test & measurement equipment.
- Scalable software technology—up to 16 axes and 8 independent jobstreams—with minimal reduction in performance!
- Servo loops closed entirely in software running on a standard PC with a single processor. No proprietary hardware. No motion control cards.
- Yaskawa Mechatrolink™ digital drive interface for Yaskawa servo and digital/analog I/O products.
- Hard real-time performance on standard Microsoft® Windows 2000/Windows XP using Ardence RTX®.
- Integrate third-party technologies such as vision systems, bar code readers, or sensors using WinMotion's Application Programming Interface (API). Develop your own software applications. All Active X components and software components necessary to develop your own user interface are provided.
- Create your own HMI using the WinMotion API and Microsoft Visual Basic® or Microsoft Visual C/C++ . Or use an off-the-shelf HMI.
- Remote machine maintenance and process diagnostics via the Internet, factory network or Intranet.
- MDSI's patented Significant Events™ technology automatically collects machine tool data including production information.
- Significant Events technology allows for data collection of quality and maintenance information—in real time, without specialty hardware, using the MDSI API and PLC programming.
- Linkage and distribution of machining data enterprise-wide using Windows DNA for Manufacturing tools.

BENEFITS

- Shorten development and integration time with integrated soft motion, soft PLC, and data server components.
- Hardware independence cuts costs and gives you the freedom to choose and upgrade your hardware platform as you choose.
- Same fast interpolation rate—whether two or 16 axes. Add additional axes with minimal reduction in performance.
- Investment protection and continuous performance improvement with upgradeable soft motion/soft PLC.
- Improve manufacturing processes and management with unprecedented access to real-time data.
- Maximize equipment utilization with soft motion control that is scalable up to 16 axes.

PERFORMANCE

WinMotion provides innovative software architecture that combines multi-axis interpolation and servo update in one process. This process, invented by MDSI, is unique in the control industry and results in higher speeds and higher-quality finishes:

- Servo/Interpolation rate – 500 µsec or less, for 10 axes. Add additional axes with minimal reduction in servo update rate.
- PLC Scan time – 2 msec or less (cyclic). In addition, scan begins the next servo update after any digital input changes state.
- High-speed probing – interrupt 50 µsec.
- Acceleration – S-Curve, based on machine acceleration and jerk constants.
- Watchdog timer relay – constant 5 msec or less.



FUNCTIONS

Integrated Soft PLC

- Use any or all of the five IEC-61131-3 programming languages—ladder logic, structured text, sequential function charts, function block diagrams, or instruction list
- Deterministic and repeatable performance
- User-defined scan rate
- Functions to generate motion commands from within the PLC

Diagnostics and Tuning Tools

- Graphical servo tuning utility
- Motion, PLC, and system variables displayed via WinMotion's winVar diagnostic tool
- PLC monitoring tool—debug soft logic on-line
- I/O monitor with advanced forcing capability
- Context sensitive help
- Multiple levels of password protection for maintenance tools

Significant Events

- Collects real-time machining event data—production, maintenance, and quality data
- Includes standard customer defined PLC events
- Provides input to production tracking or plant maintenance systems
- Provides input to production tracking or plant maintenance systems

Minimum Requirements

- 256 MB RAM, 5 GB hard drive
- Intel® Pentium® processor 300 Mhz
- Windows 2000 or Windows XP
- Visual Basic 6.0 or Visual C/C++ 6.0

Soft Motion Control Functions

- Up to 16 axes simultaneous interpolation is suitable for complex motion
- Up to 8 jobstreams used for grouping axes for simultaneous interpolation
- Programmable acceleration and deceleration per move
- Position, Velocity, and Torque mode command signal
- Backlash and bi-directional leadscrew pitch error compensation (up to 100,000 compensation points per axis)
- Software PID control with velocity and acceleration Feed Forward
- Linear and S-curve acceleration
- Excess following error protection – following error band based on command voltage and instantaneous velocity
- Multiple handwheel capability
- Handwheel feed capability allowing feed control of axes while the machine is in a running state
- Dual servo feedback option to provide added safety
- High precision electronic gearing - one gearing ratio per axis
- Cross-coupled parallel axes for gantry support
- Inverse time programming
- Rotary axis support, continuous or with travel limits
- Selectable resolution allows you to adjust for your needs
- Easy-to-read alphanumeric variable names, I/O names, and MDSI function names.



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