# Motion Toolbox: the definitive answer in motion control programming

Motion Toolbox is an extensive software library of LabVIEW virtual instruments (VIs) for icon-based programming of Compumotor's 6000 Series motion controllers.

When using Motion Toolbox with LabVIEW, applications are developed by linking graphic icons (VIs) together to form a block diagram. Motion Toolbox's library of more than 150 command, status and example VIs, accentuates the power of the 6000 Series including VIs for a variety of functions.

Create an impressive user interface using controls and indicators built into LabVIEW.
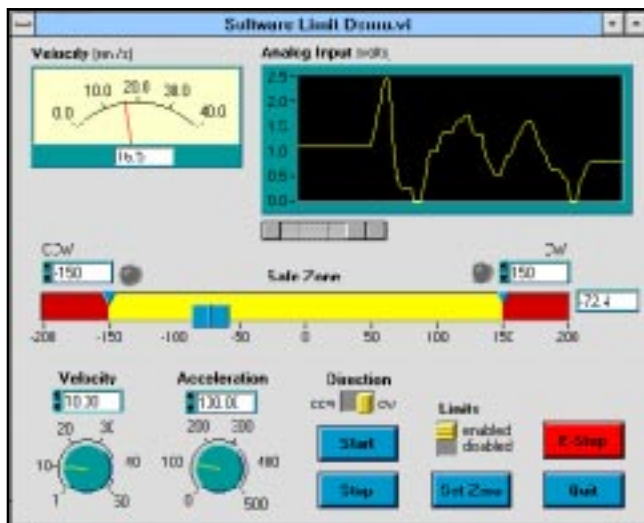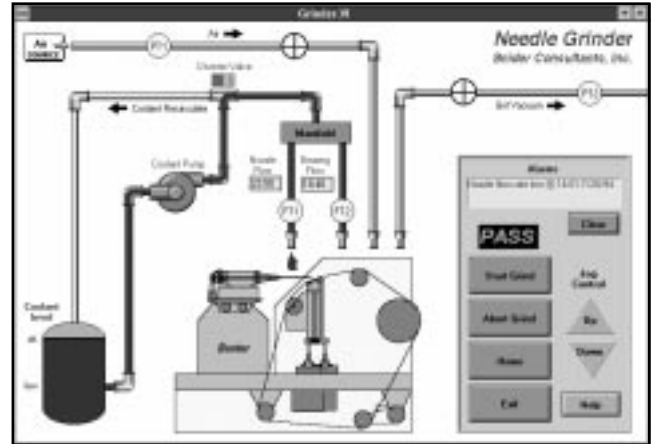
- Downloading setup and control programs to the 6000 controller's memory for later execution
- Motion control (Go, Stop, velocity, acceleration, etc.)
- Input/output setup and function configuration
- Home configuration and control
- Hardware limit and soft limit configuration
- Indexer configuration of jogging, joystick, limits, encoders, drives, etc.
- Fast status querying of I/O, limit, home, motor and encoder position, velocity, etc.
- Debugging capabilities include command "snooping" where developers can view commands sent to the 6000 Controller and communications tracing where command and query information is streamed to disk

All command and status VIs include LabVIEW source diagrams so you can modify them, if necessary, to suit your particular needs. Motion Toolbox also comes with a Windows-based installer and a comprehensive user manual to help you get up and running quickly.

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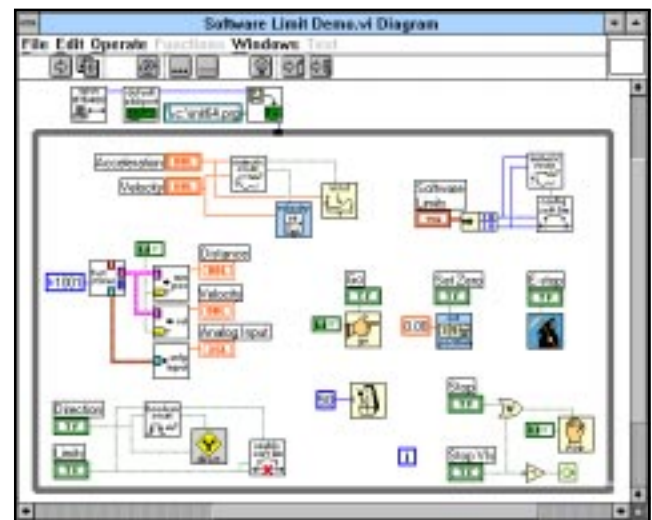
The LabVIEW Graphical Environment

LabVIEW is a graphical programming environment for data acquisition, data analysis, and instrument control that runs on several platforms including Windows-based PCs, Sun SPARC stations, Macintosh, Power Macs and HP computers. This programming environment allows you to rapidly build, test, and modify application programs without the syntactical knowledge of a conventional programming language.

LabVIEW programmers can use Motion Toolbox to develop motion control systems for a wide range of applications including automated test and manufacturing, medical, biotech, metering and dispensing, machine control, and laboratory automation. Using LabVIEW in conjunction with Motion Toolbox and the 6000 Series allows you to integrate motion control into data acquisition, process control, and image processing systems. LabVIEW includes knobs, slides, switches, charts, and many other controls and indicators allowing programmers to quickly create custom user-interface panels for motion control applications.

Capture the Power of Icon-Based Motion Control Programming

The combination of LabVIEW and Motion Toolbox simplifies the development of any application that requires motion control. Motion Toolbox can directly control motion or act in a supervisory capacity. In the supervisory mode, complex motion programs and paths can be downloaded to the 6000 controller and be orchestrated by the Motion Toolbox application. The supervisory approach provides parallel execution and performance advantages required by demanding motion control applications.

- Develop applications faster with less debug time
- Reduce operator training by providing intuitive user interfaces.
- Maximise your development time by re-using the code from project to project.
- Reduce application development by taking advantage of powerful Motion VIs designed to make the best use of the 6000 Series products
- Utilise rapid prototype techniques

Motion Toolbox was developed by Snider Integration Group through an alliance with Parker Compumotor. Snider Integration Group is a full-service systems integration and consulting firm specialising in the development of LabVIEW-based systems.

Partial List of VIs

Counters and Timers
- Start 6000 Timer
- Stop 6000 Timer
- Reset Hardware Counter

Configuration
- Motion Scaling
- Path Scaling
- Participating Axes
- Set Continuous/Preset Mode
- Set Absolute/ Incremental Mode
- Enable Drive
- Set Drive Resolution
- Configure Feedrate Override
- Set Encoder/Motor Step Mode

Device Communication
- Set Default Address/Port
- Set Error Action
- Send 6000 Block
- Receive 6000 Block
- Download 6000 File

Fast Status
- Motor Position
- Encoder Position
- Motor Velocity
- Captured Position Status
- Command Error
- Limit Status
- Motion Status
- System Status
- Analogue Input Status
- Joystick Status
- Digital Output Status
- Digital Input Status

I/O & Limits
- Set 6000 Input Active Level
- Set 6000 Output States
- Set 6000 Output Active Level
- Configure Limits

Joystick & Jogging
- Set Jog Velocity
- Set Jog Acceleration
- Set Joystick Acceleration
- Set Joystick Velocity

Motion
- Initiate Motion
- Stop Motion
- Kill Motion
- Set Distance
- Set Velocity
- Set Acceleration
- Set Deceleration
- Set Direction
- Set Position
- Initiate Lin. Interpolated Motion
- Run Path
- Set Path Velocity/ Acceleration
- Wait for Move
- Run Program
- Go Home

Variable & Transfer
- Set Numeric Variable
- Set String Variable
- Transfer Numeric Variable
- Transfer String Variable

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