CNC Machine Control Software

CNC control software is an ideal tool for learning the fundamentals of CNC machining. CNCBase is user-friendly interface and its online help allows users of all levels to control and monitor machining centers, to write, edit and run NC programs. CNCMotion integrates interactive 3D simulation with CNCBase machine control software for dynamic simulation and graphic tracking of CNC mills and lathes machines. The software accepts standard Fanuc-compatible EIA RS274D G&M codes that CNC machine tools recognize.

CNCBase®

Standard Features
- Programming and control
  - Compatibility with EIA RS274-D standard G&M codes.
  - CAD/CAM compatibility.
  - Advanced NC code editing functions, including automatic block numbering, comment management and code verification.
- Absolute and incremental programming.
- Supports canned cycles for drilling & boring.
- Programmable tool offsets & cutter compensation.
- Supports metric and imperial units.
- Unlimited number of programs can be open simultaneously.
- Unlimited number of program blocks.
- Standard Windows functions for program editing (e.g., cut, copy, paste, find).
- Programming verification
  - Quick verification of G&M code to ensure correct and complete syntax during program editing.
  - Graphic verification of the tool path ensures precise programming.
- Estimate Runtime command to calculate the approximate amount of time necessary to machine your part, and the approximate distance the machine travels.
- Manual hardware control
  - Movement along each axis at customized speed and step settings.
  - Spindle activation and speed control.
  - Movement control from dialog box & keyboard.
- Real-time data display
  - Real-time display of current hardware setup, including cross-slide and tool positions, tool in use, machining parameters.
  - Real-time display of program execution, including block being executed and program run time.
- Parameters for adjusting controller operation
  - Manual override of programmed spindle speed and feed rate.
  - Configurable soft limits for safe machining.
  - Parameters can be easily viewed & manipulated.
- User interface
  - NC code color editor.
  - Setup tool library.
- Two operating modes:
  - Online: CNCBase communicates with the controller.
  - Simulation: When not connected, you can simulate the machining process with graphic verification and simulated machining.

CNCMotion®

Standard Features
- Graphic setup
  - Interactive graphic setup enables customization of machines, including various machine tools and fixtures.
  - Definitions and properties of clamps, vises and chucks; fixtures can be defined as pneumatically or manually operated.
  - Definitions and tool offsets for up to 20 predefined and user-defined tools.
  - Definition of manual tool holders/posts, or automatic tool changer/tool turret.
  - Definitions and properties of workpieces: material, color and size.
  - During setup all definitions are verified by software to ensure compatibility with actual hardware and physical environment.
- CNCMotion simulates every tooling option available on our machines on-screen control of the same options and accessories you use with the actual machine.
- Dynamic 3D simulation
  - Dynamic simulation and graphic tracking of CNC mill and lathe during manual operation and NC program execution.
  - Simulates cross-slide, spindle & tool movements.
  - Simulates in real time the changing form of work piece during the entire machining process, including milling, turning, engraving and routing.
  - Reflects the behavior of machines in real-world conditions, including axis limits, impact, automatic and emergency stops, and shield engaged stops.
  - Enables experimentation with virtual parts of different shapes, sizes and materials, such as wax, brass, wood and aluminum.
  - Point and click on screen to move the tool for workpiece origin definition.
- Full control of machining parameters during simulation, including feed rate and spindle speed.
- Display of current tool coordinates and state of hardware components (e.g., on/off, open/closed).
- Various viewing and display controls; e.g., zoom, rotate, pan, drag, redirect.
- 3D tool path verification during machining.
- Can simultaneously display three different 3D views of the CNC machine.
- Graphic tool path verification is a standard feature with all of our CNC control software. CNCMotion takes simulation to the next level. Beyond displaying the tool path on the part, CNCMotion simulates all aspects of machine operation on-screen in 3-D, a virtual machine!

Programming and control
- Fully integrated with CNCBase control software, an intuitive tool for programming and operating CNC machines.
- Available Fanuc emulator replicates standard industry control. Switch between Intelitek and Fanuc control with the click of the mouse.

Milling Options
- All standard-size tooling
- 4" precision vise
- Single axis air vise
- Dual axis air vise
- Clamping kit
- 4-station ATC for BenchMill 6000 or ProMill 8000
- 12-tool carousel ATC for ProMill 8000
- Rotary worktable (4th axis) with 3-jaw chuck
- Coolant system
- Lubrication system
- Automatic shield opener

Turning Options
- All standard-size tooling
- 3-jaw chuck
- Air chuck
- 4-station automatic tool turret
- Tailstock
- Coolant system
- Lubrication system
- Automatic shield opener

Computer Requirements

CNCBase
- Windows XP SP3/Vista/Windows 7-32 or 64bit
- 512 MB RAM (1 GB Recommended)
- 200 MB of available hard drive space
- Available Ethernet port
- ATX power supply (Recommended)

CNCMotion
- Windows XP SP3/Vista/Windows 7-32 or 64bit
- 512 MB RAM (1 GB Recommended)
- 300 MB of available hard drive space
- Available Ethernet port (for online mode)
- ATX power supply (Recommended for online mode)
Fanuc™ 21i Emulator

The Fanuc 21i Emulator is an add on option for both CNCBase and CNCMotion control software. The Fanuc emulator replicates the Fanuc 21i CNC controller. This controller and its subset, the Fanuc 16i and 18i controllers, are the most popular controls used in industry to drive CNC industrial machines. Expand your training program with Fanuc 21i machine tool control and simulation software. You can now implement a Fanuc training component along with CNCMotion, allowing you to drive a simulation of a CNC Machine or the real thing!

Whether you are operating the actual machine or the virtual machine simulator, you can teach industrial CNC controls in addition to the G & M codes offered on our CNC machines. The Fanuc 21i control and simulator are available for any of the following machines:
- BenchMill 6000 CNC Milling Center
- BenchTurn 7000 CNC Turning Center
- ProMill 8000 CNC Machining Center
- ProTurn 9000 CNC Turning Center

Ordering Information

Software
CNCBase®, included with all CNC machines 33-2040-5001
CNCMotion®
BenchMill 6000 63-6001-1000
ProMill 8000 63-8001-1000
BenchTurn 7000 63-7001-1000
ProTurn 9000 63-9001-1000
FANUC™21i
BenchMill 6000 63-6001-2000
ProMill 8000 63-8001-2000
BenchTurn 7000 63-7001-2000
ProTurn 9000 63-9001-2000

Bundles
BenchMill 6000 includes hardware, software, curriculum and projects
- 110V CNC-6000-CLBA
- 220V CNC-6000-CLBA-2
BenchMill 6000 Virtual Add-On includes software and curriculum
- Imperial CNC-6000-LMOO
- Metric CNC-6000-LMOO-2
ProMill 8000 includes hardware, software, curriculum and projects
- 110V CNC-8000-CLBA
- 220V CNC-8000-CLBA-2
ProMill 8000 Virtual Add-On includes software and curriculum
- Imperial CNC-8000-LMOO
- Metric CNC-8000-LMOO-2
BenchTurn 7000 includes hardware, software, curriculum and projects
- 110V CNC-7000-CLBA
- 220V CNC-7000-CLBA-2
BenchTurn 7000 Virtual Add-On includes software and curriculum
- Imperial CNC-7000-LMOO
- Metric CNC-7000-LMOO-2
ProTurn 9000 includes hardware, software, curriculum and projects
- 110V CNC-9000-CLBA
- 220V CNC-9000-CLBA-2
ProTurn 9000 Virtual Add-On includes software and curriculum
- Imperial CNC-9000-LMOO
- Metric CNC-9000-LMOO-2

Hardware
BenchMill 6000
- 110V 005505-110
- 220V 005505-220
ProMill 8000
- 110V 005507-110
- 220V 005507-220
ProMill 8000 with Siemens Control
- 110V 005508-110
- 220V 005508-220
ProMill 8000 12 Station Automatic Tool Changer
- 110V 005509-110
- 220V 005509-220
BenchTurn 7000
- 110V 005504-110
- 220V 005504-220
ProTurn 9000
- 110V 005501-110
- 220V 005501-220
ProTurn 9000 Siemens Controlled
- 110V 005503-110
- 220V 005503-220

Curriculum
CNC Milling with BenchMill 6000, LearnMate course, Lab
- Imperial 17-8140-0001
- Metric 17-8140-0002
CNC Milling with BenchMill 6000, LearnMate course, Virtual
- Imperial 17-3140-0001
- Metric 17-3140-0002
CNC Milling with ProMill 8000, LearnMate course, Lab
- Imperial 17-8142-0001
- Metric 17-8142-0002
CNC Milling with ProMill 8000, LearnMate course, Virtual
- Imperial 17-3142-0001
- Metric 17-3142-0002
CNC Turning with BenchTurn 7000, LearnMate course, Lab
- Imperial 17-8141-0001
- Metric 17-8141-0002
CNC Turning with BenchTurn 7000, LearnMate course, Virtual
- Imperial 17-3141-0001
- Metric 17-3141-0002
CNC Turning with ProTurn 9000, LearnMate course, Lab
- Imperial 17-8143-0001
- Metric 17-8143-0002
CNC Turning with ProTurn 9000, LearnMate course, Virtual
- Imperial 17-3143-0001
- Metric 17-3143-0002