MACHINEMATE
PC-BASED CNC

The MACHINEMATE CNC family is the recognized leader in PC-based CNC technology. The use of

- Microsoft® Windows 2000,
- a standard PC motherboard with an Intel® processor,
- standard PC components,
- interfaces to both SERCOS and Analog drives,
- an IEC-1131-3 conformant integrated soft PLC and
- the capability of Ethernet and standard field bus systems

give this system the utmost flexibility and openness available today.

MACHINEMATE is a modern open-architecture CNC (in its fourth generation) that fulfills all the technical requirements from standard to high-tech, high-speed applications for the mill, lathe, grinder, wood working and cutting industries. It is suitable for OEM, retrofit and remanufactured machines. Special software functionality is available for laser, water jet, grinding, punch press nibbling, 5-axes transformations, gear hobber, dial index machine, transfer line, etc.

This PC-based CNC offers the features and performance available from a conventional, proprietary architecture CNC and at a much lower cost (often 1/3). The cost of the MACHINEMATE CNC is also lower than most software-only CNCs and is a complete package (industrial PC and software).

SINGLE SOURCE SOLUTION

MACHINEMATE, INC offers proven solutions for industrial automation from one state-of-the-art source. The CNC is a complete package (hardware and software). There are several operator front panel configurations (all IP-65 rated) for the remotely located industrial PC (in a CE-rated stainless steel enclosure for shop floor applications). The single processor, single standard operating system design simplifies development and integration, increases performance and reduces maintenance costs.

The MACHINEMATE CNC package comes with the CNC software loaded on hardware that is tested to work in the harsh environment of industry. The system is ready to run a machine, reducing the total integration time.

MACHINEMATE, INC also provides many accessories like a machine tool builder's panel, an auxiliary push button panel, a handheld operator station with handwheel, servo/spindle motors and amplifiers, rotary encoders, linear feedback systems, power supplies, cables, adapters and other system components that expedite the integration. We can also provide a conversational CAM software package.

MACHINEMATE, INC works through a nationwide network of independent system integrators, retrofitters and OEM's called VAC's (Value Added Customers).

MACHINEMATE, INC provides the best highly trained, dedicated, full-time support available for PC-based CNC control technology.

Please call or email us with your questions and/or interests or visit our web site (www.machinemate.com) for more information.

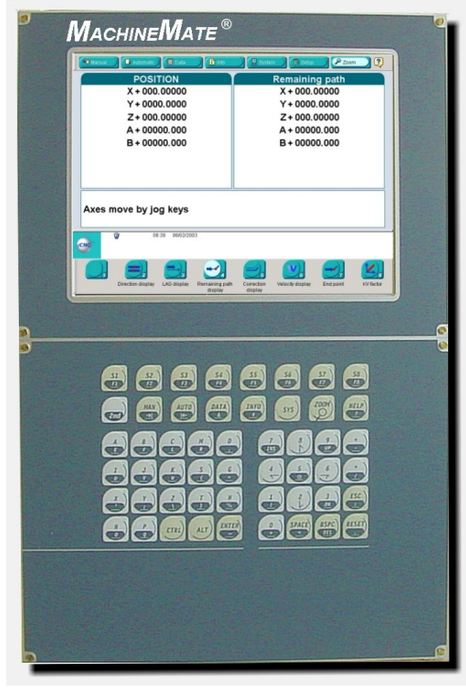
MACHINEMATE, INC

845 South Main Street
Fond du Lac, WI 54935
Phone (920) 907-0001
Fax (920) 907-0181
Email: info@machinemate.com
Web: www.machinemate.com

MACHINEMATE®

THE TOTAL SOLUTION WITH PC-BASED CNC

Open Architecture CNC Products in a Complete, Economical Industrial Package



Windows® 2000 based products

CNC PRODUCTS

L2 and eCNC

The L2 and eCNC package features include:

- Two standard drive interfaces: SERCOS (digital fiber optic cable to the drives) and/or analog (10V analog to the drives; 5V encoder feedback).
- A separate IP65 operator front panel.
- The industrial PC (IPC, in a CE-rated stainless steel enclosure) with a set of I/O modules (integrated and/or external).
- All the software required to complete the control integration (i.e., Windows 2000, CNC software, integrated soft PLC, CNC utilities).

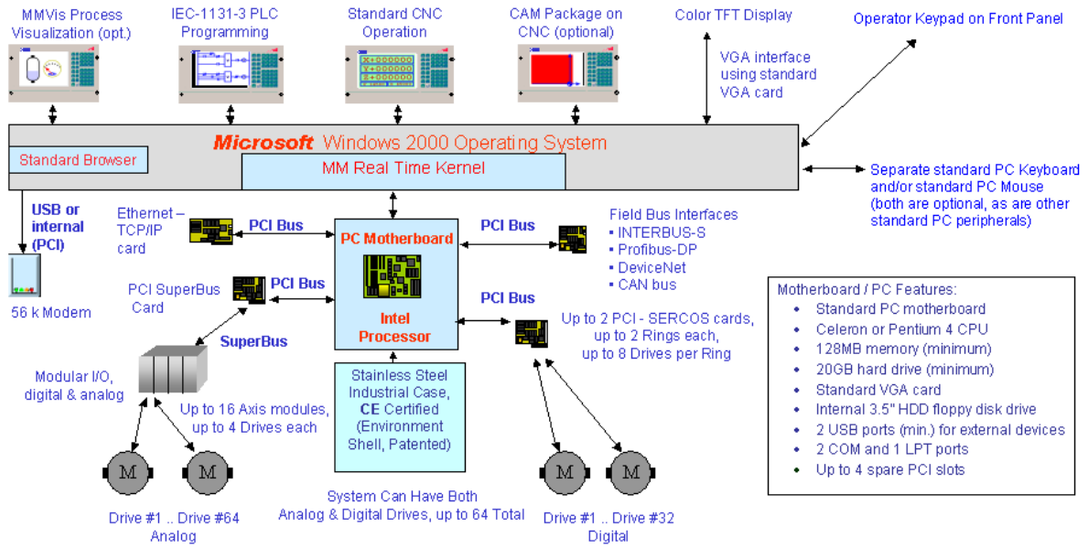
An L2 package is shown below with the 19" rack-mount operator panel (shown with an optional I/O module box for expansion for more drives and/or more I/O).

The L2 IPC for analog drives has two integrated I/O modules (48inputs/32outputs) and an integrated analog drive interface (4 drives). This lower cost L2 hardware platform uses a high-speed Celeron™ processor capable of handling most applications.

The eCNC IPC has a high-speed Pentium™ 4 processor for those industrial applications that demand higher CNC performance (such as high speed, high accuracy machining for mold and die work) or for high end CNC features such as many drives (up to 64) or several machines or heads with multiple simultaneous part programs (up to 8). The eCNC IPC (shown below) also comes with an external USB modem.

The **MACHINEMATE** PC-based CNC models are in their fourth generation of operating systems and features.

MACHINEMATE - Open PC Based CNC - Using International Standards



The standard **MACHINEMATE** CNC provides:

- Standard RS274D NC part programming (i.e., G-codes, M-codes, macro programming),
- Standard CNC tables: D (tool diameter/radius), H (tool length), part offsets (G54-G59), tools (in magazine), macro programming variables,
- Many standard features including tool path graphics, logic analyzer, PLC real-time data monitoring, drilling or turning cycles,
- High level functions like helical interpolation, part coordinate rotation,
- High speed algorithms like look-ahead, adaptive reactive technology (i.e., an axis feed-forward behavior that is learned), path filtering for jerk-free contours,
- Complex functions like block retracing on path,
- Easy-to-use browser-based operator interface,
- Nearly unlimited part program length and capacity (i.e., the PC hard drive),
- Machine Parameter tool for easier set-up,
- SERCOS monitoring utility to assist in the start-up, maintenance and trouble shooting activities for the SERCOS ring(s) and the SERCOS drives.

Among the CNC options are features like:

- Distance or gap control,
- 5-axes transformations (full 3-D machining),
- Gantry axes,
- In-process gauging systems (like on grinders).

Post-processor configurations are available for most popular CAM packages.

There are several front panel versions available:

- 19" rack-mount front panel comes with a 12.1" color TFT display and a complete operator keypad.
- The 12.1" display has optional touch screen add-on.
- An optional 19" rack-mount configuration is a 15" color TFT display with touch screen, with no operator keypad (a virtual keyboard can be used).
- The two-piece front panel (11.4" wide; pictured on the front page) includes the 10.4" color TFT display on one half and the complete operator keypad on the other half.
- The two-piece panel's display half has an optional variation: a 9" monochrome CRT (for lowest cost).
- Each panel with an operator keypad also has ten predrilled holes for adding operator switches.

ACCESSORIES

MTBP

A Machine Tool Builder's Panel (MTBP) provides the common operator switches and lights for most industrial automation applications, with a number of general purpose buttons. Each of the MTBP models (see below) has the width of its operator front panel.

The MTBP low-profile push button labels can be custom engraved by **MACHINEMATE**, INC for a nominal charge.

There is also an Auxiliary panel (shown below) in the 19" rack mount configuration with 16 general purpose push buttons (each with an LED) and a handwheel (in either 5V encoder or 24VDC input models).

Handheld Operator Station

This rugged pendant is the simple solution to the requirement for remote operator activities. It includes the handwheel, several operator switches, two push buttons and the E-Stop push button.

Adapters, Cables, Misc.

Adapters (like connector to terminal strip breakouts) and cables (both with connectors on both ends or a single connector with flying leads) are available. Power supplies (5V or 24V), handwheels, push buttons, rotary override gray-code switches, conversational CAM packages (from Cadem or Weber Systems) and other miscellaneous items are also available.

Drives, Motors, Feedback Systems

The CNC will work with drives and motors from many vendors. For a complete automation solution, quality high-performance drives and motors can also be purchased with the control at reasonable prices. Two NEMA size 11 rotary encoder models and a line of IP67 linear feedback systems are also available.