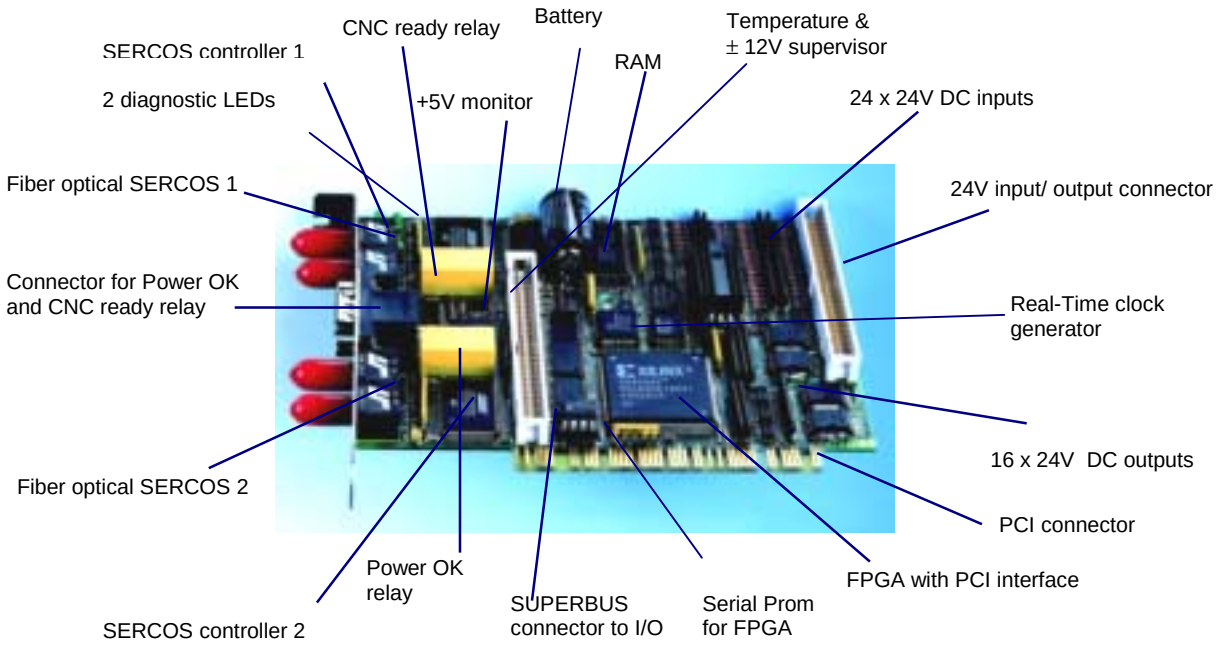
The SERCOS CNC-ENGINE board is specially designed to complement the powerful **MACHINEMATE** SERCOS software with the following features:

- PCI Interface, 33 MHz
- One or two independent SERCOS interfaces (i.e., 1 or 2 fiber-optic rings and 8 drives per ring, so either 8 or 16 drives per board)
- Easy installation
- SUPERBUS I/O Interface to **MACHINEMATE** Modular I/O pack(s)
- 24 DC Inputs
- 16 DC Outputs
- RAM on board (battery buffered)
- Watchdog (64ms)
- Voltage Monitor
- Temperature Supervisor
- Ready relay
- Power - OK relay
- Diagnostic LEDs
- Real-time clock generator
- High flexibility through FPGA technology

Technical Data

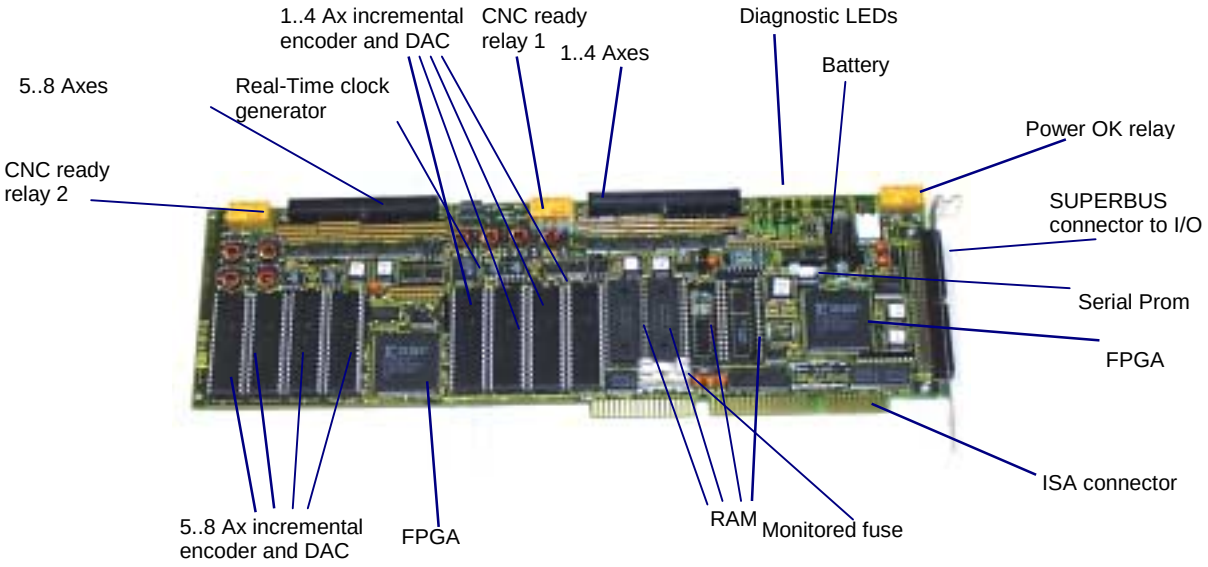


PCI Interface	32-bit bus with 33 MHz clock. The PCI interface complies with revision 2.1 of the specification.
SERCOS interface(s)	One or two independent SERCOS interfaces. Single chip controller for each SERCOS interface. Dual port RAM with 2048 bytes. Maximum transmission rate of 4 MBaud. Data communication via optical fiber ring. Power modulation of optical transmitter diode. Data transmission is synchronous to on board real-time clock.
Real - Time clock generator	Special hardware for real-time kernel. Needed for absolute clock synchronous axis control.
Easy installation	The software automatically configures interrupts and the integrated memory.
SUPERBUS interface	I/O bus interface with a transfer rate of 4Mbit/s up to a maximum extension of 115' (35m). This interface is to the MachineMate Modular I/O devices.
24V DC inputs	All inputs are opto-isolated.
24V DC outputs	All outputs are opto-isolated source outputs. Output current can be 1A per channel (8A max. for all 16 outputs). Shorted load and over temperature protections. Under voltage shut down.
Memory	256 Kbyte (1 Mbyte opt.) battery buffered static RAM.
Battery	On board Li, high capacity.
Watchdog	Digital watchdog, programmable up to 64ms.
Voltage monitor	+ 5V and ± 12V supervisor for under- and over-voltage monitoring. Battery supervisor for under-voltage monitoring.
Power OK relay	One 24V / 1A relay, which switches on if both the power and temperature are OK.
CNC ready relay	One 24V / 1A relay, which switches on if the control is in the ready state.
Relay connector	The two relays are connected to the CNC electrical circuits via this 15-pin connector.
Hardware diagnostic LEDs	Two LEDs show the ready and the power OK status.
FPGA technology	Third generation Field-Programmable Gate Array. The speed grade is fully PCI compliant. Linear PCI - Local bus interface, no address gaps. FPGA configuration via serial prom.
Temperature supervisor	131°F (55°C) / 140°F (60°C) supervisor for temperature monitoring.
Dimensions	5.315" (135 mm) x 4.21" (107 mm)

The Analog CNC-ENGINE board is specially designed to complement the powerful **MACHINEMATE** software with the following features:

- 16 Bit ISA - Interface
- 8 Axes on board (also 4 axes version)
- Easy installation
- CNC ready relay for every 4 axes
- Watchdog for every 4 axes
- SUPERBUS I/O interface to **MACHINEMATE** Modular I/O pack(s)
- RAM on board (battery buffered)
- Diagnostic LEDs
- Temperature supervisor
- Voltage monitor
- Power down relay
- Real-time clock generator
- High flexibility through FPGA technology

Technical Data



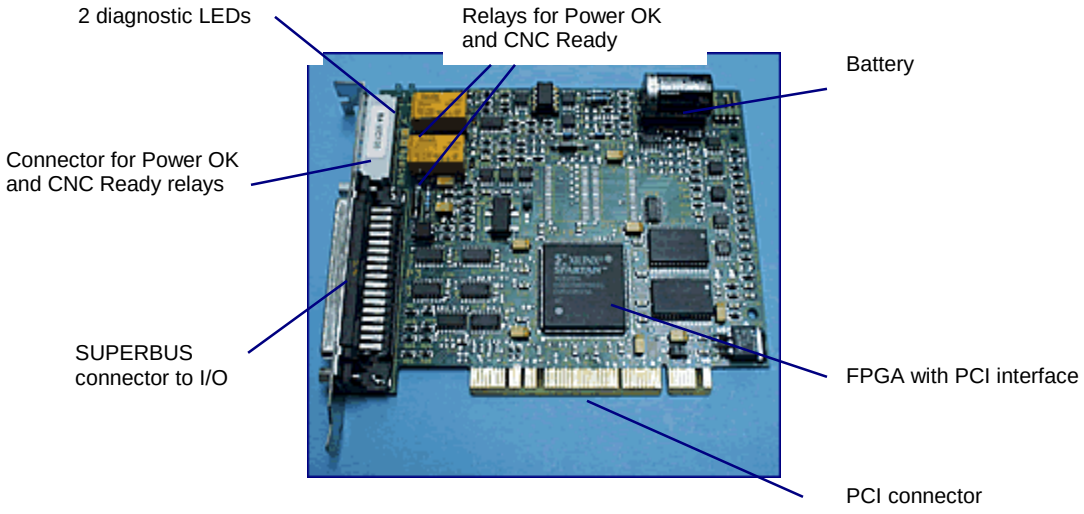
ISA-Bus interface	ISA address is configurable via two jumpers. Interrupts 10,11,12 or 15 can be used.
Real -Time clock generator	Special hardware for real-time kernel. Needed for absolute clock synchronous axis control.
Incremental encoder	Differential measurement inputs (RS422) for encoder signals A, B, R. Open loop is monitored and recognized for these signals. Synchronous data latch of counter position controlled by on board real-time clock. Card has hardware for either 4 or 8 encoder inputs.
D/A converters	16 Bit for every axis. Synchronous analog output to on board real-time clock. Card has hardware for either 4 or 8 analog outputs.
SUPERBUS interface	I/O bus interface with a transfer rate of 4Mbit/s. It is possible to extend this interface up to 115' (35m) with the external line driver. This interface is to the MachineMate Modular I/O devices.
Memory	512 Kbyte (1 Mbyte opt.) battery buffered static RAM.
Battery	On board Li, high capacity.
Watchdog	Digital watchdog, programmable up to 64ms.
Voltage monitor	+ 5V and ± 12V supervisor for under- and over-voltage monitoring. Battery supervisor for under-voltage monitoring.
Power OK relay	One 24V / 1A relay, which switches on if both the power and temperature are OK.
CNC ready relay	Two independent 24V / 1A relays that switch on if the control is in the ready state.
Hardware diagnostic LEDs	Four LEDs show the two CNC ready (axes 1-4 and axes 5-8, if present), the power OK and the FPGA status.
FPGA technology	Second generation Field - Programmable Gate Array. FPGA configuration via serial prom.
Temperature supervisor	131°F (55°C) / 140°F (60°C) supervisor for temperature monitoring.
Dimensions	16.93" (430 mm) x 4.06" (103 mm)

The Superbus IO CNC-ENGINE board is specially designed to complement the powerful **MACHINEMATE** software with the following features:

- PCI Interface, 33 MHz
- Easy installation
- SUPERBUS I/O Interface to **MACHINEMATE** Modular I/O pack(s), including the 4ENC4A module for the analog-controlled servo drives
- RAM on board (battery buffered)
- Watchdog (64ms)
- Voltage Monitor
- Temperature Supervisor
- Ready relay
- Power - OK relay
- Diagnostic LEDs
- Real-time clock generator
- High flexibility through FPGA technology

This card is similar to the SERCOS Engine card except it has no fiber-optic ring support and no 24in/16out IO connector. The drives are handled via the MIO 4ENC4A modules and the IO points in the system are handled via the MIO 2416 modules.

Technical Data



PCI Interface	32-bit bus with 33 MHz clock. The PCI interface complies with revision 2.1 of the specification.
Real - Time clock generator	Special hardware for real-time kernel. Needed for absolute clock synchronous axis control.
Easy installation	The software automatically configures interrupts and the integrated memory.
SUPERBUS interface	I/O bus interface with a transfer rate of 4Mbit/s up to a maximum extension of 115' (35m). This interface is to the MachineMate Modular I/O devices. The 4ENC4A axis interface module provides the CNC access to the analog-controlled servo drives.
Memory	256 Kbyte (1 Mbyte opt.) battery buffered static RAM.
Battery	On board Li, high capacity.
Watchdog	Digital watchdog, programmable up to 64ms.
Voltage monitor	+ 5V and ± 12V supervisor for under- and over-voltage monitoring. Battery supervisor for under-voltage monitoring.
Power OK relay	One 24V / 1A relay, which switches on if both the power and temperature are OK.
CNC ready relay	One 24V / 1A relay, which switches on if the control is in the ready state.
Relay connector	The two relays are connected to the CNC electrical circuits via this 6-pin connector.
Hardware diagnostic LEDs	Two LEDs show the CNC ready and the power OK status.
FPGA technology	Third generation Field - Programmable Gate Array. The speed grade is fully PCI compliant. Linear PCI - Local bus interface, no address gaps. FPGA configuration via serial prom.
Temperature supervisor	131°F (55°C) / 140°F (60°C) supervisor for temperature monitoring.
Dimensions	5.315" (135 mm) x 4.21" (107 mm)