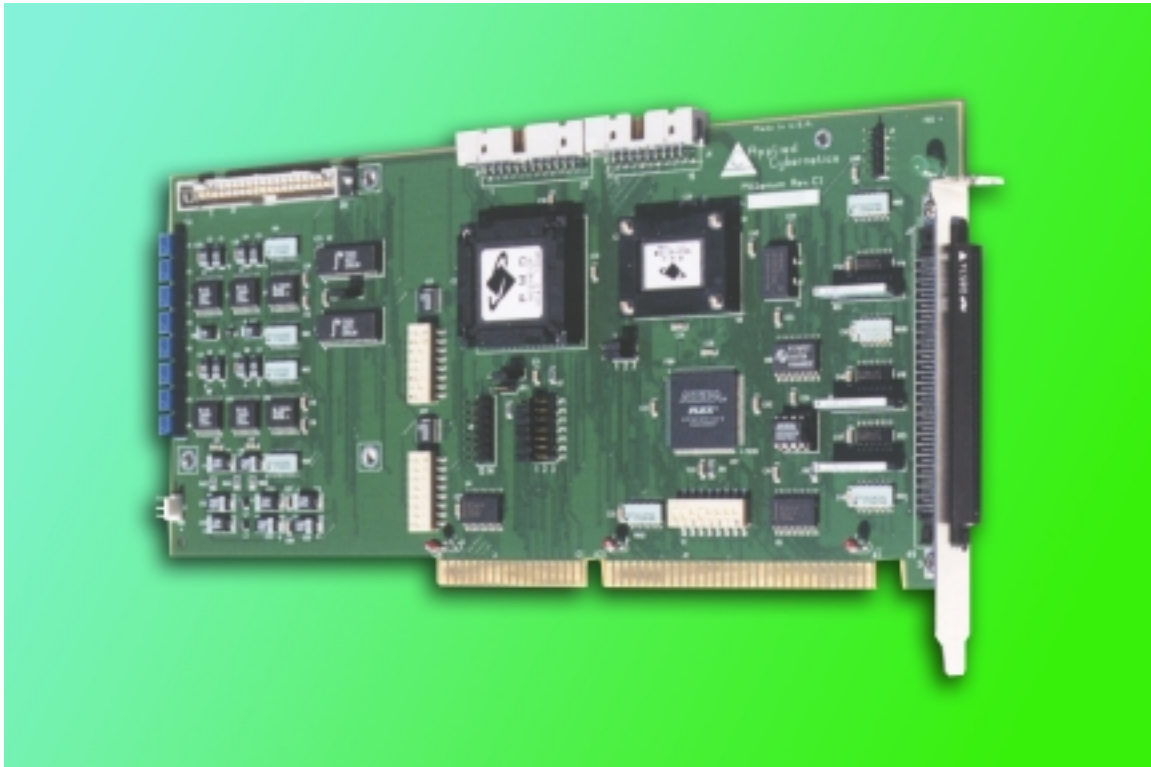


3m-0x-S



Product Description

The Millennium stepper motor multi-axis motion controllers model 3m-0x-MS implement the Navigator MC25xx series chipsets - dedicated motion processors from PMD. These controllers harness the power of the Navigator high-speed DSP chip and incorporate ASIC and surface mount technologies. They can install directly into a PC AT slot (ISA bus compatible) or can work standalone communicating via a serial link. The Millennium controllers are available in configurations of 1, 2 or 4 axes.

The DSP unit provides S-curve, trapezoidal, velocity contouring and electronic gearing profiling modes for pulse and direction signal output. Onboard memory allows designers to capture on-the-fly motion data for analyzing system performance and diagnostic purposes. Motion trajectory segments can be blended into continuous motion path in the velocity mode.

The boards interface to external components via a 100

pin high density connector providing motor outputs and reading pulsed encoder (incremental or absolute) for on-the-fly motor stall detection, limit switches and home indicator input signals. They are capable of handling eight analog inputs and eight user-defined discrete inputs and outputs.

The card is supported by C-Motion™ - extensive C-language software library and Windows drivers, which allow development of any motion control application. EasyMotion™, a Windows application package with the industry's first ever MotionWizard, assists in a quick and easy way to set up even complex electro-mechanical systems.

The boards can be used in a variety of industries, such as robotic, machine tool, semiconductor, medical, food processing, textile and many others.

Features:

- Uses DSP and ASIC high speed dedicated motion processors in 1, 2 or 4 axes configuration
- Independent or synchronous axes programming
- Open loop or stall detection with encoder feedback operating modes
- Choice of S-curve, trapezoidal, velocity contouring or electronic gearing motion profiles
- Asymmetric acceleration and deceleration to custom program a trapezoidal motion profile
- Velocity and acceleration changes on-the-fly for trapezoidal and velocity contouring profiles
- Position range from -2,147,483,648 to +2,147,483,647 counts
- Velocity range from -32,768 to +32,767 counts/sample with a resolution of 1/65,536 counts/sample
- Acceleration and deceleration range from -32,768 to 32,767 counts/sample² with a resolution of 1/65,536 counts/sample²
- Jerk range from 0 to 1/2 counts/sample³ with a resolution of 1/4,294,967,296 counts/sample³
- Electronic gear ratio range from -32,768 to 32,767 (negative and positive direction)
- Programmable sample rate from 100 μsec to 3355 msec per axis
- Maximum incremental encoder rate up to 5.0 Mcounts/sec
- Maximum parallel encoder rate up to 160.0 Mcounts/sec
- Parallel encoder word size: 16 bits
- Parallel encoder read rate: 20kHz (every 50 μsec)
- Pulse and direction motor output up to 4.98 M-pulses/sec
- On-board 256 kByte memory buffer for data and parameters storage
- Parallel or serial communication interface
- Two-directional travel limit switches, home indicator and fault input per axis
- Automatic motor shutdown on motor stall detection
- 8 general purpose 10-bit analog inputs in range of 0 to 5.0 V dc
- 8 general purpose discrete inputs and outputs expandable to 256 inputs and 128 outputs
- Programmable host interrupts
- Trace capabilities for system performance testing and diagnostic purposes
- Software functions support coordinated linear and circular interpolation, point-to-point positioning and contouring, backlash compensation, jogging, homing, etc.
- Status reporting for position, speed and errors
- Infinite number of linear and arc segments for smooth motion
- Programmable event triggers for monitoring elapsed time, motion complete, position, motion error, limit switches and position wrap-around

Axes Control Signals Connector (J7)

| Pin | Signal Name | Pin | Signal Name | Pin | Signal Name | Pin | Signal Name |
|-----|---------------|-----|---------------|-----|---------------|-----|---------------|
| 01 | QuadA1+ | 26 | QuadA2+ | 51 | QuadA3+ | 76 | QuadA4+ |
| 02 | QuadA1- | 27 | QuadA2- | 52 | QuadA3- | 77 | QuadA4- |
| 03 | QuadB1+ | 28 | QuadB2+ | 53 | QuadB3+ | 78 | QuadB4+ |
| 04 | QuadB1- | 29 | QuadB2- | 54 | QuadB3- | 79 | QuadB4- |
| 05 | Index1+ | 30 | Index2+ | 55 | Index3+ | 80 | Index4+ |
| 06 | Index1- | 31 | Index2- | 56 | Index3- | 81 | Index4- |
| 07 | Vcc (encoder) | 32 | Vcc (encoder) | 57 | Vcc (encoder) | 82 | Vcc (encoder) |
| 08 | GND (encoder) | 33 | GND (encoder) | 58 | GND (encoder) | 83 | GND (encoder) |
| 09 | N.C. | 34 | N.C. | 59 | N.C. | 84 | N.C. |
| 10 | N.C. | 35 | N.C. | 60 | N.C. | 85 | N.C. |
| 11 | N.C. | 36 | N.C. | 61 | N.C. | 86 | N.C. |
| 12 | GND | 37 | GND | 62 | GND | 87 | GND |
| 13 | PosLim1 | 38 | PosLim2 | 63 | PosLim3 | 88 | PosLim4 |
| 14 | NegLim1 | 39 | NegLim2 | 64 | NegLim3 | 89 | NegLim4 |
| 15 | Home1 | 40 | Home2 | 65 | Home3 | 90 | Home4 |
| 16 | AxisIn1 | 41 | AxisIn2 | 66 | AxisIn3 | 91 | AxisIn4 |
| 17 | AxisOut1 | 42 | AxisOut2 | 67 | AxisOut3 | 92 | AxisOut4 |
| 18 | Pulse1 | 43 | Pulse2 | 68 | Pulse3 | 93 | Pulse4 |
| 19 | N.C. | 44 | N.C. | 69 | N.C. | 94 | N.C. |
| 20 | N.C. | 45 | N.C. | 70 | N.C. | 95 | N.C. |
| 21 | Direction1 | 46 | Direction2 | 71 | Direction3 | 99 | Direction4 |
| 22 | N.C. | 47 | N.C. | 72 | N.C. | 97 | N.C. |
| 23 | N.C. | 48 | N.C. | 73 | N.C. | 98 | N.C. |
| 24 | GND | 49 | GND | 74 | GND | 99 | GND |
| 25 | N.C. | 50 | N.C. | 75 | N.C. | 100 | N.C. |

User-defined Digital I/O Connector (J8)

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 01 | PrIn0 | 11 | PrIn5 |
| 02 | PrOut0 | 12 | PrOut5 |
| 03 | PrIn1 | 13 | PrIn6 |
| 04 | PrOut1 | 14 | PrOut6 |
| 05 | PrIn2 | 15 | PrIn7 |
| 06 | PrOut2 | 16 | PrOut7 |
| 07 | PrIn3 | 17 | GND |
| 08 | PrOut3 | 18 | Vcc |
| 09 | PrIn4 | 19 | GND |
| 10 | PrOut4 | 20 | Vcc |

Analog Input Connector (J9)

| Pin | Signal Name | Pin | Signal Name |
|-----|---------------|-----|--------------|
| 01 | Analog1 | 14 | AnalogRefLow |
| 02 | Analog2 | 15 | AnalogGND |
| 03 | Analog3 | 16 | AnalogGND |
| 04 | Analog4 | 17 | AnalogVcc |
| 05 | Analog5 | 18 | GND |
| 06 | Analog6 | 19 | GND |
| 07 | Analog7 | 20 | Vcc |
| 08 | Analog8 | 21 | AxisOut1 |
| 09 | AnalogIn1 | 22 | AxisOut2 |
| 10 | AnalogIn2 | 23 | AxisOut3 |
| 11 | AnalogIn3 | 24 | AxisOut4 |
| 12 | AnalogIn4 | 25 | Watchdog |
| 13 | AnalogRefHigh | 26 | -HostIntrpt |

Serial Channel Connector (J4)

| Pin | Signal Name |
|-----|-------------|
| 01 | SrIXmt |
| 02 | SrIRcv |
| 03 | Synch |
| 04 | GND |
| 05 | Vcc |

Environmental and Electrical Ratings

| | |
|--------------------------------|--|
| Dimensions | 4.8" x 10.0", 16-bit ISA Adapter |
| Storage Temperature | -40 °C to 125 °C |
| Operating Temperature | 0 °C to 70 °C (an industrial version with an operating range of -40 °C to 85 °C is also available) |
| Power Consumption | 1A @ 5V |
| Supply Voltage Limits | -0.3V to +7.0V |
| Supply Voltage Operating Range | 4.75V to 5.25V |
| Analog Input Range | 0.0V to 5.0V |

Ordering information

3m - 0 - S

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|-----------------------|
| 1 - 1 axis controller |
| 2 - 2 axis controller |
| 4 - 4 axis controller |