

GENERAL DESCRIPTION

The MPM300 (Figure 1) is a high precision motion co-processing engine capable of obtaining nanometer measurements. The MPM300 interfaces with a variety of precision Linear, Rotary, and recently introduced Absolute Encoders, made by Nikon. NanoWave's close collaboration with Nikon resulted in the MPM300 product to provide complete support for Nikon's DigiMicro encoder products. Some of MPM's digital signal processing architecture was borrowed from NanoWave's patented Scanning Probe Position Encoder (SPPE) technology called NanoRES™ which offers many advantages over other encoding methods. NanoWave has taken advantage of the emerging high density FPGA's (Field Programmable Gate Arrays) to implement proprietary DSP (Digital Signal Processor) algorithms. Unlike conventional DSP processors, FPGA's allow many parallel signal processing paths which greatly speed up real-time signal processing. It is for this reason the MPM300 can process position data at ADC sampling clock rates with uncanny accuracy which makes it ideal for machine control.

FEATURES

- 1 Nanometer Resolution with Nikon DigiMicro heads.
- 40MHz 500K gate FPGA technology
- Simultaneous two channel 10MHz 12-bit ADC
- USB 2.0 High Speed 480Mb/Sec PC support
- CP300 Windows 2K/XP/Vista based software
- PID Control with 18-bit delta-sigma DAC ready output*
- A quad B outputs
- USB Powered
- Nikon "A" format interface compatible
- 128x64 Graphics Display
- Keypad
- Digital IO
- Automatic Power Management

* Requires low pass passive components

40MHz FPGA Processing

The MPM300 combines state of the art digital signal processing implemented in a 500K gate FPGA (Field Programmable Gate Array). This technology provides extreme flexibility and quick customization. NanoWave has surrounded the FPGA with mainstream peripherals such as USB 2.0 supporting the higher 480Mb/sec IO speeds and also added high speed ADC technology.

APPLICATIONS

- Motion Control
- Laboratory Instruments
- Medical Equipment
- Robotics
- Industrial Automation
- Milling Machines
- Semiconductor Equipment



Figure 1. MPM300

Nikon DigiMicro Encoder Support

Nikon DigiMicro encoders come with plunger-type (Linear) probes. The measurement length ranges from 12mm up to 100mm. They have extremely smooth mechanical action and feature a Nikon exclusive diffraction-type optical encoder. The encoder mechanism is enclosed in a sealed compact extruded aluminum housing which resists contamination and dirt. The encoders install quickly, are easy to set-up, and have a wide variety of industrial and research applications. Linear, Rotary, and Absolute encoder heads made by Nikon are available through NanoWave. All models work with the MPM300 also sold and supported by NanoWave.

Product Applications

For motion control systems, the MPM300 combined with Nikon's DigiMicro encoders provide a neat and compact solution. The MPM300 provides standard A-quad-B digital or differential signal outputs which are compatible with many commercially available encoders, counters, and motion control boards. Because the MPM300 is an "on-axis" measurement instrument, it can easily be mounted on the relevant measurement plane. Abbe errors are also greatly reduced or even eliminated (vs. side-mounted encoders placed on underlying translational stages) when measuring "on-axis". Because they are self contained optical encoder units, there is no need to mount and align read-heads with diffraction grating scales. This avoids many mechanical complications saving expensive engineering time while also eliminating a host of measurement errors and reliability problems typical of this type of installations. When encoder integration within compact space is required, and motion controlling needs to resume without going through initialization sequence after power outages for safety concern, Nikon's ABS linear encoder provides the perfect solution. MPM300 provides direct compatibility to any Nikon A-format absolute encoders.



Figure 2. MPM300 shown with MF1001 encoder and MS-21 stand.

PC Support

While MPM300 can work in a stand-alone application, it also comes with CP300, a comprehensive graphical user interface allowing it to be used with a PC running window 2K/XP or Vista operating system. The PC communicates with MPM300 through a high-speed USB 2.0 interface. The software can be used to monitor static or dynamic position information as well as record and save trend data over time. Figure 2 shows the interface which has a look and feel like that of a storage oscilloscope. The software also offers features like Scale, Amplitude, and Sample rate adjustments, PID parameters, LCD contrast control, and digital position readout.

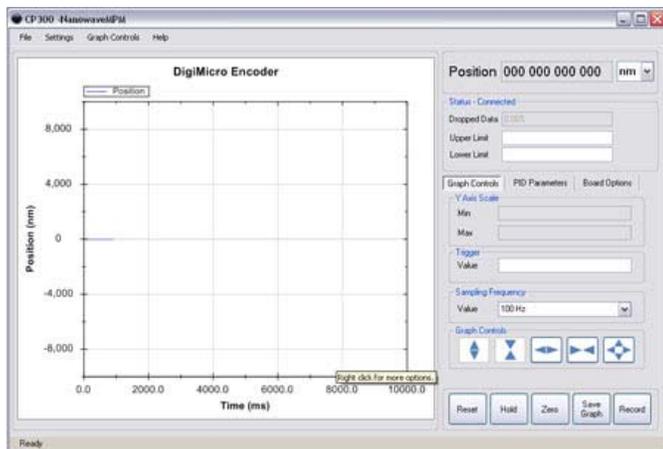


Figure 4 – CP300 Graphical Users Interface

Supported Encoders

- Nikon MH12_MPM (linear encoder)
- Nikon MF501_MPM (linear encoder)
- Nikon MF1001_MPM (linear encoder)
- Nikon SAL_S40N (absolute linear encoder)

NOTE: Please check website for latest encoders supported and full specifications at <http://www.nanowave.com/overview.htm>

Specifications

- Size - 3x5"
- Weight - 3 oz
- Power Requirements - USB Powered 500mA max.
- System Requirements - WIN2K/XP/Vista USB2.0 Direct Hub

NOTE: Please visit www.nanowave.com/pricing for current prices and availability of our products.

Shipping includes

- MPM300 Unit.
- CP300 PC software and manual CD.
- USB Cable.
- USB wall transformer (100-240 VAC 50-60 Hz 500mA).

NOTE: Please check for the latest version of the CP300 PC Software and Manual at http://www.nanowave.com/Ps_CP300.htm.

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NanoWave is pleased to bring these advanced measuring Instruments to the North American market with technical support and advanced engineering services. We have over 30 years of combined experience in high-performance, high precision measurement and motion control systems. NanoWave has teamed with Nikon Corporation to leverage their advanced encoder technologies and widely respected manufacturing expertise to bring new market opportunities.

For more Information on Products, Services, Prices, and Deliveries, please visit our website at www.nanowave.com
Please send questions to info@nanowave.com

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