eZMP-SynqNet
Standalone Motion Controller

Hardware Specification

DANAHER
MOTION

Helping you build a better machine, **faster.**

eZMP-SynqNet
Hardware Specification

DANAHER MOTION | SynqNet®

Key Benefits

- **Maximize System Productivity**
  Fastest cycle times via 64-bit technology and the lowest latency, multi-axis control available. Reduced settling times with dedicated, real-time motion processor executing advanced control algorithms.

- **Highest End Product Quality**
  Improve machine repeatability, precision, and path control with centralized motion control and real-time SynqNet motor and I/O network connectivity.

- **Reduced Development Time and Cost**
  Integrated motion controller and industrial PC for quick peripheral integration via Ethernet, USB, VGA, serial, and PCI connectivity. SynqNet motion networks support plug-and-play hardware and provides rapid system optimization tools for motion and I/O.

- **Design Flexibility**
  Open embedded PC architecture with Windows XPe operating system allows motion and machine control development in Visual Basic, C/C++/C#, and other third party software. Flexible software libraries and customizable control algorithms for best-fit motion performance. Operate as stand-alone control or connect to host PC or factory network.

Performance Standalone Machine and Motion Control

The eZMP integrates the full power, flexibility, and connectivity of an industrial computer with the performance of real-time, 64-bit multi-axis motion and I/O control.

Supported Features

SynqNet Motion Network Master
- Supports up to 64 axes of servo, stepper control
- Supports up to 16,000 digital and 1,000 analog I/O
- Servo update rates up to 48 kHz
- Motion programming in Visual Basic or C/C++/C#

Embedded PC Module with Scalable Performance
- Integrated industrial PC
- Ethernet, USB, VGA, and serial port connectivity
- Operate as stand-alone or control from remote PC
- Easy controller identification with UPnP
- Removable compact flash memory
- PCI expansion slot. Contact factory for details.
- Windows XPe operating system
- Real time operating systems available upon request

SynqNet Platform Overview

Launched in 2001, SynqNet is a digital machine control network specifically designed to meet the flexibility, performance, and safety requirements of today's demanding machine control applications. Built on the 100BT physical layer, SynqNet provides a synchronous real-time connection between motion controllers, servo drives, stepper drives, I/O modules, and custom devices.

FAST
- Network bandwidth for servo updates up to 48 kHz
- Supports up to 32 nodes with 32 axes*
- Over 16,000 bits of digital I/O and 1,000 points of analog I/O
- Real-time diagnostics over SynqNet

SAFE
- "Self-Healing" fault tolerant operation using ring topology
- "HotReplace" allowing replacement of node without network shutdown

PROVEN
- Over 350,000 motion axes installed worldwide
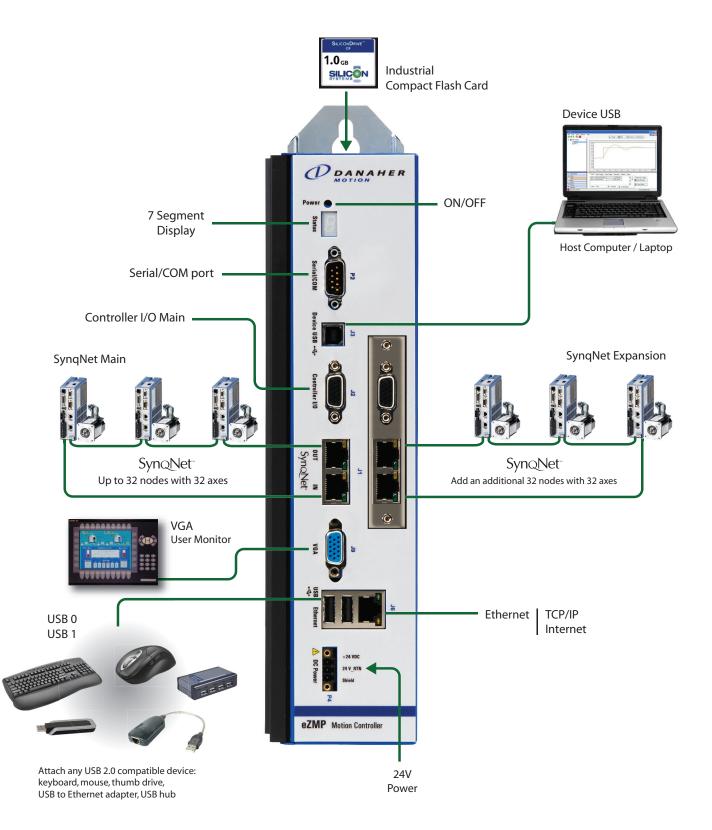- Multi-vendor interoperable network

SynqNet®
www.synqnet.org

Motion Controllers

Drives and Motors

I/O

Custom Nodes

* 64 axes/64 nodes available in 2008   **www.danahermotion.com**

eZMP Connector Diagram

SILICON DRIVE™
CF
1.0 GB
SILICON
SYSTEMS

Industrial
Compact Flash Card

Device USB

ON/OFF

Host Computer / Laptop

7 Segment
Display

Serial/COM port

Controller I/O Main

SynqNet Main

SynqNet Expansion

SynqNet™
Up to 32 nodes with 32 axes

SynqNet™
Add an additional 32 nodes with 32 axes

VGA
User Monitor

USB 0
USB 1

Ethernet | TCP/IP
Internet

+24 VDC
24 V_RTN
Shield

24V
Power

Attach any USB 2.0 compatible device:
keyboard, mouse, thumb drive,
USB to Ethernet adapter, USB hub

eZMP Motion Controller

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Power
Status
Serial/COM   P2
Device USB   J3
Controller I/O   J2
SynqNet   OUT / IN   J1
VGA   J9
USB / Ethernet   J6
DC Power   P4

Set up a SynqNet Network

1

Load Software

Install the MPX software suite on the host computer or directly onto the eZMP. Includes the MPX.NET programming library for writing motion applications in Visual Basic and WorkBench software tool for complete system setup and configuration.

MPX.NET WorkBench

2

Connect Hardware

Easy plug-and-play functionality allows you to quickly setup a SynqNet network.

Slice I/O

S200 Drive

AKM Motor (SFD)

eZMP

Operator Interface Panel

SynqNet™

24V Power

Ethernet | TCP/IP Internet

Host Computer running WorkBench or via Remote Desktop

3

Initialize SynqNet Network with WorkBench

WorkBench is a single software tool that allows you to quickly install each drive and I/O node on the SynqNet network. The Drive Setup Wizard for Danaher Motion drive products helps you quickly configure an S200 drive and AKM motor. Appropriate tuning gains and node FPGA are automatically downloaded to the drive. You are now ready to create a motion.

4

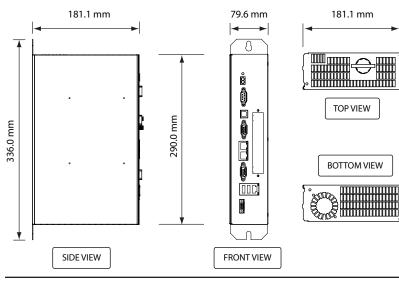### Create a Motion Application and GUI with MPX.NET Programming Library

Develop a motion application and GUI in the same development environment using the MPX.NET programming library for Visual Basic .NET.

Enclosure Dimensions

181.1 mm   79.6 mm   181.1 mm

336.0 mm

290.0 mm

TOP VIEW

BOTTOM VIEW

SIDE VIEW

FRONT VIEW

Part Numbers

Part Number	Description
T126-0001	eZMP-SynqNet, up to 32 axes
T126-0002	eZMP-SynqNet, up to 64 axes*

* Includes SynqNet expansion card.

The eZMP's software configuration must also be selected at time of ordering. Please contact Danaher Motion for details.

Specifications

Function	Parameter	Specification
Processors	ZMP Motion Processor System CPU	PowerPC 64-bit floating point, 466 MHz Intel Celeron M800MHz, cacheless (default) other x86 processors available (800MHz - 1.8GHz+)
CPU Memory	RAM Compact Flash	256 MB (default), expandable to 1 GB+ 1 GB (default), expandable to 8 GB
Software	Operating Systems	Windows XPe, WinCE*
Servo Loop	Update Rate 4 Axes Update Rate 12 Axes Update Rate 32 Axes Update Rate	User programmable Max: 48 kHz Max: 16 kHz Max: 2 kHz
User I/O	Lines Output Low Voltage Input High Voltage (ON) Input Low Voltage (OFF)	3 Inputs; 3 Outputs, 1 ESTOP Input Max. 1.0V @ I_{OUT} = 50mA Min. 4.0V Max. 28.8V Max 0.8V
Network Interfaces	Ethernet Network SynqNet Network	10/100 Mbit Ethernet (IEEE 802.3) 100 Mbit, full-duplex
Peripheral Interfaces	VGA Interface Serial Port USB Ports	DE15 COM1, RS232 (2) USB 2.0 Host (A connector) (1) USB Device (B connector)
PCI Expansion Slot	Additional SynqNet Network Additional PCI Device	Up to 64 total axes and 64 total nodes Contact factory for details.
Environment	Operating Temperature Storage Temperature Humidity	0 to 55º C -20º C to 85º C Max 80% RH, non-condensing
Power Current	Typical Peak	0.8 Amps 1.6 Amps
Power Voltage	Input Power Typical	20V to 30V 24V

* WinCE will be supported in a future release. Other real-time/embedded operating systems are available upon request.

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