eZMP-Synqnet Quick Start Guide

Quick Start

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Introduction

This Quick Start Guide explains how to set up and operate the eZMP-Synqnet as a Universal Plug 'N Play (UPnP) device over a network connection with Windows Remote Desktop or as a standalone industrial PC. After reading this guide, you will be able to:

- Operate the eZMP as a standalone industrial PC or with remote desktop via LAN or crossover cable connection.
- Enable Universal Plug 'N Play devices on a host system for network interaction with the eZMP.
- Observe safe startup and shutdown procedures.
- Quickly access vital statistics from the eZMP landing page.

You will be referred to the MPX.NET Quick Start Guide for instructions on installing MPX.NET and Microsoft Visual Basic Express on a host system.

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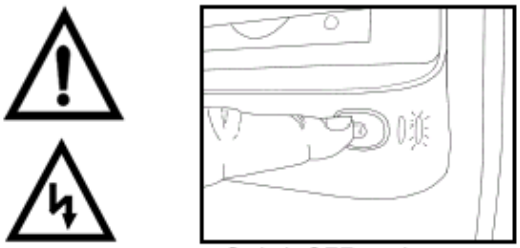
Safety Warnings

During installation, solid electrical contact must be ensured at connectors; otherwise, noise and power problems will develop. (Connections should be verified through inspection and testing.)

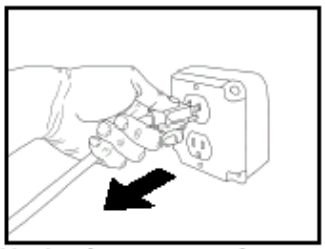
Standard safety rules prevail during installation of any hardware. Some are summarized below for the eZMP. For more information, refer to local occupational safety regulations and the manufacturer of your motion drive.

Turn Off All Power

Before Installing Equipment Before installing any motion control equipment, including the eZMP-Synqnet, power should be switched OFF. Unplug all power plugs from their sources of power.



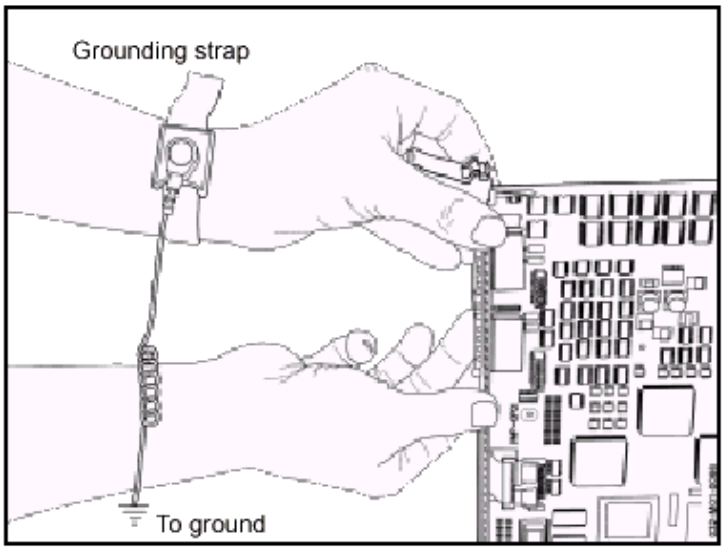
Switch OFF equipment.



Unplug from source of power.

Observe ESD Precautions

To prevent damage to controller and drive electronics due to electrostatic discharge (ESD), service personnel are cautioned to observe proper grounding during handling of components.



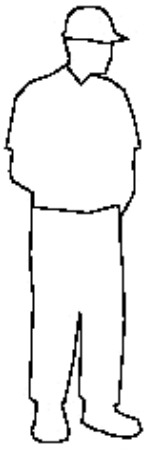
Grounding straps should be worn at all times when handling eZMP-SynqNet electrical components and connection hardware.

Define and Clear a Safety Zone!

During installation and testing of motion control hardware-software, a safety zone should be defined around moving components and kept clear of personnel, hands, fingers and loose hardware. During repowering of the system, motion control components may behave erratically due to misconnected lines, or wrongly configured software settings. Sudden and unexpected moves by components can cause injury, property damage, or even death!

Under NO circumstances, should a motion system be tested or operated while personnel are within the safety zone.

Additionally, beware of flying debris from unsecured hardware operating at high speeds. The use of safety shielding is highly recommended.



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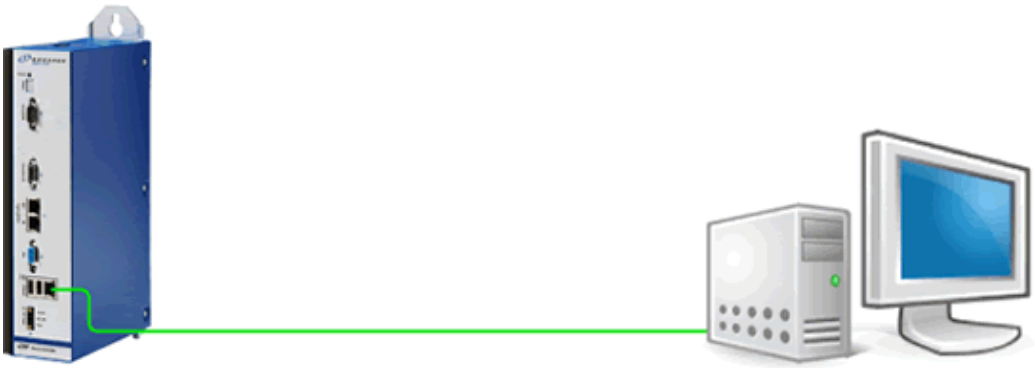
Setting up the eZMP

The eZMP is shipped with Microsoft Windows XP Embedded, Microsoft .NET Framework 2.0, and Danaher Motion's MPX 2.00 Motion Programming Interface. The eZMP is a standalone motion controller with an integrated industrial computer with VGA monitor, USB device, and Ethernet connectivity.

The eZMP features a simplified setup for quick assembly and operates as both a Universal Plug 'N Play (UPnP) device and as a standalone industrial PC.

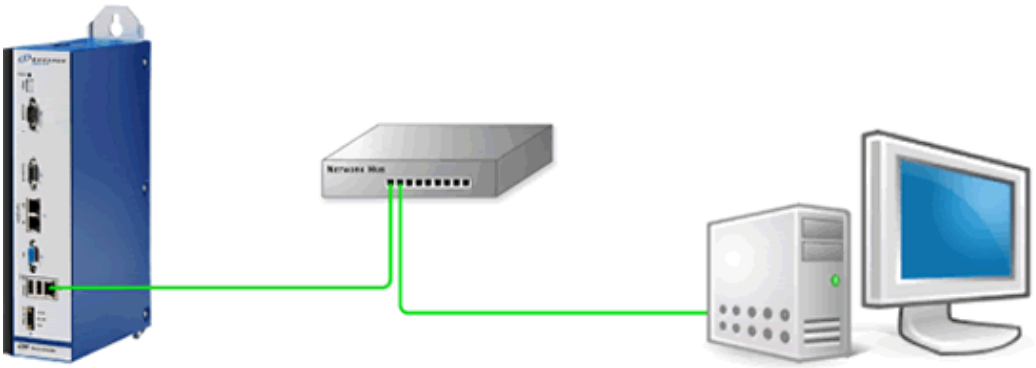
Note: The directions below for Direct Connection via Crossover Cable, Network Connection via LAN, and Standalone Operation assume that the eZMP power supply is not connected, no compact flash card is inserted, and a working hosting computer (if using the network configurations) is available.

Direct Connection via Crossover Cable



To connect directly to the eZMP with a crossover Ethernet cable, simply plug the crossover cable into the Ethernet RJ-45 port of the eZMP and connect the cable to the Ethernet RJ-45 port of the host system. Continue to eZMP Startup for instructions on inserting the compact flash and connecting power to the eZMP.

Network Connection via LAN



To setup the eZMP on your local area network (LAN), connect a CAT5 Ethernet cable from the Ethernet RJ-45 port of the eZMP to the network hub. Then, connect another Ethernet cable from the host system to the network hub. Continue to eZMP Startup for instructions on inserting the compact flash and connecting power to the eZMP.

Standalone Operation

For standalone operation, connect the monitor to the VGA connector on the eZMP. Next, connect the USB keyboard and mouse to the USB device ports on the eZMP.

Continue to eZMP Startup for instructions on inserting the compact flash and connecting power to the eZMP.

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eZMP Startup

After you have set up the eZMP-Synqnet for standalone operation or remote operation via a connection to a local area network or a crossover cable, you will be ready to boot up the eZMP for the first time. Follow the instructions below to insert the compact flash and boot up the eZMP.

Inserting the Compact Flash

The compact flash card should be inserted in the compact flash slot on the top of the eZMP. To correctly insert the compact flash, orient the compact flash card so that the bar code and serial number printed on the card is facing the top (blue surface) of the enclosure as shown below. The compact flash should slide in easily and require a minimum of firm pressure to seat securely in the slot.

CAUTION
Do not force the compact flash into the slot on the eZMP. Doing so may damage the connectors on the main board. The compact flash should slide easily into the slot and a minimum of firm pressure to insert completely. When inserted correctly the compact flash card should be flush with the enclosure.

CAUTION
Do not insert or remove the compact flash card while the eZMP is running. Removing the compact flash during operation can corrupt the compact flash memory and render it unusable.

Connecting the Power

The eZMP will begin booting as soon as power is connected. When connecting power to the eZMP make sure that the power connector is inserted firmly and securely. Use the fasteners on the connector to ensure a secure connection.

ATTENTION
Use only the specified power supply and connector with the eZMP. For more information on the eZMP's power supply and connector DC Power Connector.

CAUTION
Do not remove power from the eZMP while Windows XPe is still running. Always use the Windows shut down dialog box to first shut down Windows before disconnecting power. See Proper Shut Down and Reboot for instructions on safely shutting down and rebooting the eZMP.

7-Segment Display Boot Indicator

The eZMP features a 7-segment display for showing important status and error information.

The `8.` code is displayed when Windows is first booting up. The code is also displayed after Windows has shutdown and it is safe to remove power. See Proper Shut Down and Reboot for instructions on safely shutting down and rebooting the eZMP.

Windows Loaded Indicator

When Windows is loaded, there are no temperature or voltage faults, and no user output is being displayed, the `L.` character is displayed to indicate that the system is running with no errors.

For more information on the eZMP 7-segment display and other display codes, see 7-Segment Display.

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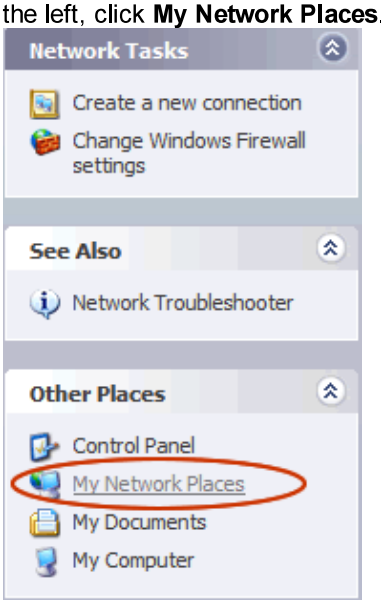
Enable UPnP on the Host System

The eZMP advertises itself as a Universal Plug 'N Play device (UPnP) on a local area network or through a direct connection with a crossover cable. In order to connect to the eZMP, you must first configure the host system to show all networked UPnP devices.

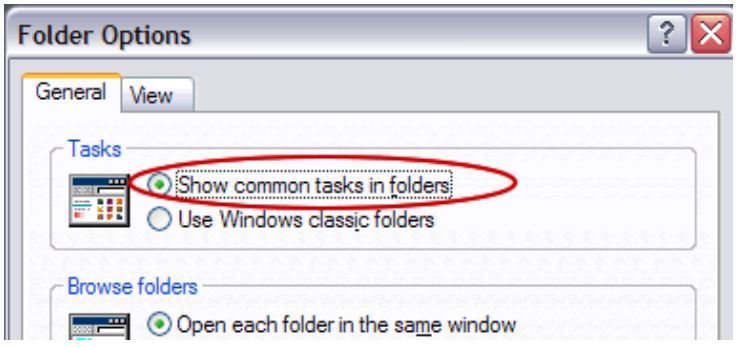
1. Go to the **Start Menu**, click on **Control Panel**. In the **Control Panel** window, double click on **Network Connections**. In the **Network Connections** window, under the **Other Places** tab on the left, click **My Network Places**.



WINDOWS COMMON TASKS SIDEBAR

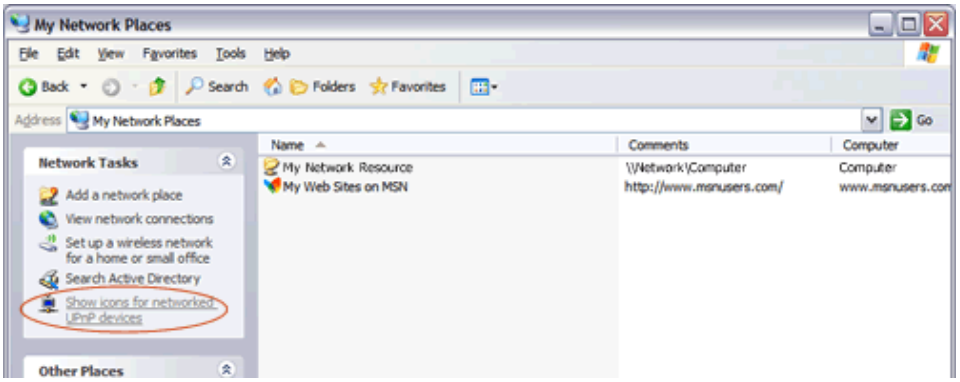
If you do not see the sidebar show above in the **Network Connections** window, you must change the Windows Explorer folder options.

In the **Network Connections** window, go to the **Tools** > **Folder Options**. Under the **General** tab in the **Folder Options** window, select *Show Common tasks in folders* under the **Tasks** heading. Click OK to apply the changes.

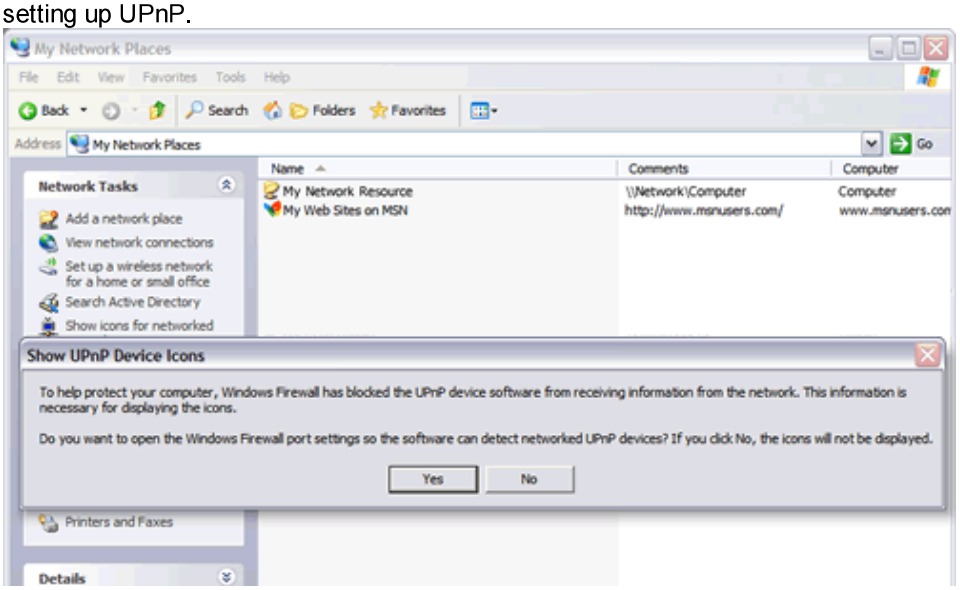


The common tasks sidebar should now be visible in the Network Connections window.

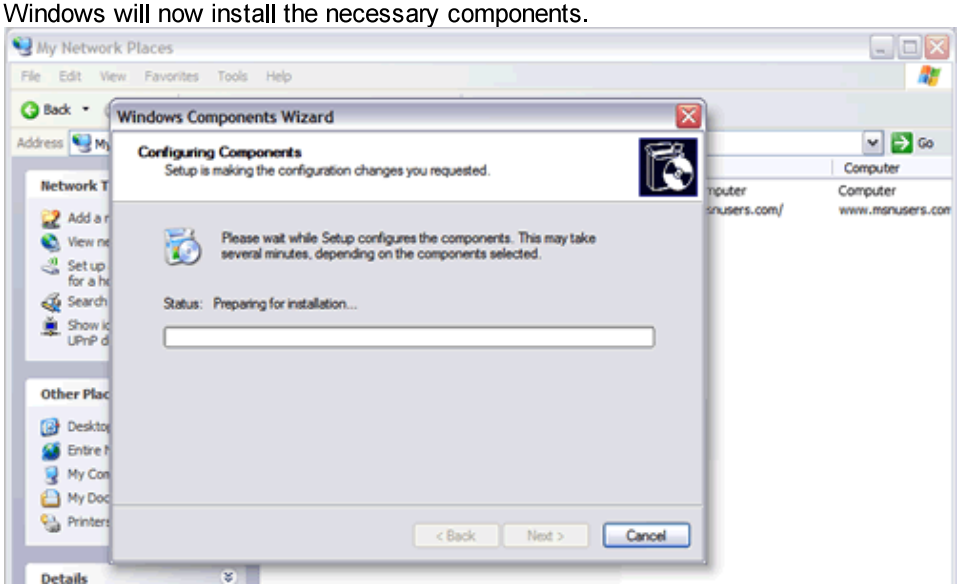
2. Under the **Network Tasks** tab on the left of the **My Network Places** window, click **Show icons for networked UPnP devices**. Windows will start to install the UPnP component.



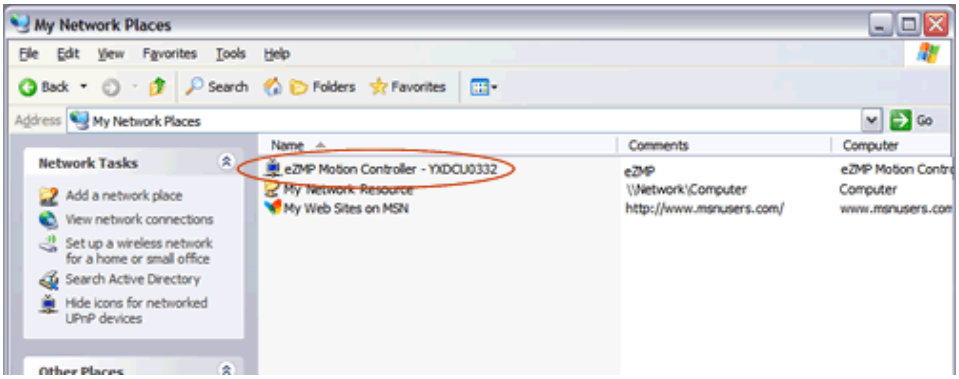
3. If the **Show UPnP Device Icons** confirmation dialog box appears, click **Yes** to continue setting up UPnP.



4. Windows will now install the necessary components.



5. When the installation of Windows UPnP components is complete, any UPnP devices connected to the host system or connected on the local area network will appear in the **My Network Places** window.



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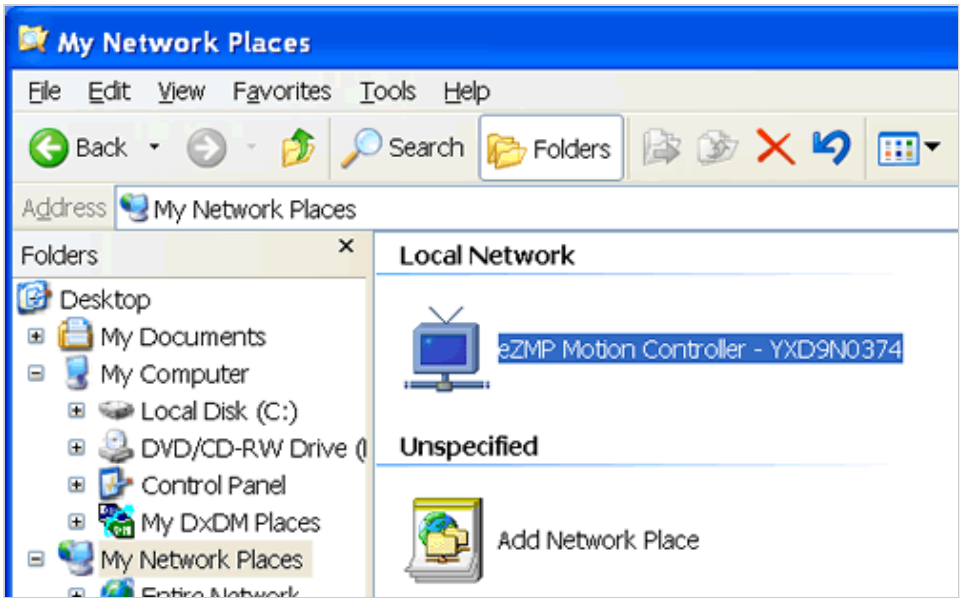
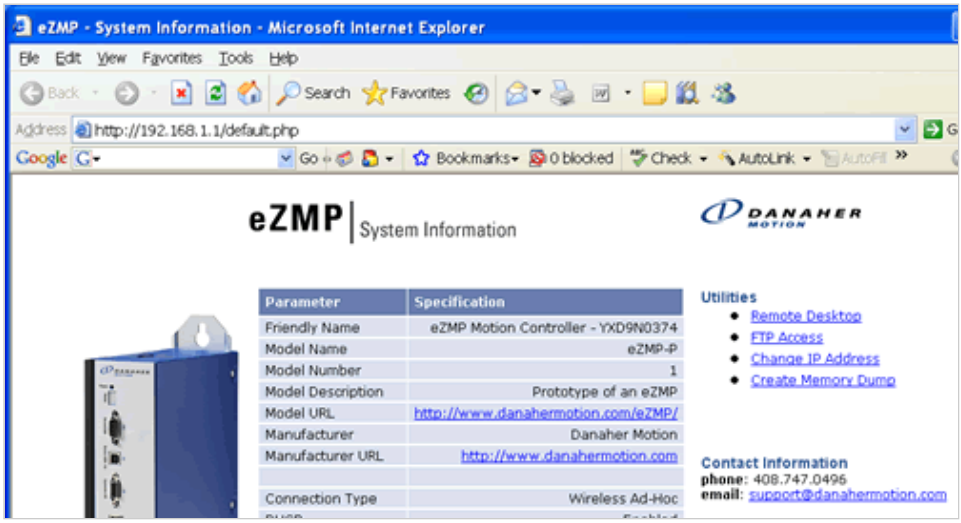
Remote Desktop with the eZMP

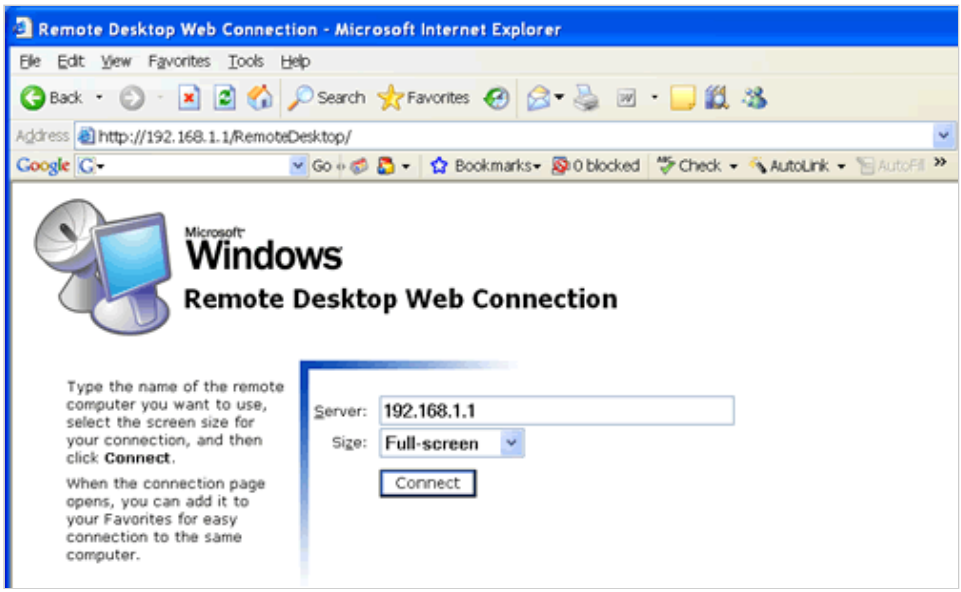
1. Double-click on the **My Network Places** icon on the desktop or go to the **Start Menu**, click **Network Connections**, and under **Other Places**, click **My Network Places**. A window similar to the image shown below should appear with an icon for the **eZMP Motion Controller** on the local network which means that the eZMP is advertising itself as an available device via Universal Plug and Play.



2. Double-click on the **eZMP Motion Controller** icon to load the eZMP System Information homepage in Internet Explorer.



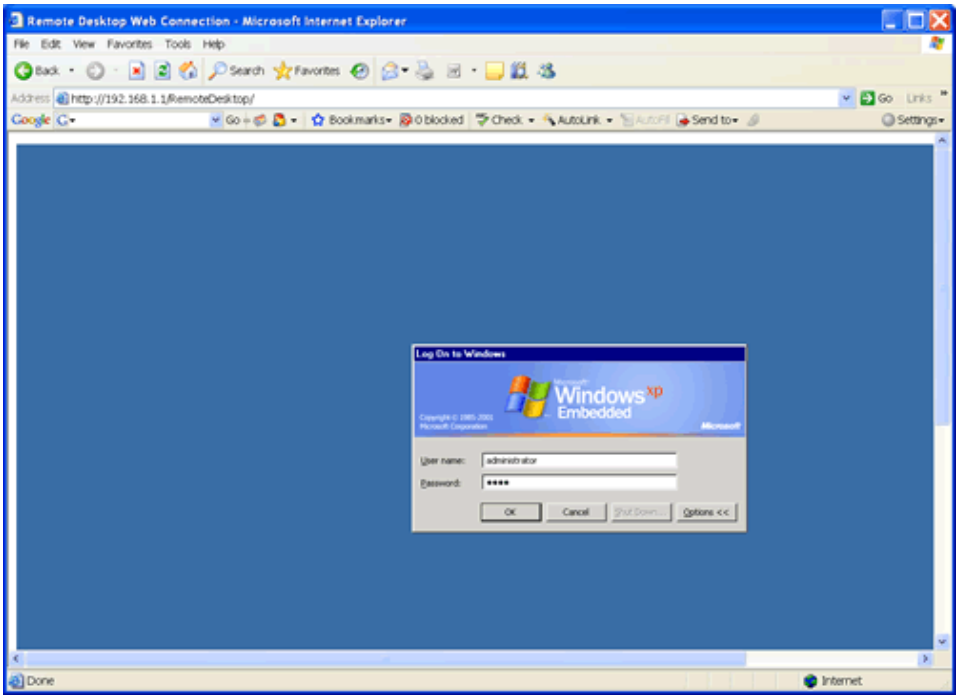
3. From the **Utilities** links on the eZMP homepage, click on **Remote Desktop**. This will load the remote desktop login page for the eZMP (shown below). Click **Connect** to continue connecting to the eZMP.



4. If a Remote Desktop Connection Security Warning appears, click **OK** to continue connecting.

5. The Windows XP Embedded login window will appear in the remote desktop window. The default username and password are:

   User name: administrator
   Password: ezmp



6. Click **OK** to login.
7. You are now logged in to the eZMP motion controller with a remote desktop connection.

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Software Installation

All eZMP units ship with a default 1 gigabyte compact flash card preloaded with Windows XPe. Depending on your configuration options, it may or may not be necessary for you to install additional software for motion development.

Software on the eZMP

The latest release of Danaher Motion's motion development and diagnostic tools, which include the MPI 03.04.09 C-language motion programming library and the MPX 02.00.01 Visual Basic.NET programming library, come preinstalled on the shipped compact flash.

The eZMP is shipped with all of the necessary software that is required for basic operation. Windows XPe has been preconfigured with network services, eZMP system services, and remote desktop for remote administration. You will not need to install any software for basic operation of the eZMP.

Refer to the eZMP Software Specifications for more information on the software installed on the eZMP compact flash.

Software on the Host System

To begin developing motion applications for use with the eZMP, the host system must be configured with the latest versions of the MPI and MPX, as well as development software.

Please see the MPX Quickstart Guide for instructions on installing Microsoft Visual Basic Express 2005 and installing the MPX .NET motion programming package

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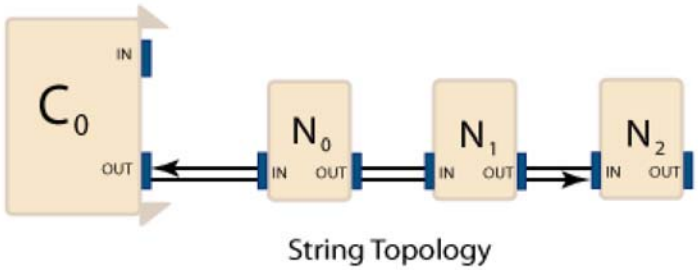
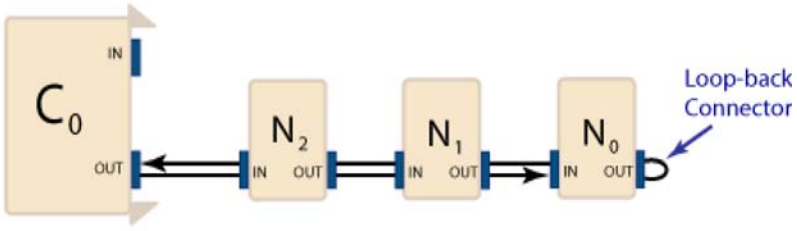
Setting Up the SynqNet Network

Choose SynqNet Network Topology

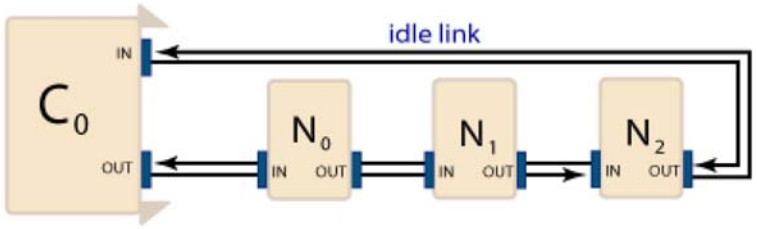
The next step is to set up the hardware of the system based upon the selected topology. Currently, SynqNet supports the following three topologies:



String Topology



Terminated String Topology

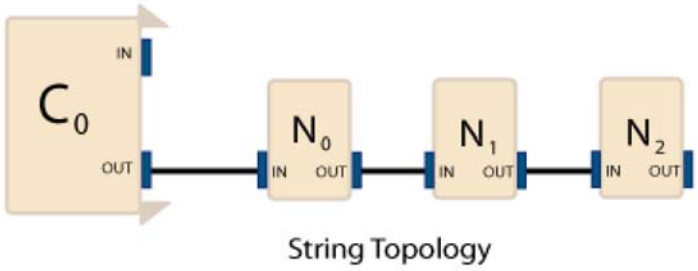


Ring Topology

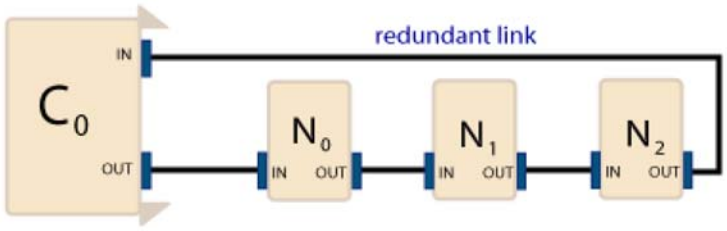
For more information about the various topolgies, please see the Node, Cable, Motor, Drive Addressing section under the SynqNet Technology page.

Cable Connections: Controller to Node(s)

The type of cables needed to connect the controller to the node(s) will vary based upon the type of controller, the particular hardware features, and the type of nodes you are using in the SynqNet Network. However, regardless of these variables, the cables will be wired the same way. For example, you will always connect a cable from an OUT port and into an IN port. The following diagram will clearly illustrate this connection pattern. For more information about cables and connectors, see the eZMP-SynqNet Hardware section.



String Topology



Ring Topology

Types of Connectors and Cables

The following table lists some of the common connectors and their matching cables.

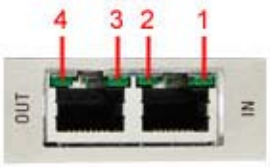
Feature	Connector	Cable
Controller I/O	Micro D15	C001-0037
SynqNet	RJ-45	C007-0003, C006-0001

Power On Nodes and Check LEDs

After all of the nodes have been connected with the proper cables, power-up the system. To verify that the Nodes have been connected correctly and that each node is receiving a network and power signal, inspect the LEDs at each connector.

Each **controller** will have four green LEDs:

- Two LEDs (3 and 4) at the IN port
- Two LEDs (1 and 2) at the OUT port.



ZMP-SynqNet-PCI

SynqNet Connectors: RJ-45
For more information, please see the Controller LEDs section.

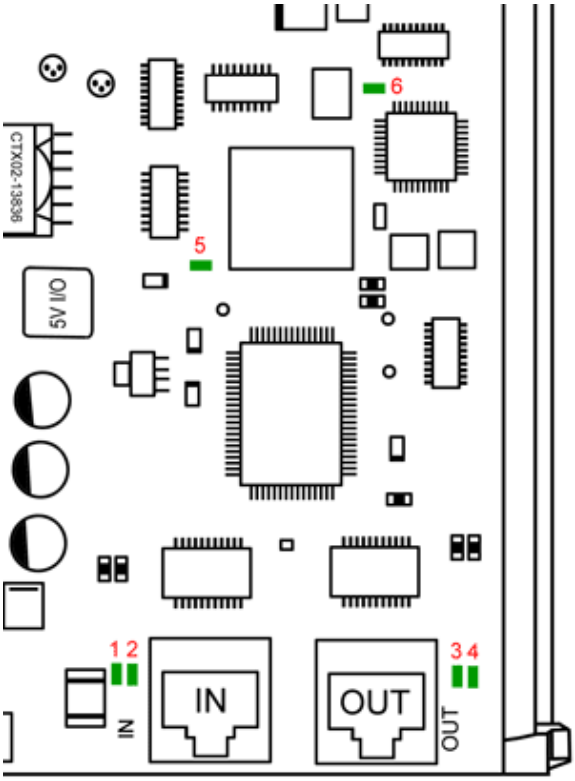
Each **node** will have four green LEDs:

- Two LEDs (1 and 2) at the IN port.
- Two LEDs(3 and 4) at the OUT port.

Node LEDs on the RMB-10V2-SynqNet

- LED1 - Link Activity
- LED2 - Node State
- LED3 - Link Activity
- LED4 - Repeater
- LED5 - FPGA
- LED6 - FPGA Boot Status

For more information, please see the Node LEDs section.



The RMB-10V2-SynqNet is shown above.

Each LED has a particular function. See the Node LEDs page for details.

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