

Product Application Note

MPIec and Numatics Valve: Configuration for EtherNet/IP communication

Applicable Product: MPIec and MotionWorks IEC

Subject: Application Note	Product: MPiec	Doc#: AN.MCD.09.092
Title: MPiec and Numatics: Configuration for EtherNet/IP communication		

Application Overview

This document describes the steps to configure the MPiec controller to be an EtherNet/IP scanner to be used to control a Numatics valve as the adapter over EtherNet/IP protocol.

Application Highlights:

- Industry: Automation
- Major Features: EtherNet/IP communication

Products Used:

Component	Product and Model Number
Controller	MPiec controller (Firmware revision 1.1.1.4 and higher)
Software	MotionWorks IEC (Revision 1.1.1.7 or higher)
Third Party Devices	Numatics valve

Application Requirements

MPiec: Scanner on EtherNet/IP, Numatics valve: Adapter on EtherNet/IP

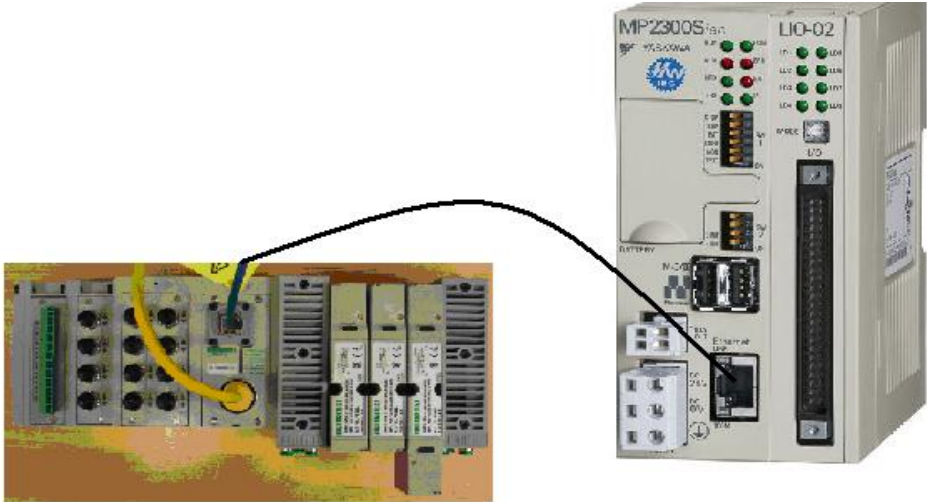


Figure 1: Hardware

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Implementation Method of Core Operation

Go online with the configuration tool. Click on the EtherNet/IP option and make sure that the Scanner Timeout Multiplier is 16x. In order to add the Numatics valve as the adapter to the MPiec controller, click on Add Adapter device at the bottom right corner of the EtherNet/IP screen.

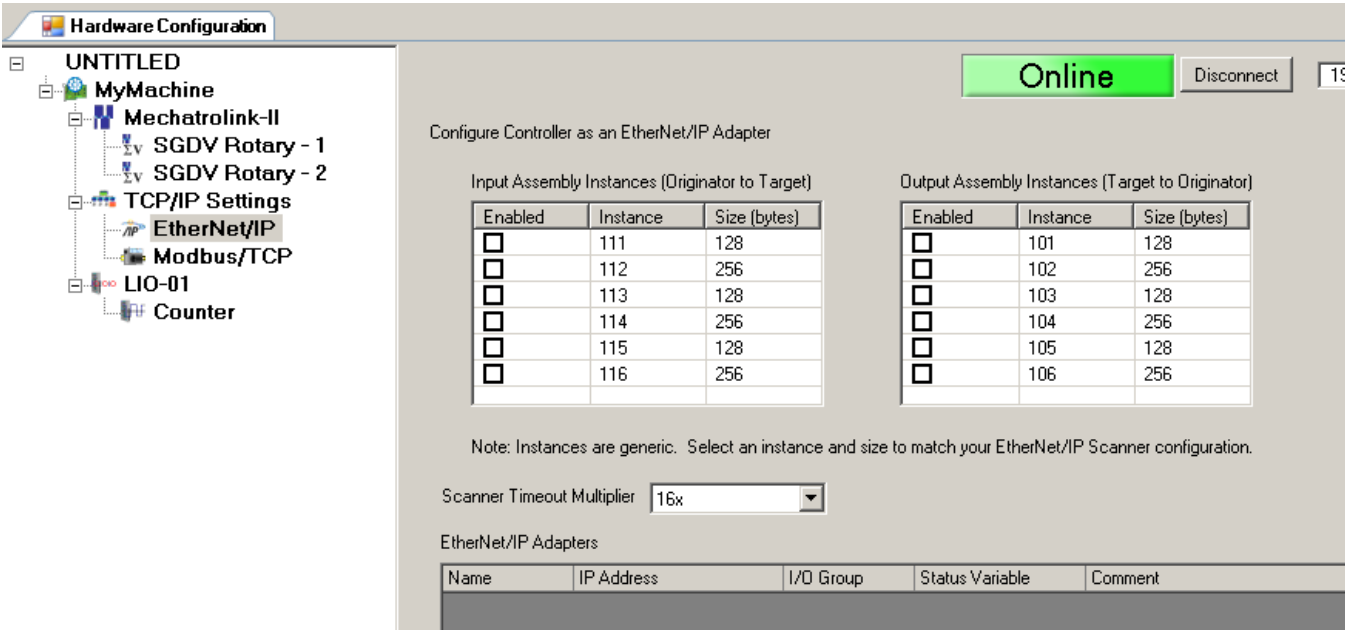


Figure 2: EtherNet/IP page

The window where the adapter details can be provided pops up. Name the device and specify the IP address. Also specify the group name and status variable name as shown in Figure 3. Click OK

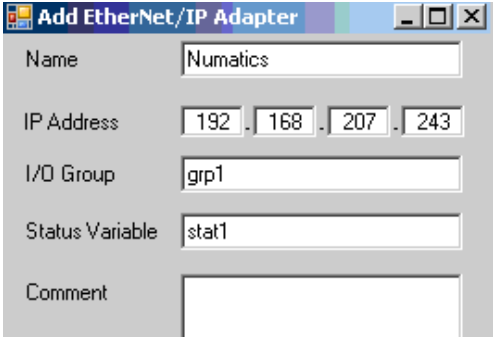


Figure 3: Adapter device details

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Make sure that the IP address of the newly created device is correct. This will be the IP address that the MPiec will try to communicate to. Double click on the newly created device on the hardware configuration tree. This opens up the window where the assembly instances can be created (Figure 5). Click on Add input/output assembly instance.

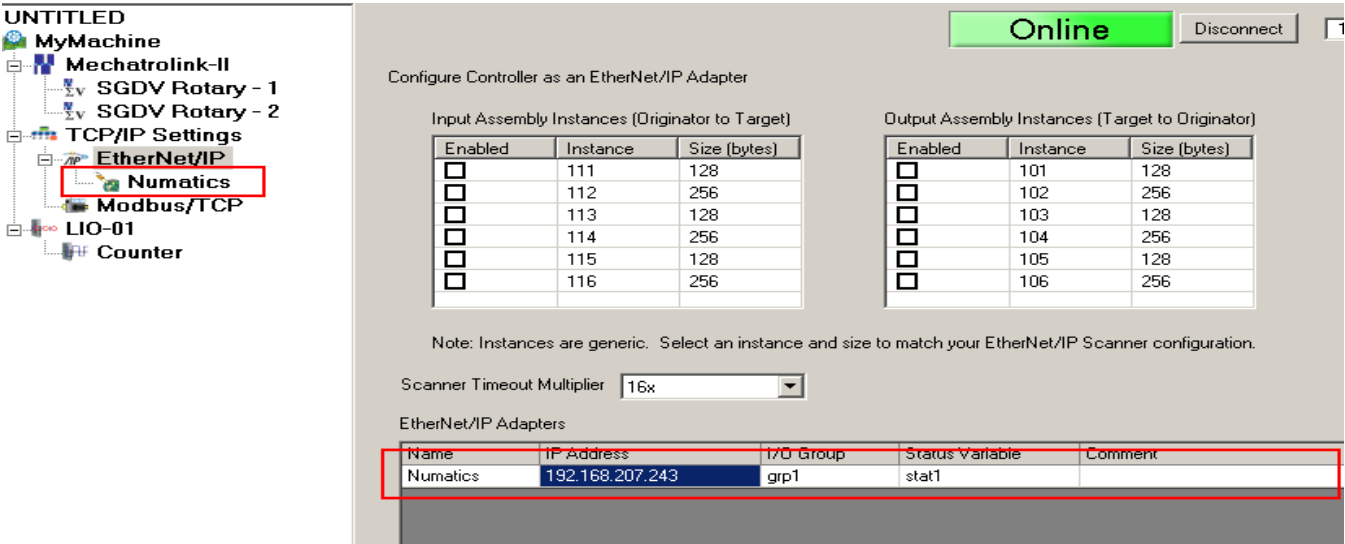


Figure 4: New adapter device

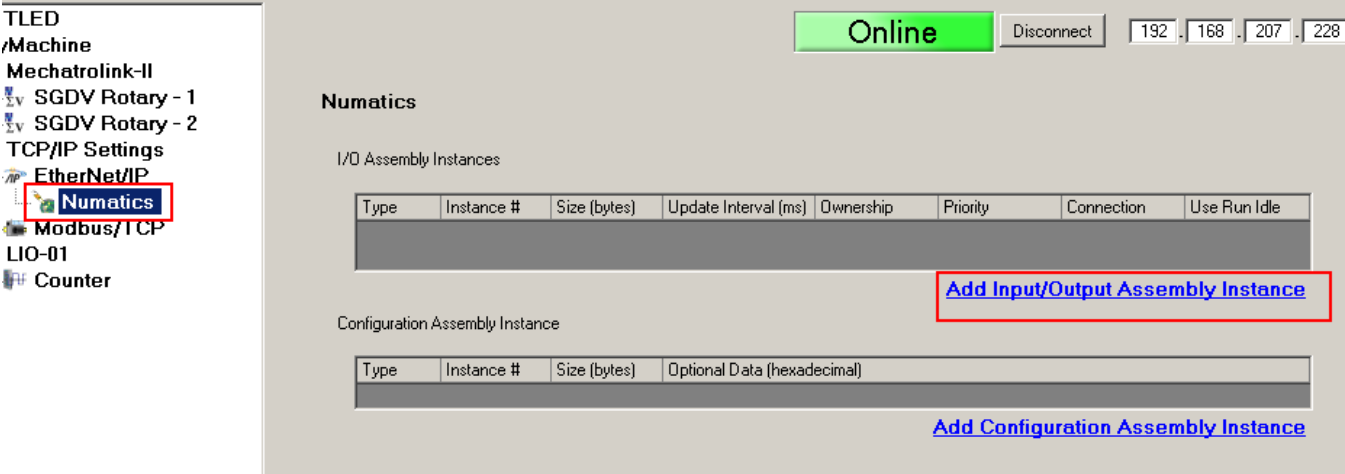


Figure 5: assembly instance page

Add the input instance as in Figure 6. Add the output instance as shown in Figure 7.

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The dialog box is titled "Add EtherNet/IP Assembly". It features three radio buttons for "Assembly": "Input" (selected), "Output", and "Use Run Idle" (unchecked). Below these are six input fields arranged in two columns. The left column contains: "Instance #" with the value "100", "Size (bytes)" with the value "8", and "Update Interval (ms)" with the value "20". The right column contains: "Ownership" with a dropdown menu set to "Exclusive", "Priority" with a dropdown menu set to "Scheduled", and "Connection Type" with a dropdown menu set to "Multicast". At the bottom right, there are two buttons: "Add" and "Cancel".

Figure 6: Input instance

The dialog box is titled "Add EtherNet/IP Assembly". It features three radio buttons for "Assembly": "Input" (unchecked), "Output" (selected), and "Use Run Idle" (checked). Below these are six input fields arranged in two columns. The left column contains: "Instance #" with the value "150", "Size (bytes)" with the value "7", and "Update Interval (ms)" with the value "20". The right column contains: "Ownership" with a dropdown menu set to "Exclusive", "Priority" with a dropdown menu set to "Scheduled", and "Connection Type" with a dropdown menu set to "Point to Point". At the bottom right, there are two buttons: "Add" and "Cancel".

Figure 7: Output

Click on Add Configuration Assembly Instance. Add the instance as shown in Figure 8.

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Add EtherNet/IP Assembly

Type Config

Instance #
1

Size (bytes)
0

Optional Data (hexadecimal)

Figure 8: Configuration instance

Confirm that the configuration for the assembly instances for the Numatics device is as shown in Figure 9.

Numatics

I/O Assembly Instances

Type	Instance #	Size (bytes)	Update Interval (ms)	Ownership	Priority	Connection	Use Run Idle
Input	100	8	20	Exclusive	Scheduled	Multicast	False
Output	150	7	20	Exclusive	Scheduled	Point to Point	True

[Add Input/Output Assembly Instance](#)

Configuration Assembly Instance

Type	Instance #	Size (bytes)	Optional Data (hexadecimal)
Config	1	0	

[Add Configuration Assembly Instance](#)

Figure 9: Final configuration

Save the configuration on the configuration tool. Cycle power on the MPiec controller. Check in MotionWorks IEC to verify that the input and output groups are created.

PLC_TASK_INFO	EXT_TASK_I...	VAR_GLOBAL	%MB1.1004	<input type="checkbox"/>	
+ <SGDV Rotary> - MechatrolinkServo - 1 (* Modify Variable Names, Not Group Name!! *)					
+ <SGDV Rotary> - MechatrolinkServo - 2 (* Modify Variable Names, Not Group Name!! *)					
- <Numatics> 'igrp1' Address Range: %IB4 - %IB11 (* Do Not Modify Group Name or Status Variable!! *)					
stat1	WORD	VAR_GLOBAL	(* Do Not Modify!! *) ... %MW12	<input type="checkbox"/>	
- <Numatics> 'ogrp1' Address Range: %QB2 - %QB9 (* Do Not Modify Group Name or Status Variable!! *)					
+ <LIO-01> - Module - 1 (* Modify Variable Names, Not Group Name!! *)					

Figure 10: status word in global variable list

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Make/compile the project, download it and start the PLC. The status word in the global variable list will show 16#1000 for healthy communication. The user can add input and output variables to communicate with the Numatics device.