Product Application Note

MPiec and Numatics Valve: Configuration for EtherNet/IP communication

Applicable Product: MPiec and MotionWorks IEC

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YASKAWA		1	
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

YASKAWA		2	
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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.

📔 Hardware Configuration								
						Oplin	Disconn	ect 19
🖻 💕 MyMachine								
🖻 🚹 Mechatrolink-II	Configure Controlle	r an an EtharNat	/IP Adapter					
	Conliguie Controlle	i as an Eulenveu	ni Adapter					
🖳 💱 SGDV Rotary - 2	Input Assemb	ly Instances (Ori	ginator to Targe	et) C	Jutput Assem	ibly Instance	s (Target to Originator)	
Etherblat/ID	Enabled	Instance	Size (bytes)		Enabled	Instance	e Size (bytes)	
		111	128	_		101	128	
		112	256			102	256	
		113	128			103	128	
Counter		114	256			104	256	
		115	128			105	128	
		116	256			106	256	
	J Note: Instanc Scanner Timeout EtherNet/IP Adap Name	es are generic. Multiplier 16x ters IP Address	Select an insta	nce and size to	match your B	EtherNet/IP	Scanner configuration.	



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

<mark>:</mark> Add EtherNet	/IP Adapter
Name	Numatics
IP Address	192 . 168 . 207 . 243
1/0 Group	grp1
Status Variable	stat1
Comment	

Figure 3: Adapter device details

YASKAWA		2	
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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.

UNTITLED MyMachine Mechatrolink-II V SGDV Rotary - 1 V SGDV Botary - 2	Configure Controller as	s an EtherNet/IF	PAdapter			Onlin		ct 1
TCP/IP Settings TCP/IP Settings Numatics Modbus/TCP UIO-01 Counter	Note: Instances Scanner Timeout Mu EtherNet/IP Adapter Numatics 1	nstances (Urigir Instance 111 112 113 114 115 116 are generic. Se altiplier 16x s Address 92,168,207,243	ator to 1 arget) Size (bytes) 128 256 128 170 170 170 170 170 170 170 170	e and size to	Enabled Enabled Comparison Status Varia stat1	Instances Instance Instance 101 102 103 104 105 106 therNet/IP S	Size (bytes) 128 256 128 256 128 256 128 256 3canner configuration.	
						`		

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.

VYASKAWA		2	
Subject: Application Note	Product: MPiec	Doc#:	AN.MCD.09.092
Title: MPiec and Numatics: Configuration for EtherNet/IP communication			

Add EtherNet/IP Assembly	
Assembly 💿 Input	O Output 🔲 Use Run Idle
Instance #	Ownership
100	Exclusive
Size (bytes)	Priority
8	Scheduled
Update Interval (ms)	Connection Type
20	Multicast
	Add Cancel

Figure 6: Input instance

Add EtherNet/IP Assembly	
Assembly C Input	Output Vise Run Idle
Instance #	Ownership
150	Exclusive
Size (bytes)	Priority
7	Scheduled
Update Interval (ms) 20	Connection Type
,	
	Add Cancel

Figure 7: Output

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

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

Add EtherNet/IP Assembly
Type 💿 Config
Instance #
1
Size (bytes)
d
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

1/O Assembly Instances

Туре	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

Туре	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			[
I									
I	SGDV Rotary> - MechatrolinkServo - 2 (* Modify Variable Names, Not Group Name‼ *)								
I	🖂 <numatics> 'igrp1' Address Range: %IB4 - %IB11 (* Do Not Modify Group Name or Status Variable!! *)</numatics>								
I		stat1	WORD	VAR_GLOBAL	(* Do Not Modify!! *)	%MV12			Г
📃 < Numatics> 'ogrp1' Address Range: %QB2 - %QB9 (* Do Not Modify Group Name or Status Variable!! *)									
I	🖃 🗄 <lio-01> - Module - 1 (* Modify Variable Names, Not Group Name!! *)</lio-01>								

Figure 10: status word in global variable list

August 27, 2012

VYASKAWA	2					
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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.