YASKAWA

Application Note

Adding a Motoman NX100 Robot Controller
as an EIP Adapter to MPiec Series Controller

Applicable Products:

- MPiec Series Controller (Firmware 1.1.1.4 or later)

- MotionWorks IEC (v 1.1.1.7 or later)

- Motoman NX100 Robot Controller

- Motoman EtherNet/IP (PCU-ETHIO) PCI Interface card (P/N154310-1)

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Application Overview

This application note illustrates how to configure an MPiec Series Controller to communicate with a Motoman NX100 Robot Controller.   The example explained in this note describes an implicit I/O message connection between the MPiec and the Motoman NX100.   No function blocks or PLC logic is necessary, since the data connection is open once the Assembly instances are correctly configured.   Additionally, a detailed description of how to create and link I/O variables in the MotionWorks IEC project is provided.

Components:

- ▪ MPiec Series Controller
- ▪ Motoman NX100 Robot Controller
- ▪ Motoman EtherNet/IP (PCU-ETHIO) PCI Interface card (P/N154310-1)

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Implementation

This example includes configuration of the EIP Module and the necessary configuration for the EIP Assembly instances on both the MPiec Controller (Scanner) and the Motoman NX100 Robot Controller (Adapter).

Step 1:   Configure the Motoman NX100 Robot Controller as an Ethernet/IP Adapter

The first step to adding the Motoman NX100 Robot Controller as an Ethernet/IP Adapter is to open the MotionWorks IEC Hardware Configuration.   If the MPiec controller was previously configured, be sure to upload the Startup Configuration.   Ethernet/IP Adapters must be added while "Offline."   Right-Click on Ethernet/IP in the TCP/IP Settings tree and select "Add Device."   Click "Finish" on the 'Add Device' dialogue that appears next.
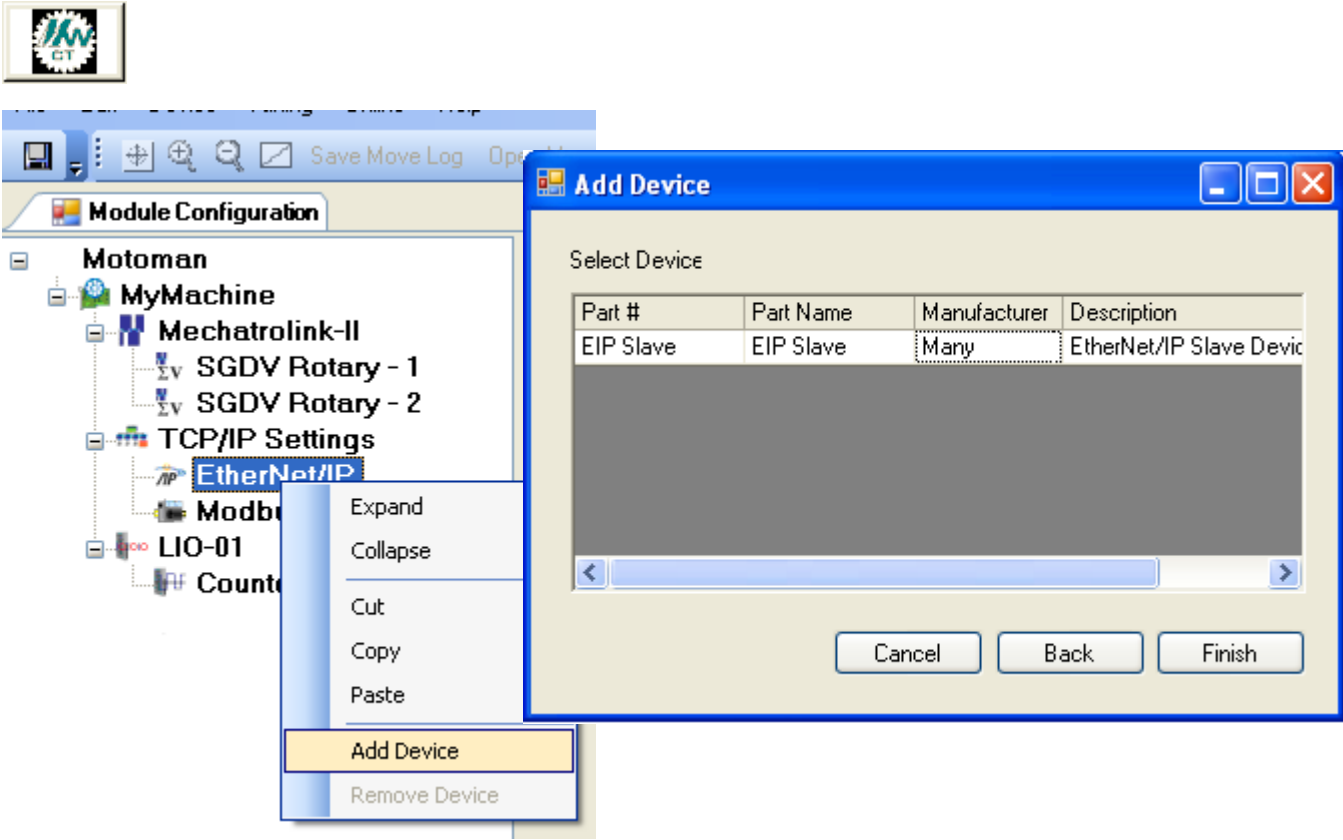
Figure #1:   Adding a device

Input the following EtherNet/IP adapter configuration information:

- **Name** (Reference name for the Adapter (Slave) device)

- **IP Address** (NX100 IP Address)

- **I/O Group Name** (Must be 7 characters or less)

- Select a **Task** with which to synchronize the data exchange (MotionWorks IEC Pro Only)

- Declare a **Status Variable** for the device.
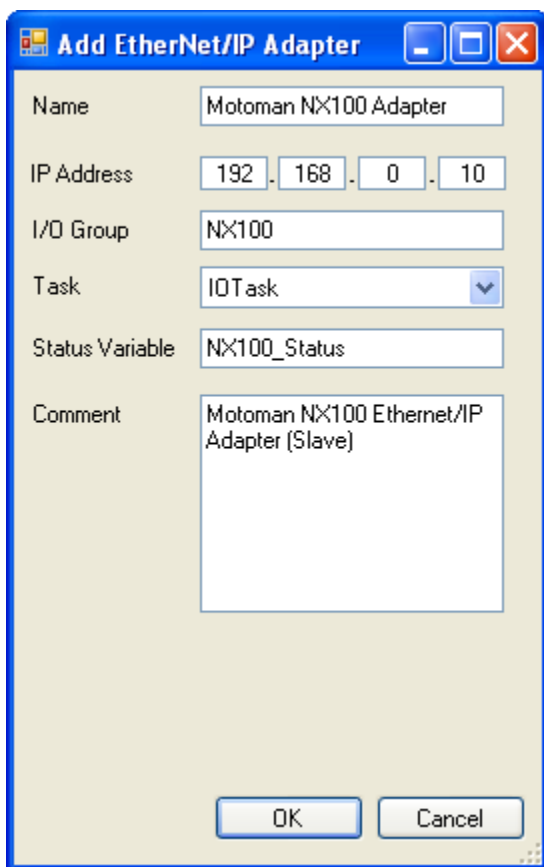
- Add a **Comment** about the device if desired.

Figure #2: **Configuration Ethernet/IP Adapter.**

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Step 2:   Configure the Motoman NX100 Robot Controller adapter input, output, and configuration instances.

Click on the new Adapter device in the Ethernet/IP tree.
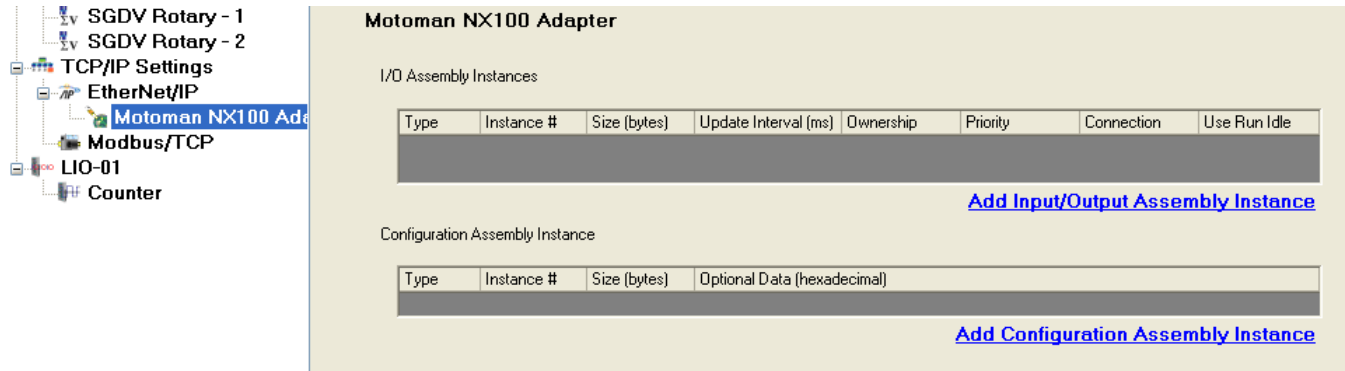

Figure #3:   Motoman NX100 Adapter instance configuration

Click on Add Input/Output Assembly Instance.   First configure the Input instance assembly as shown below, then Click "Add."
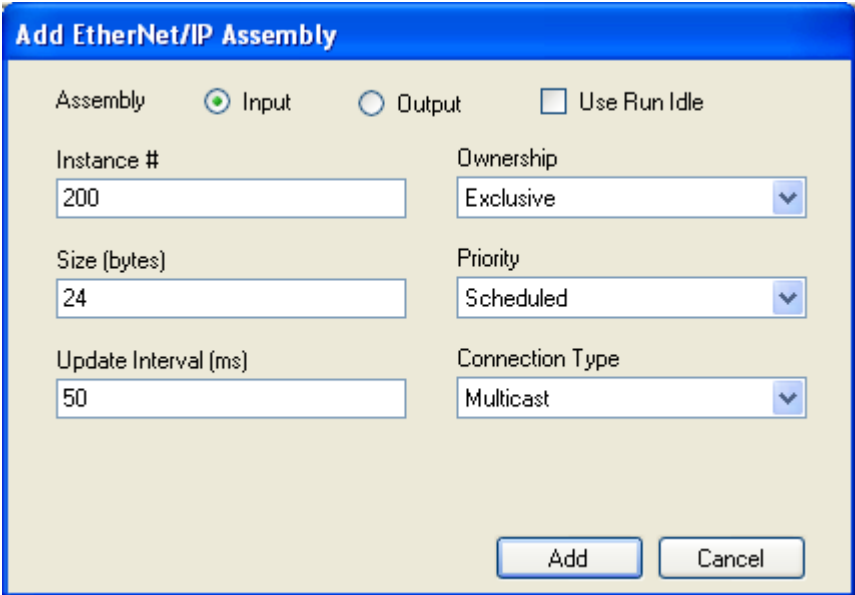

Figure #4:   Input Assembly instance configuration

Click on Add Input/Output Assembly Instance once again. Configure the Output instance assembly as shown below, then Click "Add."

Figure #5: Output Assembly instance configuration

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Lastly, Click on 'Add Configuration Assembly Instance'. Configure the Output instance assembly as shown below, then Click "Add."

Figure #5: **Configuration Assembly instance configuration**

The completed configuration will look like this:

Figure #6:   Complete Assembly instance configuration

Step 3:   Send configuration to the MPiec Controller.

Once the assembly instance configurations are finished, save the configuration.   Next, connect to the controller to go online.

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Step 4: MotionWorks IEC Variable Definition

Input and output address ranges are automatically allocated for the Adapter device.   For this project, logical outputs start at %QB32, the example below shows an output bit at %QB36.   The logical inputs for this project begin at %IB6. The starting addresses may vary depending on other devices that are included in the system.

⊟ **<Motoman NX100 Adapter> 'iNX100' Address Range: %IB6 - %IB29 (* Do Not Modify Group Name or Status Variable!! *)**					
NX100_Status	4096	WORD	VAR_GLOBAL	(* Do Not Modify!! *) Motoman NX100 Adapter Status Variable for: iNX100	%MW30
NewVar1	0	INT	VAR_GLOBAL		%MW6
NewVar2	0	INT	VAR_GLOBAL		%MW8
⊟ **<Motoman NX100 Adapter> 'oNX100' Address Range: %QB32 - %QB59 (* Do Not Modify Group Name or Status Variable!! *)**					
NewVar4	FALSE	BOOL	VAR_GLOBAL		%QX36.0

NX100 Robot Adapter Configuration

The following is the screen capture of the robot configuration using the teach pendant.   For additional details on the PCU-ETHIO Motoman Ethernet/IP module, please reference the Motoman user's manual (154309-CD)

```
ADAPTER

PCU-ETHIO  (EtherNet/IP)   ENABLE
INPUT SIZE                 24 byte
OUTPUT SIZE                24 byte
CONFIGURATION SIZE          0 word
INPUT INSTANCE             100
OUTPUT INSTANCE            200
CONFIGURATION INSTANCE      50
```

SYSTEM

FILE

TOOL

DISPLAY SETUP

Main Menu   Short Cut   I/F Panel   Maintenance mode