Connecting the MPiec Series Controllers to DeviceNet Slaves

There are a number of third party gateways available that will convert EtherNet/IP to DeviceNet. Two devices have been tested and found to work.

They are available from Turck:

http://www.turck-usa.com/

and from RTA:

http://www.rtaautomation.com/

The following comparison shows the maximum number of DeviceNet slaves supported, bytes transferred over EtherNet/IP, and EtherNet/IP connections allowed for each device.

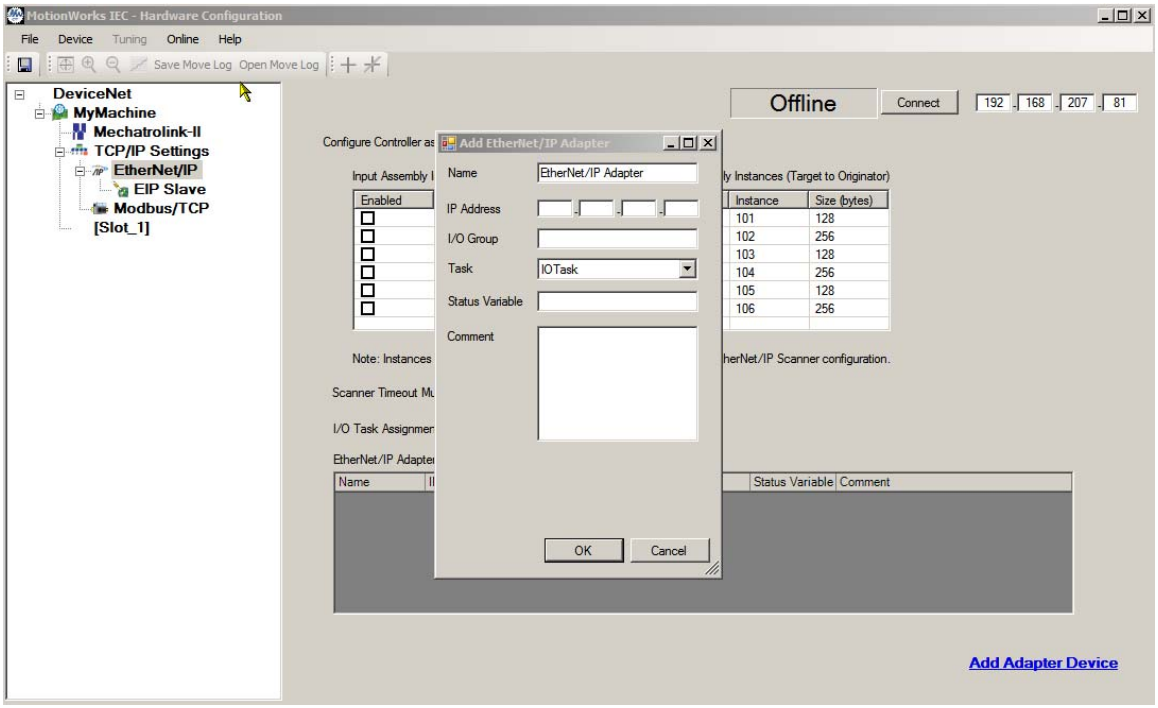
Manufacturer	Part Number	DeviceNet		EtherNet/IP	
		Slaves	Configuration	I/O	Number of Connections
Turck	BL-67-EN-IP-DN	64	Automatic	496 Bytes	12
RTA	455ED	32	Manual	396 Bytes	1

This product note will describe how to set up the MPiec Series Controller to communicate to the gateways. For information on how to configure the gateway, see the documentation available from the manufacturers website listed above.

Configuring the MPiec Series Controller

After opening a project in the MotionWorks IEC software and opening the Hadrware Configuration, the first step is to configure an EtherNet/IP adapter.

Navigate to the EtherNet/IP node in the project tree and select “Add Adapter Device” on the bottom right of the screen. The following dialog will be shown.



Enter an IP address, an I/O Group, and a status variable and select OK.

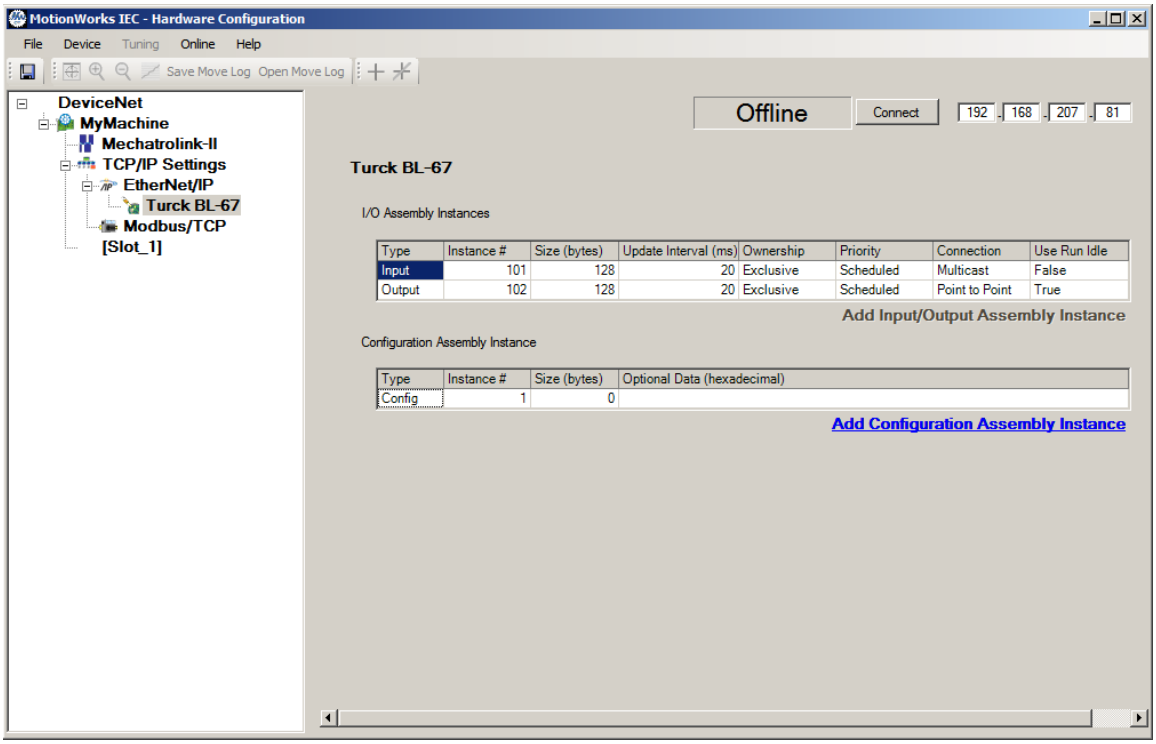
The next step is to add Input & Output instances and in the case of the Turck device, a configuration instance.

The following chart lists the possible instances for each device:

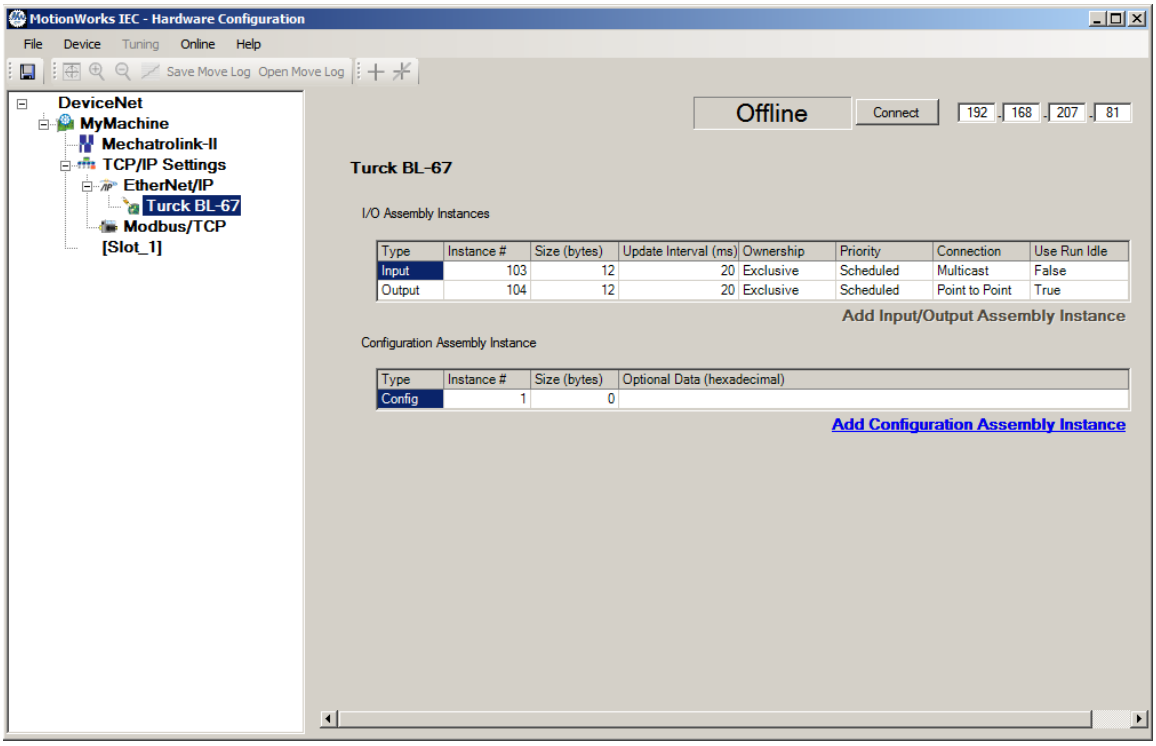
Manufacturer	Input		Output		Configuration	
	Instance	Size	Instance	Size	Instance	Size
Turck	101	128	102	128	1	0
	103	Variable	104	Variable	1	0
RTA	100	400	112	400	Not Required	
	101	8	113	8		
	102	16	114	16		
	103	32	115	32		
	104	64	116	64		
	105	128	117	128		
	106	256	118	256		
	107	400	119	400		

Configuring the MPiec controller to communicate with the Turck device:

The screen below shows the settings used to communicate with the first Input & Output instance pair on the Turck gateway:



The next screen shows the configuration settings for the second pair. The second instance pair has a variable size that depends on the DeviceNet network. This pair's size will be defined as the size of the DeviceNet network plus two bytes used for status and control words. As you can see below, the instance size has been defined as 12 bytes because there was 10 bytes of data on the network.



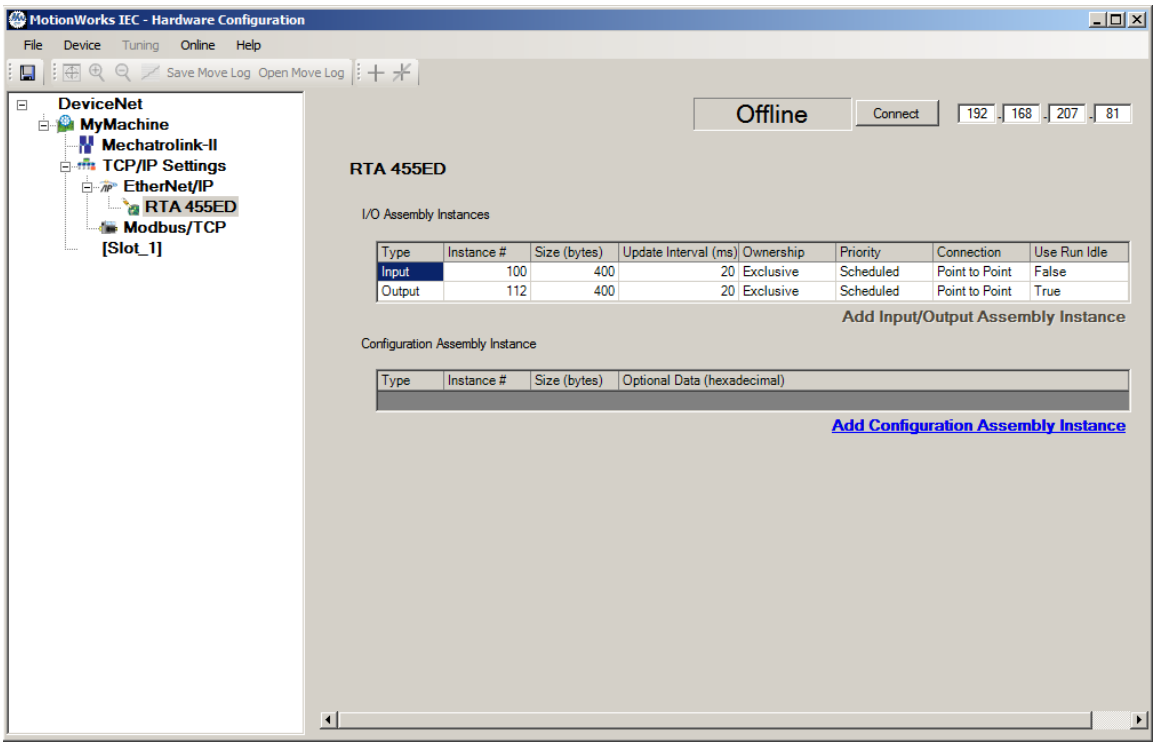
After completing the configuration, save and cycle power to the system.

Go to MotionWorks IEC and make, download and run the project.

Data should now be visible in variables created within the I/O group's address space. When there is a valid connection, the status variable should have a value of 0x1000 (4096 decimal). If the value is not 0x1000, see the Hardware Configuration's help for information on trouble shooting Ethernet/IP connections.

Configuring the MPiec controller to communicate with the RTA device:

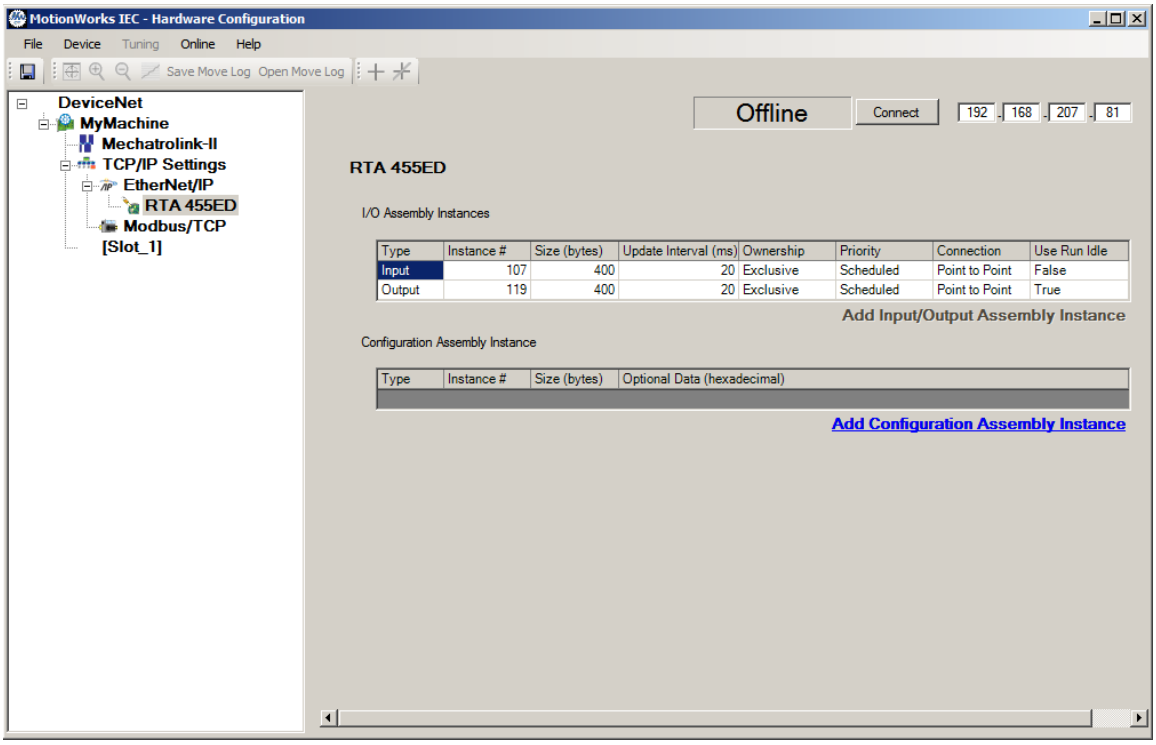
The following screen shot shows the settings used to communicate with the first Input & Output instance pair.



It should be noted that when using this instance pair the data becomes separated by a blank byte effectively limiting the connection to 200 bytes of data. The first byte of DeviceNet data will appear at byte 0 in the I/O group and byte 1 will be zero. The second byte of DeviceNet data will appear at byte 2 in the I/O group and byte 3 will be zero…

The screen below displays the settings used for the last Input & Output instance pair.

When using these instances the data will be packed causing no blank bytes between the data. With these instances, and in fact all instances except the first pair, the first four bytes are reserved and provide status in the Input instance.



After completing the configuration, save and cycle power to the system.

Go to MotionWorks IEC and make, download and run the project.

Data should now be visible in variables created within the I/O group's address space. When there is a valid connection the status variable should have a value of 0x1000 (4096 decimal.) If the value is not 0x1000, see the Hardware Configuration's help for information on trouble shooting Ethernet/IP connections.