Using KEPServerEX OPC Server (Kepware)with the ioLogik E2210

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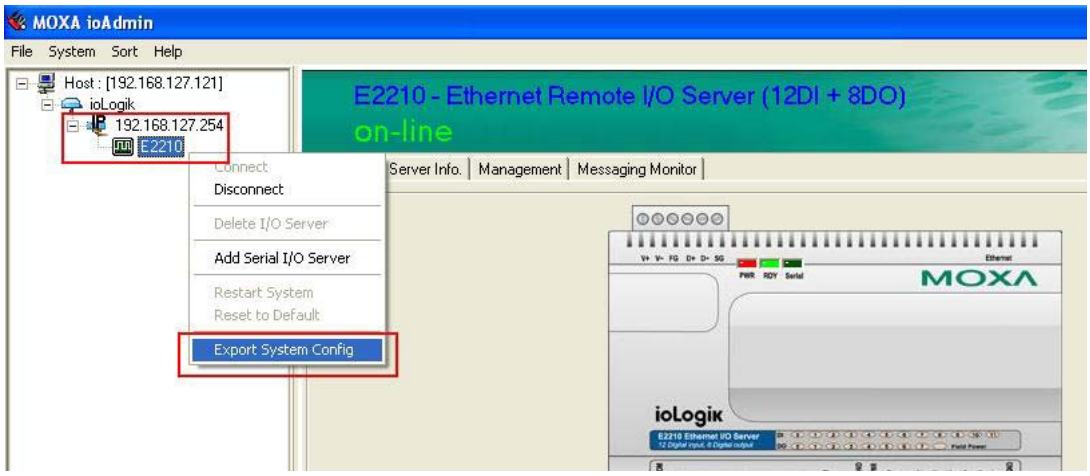
In this Technical Note, we cover the following topics:

1. Obtaining Modbus addresses from the ioLogik E2210 configuration file
2. Configuring KEPServerEX OPC Server (Kepware) with the ioLogik E2210

1. Obtaining Modbus addresses from the ioLogik E2210 configuration file

1.1 In order to use the ioLogik E2210 with KEPServerEX OPC Server (Kepware), you will need to obtain the Modbus addresses of each input and output channel that you wish to access. The Modbus address can be obtained by exporting the system configuration.

Run ioAdmin by clicking Start-> Program Files -> ioLogik -> Utility ->ioAdmin. In the left panel, right click on the ioLogik E2210 whose address table you wish to export, and then select Export System Config to save the configuration file.



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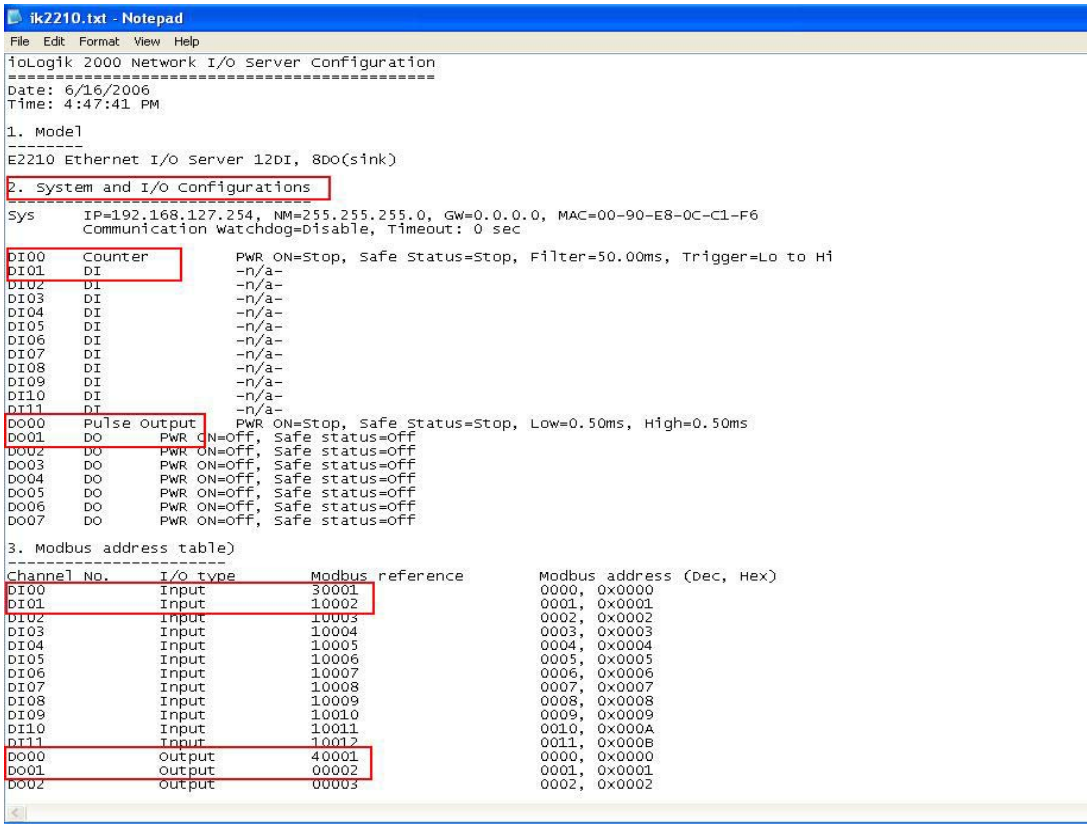
1.2 The exported system configuration will appear as follows. This table can be used to retrieve the ioLogik E2210 system, I/O configuration, and Modbus address table.



ik2210.txt - Notepad

File Edit Format View Help

```
ioLogik 2000 Network I/O Server Configuration
=============================================
Date: 6/16/2006
Time: 4:47:41 PM

1. Model
--------
E2210 Ethernet I/O Server 12DI, 8DO(sink)

2. System and I/O Configurations
--------------------------------
Sys      IP=192.168.127.254, NM=255.255.255.0, GW=0.0.0.0, MAC=00-90-E8-0C-C1-F6
         Communication Watchdog=Disable, Timeout: 0 sec

DI00     Counter          PWR ON=Stop, Safe Status=Stop, Filter=50.00ms, Trigger=Lo to Hi
DI01     DI               -n/a-
DI02     DI               -n/a-
DI03     DI               -n/a-
DI04     DI               -n/a-
DI05     DI               -n/a-
DI06     DI               -n/a-
DI07     DI               -n/a-
DI08     DI               -n/a-
DI09     DI               -n/a-
DI10     DI               -n/a-
DI11     DI               -n/a-
DO00     Pulse Output     PWR ON=Stop, Safe Status=Stop, Low=0.50ms, High=0.50ms
DO01     DO       PWR ON=Off, Safe status=Off
DO02     DO       PWR ON=Off, Safe status=Off
DO03     DO       PWR ON=Off, Safe status=Off
DO04     DO       PWR ON=Off, Safe status=Off
DO05     DO       PWR ON=Off, Safe status=Off
DO06     DO       PWR ON=Off, Safe status=Off
DO07     DO       PWR ON=Off, Safe status=Off

3. Modbus address table)
------------------------
Channel No.      I/O type        Modbus reference        Modbus address (Dec, Hex)
DI00             Input           30001                   0000, 0x0000
DI01             Input           10002                   0001, 0x0001
DI02             Input           10003                   0002, 0x0002
DI03             Input           10004                   0003, 0x0003
DI04             Input           10005                   0004, 0x0004
DI05             Input           10006                   0005, 0x0005
DI06             Input           10007                   0006, 0x0006
DI07             Input           10008                   0007, 0x0007
DI08             Input           10009                   0008, 0x0008
DI09             Input           10010                   0009, 0x0009
DI10             Input           10011                   0010, 0x000A
DI11             Input           10012                   0011, 0x000B
DO00             Output          40001                   0000, 0x0000
DO01             Output          00002                   0001, 0x0001
DO02             Output          00003                   0002, 0x0002
```

You will use the information in the configuration file to determine each channel's Modbus address. In the second section of the file, you can obtain information on each channel's configuration. From the configuration file shown on the previous page, we obtain the following information on digital input channels 00 and 01 and digital output channels 00 and 01:

```
Channel No.          Configuration
DI00                 Counter
DI01                 DI
DO00                 Pulse Output
DO01                 DO
```

In the third section of the configuration file, you obtain the Modbus address for each channel, under Modbus reference:

```
(2) Modbus address table
------------------------------------
Channel No.      I/O type     Modbus reference      Modbus address (Dec, Hex)
DI00             Input        30001                 0000, 0x0000
DI01             Input        10002                 0001, 0x0001
DO00             Output       40001                 0000, 0x0000
DO01             Output       00002                 0001, 0x0001
```

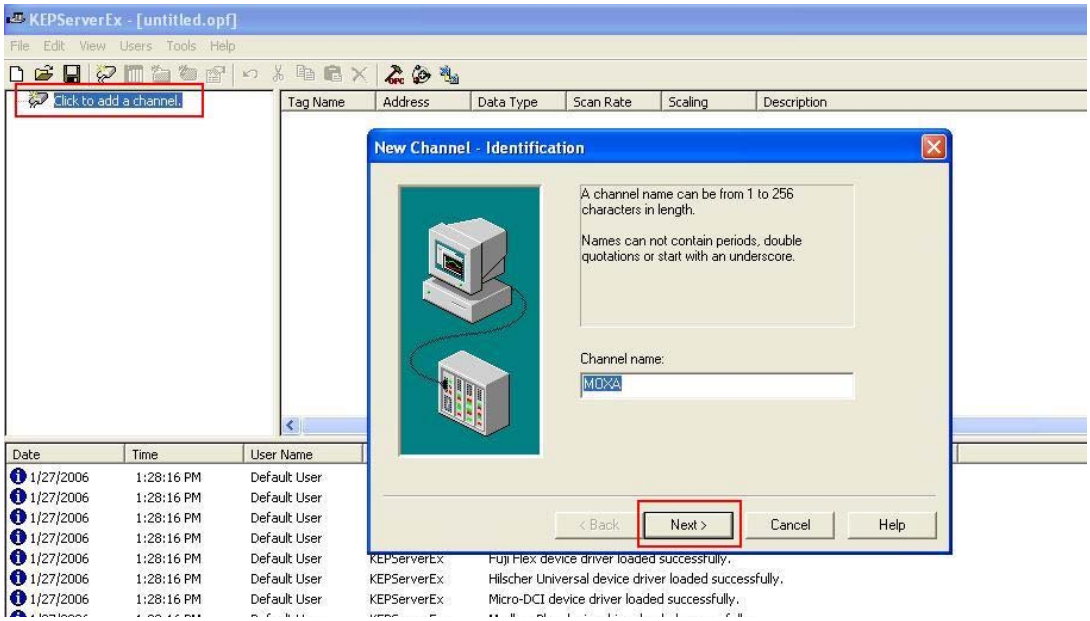
1.3 The ioLogik E2210 supports Modbus function codes as defined by the Modbus protocol. Each data type has a specific address range. A quick overview of the address types and function codes can be found in the following table. For more detailed information on Modbus address mapping, please refer to the User's Manual.

I/O Type	Address range	Data type	Common name	Read/write behavior	Function Codes
Event Counter	30001 to 39999	Read Only Registers	analog inputs	16-bit quantity, provided by an I/O system, read-only	04=Read Input Register
Digital Input	10001 to 19999	Read Only Coils	binary inputs	single bit, provided by an I/O system, read-only	02=Read Discrete Inputs
Pulse Output	40001 to 49999	Read/Write Registers	analog values, variables, registers	16-bit quantity, alterable by an application program, read-write	03=Read Holding Registers 06 = Write Single Register 16 = Write Multiple Registers
Digital Output	00001 to 09999	Read/Write Coils	bits, binary values, flags	single bit, alterable by an application program, read-write	01=Read Coil 05 = Write Single Coil 15 = Write Multiple Coils

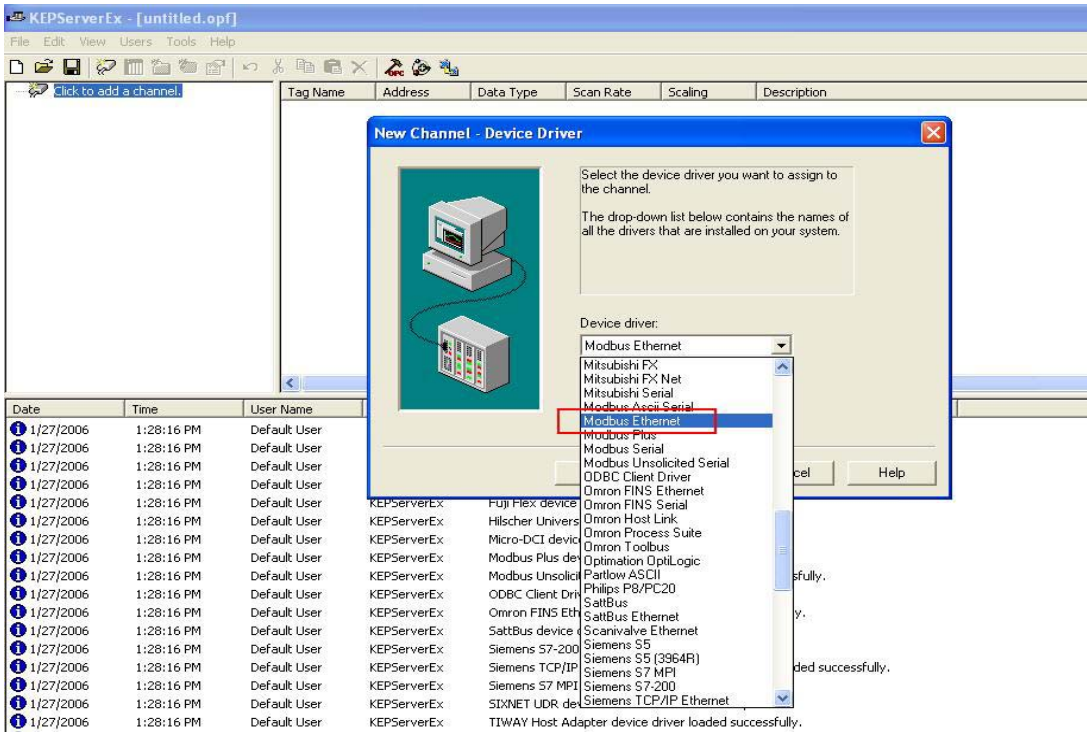
In the previous example, the value of digital input channel 01 would be read by referencing Modbus address 10002 and function code 02. To read/write digital output channel 01, you would reference Modbus address 00002 and function codes 01 and 05. To read the value of the event counter at digital input channel 00, you would reference Modbus address 30001 and function code 04. To read/write the pulse output at digital output channel 00, you would reference 40001 and function codes 03 and 06.

2. Configuring KEPServerEX OPC Server (Kepware) with the ioLogik E2210

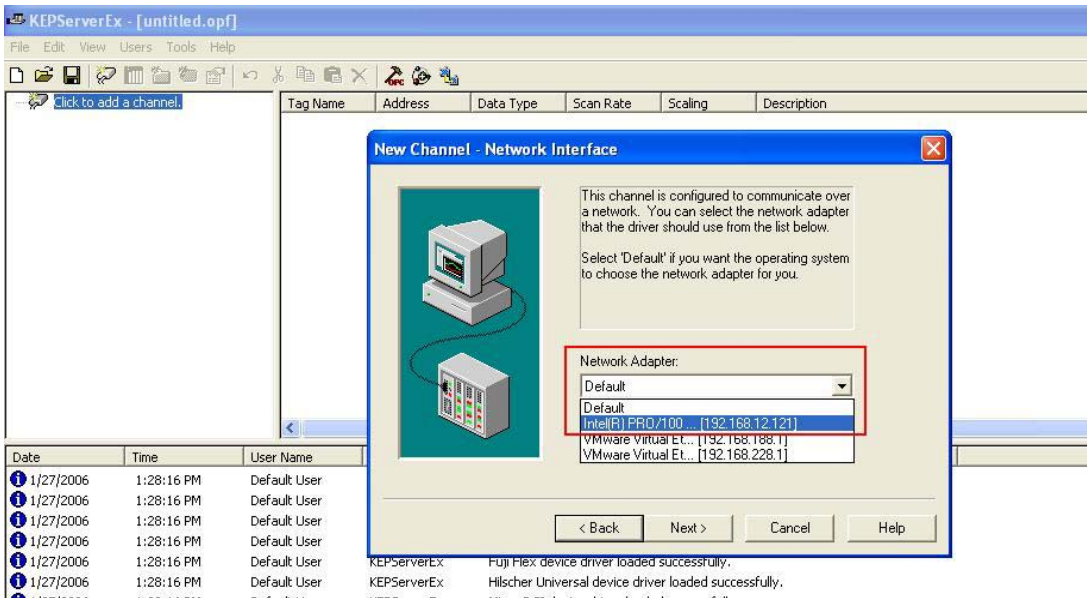
2.1 Go to **Click to add a channel** in KEPServerEX OPC Server. Enter a channel name and click **Next**.



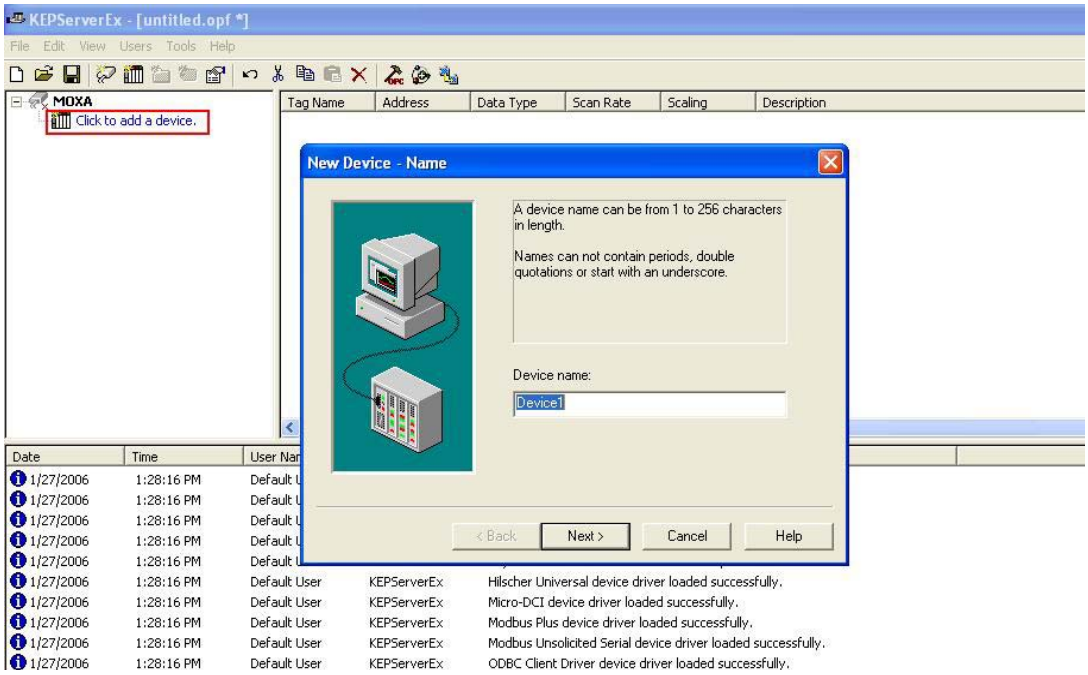
2.2 Under Device driver, select **Modbus Ethernet** and click **Next**.



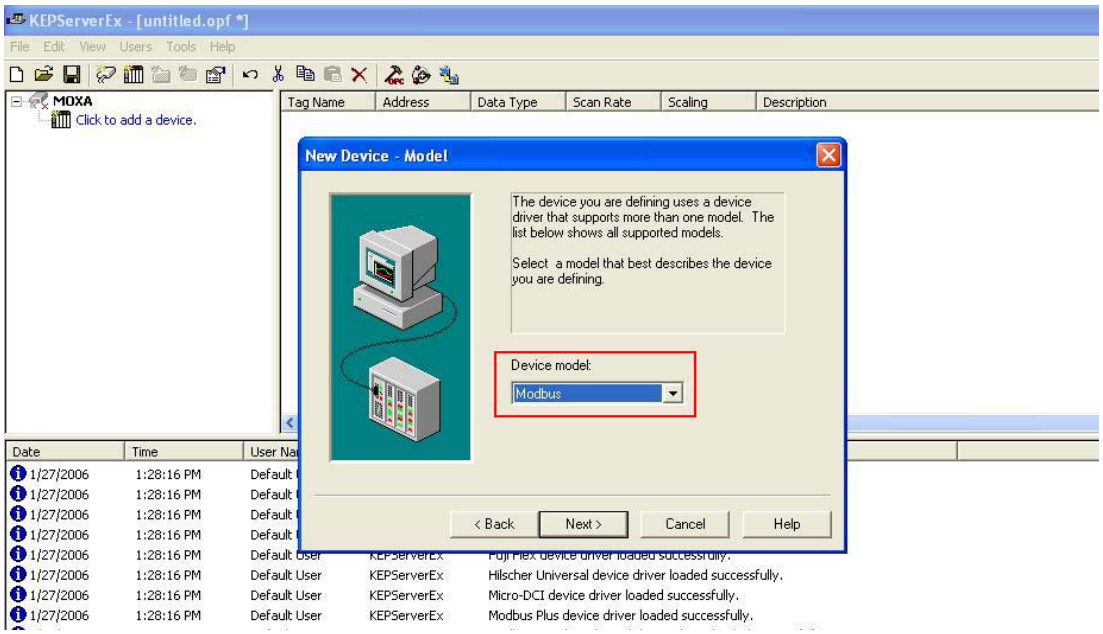
2.3 Select the correct network adapter for your host and click **Next**.



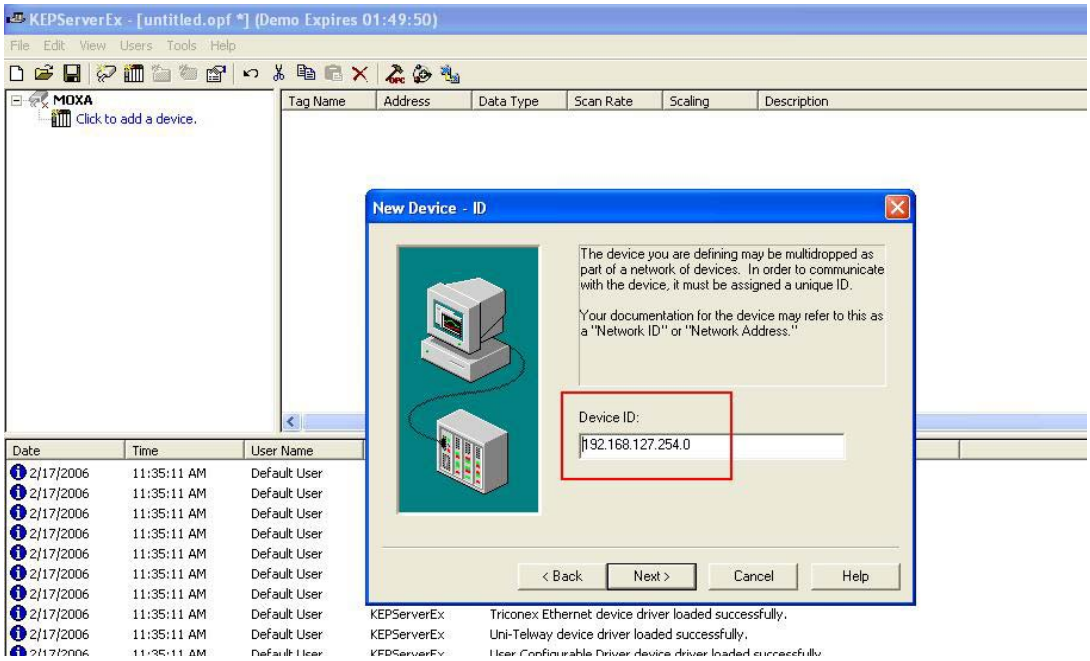
2.4 Go to **Click to add a device**. Enter a device name and click **Next**.



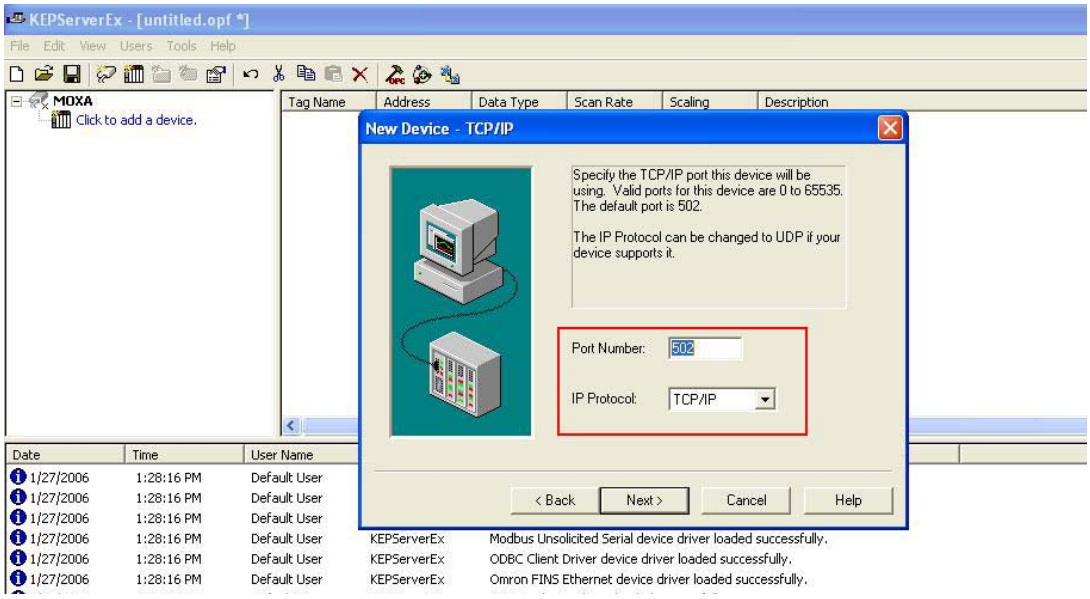
2.5 Under **Device model**, select **Modbus** and click **Next**.



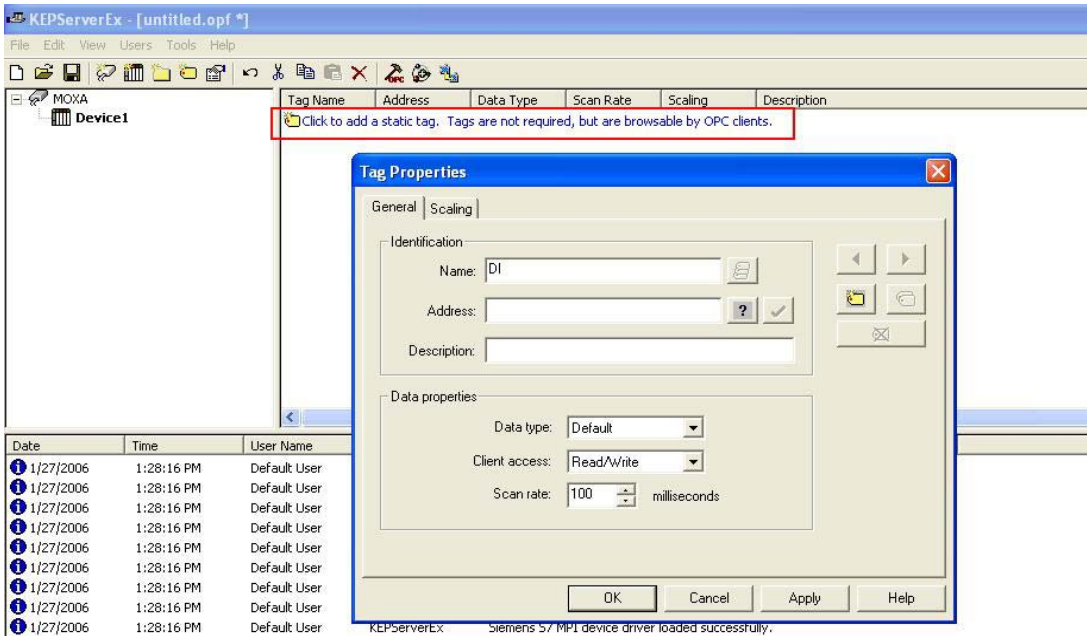
2.6 Use the ioLogik E2210's IP address (default=192.168.127.254) and ID (default=0) in the **Device ID** field, then click **Next**.



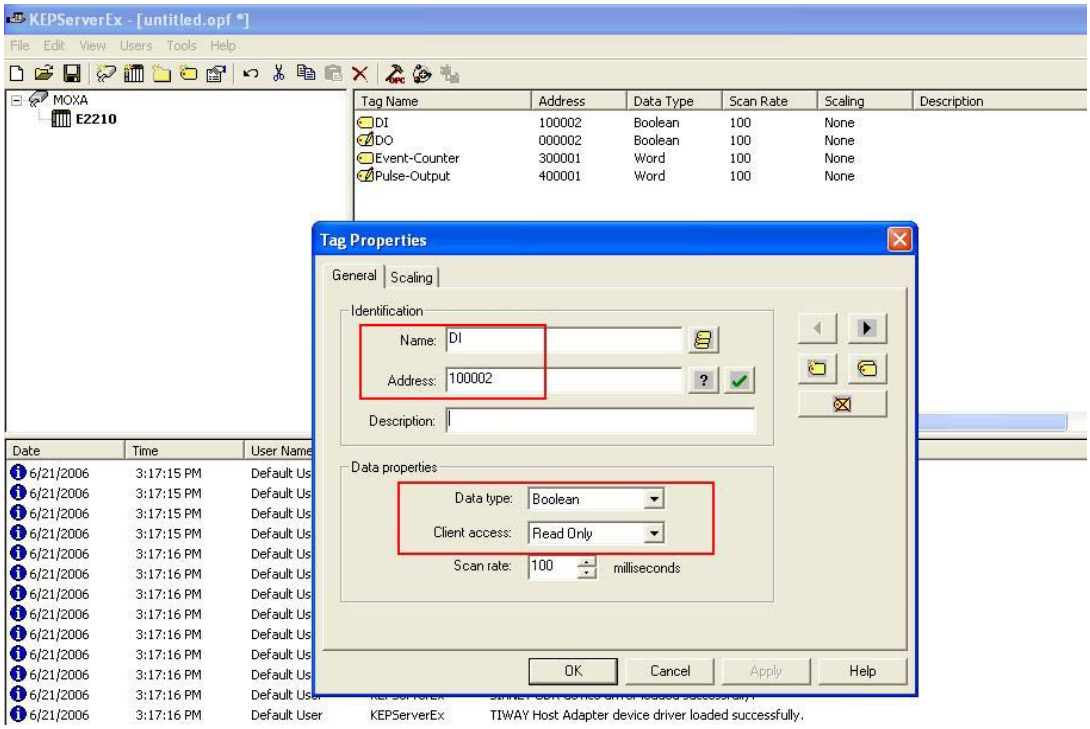
2.7 Enter 502 for the **Port Number** and select TCP/IP for the **IP Protocol**, then click **Next**.



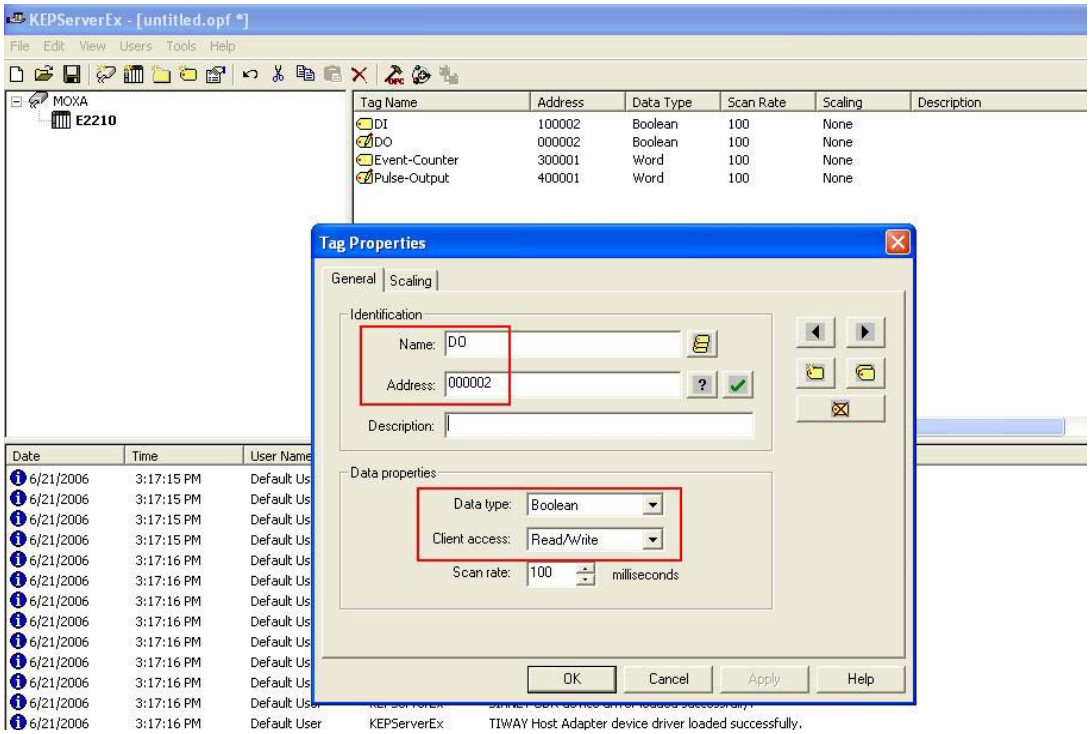
2.8 Go to **Click to add a static tag**. A dialog box will open up. The information you enter here will depend on the channel and mode that you are configuring.



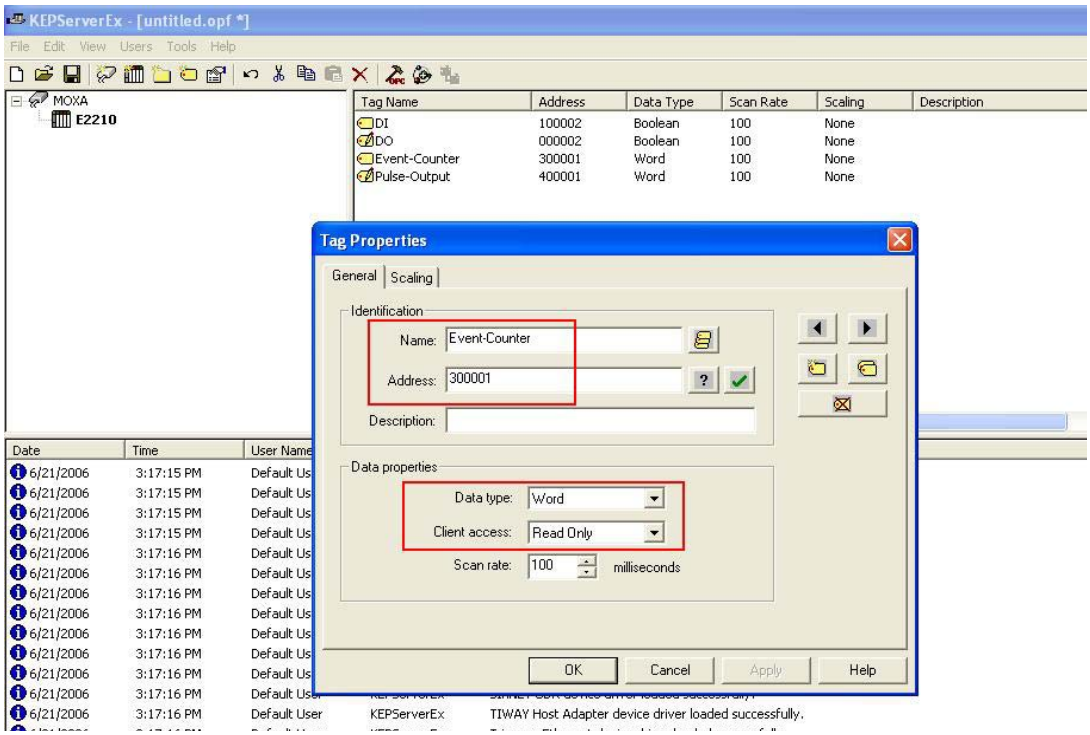
DI tags should be assigned as follows: Address=the Modbus address of the desired I/O channel as found in the configuration file, Data type=Boolean, Client Access=Read only.



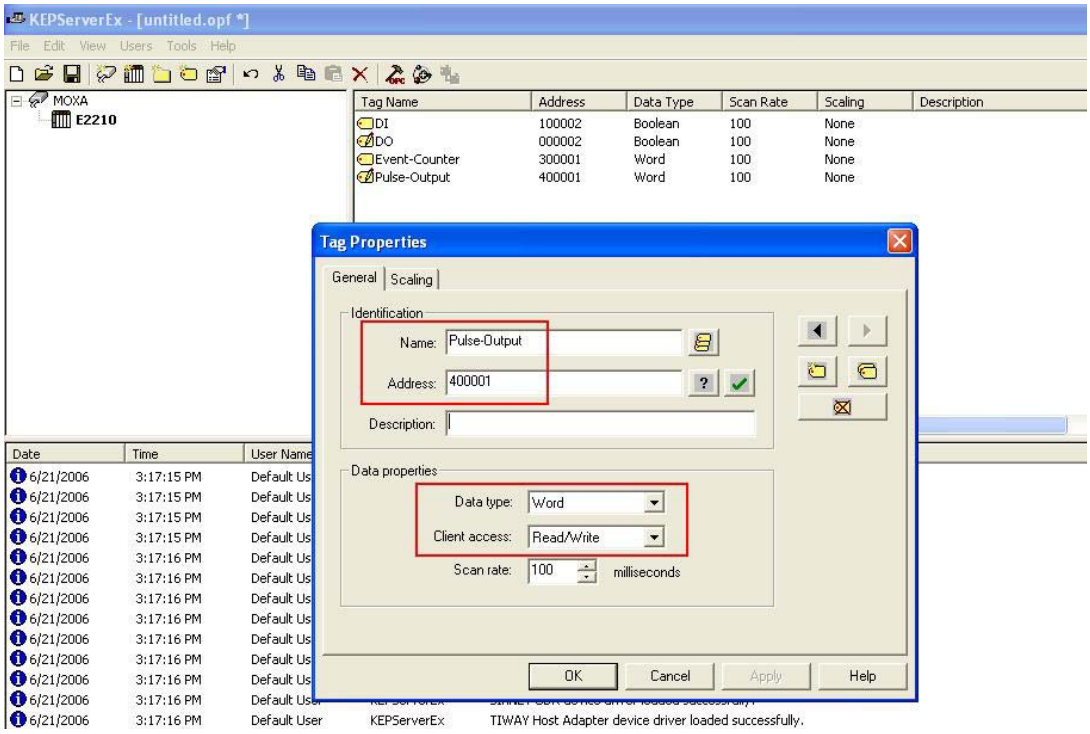
DO tags should be assigned as follows: Address= the Modbus address of the desired I/O channel as found in the configuration file, Data type=Boolean, Client Access=Read/Write.



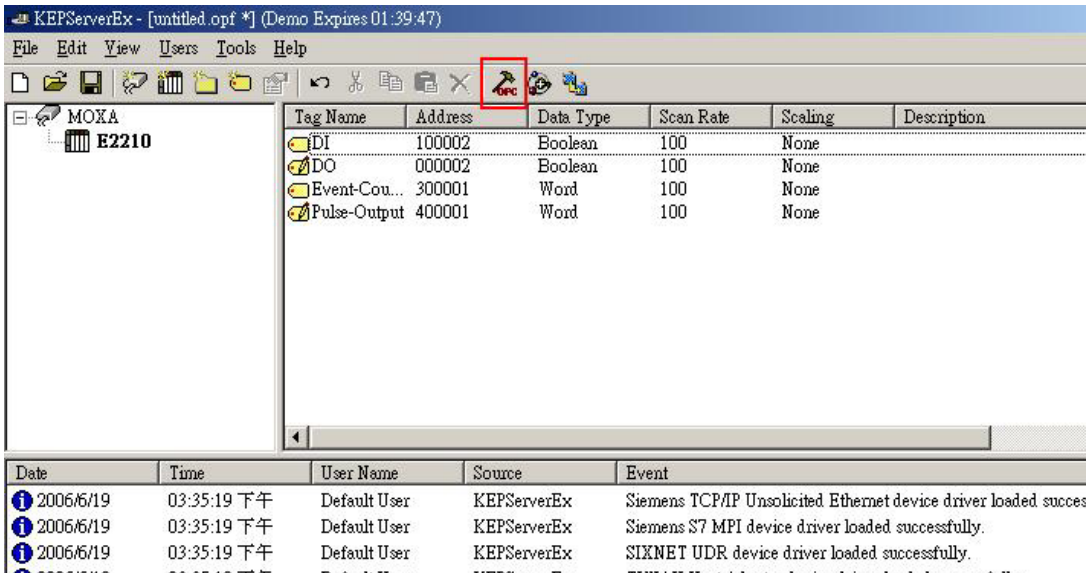
Event Counter tags should be assigned as follows: Address= the Modbus address of the desired I/O channel as found in the configuration file, Data type=Word, Client Access =Read only.



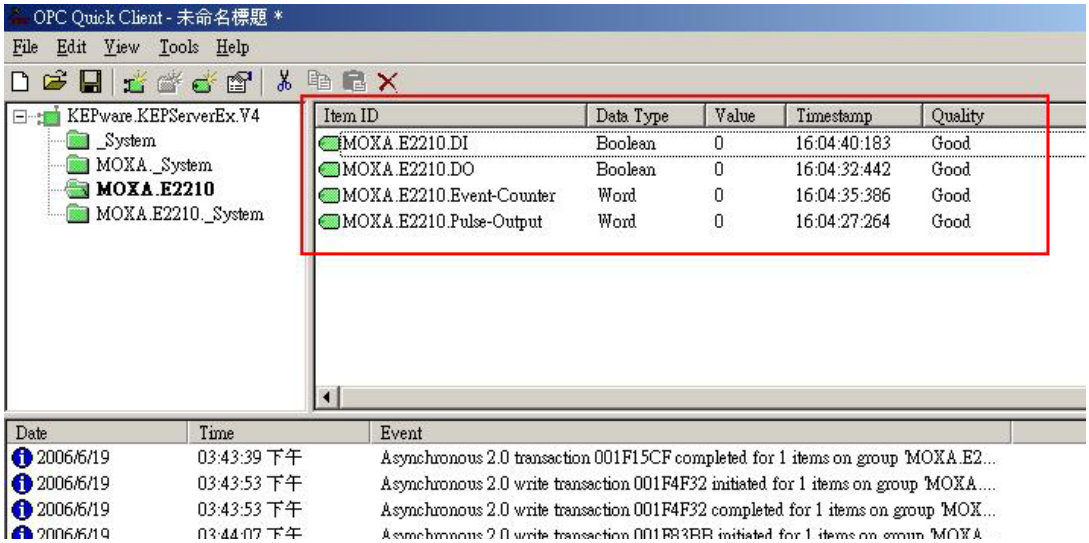
Pulse Output tags should be assigned as follows: Address= the Modbus address of the desired I/O channel as found in the configuration file, Data type=Word, Client Access =Read/Write.



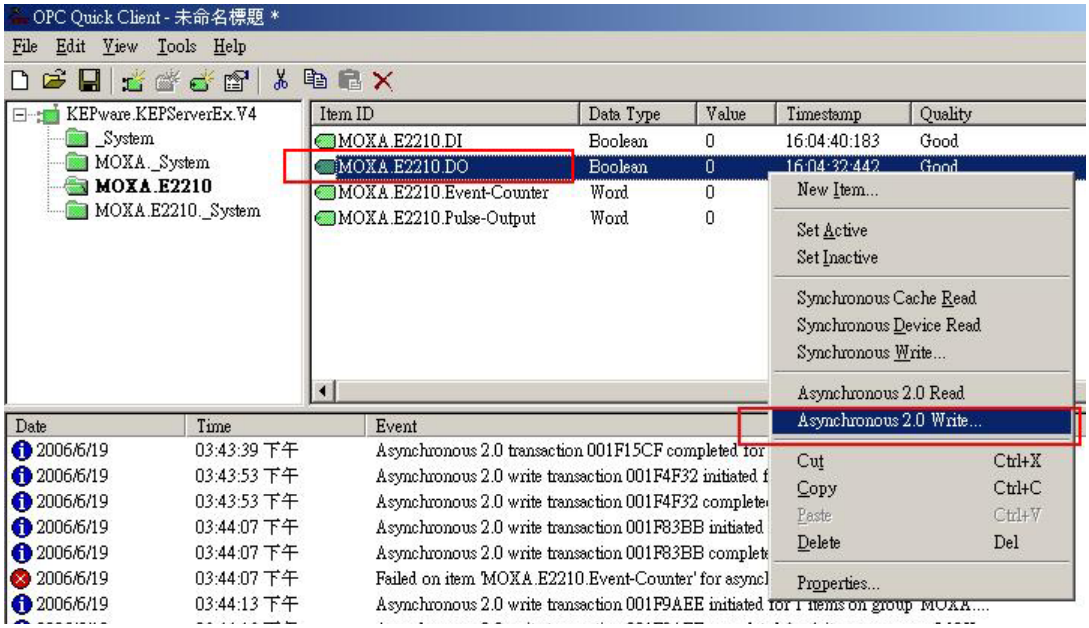
2.9 Next, click the Quick Client icon to monitor all of your configurations and values.



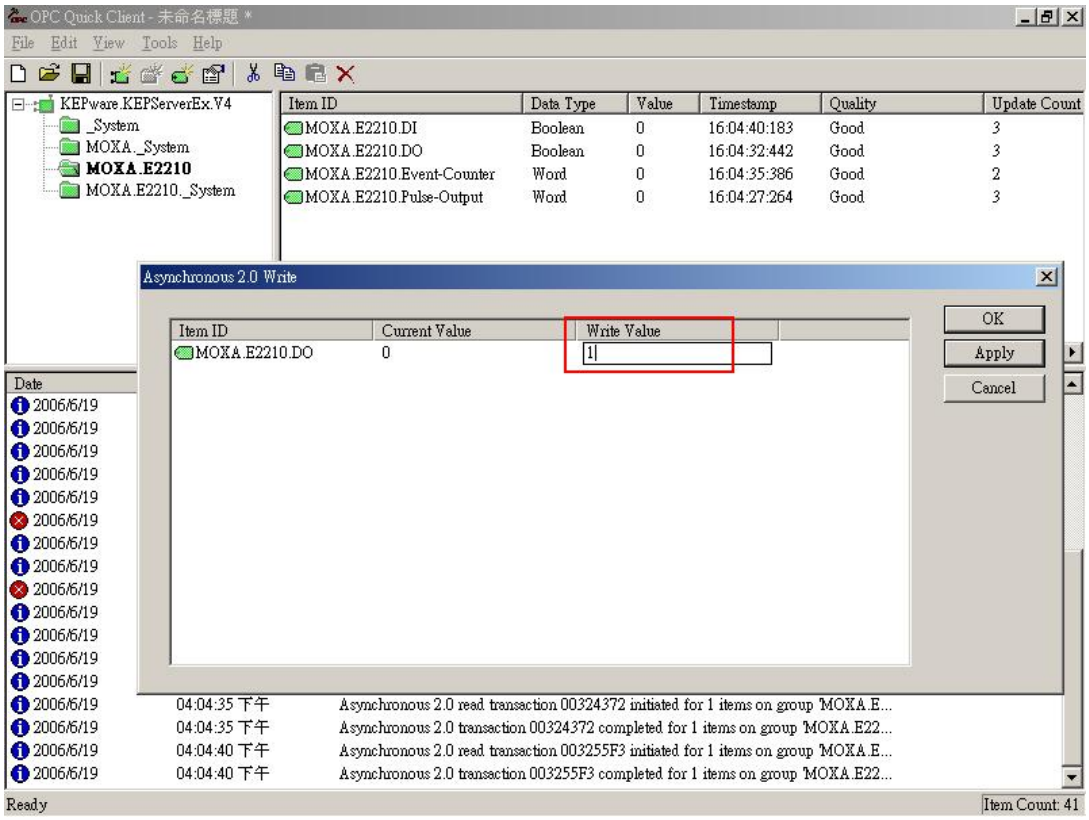
The window will appear as below. You will be able to see the current status of the I/O channels that you configured.



2.10 To test DO or Pulse Output channels, right click the channel and select **Asynchronous 2.0 Write…**



Modify the Write Value, then click **Apply** and **OK**.



When you return to the main screen, you should see the updated value.