



APPLICATION NOTE

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Product Family: GS Drives

Number: AN-GS-009

Subject: Connecting a GS drive as a Modbus Ethernet slave via Digi PortServer TS4 and KEPserverEX v4.0

Date Issued: 8/04/03

Revision: Original

Specifications

Drive:

Various GS series

Software:

Digi Port Authority – remote

<http://www.digi.com/>

Ethernet to Serial Converter:

Digi Port server TS 4 MEI

OPC Server:

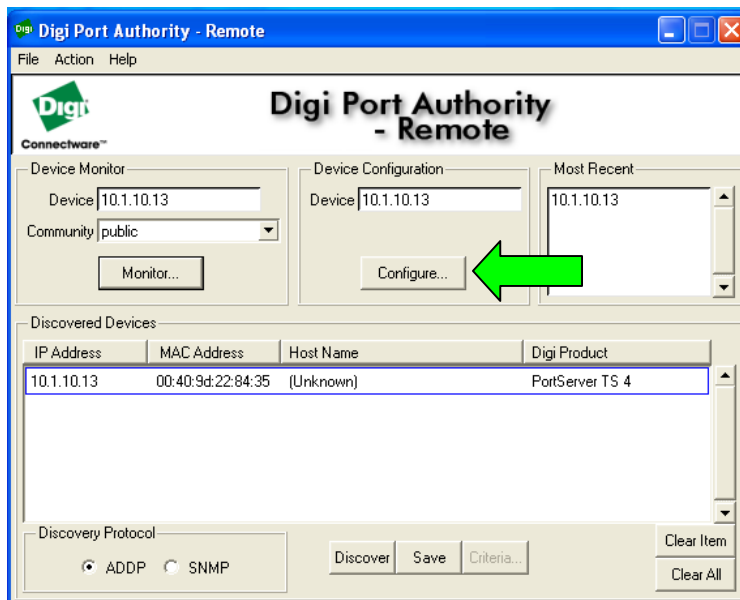
KEPserverEX v4.0

<http://www.kepware.com/>



Application Description

The user wants to connect GS drives over the Ethernet with other Modbus devices like loop controllers and meters without a PLC connected directly to a third party OPC/DDE compliant client software package. One method is to use the Digi port server TS4 MEI connected to KEPserver EX v4.0. This will allow the user to connect up to 4 GS drives on one port server. This will also allow the versatility of having mixed devices types in addition to the drive control.



Follow the Digi Port manual in assigning an IP address to the Digi Port server TS4.

Go to configure to set-up up server for Modbus control.



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A Windows-style dialog box titled "Connect to 10.1.10.13". It features a blue header bar with a question mark icon and a close button. Below the header is a yellow key icon. The main area is white and contains the text "PortServer TS 4". There are two input fields: "User name:" with a dropdown menu showing a user icon, and "Password:" with a text box. Below the password field is a checkbox labeled "Remember my password". At the bottom are "OK" and "Cancel" buttons.

Sign into the Port server with
"root" being the user name and
"dbps" being the password.

All the Port servers use this as a
default user name and password.

A screenshot of a Microsoft Internet Explorer browser window displaying the "PortServer TS 4 Configuration" page. The address bar shows "http://10.1.10.13/". The page has a green "Digi" logo and a menu on the left with links: "Information", "Configure", "Report", "Admin", "Help", and "Logout". A green arrow points to the "Configure" link. The main content area displays system settings: Model: PortServer, Type: TS 4, Firmware version: Version 82000747_E 05/07/2002, DHCP: Off, IP address: 10.1.10.13, MAC address: 00:40:9d:22:84:35, My name: GS2 network, CPU Utilization: 0%, and Up time: 23 hours 54 minutes 3 seconds. Below this is a table with power supply information.

Power Supply Index	Type	Status
Power Supply 1	802.3af powered Ethernet	Disabled
Power Supply 2	External power supply	Engaged

Go to configure



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Port Configuration Status

The table below lists the present configuration for the PortServer TS 4's serial ports.

To edit a port configuration or to configure a new port, choose a port.

[View detailed report?](#)

Port	Type	Device	Term Type	Altpin	Flow Control	Band Rate	Autoconnect			Data Bits
							on/off	DestIP	dPort	
Port 1	RS-232	Modbus	vt100	Off	None	9600	Off	10.1.10.1	502	8
Port 2	RS-232	Modbus	vt100	Off	None	9600	Off	0.0.0.0	0	8
Port 3	RS-232	Modbus	vt100	Off	None	9600	Off	0.0.0.0	0	8
Port 4	RS-232	Modbus	vt100	Off	None	9600	Off	0.0.0.0	0	8

Click on ports and this will display all 4 ports current configuration.

This example only has port 1 set-up.

Port 1 Configuration

Use The menu below to configure The port settings for the PortServer TS 4.

When you have configured the port, choose Submit. If you would like to use this same configuration for other ports, choose Clone.

Port Type: **RS-232** Duplex: **Half** Mode: **Four-wire** Termination: **Un-terminated**

Device type: **Modbus** ☐ Enable AutoConnect
Terminal type: **vt100** IP address: **10.1.10.1**
Flow control: **None** TCP Port number: **502**
Baud rate: **9600** ☒ Disable AutoConnect
Data bits: **8** Group number: **0**
Stop bits: **1** Altpin: ☐
Parity: **Odd** Force DCD: ☐
☐ Enable Socket ID
Socket ID String: **SOCKETID**
☒ Disable Socket ID

Disable auto-connect

Factory Default Clone... Submit ?

Set this port up to match the requirements of the drive found in the beginning of chapter 5 in the GS1 or GS2 manuals.

Disable auto-connect



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PortServer TS 4 Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://10.1.10.13/>

Digi Connectware™

Modbus Configuration Status

The table below lists the current modbus configuration for the PortServer TS 4.

To edit the modbus network select the Configure Modbus Network button. To edit the modbus serial configuration select the Configure Modbus Serial button.

Network Configuration

Allowed IP Servers: 10.1.1.1 - 10.1.10.15

Serial Configuration

Serial encoding: RTU

Go to Modbus tab and configure for RTU.

PortServer TS 4 Configuration - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://10.1.10.13/>

Digi Connectware™

Modbus Serial Configuration

Use the menu below to configure the modbus serial settings for the PortServer TS 4.

When you have configured the serial settings, choose Submit to save.

Serial Encoding: RTU

Advanced

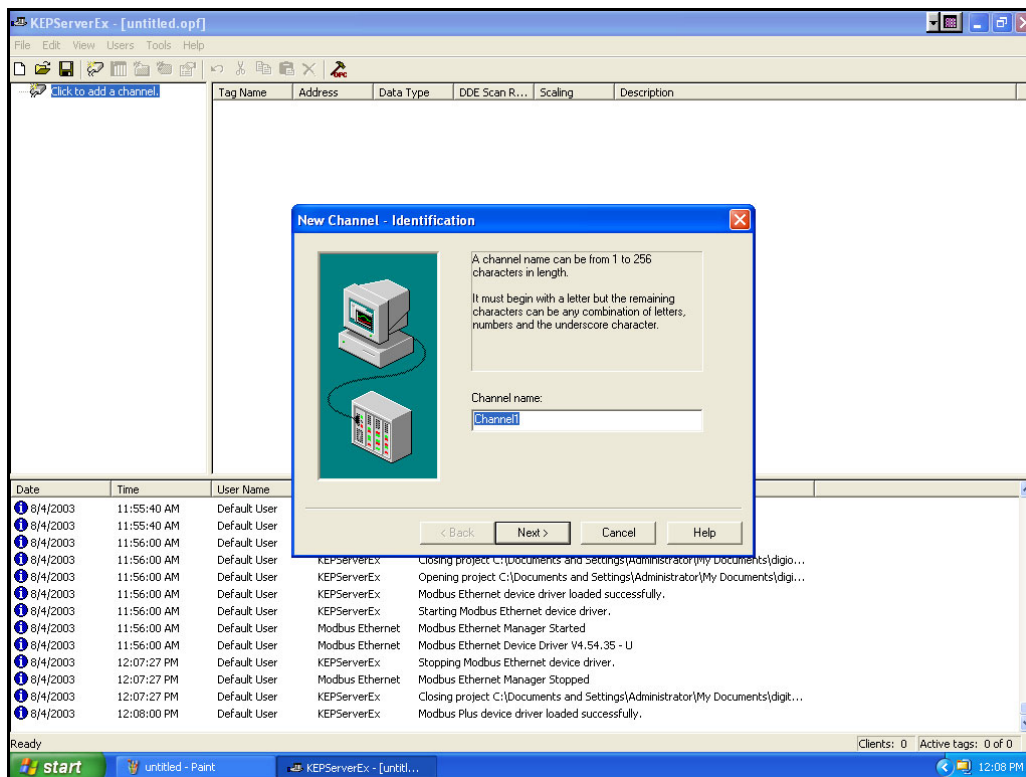
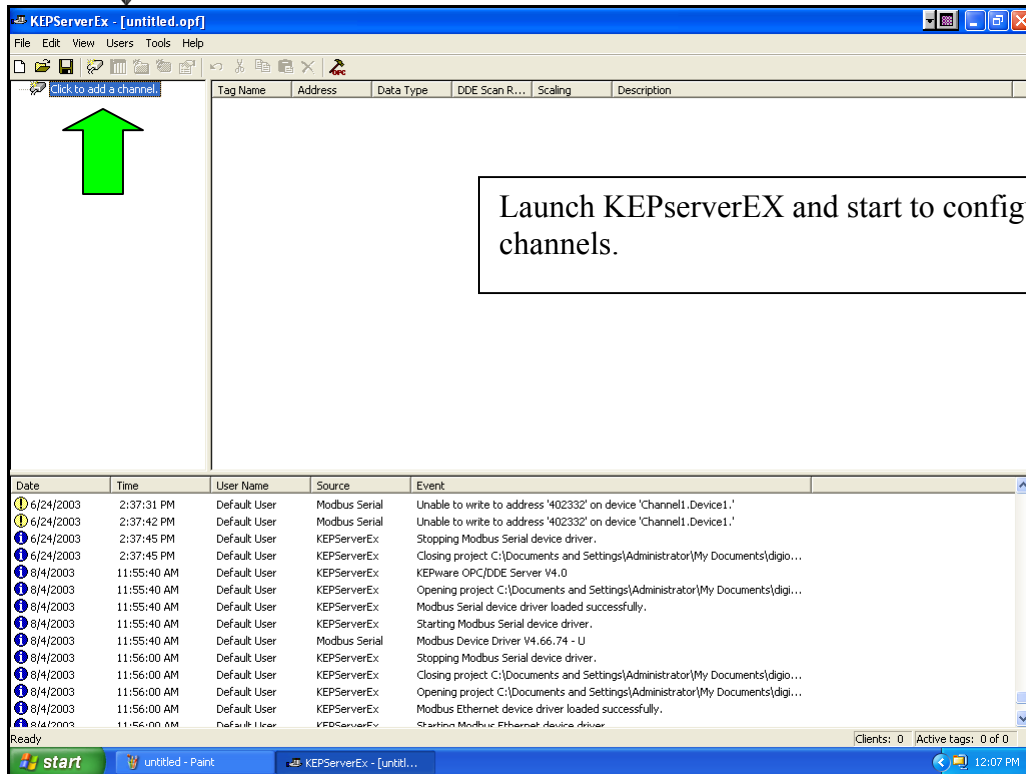
Character timeout: 20 Transaction timeout: 0

Basic Port server set-up is now complete.



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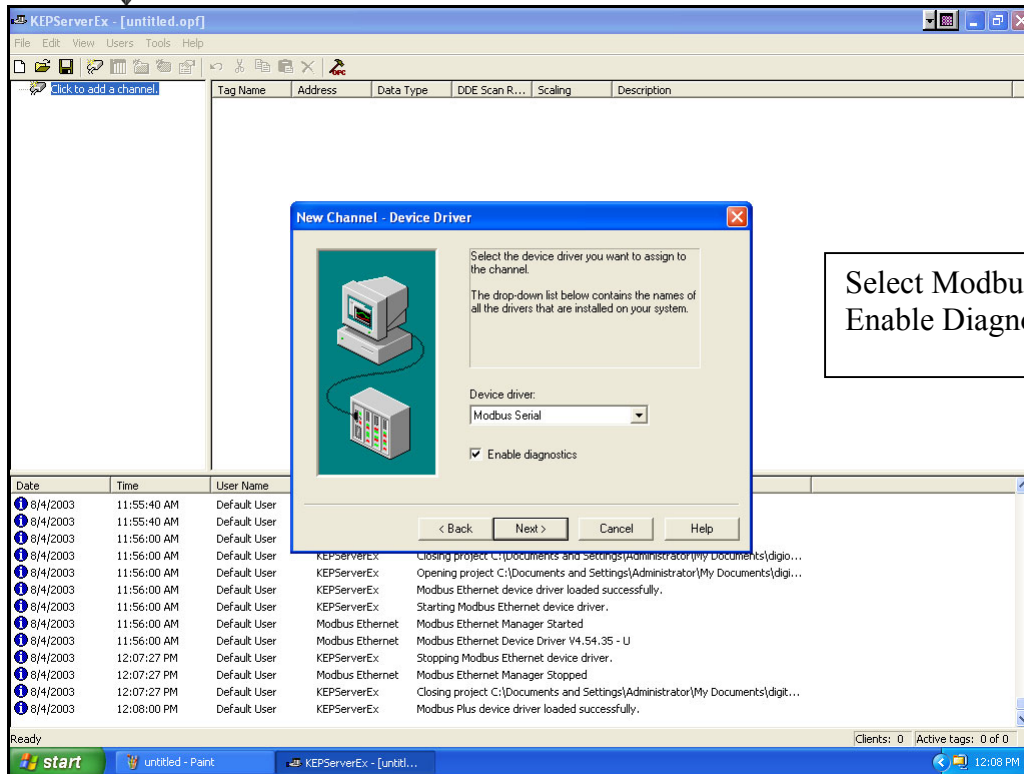
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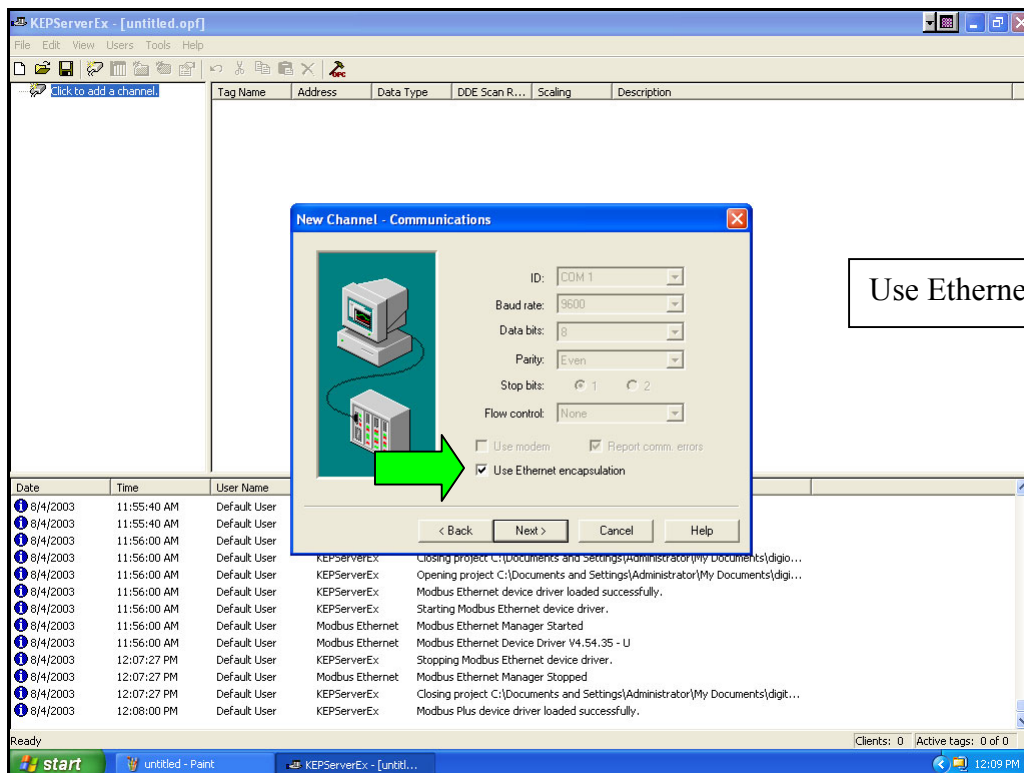


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Select Modbus serial and Enable Diagnostics.

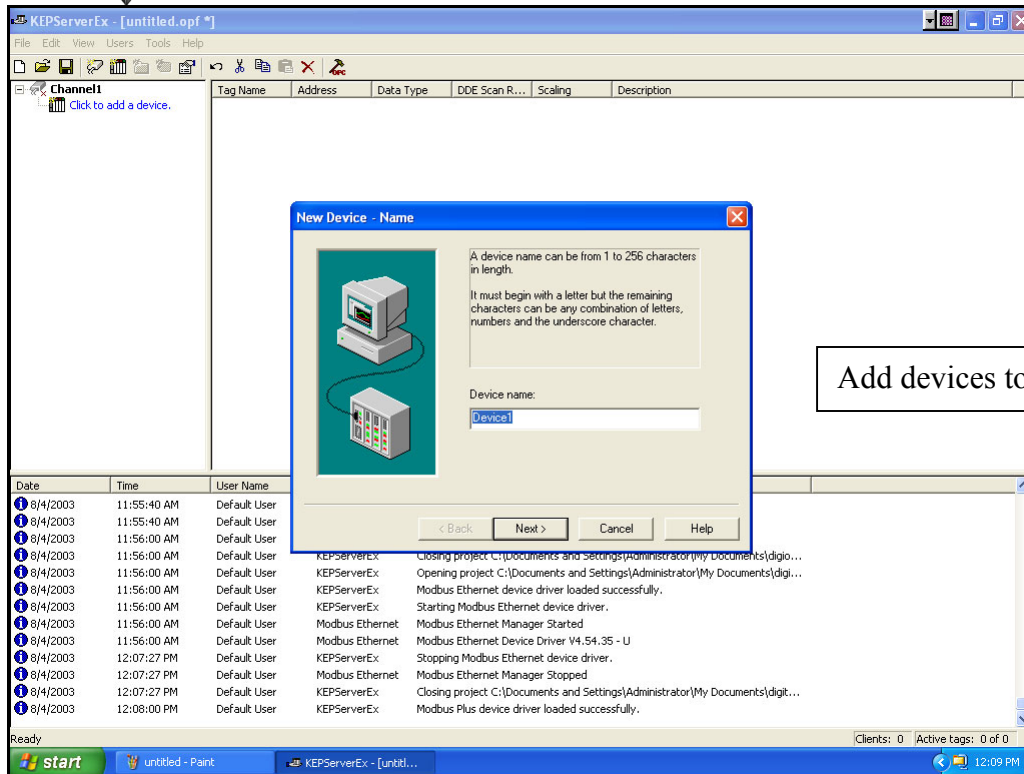


Use Ethernet Encapsulation.

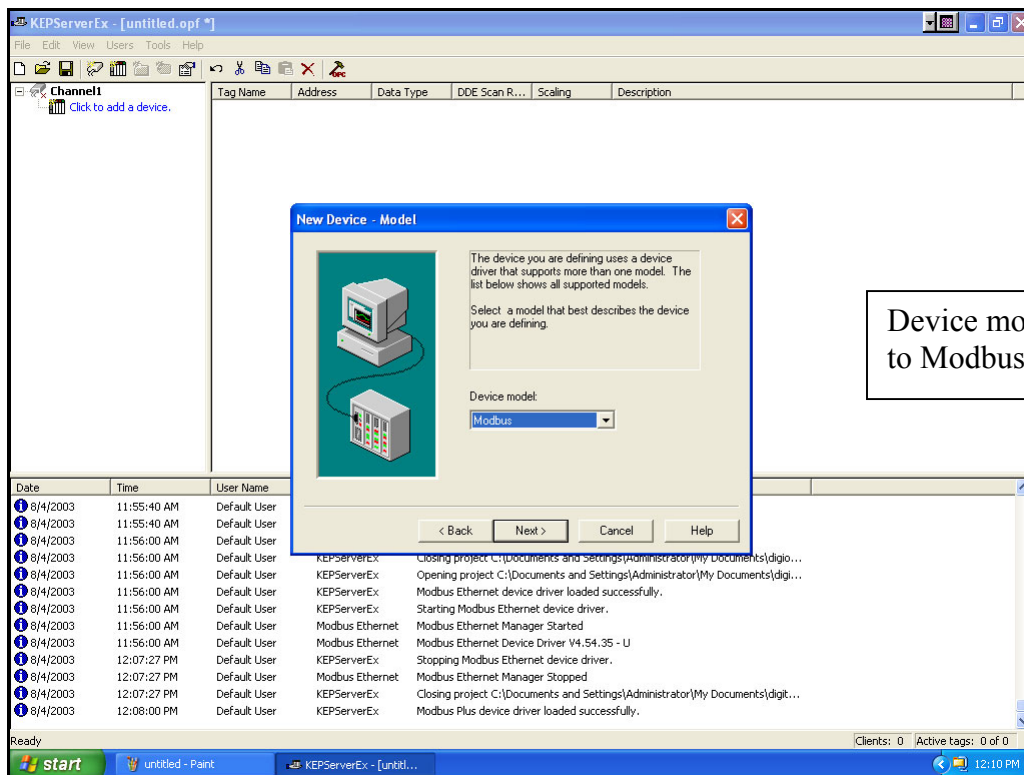


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Add devices to the network.

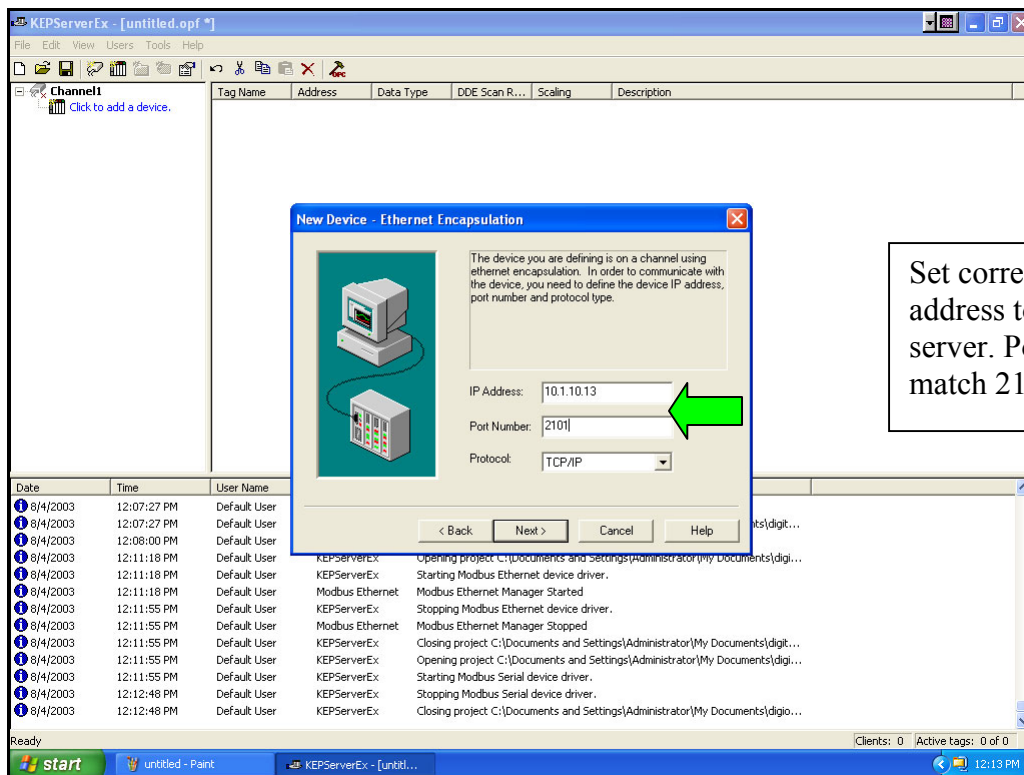
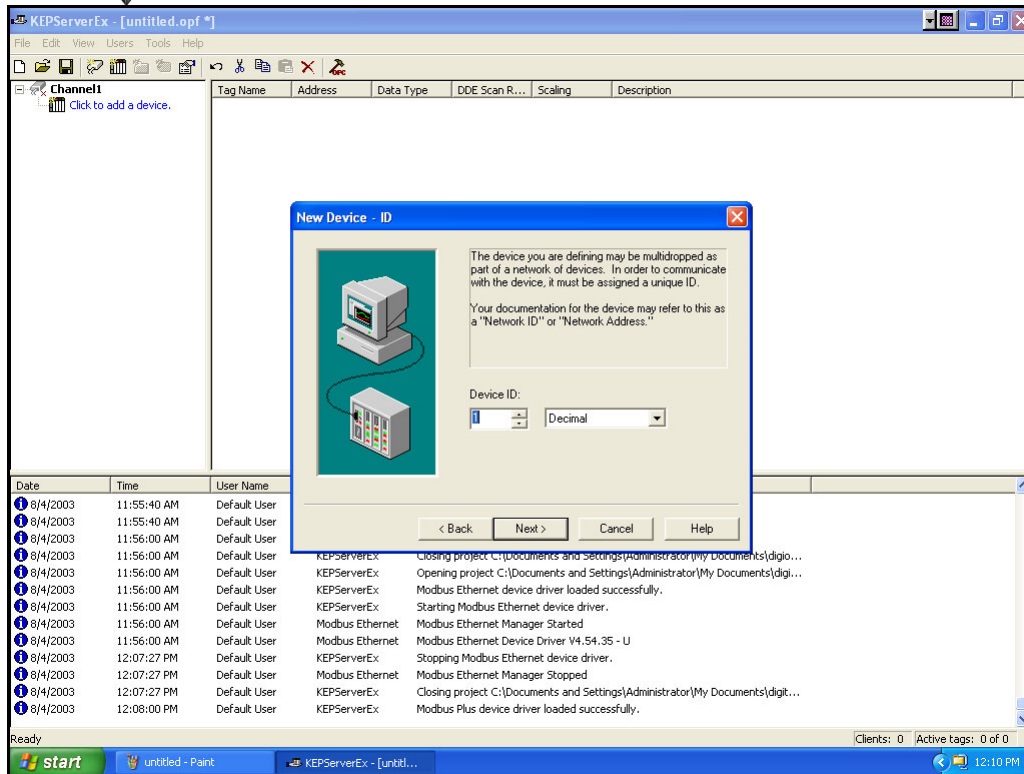


Device model is set to Modbus.



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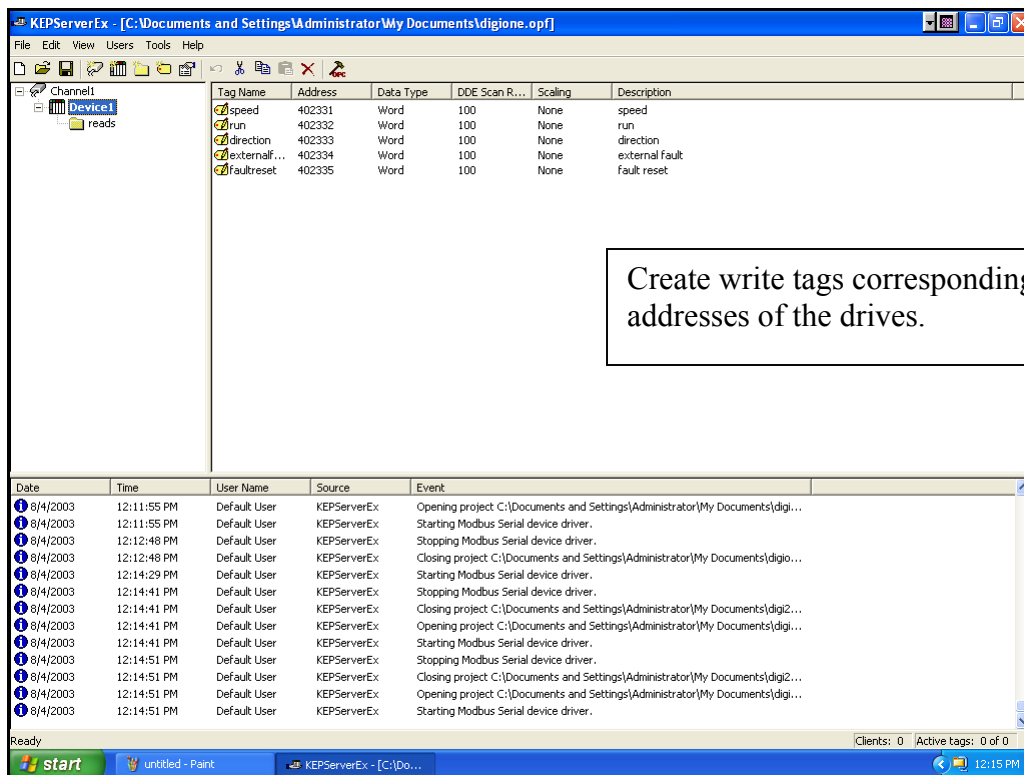
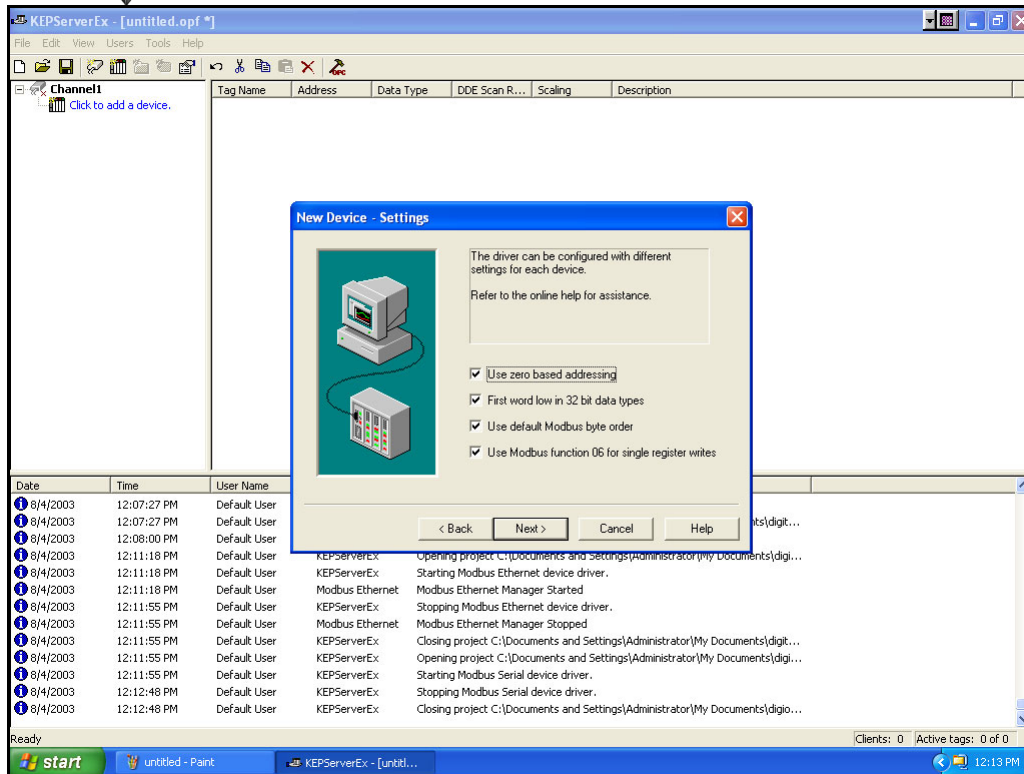
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The screenshot shows the KEPServerEx application window. The left pane shows a tree view with 'Channel1' and 'Device1' containing a 'reads' folder. The main pane displays a table of tags:

Tag Name	Address	Data Type	DDE Scan R...	Scaling	Description
status1	408449	Word	100	None	status 1
status2	408450	Word	100	None	status 2
freqcomm...	408451	Word	100	None	commanded speed
outfreq	408452	Word	100	None	output frequency
outcurrent	408453	Word	100	None	output current
dcbusvolt...	408454	Word	100	None	dc bus voltage
outputvol...	408455	Word	100	None	output voltage
motorrpm	408456	Word	100	None	motor rpm

Below the tag table is an event log table:

Date	Time	User Name	Source	Event
8/4/2003	12:11:55 PM	Default User	KEPServerEx	Opening project C:\Documents and Settings\Administrator\My Documents\digi...
8/4/2003	12:11:55 PM	Default User	KEPServerEx	Starting Modbus Serial device driver.
8/4/2003	12:12:48 PM	Default User	KEPServerEx	Stopping Modbus Serial device driver.
8/4/2003	12:12:48 PM	Default User	KEPServerEx	Closing project C:\Documents and Settings\Administrator\My Documents\digi...
8/4/2003	12:14:29 PM	Default User	KEPServerEx	Starting Modbus Serial device driver.
8/4/2003	12:14:41 PM	Default User	KEPServerEx	Stopping Modbus Serial device driver.
8/4/2003	12:14:41 PM	Default User	KEPServerEx	Closing project C:\Documents and Settings\Administrator\My Documents\digi...
8/4/2003	12:14:41 PM	Default User	KEPServerEx	Opening project C:\Documents and Settings\Administrator\My Documents\digi...
8/4/2003	12:14:41 PM	Default User	KEPServerEx	Starting Modbus Serial device driver.
8/4/2003	12:14:51 PM	Default User	KEPServerEx	Stopping Modbus Serial device driver.
8/4/2003	12:14:51 PM	Default User	KEPServerEx	Closing project C:\Documents and Settings\Administrator\My Documents\digi...
8/4/2003	12:14:51 PM	Default User	KEPServerEx	Opening project C:\Documents and Settings\Administrator\My Documents\digi...
8/4/2003	12:14:51 PM	Default User	KEPServerEx	Starting Modbus Serial device driver.

The status bar at the bottom shows 'Clients: 0' and 'Active tags: 0 of 0'.

Create read only tags similar to the previous example for reading status and other drive feedback information.

The screenshot shows the KEPServerEx application window with the 'Tools' menu open. The menu options are: 'Reinitialize', 'Event Log', 'Launch OPC Quick Client', 'Launch DCOM Configuration', 'Create Startup Shortcut', and 'Options...'. The tag table and event log are visible in the background, showing the same data as the previous screenshot.

Launch OPC quick client to test application.



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The screenshot shows the OPC Quick Client interface. On the left is a tree view of the data hierarchy under 'KEPware.KEPServerEx.V4'. The selected item is 'Channel1.Device1._System'. The main pane displays a table of values for this item.

Item ID	Data Type	Value	Timestamp	Quality	Update
Channel1.Device1._System._AutoCre...	Boolean	0	12:16:13:734	Good	2
Channel1.Device1._System._Connect...	Long	3	12:16:13:734	Good	2
Channel1.Device1._System._DeviceId	String	1	12:16:13:734	Good	2
Channel1.Device1._System._Enabled	Boolean	1	12:16:13:734	Good	2
Channel1.Device1._System._Encapsul...	String	10.1.10.13	12:16:13:734	Good	2
Channel1.Device1._System._Encapsul...	Long	2101	12:16:13:734	Good	2
Channel1.Device1._System._Encapsul...	String	TCP/IP	12:16:13:734	Good	2
Channel1.Device1._System._Error	Boolean	1	12:16:16:843	Good	3
Channel1.Device1._System._Request...	Long	3	12:16:13:734	Good	2
Channel1.Device1._System._Request...	Long	1000	12:16:13:734	Good	2
Channel1.Device1._System._Simulated	Boolean	0	12:16:13:734	Good	2

Below the table is an event log showing a series of 'Added' events for the same hierarchy, all occurring at 12:16:14 PM on 8/4/2003. The status bar at the bottom shows 'Ready' and 'Item Count: 45'.

Technical

Assistance: If you have questions regarding this Application Note, please contact us at 770-844-4200 for further assistance.