APPLICATION GUIDE

AG020716

Data Communications Reference

Setting up a Serial to Ethernet Adapter to Work with a Siemens Milltronics Instrument and KEPServerEX

Objective:	To communicate with a Siemens Milltronics instrument using KEPServerEX over an Ethernet network
Equipment:	• EnviroRanger ERS 500 (or other Modbus RTU protocol equipped device) • GE FANUC, VersaMax Serial to Ethernet Adapter (or equivalent) • IBM compatible PC operating Windows 2000 or NT • KEPServerEX Microsoft Windows based OPC driver (or equivalent)

Overview:

To communicate with an EnviroRanger ERS 500 over an Ethernet network, an adapter and OPC driver are required. (These same principles apply to any Siemens Milltronics instrument that supports Modbus RTU protocol.)

For this application guide, we used the GE FANUC, VersaMax Serial to Ethernet Adapter. Any similar device, such as a Modicon TSX Momentum to Ethernet Bridge, should also work.

The driver used was KEPServerEX by KEPware (www.kepware.com). Similar DDE/OPC drivers may also work, but preliminary testing and verification is recommended.

This application guide details the following procedures:

- Setting up the GE FANUC, VersaMax Serial to Ethernet Adapter
- Setting up the EnviroRanger ERS 500
- Setting up the KEPServerEX OPC driver

Procedures:

Setting up the GE FANUC, VersaMax Serial to Ethernet Adapter

To set up the adapter, follow these steps:

1. Connect the adapter to a TCP/IP Ethernet network
2. Connect power to the adapter (24Vdc power supply).
3. To set the adapter IP address with the computer, at the DOS prompt enter:
   arp –s (IP address) (Mac address)
   (Get the IP address from your systems administrator and the Mac address from the side of the adapter.)
   Example: arp –s 3.16.27.44 00-20-4a-51-0e-5b (Note that there is no screen reply.)

Siemens Milltronics Process Instruments Inc.
1954 Technology Drive, P.O. Box 4225, Peterborough, ON. Canada K9J 7B1
Tel: (705) 745-2431 Fax: (705) 741-0466 www.milltronics.com
E-mail: techpubs@milltronics.com

4. To complete the IP address change, from the DOS prompt enter:
   telnet (IP address) 1
   Immediately upon entering this data, the current connection will fail due to the adaptor IP address change.
5. To verify the IP address change, at the DOS prompt enter:
   ping IP_Address
   (If you get packets back, the IP address change was successful)
6. Copy the Modbus driver from the CD that came with the adapter to the C: drive root directory.
7. To install the driver, at the DOS prompt enter:
   tftp –1 (IP address) PUT C:\Mod12.ROM G1
8. To configure the driver, at the DOS prompt enter:
   telnet (IP address) 9999
9. Observe the following screen:

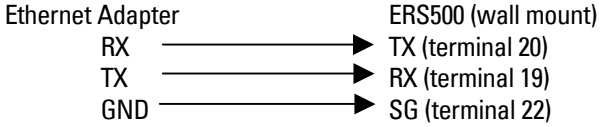
```
Serial Number 5126215 MAC address 00:20:4A:51:66:67
Software Version V01.2 (000719)

Press Enter to go into Setup Mode, wait to close

1) Network/IP Settings:
   IP Address ..... 136.157.231.240
   Default Gateway ..... 136.157.230.001
   Netmask ..... 255.255.254.000
2) Serial & Mode Settings:
   Protocol ..... Modbus/RTU,Slave(s) attached
   Serial Interface ..... 9600,8,N,1,RS232
3) Modem Control Settings:
   RTS Output ..... Fixed High/Active
4) Advanced Modbus Protocol settings:
   Slave Addr/Unit Id Source .. Modbus/TCP header
   Modbus Serial Broadcasts ... Disabled
   Character,Message Timeout .. 01000 ms,05000 ms

D)efault settings, S)ave, Q)uit without save
Select Command or parameter set (1..4) to change:
```

10. Enter the Network IP Settings obtained from your systems administrator, and all other settings exactly as shown.
11. Set the adapter front switch to "RS232". (For a MultiRanger 100 or 200, set the switch and Serial Interface to "RS485".)

Setting up the EnviroRanger ERS 500

To set up the ERS 500, follow these steps:

1. Wire the Ethernet adapter to port 2 of an ERS 500 (wall mount) as follows:



2. Set the ERS 500 communications parameters for port 2:

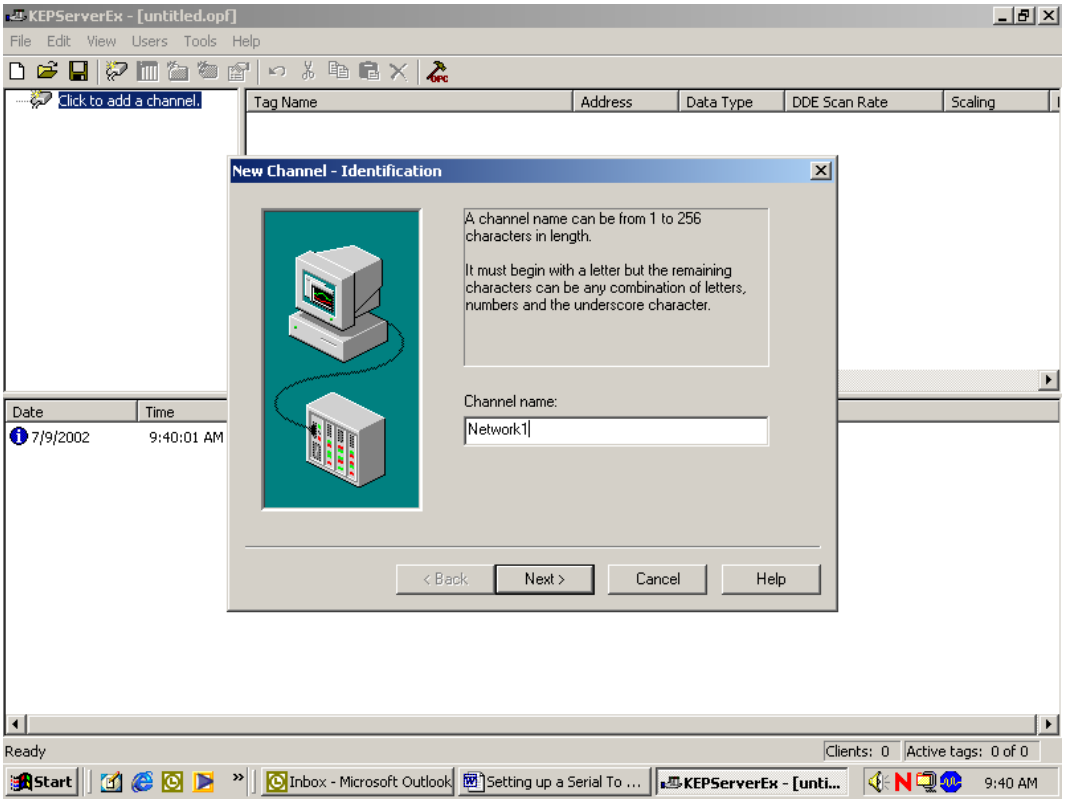
Parameter	Index	Value	Description
P770	2	3	Modbus RTU
P771	2	1	Modbus address 1
P772	2	9.6	9.6 Kbaud
P773	2	0	No parity
P774	2	8	8 data bits
P775	2	1	1 stop bit
P776	2	0	No flow control
P777	2	0	No key up delay
P778	2	0	No modem connected

Setting up KEPServerEX

KEPServerEX is an OPC/DDE driver that can be obtained from KEPware at www.kepware.com.

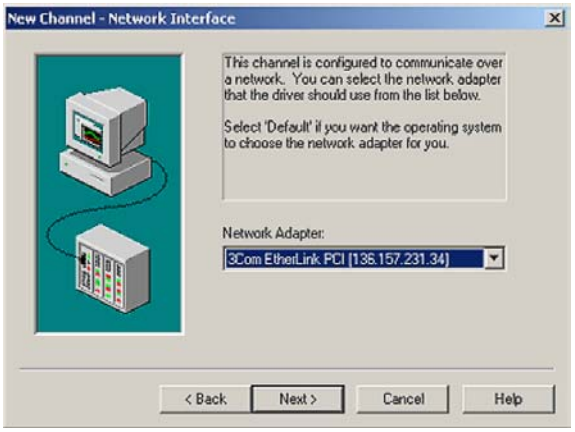
In the following example the server is set up to read the current level value from an ERS 500 via Ethernet.

1. Click **Edit** and then **New Channel** and name your new channel. (Example: **Network 1**)

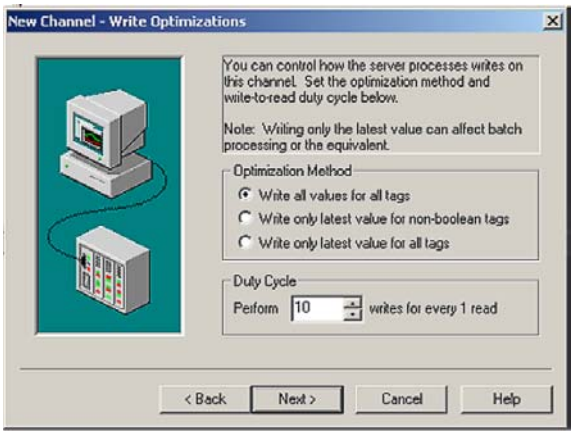


2. Set the device Driver to **Modbus Ethernet**.

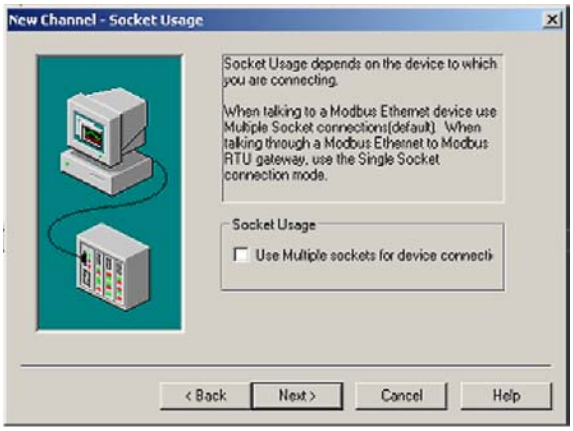
3. Select the Network Adapter installed in your computer. (Example: **3Com EtherLink PCI**)



4. Keep the default values. (Example: **Write all values for all tags** and Duty Cycle = **Perform 10 writes for every 1 read**)

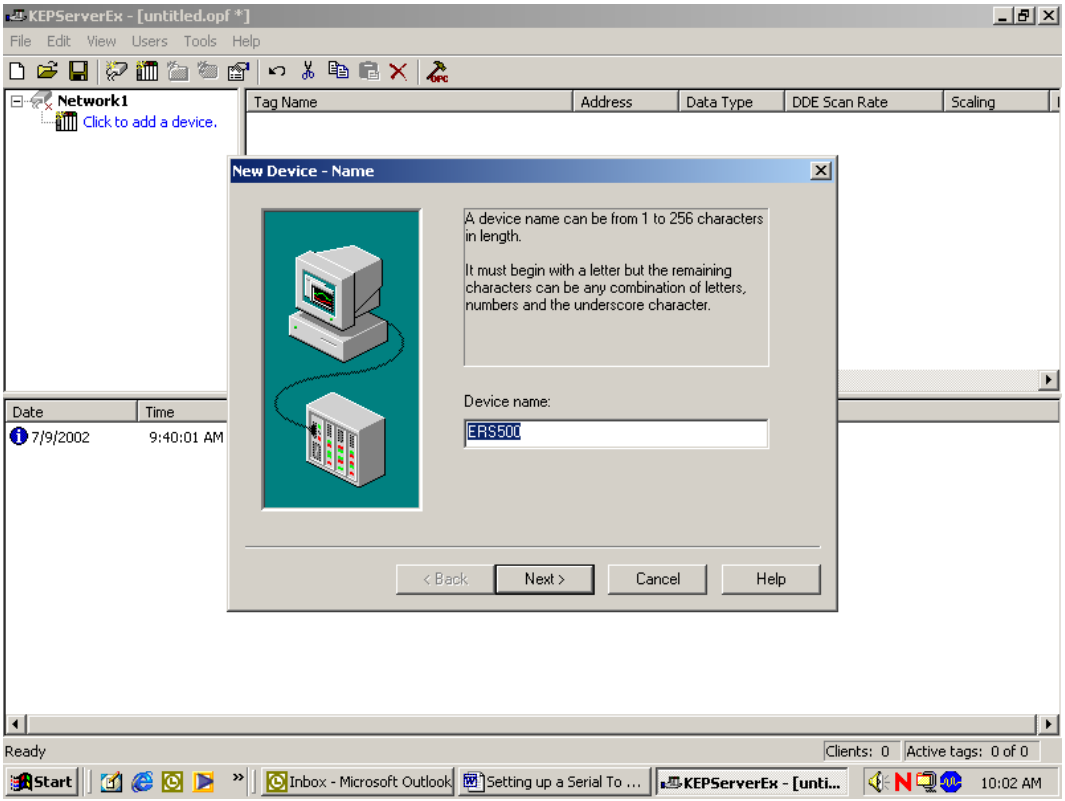


5. Uncheck **Use multiple sockets for device connections**. (You will get the best performance with using just one socket.)

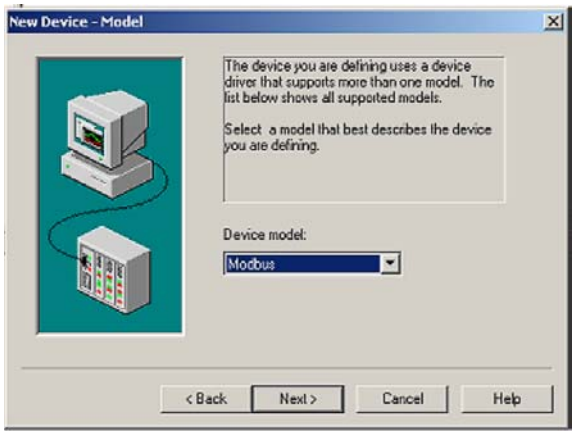


6. The next screen (not shown here) is just a summary, click **Finished** and the channel is defined.

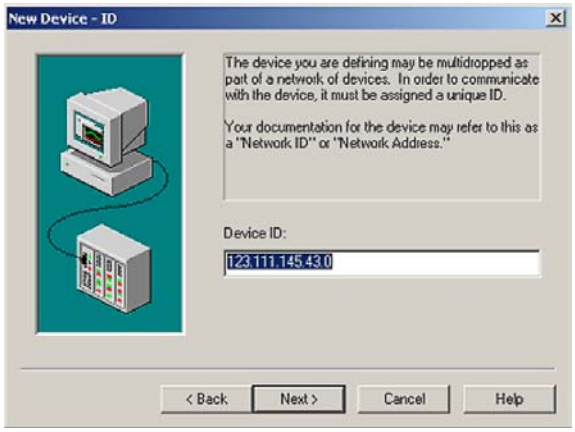
7. Click **Edit** and then **New Device** and enter the device name. (Example: **ERS 500**)



8. Select the **Device Model.** (Example: **Modbus**)

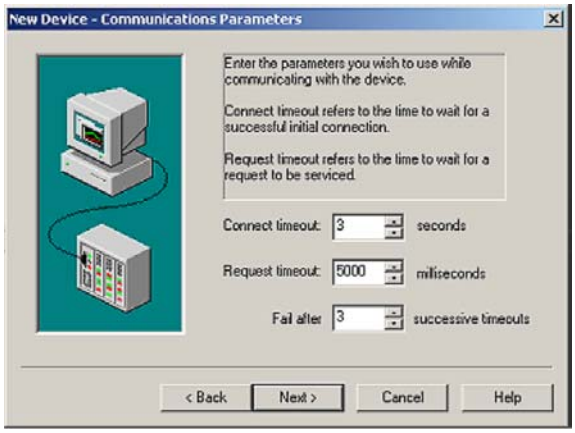


9. Enter the Ethernet bridge IP Address in the **Device ID**. (Example: **123.111.145.43.0**)

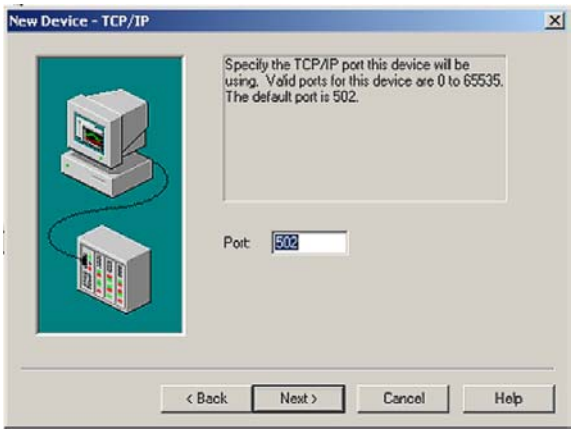


10. Enter the timeout values as shown.

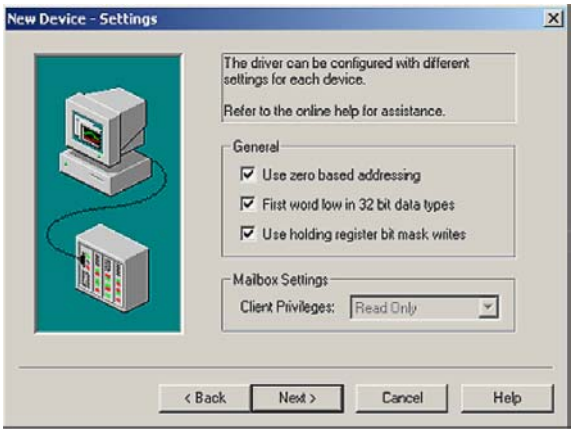
(Example: **Connect timeout: 3 seconds, Request timeout: 5000 milliseconds, Fail after 3 successive timeouts)**



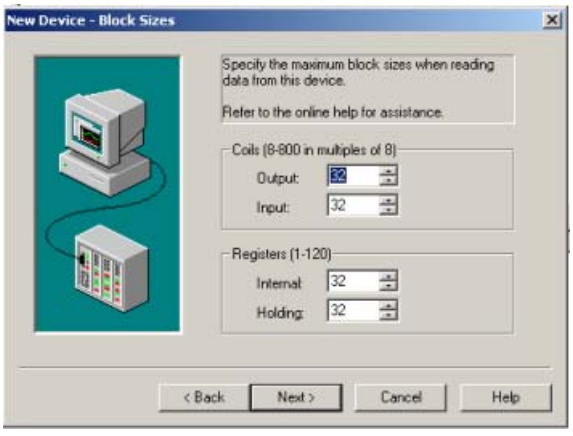
11. Keep the default port number. (Example: **502**)



12. Keep the Device Setting defaults as shown.
(Example: All General boxes **checked**)

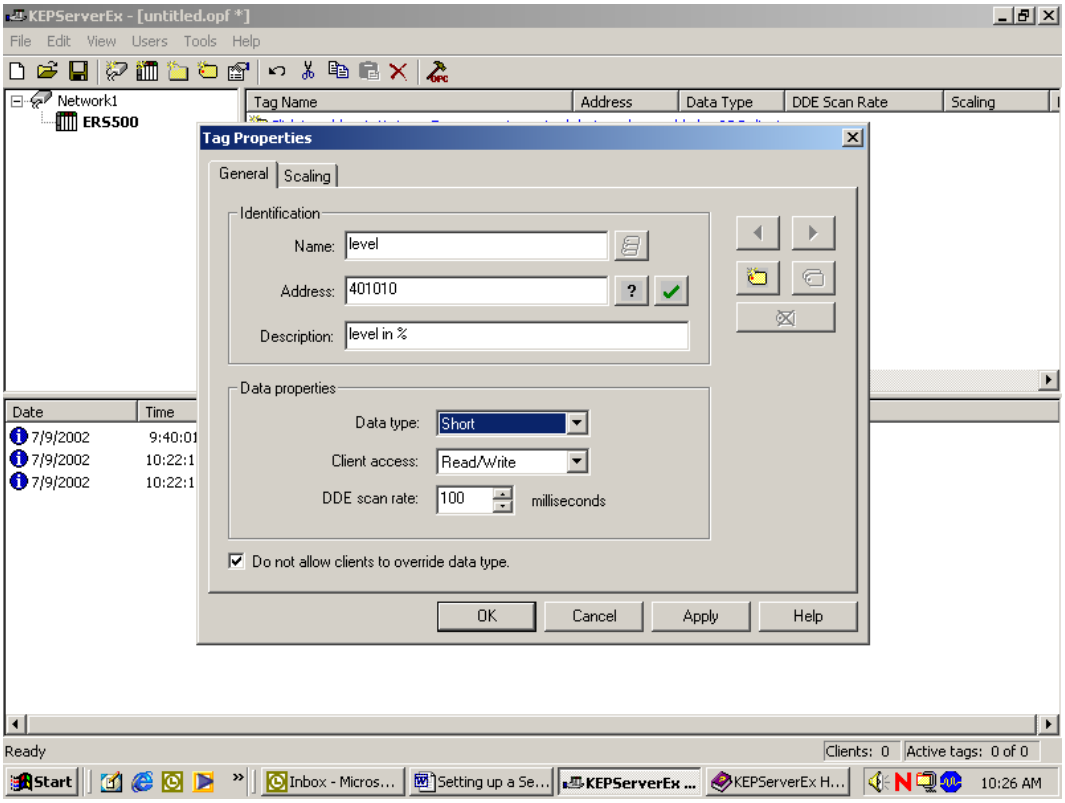


13. Keep the Block Size defaults as shown.
(Example: All boxes set to **32**)



14. The next screen (not shown here) is just a summary, click **Finished** and the New Device is defined.

15. Click **Edit** and then **New Tag** to enter a tag value.
(Example: **Name: level, Address: 401010, Description: level in %**)
This sets up the Tag defined as "level" to be read from ERS 500 Modbus register 41010, to provide the level reading in percent of span.



16. To test communications, click on OPC quick client icon (the one labelled OPC with a hammer), and another screen will appear that will give you the tag value and show you the status of the communications.