Introduction

This document describes the techniques and procedures we have found to consistently connect a PC running DirectSOFT to a AutomationDirect PLC through the ADC MDM-TEL modem. It covers how to set up remote PLC programming and a PLC-to-PLC connection with a MDM-TEL. The document also describes how to troubleshoot an MDM-TEL connection.

We are not suggesting that other techniques will not work, nor are we suggesting that other modems will not work. There is no possible way for us to test every manufacturer's modems and find the settings and procedures to make those work. Because of this, we can only support the use of the modem that we sell. We will help in whatever way we can to get you connected with other modems but we will have no specific information on the firmwares and nuances of other modems.

It is our suggestion that you carefully follow this document first in attempting modem communication with our PLCs. If this works, you can then try to achieve higher baud rates and faster throughputs. Phone technology is the key to high performance. There will be some sites that will not be able to achieve a higher baud rate or even a 9600 baud rate.

If following these steps does not get you connected, please refer to the troubleshooting steps at the end of this document. If this still does not get you connected, please call our Tech Support at (770)844-4200. We will help you in whatever way we can. We would also welcome feedback if you think that there is any other pertinent information that should be added to this document.

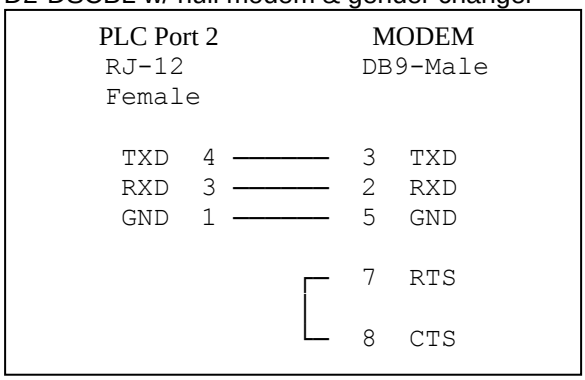
Recommended PLCs and ports to use

Due to timing problems created by poor quality phone lines, old switches and many other complications associated with telephone transmissions, we only recommend using the modems on the "configurable ports" of our PLC's. These include:

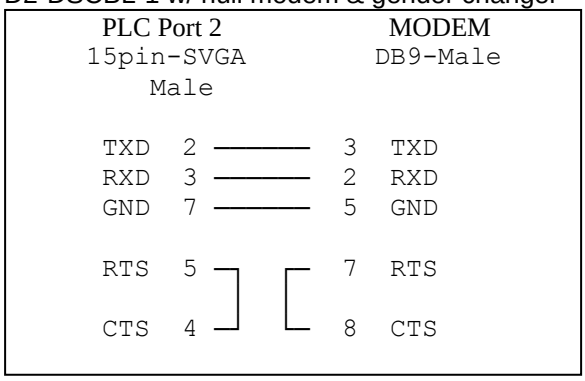
- D0-05 communication port 2
- D2-250 communication port 2
- D2-DCM
- D3-350 communication port 2
- D3-DCM
- D4-450 communications ports 1(RS232 25-pin connector) and 2(RJ-12 on top)
- D4-DCM
- D0-DCM

Cable Wiring

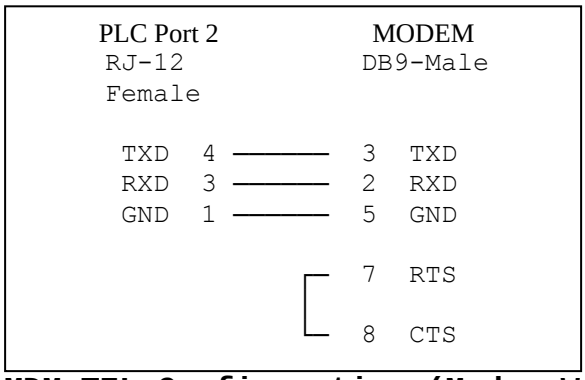
D0-05 comm port 2
D4-450 port 2
D2-DSCBL w/ null modem & gender changer



D0-06 port 2
D2-250-1 port 2
D2-260 port 2
D0-DCM port 2
D2-DSCBL-1 w/ null modem & gender changer



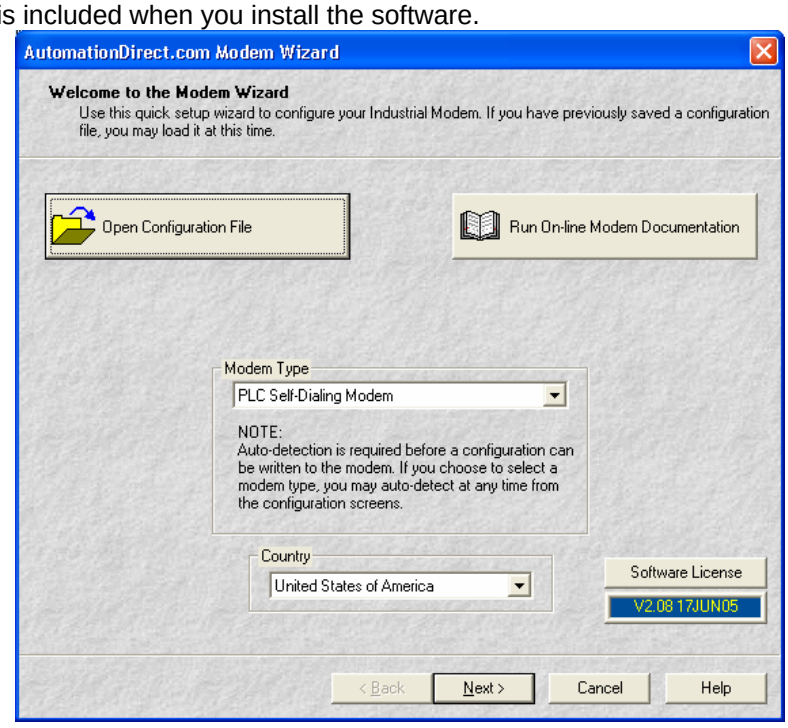
D2-DCM
D3-350 port 2
D4-DCM
D4-450 port 1
D3-DSCBL-2 w/ null modem & gender changer



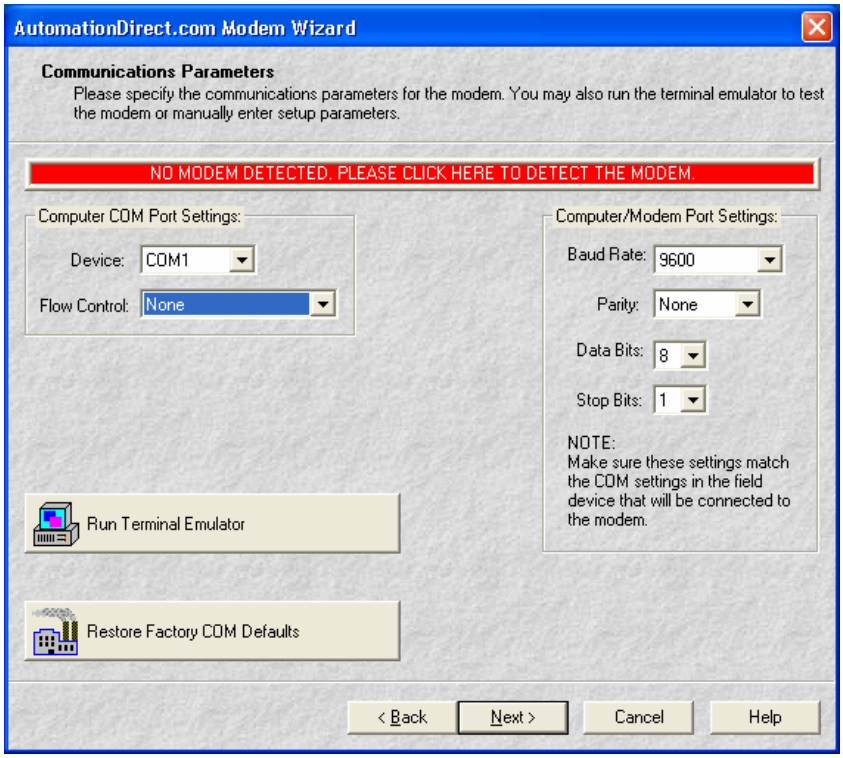
MDM-TEL Configuration (Modem Wizard)

The following steps show how to configure the modem for connectivity to the PLC using the Configuration Wizard Software provided with the modem. Use the 9 pin serial cable to connect between the serial port of your PC and the ADC modem to download the configuration. If using an ADC modem at both local and remote locations (which is strongly recommended), use the same settings for both.

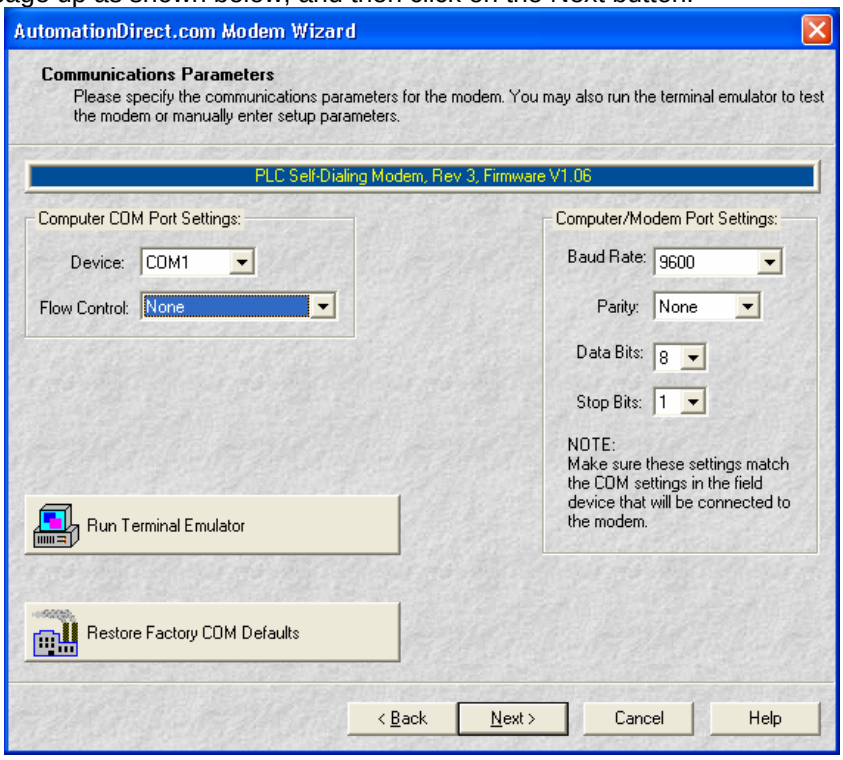
1. Click on Next to use the "PLC Self-Dialing Modem" or choose a previously defined configuration from the "Open Configuration File". A 250 configuration that will work for all of our PLC's is included when you install the software.



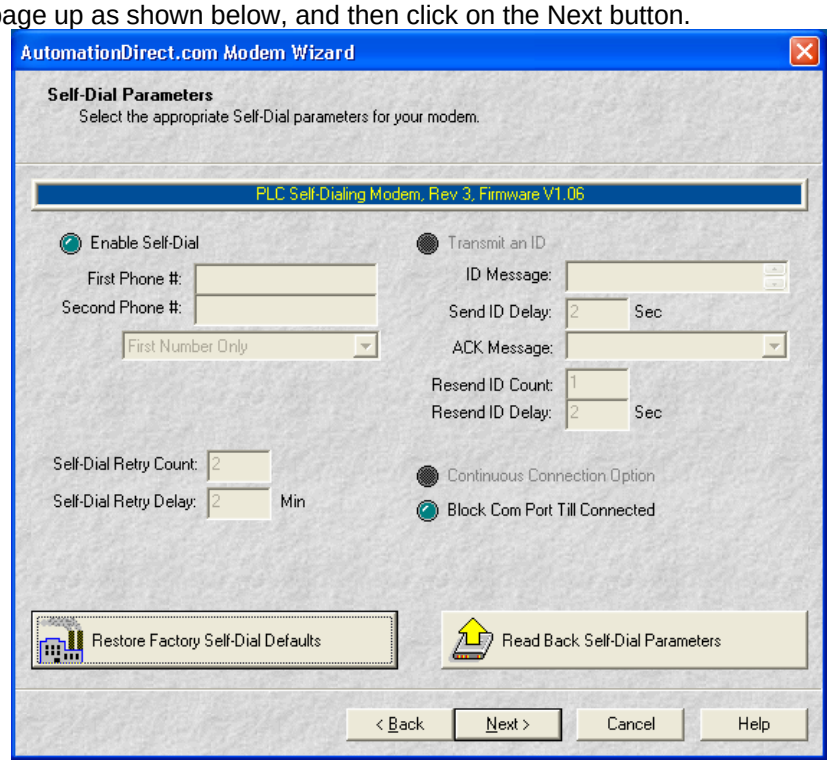
2. Click on the red banner and allow the modem to be detected.



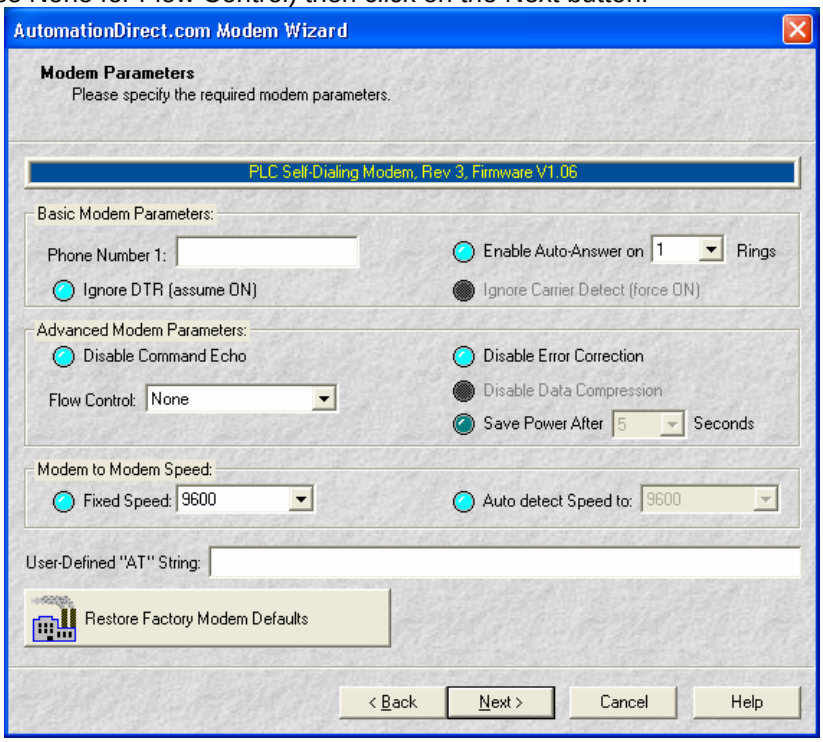
3. Set this page up as shown below, and then click on the Next button.



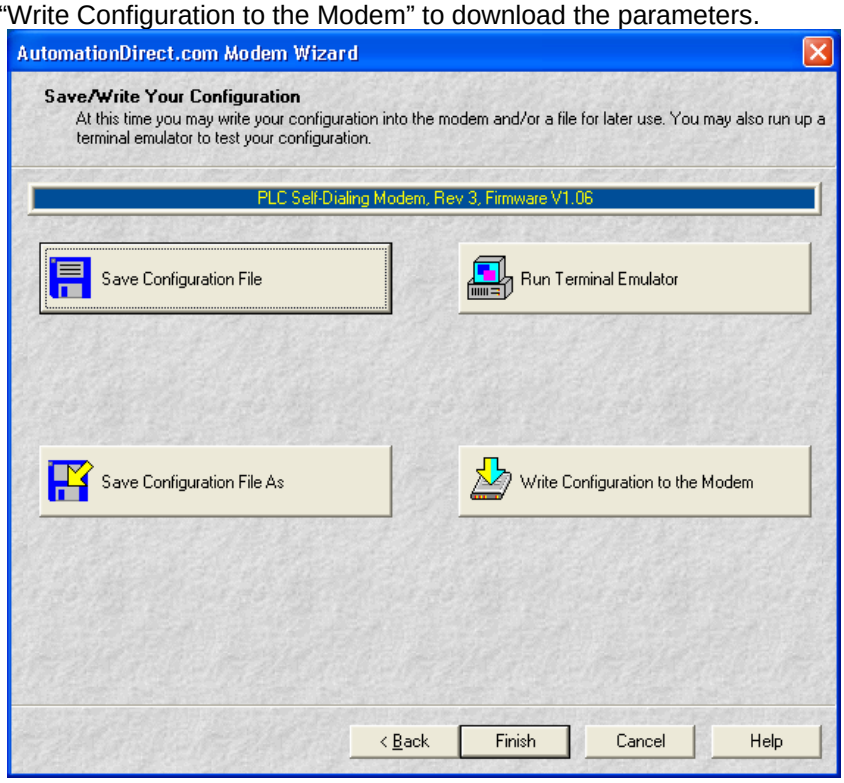
4. Set this page up as shown below, and then click on the Next button.



5. Set this page up as shown below (Be sure to disable Error Correction and Command Echo and choose None for Flow Control) then click on the Next button.



6. Click on “Write Configuration to the Modem” to download the parameters.



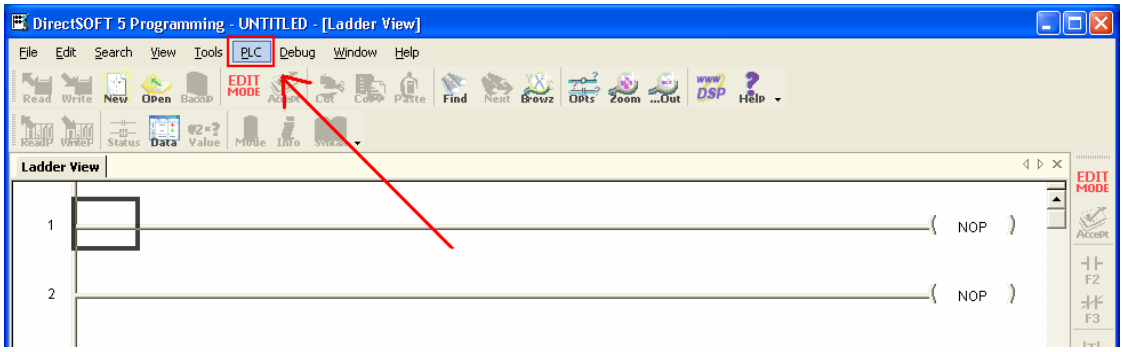
7. The modem is now configured for use. Depending on your intended function you may possibly need to configure a Windows Modem Driver, DirectSOFT New Link using the Modem Driver, KEPDirect New Channel using the Modem Driver, or PLC Logic which uses the modem.

Direct Logic PLC Communications Port Setup

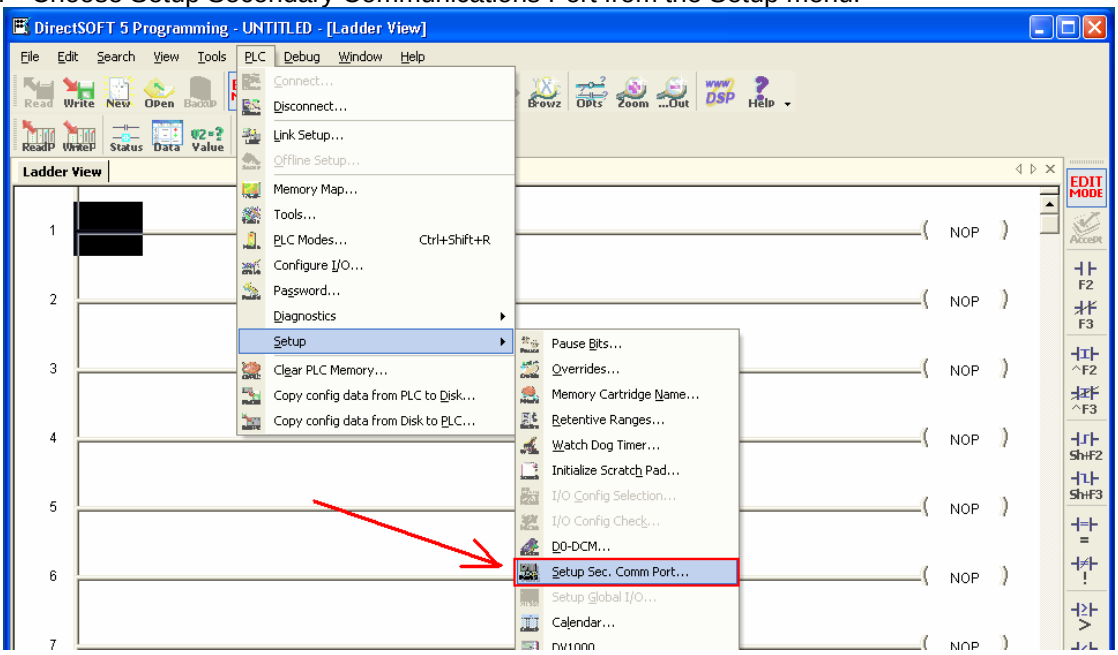
This setup shows a D0-06 port 2 setup. Other PLC setups will differ slightly but you should follow the same parameters. Note: The DCM modules are not configured through DirectSOFT. You must configure the DIP-switches and selector switches for the proper setup on these modules. Again, follow the same parameters guidelines from this example and refer to the DCM manuals for the appropriate switch settings.

You must first connect to the programming port of the PLC in order to configure the other port for use with the modem. On the D0-06, the programming port is the left port (1) the secondary port is the right port (2). Consult the DirectSOFT programming manual to find the steps necessary to install the software and access the "Link Wizard".

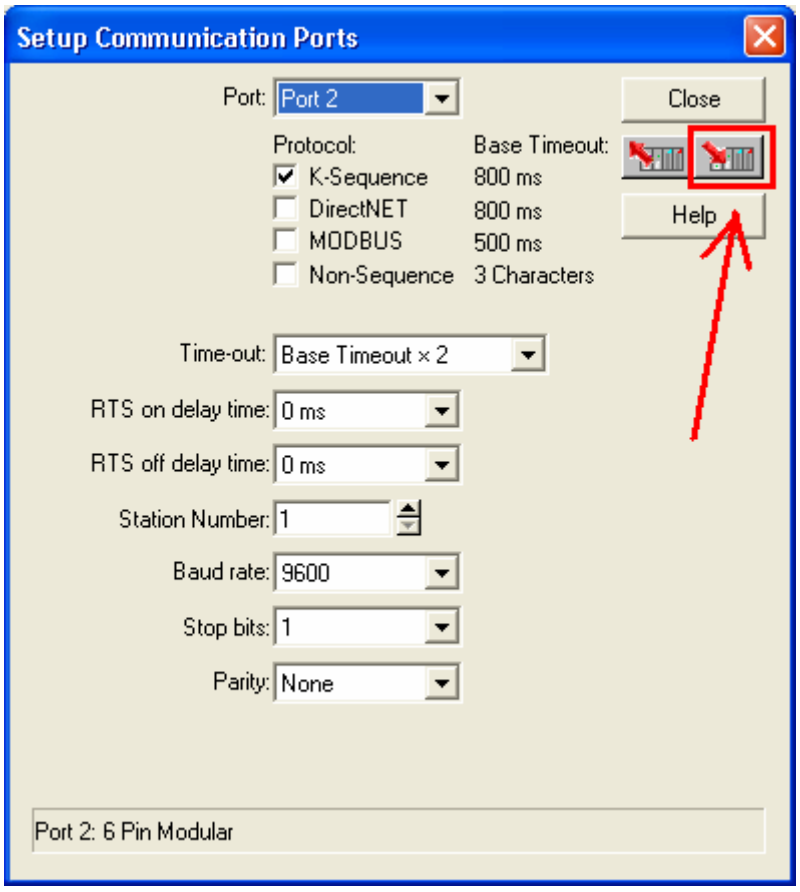
1. Click on PLC.



2. Choose Setup Secondary Communications Port from the Setup menu.



3. Set the port up as indicated below and then Write PLC changes by clicking on the indicated button.

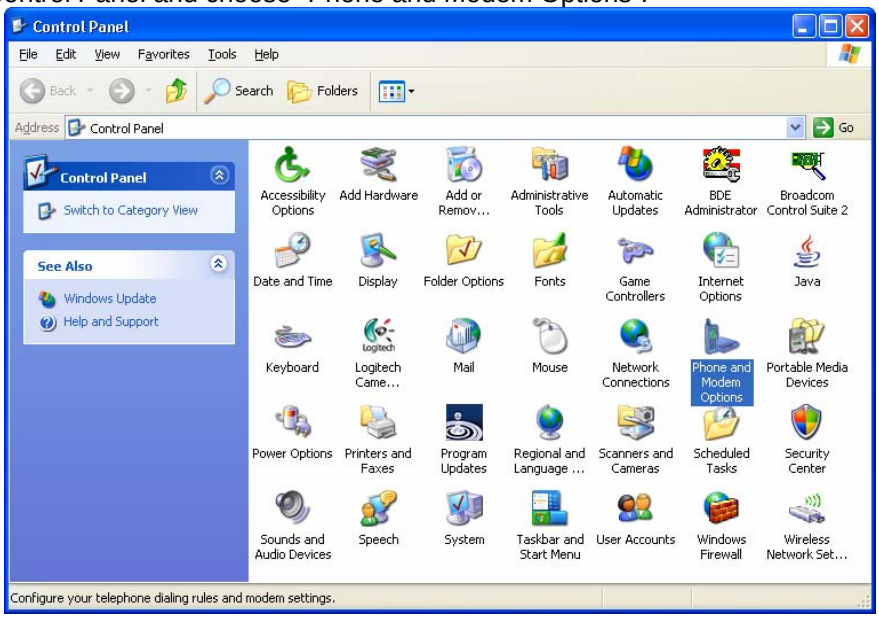


Windows Driver Configuration

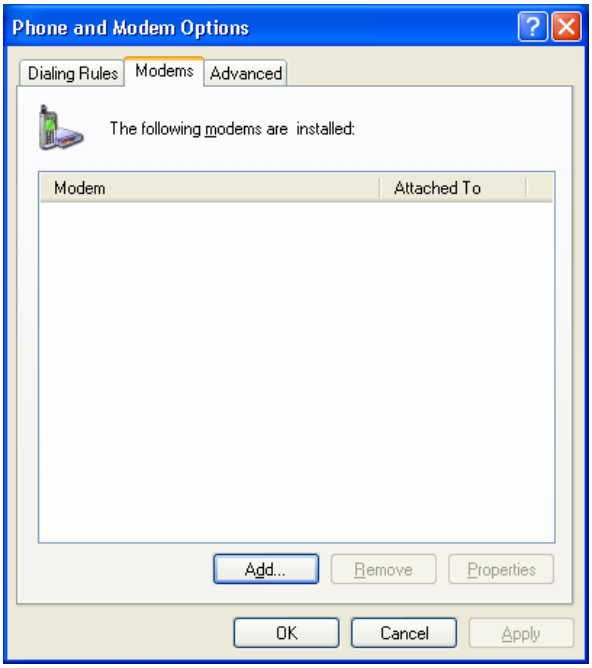
Installing the Windows Modem Driver

Install the standard 28800 baud modem driver in Windows to use with the ADC modem. Here is the procedure for installing this driver. We strongly recommend using these initial settings, after you establish good communications you may try faster speeds.

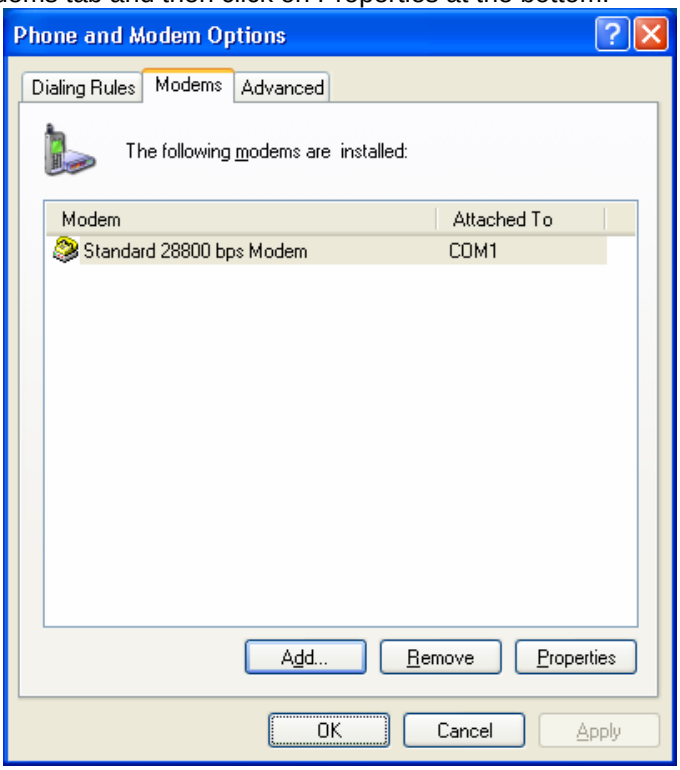
1. Go to Control Panel and choose “Phone and Modem Options”.



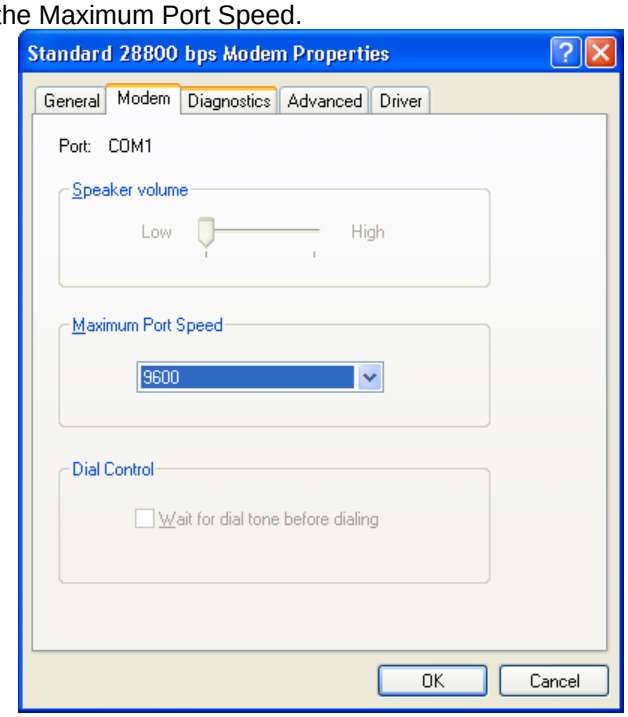
2. Choose the Modems tab and then click on Add at the bottom.



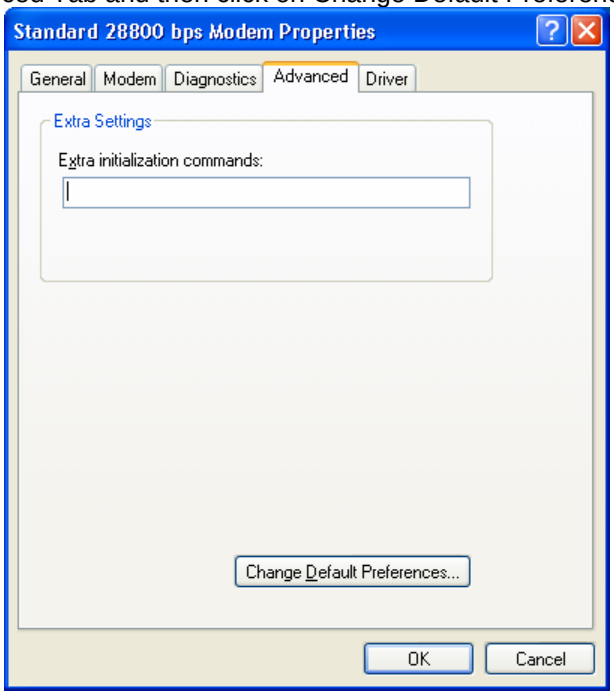
3. Using the Hardware Wizard add a new modem. Check the box “Don’t detect my modem, I will select it from a list.” Select “Standard 28000 bps Modem” and select the PC’s serial port which the MDM-TEL is connected.
4. Choose the Modems tab and then click on Properties at the bottom.



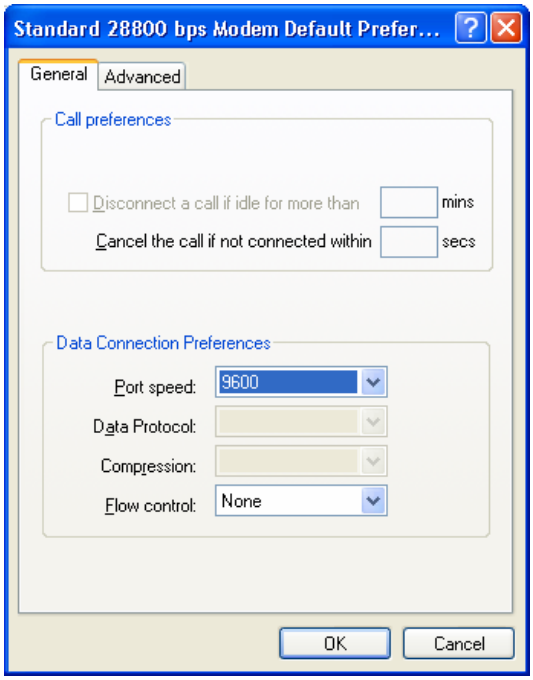
5. Choose 9600 as the Maximum Port Speed.



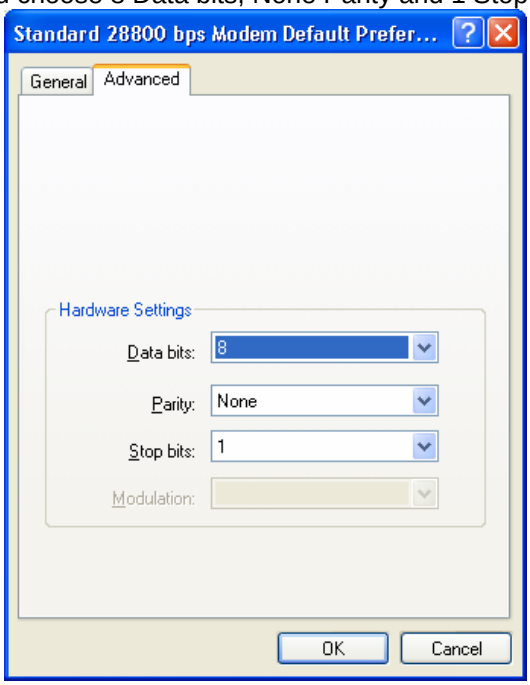
6. Click on the Advanced Tab and then click on Change Default Preferences.



7. Make Port speed 9600 and choose None for Flow control.



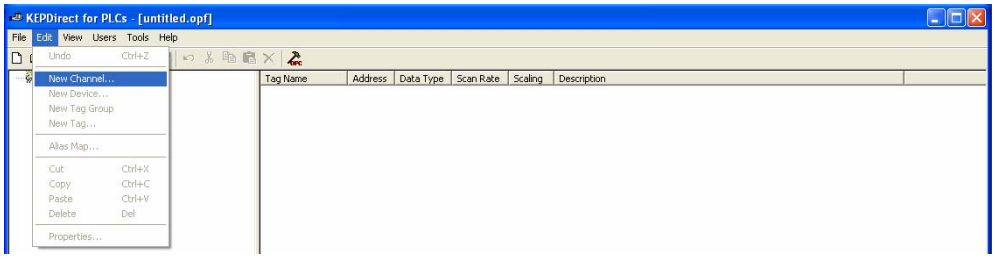
8. Click on Advanced and choose 8 Data bits, None Parity and 1 Stop Bits.



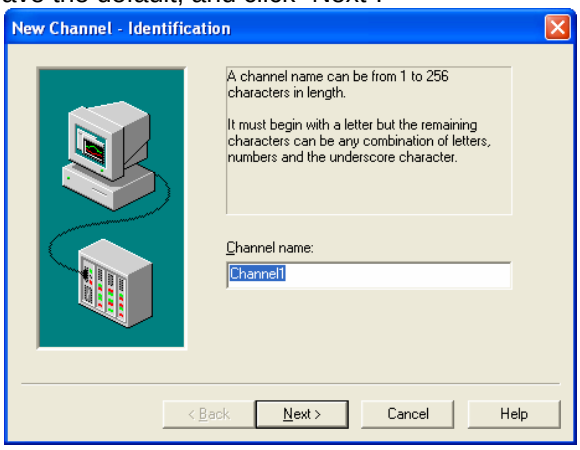
9. Click OK until all dialog boxes are closed. The Windows TAPI (Telephony Application Programming Interface) driver is now ready so that DirectSOFT can use the modem.

Using KEPDirect with Modem

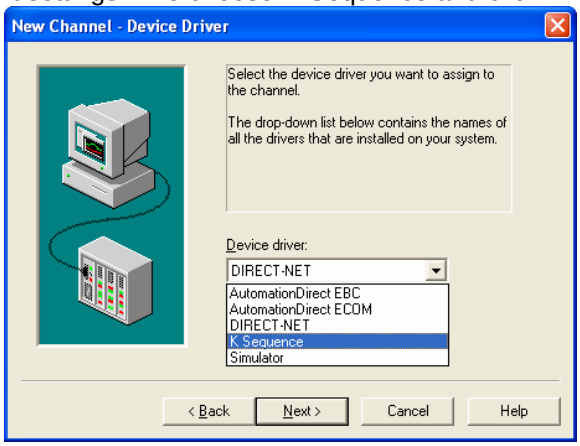
1) Open the software KEPDirect and select the Edit menu to add a New Channel to the server. The Channel defines the communication media that will be used to communicate with the PLC. In this example we will be using the PCs Serial Port to connect through the modem.



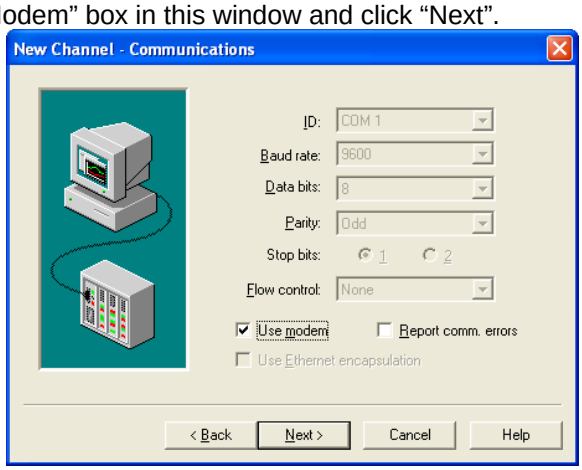
2) When you select New Channel, it will open a wizard to walk you through the settings. The first step in the wizard is to give the channel a unique name. The name can be anything you desire up to 256 characters. It does not allow dashes in the channel name. In this example we will leave the default, and click "Next".



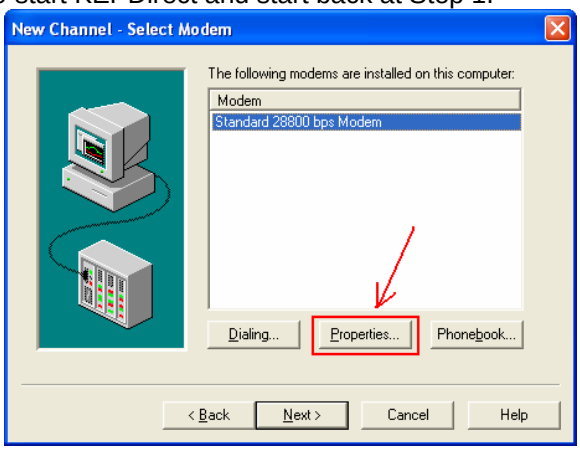
3) The next step is to select the communication Device Driver which must match the PLC communication port settings. We choose K-Sequence and click "Next".



4) Check the “Use Modem” box in this window and click “Next”.

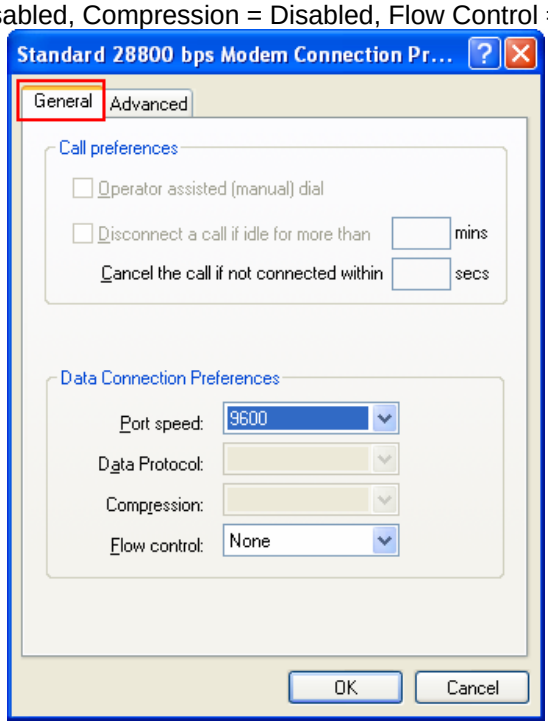


5) This screen will allow you to select the modem you want to use on your PC. If you don’t have any modems listed then you must exit KEPDirect and create a Windows Modem Driver first, then re-start KEPDirect and start back at Step 1.

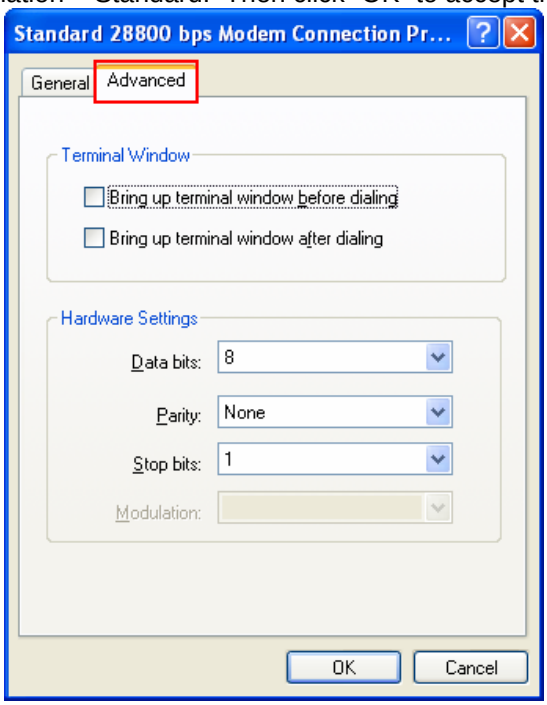


6) Select your modem in the list and click “Properties” to configure the modem.

7) Under the “General” tab use these parameters. Port speed = 9600, Data Protocol = Disabled, Compression = Disabled, Flow Control = None

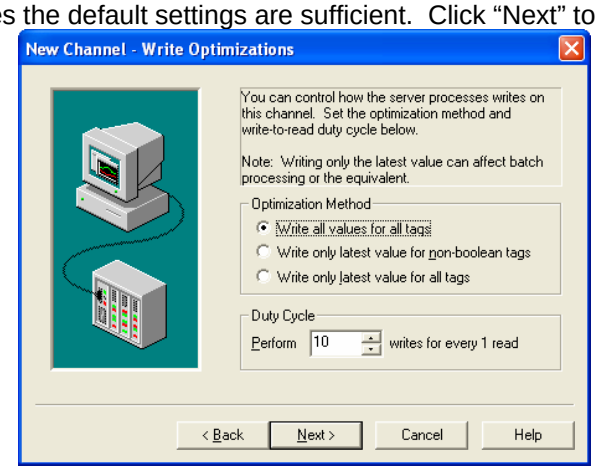


8) Under the “Advanced” tab use these parameters. Data Bits = 8, Parity = None, Stop bits = 1, Modulation = Standard. Then click “OK” to accept the changes.

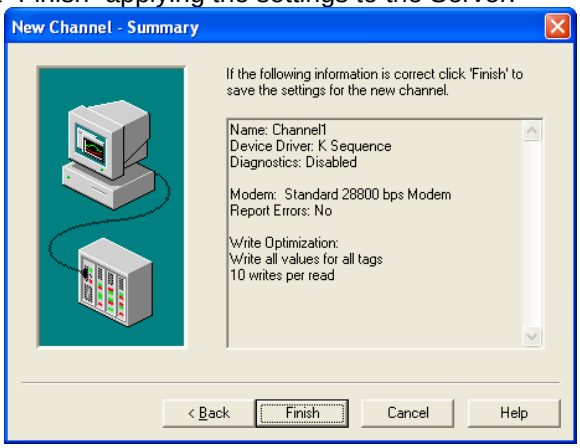


9) When you return to the Select Modem screen press “Next”.

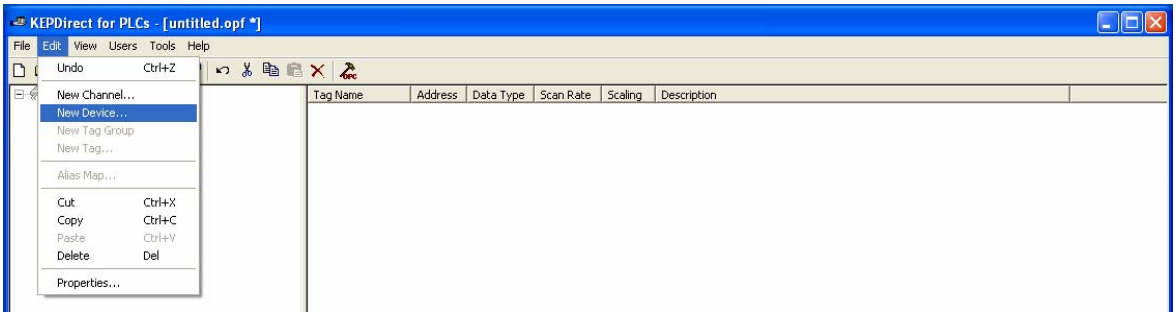
10) The Write Optimization allows the user to define how the software processes read and write commands from the client software. These parameters are application dependent and in most cases the default settings are sufficient. Click “Next” to continue.



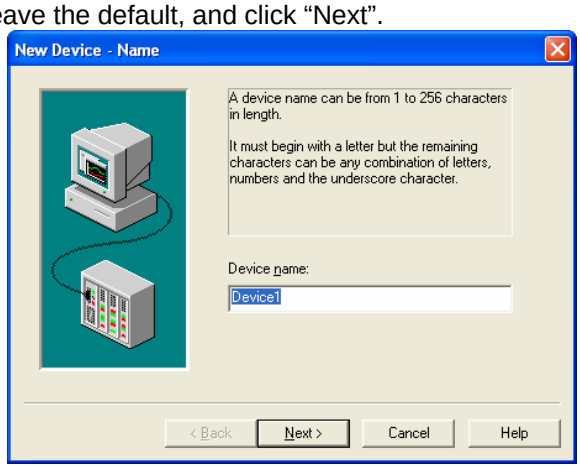
11) The Summary screen allows the user to review all the settings before they are applied to the server. Select “Finish” applying the settings to the Server.



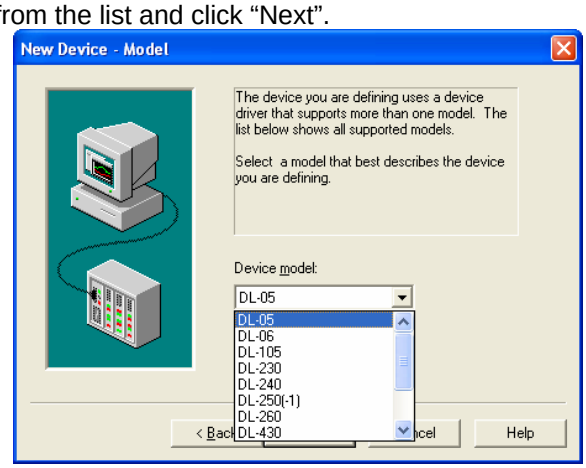
12) The next step is to add a PLC connection to the Channel. From the Edit menu select New Device.



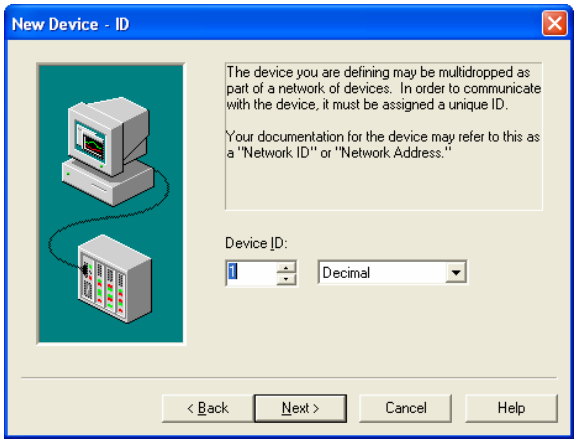
13) When you select New Device, it will open a wizard to walk you through the settings. The first step in the wizard is to give the device a unique name. The name can be anything you desire up to 256 characters. It does not allow dashes in the device name. In this example we will leave the default, and click “Next”.



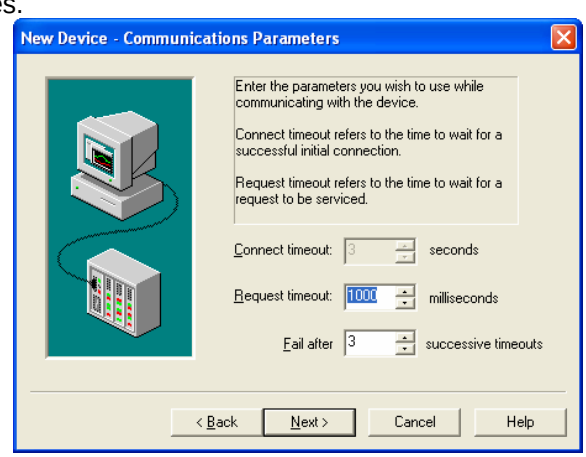
14) From this screen you select the PLC model. In this example we are using a D2-260 PLC. Select your PLC from the list and click “Next”.



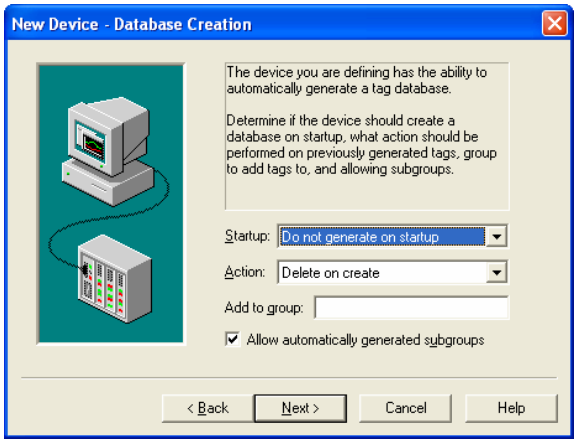
15) The Device ID must match the PLC Station Number that was configured in DirectSOFT (PLC>Setup>Setup Sec Comm. Port>Station Number). Once you have entered the Device ID click “Next”.



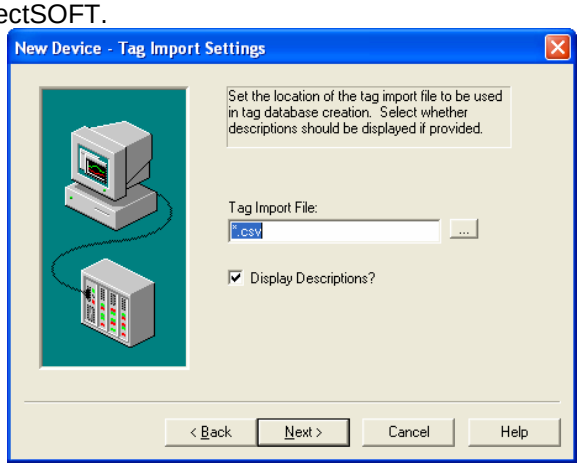
16) The Communication Parameters are used to set the server Time Out parameters for connection failures.



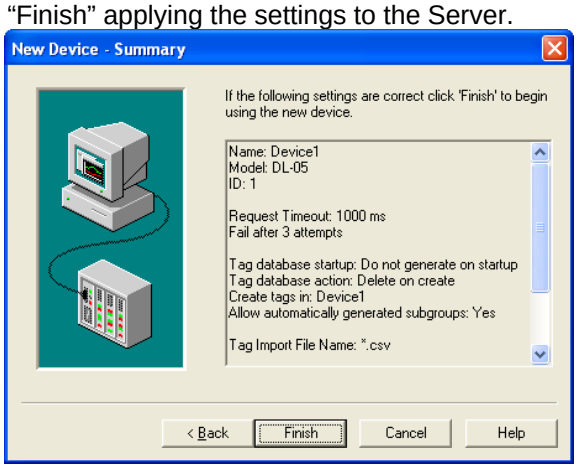
17) This screen is only useful if you are importing a CSV file with the tag definitions in it or if you are setting up an EBC. So we will leave the defaults in this example and Click "Next".



18) The Tag Import Settings allow the user to import DirectSOFT Nicknames into KEPDirect as Tag Names. Click the button with the "…" on it to browse for the CSV file that you exported from DirectSOFT.

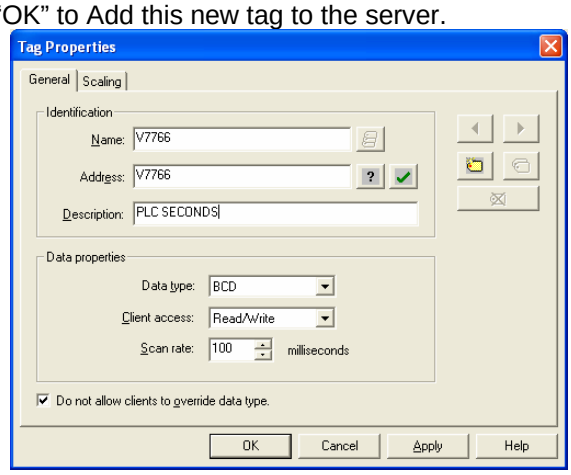


19) The Summary screen allows the user to review all the settings before they are applied to the server. Select “Finish” applying the settings to the Server.

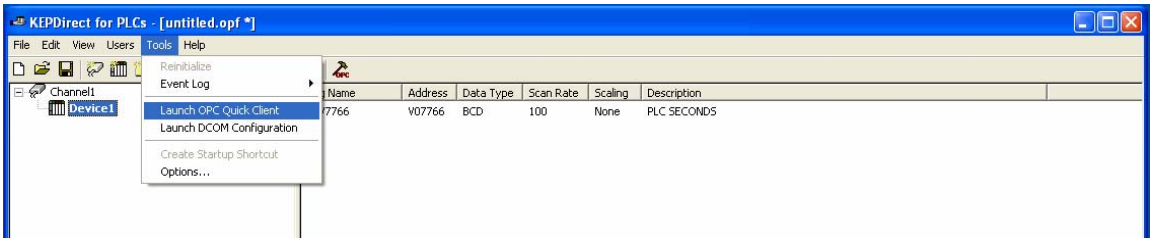


20) To test the server connection we need to create a tag. In the Edit menu select New Tag.

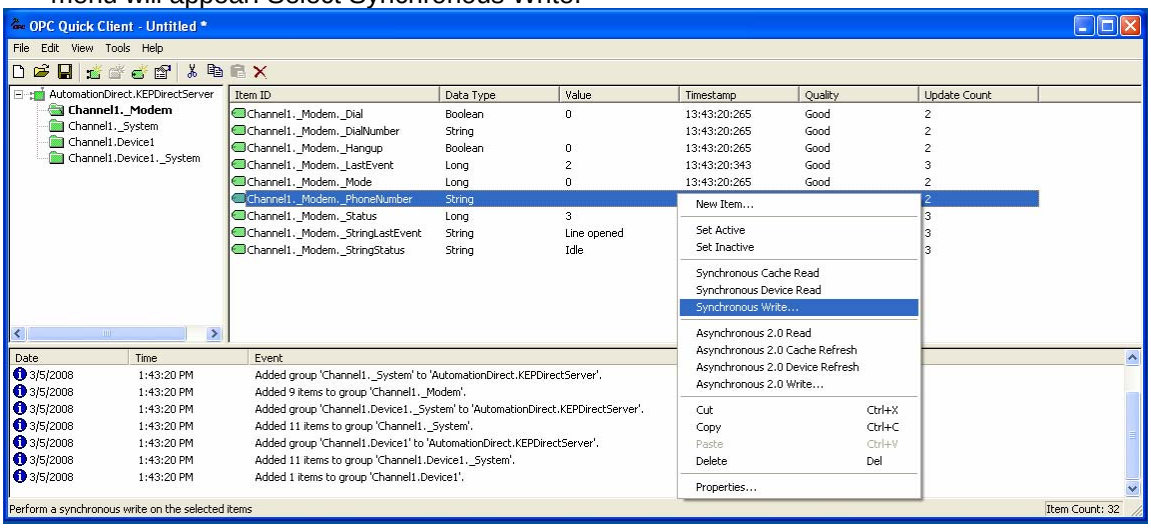
21) This screen will appear. Select the General Tab. Name = V7766, Address = V7766, Description = “PLC SECONDS”, Data type = BCD, Client Access = Read/Write, Scan rate = 100. Click “OK” to Add this new tag to the server.



22) The new tag should appear in the Tag Names list on the right side of the screen. Then click the Tools Menu and click Launch OPC Quick Client. This will open the OPC Quick Client into a new window.

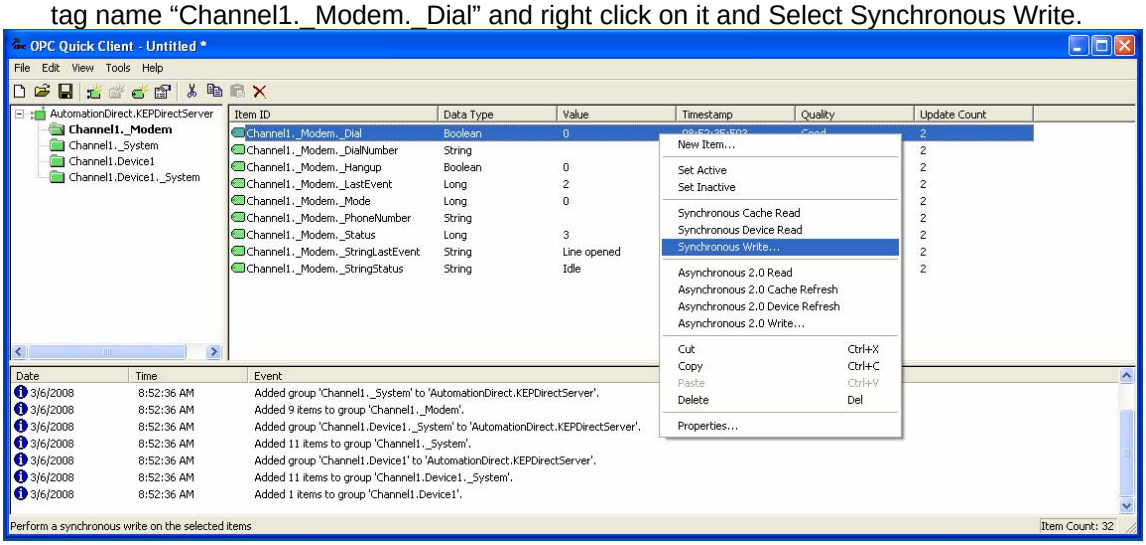


23) In the "Channel1._Modem" folder there will be a list of modem parameter tags. Find the tag name "Channel1._Modem._PhoneNumber" and right click on it and this drop down menu will appear. Select Synchronous Write.

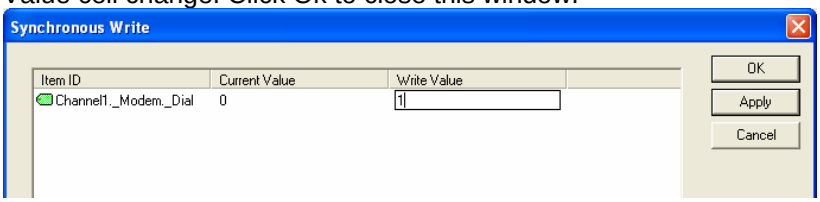


24) In the Write Value field, type the phone number of the PLC/Modem you want to call. Click "Apply", and you should see the value in the Current Value cell change. Click Ok to close this window.

25) In the “Channel1._Modem” folder there will be a list of modem parameter tags. Find the tag name “Channel1._Modem._Dial” and right click on it and Select Synchronous Write.

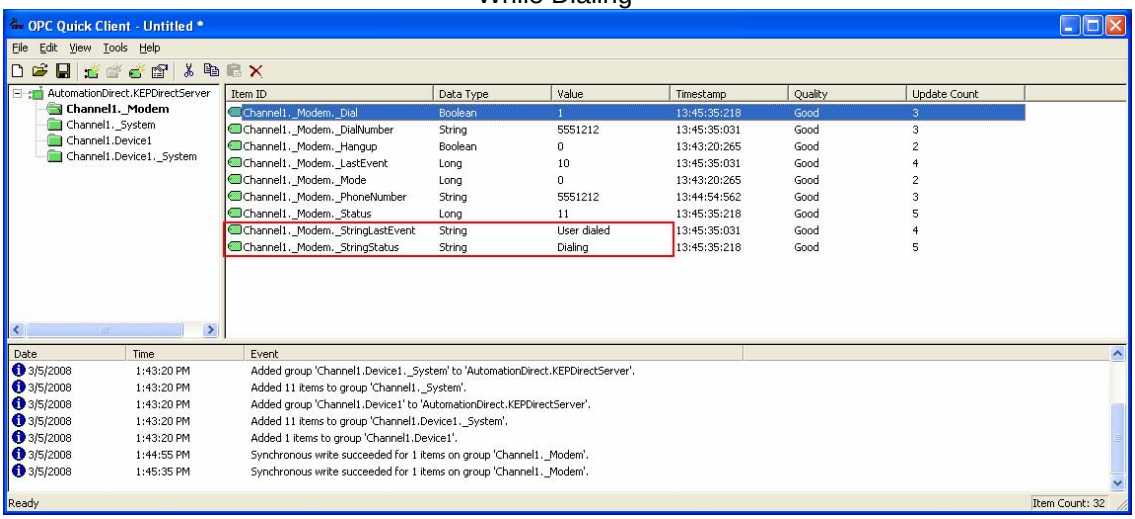


26) In the Write Value field, Type “1”. Click “Apply” and you should see the value in the Current Value cell change. Click Ok to close this window.

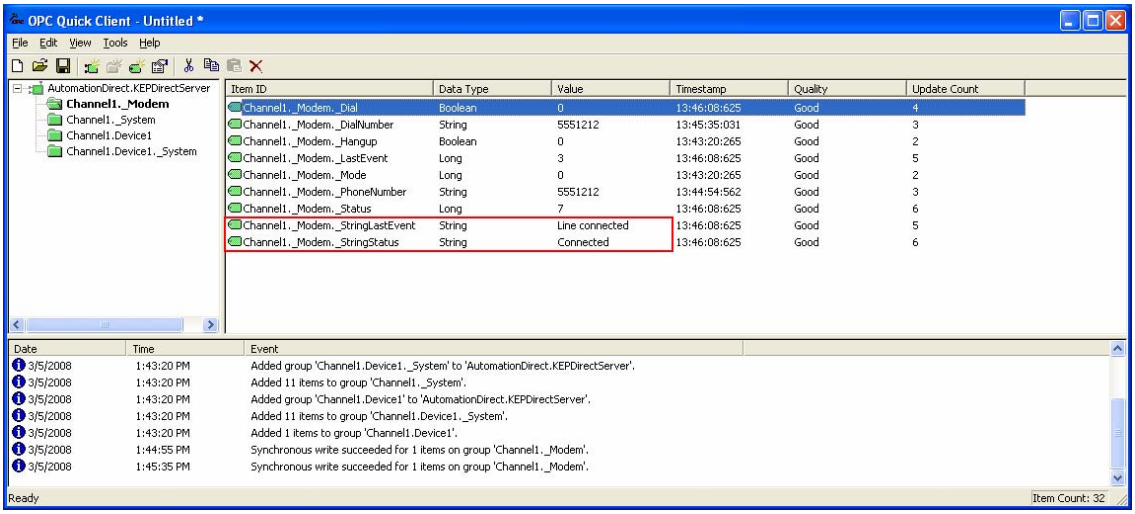


27) This will cause the KEPDirect software to use the modem to dial the phone number you previously entered. When the modem has connected to the other modem, "Channel1._Modem._StringStatus" will change to "Connected". You should see the modems "CD" light comes on and "TR" & "RD" will flicker as communications occur.

While Dialing



After Connection



28) Under the “Channel1.Device1” folder there will be a list of PLC tags. Find the tag name “Channel1.Device1.V7766” the value will have the PLC seconds if you did everything correctly.