Modbus RTU Setup and Test

Materials required:
Null modem cable
PC with com port to run Modbus Slave
DeviceMaster UP running Modbus/TCP version 4.09
Modbus Slave from http://www.modbustools.com
Modbus Poll from http://www.modbustools.com
Please note: The Modbus Slave and Modbus Poll application's are not freeware. You may use the application's for 10 minutes from connection. After 10 minutes the connection is broken. Re-starting the Modbus Slave or Modbus Poll application's will initiate another 10 minute demonstration period. After 30 days it will no longer operate without purchase.

This document will show step-by-step instructions of how to setup and configure the DeviceMaster UP in Modbus RTU mode and use the Modbus Slave and Modbus Poll application's to test the configuration.

This manual contains no explanations for the procedures outlined here. For full information and details, please see the DeviceMaster UP Modbus user guide and the Modbus Slave and Modbus Poll user guides.

DeviceMaster Configuration

The web pages for this example are as follow.
There are only two pages that will need to be configured:
Serial Device Configuration
and
Configure Network

Please note the version number. If necessary, begin by downloading the current firmware and use PortVision Plus to update the firmware in the DeviceMaster.
Here is a link to download the firmware at the tome of this writing:
ftp://ftp.comtrol.com/dev_mstr/up/software/modbus_tcp/firmware/modbus_tcp_4.09.msi

These are the network settings used in this example:
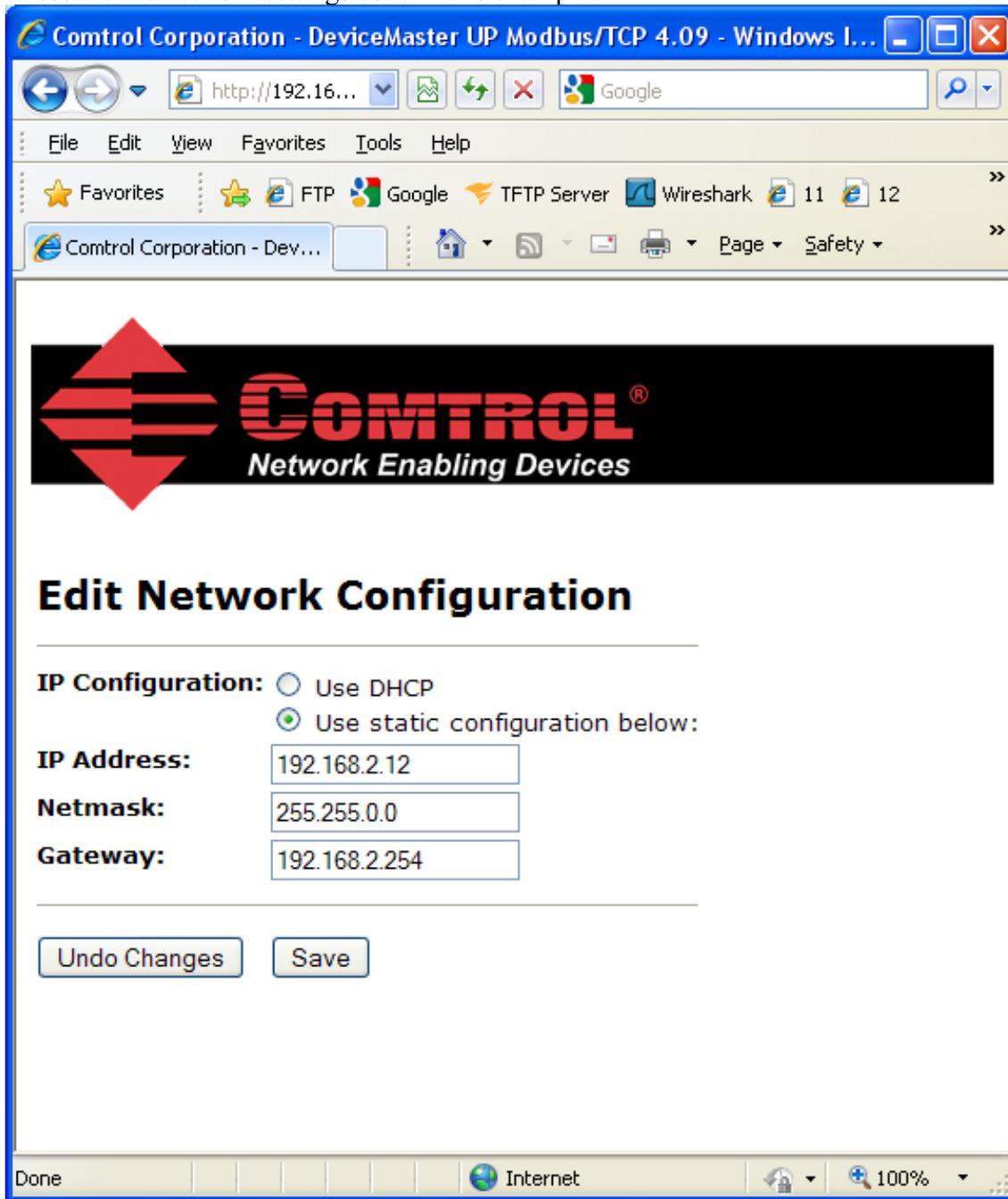
The PC Slave application is used on a Windows XP system with the following IP settings:
IP Address: 192.168.2.20
Subnet Mask: 255.255.0.0
Gateway Address: 192.168.0.254

You should configure the IP information to be compatible with your network and then substitute your values in place of the values shown in this example.

Here are the serial port settings.

All options in, or below, *Serial Packet ID Settings (Raw-Data Only)* are left at default as they are not used with Modbus RTU.
Scroll to the bottom of the page and click on **Submit**.

The verification page is displayed.

Serial Device Configuration

Server Configuration Home
Ethernet Device Configuration
Communication Statistics
PLC Interface Diagnostics
Display Serial Logs

|	Port 1
Serial Port Settings	
Mode:	RS-232
Baud:	38400
Parity:	none
Data Bits:	8
Stop Bits:	1
Flow:	none
DTR:	off
Rx Timeout Between Packets:	200
General Protocol Settings	
Serial Port Protocol:	Modbus/RTU
Discard Rx Pkts With Errors:	yes
Modbus/RTU Protocol Settings	
Response Timeout (ms):	1000

Display Devices

Click on Display Devices

The Known Modbus/RTU Device List will be presented.
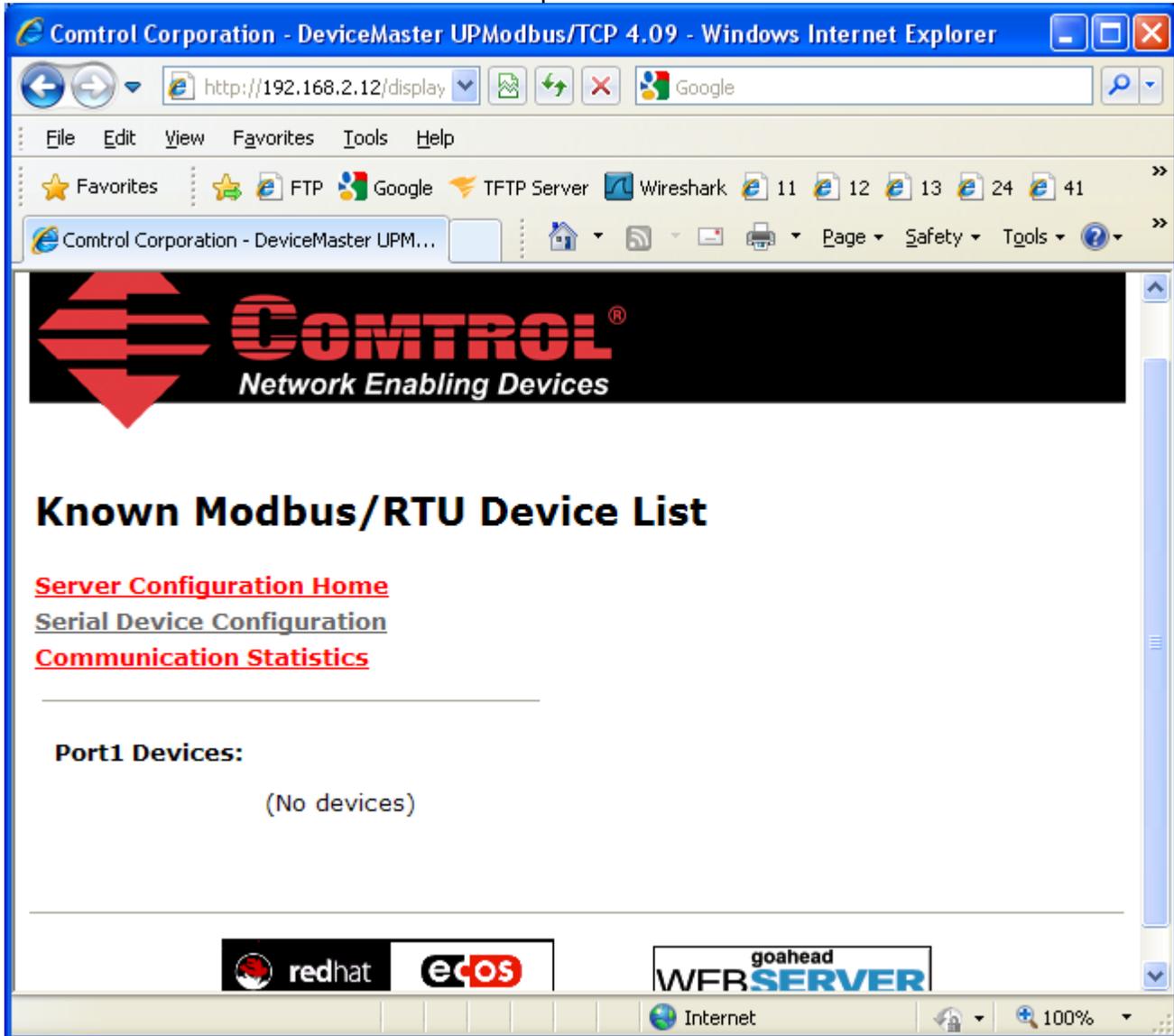
Until the Modbus Slave application is running, at this point (No devices) will be displayed.
This page will be returned to once the Modbus Slave and Modbus Poll application's are running.

Modbus Slave Configuration

Connect a null modem cable to com1 or com 2 of your PC and the other end to the serial port on the DeviceMaster. Start Modbus Slave. This will be connected via a null modem cable to the DeviceMaster, so knowing which com port your null modem cable is connected to will be necessary. Modbus Slave will emulate a Modbus device attached to the DeviceMaster's serial port.
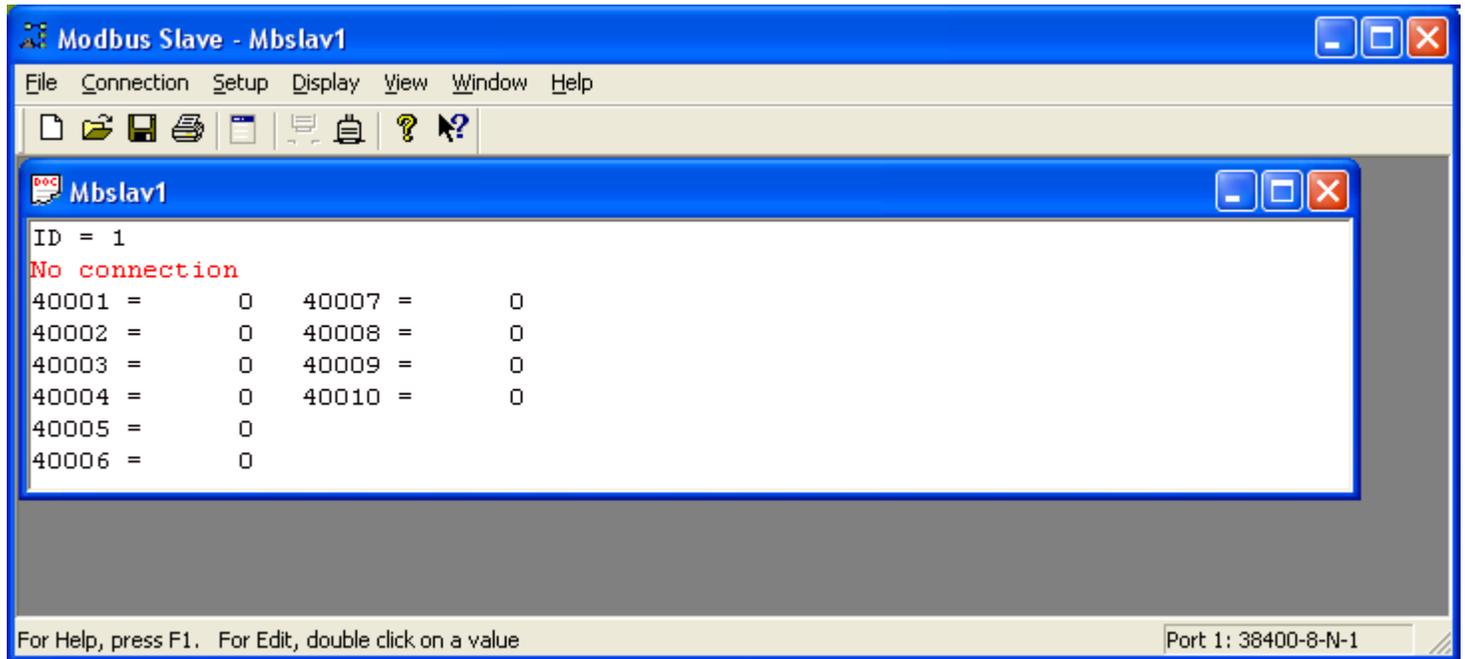
Configure the Display as shown here:
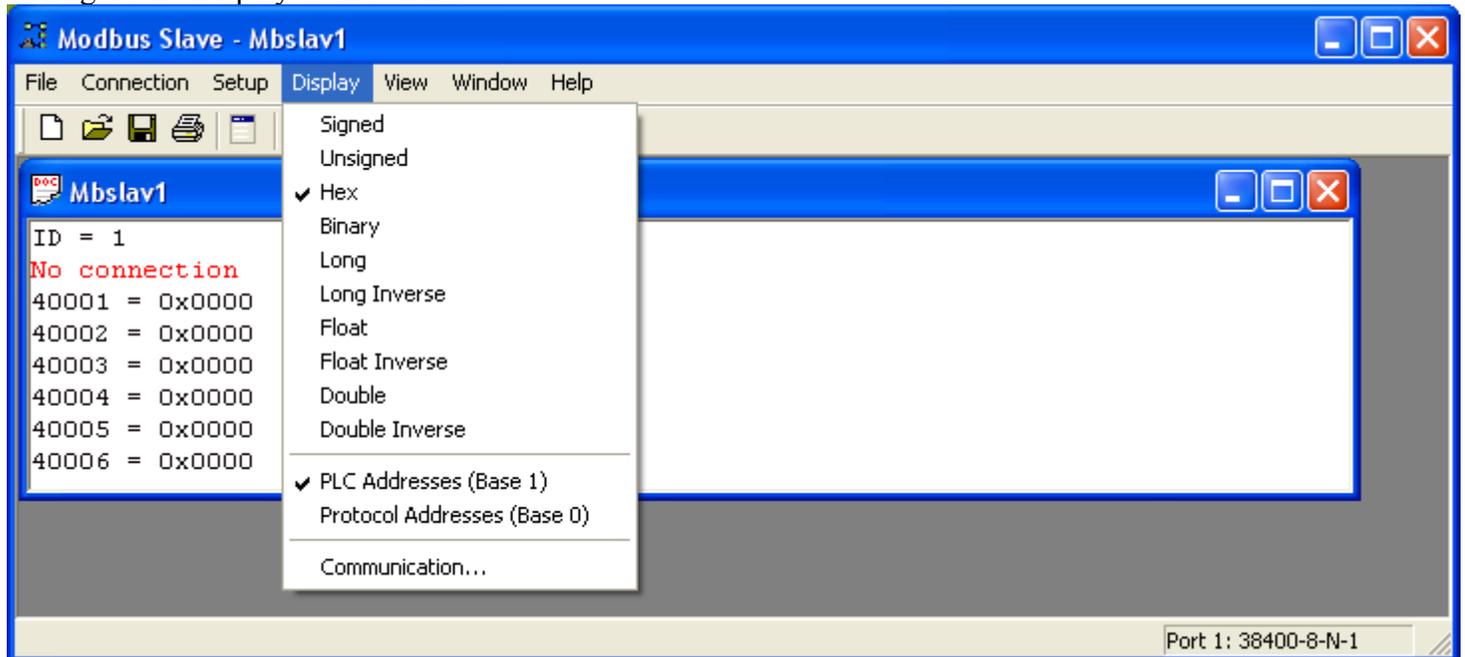
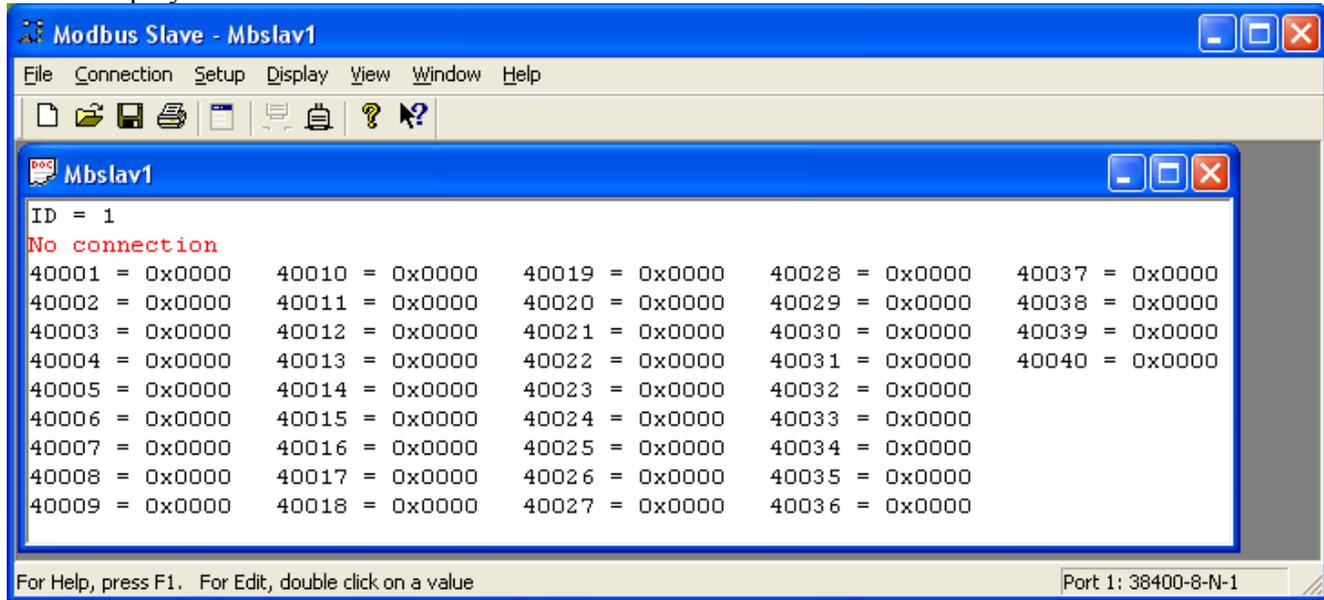Configure the Slave Definition:
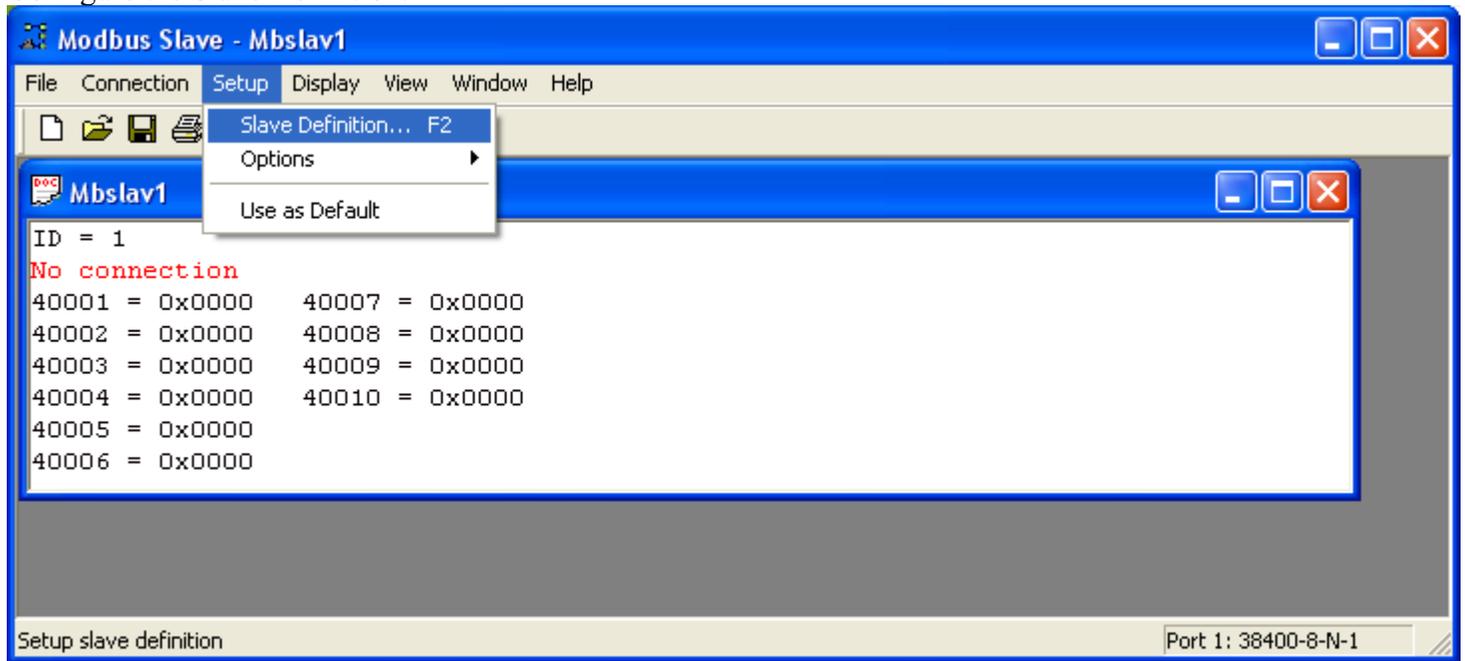
Leave the Slave ID at the default of 1.

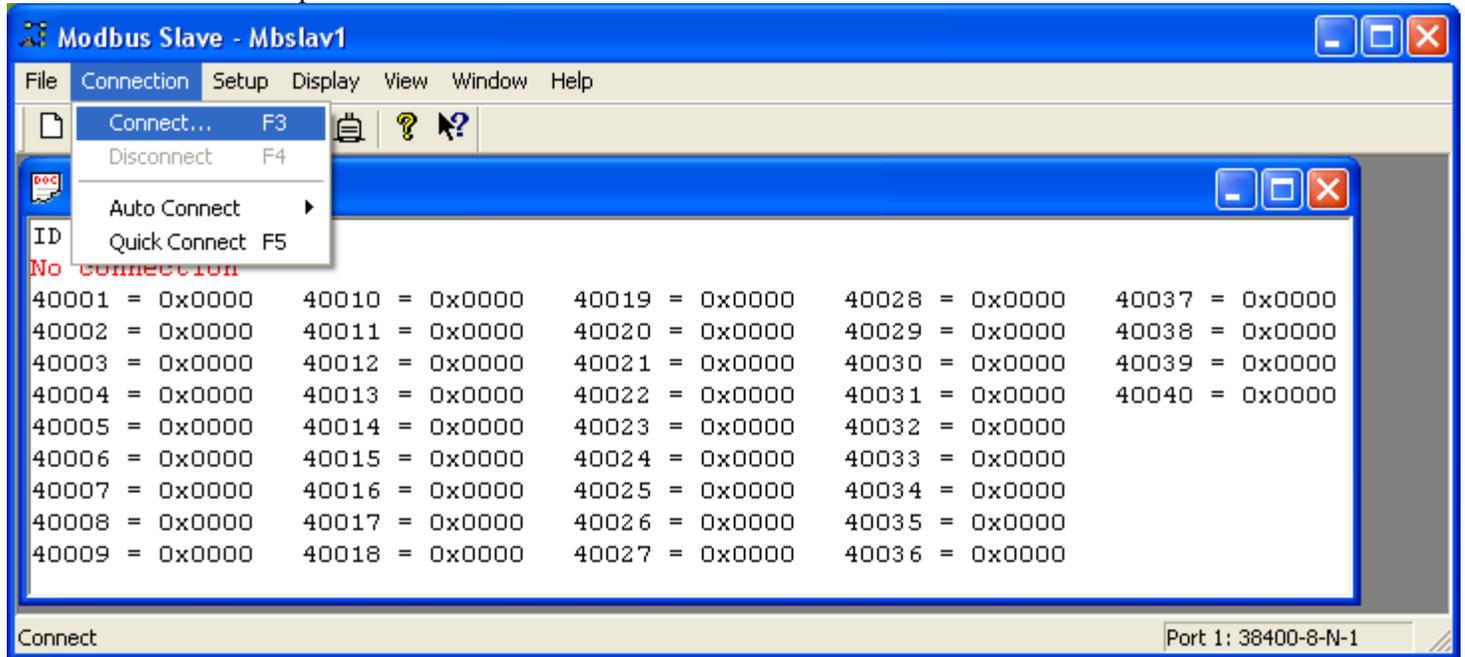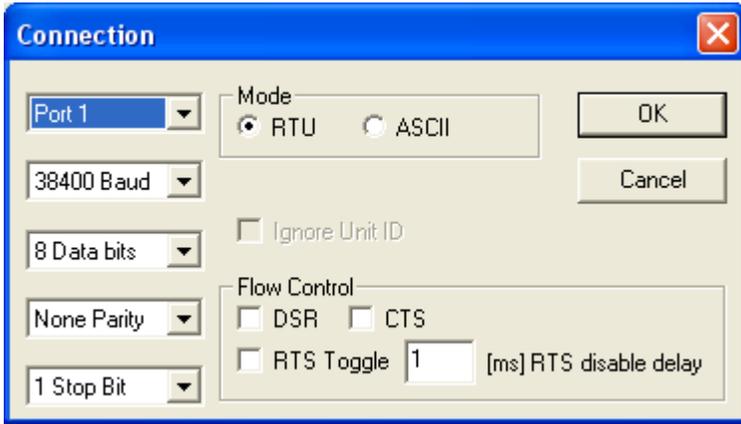Change the Length from the default 10 to 40

Click OK

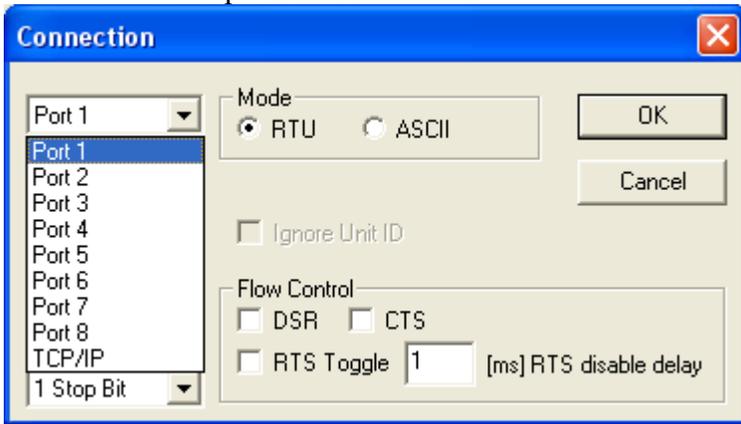It will display No connection at this time.

On the Connection drop down menu select Connect.
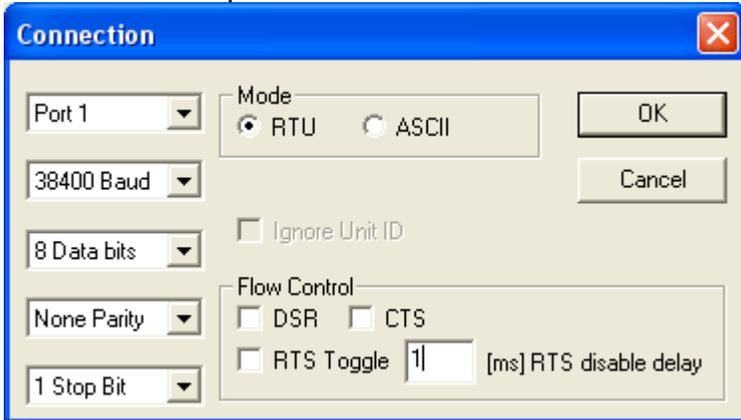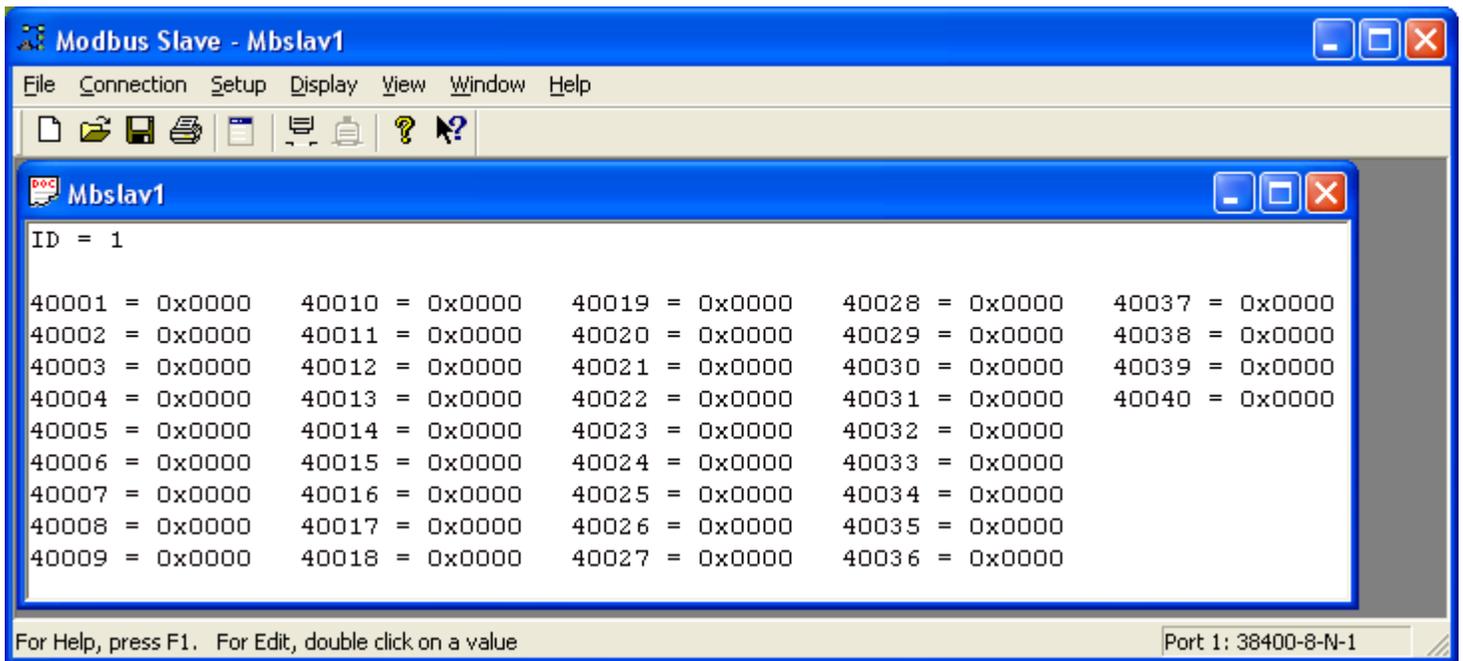
Select the Port number.

Port 1 will correspond to Com1

 In this example Com1 is used.

Select the other options to match as shown here.

Click OK

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Modbus Slave - Mbslav1
File  Connection  Setup  Display  View  Window  Help

Mbslav1
ID = 1

40001 = 0x0000    40010 = 0x0000    40019 = 0x0000    40028 = 0x0000    40037 = 0x0000
40002 = 0x0000    40011 = 0x0000    40020 = 0x0000    40029 = 0x0000    40038 = 0x0000
40003 = 0x0000    40012 = 0x0000    40021 = 0x0000    40030 = 0x0000    40039 = 0x0000
40004 = 0x0000    40013 = 0x0000    40022 = 0x0000    40031 = 0x0000    40040 = 0x0000
40005 = 0x0000    40014 = 0x0000    40023 = 0x0000    40032 = 0x0000
40006 = 0x0000    40015 = 0x0000    40024 = 0x0000    40033 = 0x0000
40007 = 0x0000    40016 = 0x0000    40025 = 0x0000    40034 = 0x0000
40008 = 0x0000    40017 = 0x0000    40026 = 0x0000    40035 = 0x0000
40009 = 0x0000    40018 = 0x0000    40027 = 0x0000    40036 = 0x0000

For Help, press F1.  For Edit, double click on a value          Port 1: 38400-8-N-1
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Modbus Slave is now connected to the serial port on the DeviceMaster as shown by the absence of the No connection indicator.
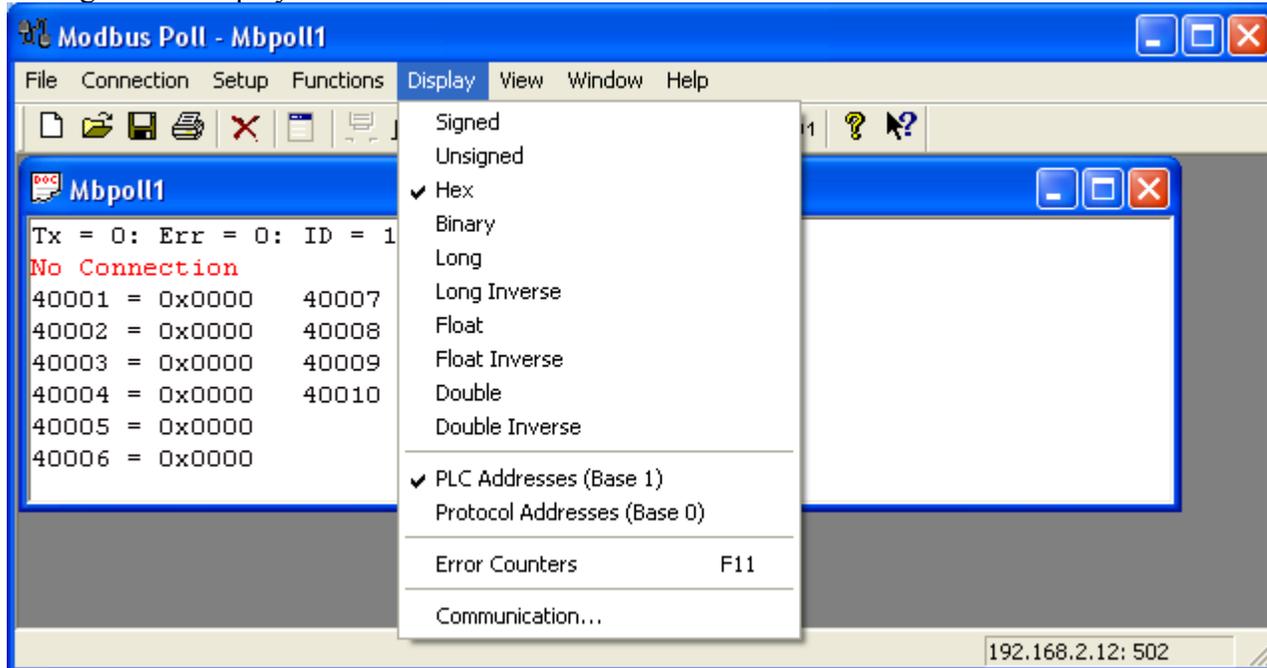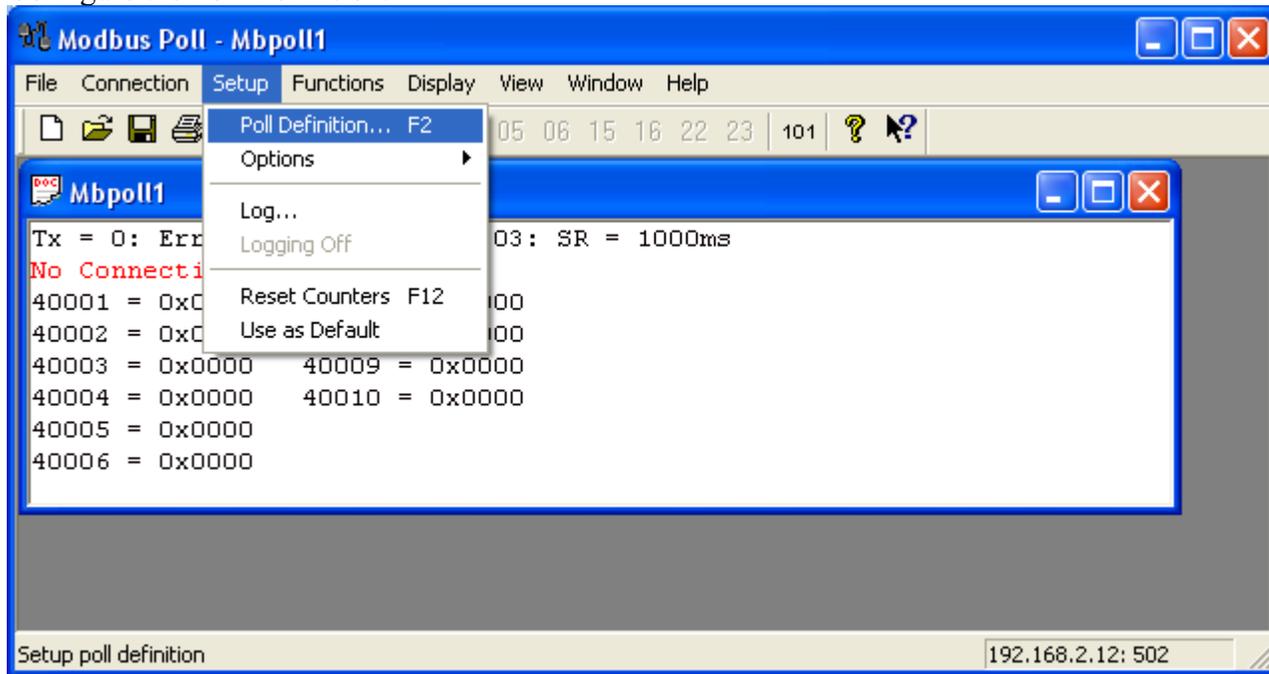
Start the Modbus Poll application.
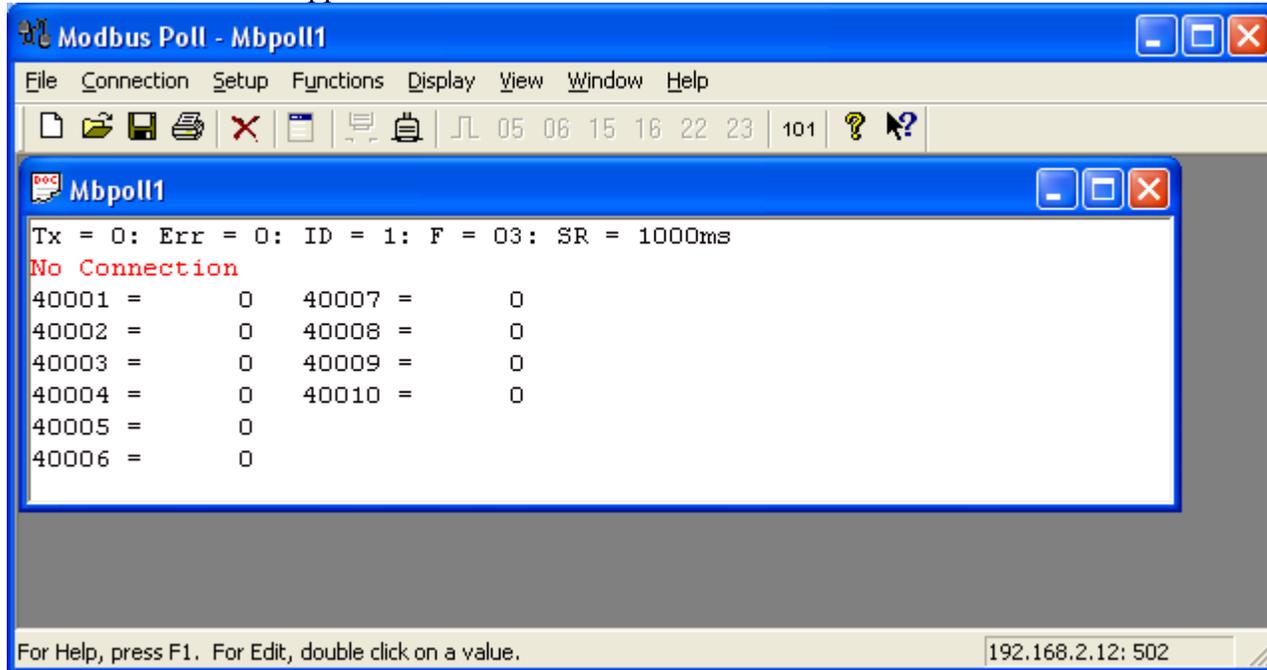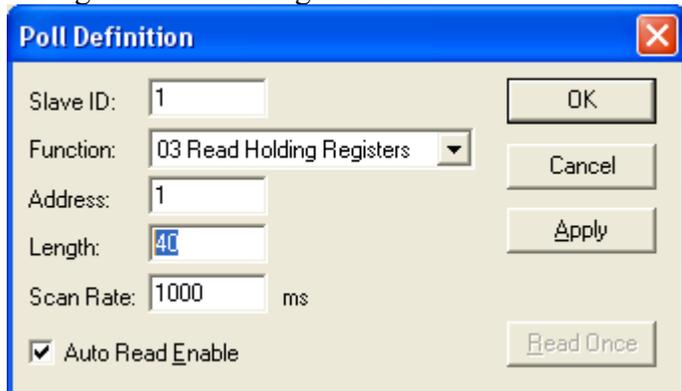

Configure the Display as shown here:
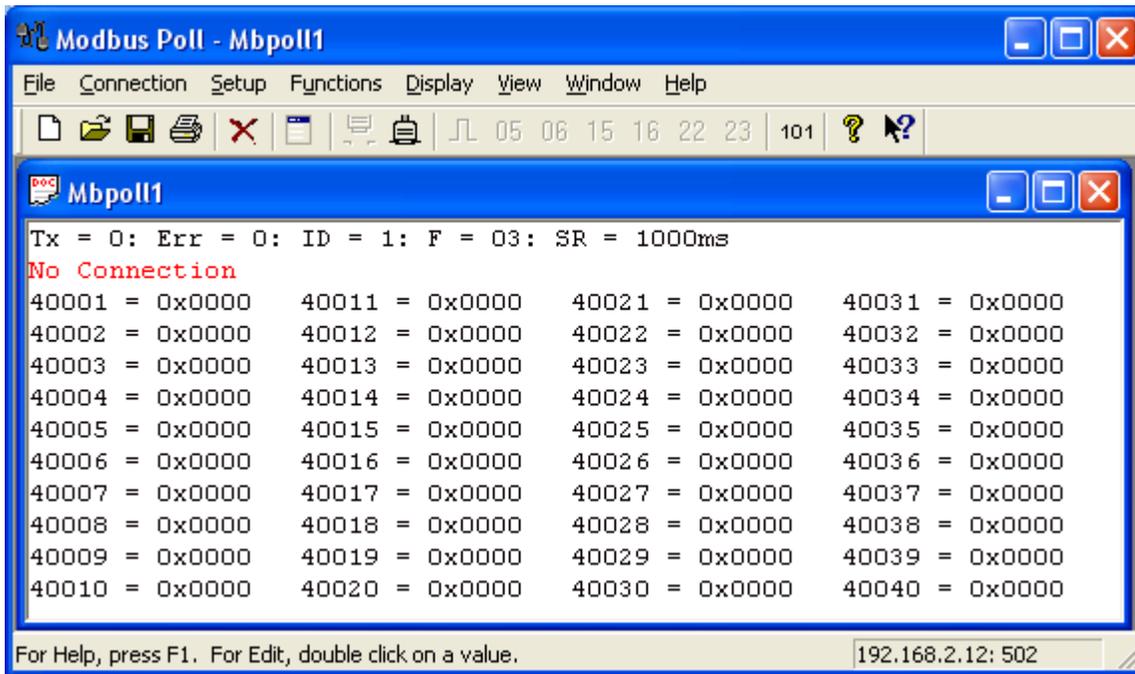
Configure the Poll Definition:

Leave the default Slave ID set at 1 to match the ID in the Modbus Slave application.

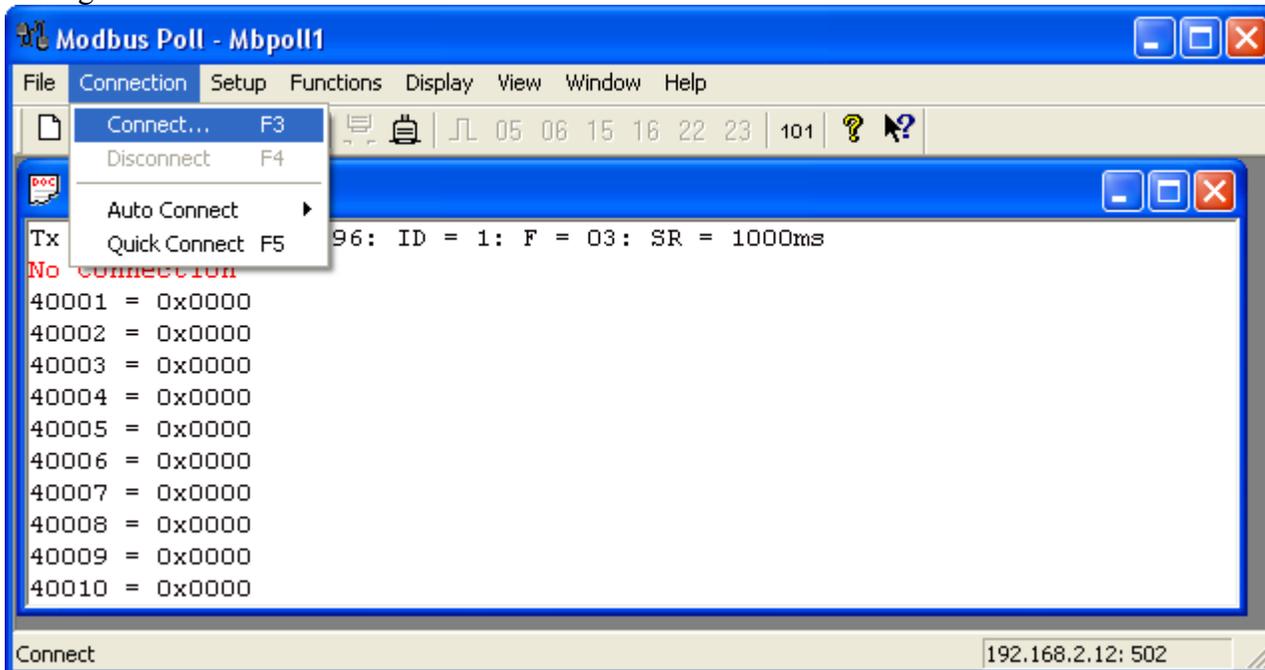Change the default length of 10 to 40 to match the length field in the Modbus Slave application.
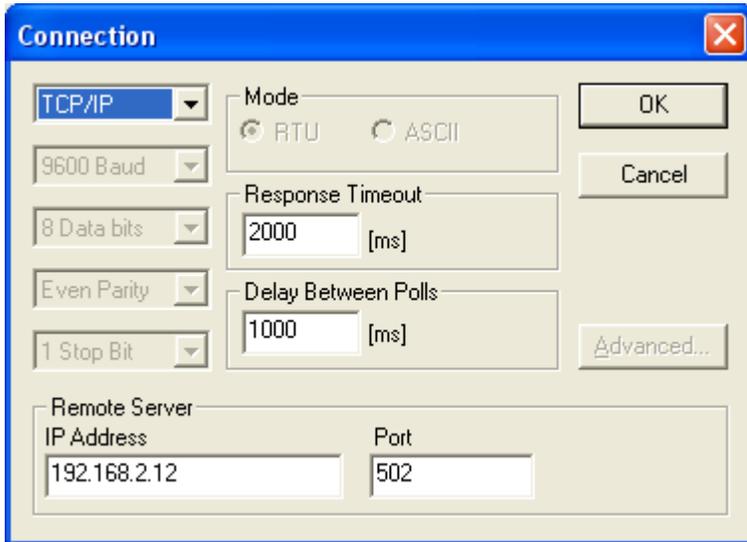

Click OK

At this time the No connection indicator will be shown.

Configure the Connection.

Select TCP/IP

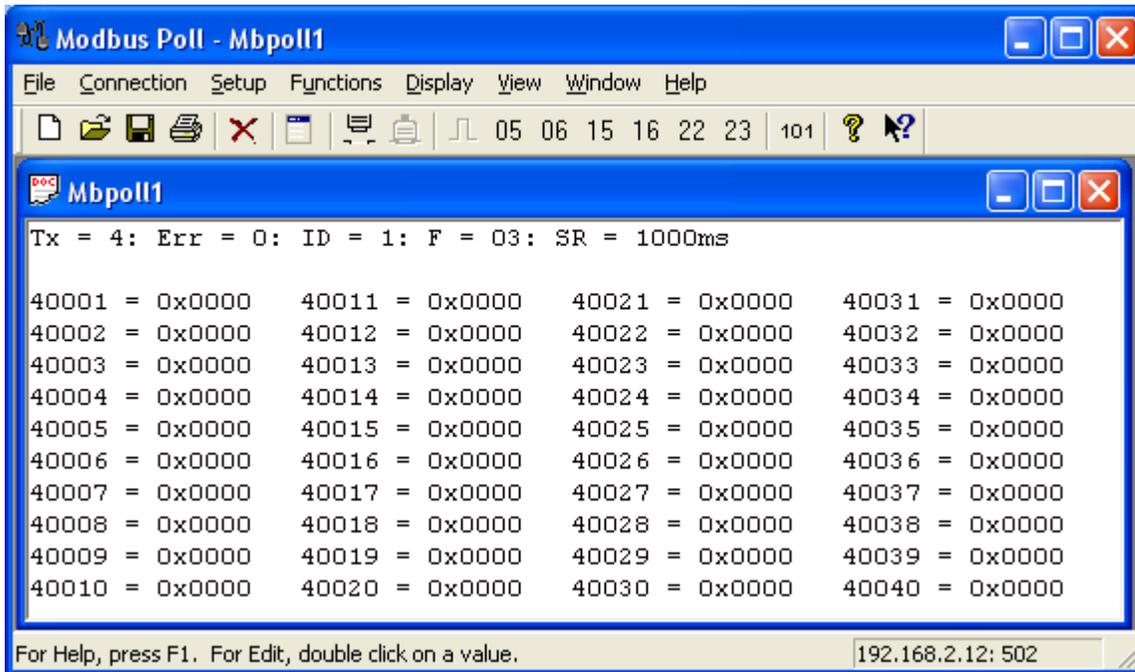
Modify the IP address to show the Ip of your DeviceMaster.
For ease of observation;
Increase the **Response Timeout** to 2000
Increase the **Delay Between Polls** to 1000
Leave the **Port** set to 502.

Click OK

You will immediately see the Tx = value increasing.
The ID = value will show the Slave device ID
The F = value is the Function value
The SR = value is the Delay between Polls.

Verification of Operation
back to top

Back to the web page:
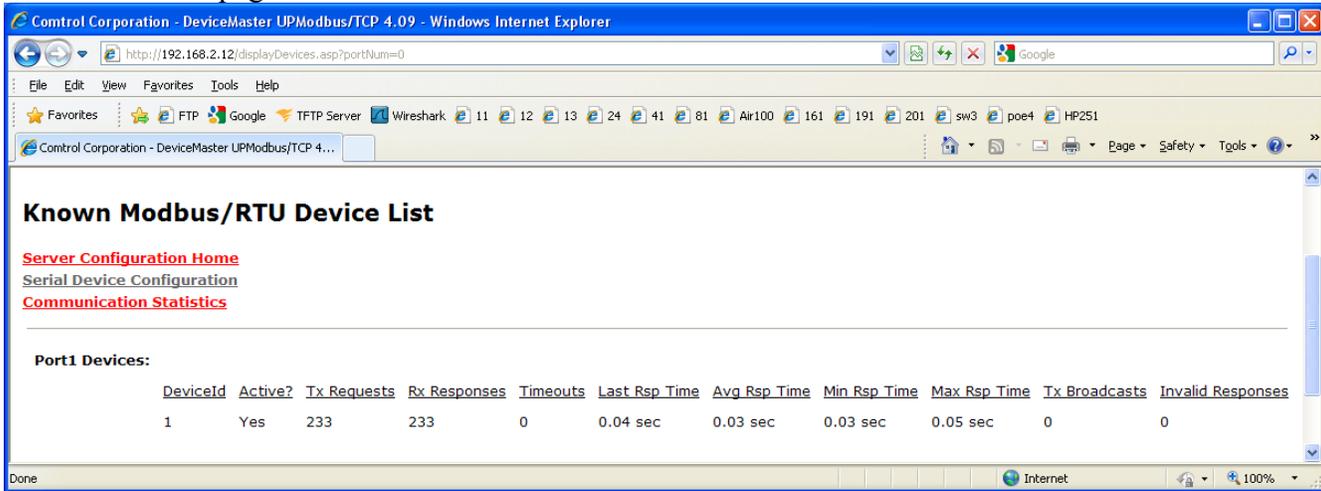
Known Devices will now be listed
Statistics will now be shown on the Known Modbus/RTU Device List

Click on Communications Statistics and Values will be seen to be incrementing

Click on Display Serial Logs to see the log file of the packets.

To stop the run, go back to both Modbus Poll and Modbus Slave and from the Connection menu, click on Disconnect.

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