

NM-431MP

System Configuration Guide

The configuration of the NM-431MP and Virtual Serial Port creation can be achieved in three ways:

1. By using the Tibbo Connection Wizard. This is an automated procedure and must be followed from the computer system where the target application is installed. In this way the NM-431MP is configured either for communicating with a VSP or directly with the application via a UDP socket.
2. By using the Tibbo DS Manager utility to configure the NM-431MP and the VSP manager utility to create the Virtual Serial Port in the target computer.
3. By using the internet explorer or similar http browser to configure the NM-431MP and the VSP manager utility to create the Virtual Serial Port in the target computer.

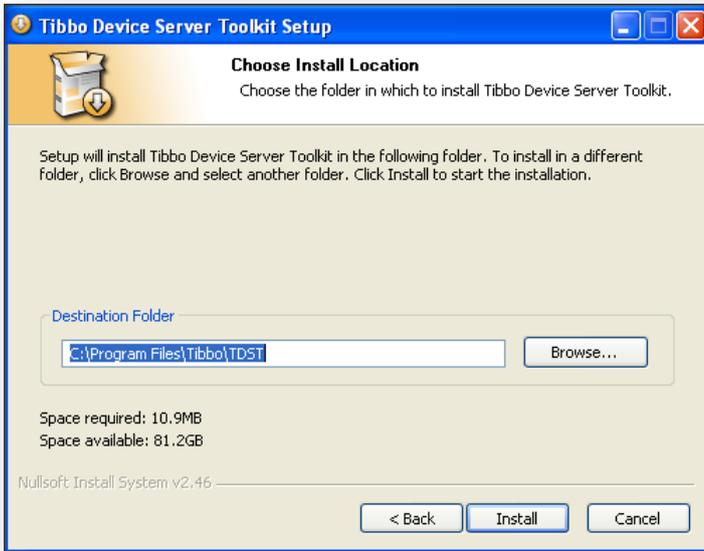
The utilities can be installed by running the corresponding setup file in the Setup CD:



Click "I Agree" to proceed with the setup.



Select the full installation option and click "Next" to continue.



Select the Destination Folder on where the files will be installed. Press "Install" to proceed with the installation.



After completion of the installation a reboot will be required. Click "Finish" to reboot the computer.

The following Software shortcuts will be created under Start>All Programs>Tibbo>Tibbo Device Server Toolkit:



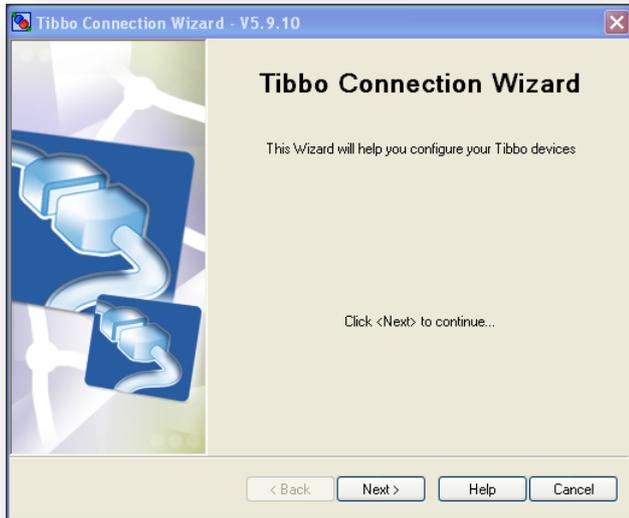
1. Configuring the NM-431MP with the Tibbo Connection Wizard utility



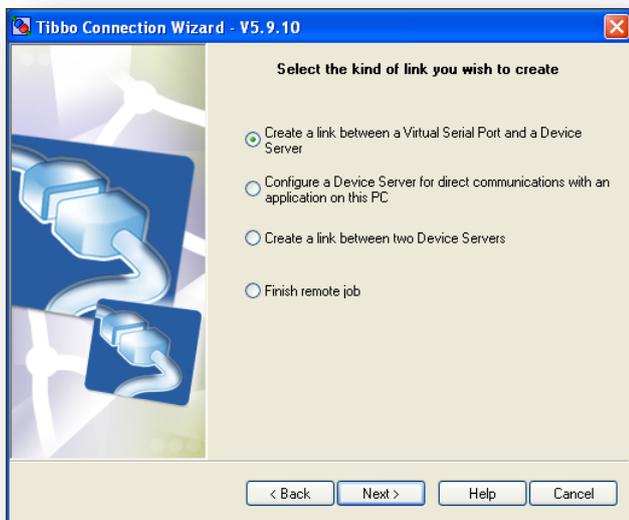
The Tibbo Connection Wizard utility should be started by clicking on the icon or on the corresponding shortcut via the Start>All Programs>Tibbo>Tibbo Device Server Toolkit> Tibbo Connection Wizard.

1.1. NM-431MP configuration and VSP creation in the target computer

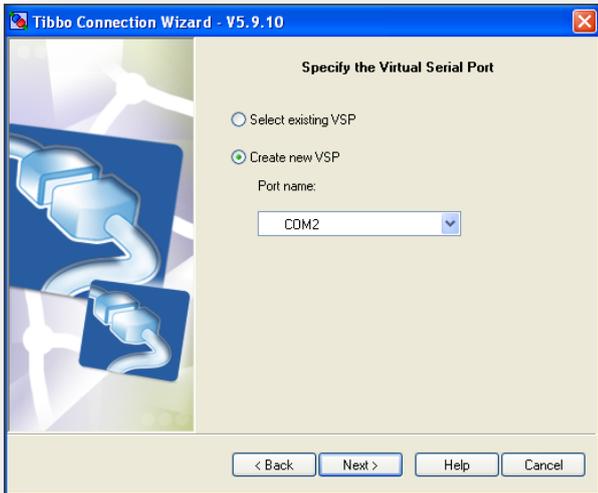
The following procedure should be followed to configure the NM-431MP and create the VSP on the target computer



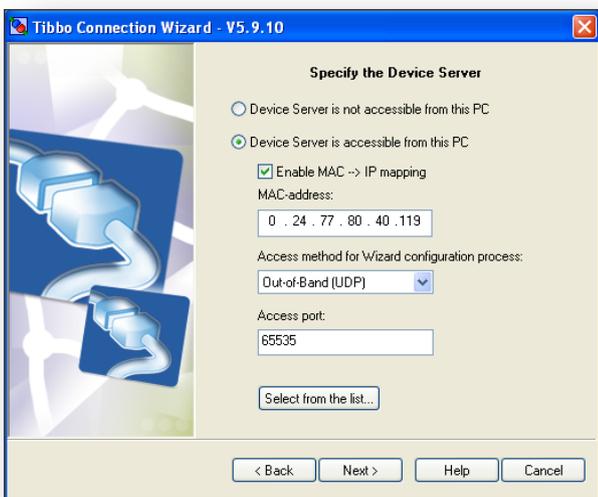
Click "Next" to continue



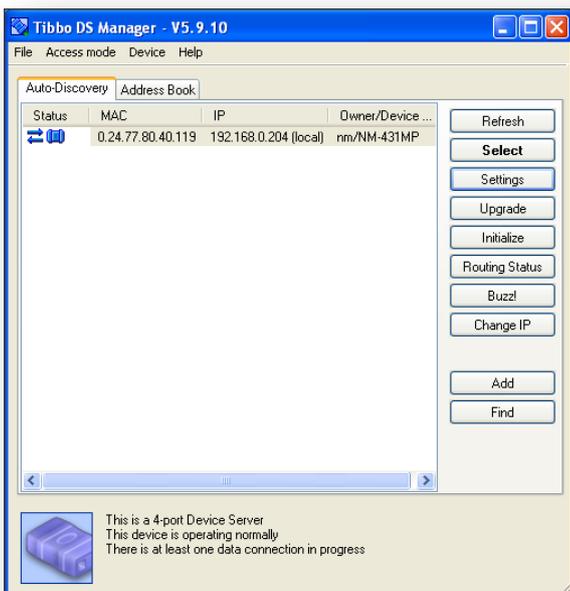
Select "Create a link between a Virtual Serial Port and a Device Server" and click "Next" to continue.



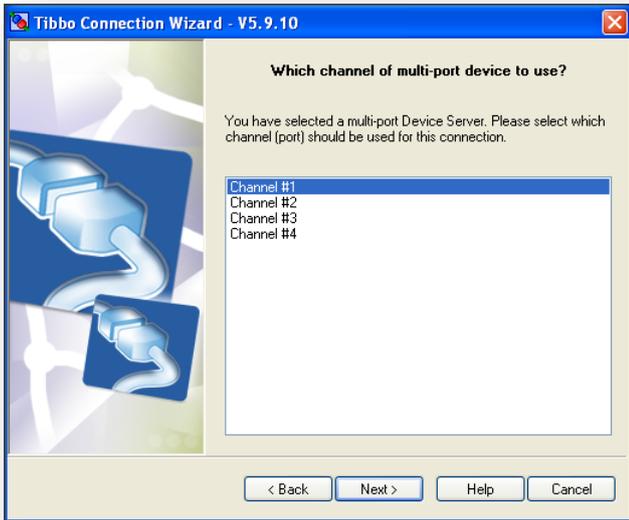
Select "Create new VSP" and the Port name in the drop box of the new serial port to be installed and click "Next" to proceed.



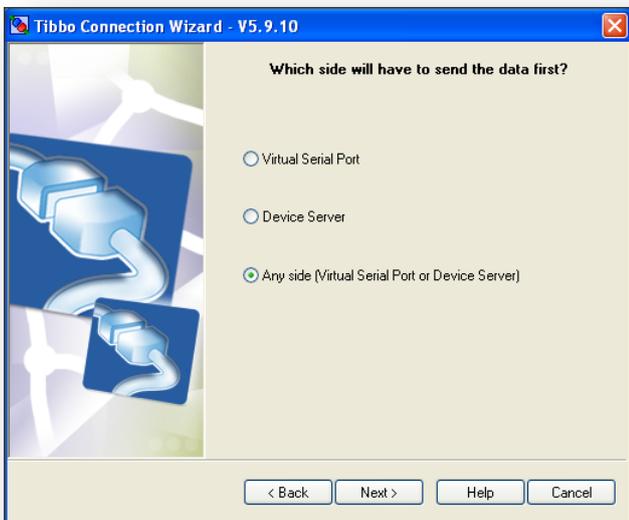
Select "Device Server is accessible from this PC" and click the "Select from the list..." button. The Tibbo DS manager will start and the Device will be listed.



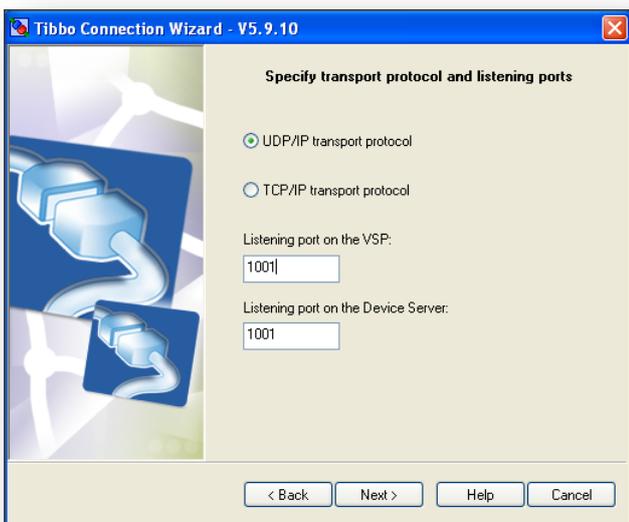
Select the corresponding NM-431MP device and click "Select". The Tibbo DS Manager will close automatically and the Connection wizard will display the information of the Device as in the above image. Check the "Enable MAC→ IP mapping" checkbox and click the "Next" Button to continue



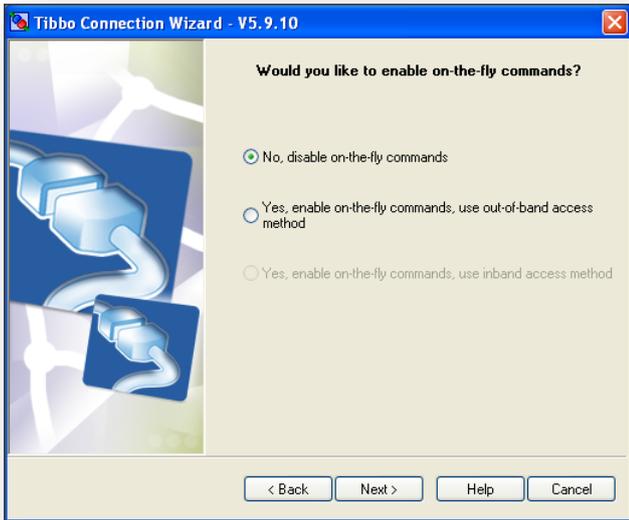
Select the channel you wish to configure and click "Next" to continue



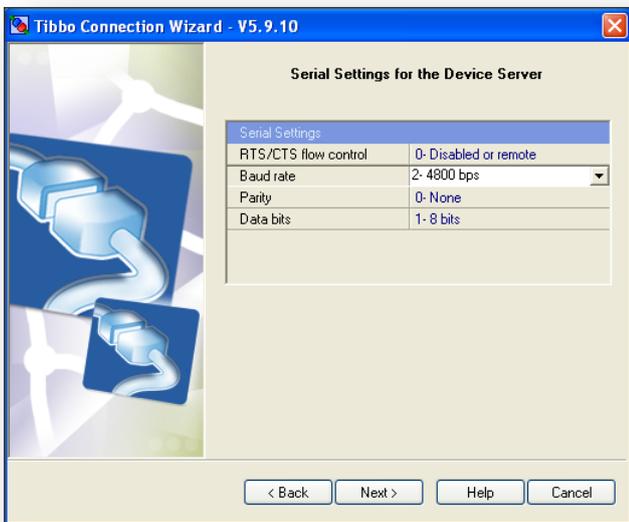
Select the "Any side (Virtual Serial Port or Device Server)" and click "Next" to continue



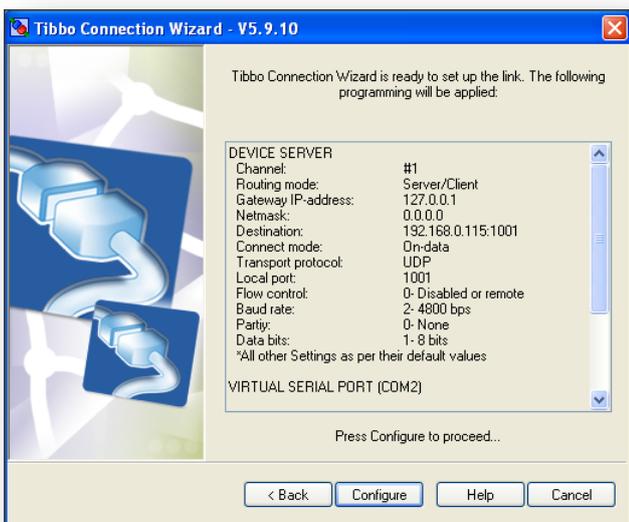
Select the "UDP/IP" transport protocol and fill in the desired UDP port number for listening on both sides of the link (VSP and Device Server). Click "Next" to continue.



Disable the on-the-fly commands by selecting the "No, disable on-the-fly commands" radio button. Click "Next" to continue.



Configure the serial settings for the device server as shown in the image. You can select the baud rate, parity and data bits matching the input signal applied to the corresponding input port. RTS/CTS flow control should be always configured to "0- Disabled or remote". Click "Next" to continue.



In this window you can review the configuration settings before saving. Click "Configure" to proceed.



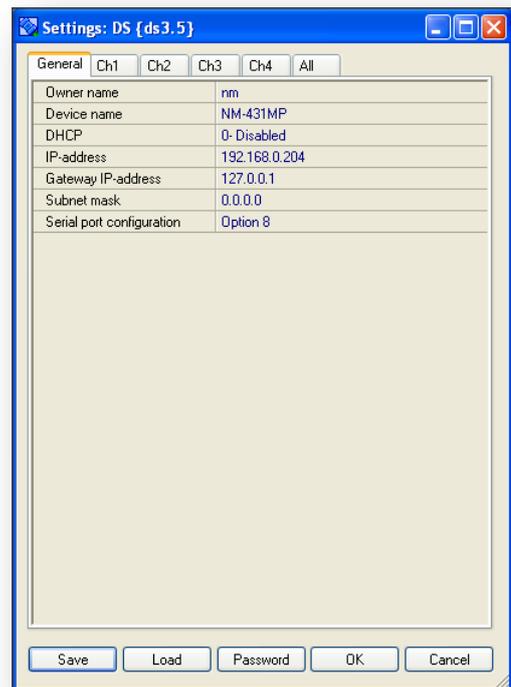
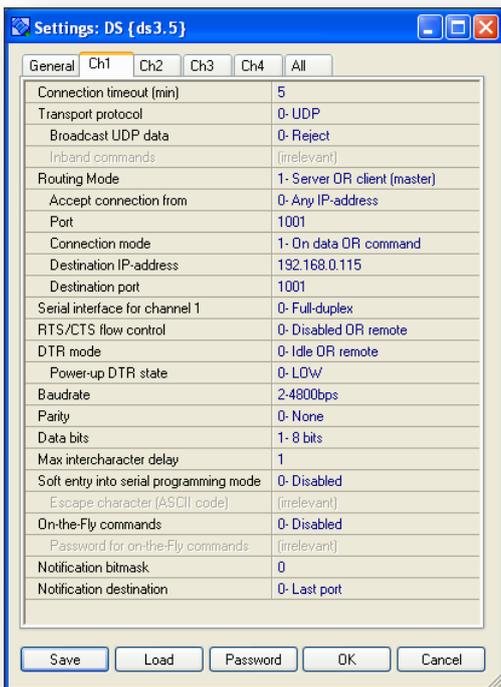
A pop-up message will require confirmation to install the driver for the Virtual Serial Port. Press "Continue Anyway" to proceed.

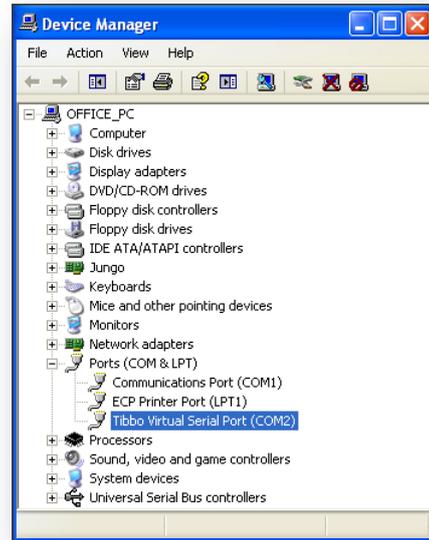
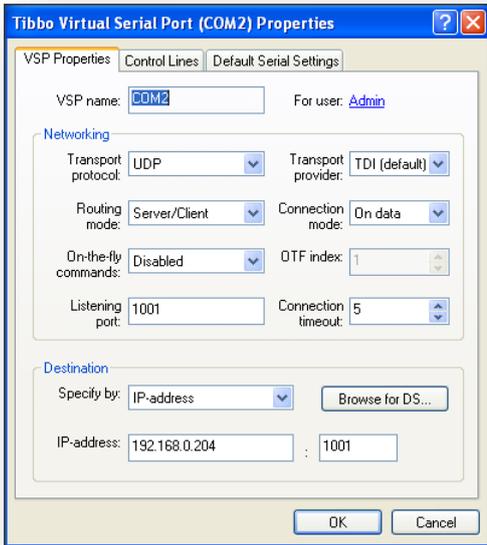


By pressing "OK" the NM-431MP will save all changes performed and reboot. The connection will be aborted.

The NM-431 is configured and the VSP is created. Click "Finish" to exit the Connection Wizard

All changes made with the connection wizard are displayed as in the below four images.



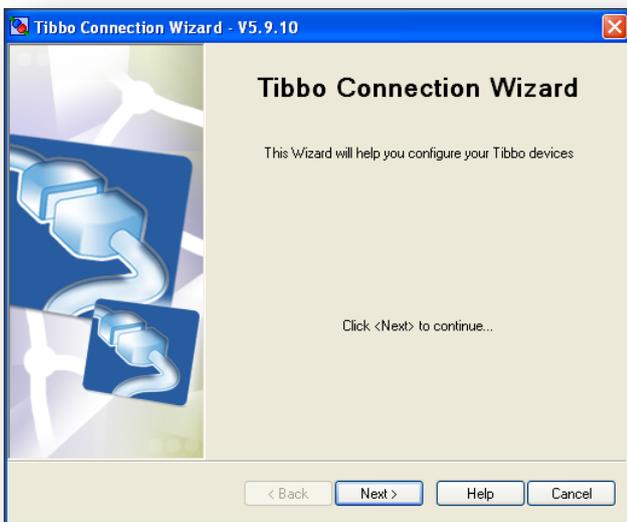


In the device manager under the "Ports (COM & LPT)", a new serial port will be created "Tibbo Virtual Serial Port (COM2)" that can be accessed from all application as if it was a physical hardware serial port.

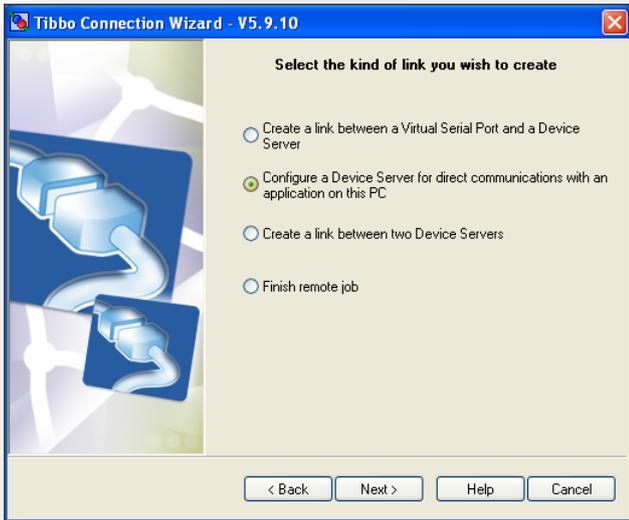
The same procedure should be followed to configure the other ports 2, 3 and 4.

1.2. NM-431MP configuration to communicate directly with an application in the target computer

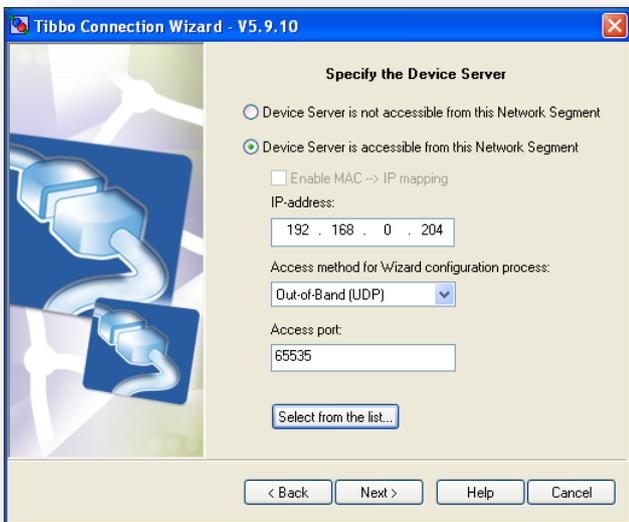
The following procedure should be followed in the target computer to configure the NM-431MP, in order to communicate directly with the application via a UDP socket (without creating a Virtual Serial Port)



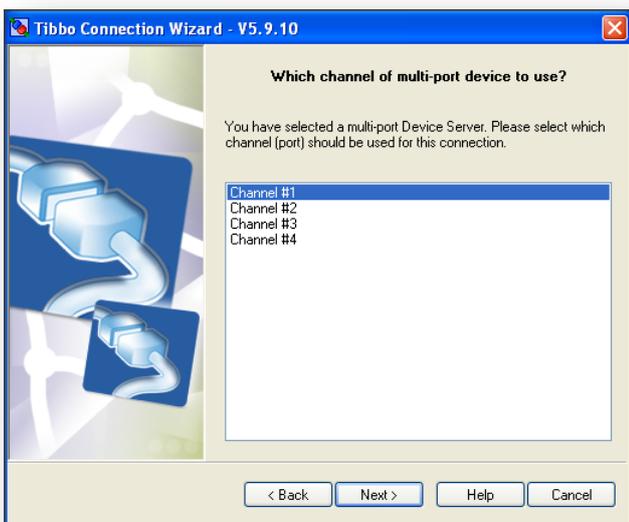
Click "Next" to continue



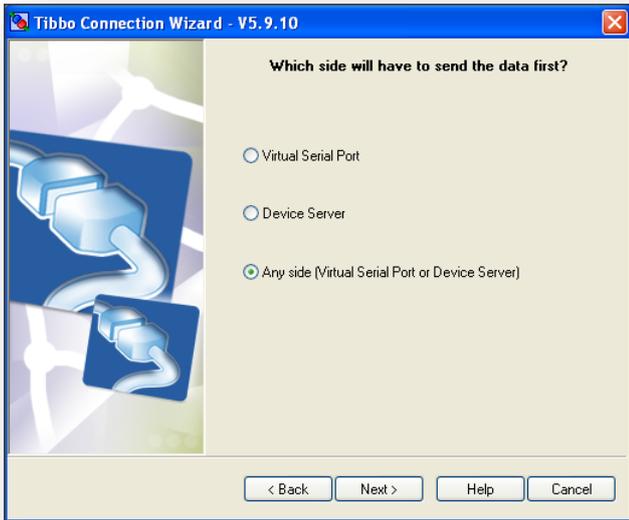
Select "configure a Device Server for direct communication with an application on this PC", and click "Next" to continue.



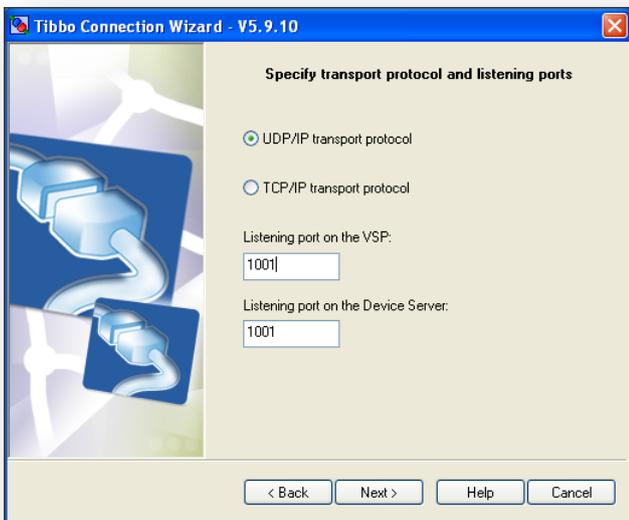
Select "Device Server is accessible from this Network Segment". Verify that the IP address matches the IP of the NM-431MP interface and the Access method is UDP. Click "Next" to continue.



Select the channel you wish to configure and click "Next" to continue and click "Next" to continue.

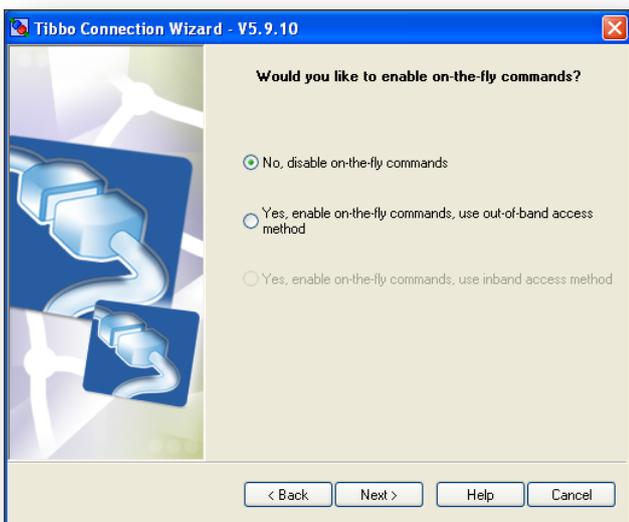


Select the "Any side (Virtual Serial Port or Device Server)" and click "Next" to continue.

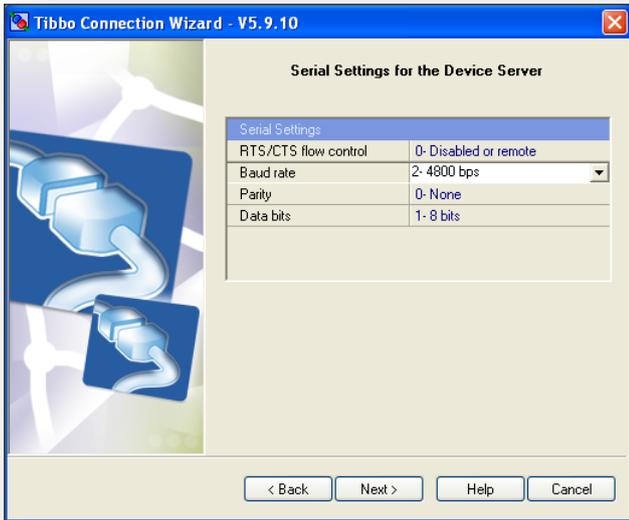


Select the "UDP/IP" transport protocol and fill in the desired UDP port number for listening on both sides of the link (VSP and Device Server). Click "Next" to continue.

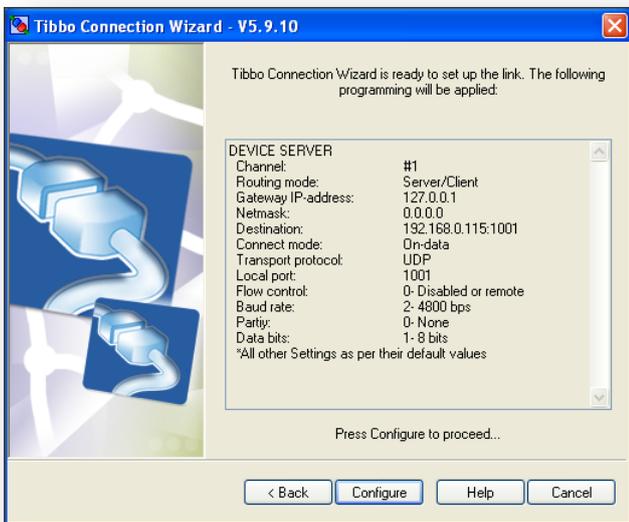
Note: In this step it may be needed to assign a different UDP socket as a "Listening port on the Device Server".



Disable the on-the-fly commands by selecting the "No, disable on-the-fly commands" radio button. Click "Next" to continue



Configure the serial settings for the device server as shown in the image. You can select the baud rate, parity and data bits matching the input signal applied to the corresponding input port. RTS/CTS flow control should be always configured to "0- Disabled or remote". Click "Next" to continue.



In this window you can review the configuration settings before saving. Click "Configure" to proceed.

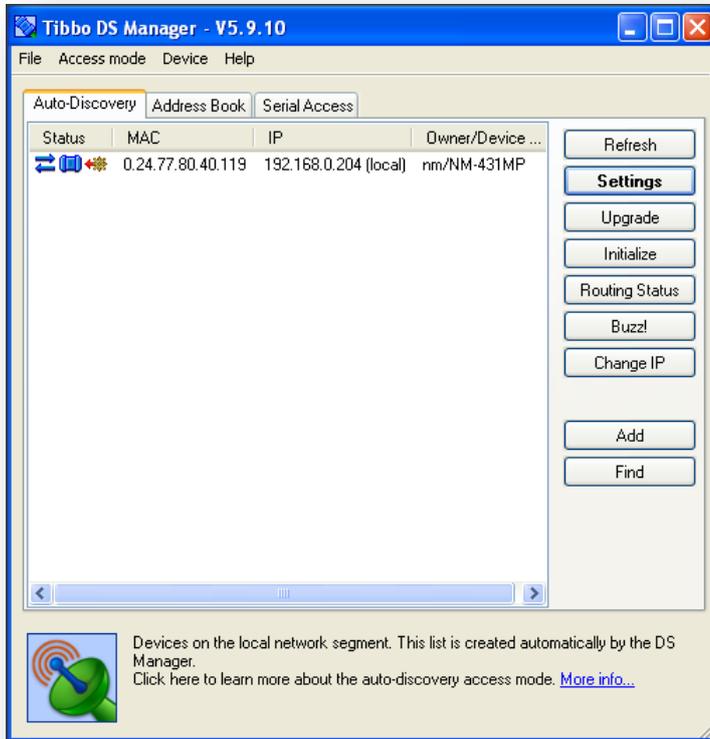


By pressing "OK" the NM-431MP will save all changes performed and reboot. The connection will be aborted and the NM-431MP will be available in the network after a few seconds.

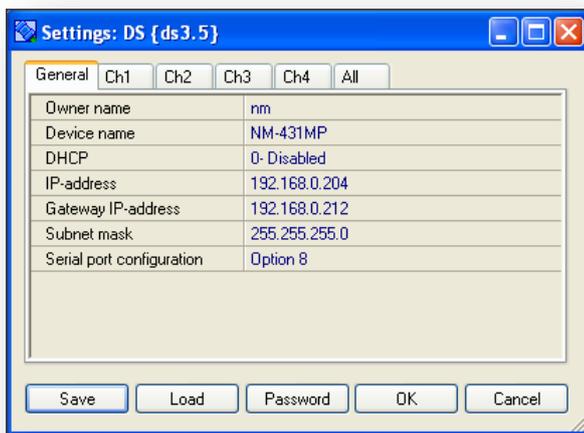
2. Configuring the NM-431MP with the DS Manager and the VSP Manager:



To discover the NM-431MP and configure it, the Tibbo DS Manager utility should be started by clicking the on the icon or on the corresponding shortcut via the Start>All Programs>Tibbo>Tibbo Device Server Toolkit>Tibbo VSP Manager for windows XP.



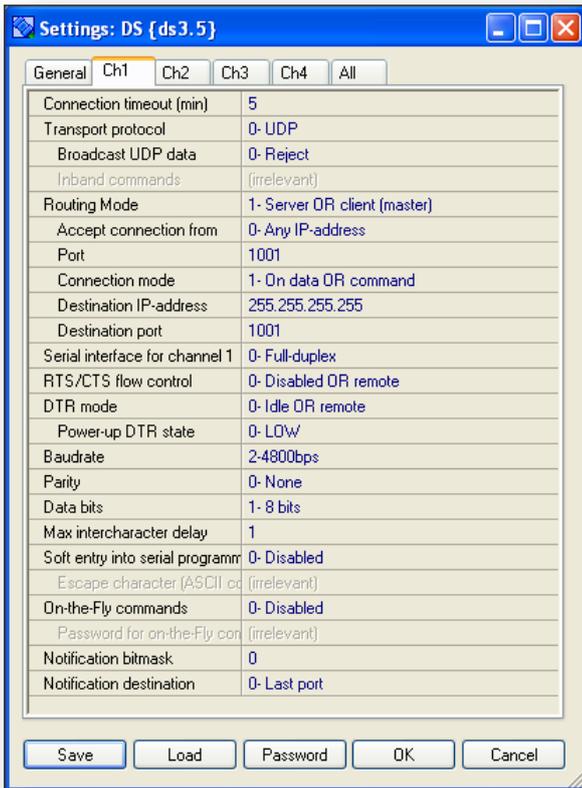
The NM-431MP interfaces should be listed in the main window. Select the NM-431MP you wish to configure and click on the "Settings" button.



The General Settings Tab will appear. The Network settings for the NM-431MP should be configured as follows:

1. Owner name: nm
2. Device name: NM-431MP
3. DHCP: 0-Disabled
4. **IP-address: Enter the fixed IP-address according to your local network**
5. **Gateway IP-address: Enter the Fixed IP-address of the target computer running the software**
6. **Subnet mask: Enter the subnet mask (usually 255.255.255.0)**
7. Serial port configuration: Option 8 **(never change!!)**

The DHCP option is by default set to 1-Enable in order for the NM-431MP interfaces to be discoverable in new installations. You can keep the setting enabled but it is strongly recommended to configure both target computer and the connected NM-431MP interfaces with fixed IP-addresses for ease in maintenance/troubleshooting. In addition when keeping peripherals in a fix IP configuration there is no need for a router to be part of the installation. The serial port configuration should be left unchanged to Option 8 at all times else not all input ports will be inputted.



The Settings Window will appear. Settings 6, 8, 12, 13 and 14 should be changed only to configure ch1:

1. Connection timeout (min):5
2. Transport Protocol: 0-UDP
3. Broadcast UDP data: 0-Reject
4. Routing Mode: 1-Server OR Client (master)
5. Accept connections from: 0-Any IP-Address
- 6. Port: Select the UDP socket to transmit data from the computer.**
7. Destination IP-address: 255.255.255.255
- 8. Destination port: Select the UDP socket to read from the computer**
9. Serial interface for channel:0-Full-duplex
10. RTS/CTS flow control:0-Idle OR remote
11. Power-up DTR state:0-LOW
- 12. Baudrate: Select the baud rate of the signal connected to input 1**
- 13. Parity: Select the Parity option for the signal connected to input 1**
- 14. Data bits: Select the Data bits option for the signal connected to input 1**
15. Max intercharacter delay: 1
16. Soft entry into serial programming mode:0-Disabled
17. On-the-Fly commands:0-Disabled
18. Notification bitmask: 0
19. Notification destination: 0-Last port

In the above image you can see a typical configuration of the input port 1 of a NM-431MP transmitting data to the 1001 UDP socket.

Similar configuration should be performed for each channel by clicking the corresponding tab. In the Tab "All" the user can review the changes made to all ports along with the network configuration settings from the "General" tab prior pressing the OK button to save the changes.

By pressing the OK button the following window will appear:



By pressing OK the NM-431MP will save all changes performed and reboot. The connection will be aborted. User should press the refresh button in the main window in order for the NM-431MP to re appear in the list.

The NM-431MP is now configured properly to transmit and receive data to and from the required UDP sockets. The target computer IP-address is also configured. Press the cross to exit the configuration manager.

In case that the Virtual Serial Ports (VSP) is not required to be created and the target application can access the UDP sockets directly, the data should be available for input from the software.

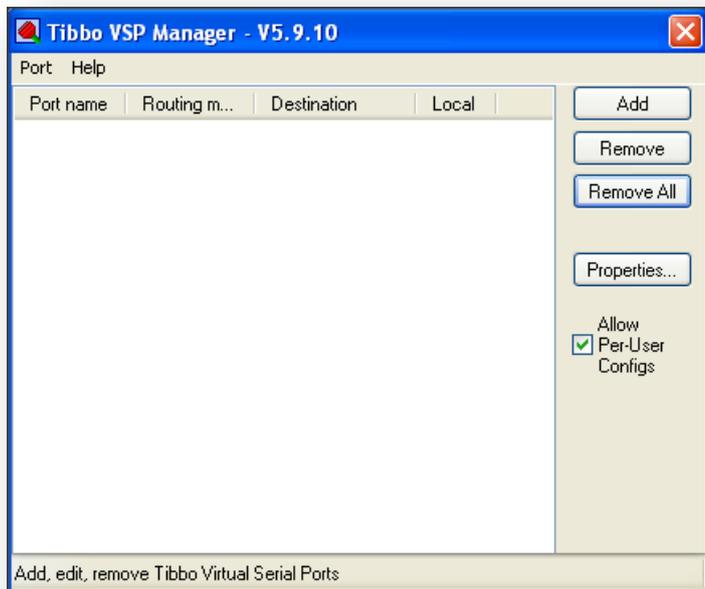
2.1. VSP manager configuration

In the case that serial COM ports are required from the target application to input the NMEA-0183 data then these should be created via the VSP manager utility as follows:



The utility is started by clicking on Tibbo VSP Manager Icon or on the corresponding shortcut under the Start>All Programs>Tibbo>Tibbo Device Server Toolkit>Tibbo VSP Manager for windows XP

The following window will appear:

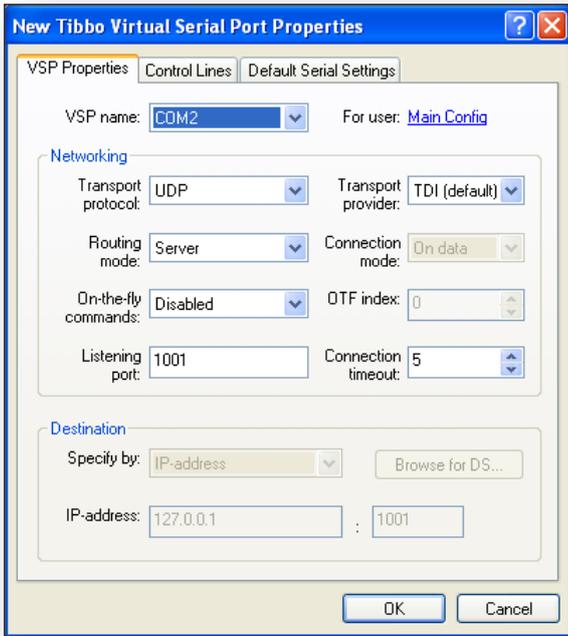


If any Virtual Serial Port (VSP) is already configured then it will show up in the list. Already added ports can be removed by pressing the Remove/Remove All buttons or edited by selecting the port pressing the Properties button.

Pressing the Add button will add and start the configuration of a new Virtual Serial Port.



A pop-up message will require confirmation on installing the driver for the Virtual Serial Port. Press "Continue Anyway" to proceed.



The new Virtual Serial Port configuration window will appear.

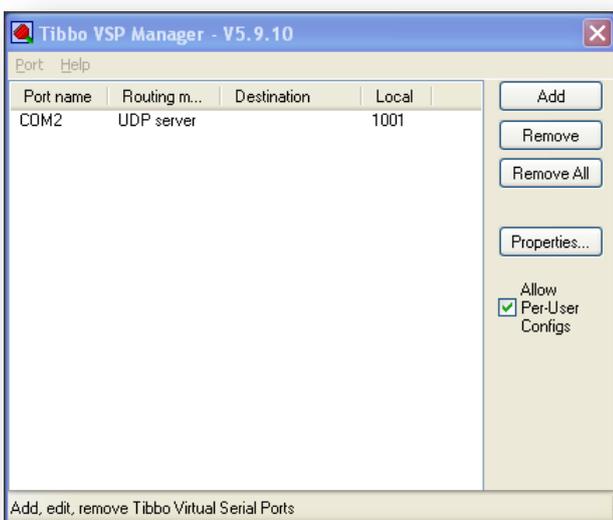
Configure the port new port as show in the image:

1. VSP name: Select the new COM port name. It will be assigned automatically to the first available COM of the computer. Change to a not used COM port if required.
2. Transport Protocol: change to UDP
3. Routing mode: change to Server
4. On-the-fly commands: change to Disabled
5. Listening port: Fill in the UDP socket configured for listening according to Image 3
6. Transport provider: TDI (default)
7. Connection timeout: 5

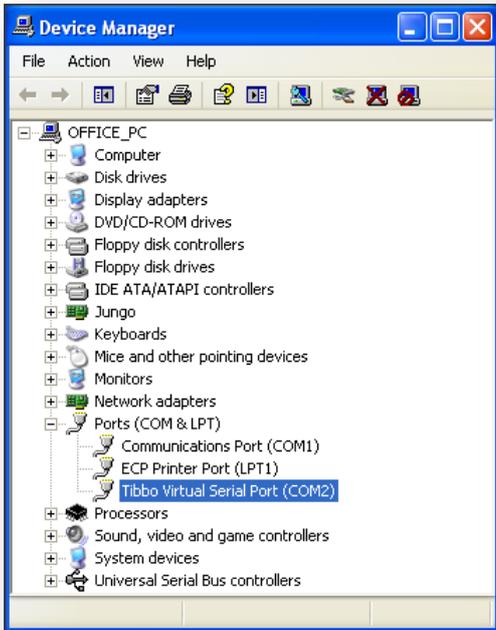
Pressing "OK" will result for the pop-up window to appear.



Press "Continue Anyway" once more to proceed with the VSP creation.

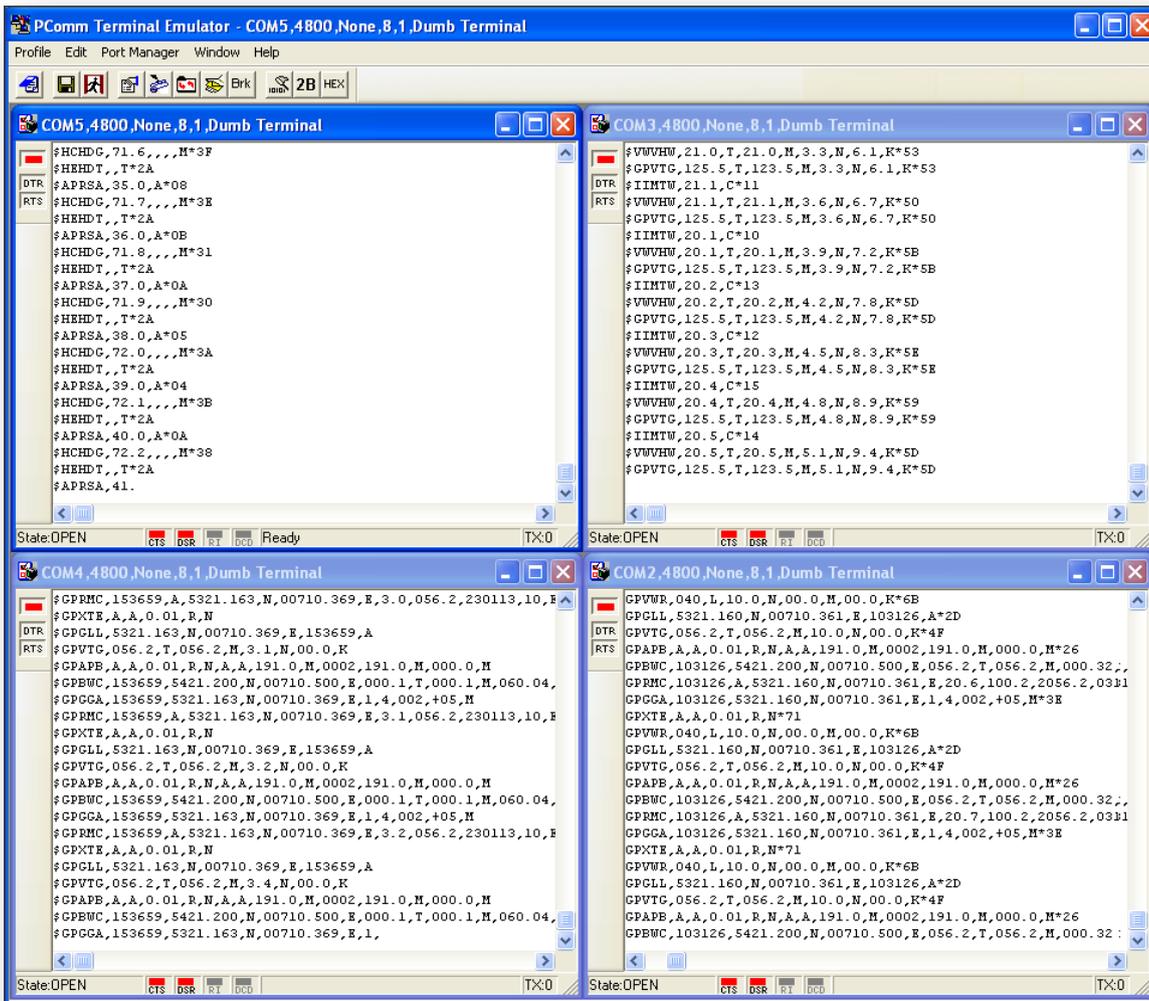


The new Virtual Serial Port will be created.



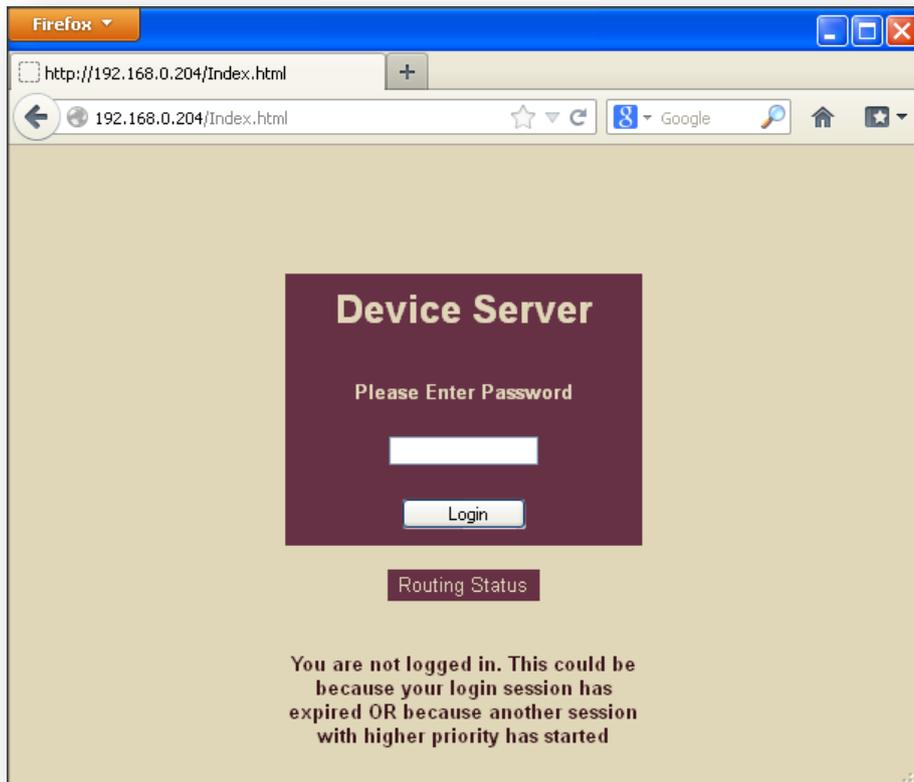
The new Port will be shown in the device manager (windows XP) as shown in the image and it will be accessed by applications as if it was a physical Serial Port.

Data input in the created VSP can be reviewed with a typical hyper terminal application:

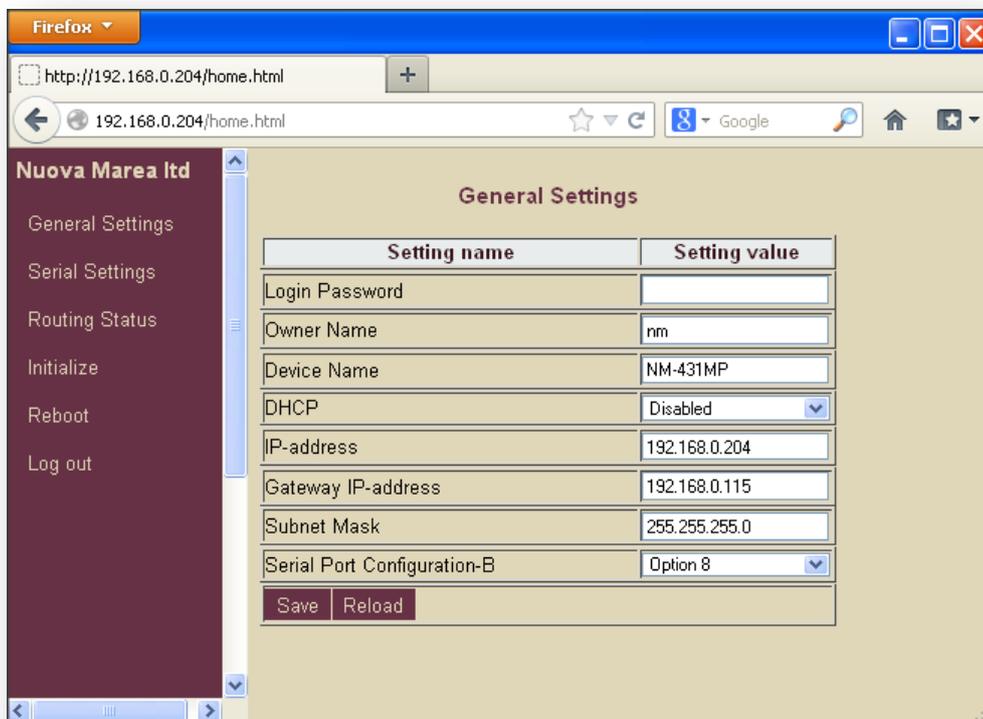


3. Configuring the NM-431MP using the http browser and the VSP manager

To configure the NM-431MP start your web browser (i.e. Windows Internet Explorer, Firefox, Chrome etc) and type in the IP address of the NM-431MP. A login screen will be loaded.



Click "Login" (leave the password field blank) to enter the configuration setup.



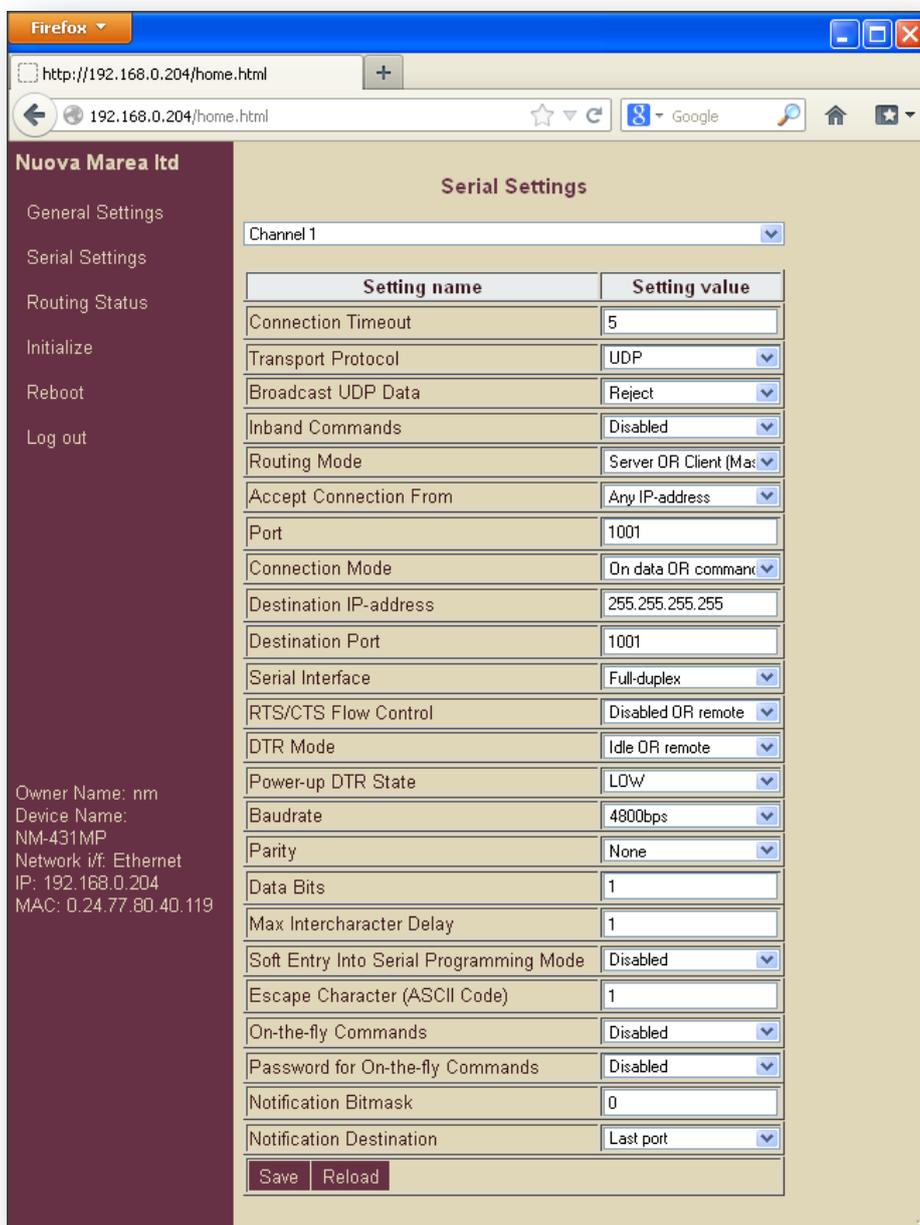
The General Settings screen will load displaying all network configurations as in the image 2 above. The Network settings for the NM-431MP should be configured as follows:

1. Owner name: nm
2. Device name: NM-431MP
3. DHCP: 0-Disabled
4. **IP-address: Enter the fixed IP-address according to your local network**
5. **Gateway IP-address: Enter the Fixed IP-address of the target computer running the software**
6. **Subnet mask: Enter the subnet mask (usually 255.255.255.0)**
7. Serial port configuration: Option 8 **(never change!!)**

The DHCP option is by default set to 1-Enable in order for the NM-431MP interfaces to be discoverable in new installations. You can keep the setting enabled but it is strongly recommended to configure both target computer and the connected NM-431MP interfaces with fixed IP-addresses for ease in future maintenance. In addition when keeping peripherals in a fix IP configuration there is no need for a router to be part of the installation.

The serial port configuration should be left unchanged to Option 8 at all times else not all input ports will be inputted.

By selecting the Serial Settings option in the left pane you can configure the NM-431MP for each channel (here channel 1 is shown only) as in the image 3 above



1. **Connection Mode: On data OR command**
2. Destination IP-address: 255.255.255.255
3. **Destination port: Select the UDP socket to read from the computer**
4. Serial interface: Full-duplex
5. RTS/CTS Flow Control: Disable OR remote
6. DTR Mode: Idle OR remote
7. Power-up DTR state: LOW
8. **Baudrate: Select the baud rate of the signal connected to input 1**
9. **Parity: Select the Parity option for the signal connected to input 1**
10. **Data bits: Select the Data bits option for the signal connected to input 1**
11. Max intercharacter delay: 1
12. Soft entry into serial programming
13. Escape Character (ASCII Code): 1
14. On-the-Fly commands: Disabled
15. Password for On-the-fly Commands: Disabled
16. Notification bitmask: 0
17. Notification destination: Last port
18. Connection timeout (min): 5
19. Transport Protocol: UDP
20. Broadcast UDP data: Reject
21. Inband Commands: Disabled
22. Routing Mode: Server OR Client (master)
23. Accept connections from: Any IP-Address
24. **Port: Select the UDP socket to transmit data from the computer.**

After configuring correctly the NM-431MP click "Save" and then "Reload". The same procedure must be followed to configure all four input ports by selecting the corresponding channels in the Serial settings menu.

In the case that serial com ports are required from the target application to input the NMEA-0183 data then these should be created via the VSP manager utility as show in the 2.1 section of this manual.

Appendix A: Windows Firewall configuration

1. Using auto-discovery access mode of DS Manager with Windows Firewall

Once you run the *DS Manager* (or click *Refresh* in the auto-discovery mode), and provided that your *Firewall* is using default configuration, you will get this warning message:



This message means that Windows Firewall has detected certain network activity that is currently not allowed. Application name is "Run DLL as an App". Click Unblock and the DS Manager will be able to auto-discover local Device Servers again.

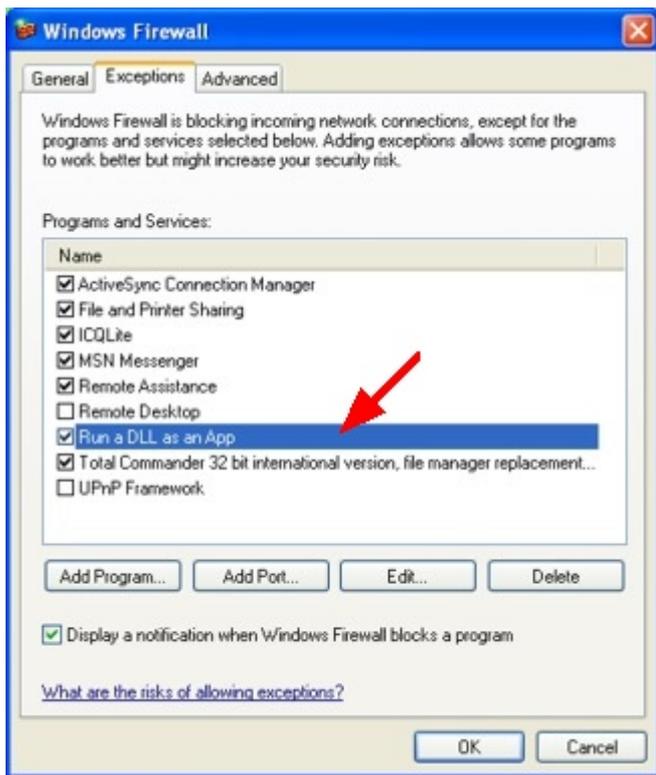
If, when you run the *DS Manager* (click *Refresh*), the warning is not displayed (and the *DS Manager* is still unable to find Device Servers) then this may be because the *Firewall* is not allowing "exceptions" and/or firewall notifications are not enabled.



Run the Firewall (Start→Control Panel→Windows Firewall) and make sure that "Don't allow exceptions" checkbox is unchecked (clear)



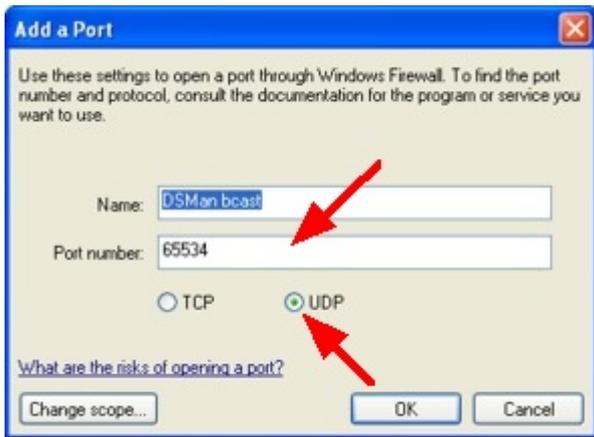
Next, click on the *Exceptions* tab and make sure that *Display a notification when Windows Firewall blocks a program* checkbox is checked:



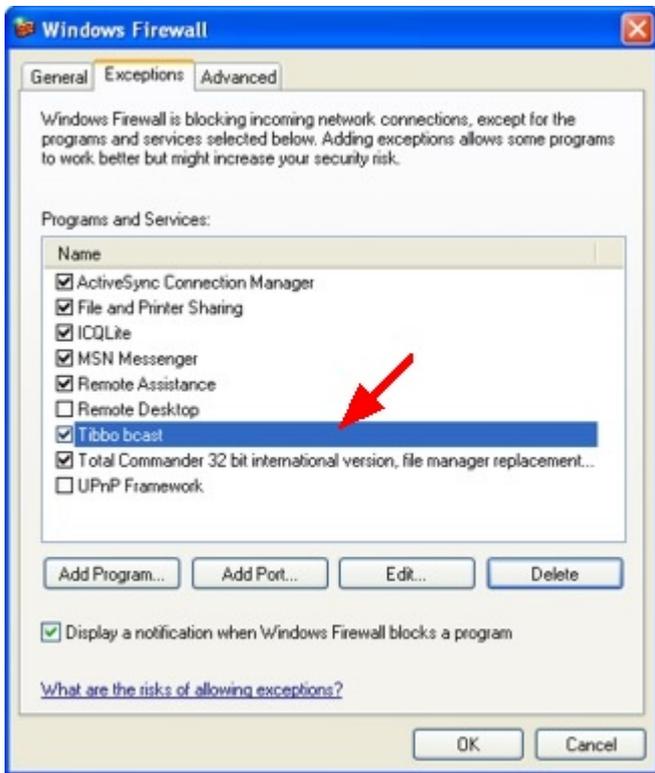
After you "unblock" the DS Manager the Firewall puts it into the list of "exceptions" i.e. programs whose traffic is allowed to pass through the Firewall:

2. Manual way of making the auto-discovery mode work

Same result can be achieved by telling the Firewall which port on the PC should be opened. To do this click on the Exceptions tab of the Windows Firewall dialog, then press Add Port... button- Edit a port dialog will open:



Input any meaningful name into the Name textbox (i.e. "DSMan bcast"- this is because what we are opening here is a port for DS Manager's auto-discovery broadcasts to work). In the Port number textbox input 65534- this is the port number that must be opened on your PC. Finally, select UDP- this is a protocol the DS Manager is using to find Device Servers on the network. Click OK when finished.

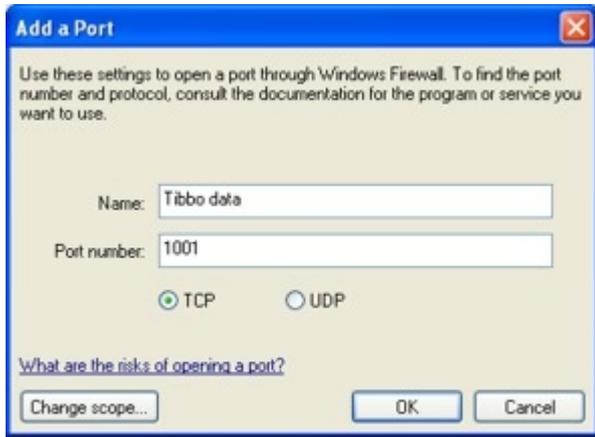


New entry will appear in the list of exceptions and the *DS Manager* will start working properly

3. Opening the Firewall for DS data connections

Windows Firewall monitors all incoming connections and that means that if your DS is supposed to connect to the *VSP* on the PC (or directly to your application) then a specific port (to which the DS will be connecting) must be opened on the *Firewall*.

For example, if you know that the DS will be opening a TCP connection to the *VSP* "COM3" with listening port number 1001 then you need to "open" this port in the *Firewall*. Use *Add port...* feature to do this:



You only need to open ports if your DS is going to connect to your PC. If it is the *VSP* (or application) on your PC that is going to connect to the DS then you don't need to setup the *Firewall*. This is because the *Firewall* doesn't block any connections that originate from within the PC.