VESDA VESDANET™ TO ETHERNET TCP/IP USING MOXA NPORT SERVER APPLICATION NOTE

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Preface

This Application Note provides instructions on how to connect and interface VESDA devices and VESDAnet to an Ethernet TCP/IP network using a MOXA NPort Server. It also includes instructions on how to configure your PC and test the connection with VESDA System Manager (VSM4) software.

Related Products

Related products are as follows:

- All VESDA detectors
- VSM
- VESDAnet
- VSC
- VESDA HLI

Contents

1 Introduction

1.1 Operation

The RS232/485 serial connectors on VESDA detectors or a VESDAnet network of detectors can be connected to one side of a Serial to Ethernet Device via a High-Level Interface (“HLI”). Connecting a 10/100 Mbps Ethernet connector to the other side will provide communication between the VESDA devices over a TCP/IP network (Figure 1).

Depending on the selected configuration, any computer with IP connectivity, and running VSC or VSM, is able to establish communications with a VESDA device or VESDAnet network from virtually any location.

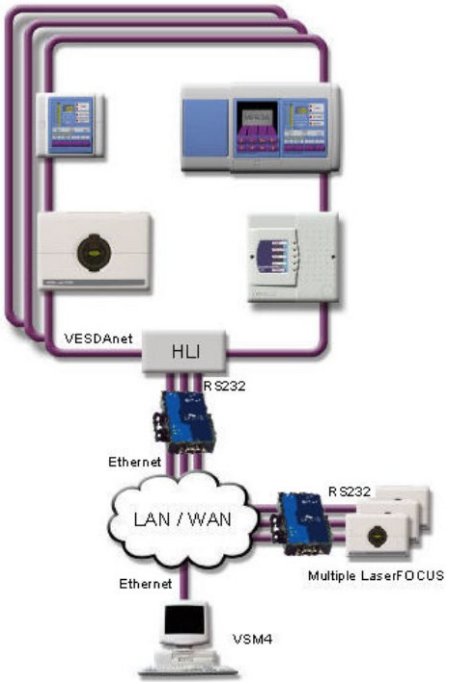


Figure 1: Illustration of the connectivity of VESDA detectors and VESDAnet with the VSM4 software over a TCP/IP network

1.2 Business Efficiency and Cost Savings

Ethernet and other IP networks have become an essential part of facility infrastructure. It is common to find Ethernet networks throughout modern buildings, and Internet or private wide area networking is a popular mean of providing remote access to many building services.

The use of powerful VESDA system configuration and management software with reliable TCP/IP networking, provides remote maintenance tools that improve operational efficiency and reduce the costs associated with on-site visits.

The cost savings accessed by utilizing VESDAnet communications over wide area or local area TCP/IP networks can be significant.

1.3 Applications

VESDAnet to Ethernet connectivity is of use in the following applications:

- Large and campus site monitoring
- Remote site management and maintenance
- Campus integration
- Unmanned or inaccessible sites

2 Communications over Ethernet with Multiple Remote VESDAnet Networks

The illustration below provides an example of one likely configuration. You should note that other configurations are possible.

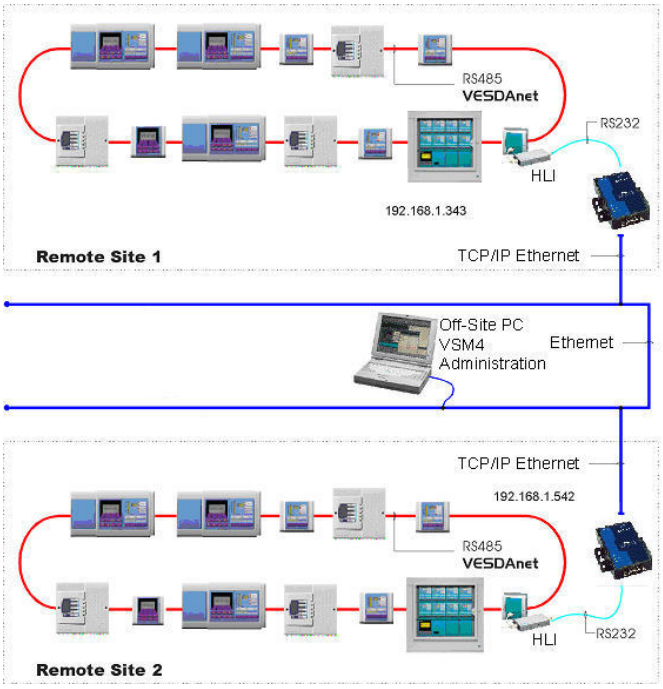


Figure 2: Example configuration

Warning!

Remote interfacing between VESDA detectors and other devices via Ethernet does not comply with fire approvals for primary fire reporting. This method should only be used for auxiliary monitoring, supervision, and maintenance.

3 Interfacing VESDAnet to a Serial to Ethernet Device

3.1 Overview

The following is an overview of the procedure for interfacing VESDAnet to a Serial to Ethernet device:

1. Each remote site must be equipped with a VESDAnet socket, PC-Link HLI and one Serial to Ethernet device.
2. Each Ethernet device must be assigned an IP address.
3. Software for configuring the MOXA Serial to Ethernet device must be installed on your PC and various parameters set.

The PC can then connect to a serial port through a TCP/IP Ethernet. Windows recognizes the port on the Serial to Ethernet devices as a real COM port, even though it connects through the virtual link of the Ethernet.

You can connect a PC to a Serial to Ethernet device connected outside the PC's LAN. To do this, you require information about the public IP and Gateway addresses associated with the Ethernet device.

Note!

For remote sites that connect to VESDA detectors, consult your IT Administrator for advice on the most appropriate TCP/IP connectivity between your PC and Serial to Ethernet device.

3.2 Step 1: Purchasing A MOXA Serial to Ethernet Device

Xtralis recommends using MOXA NPort Servers, specifically the models listed in Table 1. You should purchase a MOXA NPort server and the appropriate cables. If you wish to assemble your own RJ45 cable, follow the cable pin out table below (Table 2).

Obtain a copy of NPort Administrator software version 1.5.9. Contact MOXA at http://www.moxa.com for information about NPort servers and for a copy of the software.

Note!

Xtralis provides limited application support for MOXA Serial to Ethernet devices. You should refer to MOXA's product manuals and troubleshooting guides for more information.

Configurations described in this document are based on the functions and features of the MOXA NPort 5110 Serial to Ethernet device.

Table 1: MOXA NPort servers recommended by Xtralis

Model	Ports	Firmware version	PC software	PC software version	Cable to connect to HLI
NPort 5110	1	1.1	NPort Administrator	1.5.9	DB9 – standard extension cable (Straight through DB9 male to DB9 female)
NPort 5610 -16	16	2.1	NPort Administrator	1.5.9	RJ45 – MOXA part # CBL-RJ45M9-150
NPort 5410	4	2.2	NPort Administrator	1.5.9	DB9 – standard extension cable (Straight through DB9 male to DB9 female)
NPort 5210	2	2.0	NPort Administrator	1.5.9	RJ45 – MOXA part # CBL-RJ45M9-150

Table 2: Cable pin out table for an RJ45 cable.

DB9 Male Pin	RJ45 Pin
1	6
2	5
3	4
4	8
5	3
6	1
7	2
8	7
9	NC

3.3 Step 2: Arranging an Open IP Connection and Fixed IP Address

Your IT department will need to provide you with access to 1 LAN port. The port allocated to you will depend on your LAN and WAN setup. Your IT department should verify that this port is open and clear and not blocked by your company's firewall.

Your IT department will also need to provide you with a static IP address. Due to known problems with the MOXA software, the static IP address MUST NOT end in .255. For example, aa.bbb.ccc.255. If the IP address ends in .255, you will experience problems with your MOXA server. Your IT department should verify that the IP address allocated to you is accessible from the PC loaded with your application software (for example, VSM4).

3.4 Step 3: Configuring Your PC To Connect to The MOXA Serial To Ethernet Device

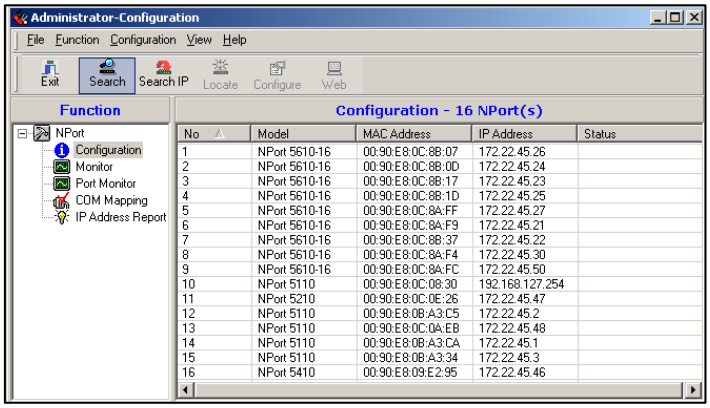
Install Moxa NPort Admin Suite 1.5.9.

Note!

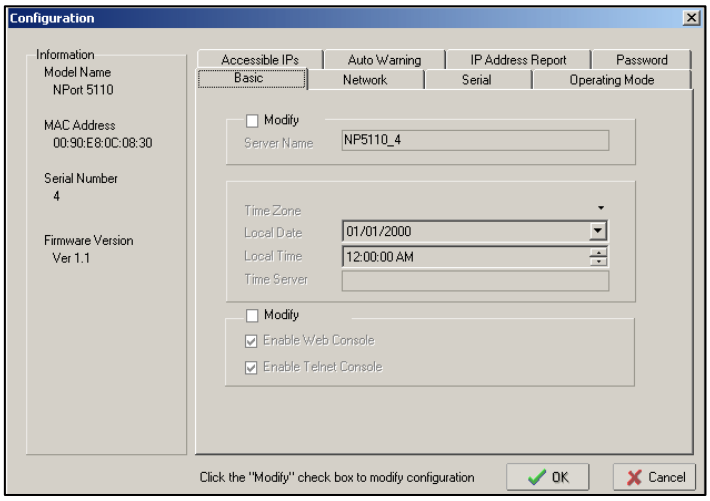
You should uninstall all previous versions of NPort Administrator software and reboot your PC before installing version 1.5.9. This software requires at least 2.5 MB of disk space.

You can run the NPort Administrator software from WinZip as follows:

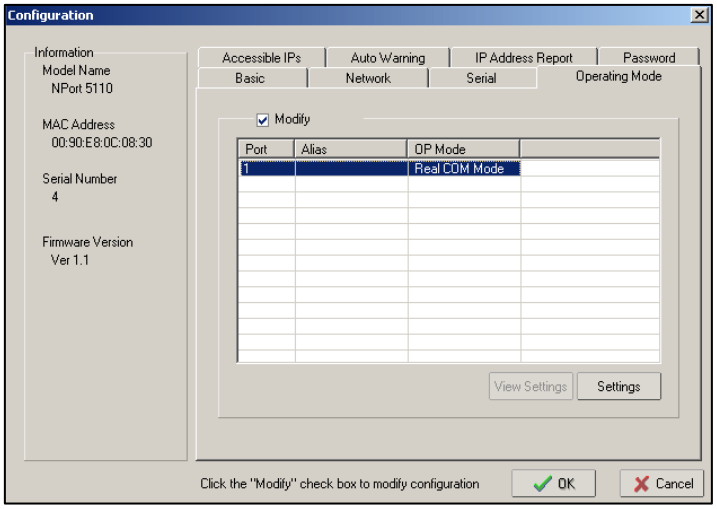
1. In WinZip, double click on the filename npadam_setup_1.5.9.exe to start the Setup Wizard.
2. Follow the prompts in the Wizard and install NPort Admin Suite 1.5.9 on your PC.
3. Set the IP Address for the MOXA NPort as follows:
   a) Open NPort Administrator software.
   b) Click on **Search** from the toolbar. The software will search for all MOXA devices on the network. The model number, MAC Address and IP address of each MOXA will be displayed under **Configuration**.
4. Click on the NPort model and then from the toolbar click on **Configure**. The Configuration screen will be displayed in a separate window.



5. Click on the **Network** tab and then check the **Modify** box. You must change the IP address to the address provided by your IT department. You should not use the default IP address. Enter the IP address in the text box provided and then click on the **Operating Mode** tab.



6. The Operating Mode should default to **Real COM Mode**. If it is different from **Real COM Mode**, check the **Modify** box then click on the Port and then on **Settings**. Select **Real COM Mode** from the drop-down menu and then click on **OK**.
7. Click on **OK** from the Configuration screen, to complete the IP address configuration. A dialogue box will confirm that your changes have been applied.



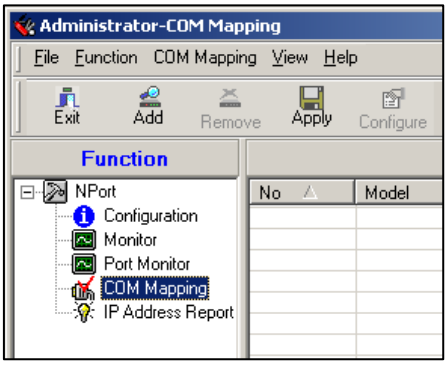
Warning!

Do not change any of the settings within the remaining Configuration tabs..

3.5 Step 4: COM Port Mapping

Follow the instructions below to map the COM Port:

1. Under **Function** under the NPort tree, click on **COM** Mapping. From the toolbar, click on **Add**. A list of all NPort devices will be displayed in a separate window.

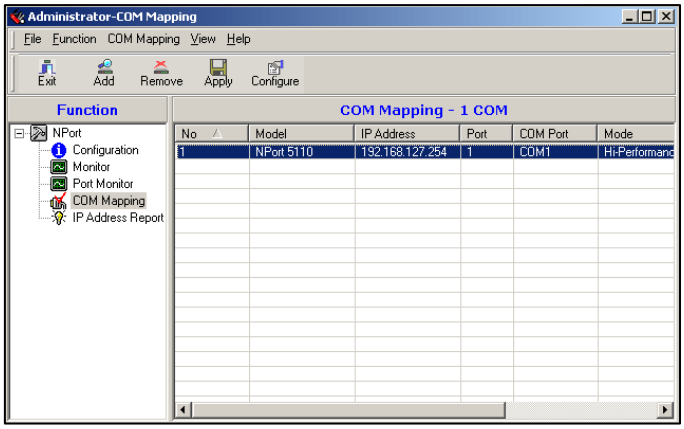


2. The default checks the boxes of all NPort devices. Click on **Clear All** and then check the box next to your desired NPort device.

> **Warning!**
>
> You must choose an NPort device from the list provided. Do not input the IP address manually.

3. When you have selected your NPort device from the list, click on **OK**. Your selected NPort device will be displayed under **COM Mapping – 1 COM**.

> **Note!**
>
> If you click on **OK** before **Clear All**, all NPort devices will be displayed under **COM Mapping – 1 COM**. Click on **Discard Changes** from the **COM Mapping** menu to undo.



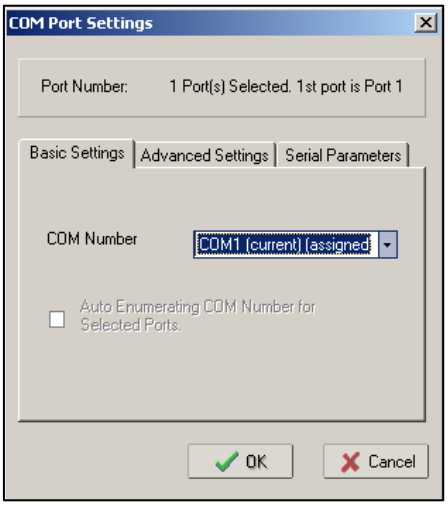
4. Click on the NPort device under **COM Mapping – 1 COM** and then from the toolbar click on **Configure**. The **COM Port Settings** configuration screen will be displayed in a separate window.
5. A COM Port is automatically selected and shown in the text box labelled **COM Number** under the **Basic Settings** tab. All COM Ports are contiguous, and the software selects the first available COM Port. If you need to change the COM Number, select a COM port from the drop-down menu.

> **Note!**
>
> The COM Port automatically selected should be added to your existing list of COM Ports. You should check that the COM Port did not override your existing COM Ports.

Warning!

Do not change any of the settings in the **Advanced Settings** or **Serial Parameters** tabs. The application software (VSM4) automatically configures this information.

6. Click on **OK** to set the COM Port and return to the main screen.



7. From the toolbar, click on **Apply** to save your configuration settings.

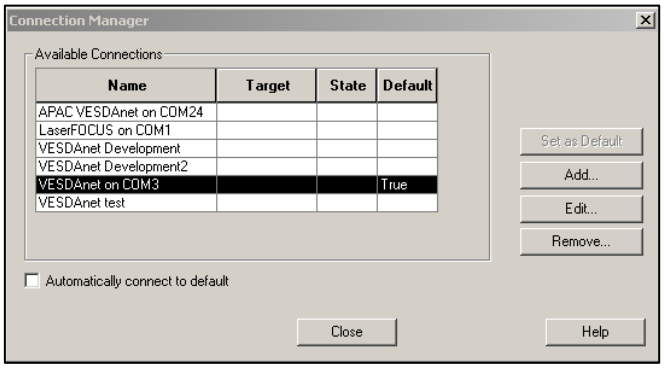
8. A dialogue box asking if you want to apply these settings appears, select **Yes**.
9. You will be prompted to change the firmware operating mode to Real COM. The firmware operating mode was set to Real COM when you set the IP Address for the NPort device. Click on **OK** to complete the COM Port Mapping.

3.6 Step 5: Test the Connection Using VESDA System Manager (VSM4)

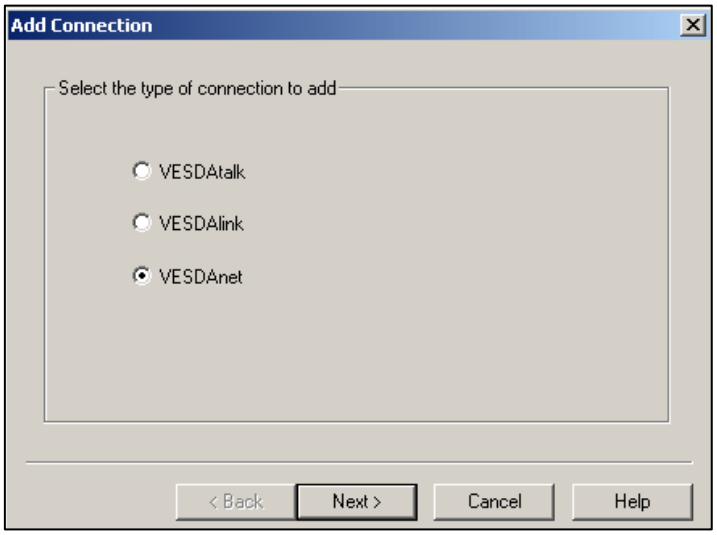
Purchase a copy of VSM4 from Xtralis (see www.xtralis.com) and install it on your PC. The VSM4 Product Guide contains instructions on how to install and set up VSM4 software.

Test the configuration as follows:

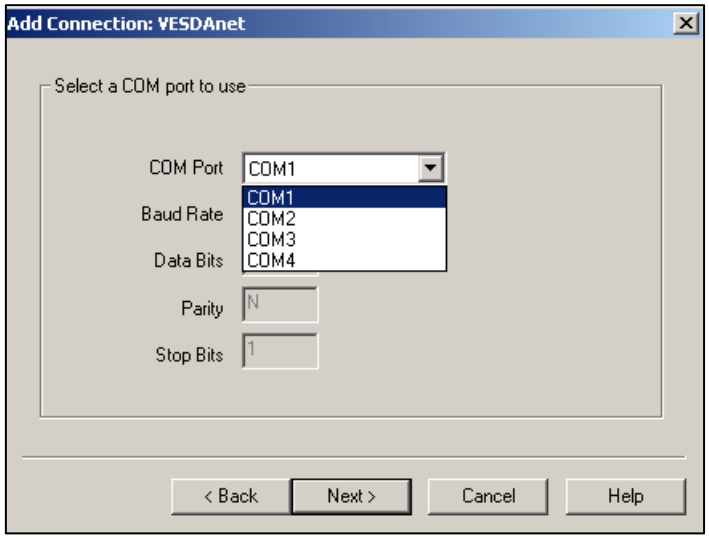
1. Logon to VSM4 and establish a connection.
2. From the main menu, click on **Connection** and then **Manager**. The Connection Manager screen will be displayed. Click on **Add**.



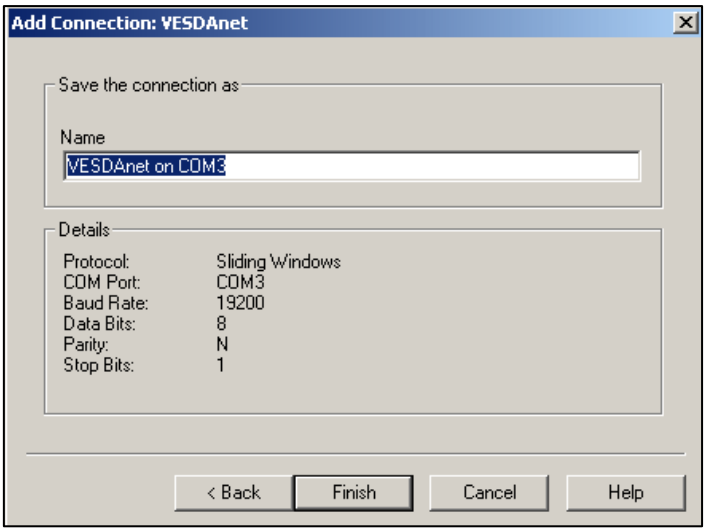
3. Check the box for the type of connection you require and then click on Next. In this case, connection to a VESDAnet is shown.



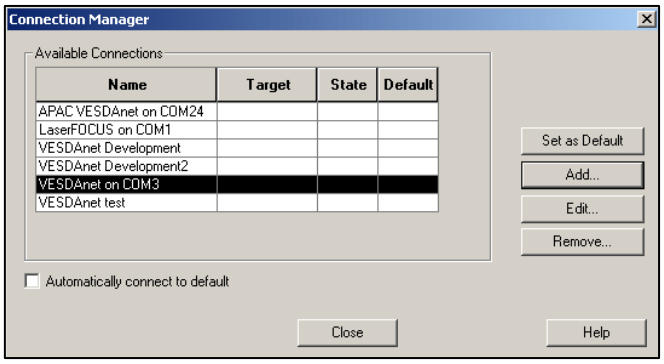
4. Select the COM Port from the drop-down list. NPort Administrator software automatically assigns a COM port to the device. Select the relevant COM Port and click on **Next** to continue.



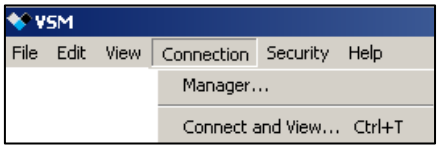
5. Click on **Finish** to return to the Connection Manager screen.



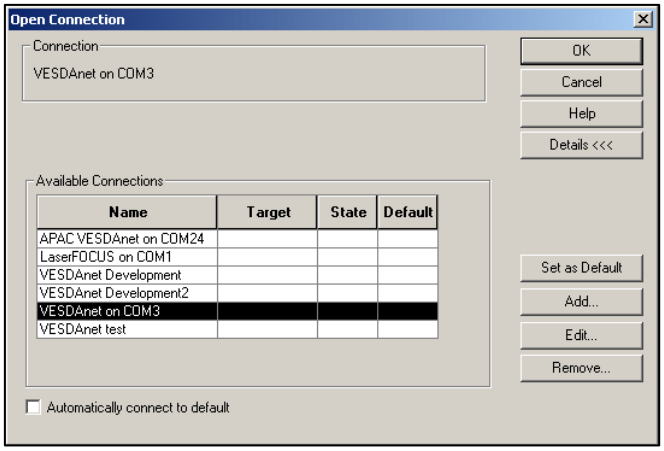
6. Click **Close** to close the Connection Manager screen.



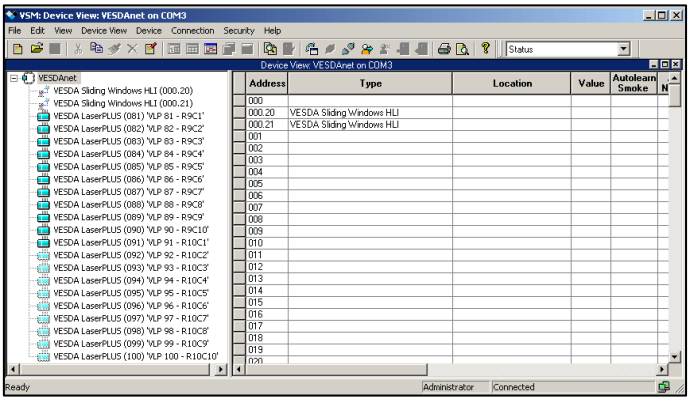
7. From the main menu click on **Connection** and then **Connect and View**. The Open Connection window will be displayed.



8. In the Open Connection window, click on **Details**. Select the name of the COM Port from the Available Connections list and click on **OK**.



9. If the MOXA NPort is correctly configured, the device or devices associated with this COM Port will be displayed under the VESDAnet tree.



4 Additional Support

For further information please contact an Xtralis office or e-mail Technical Support at www.xtralis.com/vesda.

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