



DL-V3 Ethernet Connectivity



1 Overview

To communicate with the DL-V3 receiver by sending commands and obtaining logs, a connection to some form of data communications equipment is required. Your PC/laptop can also communicate with the receiver using the *Ethernet* interface. This application note gives the step-by-step process for connecting the DL-V3 to the Ethernet using NovAtel's CDU or Telnet. PC/laptop Ethernet port connections are also described.

For more information, please refer to the *DL-V3 User* available from our website at <http://www.novatel.com/support/docupdates.htm>.

2 Required Hardware

The following hardware is required to setup an XPORT AV within a DL-V3 unit:

- user supplied PC/laptop with an available Straight Ethernet, serial and/or USB port
- DL-V3 receiver, power cable and serial communication cables
- one (1) RS-232 null modem cable
- two (2) CAT5 Straight Ethernet cables or one (1) CAT5 cross-over Straight Ethernet cable
- optional USB-to-serial adaptor
- user supplied network Ethernet hub or wired router

3 DL-V3 Initial Ethernet Setup

When initially powering up your DL-V3 receiver, you must configure the device into Ethernet mode. To do this, connect the DL-V3 by using a serial or USB cable into your PC/laptop and use either NovAtel's CDU or a Telnet program, like HyperTerminal. Steps for both of these tools are described in the following two sections.

3.1 How to connect with NovAtel's CDU

1. Ensure you have the CDU software installed. Download the most recent version available from our Web site at <http://www.novatel.com/support/fwsupdates.htm#pc>.

NovAtel Application Note

2. In the console command window, enter the following:
APPCONTROL BLUETOOTH 1
SAVECONFIG (optional)



Figure 1: CDU Console Window

The Ethernet status LED, labeled , at the front of the DL-V3 will emit an amber light when Ethernet is successfully enabled.

3.2 How to Connect with Telnet using the HyperTerminal Program

1. Click on the following to access Windows HyperTerminal in Windows XP:
START → PROGRAMS → ACCESSORIES → COMMUNICATIONS → HYPERTERMINAL

If HyperTerminal has not been initialized previously, the following window appears:



Figure 2 - Windows HyperTerminal Default Telnet

Select *YES* to make HyperTerminal your default Telnet program (optional).

2. Select your current country and area code (or city code) you are currently in and then select *OK*.

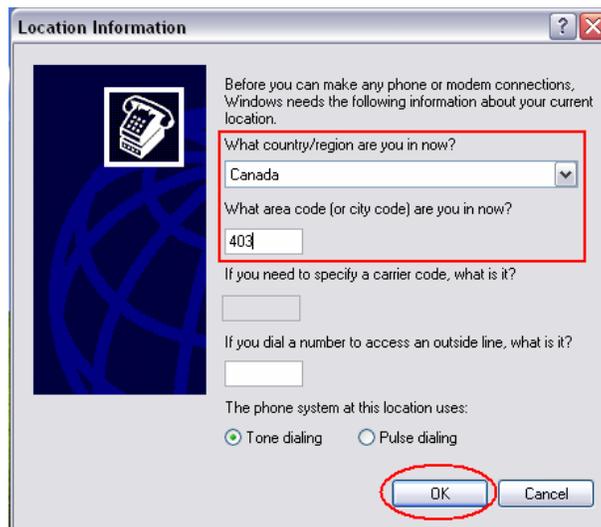


Figure 3: HyperTerminal Location

NovAtel Application Note

3. Select *OK* in the *Phone and Modem Options* window.

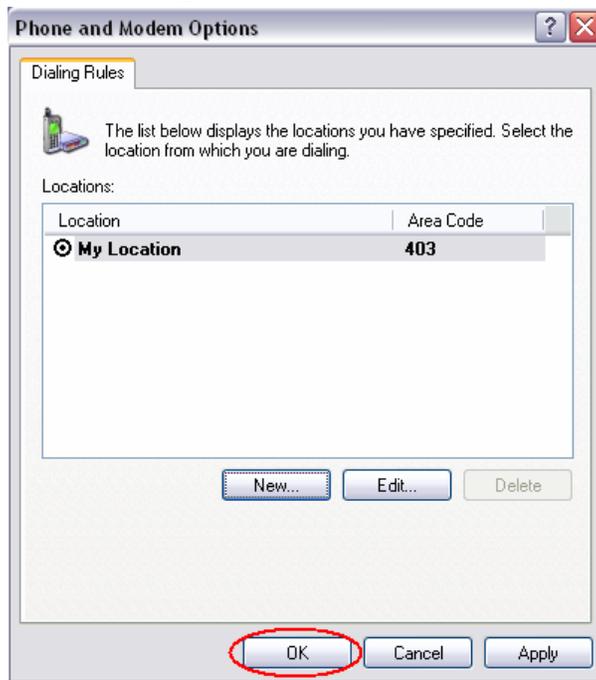


Figure 4 - Phone and Modem Option

The initial setup of HyperTerminal is complete. When HyperTerminal is reinitialized, you are directed to the following screen:

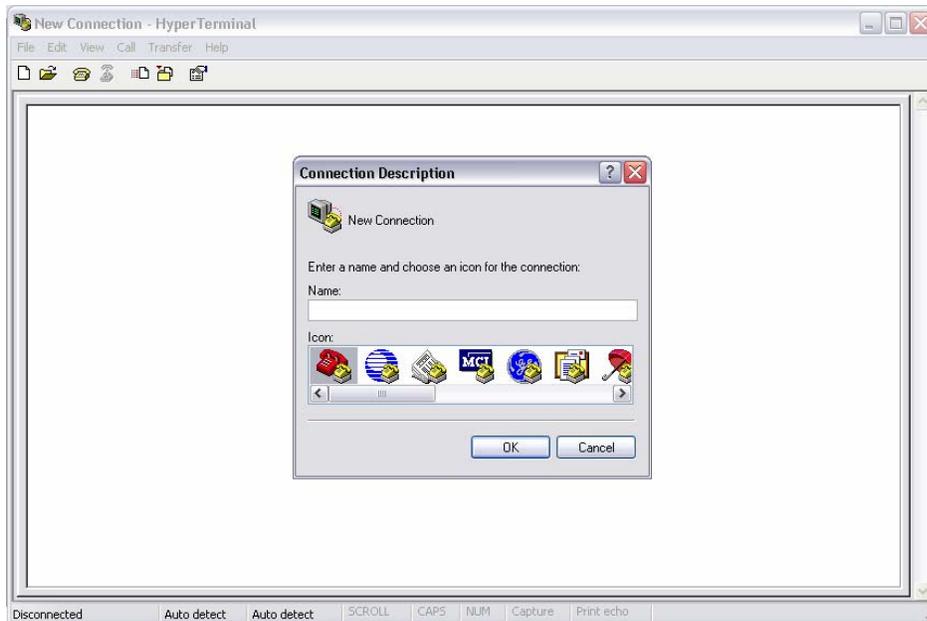


Figure 5 - HyperTerminal Default Window (Reinitialized)

NovAtel Application Note

4. Enter a desired name in the *Connection Description* window and then select *OK*.



Figure 6 - Connection Description

5. Select the computer's assigned com port which is currently connected to your receiver in the *Connect using:* field and then select *OK*.



Figure 7 - Connection to com port setting

6. Set the *Bits per second:* field to an optimal rate of 9600 bps.
7. Select the *Flow Control* field to *None*.

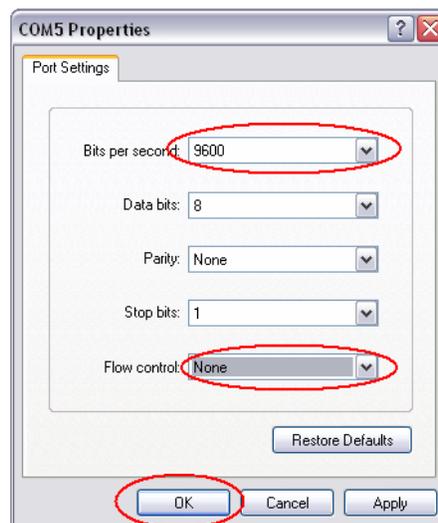


Figure 8 - Com Port Properties

NovAtel Application Note

The following screen appears:

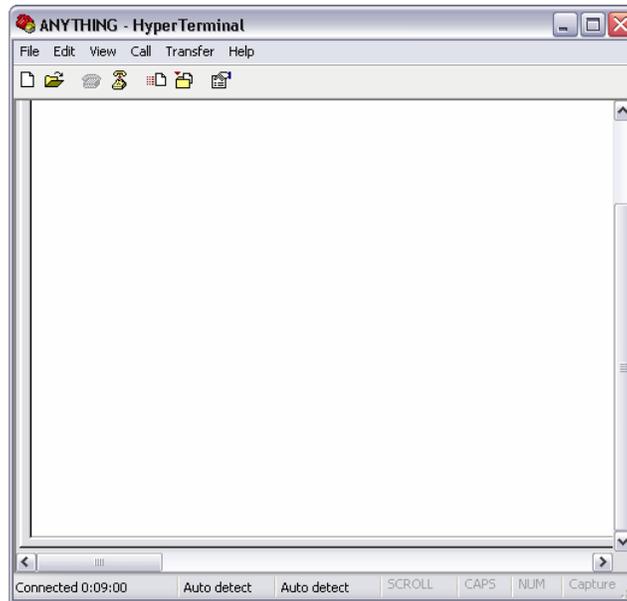


Figure 9 - HyperTerminal Main Window

8. Select  to input commands into HyperTerminal.

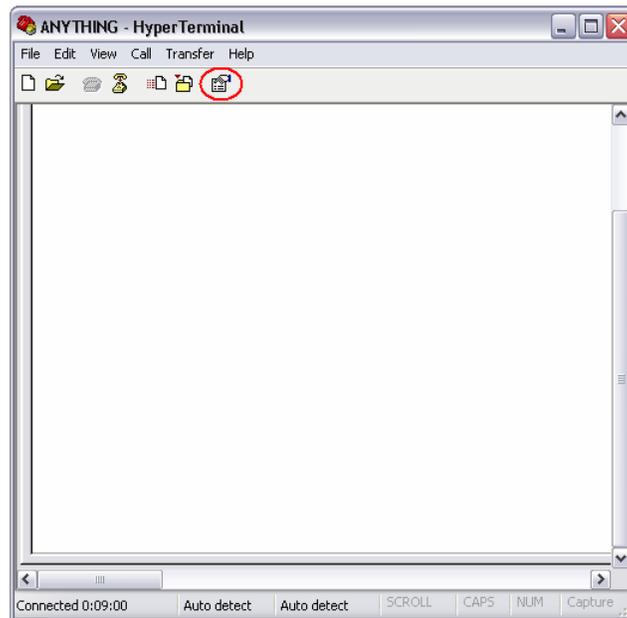


Figure 10 - HyperTerminal Main Window

NovAtel Application Note

- Click on the *Settings* tab and then *ASCII Setup...*

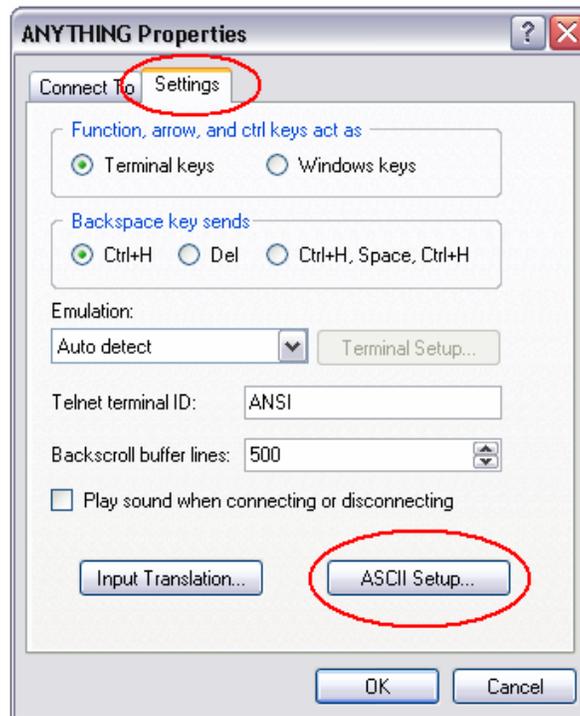


Figure 11 - HyperTerminal Properties

- Select the top two options under *ASCII Sending*, and then select *OK*.

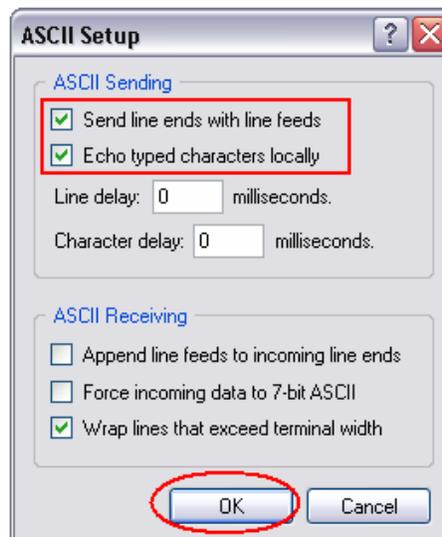


Figure 12 - ASCII Setup

You can now input commands into HyperTerminal.

- Enter the following command into HyperTerminal to enable Ethernet mode:
APPCONTROL BLUETOOTH 1
SAVECONFIG (optional)

The Ethernet status LED, labeled , emits an orange light when Ethernet mode is successfully enabled.

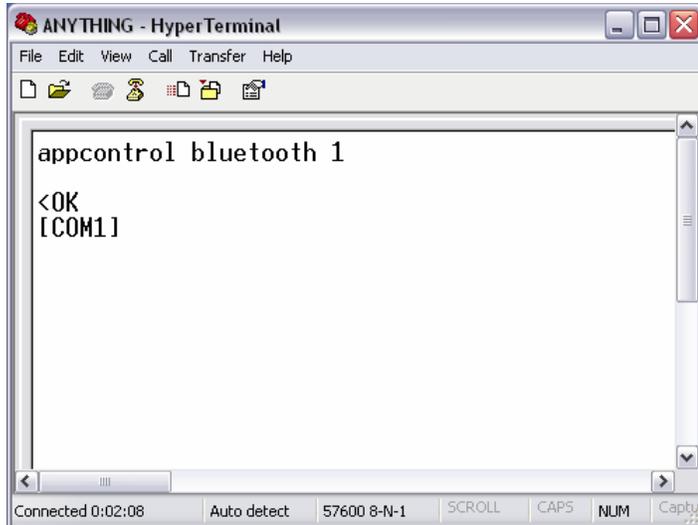


Figure 13 - Ethernet Enabled

4 PC/laptop to DL-V3 Ethernet Port connection

This section contains the configuration methods and the hardware you require to set them up.

4.1 Configuration with a CAT5 RJ45 Straight Ethernet Cable

1. Connect the first Straight Ethernet cable on a laptop into a free Ethernet port.
2. Connect the other free end of the Straight Ethernet cable into a free port on an Ethernet hub or wired router.
3. Connect the second Straight Ethernet cable from the back of the DL-V3's Ethernet port to another free port on an Ethernet hub or wired router.
4. Connect the power cable to the DL-V3 and power the unit *ON*.

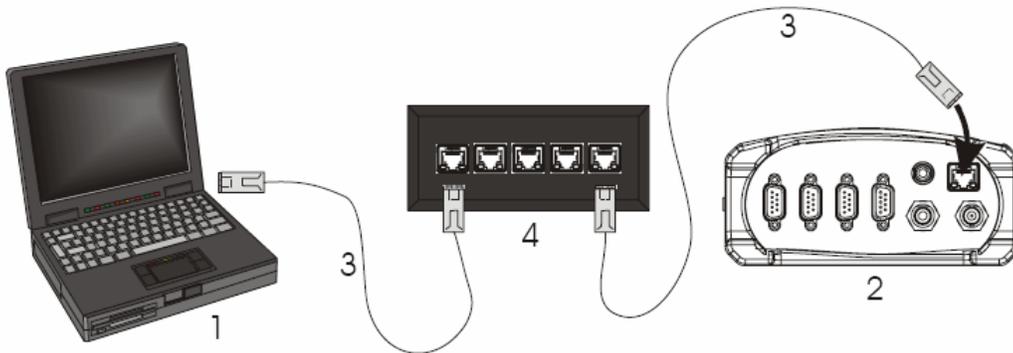


Figure 14: CAT5 RJ45 Straight Ethernet Cable Connection

Table 1: CAT5 RJ45 Straight Cable Configuration Equipment

Reference	Description
1	user supplied PC/ laptop computer
2	DL-V3 receiver (powered)
3	user supplied CAT5 Straight Ethernet network cable
4	user supplied 5 port Ethernet hub/wired router

4.2 Configuration via CAT5 Cross-over Ethernet cable

1. Connect the CAT5 Cross-over Ethernet cable to a laptop with a free Ethernet port.
2. Connect the other free end of the CAT5 Cross-over cable to the DL-V3's Ethernet port at the back.
3. Connect the power cable to the DL-V3 and power the unit up.

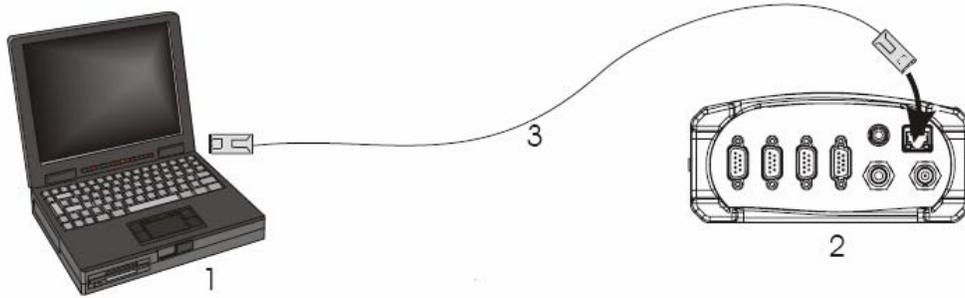


Figure 15: CAT5 Cross-over Ethernet Cable Connection

Table 2: CAT5 Cross-over Configuration Equipment

Reference	Description
1	user supplied PC/laptop computer
2	DL-V3 receiver (powered)
3	user supplied CAT5 Cross-over Ethernet cable

4.3 Windows XP Network Settings

**Full administrative access is required to proceed in the following steps.*

You are required to setup an alternate TCP/IP configuration (static IP address) when connecting your laptop to the DL-V3 via Ethernet.

1. Click on the following:
Start -> Control Panel -> Network Connections
2. Right click on the *Local Area Connections* and then select *Properties*.

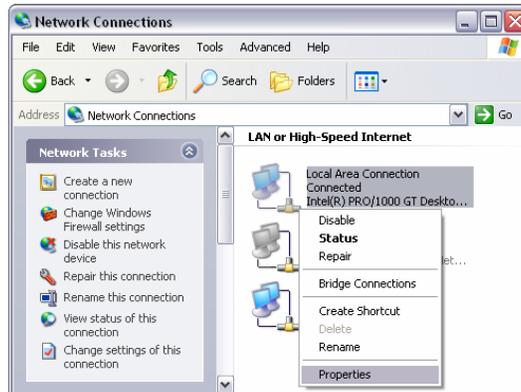


Figure 16: Network Connections

NovAtel Application Note

3. Select *Internet Protocol (TCP/IP)* and then click *Properties*.

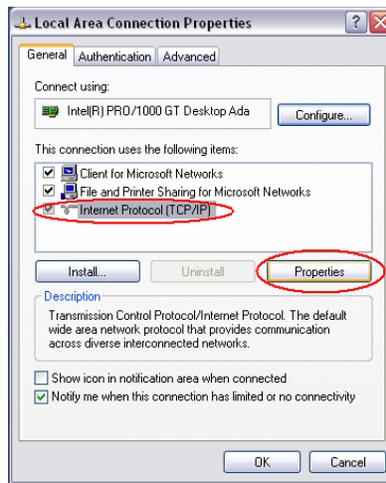


Figure 17: - Local Area Connection Properties

The following window appears:

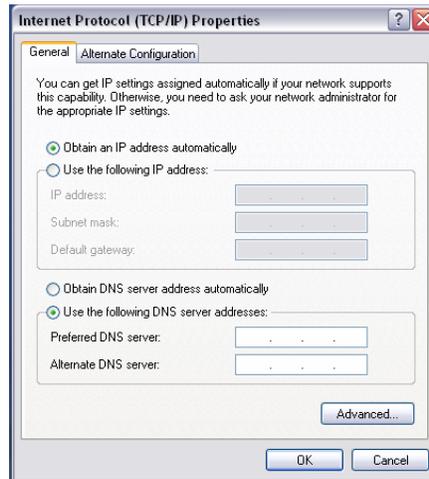


Figure 18: Internet Protocol Properties

4. Click *Use the following IP address* option.

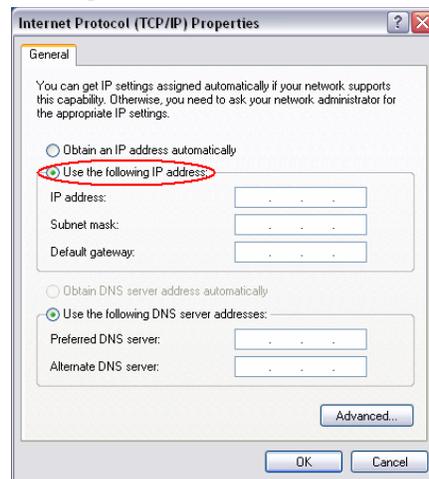


Figure 19: Select Static IP Address Configuration

NovAtel Application Note

5. Enter the following information:
IP address: 192.168.1.XXX
where XXX is a number between 1 – 255, excluding 223
Subnet mask: 255.255.255.0
6. Select *OK*. You are now back at the *Local Area Properties* dialog box.
7. Select *OK*.

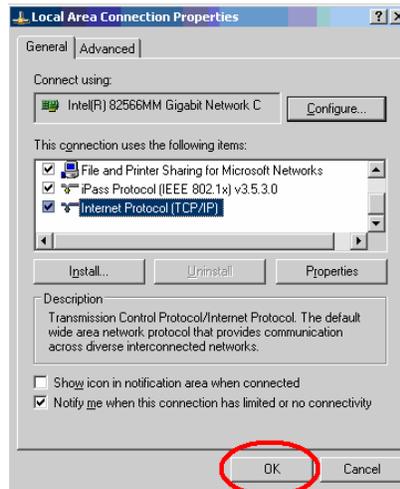


Figure 20: Local Area Connection Properties

8. Click *Close* to ensure that the IP address has been successfully updated.

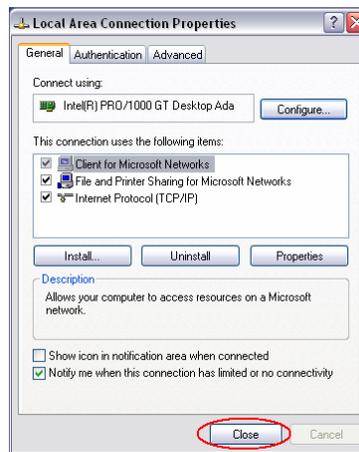


Figure 21: Local Area Connection Properties

At this point, your PC or laptop may request a reboot.

4.4 Lantronix Setup using Lantronix web Manager

1. Open any web browser and enter the following IP Address: *http://192.168.1.223* in the status bar on the PC/laptop connected via Ethernet to your DL-V3.

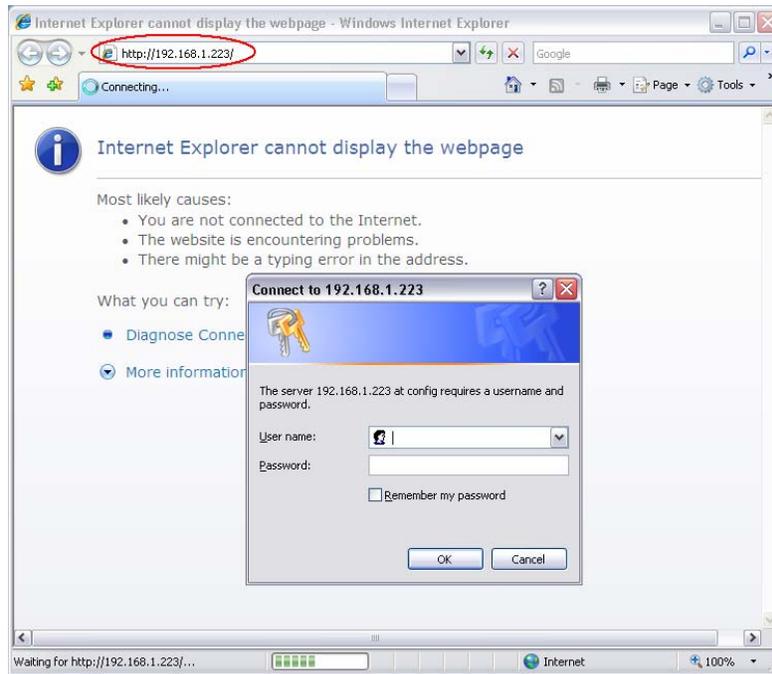


Figure 22: Receiver Configuration

You are prompted to enter a username and password.



Figure 23: Secure Login

2. Enter the following:
User name: admin
Password: PASS (case sensitive)

NovAtel Application Note

Once authenticated, you are redirected to the Lantronix Web Manager Webpage as shown below.

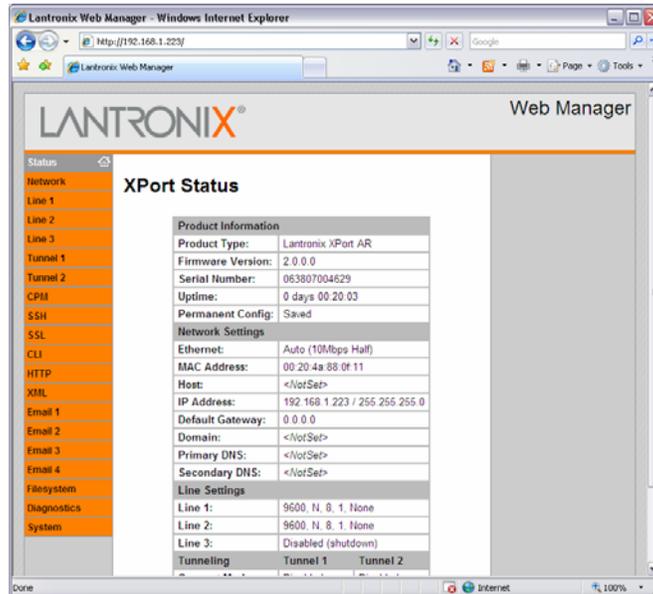


Figure 24: Lantronix Web Manager

You will need to consult with your IT or IS department, or network administrator to find out if your network requires that the DL-V3 Lantronix Ethernet module be set to as a Static IP address or Dynamic Host Configuration Protocol (DHCP) device.

4.5 DHCP Setup

1. Click the *Network* link on the left navigation bar to display the Network menu. The sub-menus displayed allow for the configuration of the general network settings, protocol stack, DNS, SNMP, FTP, TFTP, IP address filter, and the query port.
2. Click on the following from the navigation menu:
Network -> Configuration.

The Network Configuration dialog box opens.

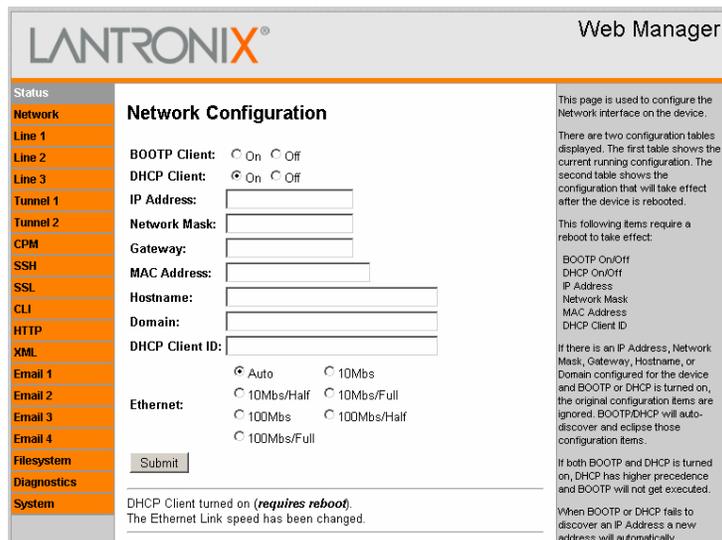


Figure 25: Lantronix Network Configuration DHCP

3. Select DHCP Client and Ethernet Auto.
4. Click *Submit*. This may take a minute but returns a screen with the statement telling you that the Lantronix system requires a reboot for the configuration to be changed to DHCP.
5. Reboot. After the reboot (or power cycle of the DL-V3), the Ethernet settings are DHCP.
6. Connect the DL-V3 to an available Ethernet port using a CAT5 Straight Ethernet cable.
7. Your network administrator can tell you what the DHCP assigned TCP/IP address is.

You can then telnet (via HyperTerminal or equivalent Telnet program) to the TCP/IP address (see Section 0 for instructions).

4.6 Static IP Setup

1. Click on the following from the navigation menu:
Network -> Configuration.

The Network Configuration dialog box opens.

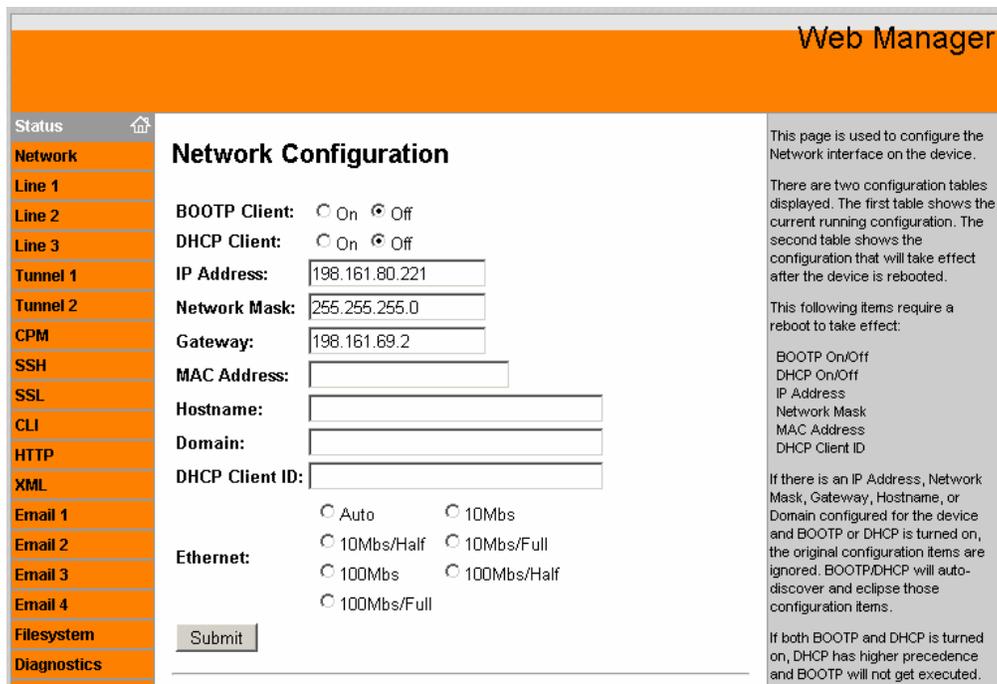


Figure 26: Lantronix Network Configuration STATIC IP

2. Set both the BOOTP and DHCP to *OFF*.
3. Enter the XPort AR's static IP address that is assigned your DL-V3 by your network administrator.
4. Click on *Submit*. This may take a minute but returns a screen with the statement telling you that the Lantronix system requires a reboot for the configuration to be changed to the STATIC IP address.
5. Reboot. After the reboot (or power cycle of the DL-V3), the Ethernet settings are set to the STATIC IP address.
6. Connect the DL-V3 to an available Ethernet port using a CAT5 Straight Ethernet cable.

You can then Telnet (via HyperTerminal or equivalent Telnet program) to the TCP/IP address (see Section 0 for instructions).

4.7 Line 1 Setup

The steps to configure Line 1 are the following:

1. Click on the following from the navigation menu:
Line 1-> Configuration

The Line 1 Configuration window displays.

	Received	Transmitted
Bytes:	0	6
Breaks:	0	0
Parity Errors:	0	
Framing Errors:	0	
Overrun Errors:	0	
No Receive Buffers:	0	
Allocated Bytes:	12288	
Queued Bytes:	0	
CTS:	n/a	
RTS:	n/a	
DSR:	n/a	
DTR:	n/a	

Figure 27: Line 1 Properties

2. Set the following configuration:
Baud rate: 115200 bps
Flow Control: Hardware
3. Click *Submit*.

	Current	Change
Status:	Enabled	Enabled
Baud Rate:	115200	115200 Custom
Parity:	None	None
Data Bits:	8	8
Stop Bits:	1	1
Flow Control:	Hardware	Hardware

Figure 28: Baud Rate Set to 115200 bps

NovAtel Application Note

4. Reboot the system. On the left hand orange panel, select *Systems* and click *Reboot*.

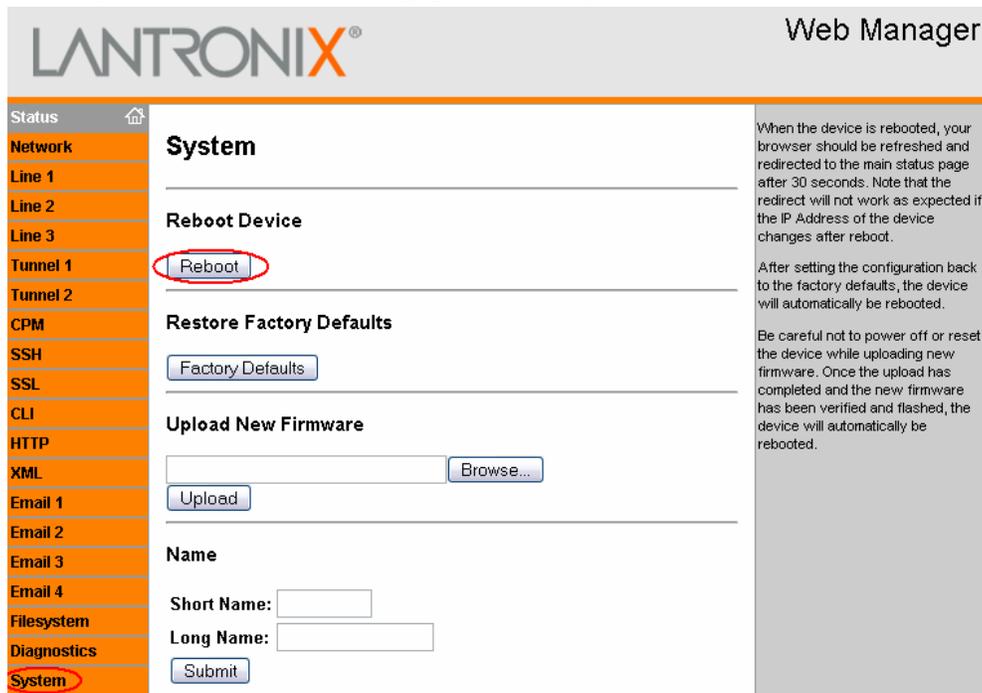


Figure 29: Lantronix Web Manager

5. Select *OK* when prompted to do so.



Figure 30: Reboot Confirmation

You will see the following statement:

Rebooting device...
This page should automatically redirect your browser to the [Main Status](#) page in 30 seconds.

If you are not redirected to the Main Status page, click *Main Status* to go back to the home page. Upon successful completion, your Line 1 properties are changed and confirmed in the main status page.



Figure 31: Lantronix Main Web Manager

5 Communicating via HyperTerminal

1. Click on the following to access HyperTerminal in Windows XP:
Start -> Programs -> Accessories -> Communications -> HyperTerminal
If you have not previously initialized HyperTerminal, see Section 3.2.

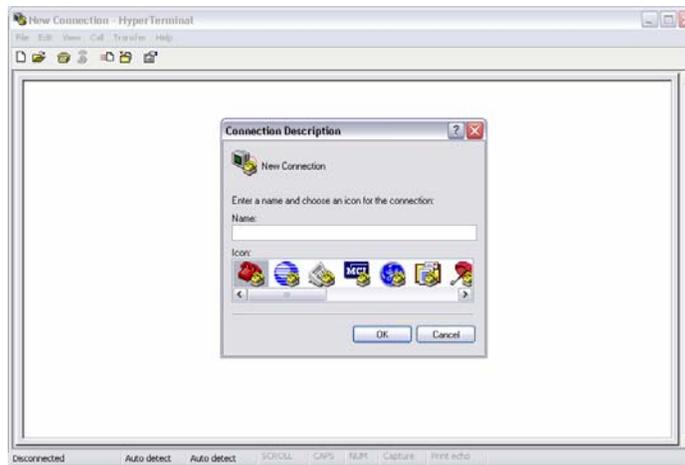


Figure 32: - HyperTerminal Default Window (Reinitialized)

2. Enter a desired name in the *Connection Description* window and then select *OK*.

NovAtel Application Note



Figure 33: Connection Description

3. Select *TCP/IP (Winsock)* in the *Connect using:* field and then select *OK*.
4. Enter the information displayed in Figure 34, below, to communicate with the DL-V3 via HyperTerminal and then click *OK*.

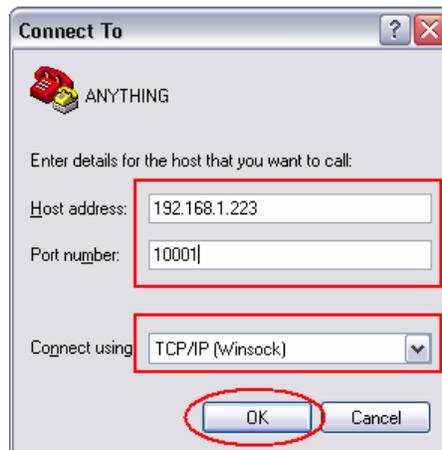


Figure 34: IP Address Setup

5. Select  to enable input commands into HyperTerminal. See Section 3.2 for further information. You will now be able to send commands to the DL-V3 using HyperTerminal. An example command is shown in the figure below.

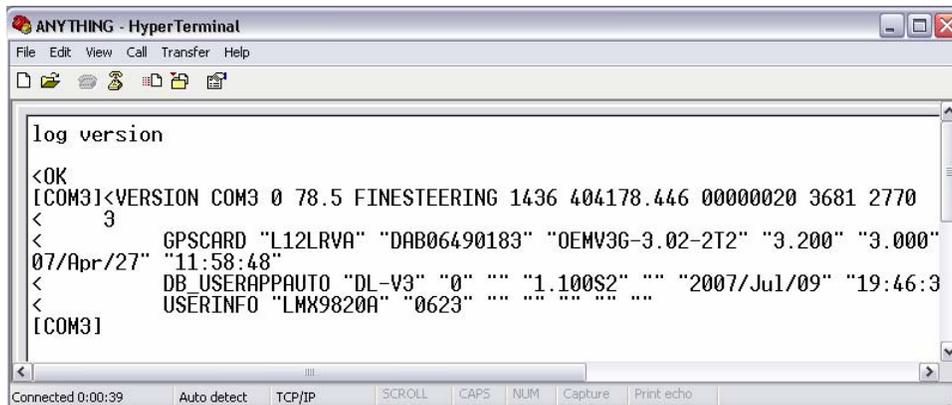


Figure 35: - HyperTerminal Successfully Connected with Receiver

6 Appendix A:

6.1 T568A Wiring Schematic

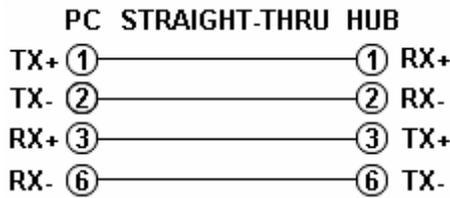
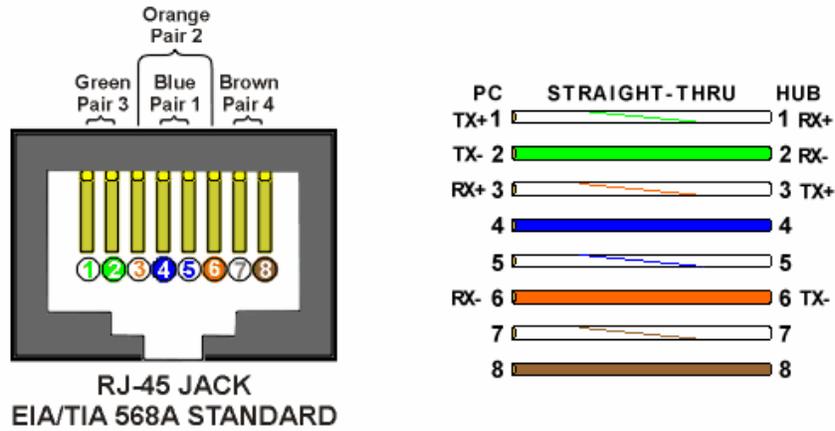


Figure 36: T568A Pin Out Diagram

6.2 CAT5 Cross-over Ethernet Cable Wiring Schematic

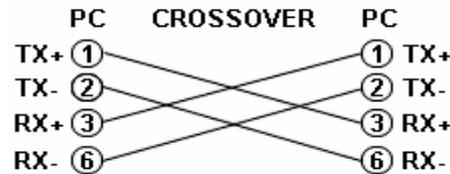
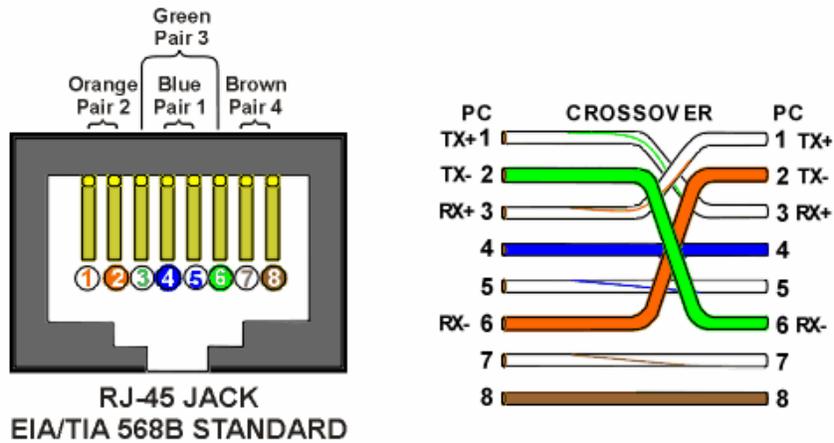


Figure 37: CAT5 Cross-over Ethernet Cable Pin Out Diagram

7 Final Points

7.1 Customer Service Contact Information

If you require any further information regarding the topics covered within this application, please contact:

NovAtel Customer Service

1120 – 68 Ave. N.E.

Calgary, Alberta, Canada, T2E 8S5

Phone: 1-800-NOVATEL (in Canada or the U.S.) or +1-403-295-4500

Fax: 403-295-4501

E-mail: support@novatel.ca

Website: www.novatel.com

7.2 RESTRICTED PROPRIETARY INFORMATION

The information disclosed herein is the exclusive property of NovAtel Inc. and is not to be disclosed without the written consent of NovAtel Inc. No part of this publication may be reproduced or transmitted in any form or by any means including electronic storage, reproduction, execution or transmission without the prior written consent of NovAtel Inc. The recipient of this document, by its retention and use, agrees to respect the security status of the information contained herein.

This document is intended for limited circulation.

The information contained in this document is subject to change without notice and should not be construed as a commitment by NovAtel Inc. unless such commitment is expressly given in a covering document.

© Copyright NovAtel Inc. (2009)