TABLE OF CONTENTS

Figures:

Tables:

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Preliminary	Sept 05

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1. OVERVIEW

The 7700PTX-10XL is a network-controlled protocol translator that translates SNMP (Simple Network Management Protocol) or TCP (Transmission Control Protocol) application commands into 10XL protocol packets, which are then transmitted to one of up to four 10XL protocol-based routers. The routers are connected serially to the 7700PTX-10XL.

Figure 1-1 shows how the 7700PTX-10XL is typically set up.

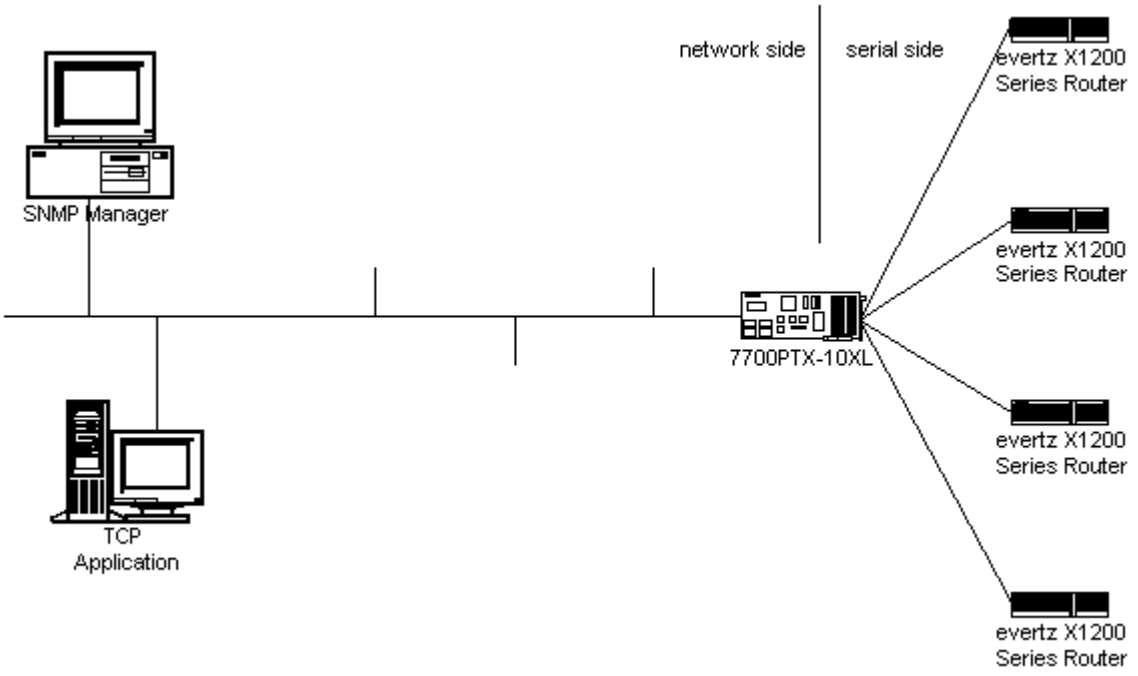


Figure 1-1: Typical 7700PTX-10XL Setup

2. BASIC CONFIGURATION

2.1. CONFIGURATION STEPS

The steps required to configure the 7700PTX-10XL are as follows:

1) Connect a PC running a console application to the 7700PTX-10XL's debug/monitor port via the adapter cable
2) Configure the 7700PTX-10XL's network parameters
3) Configure the parameters of each serial port to match those of the connected 10XL router(s)
4) Physically wire the serial port(s) of the 7700PTX-10XL the 10XL router(s)
5) Reboot the 7700PTX-10XL

For detailed instructions on configuring serial and network connections see Chapter 6

2.2. CARD EDGE CONTROLS

2.2.1. Determining Current Settings

To read the current IP (Internet Protocol) address settings during normal operation, press the front toggle switch DOWN. The IP address can be read on the four-character alphanumeric display.

2.2.2. Clearing Previous Settings

To clear ALL current settings, apply power to the card while holding the toggle switch UP. The Red LED (the left of the two LEDs) will light. When the Red LED is off and the Green LED (the right of the two LEDs) lights, the settings have been cleared, and you can enter your new settings.

2.2.3. Card Edge LEDs

LED 15 (when facing the card edge, on the left side; sixth from the top) is lit when Ethernet activity is detected.

All other card edge LEDs are for factory use only.

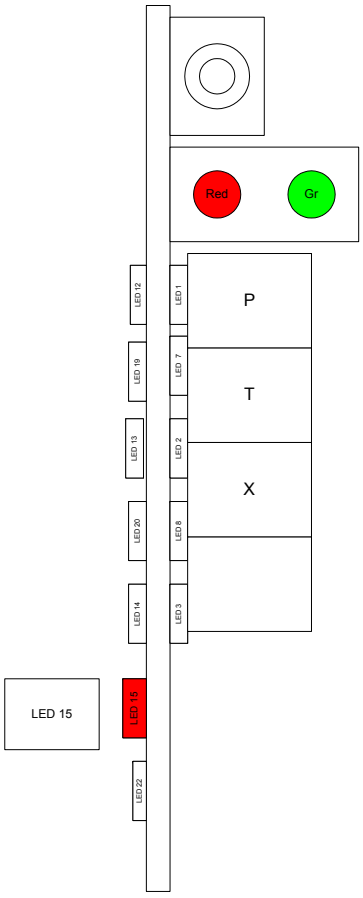


Figure 2-1: PTX Upper Card Edge

2.3. DEBUG/MONITOR SERIAL PORT SETTINGS

The 7700PTX-10XL is configured via the debug/monitor serial port the header of which is labeled J1. A special adapter cable allows the 7700PTX-10XL to connect to a PC. When using a PC terminal application such as Windows *HyperTerminal* in ANSI emulation mode, use the serial port settings given in Table 2-1.

Setting	Value
Baud rate	115,200
Number of data bits	8
Parity	None
Number of stop bits	2

Table 2-1: Debug/Monitor Serial Port Settings

2.4. MAIN MENU

Table 2-2 below lists the entries available in the 7700PTX-10XL main menu.

Entry	Item	Notes
1	Network Configuration	IP address, subnet mask, gateway, etc.
2	Serial Port Setup	Baud rate, number of data bits, etc. of serial ports which connect to 10XL router(s)
3	SNMP Setup	IP address of SNMP manager(s) to receive traps
4	10XL Protocol Settings Setup	Settings specific to the 10XL protocol
5	Under Monitor Display Setup	IP address and TCP port of PPV to receive the label of the source associated with a particular output
6	Engineering/Debug	Used for troubleshooting

Table 2-2: 7700PTX-10XL Main Menu

2.5. NETWORK CONFIGURATION

To configure the network settings of the 7700PTX-10XL select *Network Configuration* from the *Main Menu*. If DHCP (Dynamic Host Configuration Protocol) is desired, then set TRUE in the *Use DHCP* field. Otherwise, the IP address, subnet mask, and gateway (if any) must be input and the *Use DHCP* field set to FALSE. Once the network settings are configured be sure to select *Save and Exit* before exiting *Network Configuration*, otherwise select *Exit*.

The 7700PTX-10XL must be rebooted for any network setting changes to take effect.

2.6. SERIAL PORT SETUP

Table 2-3 lists the parameters associated with configuring the serial ports of the 7700PTX-10XL. A serial port connects to and controls a 10XL router.

The serial port settings must match those of the router(s) to which it is connected.

Parameter	Notes
Baud Rate	115200
Data Bits	8
Parity	N
Stop Bits	2
Standard	For serial port 4, only RS-232 is valid.

Table 2-3: Serial Port Parameters

3. BACK PLATE

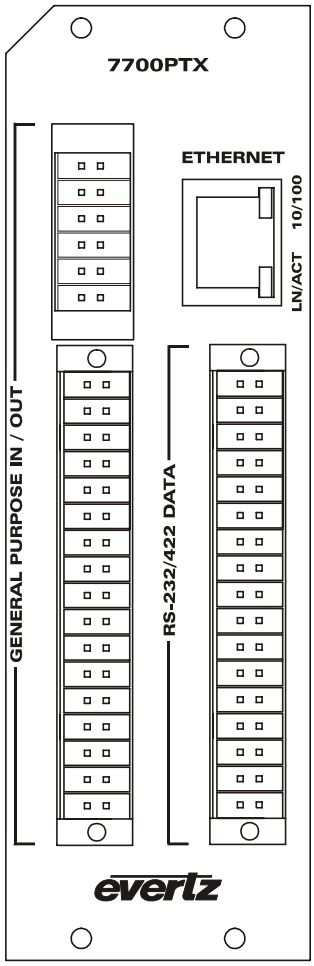


Figure 3-1: 7707PTX Back Plate

3.1. SERIAL PORT WIRING

The back plate connections of the 7700PTX-10XL are shown in Figure 3-2.

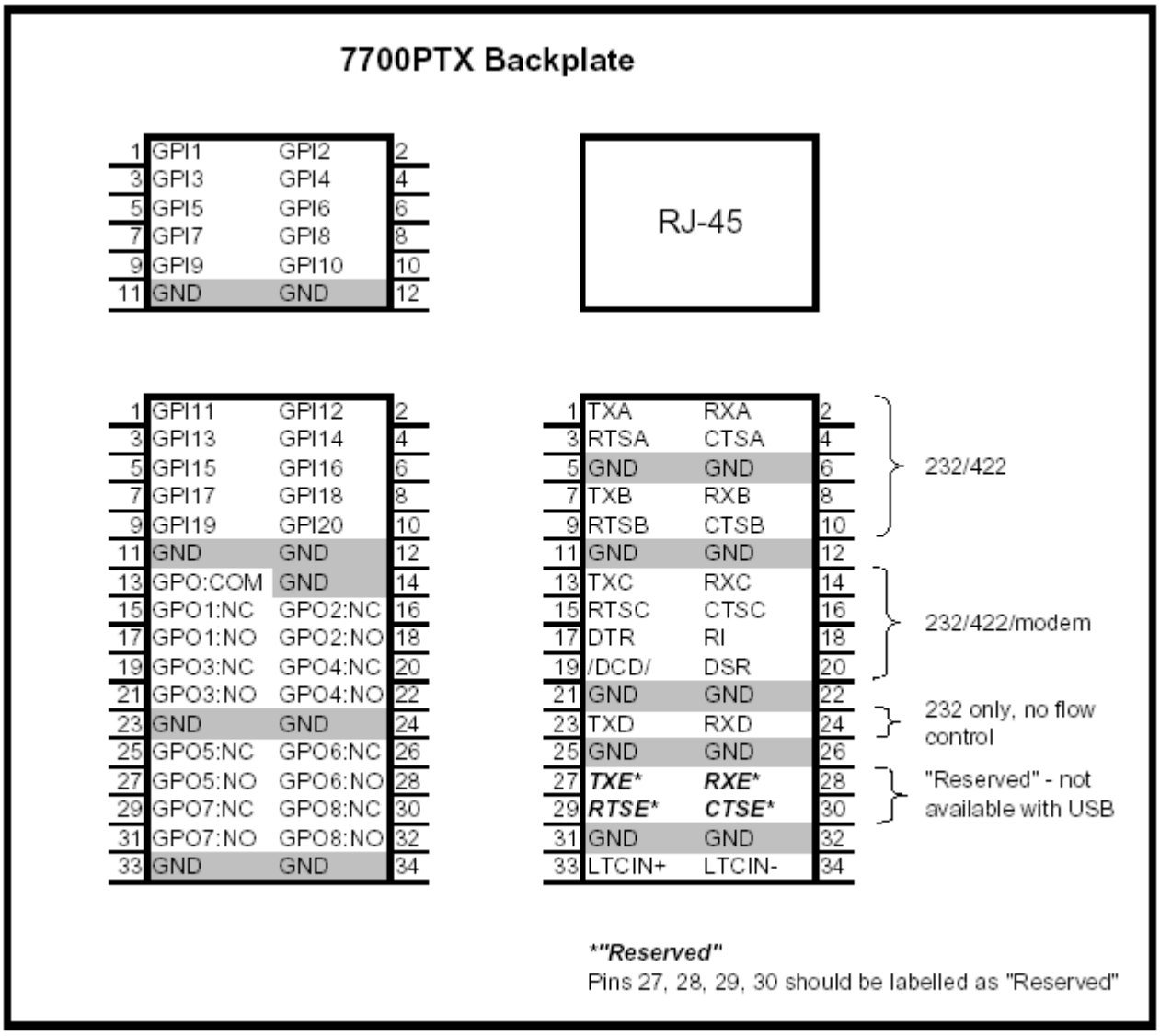


Figure 3-2: Back Plate Connections

In the figure, the serial ports located under the RJ-45 block are labeled A – D. These correspond to serial ports 1 – 4. Serial port E is currently not in use.

3.1.1. RS-232 Wiring

7700PTX-10XL Pin	Router Pin
Tx	Rx
Rx	Tx
Gnd	Gnd

Table 3-1: RS-232 Wiring

3.1.2. RS-422 Wiring

7700PTX-10XL Pin	Router Pin
Tx (tx-)	Rx-
Rts (tx+)	Rx+
Gnd	Rx common
Rx (rx-)	Tx-
Cts (rx+)	Tx+
Gnd	Tx common

Table 3-2: RS-422 Wiring

4. EXTENDED CONFIGURATION

Section 3 covers the steps required to configure the 7700PTX-10XL for most installations. However, further configuration is available for extended features.

4.1. SNMP SETUP

The 7700PTX-10XL monitors its ability to communicate with a 10XL router. It can communicate its communication status with an SNMP manager via traps. If that's what you want, then use the SNMP *Setup* entry of the *Main Menu* to add or remove IP addresses of any SNMP managers.

Once a SNMP manager is added or removed, the setting takes effect immediately; no reboot is required. By default, no SNMP manager IP addresses are configured.

4.2. 10XL PROTOCOL SETTINGS SETUP

4.2.1. Serial Address

The 10XL protocol allows multiple devices to be addressed on a multi-drop serial connection. To differentiate between multiple routers, each router has its own unique serial address. For instance, suppose we have two routers (Router 1 and Router 2) each with two outputs. Suppose further that the serial address of Router 1 is 1 and that the serial address of Router 2 is 3. A 10XL packet addressed to address 1 would mean Router 1/Output 1. A 10XL packet addressed to address 4 would mean Router 2/Output 2. Basically, the serial address refers to the address of Output 1 for the router. Table 4-1 summarizes this association.

Router (2 Outputs)	Serial Address	Router Output	10XL Packet Address
1	1	1	1
		2	2
2	3	1	3
		2	4

Table 4-1: Serial Address Example

The 7700PTX-10XL does not support a multi-drop environment. However, since the 7700PTX-10XL (master) is connected to a router (slave) in a master/slave configuration, the serial address of the 7700PTX-10XL must match that of the router. The 7700PTX-10XL serial address default is 1.

4.2.2. Power On Reset Router Initialization

During its power on sequence, the 7700PTX-10XL can initialize any connected routers. This is useful for routers that lose settings when powered off. To enable this feature, set the POWER ON RESET ROUTER INITIALIZATION parameter to YES, otherwise set it as NO (the default).

4.3. UNDER MONITOR DISPLAY SETUP

The 7700PTX-10XL has the ability to transmit router source label information to the UMDs of up to 12 PPVs.

As an example, suppose we have the setup of Figure 4-1

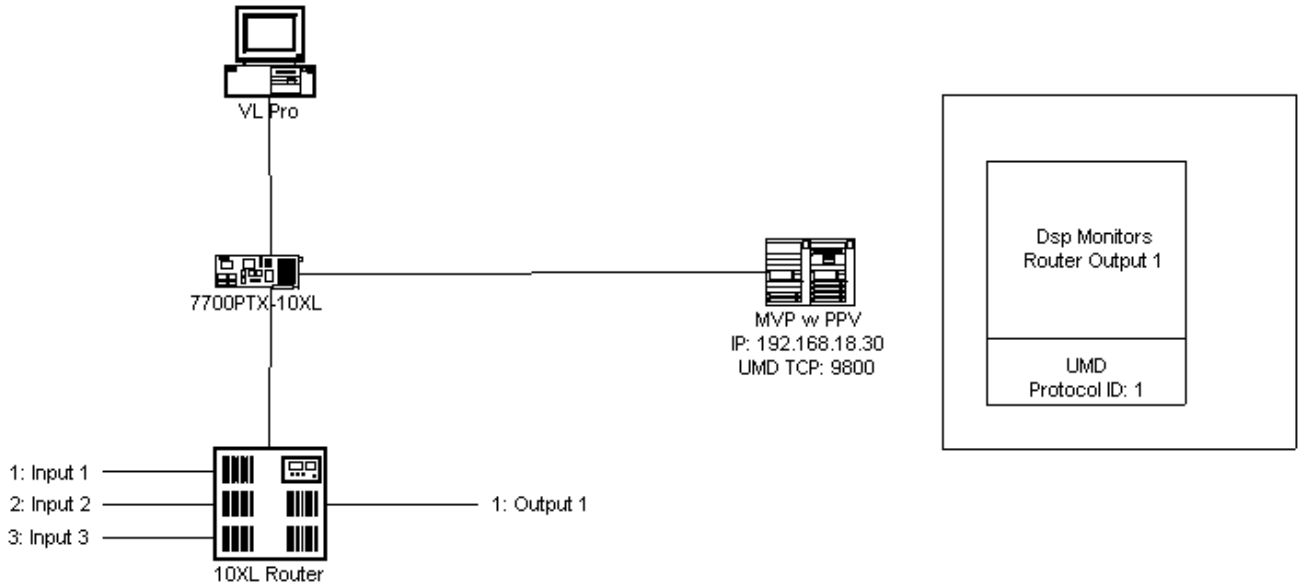


Figure 4-1: UMD Example

Where:

- A 10XL router has 3 inputs connected (labeled *Input 1*, *Input 2*, and *Input 3*) and 1 output (labeled *Output 1*)
- A 7700PTX-10XL monitors the router cross points
- An MVP contains a PPV with IP address 192.168.18.30
- The PPV is set to receive UMD data via the *Image Video* protocol over TCP (TCP port is configured to be 9800)
- The PPV drives a single display monitoring router Output 1; the display contains a UMD with protocol ID (PID) is set to 1
- A PC running VistaLINK Pro configures the 7700PTX-10XL so that the UMD PID associated with router Output 1 matches the PID of the UMD (ie. 1)

The *Under Monitor Display Setup* menu allows the configuration of the IP address and TCP port of the PPV to receive router source label information. In keeping with the above example, the 7700PTX-10XL would be configured to have a peer 1 IP address of 192.168.18.30 and a TCP port of 9800. When router input 1 is on output 1, the UMD of the display should display INPUT 1. If the cross point is switched to input 3, the UMD should display INPUT 3.

5. DEBUG TIPS

5.1. ROUTER POLLING

By default, the 7700PTX-10XL polls each router at 30-second intervals. A poll consists of a 10XL read or query request packet addressed to each router output.

The polling mechanism detects changes in router status (ie. active/inactive) as well as changes to the router cross-points. A change in router status results in an SNMP trap being sent to any configured trap hosts.

Poll duration can be changed via the *Set router poll status* entry of the *Engineering/Debug* menu. The time between polls can be set on a per-serial port basis. If 0 is selected as the time between polls, polling is disabled.

Regardless of the router poll setting, upon power-on the 7700PTX-10XL transmits a single poll request to each serial port to determine initial router activity status. Once set, the router poll status setting is saved to flash; no reboot required.

5.2. STATISTICS

The 7700PTX-10XL tracks a wide variety of statistical information. These statistics are viewed via the *Show task statistics* entry of the *Engineering/Debug* menu. Some of these statistics are discussed briefly below.

5.2.1. Serial Port Activity

5.2.1.1.Incoming

An example of incoming serial port activity is represented by the following:

```
incoming serial port statistics...
  in      in    in
prot    port  subp                        valid       cmds      cmds    timeout                 no
  id      id    id       in chars       cmds out    too lng  malfrmd  discrds   no outQ  mbufs
**** ***** ***** ********** ********** ******* ******* ******* ******* ******* *******
 6XL   1S1       0  0x00000003 0x00000001 0x00000 0x00000 0x00000 0x00000 0x00000
 6XL   2S2       0  0x00000003 0x00000001 0x00000 0x00000 0x00000 0x00000 0x00000
 6XL   3S3       0  0x00000003 0x00000001 0x00000 0x00000 0x00000 0x00000 0x00000
 6XL   4S4       0  0x00000003 0x00000001 0x00000 0x00000 0x00000 0x00000 0x00000
```

These statistics are described in Table 5-1.

Parameter	Notes
In prot id	The router protocol expected on this serial port displayed in both a numeric (6) and textual (XL) format.
In port id	The port identifier in both numeric (1 – 4) and textual (S1 – S4) format.
In subp id	The sub-port identifier. Serial ports do not require a sub-port ID so this value should be 0.
In chars	The number of alpha-numeric characters received from the router. If a router is connected and this value is 0 it may mean: • The serial port configuration is incorrect • The serial port wiring is incorrect
Valid cmds out	The number of full 10XL responses received by the 7700PTX-10XL. A 10XL response is 3 bytes in size, so typically, this field is one-third the value of in chars.
Cmds too long	The number of 10XL responses received that were too long. Typically, this field should be 0. If not, it may point to bad wiring or incorrect serial port settings.
Cmds malfmd	The number of bad 10XL responses received by the 7700PTX-10XL. Typically, this field should be 0 during normal router operation. If not, it may point to bad wiring or incorrect serial port settings. Note: the Evertz X1200 series of routers send status messages over their serial port as part of their power on procedure. Do not be surprised to see this field's value increment when you power on one of these routers.
Timeout discards	The number of 10XL responses discarded due to inactivity. This value gets incremented if part of a 10XL response is received. This value should normally be 0.
No outQ	This value should be 0.
No mbufs	The number of 10XL responses discarded due to lack of internal storage on the 7700PTX-10XL. The value should normally be 0.

Table 5-1: Incoming Serial Port Statistics

5.2.1.2.Outgoing

The following represents an example of outgoing serial port activity:

```
Outgoing serial port statistics...
Port     Out Cmds
****   **********
  S1     0x00000001
  S2     0x00000001
  S3     0x00000001
  S4     0x00000001
```

These statistics are described in Table 5-2.

Parameter	Notes
Port	The port identifier in textual (S1 – S4) format.
Out Cmds	The number of 10XL request packets sent by the 7700PTX-10XL to the router.

Table 5-2: Outgoing Serial Port Statistics

5.3. OPERATIONAL STATE

The state of the various 7700PTX-10XL tasks is accessed via the *Show task state entry* of the Engineering/Debug menu. Generally, all states should be reported as READY.

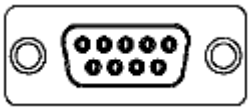
6. CONFIGURING NETWORK AND SERIAL CONNECTIONS

6.1. MAKING THE SERIAL CONNECTION

1) Take the small, keyed, four–pin end of the upgrade cable provided by Evertz

2) Connect it to the four-pin interface (J1) near the front of the 7700PTX, directly above the card unlock latch.

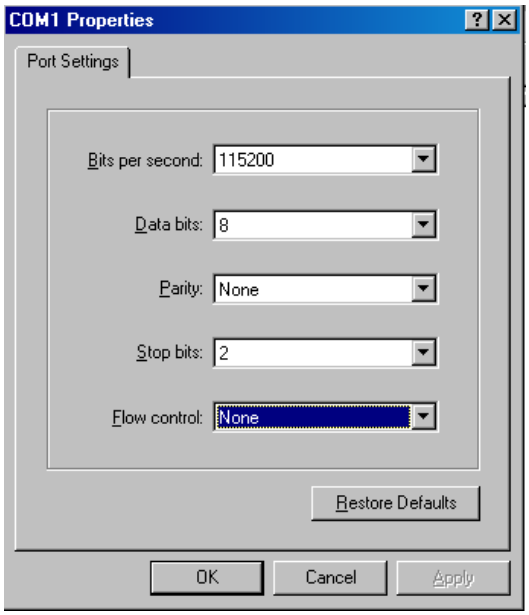
3) Connect the other end of the upgrade cable to the serial or COM port of the computer. This is commonly called a DB-9 connector.



6.2. CONFIGURING THE SERIAL CONNECTION

1. On the Windows computer, click “Start”. A menu opens.
2. Click “Programs”. A menu opens.
3. Click “Accessories” A menu opens.
1. Click “Communications”. A menu opens.
2. Click “HyperTerminal”. A window opens.
3. Enter a name for your connection. Example: “PTX”.
4. Press the <Enter> key. A new “Connect To” window opens.

5. Enter country and area code details in the appropriate spaces. If COM1 is already taken for another device, choose COM2.
6. Press the <Enter> key or click OK. “HyperTerminal” and “Properties ”windows open.

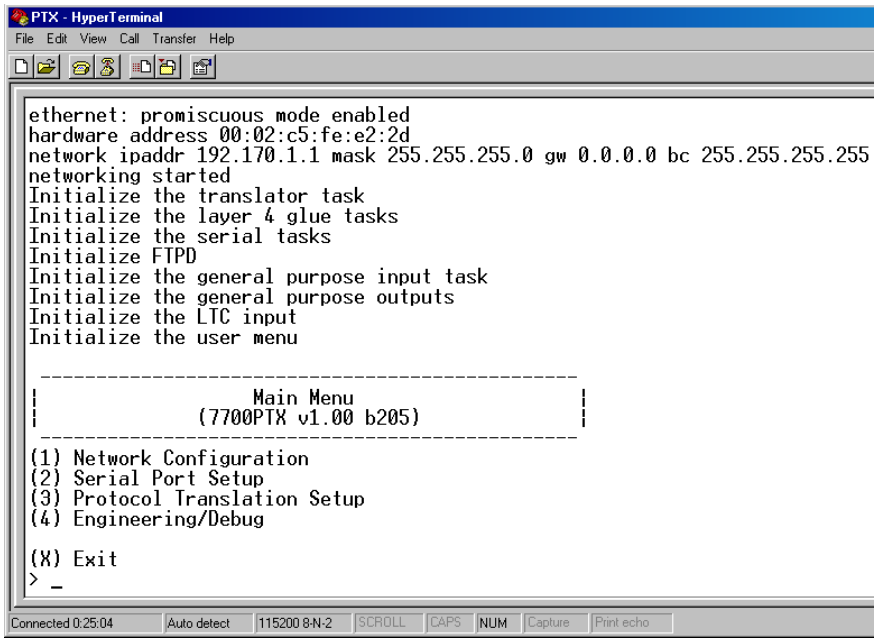


7. Enter the information as listed in the illustration above, the same as in the table below.

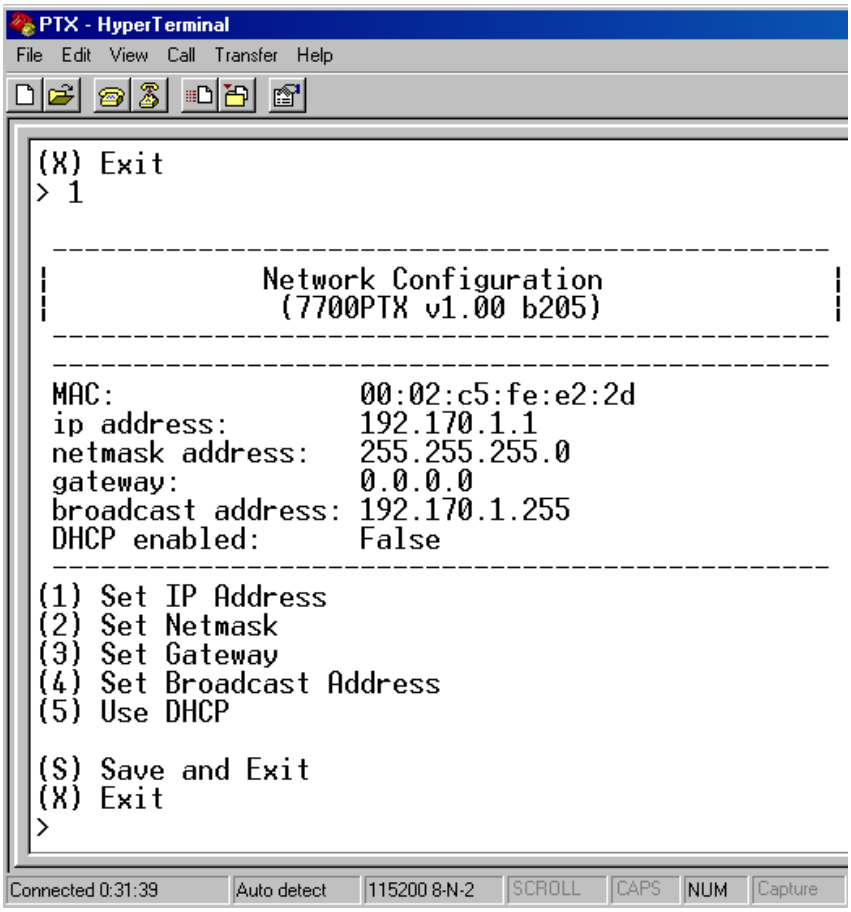
Baud	115200
Data bits	8
Parity	None
Stop bits	2
Flow Control	None

8. Press the <Enter> key or click OK. The “Properties” window closes, leaving the HyperTerminal window open.

9. Apply power to the card. The boot sequence is displayed in the HyperTerminal window.



10. Use the numbered menu on the HyperTerminal window to change settings. For example, press 1 and <Enter> to change the Network Configuration, including IP address, Net Mask, Gateway, and Broadcast Address, or to use DHCP.



6.3. FINDING THE COMPUTER IP ADDRESS

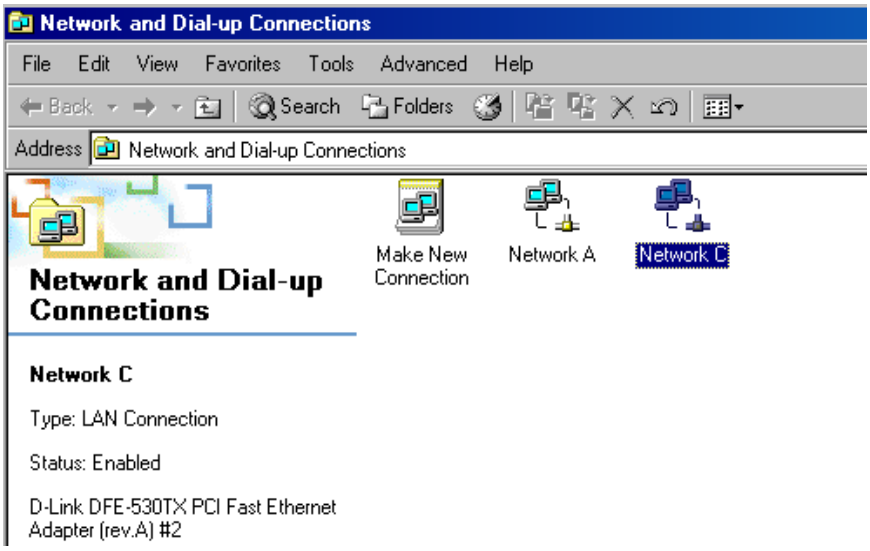
On a network, you might not have any control over what the IP address of your computer is. The following example is for Windows 2000, which may differ from other operating systems.

To learn the IP address of your computer in MSFT Windows 2000:

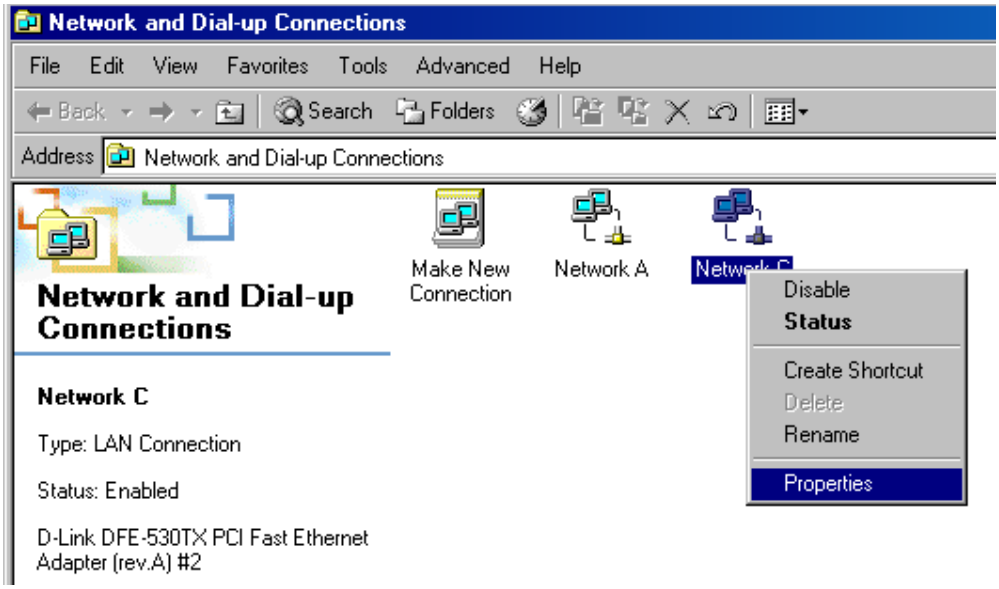
1. Click “Start”. A menu opens.
2. Click “Programs”. A menu opens.
3. Click “Accessories” A menu opens.
4. Click “Communications”. A menu opens.
5. Click “Network and Dial-up Connections”. A new pane opens. In the new pane will be icons, including one titled “Make a New Connection”. Your network card icon(s) should also be visible there.

If there is no network card icon, or none configured in the computer, please see your IT staff

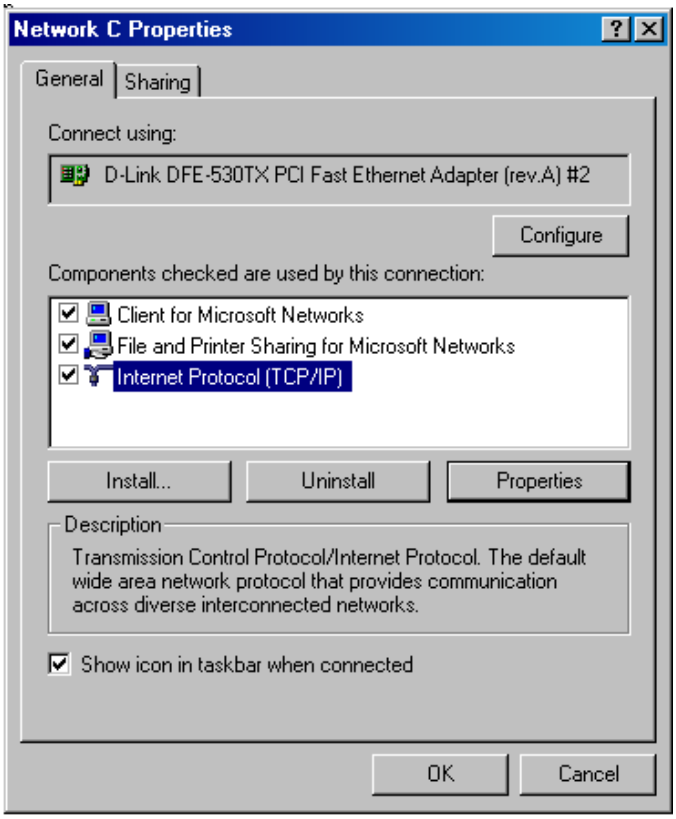
In the example below there are two Network Interface Cards. Network A is the corporate network, which we won’t change. Network C is what we’ll use to connect to the PTX.



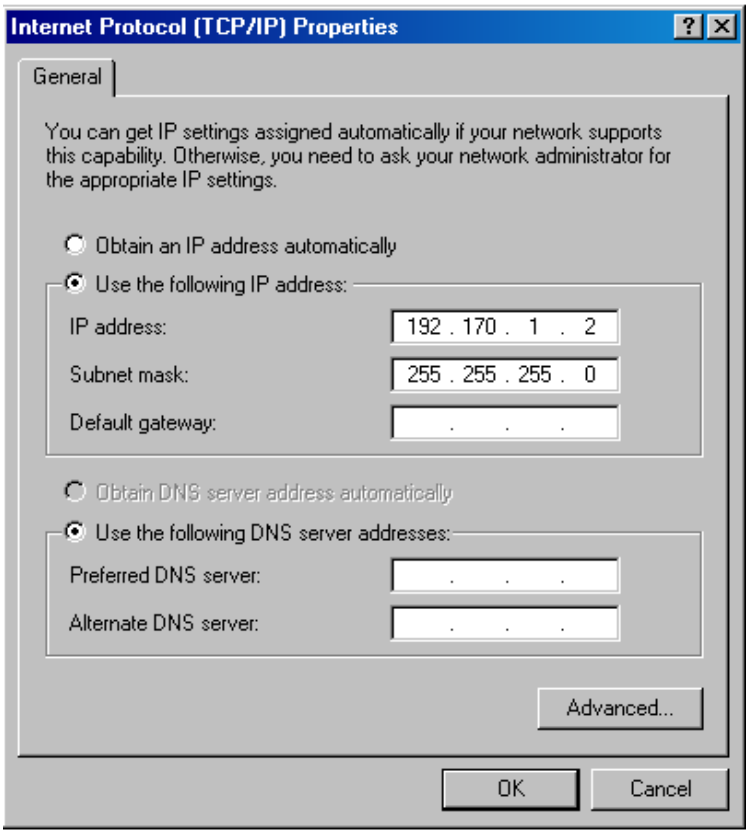
6. Highlight the icon of the NIC you wish to use to connect with the PTX.
7. Right click the icon. A menu opens.



8. Click “Properties”. A Network Properties window opens.



9. Ensure a box next to “Internet Protocol (TCP/IP)” is checked, meaning it is installed. If TCP/IP is not installed in the computer, please see your IT staff.
10. Highlight “Internet Protocol (TCP/IP)”
11. Click on the PROPERTIES button. A TCP/IP Properties window opens.



12. View the IP Address provided. If no IP address is present, you must enter one, as you cannot obtain one automatically from the PTX.

6.4. SETTING THE COMPUTER IP ADDRESS

13. In the "Properties" window, click the round box next to "Use the following IP address".
14. Enter the IP address desired. Example: 192.170.1.2
15. Your PTX and NIC must be on the same subnet. If no number is already specified, enter 255.255.255.0 as the Subnet Mask.
16. Click OK. The TCP/IP Properties window closes.
17. Click OK. The Network Properties window closes.

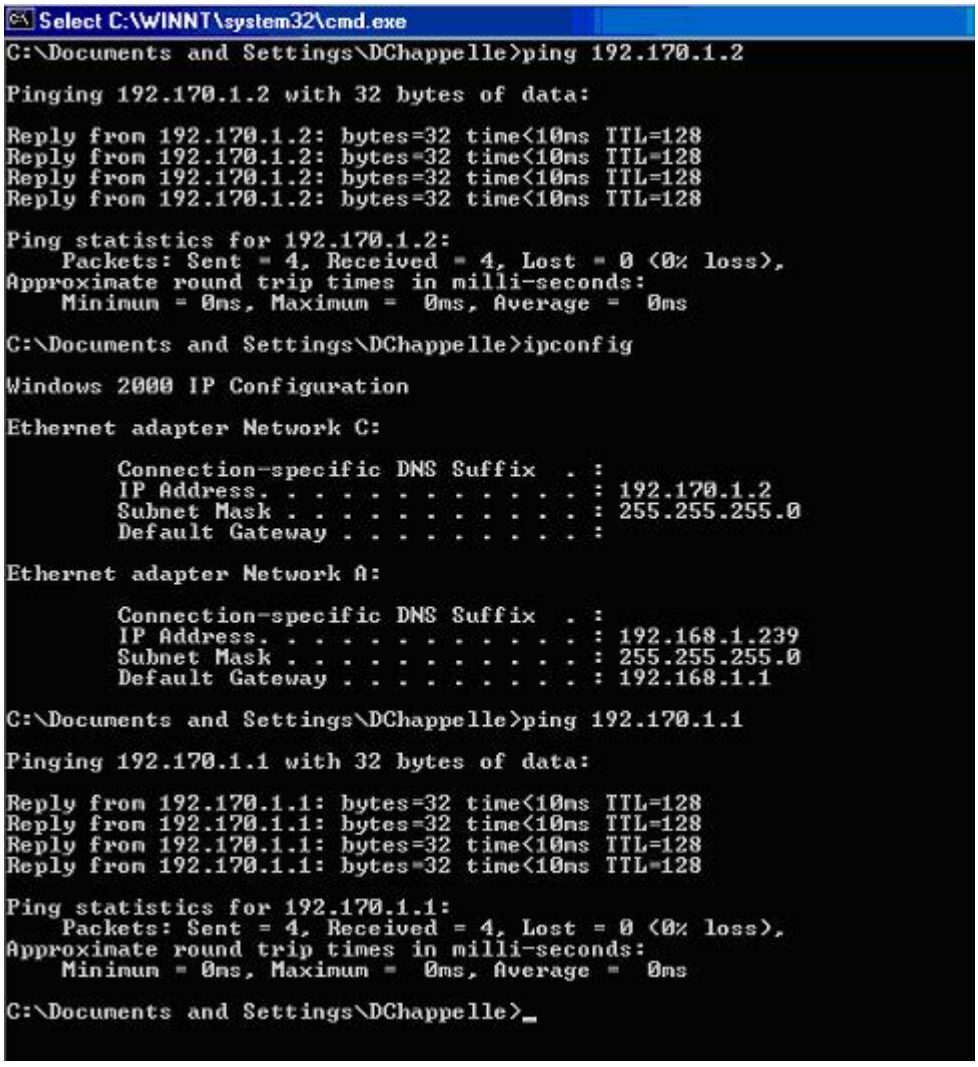
During normal operation, press down the card edge toggle switch to view the IP address on the card edge LCD.

6.5. TESTING AN ETHERNET CONNECTION

Ping is a method of determining if a device is connected to a network. You can ping the addresses of your PTX and computer network interface cards.

1. Click Start. A menu opens
2. Click Run. A windowpane opens
3. Type "Cmd" and press enter. The Command Prompt windowpane opens.

4. At the Command Prompt, type *ping*, space, and the IP address of the device you are pinging. Press Enter. You should see the results of your ping in the command prompt window.



Once your computer NIC IP Address is correctly configured you can communicate with other devices on the network.

7. PERFORMING A FIRMWARE UPGRADE

There are two ways to upgrade PTX firmware:

1. Using a terminal application such as *HyperTerminal* to perform the upgrade via a serial connection
2. Using FTP to perform the upgrade via TCP/IP

FTP is recommended, as it is much quicker.

7.1. FTP

Suppose the PTX IP address is 192.168.18.22, its firmware file is called ptx.bin, and the firmware file is located in c:\temp.

1. Open a command prompt window (in Windows: Start/Programs/Accessories/Command Prompt)
2. Enter the command: *cd c:\temp*.

3. Enter the command: *ftp –A 192.168.18.22*.
4. Enter the FTP command: *put ptx.bin*.
5. When the transfer is complete enter the FTP command: *bye*.
6. Step 5 begins the process of saving the firmware to the non-volatile flash of the PTX. The save process is displayed as a percentage on the PTX LCD. Once the process is complete, the PTX LCD again displays the product name and firmware version.
7. Power off the PTX.
8. Power on the PTX.

7.2. SERIAL

Suppose the firmware file is called ptx.bin:

1. Power off the PTX.
2. Connect an adapter cable to a PC running a console or terminal application, such as Windows *HyperTerminal*, to the PTX debug/monitor port.
3. Set the terminal application serial port settings to 115200 8 N 2.
4. Set the PTX run/upgrade jumper to the upgrade position.
5. Power on the PTX.
6. After a few moments, the prompt *PPCBOOT*> will appear. Enter the command "*upload".*
7. Start the firmware upload on the terminal application (for instance, in *HyperTerminal* select Transfer/Send File…), use Xmodem as the transfer protocol, and select firmware file ptx.bin.
8. Once the upload is complete the message *upload okay* is displayed.
9. Power off the PTX.
10. Set the PTX run/upgrade jumper to the run position.
11. Remove the serial adapter cable.
12. Power on the PTX.

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