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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Apr 07
1.1	Updated card edge drawing	Nov 07
1.2	Added features, block diagram, technical specs & VistaLINK® section.	Nov 08
1.3	Removed references to GPI, GPO, LTC specifications	Apr 09
1.4	Removed block diagram	Nov 09

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1. OVERVIEW

The 7700PTX Universal Protocol Translator module provides an interface between third-party and Evertz equipment. The 7700PTX communicates with third-party equipment either via one of four serial ports or via a built in Ethernet port. These ports can provide bi-directional protocol support.

Function:
The function of the 7700PTX generally falls into one of 4 categories:

1. **Third-Party Router Control:** In this mode the 7700PTX affords *Vista*LINK® the ability to control and monitor third-party routers. The 7700PTX can convey UMD information to Evertz monitoring equipment.

2. **Third-Party UMD Interface:** In this mode the 7700PTX translates third-party UMD protocol data into a format suitable for Evertz monitoring equipment.

3. **Third-Party Switcher Interface:** In this mode the 7700PTX extracts tally information from third-party switchers and translates and conveys that tally information to Evertz monitoring equipment.

4. **Third-Party Device Control:** In this mode the 7700PTX allows *Vista*LINK® to control third-party devices such as satellite controllers.

Features:
- 4 serial ports RS232/422 selectable
- Modular, conveniently fits into 7700FR-C 3RU frame
- Frame status trigger
- *Vista*LINK® - capable for remote monitoring and control via SNMP (using *Vista*LINK® PRO)

The 7700PTX-PB is a protocol translator that can accept, on any of its serial 4 serial ports, the Pro-Bel protocols SW-P-06 and SW-P-04. The 7700PTX-PB translates the Pro-Bel protocol to the Image Video protocol then transmits it over TCP to a UMD peer. Figure 1-1 shows how the 7700PTX-PB is typically set up.

Figure 1-1: Typical 7700PTX-PB Setup

In this example, the Pro-Bel controller is connected to serial port 1 of the 7700PTX-PB. The 7700PTX-PB communicates with two PPVs distributed over two MVP chassis.

2. CARD EDGE CONTROLS

2.1. DETERMINING CURRENT IP ADDRESS SETTINGS

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

2.2. RESTORING FACTORY DEFAULTS

To restore all settings to factory defaults, apply power to the card while holding the toggle switch UP until the green LED is illuminated.

2.3. CARD EDGE LEDS

LED 22 is illuminated when Ethernet activity is detected.

All other card edge LEDs are for factory use only.

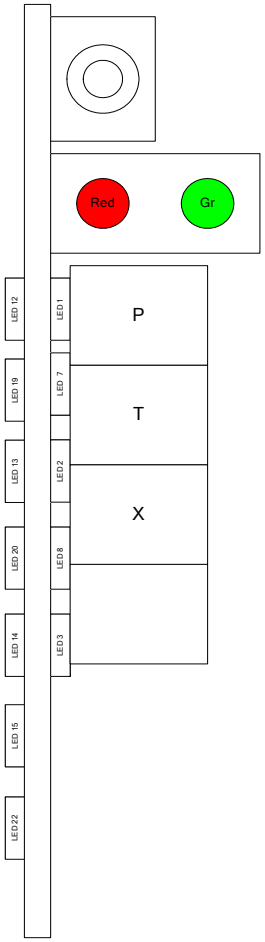

Figure 2-1: PTX Card Edge

3. TECHNICAL SPECIFICATIONS

3.1. DATA INPUT SERIAL PORT

Number of Ports: 4 RS-232 or 3 RS-422
Connector: Phoenix Terminal Block pins
Baud Rate: Up to 1Mbaud

3.2. ELECTRICAL

Voltage: +12V DC
Power: < 6W
Safety: ETL Listed, complies with EU safety directives
EMI/RFI: Complies with FCC Part 15, Class A
EU EMC Directive

3.3. PHYSICAL

Number of slots: 2

4. CONFIGURATION

4.1. CONFIGURATION STEPS

The basic steps required to configure the 7700PTX-PB are as follows:

1. Connect a PC running a console application to the PTX debug/monitor port via the adapter cable.
2. Configure the network parameters of the 7700PTX-PB.
3. Configure the parameters of each serial port to match those of the connected Pro-Bel equipment.
4. Configure the Pro-Bel protocol parameters should changes to the defaults be required.
5. Configure the IP address and TCP port of the UMD peer(s).
6. Save all configuration parameters.
7. Power off the 7700PTX-PB.
8. Physically wire the serial port(s) of the 7700PTX-PB to the Pro-Bel equipment.
9. Power on the 7700PTX-PB.

4.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-PB is configured via the debug/monitor port, the header of which is labelled J1. A special Evertz adapter cable allows this port to connect to the COM port of a personal computer. The following steps describe this procedure.

1. Locate 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.

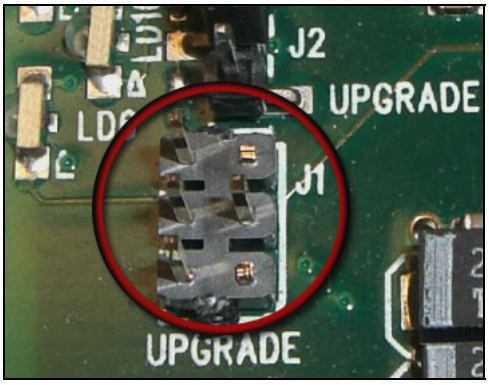

Figure 4-1: Upgrade Jumper

3. Connect the other end of the upgrade cable to a straight-through serial cable. Connect the serial cable to the serial or COM port of the computer.

4. Initiate HyperTerminal on your computer by selecting:
"Start\Programs\Accessories\Communications\HyperTerminal".

5. Enter a name for your connection, for example: PTX.

6. Press the <Enter> key. A new "Connect To" window opens.

Figure 4-2: 'Connect To' Window

7. Select COM1 for the "*Connect using*' setting. If COM1 is in use, choose an alternate COM port.

8. Press the <Enter> key or select OK. This opens the "*COM Properties*" window as shown in Figure 4-3.

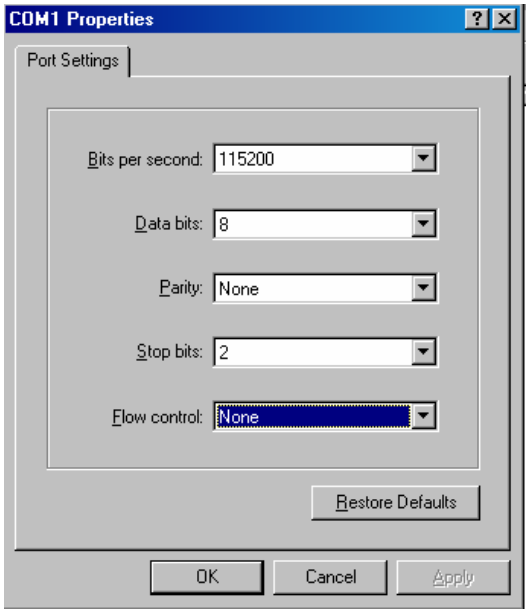

Figure 4-3: COM1 Properties

9. Enter the information as listed in Figure 4-3.

10. Press the <Enter> key or select OK. The "*COM Properties*" window closes, leaving the HyperTerminal window open.

11. Apply power if the 7700PTX-PB does not have power. The boot sequence and *Main Menu* are displayed in the HyperTerminal window.

12. If the 7700PTX-PB has power, press the <Enter> key to view the 7700PTX-PB's menu system.

13. Various 7700PTX-PB parameters are configurable via the 7700PTX-PB's menu system, the root of which is called *Main Menu*.

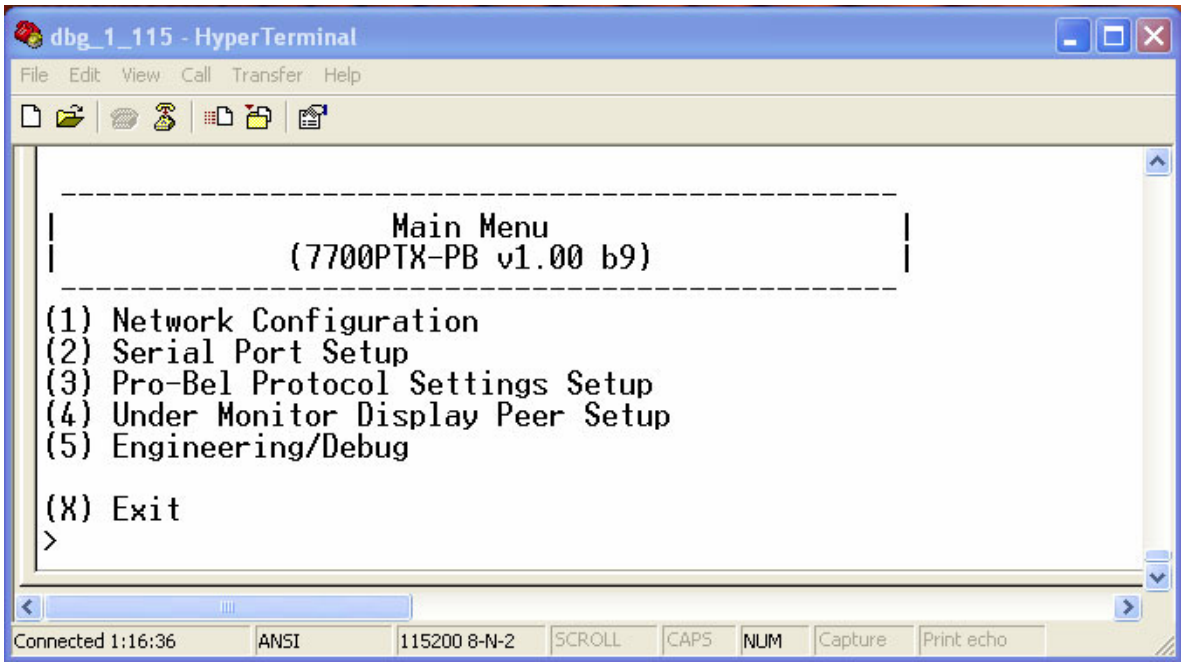

Figure 4-4: HyperTerminal Main Menu

4.3. MAIN MENU

Table 4-1 lists the entries available in the 7700PTX-PB's *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 that are connected to Pro-Bel equipment.
3	**Pro-Bel Protocol Settings Setup**	Parameters pertaining to the Pro-Bel protocol.
4	**Under Monitor Display Setup**	IP address and TCP port of UMD peers.
5	**Engineering/Debug**	Used for troubleshooting.

Table 4-1: 7700PTX-PB Main Menu

4.4. NETWORK CONFIGURATION

1. From the *Main Menu* select *Network Configuration*.

2. If DHCP (Dynamic Host Configuration Protocol) is desired, then the *Use DHCP* field is set to *True*. Otherwise, the IP address, subnet mask, and gateway (if any) are set and the *Use DHCP* field is set to *False*.

3. Once the network settings are configured, select *Save* and *Exit* before exiting the *Network Configuration* to save the settings, otherwise select *Exit*.

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

4.5. SERIAL PORT SETUP

4.5.1. Parameters

The 7700PTX-PB has 4 serial ports. The parameters associated with each serial port are listed in Table 4-2.

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

Table 4-2: Serial Port Parameters

The serial port settings of the 7700PTX-PB must match those of the Pro-Bel equipment. The 7700PTX-PB must be rebooted for any serial parameter changes to take effect.

4.5.2. Back Plate

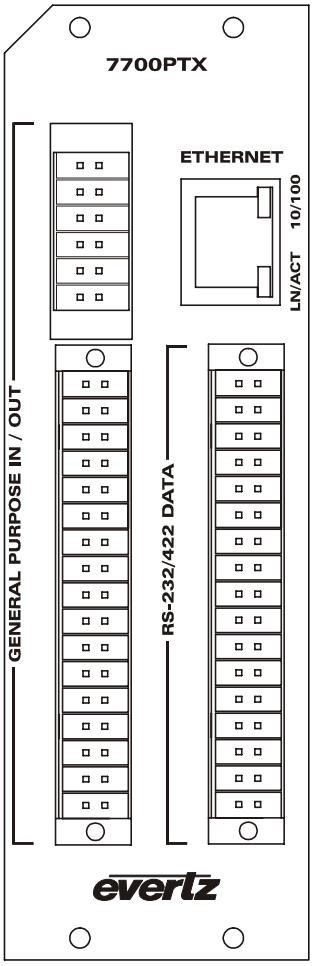

Figure 4-5: 7700PTX Back Plate

4.5.3. RS-232 Wiring

Figure 4-6 shows which pins of the back plate are used for RS-232 serial connections.

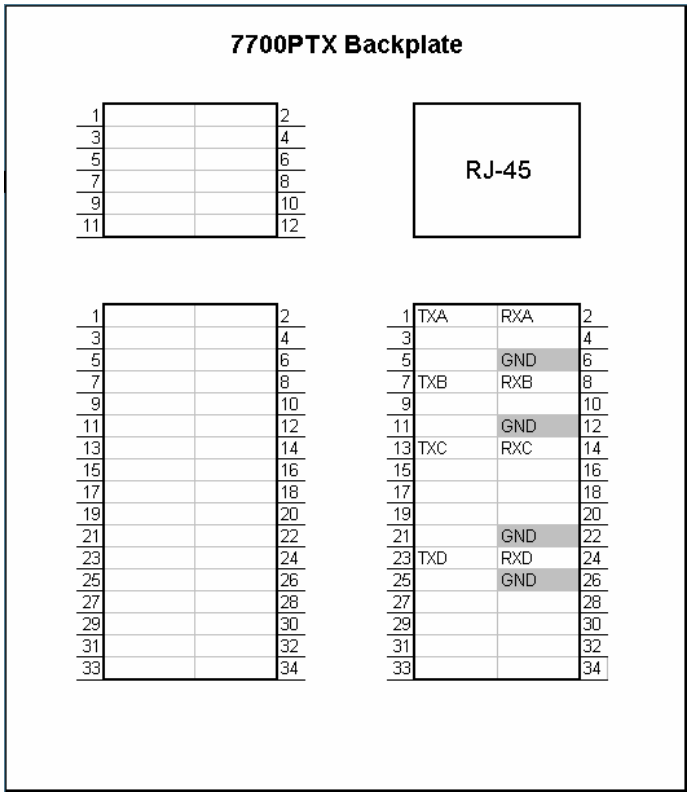

Figure 4-6: RS-232 Pins

Table 4-3 outlines how to connect the 7700PTX-PB to the Pro-Bel equipment for RS-232 operation.

7700PTX-PB			Pro-Bel Equipment
Port	**Pin Name**	**Pin**	**Pin Name**
1	**TXA**	1	**RX**
	RXA	2	**TX**
	GND	6	**GND**
2	**TXB**	7	**RX**
	RXB	8	**TX**
	GND	12	**GND**
3	**TXC**	13	**RX**
	RXC	14	**TX**
	GND	22	**GND**
4	**TXD**	23	**RX**
	RXD	24	**TX**
	GND	26	**GND**

Table 4-3: RS-232 Wiring

4.5.4. RS-422 Wiring

Figure 4-7 displays which pins of the back plate are used for RS-422 serial connections.

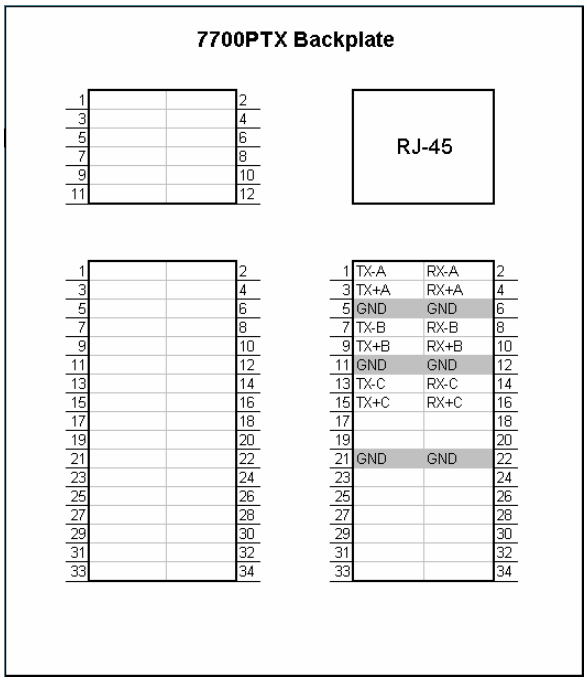

Figure 4-7: RS-422 Pins

Table 4-4 outlines how to connect the 7700PTX-PB to the Pro-Bel equipment for RS-422 operation.

7700PTX-PB			Pro-Bel Equipment
Port	**Pin Name**	**Pin**	**Pin Name**
1	**TX-A**	1	**RX-**
	TX+A	3	**RX+**
	RX-A	2	**TX-**
	RX+A	4	**TX+**
	GND	6	**GND**
2	**TX-B**	7	**RX-**
	TX+B	9	**RX+**
	RX-B	8	**TX-**
	RX+B	10	**TX+**
	GND	12	**GND**
3	**TX-C**	13	**RX-**
	TX+C	15	**RX+**
	RX-C	14	**TX-**
	RX+C	16	**TX+**
	GND	22	**GND**

Table 4-4: RS-422 Wiring

The 7700PTX-PB's fourth serial port is not RS-422 capable.

4.6. PRO-BEL PROTOCOL SETUP

4.6.1. Refresh Cycle Count

The Pro-Bel equipment will send protocol messages to the 7700PTX-PB on a continuous basis. There may not be any changes in the contents of these messages. A message count can be specified when, in the absence of changes, the 7700PTX-PB will refresh the PPV(s) UMD data. By default, this message cycle count is set to 50. If the 7700PTX-PB needs to refresh the PPV(s) more frequently a smaller count should be selected. If the 7700PTX-PB needs to refresh the PPV(s) less frequently a larger count should be selected.

4.6.2. Display ID Offset

This is the value added to Pro-Bel's device number to obtain the display ID which the 7700PTX-PB transmits to the PPV(s). Table 4-5 shows the default display ID offsets. Although 0 – 31 have been allocated, Pro-Bel control software currently uses device numbers 1 – 16.

Pro-Bel Device Number	Serial Port 1 (Offset = 0) Display ID	Serial Port 2 (Offset = 32) Display ID	Serial Port 3 (Offset = 64) Display ID	Serial Port 4 (Offset = 96) Display ID
0	0	32	64	96
1	1	33	65	97
2	2	34	66	98
3	3	35	67	99
4	4	36	68	100
5	5	37	69	101
6	6	38	70	102
7	7	38	71	103
8	8	40	72	104
9	9	41	73	105
10	10	42	74	106
11	11	43	75	107
12	12	44	76	108
13	13	45	77	109
14	14	46	78	110
15	15	47	79	111
16	16	48	80	112
17	17	49	81	113
18	18	50	82	114
19	19	51	83	115
20	20	52	84	116
21	21	53	85	117
22	22	54	86	118
23	23	55	87	119
24	24	56	88	120
25	25	57	89	121
26	26	58	90	122
27	27	59	91	123
28	28	60	92	124
29	29	61	93	125
30	30	62	94	126
31	31	63	95	127

Table 4-5 : Device Number to Display ID Mapping

4.6.3. UMD Text Selection

The setting permits the 7700PTX-PB to select only certain parts of the received UMD text.

Setting	Description
All characters	Use all characters of the received UMD text.
First 8 characters	Use only the first 8 characters of the received UMD text.
Last 8 characters	Use only the last 8 characters of the received UMD text

Table 4-6: UMD Text Selection

4.7. UNDER MONITOR DISPLAY SETUP

Suppose we have the setup of Figure 4-8:

Figure 4-8: UMD Peer Configuration

Where:

- A Pro-Bel device is connected to Serial Port 1 of the 7700PTX-PB.
- The 7700PTX-PB communicates with a PPV with IP address 192.168.18.50, configured to listen for Image Video UMD data on TCP port 9800
- Via the debug console *Main Menu/Under Monitor Display Peer Setup/UMD Peer Setup via Ethernet 1,* configure peer 1 IP address as 192.168.18.50, and its TCP port as 9800.

The 7700PTX-PB must be rebooted for any UMD peer changes to take effect.

5. TROUBLESHOOTING TIPS

5.1. CHECKING PRO-BEL COMMUNICATION

1. From the *Main Menu* select *Engineering/Debug*.

2. Select *Show task statistics*.

3. There are four entries, one for each serial port, listed under the heading *router protocol PCB stats…* If the item *pk rx* is reported as a non-zero hexadecimal value then the 7700PTX-PB is receiving data from the Pro-Bel equipment. If it is consistently reported as 0x00000000 then the 7700PTX-PB is not receiving data from the Pro-Bel equipment. In this case the serial settings or wiring may be incorrect or the Pro-Bel equipment may not be configured properly.

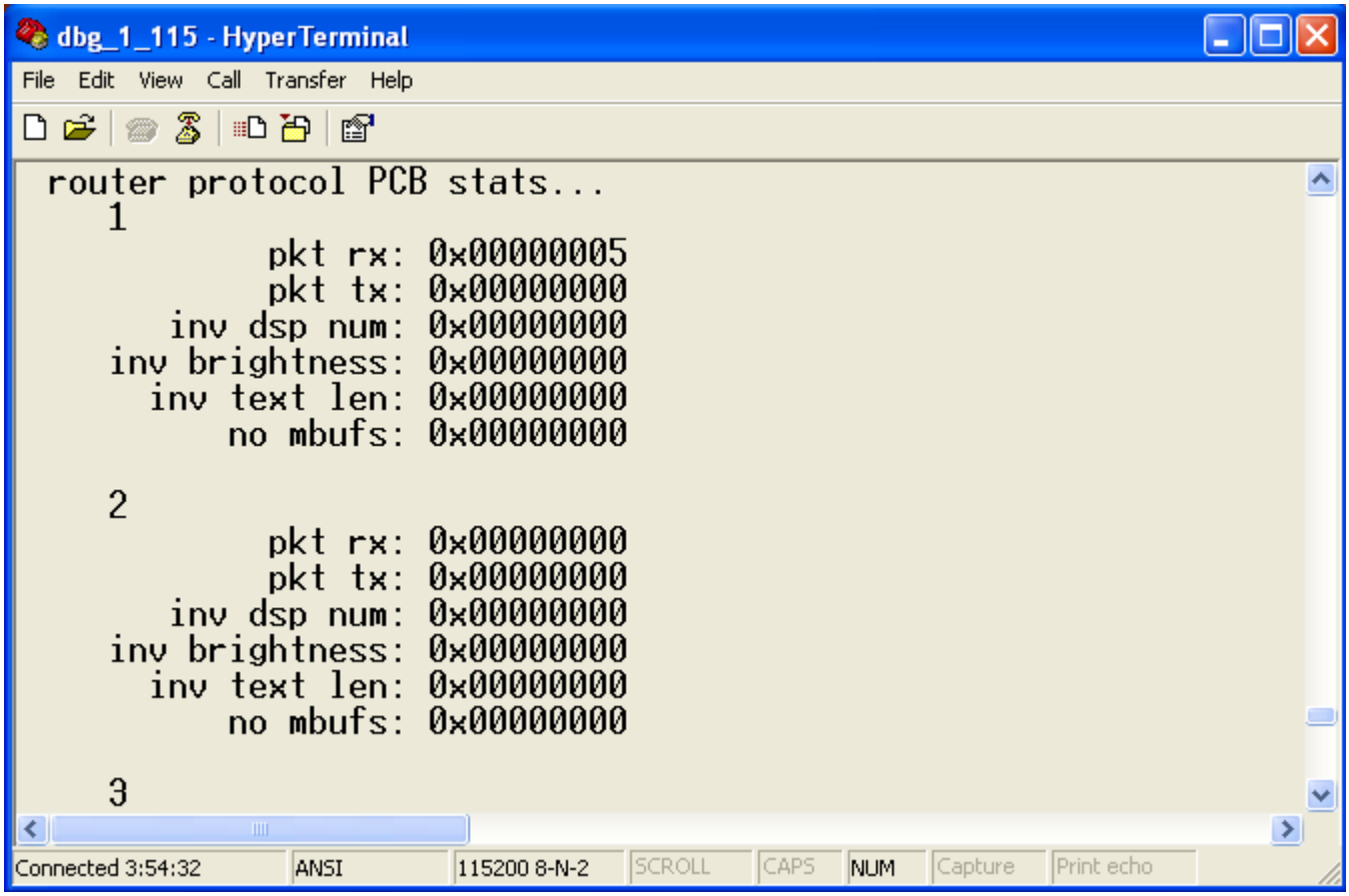

Figure 5-1: Pro-Bel Status

5.2. CHECKING UMD COMMUNICATION

1. From the *Main Menu* select *Engineering/Debug*.

2. Select *Show task state*.

3. There are up to 12 UMD peer entries listed under the heading *UMD peer status…* A status reported as *ready* indicates the 7700PTX-PB is able to communicate with that UMD peer. A status consistently reported as something other than ready indicates the inability of the 7700PTX-PB to communicate with that UMD peer. Be sure that the UMD peer has been rebooted after being configured to receive the Image Video over TCP.

4. Figure 5-2 shows that the 7700PTX-PB is able to communicate with the UMD peer whose IP address is 192.168.18.40 and who is listening on TCP port 9800.

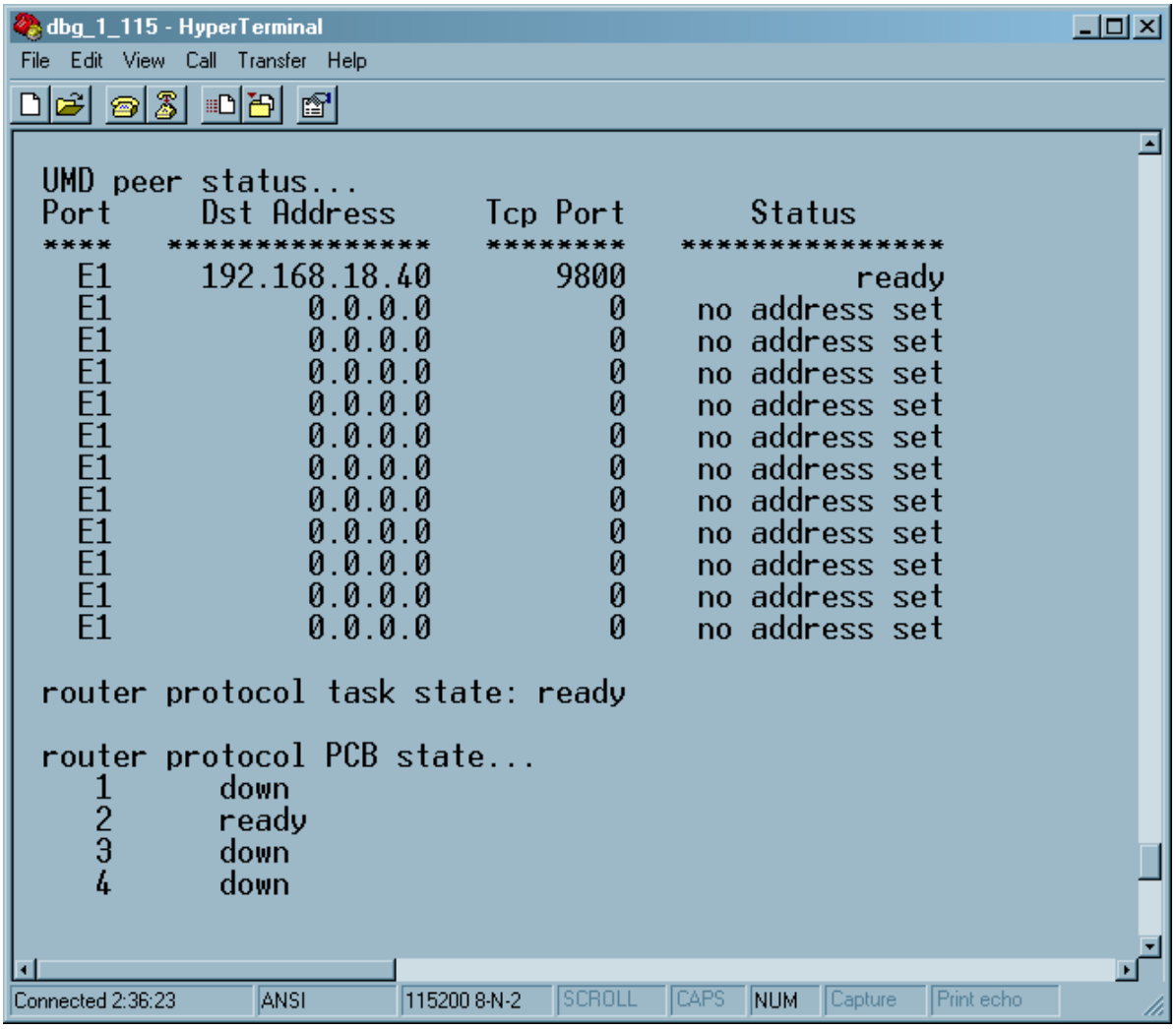

Figure 5-2: UMD Peer Status

6. PERFORMING A FIRMWARE UPGRADE

There are two ways to upgrade PTX firmware:

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

6.1. FTP PROCEDURE

1. Open a command prompt window (in Windows: Start/Programs/Accessories/Command Prompt)

2. Enter the location of the firmware file. For example, type *cd c:\temp*.

3. Enter the command *ftp* followed by the PTX IP address.
   For example, type *ftp –A 192.168.18.22*.

4. Enter the FTP command *put* followed by the firmware file name. For example, *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.

6.2. SERIAL PROCEDURE

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. Configure the port settings of the terminal program as follows:

Baud	**115200**
Parity	**no**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

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 the firmware file. For example, *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.

7. *VISTA*LINK® REMOTE MONITORING/CONTROL

7.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® is Evertz' remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. *Vista*LINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through *Vista*LINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, *Vista*LINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz *Vista*LINK®-C Configuration Utility graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled products.

2. Managed devices, (such as 7700PTX modules), each with a unique address (OID), communicate with the NMS through an SNMP Agent. The 7700PTX-PB communicates directly with the manager using its internal Agent.

3. A virtual database known as the Management Information Base (MIB) lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.