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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Draft	Sept 05
1.1	Minor Corrections	Feb 07
1.2	Standardized Format	Mar 07
1.3	Added ASCII Plus Protocol Setup	Apr 07
1.4	Updated Card Edge drawing	Nov 07
1.5	Added features, block diagram, technical specs, and VistaLINK® section	Nov 08
1.6	Removed references to GPI, GPO, LTC specifications	Apr 09
1.7	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
- Selectable +5V or +12V supply for driving GPI over longer cable runs
- 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-AP is a protocol translator that can accept, on any of its 4 serial ports, the ASCII Plus protocol generated by Andromeda equipment. The 7700PTX-AP translates the ASCII Plus protocol to the Image Video protocol then transmits it over TCP to a UMD peer. Figure 1-1 shows how the 7700PTX-AP is typically set up.

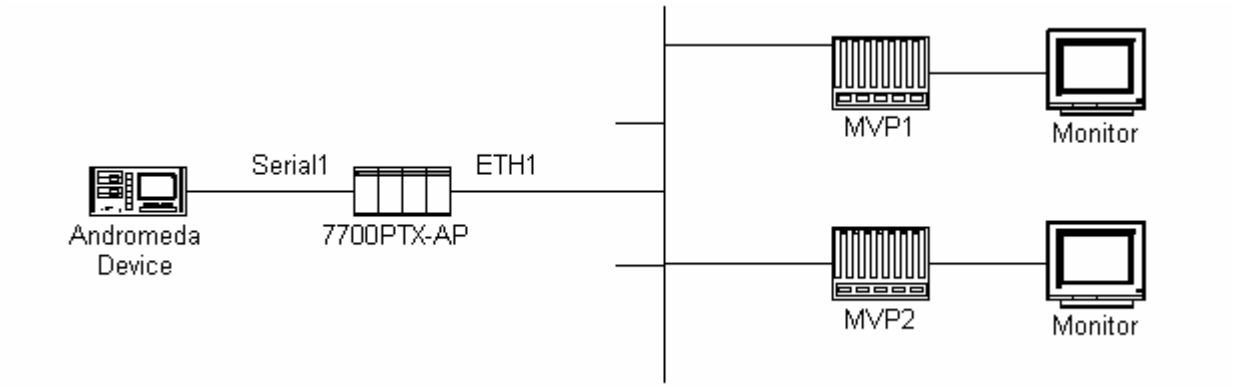


Figure 1-1: Typical 7700PTX-AP Master Mode Setup

In this example, the Andromeda device is connected to serial port 1 of the 7700PTX-AP. The 7700PTX-AP 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.

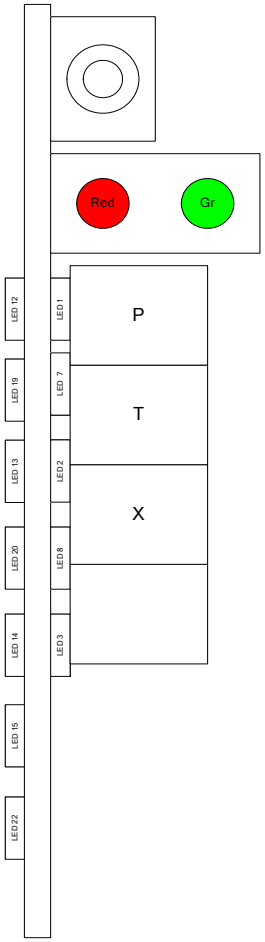


Figure 2-1: PTX Card Edge

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

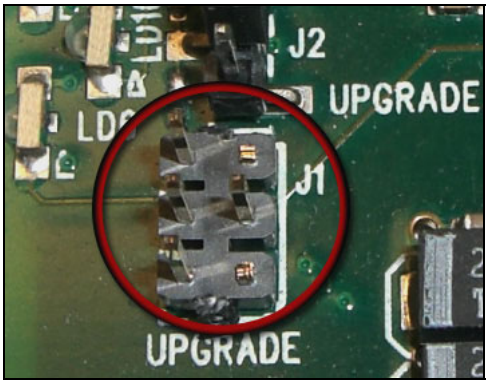
The basic steps required to configure the 7700PTX-AP are as follows:

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-AP.
3. Configure the parameters of each serial port to match those of the connected Andromeda equipment.
4. Enable user-defined display mode if required.
5. Configure the IP address and TCP port of the UMD peer(s).
6. Save all configuration parameters.
7. Power off the 7700PTX-AP.
8. Physically wire the serial port(s) of the 7700PTX-AP to the Andromeda equipment.
9. Power on the 7700PTX-AP.

4.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-AP is configured via the debug/monitor port, the header of which is labeled 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.



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 should open as shown in Figure 4-1.

Figure 4-1: Connect To Window

7. From the "*Connect using:*" drop down menu, select COM1. If COM1 is in use, choose an alternate COM port.

8. Press the <Enter> key or select OK. This opens the "*COM Properties*" window.

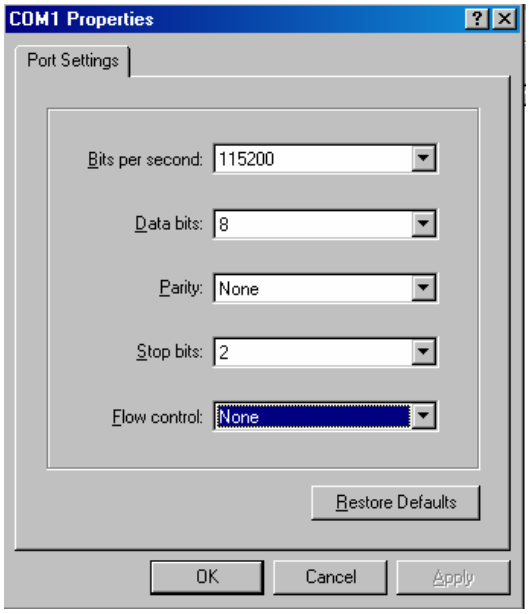


Figure 4-2: COM1 Properties

9. Enter the information as listed in the screen above in Figure 4-2.

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

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

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

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

4.3. MAIN MENU

Table 4-1 lists the entries available in the 7700PTX-AP'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 Andromeda equipment.
3	**ASCII Plus Protocol Setup**	Permits user-defined display mode.
4	**Under Monitor Display Setup**	IP address and TCP port of UMD peers.
5	**Engineering/Debug**	Used for troubleshooting.

Table 4-1: 7700PTX-AP 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-AP must be rebooted for any network setting changes to take effect.

4.5. SERIAL PORT SETUP

4.5.1. Parameters

The 7700PTX-AP 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-AP must match those of the Andromeda equipment. The 7700PTX-AP must be rebooted for any serial parameter changes to take effect.

4.5.2. Back Plate

Figure 4-3 provides an illustration of the 7700PTX rear plate.

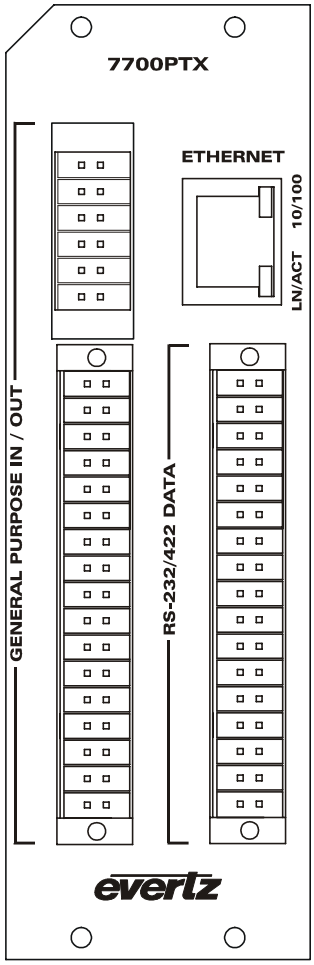


Figure 4-3: 7700PTX Back Plate

4.5.3. RS-232 Wiring

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

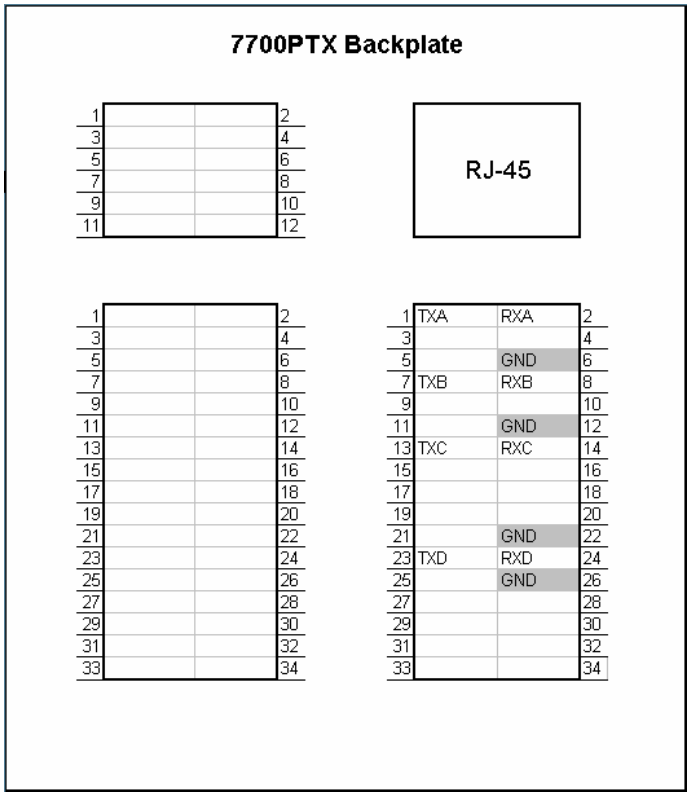


Figure 4-4: RS-232 Pins

Table 4-3 outlines how to connect the 7700PTX-AP to the Andromeda equipment for RS-232 operation.

7700PTX-AP			Andromeda 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 4-5 displays which pins of the rear plate are used for RS-422 serial connections.

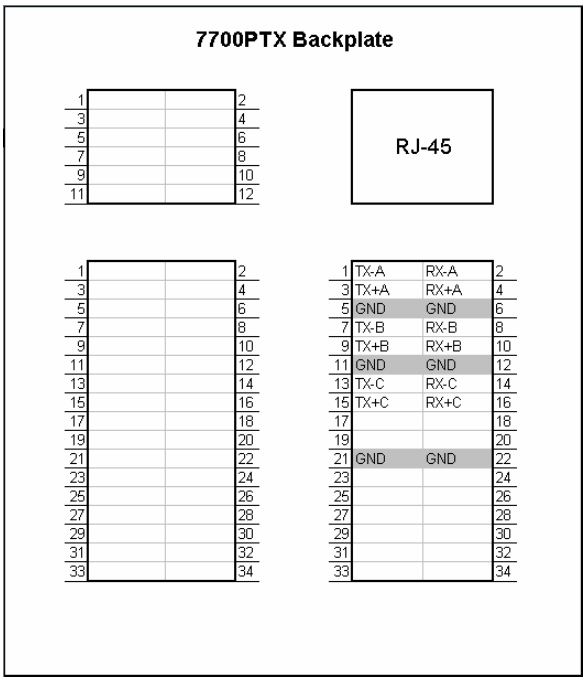


Figure 4-5: RS-422 Pins

Table 4-4 outlines how to connect the 7700PTX-AP to the Andromeda equipment for RS-422 operation.

7700PTX-AP			Andromeda 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-AP's fourth serial port is not RS-422 capable.

4.6. ASCII PLUS PROTOCOL SETUP

4.6.1. Supported Commands

The 7700PTX-AP supports the following ASCII Plus protocol commands:

1. ZC – Set Colour
2. ZD – Display Set
3. ZL – Set Display and Tally Colours (nn = 00, 80, 81)
4. ZM – Set UMD Mode (short format, m ignored)
5. ZT – Set Tally LED (should be done with ZL, ZT fully supported only when user-defined display mode is enabled)

4.6.2. UMD Mapping

On the MVP, UMDs must be associated with a protocol ID. The protocol ID must match that sent by the 7700PTX-AP to the PPV(s).

4.6.3. Tally Mapping

The left ASCII Plus tally corresponds to tally 1 of the MVP. The right ASCII Plus tally corresponds to tally 2 of the MVP. On the MVP, tallies must be associated with a protocol ID. The protocol ID must match that sent by the 7700PTX-AP to the PPV(s).

4.6.4. User Defined Display Mode

Suppose the equipment generating the ASCII Plus protocol does not support the *ZM – Set UMD Mode (short format)* command. For this scenario, a user-defined display mode must be enabled on a per-port basis on the 7700PTX-AP. The user-defined display mode specifies:

- The mode under which the UMD will operate.
- An offset to the ASCII Plus address field.

To activate the user-defined display mode:

1. From the *Main Menu* select *ASCII Plus Protocol Setup.*

2. Select *Display Mode Setup For Serial Port 1* (or select the serial port to which the Andromeda equipment is connected).

3. Select *Enable user-defined display mode* and enter ***y*** at the prompt.

4. Modify the display ID offset if needed.

5. Select *Save and Exit*.

4.6.5. Display ID Offset

This is the value added to the ASCII Plus address field to obtain the display ID transmitted to the PPV(s). Table 4-5 shows an example using the first 5 ASCII Plus addresses. The ASCII Plus address field is the UMD address received by the 7700PTX-AP. The display ID is the value transmitted by the 7700PTX-AP to the PPV(s).

ASCII Plus Address Field	Serial Port 1 Display ID (Offset = 0)	Serial Port 2 Display ID (Offset = 32)	Serial Port 3 Display ID (Offset = 64)	Serial Port 4 Display ID (Offset = 96)
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

Table 4-5: Display ID Mapping

4.6.6. AP Address 0xFE Remap To 00

Some AP-based equipment uses address 0xFE in place of 0x00. For this case, address 0xFE can be remapped to 0x00 by the 7700PTX-AP provided that this setting is enabled.

The 7700PTX-AP does not need to be rebooted for any user-defined display mode changes to take effect.

4.7. UNDER MONITOR DISPLAY SETUP

The 7700PTX-AP has the ability to transmit router source label information to the UMDs of up to 12 PPVs or UMD peers.

Suppose we have the setup of Figure 4-6.

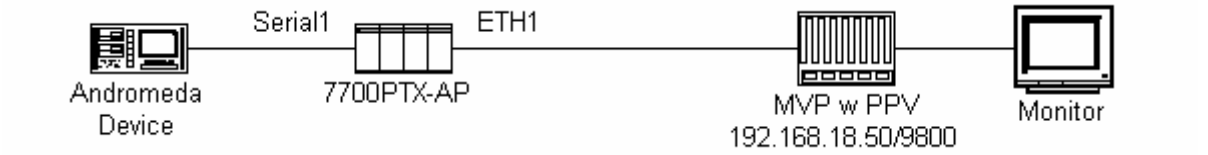


Figure 4-6: UMD Peer Configuration

Where:

- An Andromeda device is connected to Serial Port 1 of the 7700PTX-AP.
- The 7700PTX-AP communicates with a PPV using IP address 192.168.18.50, which is configured to listen for the 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-AP must be rebooted for any UMD peer changes to take effect.

5. TROUBLESHOOTING TIPS

5.1. CHECKING ANDROMEDA 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 *prot pk rx* is reported as a non-zero hexadecimal value then the 7700PTX-AP is receiving data from the Andromeda equipment. If it is consistently reported as 0x00000000 then the 7700PTX-AP is not receiving data from the Andromeda equipment. In this case the serial settings or wiring may be incorrect or the Andromeda equipment may not be configured properly.

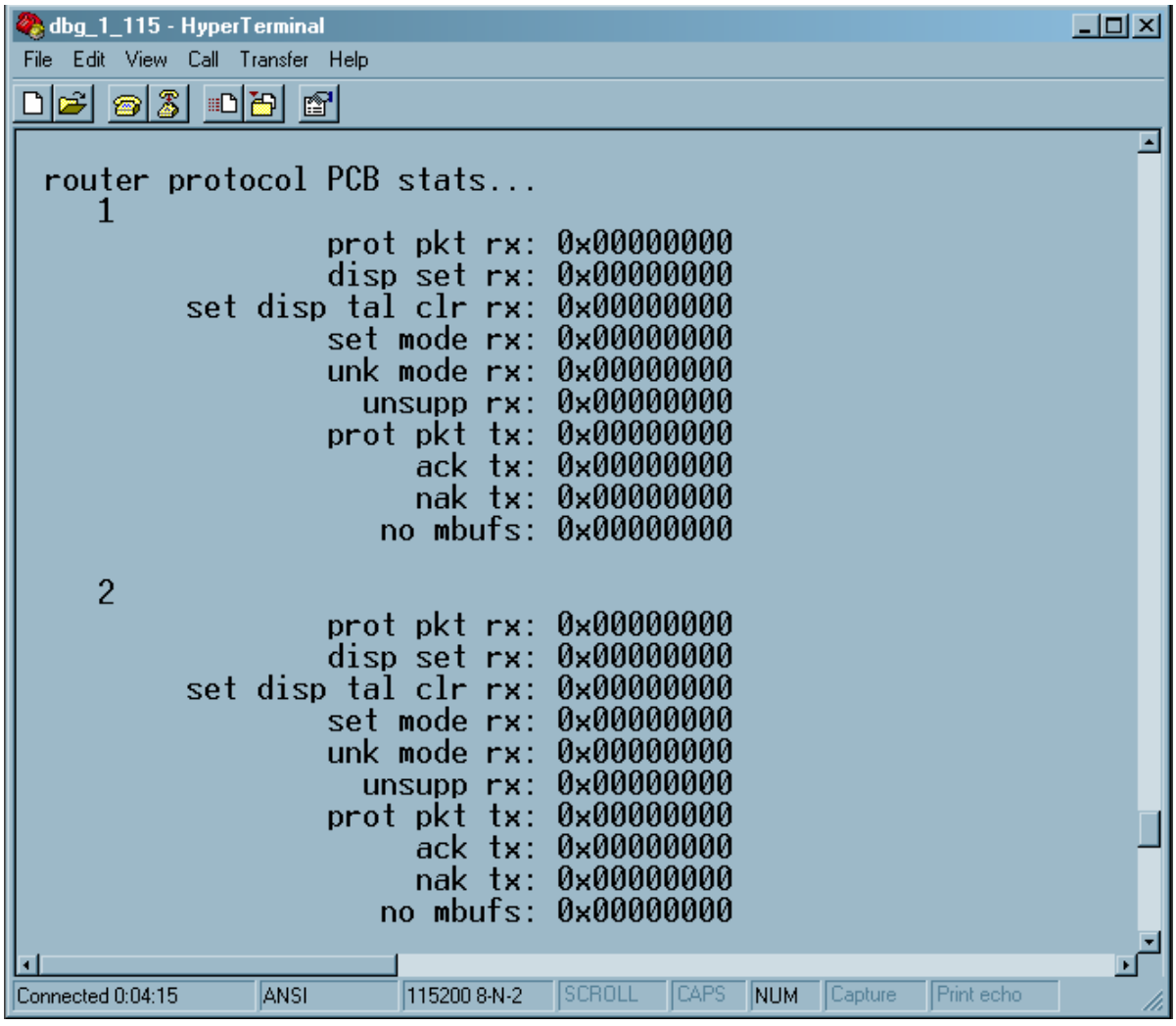


Figure 5-1: Andromeda Status

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-AP is able to communicate with that UMD peer. A status consistently reported as something other than ready indicates the inability of the 7700PTX-AP 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-AP is able to communicate with the UMD peer whose IP address is 192.168.18.40 and who is listening on TCP port 9800.

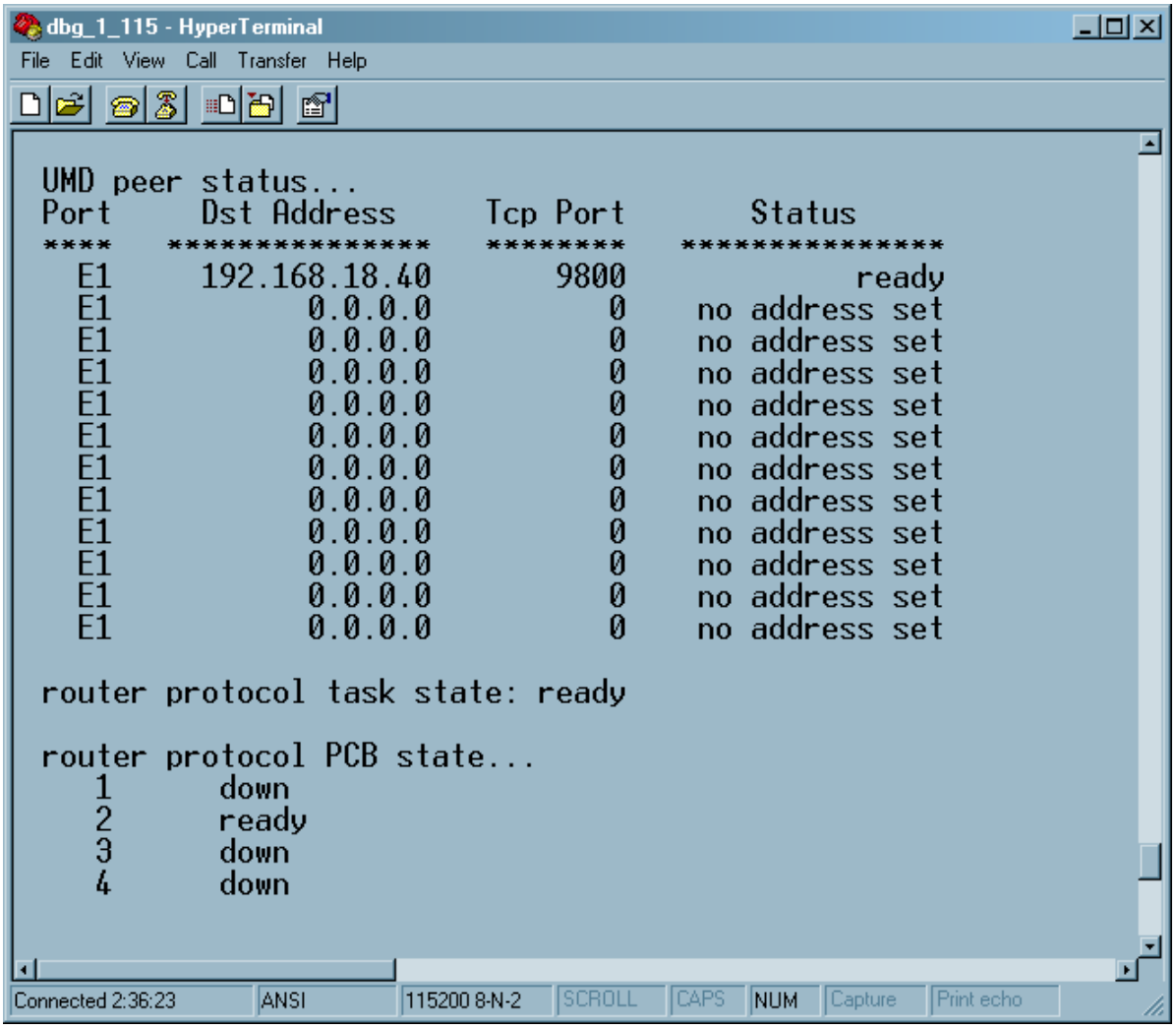


Figure 5-2: UMD Peer Status

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-AP 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.

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