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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Apr 07
1.1	Added information on source name offset and VGPI transmission	Oct 07
1.2	Updated card edge drawing	Nov 07
1.3	Updated Preview VGPI Offset information	Apr 08

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1. OVERVIEW

The 7700PTX-CTP is a protocol translator that can accept, on any of its 4 serial ports, the Contribution Tally Protocol. The typical environment, as Figure 1-1 shows, has the 7700PTX-CTP connecting to a Ross Synergy switcher. The 7700PTX-CTP, in turn, communicates with a MVP via a TCP link.

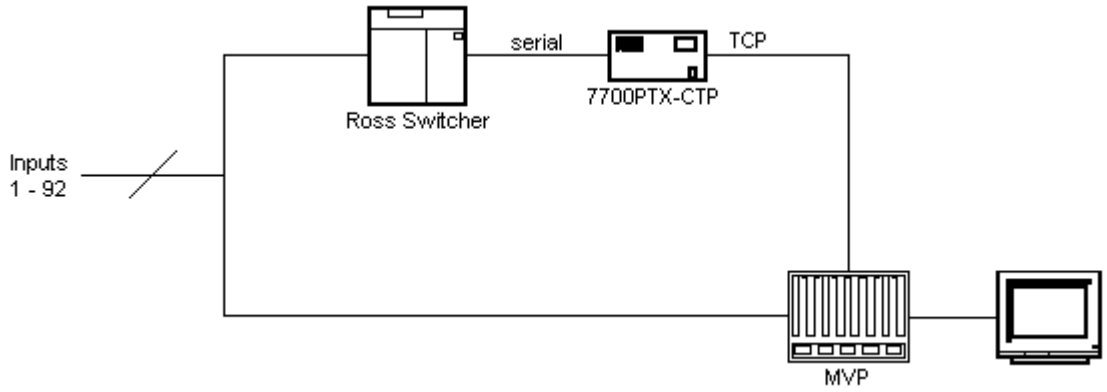

Figure 1-1: Typical 7700PTX-CTP Setup

The function of the 7700PTX-CTP is to monitor the Contribution Tally Protocol to:

1. Determine which, if any, of the switcher's 92 inputs is contributing to the switcher's program output.
2. Determine which, if any, of the switcher's 92 inputs is contributing to the switcher's preview output.
3. Determine the names of the switcher's inputs or sources.
4. Convey the information via TCP to the display card of an MVP.

As an example, suppose:

1. 12 sources are supplied to inputs 1 – 12 of the switcher.
2. A MVP is monitoring these sources.
3. A 7700PTX-CTP communicates with the switcher via a RS-422 link.
4. The 7700PTX-CTP communicates with the display card of the MVP via TCP.
5. The MVP's output card display matches that of Figure 1-2 where each input has associated with it a program tally, a preview tally, and a UMD.

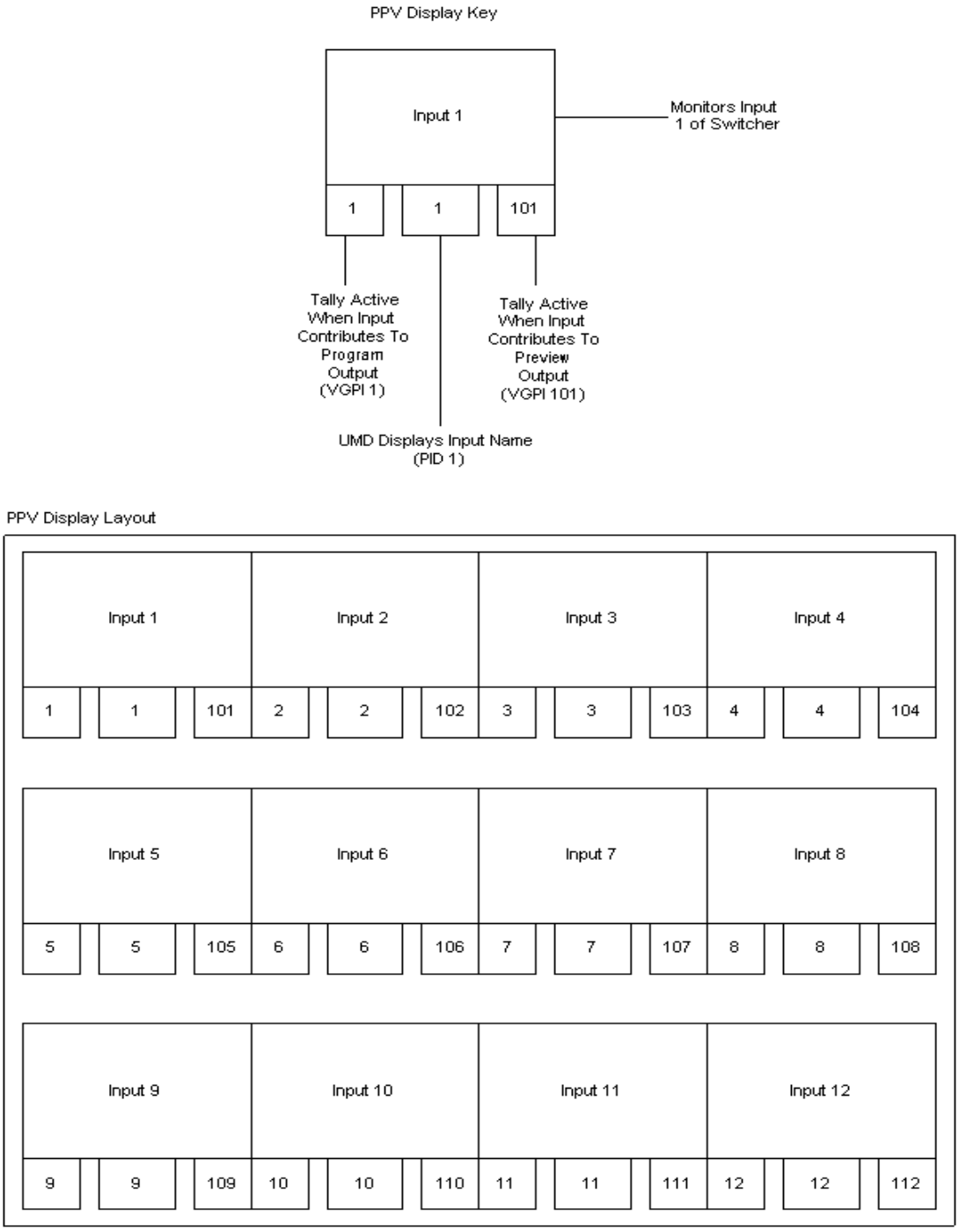

Figure 1-2: 7700PTX-CTP Example

The names of the switcher inputs will appear on the UMD located beneath each display window. If the input contributes to the program output the tally on the left will be active. If the input contributes to the preview output the tally on the right will be active.

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.

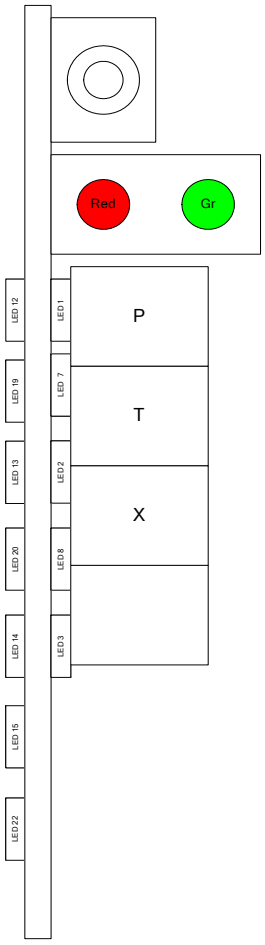

Figure 2-1: PTX Card Edge

3. CONFIGURATION

3.1. CONFIGURATION STEPS

The basic steps required to configure the 7700PTX-CTP 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-CTP.
3. Configure the parameters of each serial port to match those of the connected switcher.
4. Configure the CTP 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-CTP.
8. Physically wire the serial port(s) of the 7700PTX-CTP to the switcher.
9. Power on the 7700PTX-CTP.

3.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-CTP 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.

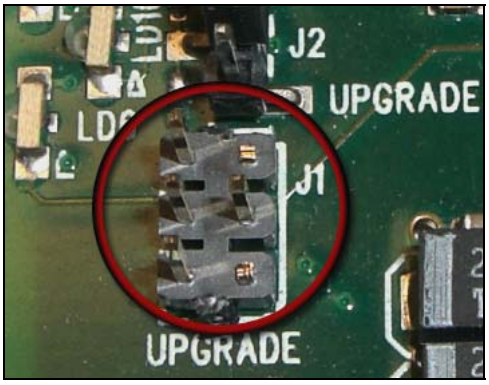

Figure 3-1: Upgrade Jumper

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 3-2: '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.

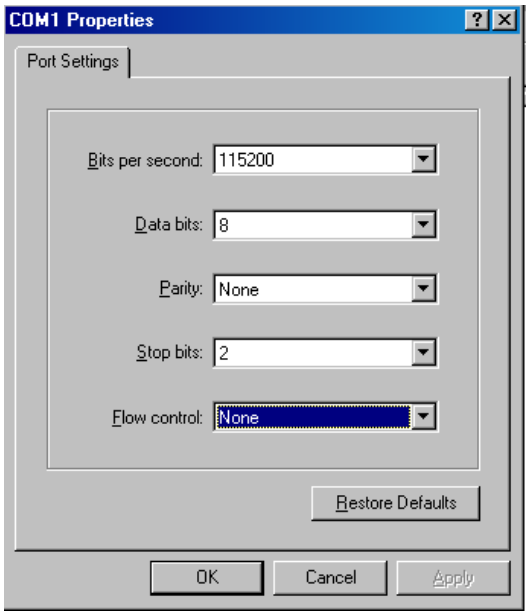

Figure 3-3: COM1 Properties

9. Enter the information as listed in the screen above.
10. Press the <Enter> key or select OK. The "*COM Properties*" window closes, leaving the HyperTerminal window open.
11. Apply power if the 7700PTX-CTP does not have power. The boot sequence and *Main Menu* are displayed in the HyperTerminal window.
12. If the 7700PTX-CTP has power, press the <Enter> key to view the 7700PTX-CTP's menu system.
13. Various 7700PTX-CTP parameters are configurable via the 7700PTX-CTP's menu system, the root of which is called *Main Menu*.

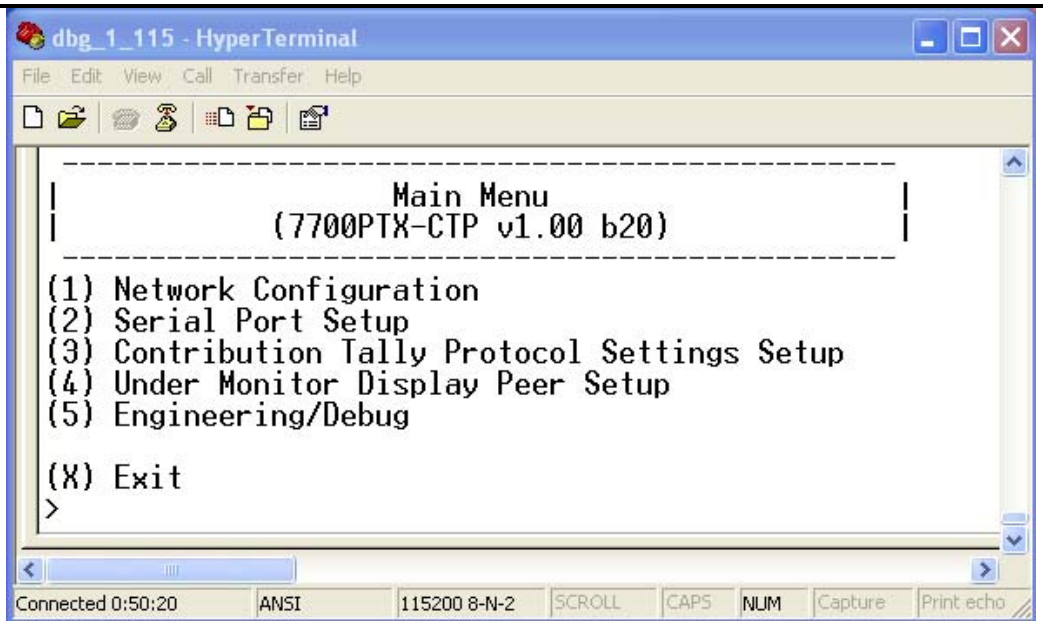

Figure 3-4: HypterTerminal Main Menu

3.3. MAIN MENU

Table 3-1 lists the entries available in the 7700PTX-CTP'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 the switcher.
3	Contribution Tally Protocol Settings Setup	Parameters pertaining to the Contribution Tally Protocol.
4	Under Monitor Display Setup	IP address and TCP port of UMD peers.
5	Engineering/Debug	Used for troubleshooting.

Table 3-1: 7700PTX-CTP Main Menu

3.4. 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-CTP must be rebooted for any network setting changes to take effect.

3.5. SERIAL PORT SETUP

3.5.1. Parameters

The 7700PTX-CTP has 4 serial ports. The parameters associated with each serial port are listed in Table 3-2.

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

Table 3-2: Serial Port Parameters

Typically the switcher uses 8 data bits, no parity, and 1 stop bit. The highest baud rate supported by both the switcher and 7700PTX-CTP should be used (typically 115,200).

The serial port settings of the 7700PTX-CTP must match those of the switcher. The 7700PTX-CTP must be rebooted for any serial parameter changes to take effect.

3.5.2. Back Plate

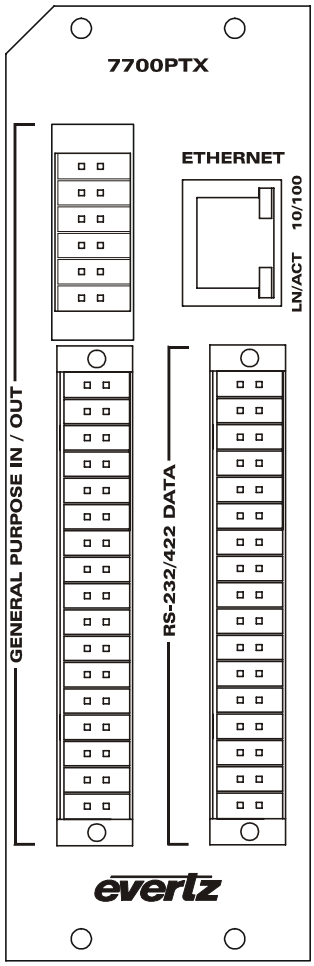

Figure 3-5: 7700PTX Back Plate

3.5.3. RS-232 Wiring

Figure 3-6 shows which pins of the back plate are used for RS-232 serial connections.

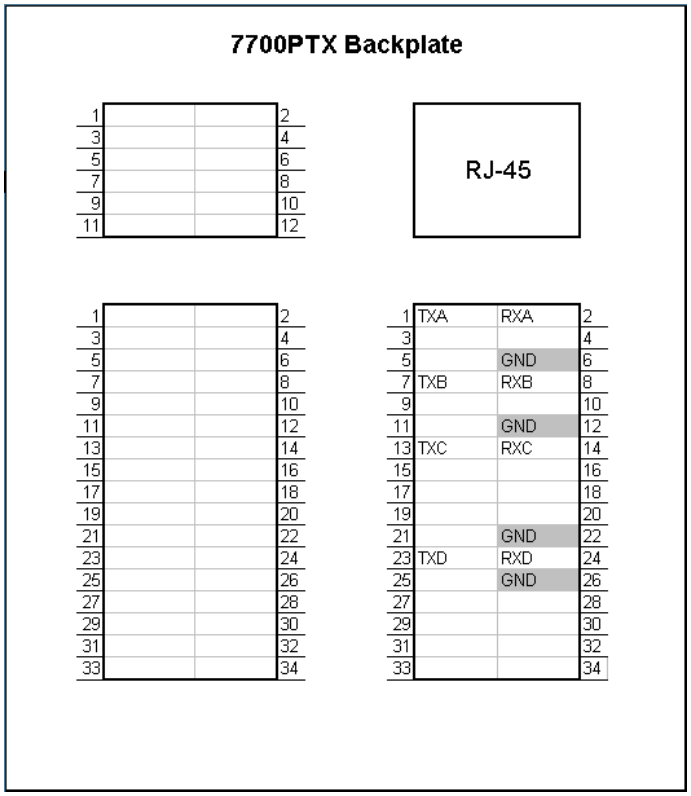

Figure 3-6: RS-232 Pins

Table 3-3 outlines how to connect the 7700PTX-CTP to the switcher for RS-232 operation.

7700PTX-CTP			Switcher
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 3-3: RS-232 Wiring

3.5.4. RS-422 Wiring

Figure 3-7 displays which pins of the back plate are used for RS-422 serial connections.

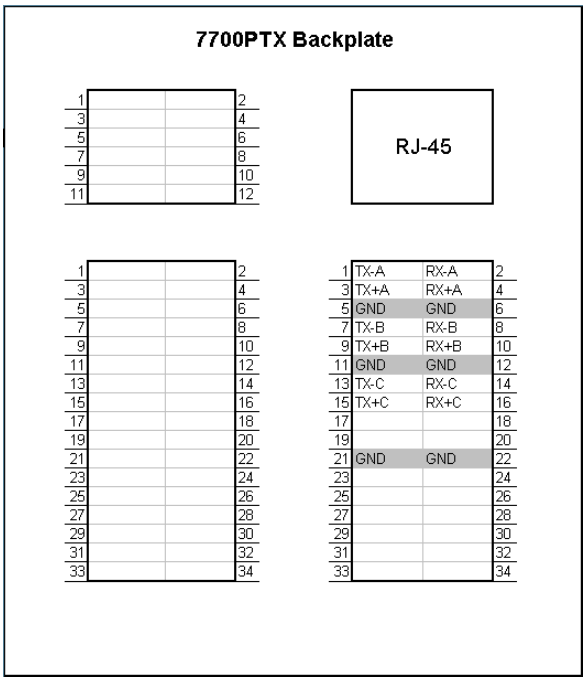

Figure 3-7: RS-422 Pins

Table 3-4 outlines how to connect the 7700PTX-CTP to the CTP switcher for RS-422 operation.

7700PTX-CTP			Switcher
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 3-4: RS-422 Wiring

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

3.6. CTP PROTOCOL SETUP

3.6.1. VGPI Image Video Display ID

The default for this parameter is 2000. If this value needs to change, select a display ID that does not conflict with another display ID.

3.6.2. Program Output Number

This parameter is the output of the switcher that corresponds to the program output. The default for this parameter is 5.

3.6.3. Program VGPI Offset

This is the value added to the switcher's source number to obtain the program VGPI number that the 7700PTX-CTP transmits to the PPV(s). Table 3-5 shows the default offset (0) as well as a user-defined offset (1). Selecting an offset of –1 will disable the transmission of program VGPIs.

CTP Source Number	Offset = 0, VGPI Number	Offset = 1, VGPI Number
1	1	2
2	2	3
3	3	4
4	4	5
5	5	6
. . .	. . .	. . .
88	88	89
89	89	90
90	90	91
91	91	92
92	92	93

Table 3-5: CTP Source Number to Program VGPI Mapping

3.6.4. Preview Output Number

This parameter is the output of the switcher that corresponds to the preview output. The default for this parameter is 6.

3.6.5. Preview VGPI Offset

This is the value added to the switcher's source number to obtain the preview VGPI number that the 7700PTX-CTP transmits to the PPV(s). Table 3-6 shows the default offset (100) as well as a user-defined offset (101). Selecting an offset of –1 will disable the transmission of preview VGPIs.

CTP Source Number	Offset = 100, VGPI Number	Offset = 101, VGPI Number
1	101	102
2	102	103
3	103	104
4	104	105
5	105	106
. . .	. . .	. . .
88	188	189
89	189	190
90	190	191
91	191	192
92	192	193

Table 3-6: CTP Source Number to Preview VGPI Mapping

3.6.6. Transmit Source Names

By default, the 7700PTX-CTP will transmit the names of sources provided by the switcher. Please note that the switcher must be configured to transmit these names to the 7700PTX-CTP in order for the 7700PTX-CTP to forward them to the PPV(s).

3.6.7. VGPI Refresh Count

This value specifies the maximum number of times, in the absence of any changes, the 7700PTX-CTP will receive a cycle of CTP source-to-output messages before the 7700PTX-CTP refreshes the program and preview VGPI data. The default for this parameter is 50.

3.6.8. Source Names Refresh Count

This value specifies the maximum number of times, in the absence of any changes, the 7700PTX-CTP will receive a cycle of CTP source name messages before the 7700PTX-CTP refreshes the UMD data. The default for this parameter is 50.

3.6.9. Source Names Display ID Offset

This is the value added to the source number to obtain the Image Video ID display ID.

Display ID = (CTP Source Number) + (Source Names Display ID Offset)

A UMD with a matching protocol ID will display the source.

3.7. UNDER MONITOR DISPLAY SETUP

Suppose we have the setup of Figure 3-8

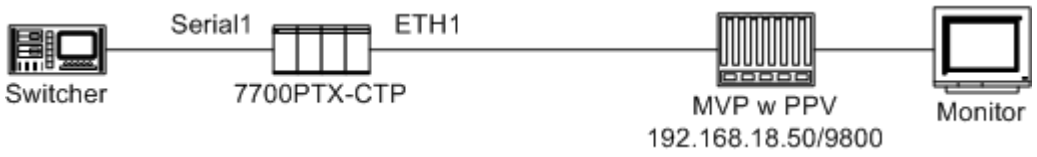

Figure 3-8: UMD Peer Configuration

Where:

- A switcher is connected to Serial port 1 of the 7700PTX-CTP.
- The 7700PTX-CTP 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-CTP must be rebooted for any UMD peer changes to take effect.

4. TROUBLESHOOTING TIPS

4.1. CHECKING SWITCHER 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 *incoming serial port statistics…* If the item *in chars* is reported as a non-zero hexadecimal value then the 7700PTX-CTP is receiving data from the switcher. If it is consistently reported as 0x00000000 then the 7700PTX-CTP is not receiving data from the switcher. In this case the serial settings or wiring may be incorrect or the switcher may not be configured properly.

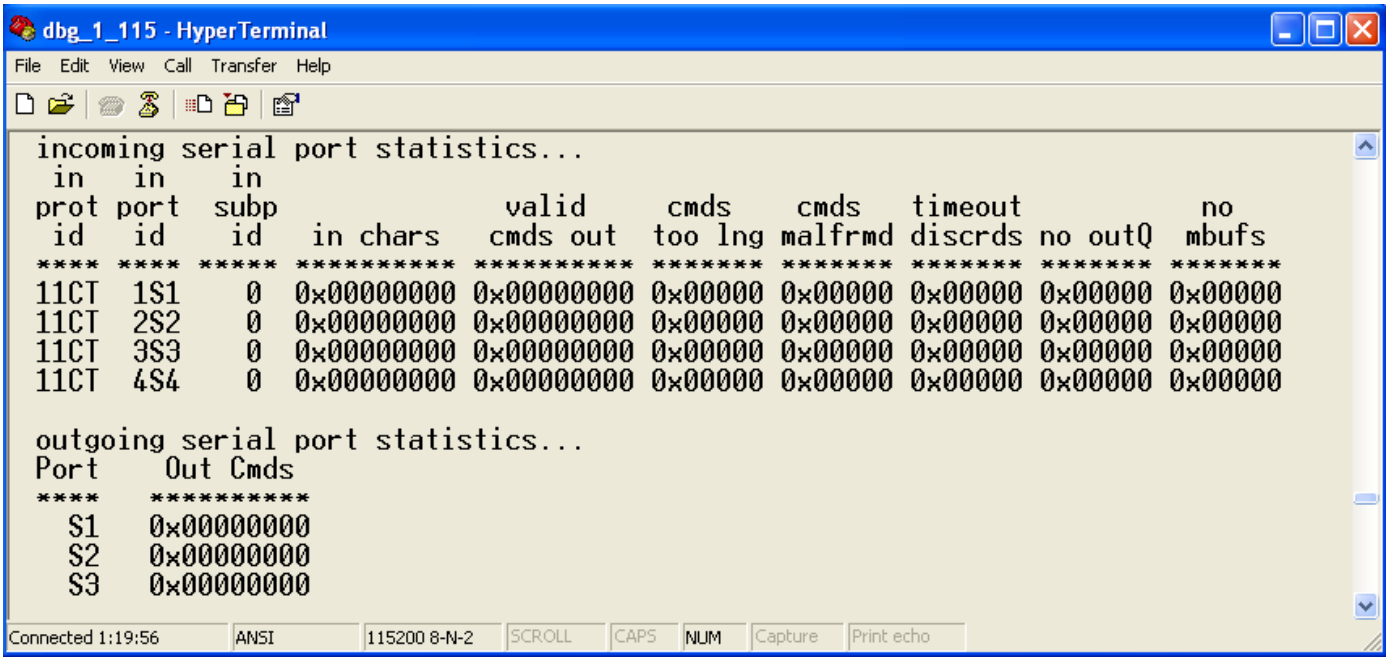

Figure 4-1: CTP Status

4.2. 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-CTP is able to communicate with that UMD peer. A status consistently reported as something other than ready indicates the inability of the 7700PTX-CTP 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 4-2 shows that the 7700PTX-CTP is able to communicate with the UMD peer whose IP address is 192.168.18.40 and who is listening on TCP port 9800.

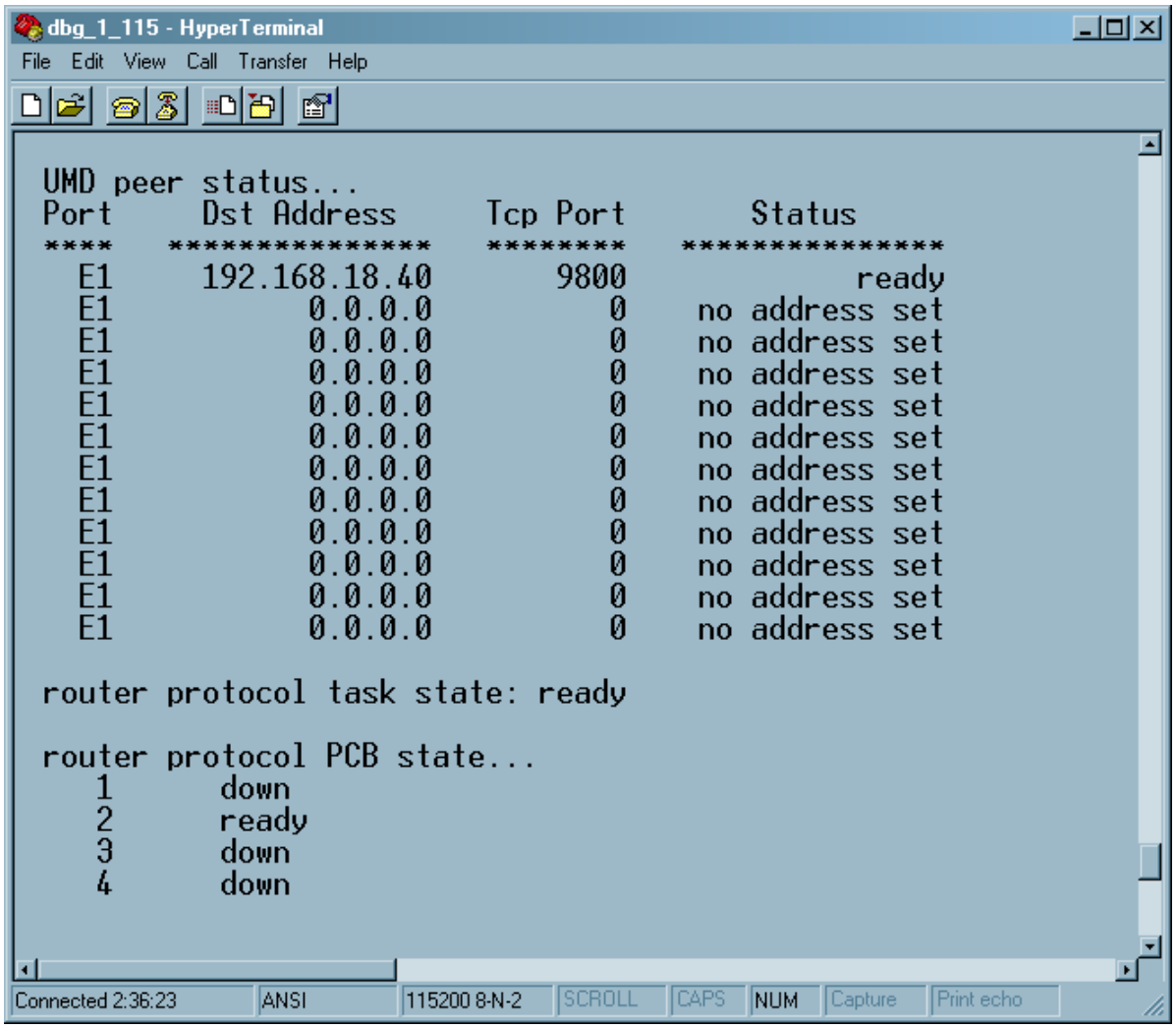

Figure 4-2: UMD Peer Status

5. 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.

5.1. FTP

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.

5.2. SERIAL

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.