TABLE OF CONTENTS

Figures

Tables

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Sept 07
1.1	Added information on source name handling.	Oct 07
1.2	Updated card edge drawing and RS-422 wiring table	Nov 07
1.3	Added information on DVS-7000	Feb 08
1.4	Added features, block diagram, technical specs & *Vista*LINK® section.	Nov 08
1.5	Removed references to GPI, GPO, LTC specifications	Apr 09
1.6	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-STP is designed to retrieve the serial tally information, via a RS-422 serial link, from a DVS-7000 series switcher using the Serial Tally Protocol. The 7700PTX-STP can relay this information for up to 12 MVP output cards via TCP. The user can select up to 4 switcher blocks from those listed in Table 1-1. The 7700PTX-STP determines which of the switcher's 80 primary sources contributes to the output of the selected block(s).

Number	Switcher Block
1	PP on-air
2	PP standby
3	ME1 on-air
4	ME1 standby
5	ME2 on-air
6	ME2 standby
7	ME3 on-air
8	ME3 standby

Table 1-1: Switcher Blocks

2. CARD EDGE CONTROLS

2.1. DETERMINING CURRENT IP ADDRESS SETTINGS

To read the current IP address during normal operation, press the front 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.

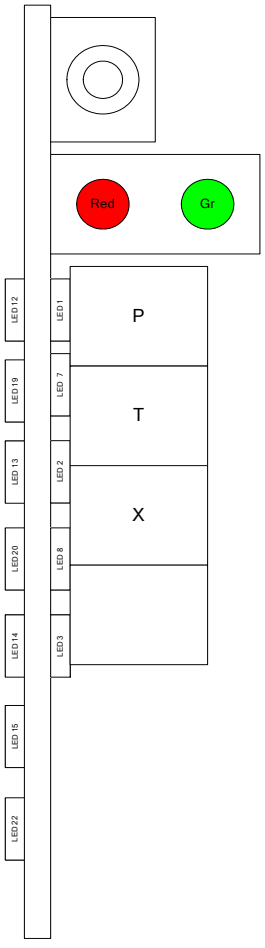

Figure 2-1: PTX Card Edge

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

To configure the 7700PTX-STP perform the following steps:

1. Connect a PC running a console application to the PTX debug/monitor port via the adapter cable.
2. Configure the PTX network parameters.
3. Configure the parameters of the serial port to match those of the switcher.
4. Configure the Serial Tally Protocol parameters.
5. Configure the IP address and TCP port of each UMD peer (MVP output card) that will receive tally information.
6. Power off the 7700PTX-STP.
7. Physically wire the serial port of the 7700PTX-STP to the serial port of the switcher.
8. Power on the 7700PTX-STP.

4.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-STP 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.

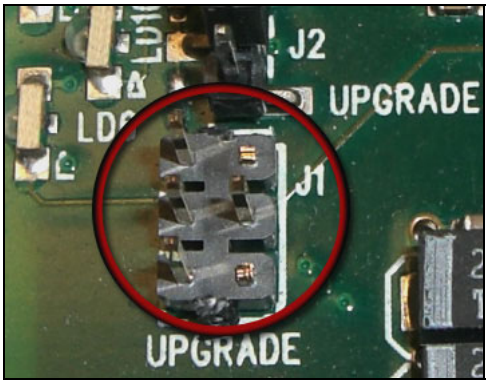

Figure 4-1: Upgrade Jumper

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 will appear.

Figure 4-2: 'Connect To' Window

7. In the "*Connect using"* region, select COM1 from the drop down menu. If COM1 is in use, select an alternate COM port.

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

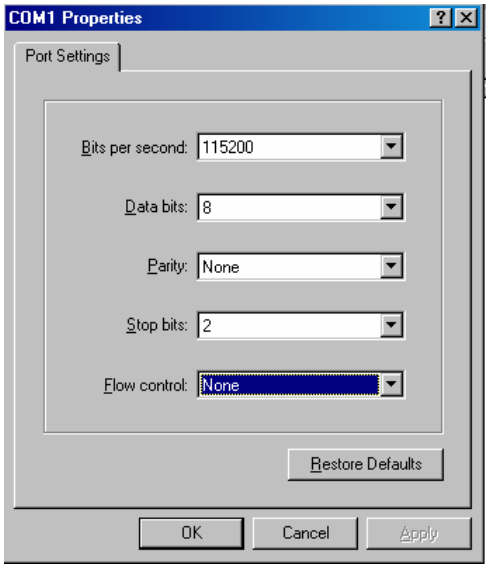

Figure 4-3: COM1 Properties

9. Enter the information for the *COM1 Properties* settings 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-STP does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.

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

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

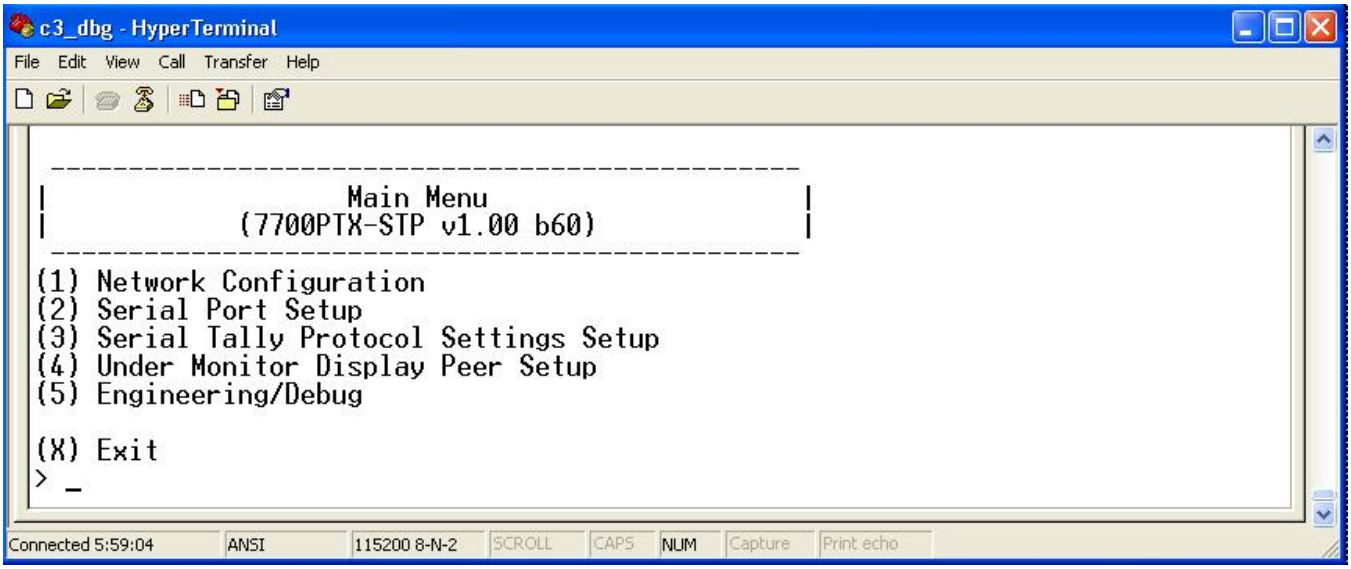

Figure 4-4: HyperTerminal Main Menu

4.3. MAIN MENU

Table 4-1 below lists the entries available in the 7700PTX-STP'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 port which connects to the switcher
3	**Serial Tally Protocol Settings Setup**	Settings specific to the Serial Tally Protocol
4	**Under Monitor Display Peer Setup**	IP address and TCP port of PPV to receive the tally information
5	**Engineering/Debug**	Used for troubleshooting

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

4.5. SERIAL PORT SETUP

4.5.1. Parameters

The 7700PTX-STP has 1 serial port. The parameters associated with this serial port are:

- Baud rate
- Number of data bits
- Parity
- Number of stop bits
- Electrical standard

The switcher typically uses the following settings:

- Baud of 38400
- 8 data bits
- Odd parity
- 1 stop bit
- RS-422 Standard

The serial settings of the 7700PTX-STP must be configured to match those of the switcher.

The 7700PTX-STP must be rebooted for any serial parameter changes to take effect.

4.5.2. Back Plate

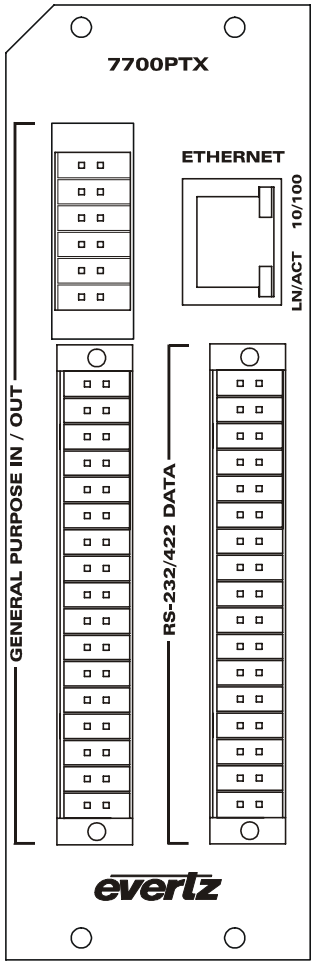

Figure 4-5: 7700PTX Back Plate

4.5.3. RS-422 Wiring

Figure 4-6 shows which pins of the back plate are used for the RS-422 serial connection.

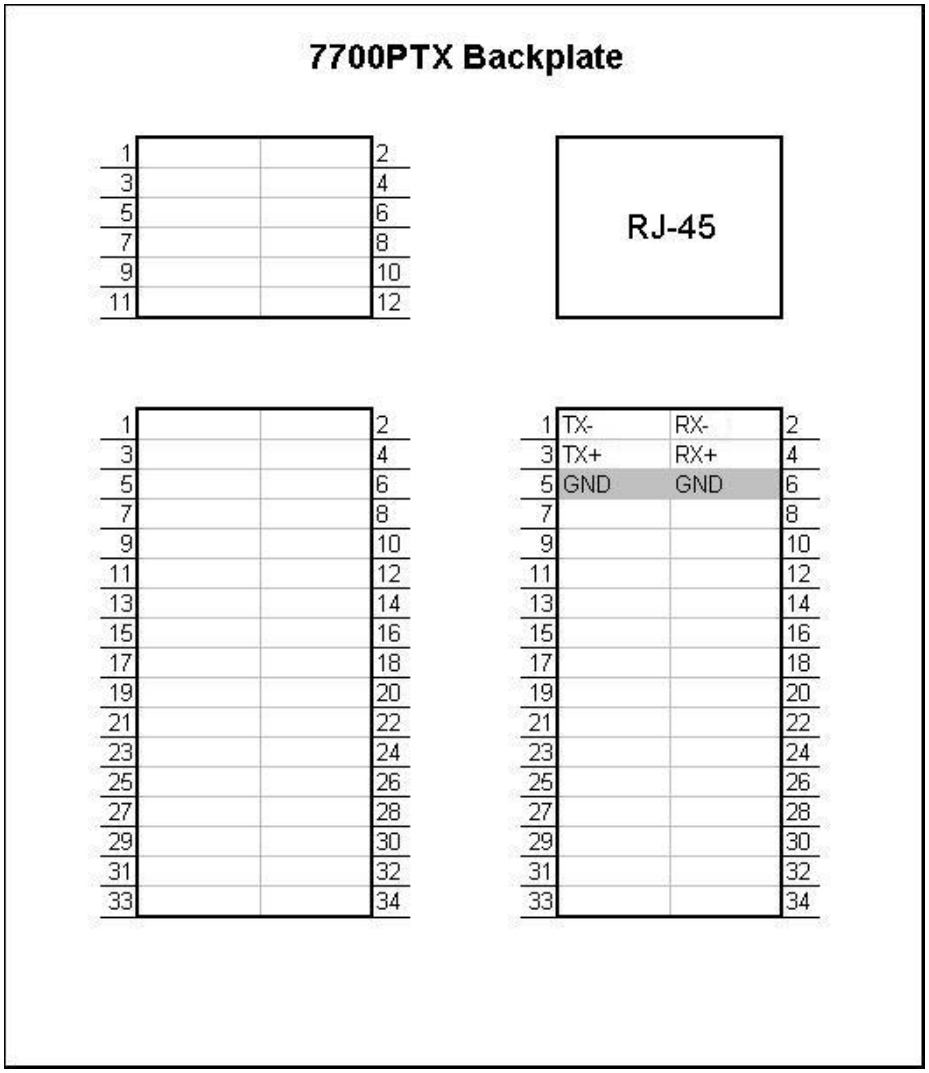

Figure 4-6: RS-422 Pins

Table 4-2 details how to connect the 7700PTX-STP to the switcher's serial port for RS-422 operation.

7700PTX-STP			Switcher	
Port	Pin Name	Pin	Pin	Pin Name
1	**TX-**	1	2	**RX A**
	TX+	3	7	**RX B**
	RX-	2	8	**TX A**
	RX+	4	3	**TX B**
	GND	6	6	**RX Common**
	GND	5	4	**TX Common**

Table 4-2: RS-422 Wiring

4.6. SERIAL TALLY PROTOCOL SETTINGS SETUP

4.6.1. Parameters

Table 4-3 lists the parameters associated with the Serial Tally Protocol.

Parameter	Notes
Switcher Mode	The switcher can operate in either standard mode (136x138) or compact mode (128x128). This setting must match the mode of the switcher otherwise the tallies could be interpreted incorrectly by the 7700PTX-STP.
VGPI Image Video Display Id	This parameter represents the display ID used to transmit VGPI information from the 7700PTX-STP to the PPV(s). A display ID should be selected which does not conflict with any other display ID in use by the PPV(s).
VGPI Group Number	The 7700PTX-STP assigns a Virtual General Purpose Input (VGPI) to each of the switcher's 80 primary sources. The 7700PTX-STP supports 4 groups of 80 VGPIs. Each group can be assigned an owner. An owner corresponds to one of the switcher blocks listed in Table 1-1. If a group has been assigned to an owner then the 7700PTX-STP will transmit VGPI information to the PPV(s). Table 4-4 shows the mapping between the switcher's primary sources and the VGPIs. The default VGPI group owner is shown in parenthesis. When a VGPI is on, the corresponding primary source contributes to the output of the associated switcher block. When a VGPI is off, the corresponding primary source does not contribute to the output of the associated switcher block. As an example, suppose VGPI group 1 is assigned to switcher block PP on-air. If primary source 62 contributes to the output of PP on-air then the 7700PTX-STP will transmit VGPI 62 as 'on' to the PPV(s).
Transmit Source Names	When set to 'yes' the 7700PTX-STP will retrieve the names of primary sources 1 to 80 from the switcher. The 7700PTX-STP will then transmit, on a periodic basis, these names to the PPV(s).
Source Names Display ID offset	The value added to the primary source number to obtain the display ID associated with the source. Thus, Source Name Image Video Display ID = source number + display ID offset Where source number has the range 1 to 80. If source 1 is used as an example with display offset 0: Display ID = 1 + 0 = 1 Thus, a UMD with protocol ID of 1 will display the name of source 1.

Table 4-3: STP30B Protocol Parameters

Primary Source	VGPI Group 1 (PP On-Air)	VGPI Group 2 (ME1 On-Air)	VGPI Group 3 (ME2 On-Air)	VGPI Group 4 (ME3 On-Air)
1	1	81	161	241
2	2	82	162	242
3	3	83	163	243
4	4	84	164	244
5	5	85	165	245
6	6	86	166	246
7	7	87	167	247
8	8	88	168	248
9	9	89	169	249
10	10	90	170	250
11	11	91	171	251
12	12	92	172	252
13	13	93	173	253
14	14	94	174	254
15	15	95	175	255
16	16	96	176	256
17	17	97	177	257
18	18	98	178	258
19	19	99	179	259
20	20	100	180	260
21	21	101	181	261
22	22	102	182	262
23	23	103	183	263
24	24	104	184	264
25	25	105	185	265
26	26	106	186	266
27	27	107	187	267
28	28	108	188	268
29	29	109	189	269
30	30	110	190	270
31	31	111	191	271
32	32	112	192	272
33	33	113	193	273
34	34	114	194	274
35	35	115	195	275
36	36	116	196	276
37	37	117	197	277
38	38	118	198	278
39	39	119	199	279
40	40	120	200	280
41	41	121	201	281
42	42	122	202	282
43	43	123	203	283
44	44	124	204	284
45	45	125	205	285
46	46	126	206	286
47	47	127	207	287
48	48	128	208	288
49	49	129	209	289
50	50	130	210	290
51	51	131	211	291
52	52	132	212	292
53	53	133	213	293
54	54	134	214	294
55	55	135	215	295
56	56	136	216	296
57	57	137	217	297
58	58	138	218	298
59	59	139	219	299
60	60	140	220	300
61	61	141	221	301
62	62	142	222	302
63	63	143	223	303

64	64	144	224	304
65	65	145	225	305
66	66	146	226	306
67	67	147	227	307
68	68	148	228	308
69	69	149	229	309
70	70	150	230	310
71	71	151	231	311
72	72	152	232	312
73	73	153	233	313
74	74	154	234	314
75	75	155	235	315
76	76	156	236	316
77	77	157	237	317
78	78	158	238	318
79	79	159	239	319
80	80	160	240	320

Table 4-4 : Primay Source/VGPI

Changes to any of these serial tally protocol parameters do not require a reboot of the 7700PTX-STP.

4.7. UNDER MONITOR DISPLAY PEER SETUP

Suppose the 7700PTX-STP is to transmit tally information to a PPV whose IP address is 192.168.18.55 and to a PPV whose IP address is 192.168.18.56. The following configuration steps must be followed:

1. Use the menu system of the PPV with IP address 192.168.18.55 to receive UMD data via the Image Video protocol over TCP. Set the TCP port to 9800. Reboot the PPV.
2. Repeat step 1 for the PPV with IP address 192.168.18.56.
3. From the 7700PTX-STP's *Main Menu*, select *Under Monitor Display Peer Setup*.
4. Select *UMD Peer Setup via Ethernet 1*.
5. Select *Peer 1 Setup*.
6. Select *Set ip address* and enter 192.168.18.55 as the IP address.
7. Select *Set tcp port* and enter 9800.
8. Once you have entered the above settings select *Save and Exit*.
9. Repeat steps 3 and 4 for Peer 2 Setup. Select *Peer 2 Setup* from the menu.
10. Select *Set ip address* and enter 192.168.18.56 as the IP address.
11. Select *Set tcp port* and enter 9800.
12. Once you have entered the above settings select *Save and Exit*.

13. Confirm the settings by selecting *Show all setups*.

14. Reboot the 7700PTX-STP.

After the 7700PTX-STP reboots it will attempt to open TCP sessions with each PPV. Tally information can be transmitted to a PPV after the TCP session has been established.

5. TROUBLESHOOTING TIPS

5.1. CHECKING SWITCHER COMMUNICATION

The steps below verify the 7700PTX-STP ability to communicate with the switcher.

1. Start a HyperTerminal session via the steps outlined in section 4.2.

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

3. Select *Show task state.*

4. Scroll up to find the heading *router protocol PCB state* (Figure 5-1). Item 1 lists the state associated with the switcher. If the state is reported as *ready* then the 7700PTX-STP has established a session with the switcher.

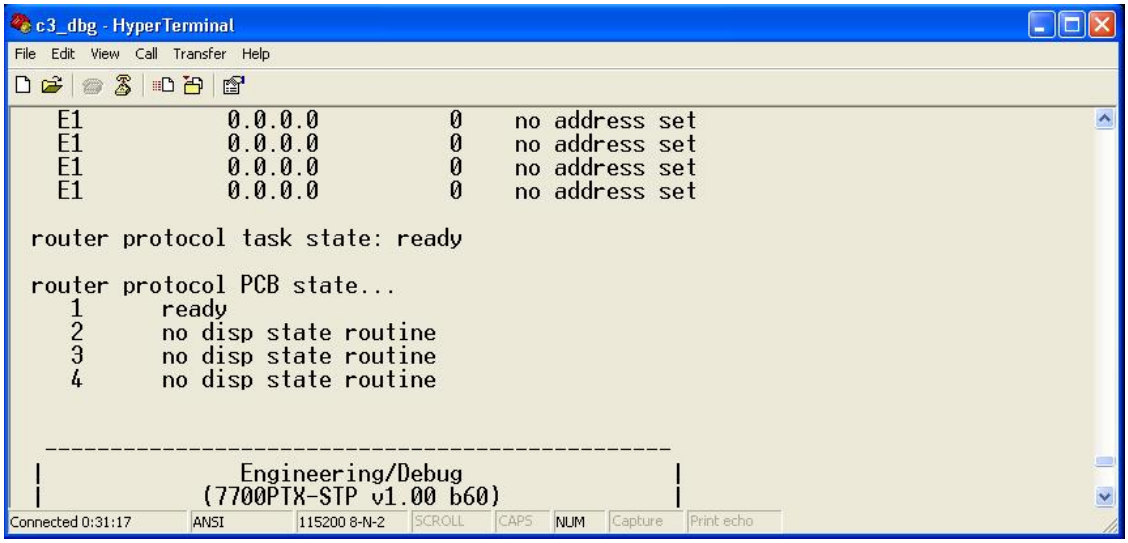

Figure 5-1: Switcher Communication State

5. If the switcher state is not listed as *ready*, select *Show task statistics*.

6. Scroll up to find the heading *incoming serial port statistics*…(Figure 5-2)

7. Locate the *in chars* column under the *incoming serial port statistics…* heading. The *In chars* reports, in hexadecimal form, the number of characters received by the 7700PTX-STP over the serial port. If this value is consistently reported as 0 then it may indicate that the serial port settings or serial port wiring are incorrect. The *Valid cmds out* column reports, in hexadecimal form, the number of complete serial tally protocol packets received by the 7700PTX-STP over the serial port. Normally, this value would be non-zero. The *Cmds too lng* column indicates the number, in hexadecimal form, of serial tally protocol packets received by the 7700PTX-STP that were too long. Normally, this value is 0. The *Cmds malfrmd* column reports, in hexadecimal form, the number of invalid serial tally protocol packets received by the 7700PTX-STP. Normally, this value is 0. If not, it may indicate that the serial port settings or wiring is incorrect. The remaining statistics should be reported as 0.

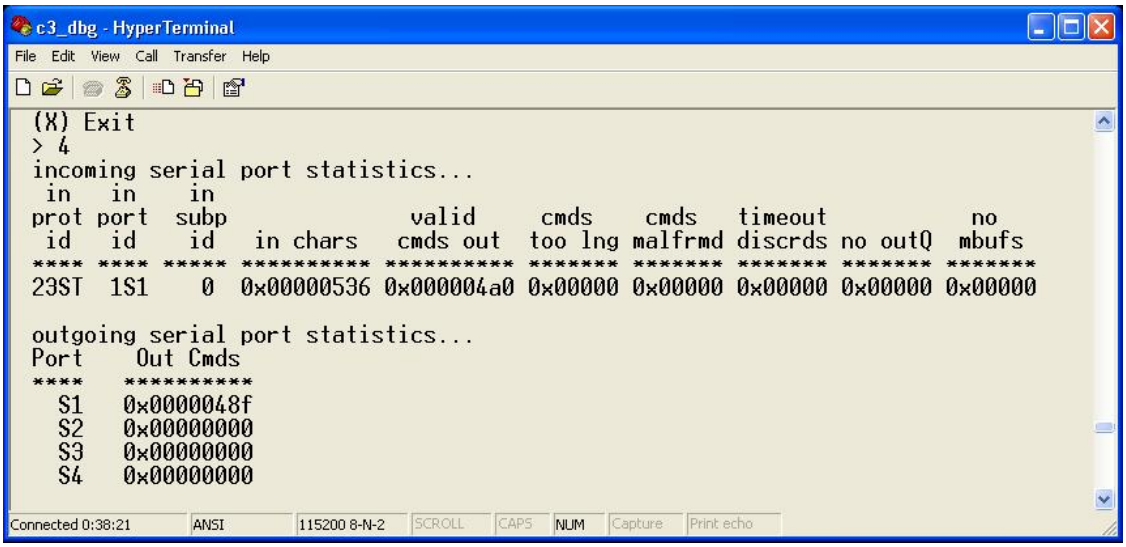

Figure 5-2: Switcher Communication Statistics

5.2. CHECKING UMD PEER COMMUNICATION

The steps below verify the 7700PTX-STP ability to communicate with the PPV(s).

1. Start a HyperTerminal session via the steps given in section 4.2.

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

3. Select *Show task state.*

4. Scroll up to find the heading *UMD peer status* (Figure 5-3). Under this heading is a table which lists each configured PPV. The *status* column reports the ability of the 7700PTX-STP to communicate with the PPV(s). A status of *ready* indicates the 7700PTX-STP is currently communicating with that PPV. If the status is listed as something other than *ready* then it may indicate that the PPV-side needs to be configured properly, and then rebooted.

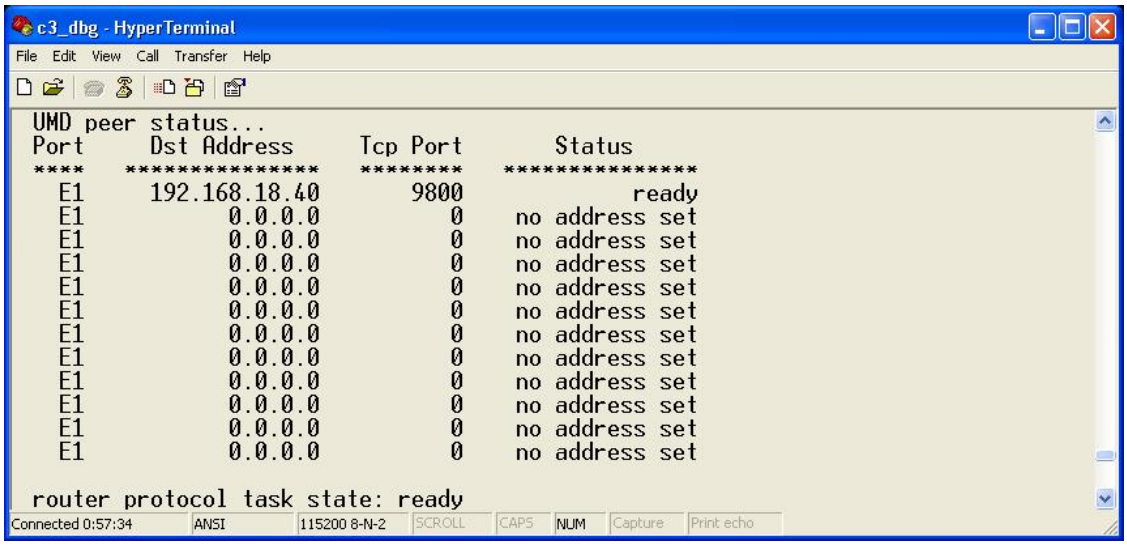

Figure 5-3: UMD Peer Communication State

6. 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-STP 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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