TABLE OF CONTENTS

Figures

Tables

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Apr 08
1.1	Added features, block diagram, technical specs & *Vista*LINK® section.	Nov 08
1.2	Removed references to GPI, GPO, LTC specifications	Apr 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)

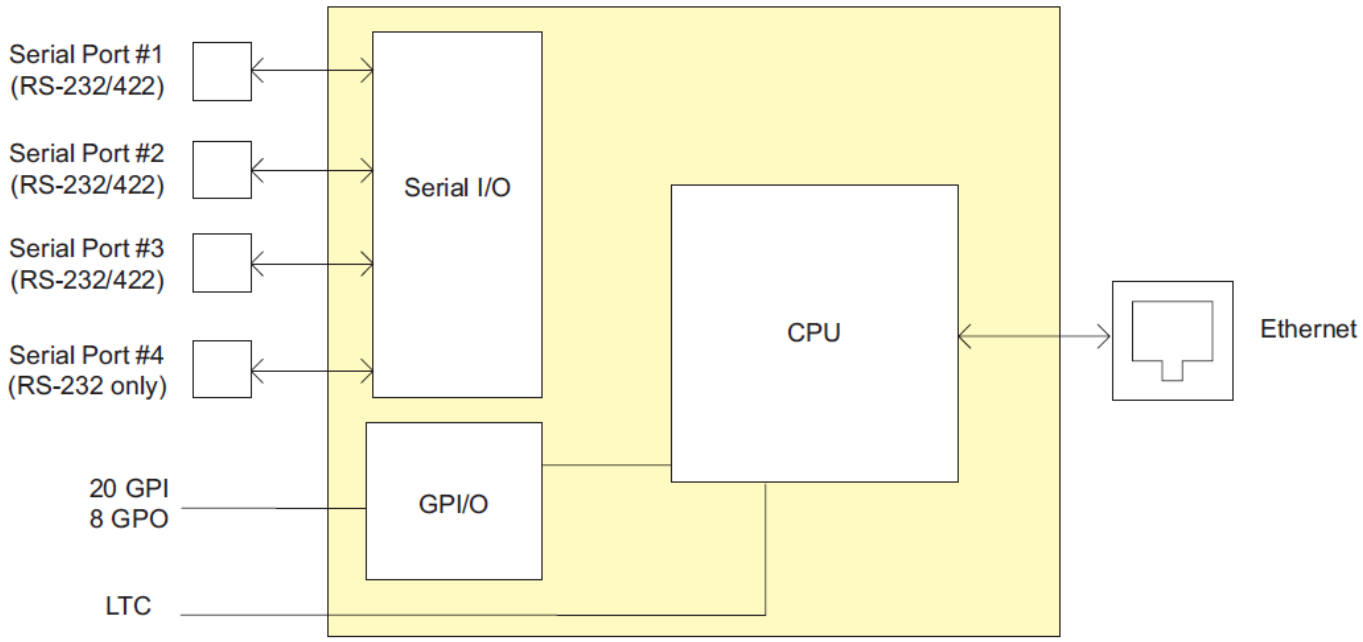

Figure 1-1: PTX Block Diagram

The function of the 7700PTX-TRNS is to provide transport translation between a serial and a TCP/IP link. The 7700PTX-TRNS supports up to 4 translations – one for each of the 7700PTX-TRNS's serial ports.

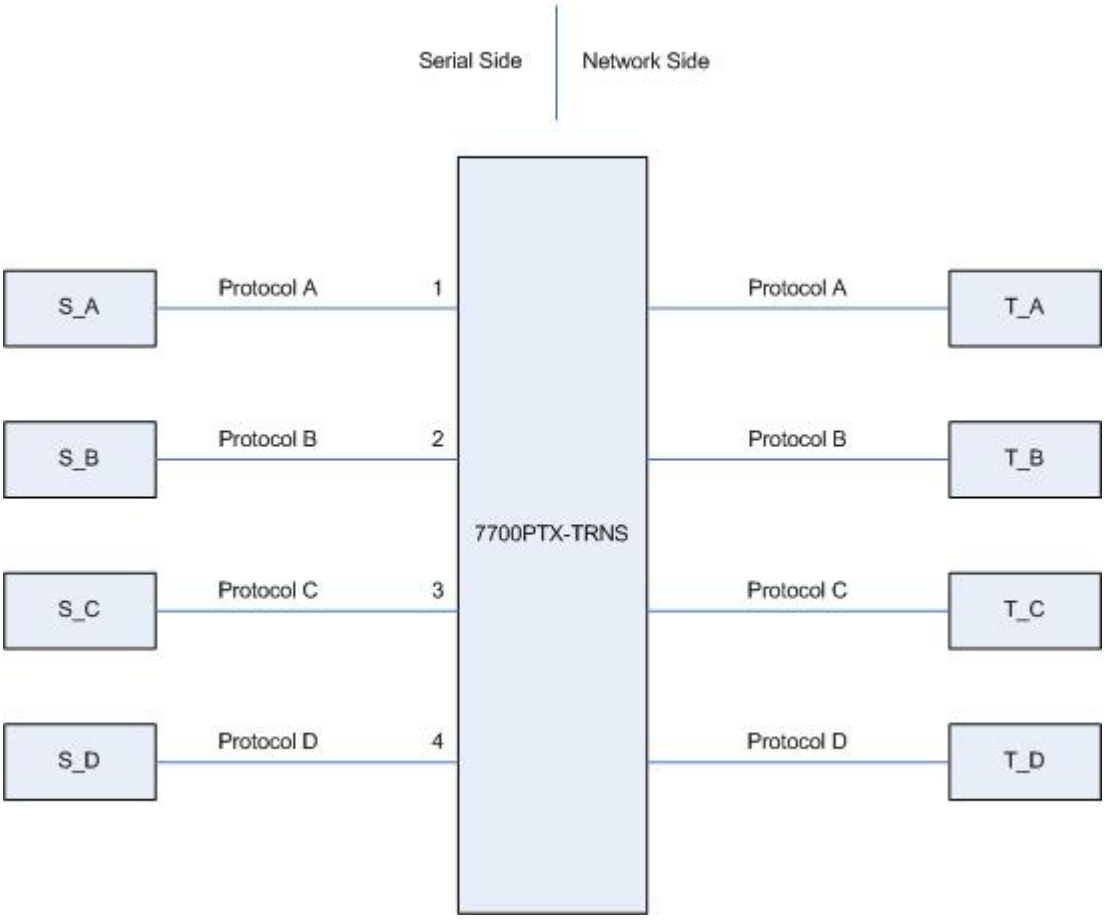

Figure 1-2: Overview

On the serial-side of the 7700PTX-TRNS, Figure 1-2 shows:

- Host *S_A* connected to serial port 1 of the 7700PTX-TRNS.
- Host *S_B* connected to serial port 2 of the 7700PTX-TRNS.
- Host *S_C* connected to serial port 3 of the 7700PTX-TRNS.
- Host *S_D* connected to serial port 4 of the 7700PTX-TRNS.

On the network-side of the 7700PTX-TRNS, Figure 1-2 shows:

- Hosts *T_A*, *T_B*, *T_C*, and *T_D* connected to the 7700PTX-TRNS.

Protocol A data sent by *S_A* will be received by the 7700PTX-TRNS and passed along to *T_A* via TCP/IP. *Protocol A* data sent by *T_A* via TCP/IP will be received by the 7700PTX-TRNS and passed along to *S_A* via the serial link. The same holds true for *Protocol B* between *S_B* and *T_B*, *Protocol C* between *S_C* and *T_C*, and *Protocol D* between *S_D* and *T_D*.

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.

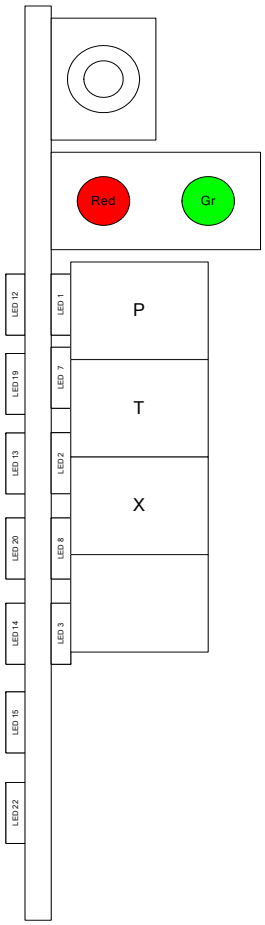

Figure 2-1: PTX Card Edge

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. OVERVIEW

The basic steps needed to configure the 7700PTX-TRNS are as follows:

1. Connect the serial port of a PC running a console application to the debug/upgrade port of the 7700PTX-TRNS.
2. Configure the network settings of the 7700PTX-TRNS.
3. Configure the transport translation serial settings of the 7700PTX-TRNS.
4. Wire the 7700PTX-TRNS to the serial hosts.
5. Reboot the 700PTX-TRNS to allow modifications to network settings and/or transport translation serial settings to take effect.
6. Configure the transport translation network settings of the 7700PTX-TRNS.

4.2. CONNECT A PC TO THE DEBUG/MONITOR PORT

The parameters of the 7700PTX-TRNS must be configured via its 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-TRNS, directly above the card unlock latch.

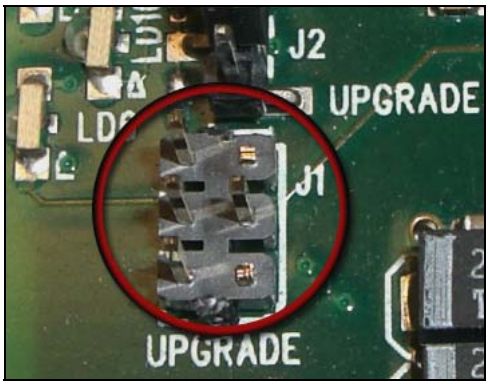

Figure 4-1: Upgrade Jumper

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.

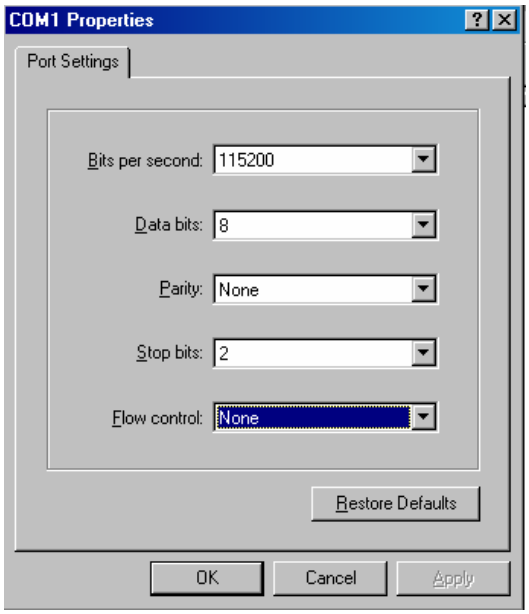

Figure 4-3: COM1 Properties

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

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

13. The parameters of the 7700PTX-TRNS are configurable via its menu system, the root of which is called *Main Menu*. This is shown in Figure 4-4.

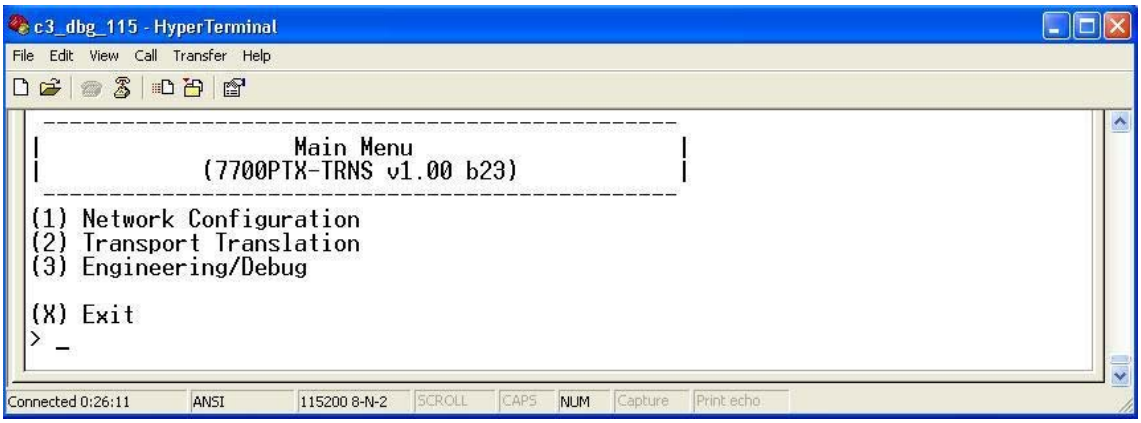

Figure 4-4: 7700PTX-TRNS Main Menu

The menu system of the 7700PTX-TRNS can also be accessed by using a TELNET client.

4.3. CONFIGURE NETWORK PARAMETERS

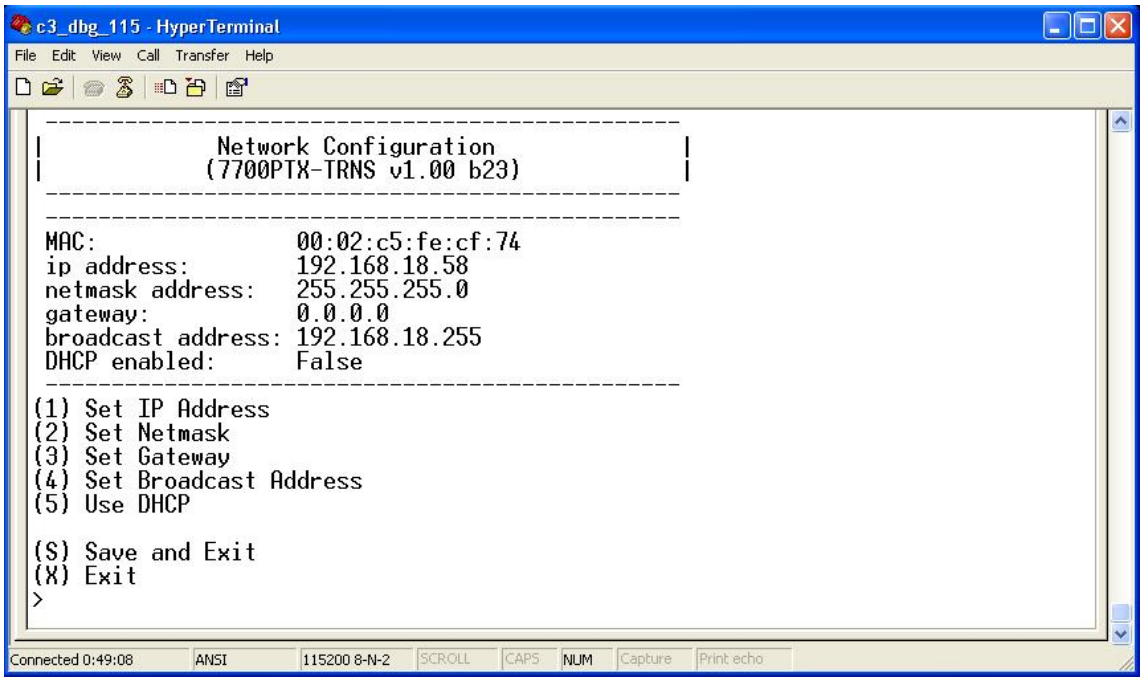

Figure 4-5: 7700PTX-TRNS Network Configuration Menu

To configure the network parameters of the 7700PTX-TRNS:

1. From the *Main Menu* select *Network Configuration*.
2. Select *Set IP Address* then enter the IP address of the 7700PTX-TRNS.
3. Select *Set Netmask* then enter the subnet mask of the 7700PTX-TRNS.
4. If needed, select *Set Gateway* to set the IP address of the gateway/router.
5. For a manually entered network configuration, ensure *DHCP enabled* is set to *False*. A setting of *True* means the 7700PTX-TRNS will, upon boot, try to fetch network settings from a DHCP server. The *Use DHCP* entry permits changes to this parameter.
6. Once the network settings are configured, select *Save* and *Exit* before exiting the *Network Configuration* to save the settings, otherwise select *Exit*.

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

4.4. CONFIGURE TRANSPORT TRANSLATION SERIAL SETTINGS

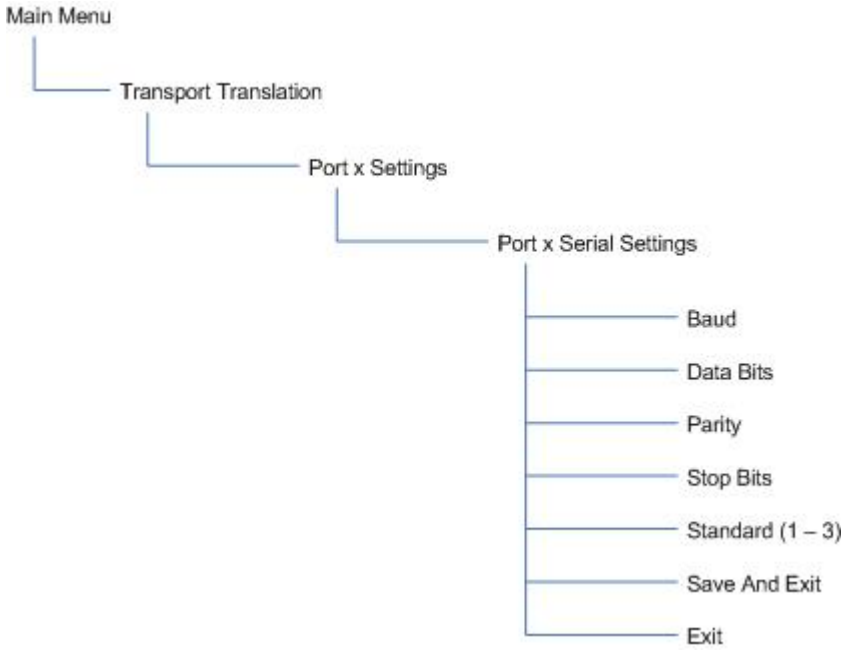

Figure 4-6: Transport Translation Serial Settings Menu Structure

Figure 4-6 shows the menu structure used to configure the transport translation serial settings. The serial standard is available only to ports 1 – 3. Port 4 is capable only of RS-232.

The 7700PTX-TRNS must be rebooted for any transport translation serial setting changes to take effect.

4.5. RS-232 PINOUTS

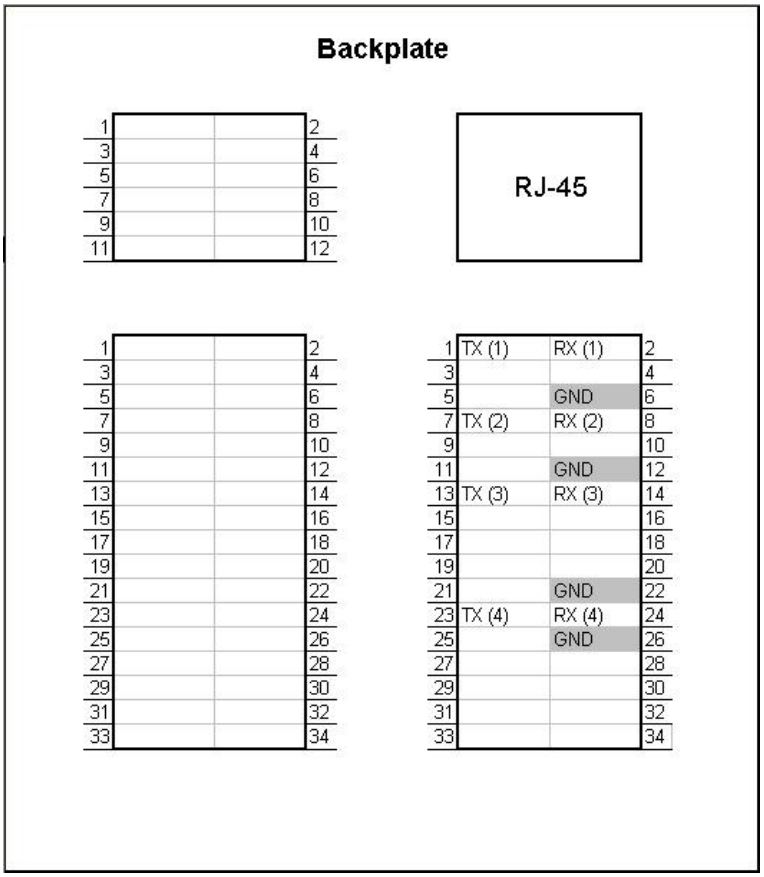

Figure 4-7: RS-232 Pinouts

7700PTX-TRNS			Serial Host
Port	**Pin Number**	**Pin Function**	**Pin Function**
1	**1**	TX	RX
	2	RX	TX
	6	GND	GND
2	**7**	TX	RX
	8	RX	TX
	12	GND	GND
3	**13**	TX	RX
	14	RX	TX
	22	GND	GND
4	**23**	TX	RX
	24	RX	TX
	26	GND	GND

Table 4-1: RS-232 Connections

4.6. RS-422 PINOUTS

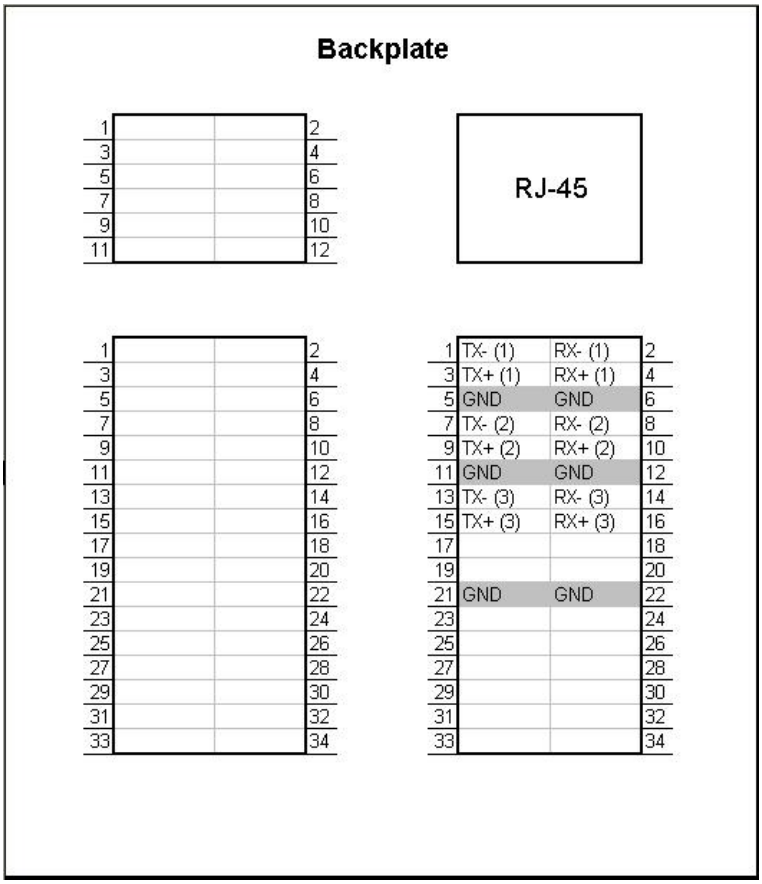

Figure 4-8: RS-422 Pinouts

7700PTX-TRNS			Serial Host
Port	**Pin Number**	**Pin Function**	**Pin Function**
1	**1**	TX-	RX-
	3	TX+	RX+
	2	Rx-	TX-
	4	RX+	TX+
	6	GND	GND
2	**7**	TX-	RX-
	9	TX+	RX+
	8	Rx-	TX-
	10	RX+	TX+
	12	GND	GND
3	**13**	TX-	RX-
	15	TX+	RX+
	14	Rx-	TX-
	16	RX+	TX+
	22	GND	GND

Table 4-2: RS-422 Connections

Port 4 is not RS-422 capable.

4.7. REBOOT

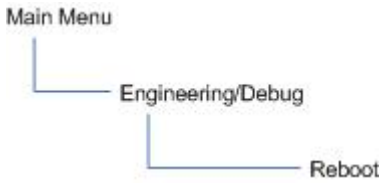

Figure 4-9: Reboot Menu Structure

Figure 4-9 shows how the 7700PTX-TRNS can be instructed to reboot, via its menu system.

4.8. CONFIGURE TRANSPORT TRANSLATION NETWORK SETTINGS

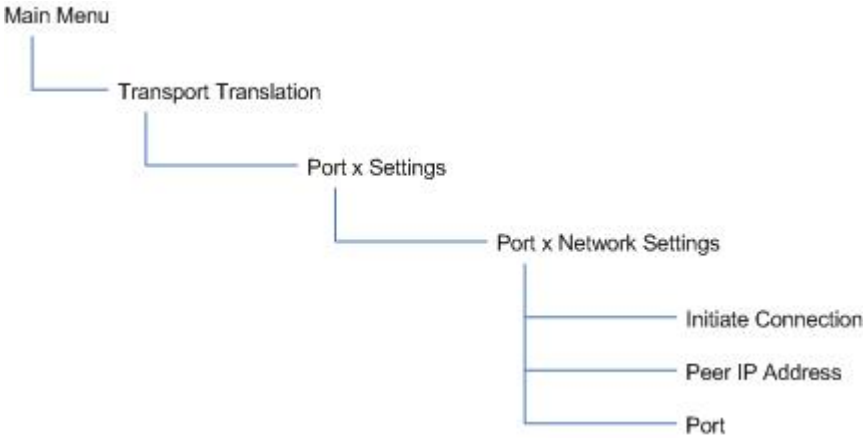

Figure 4-10: Transport Translation Network Settings Menu Structure

Figure 4-10 shows the menu structure used to configure the transport translation network settings. The manner in which these parameters are set depends on whether or not the 7700PTX-TRNS initiates the TCP connection.

4.8.1. Initiate Connection

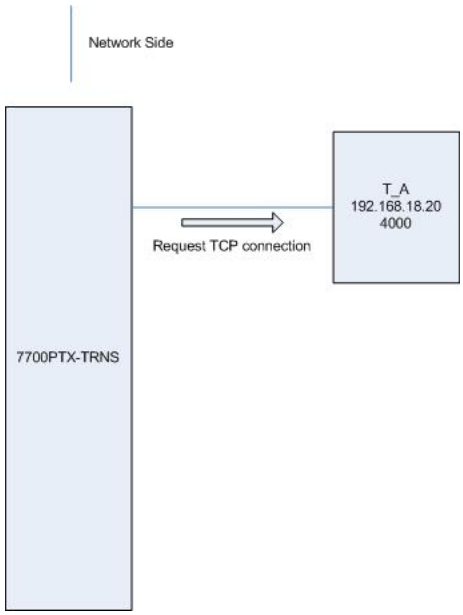

Figure 4-11: 7700PTX-TRNS Initiates Connection

Suppose we have the environment of Figure 4-11 where host *T_A* listens on port 4000 for TCP connection requests. Under these conditions, it is the responsibility of the 7700PTX-TRNS to initiate the TCP connection establishment process. The corresponding 7700PTX-TRNS configuration would appear similar to that of Figure 4-12.

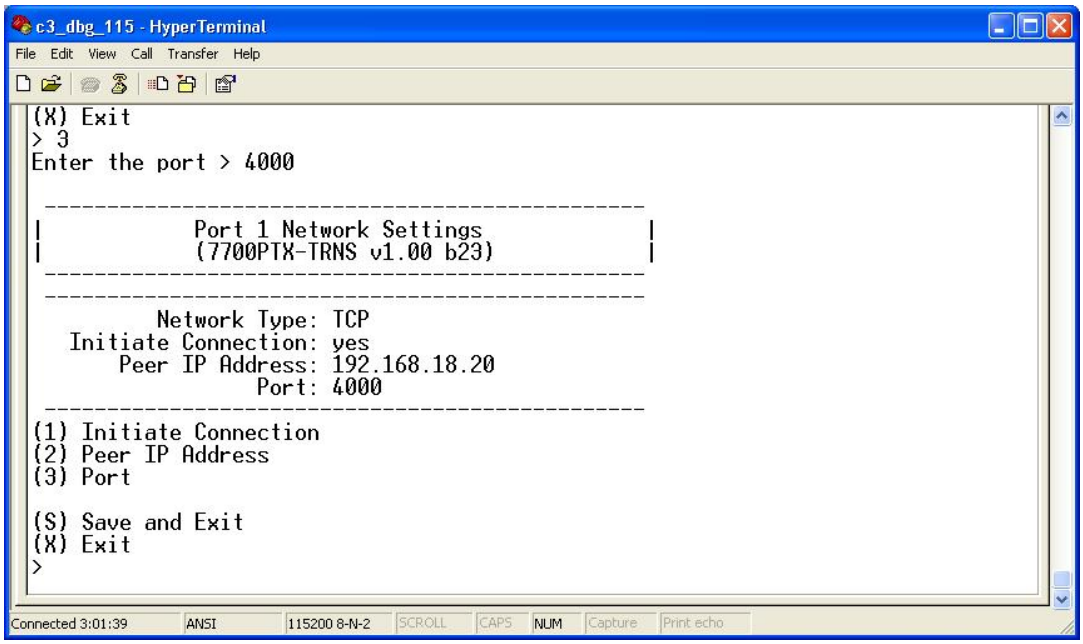

Figure 4-12: Initiate Connection Example

The 7700PTX-TRNS will attempt to initiate the TCP connection after the network settings have been saved.

4.8.2. Receive Connection Request

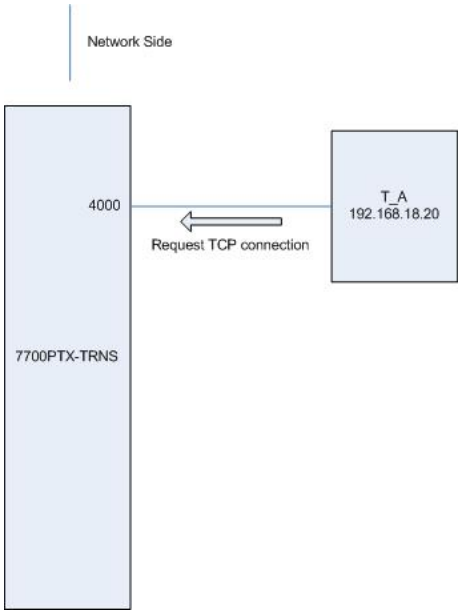

Figure 4-13: 7700PTX-TRNS Receives Connection

Suppose we have the environment of Figure 4-14 where host *T_A* initiates the TCP connection establishment process. *T_A* sends the connection request to port 4000. Under these conditions, it is the responsibility of the 7700PTX-TRNS to listen on port 4000 for TCP connection requests. The corresponding 7700PTX-TRNS configuration will be similar to that of Figure 4-14.

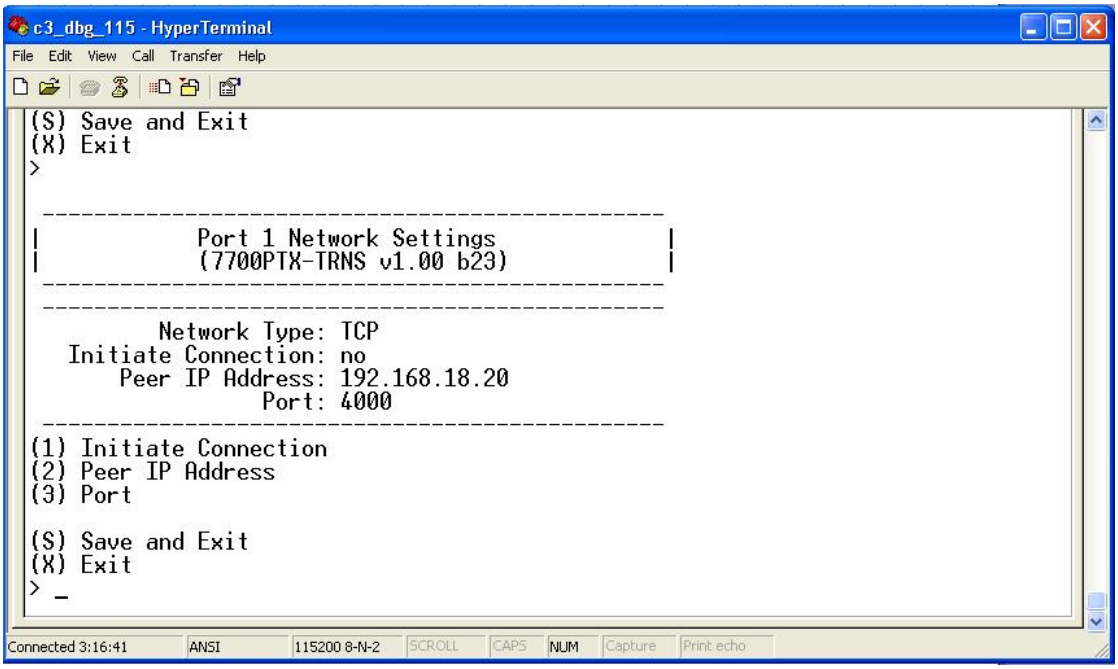

Figure 4-14: Receive Connection Example

When the *Peer IP Address* is set only connection requests from that IP address will be accepted by the 7700PTX-TRNS.

The corresponding 7700PTX-TRNS configuration will be similar to Figure 4-15.

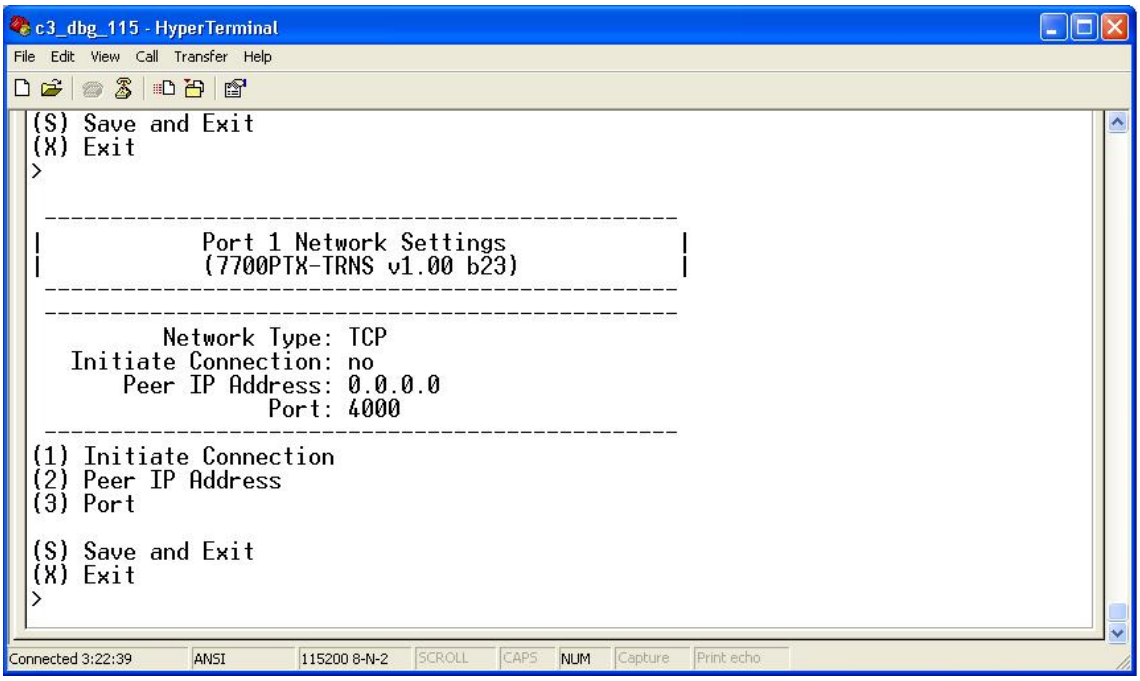

Figure 4-15: Receive Connection Example

When the *Peer IP Address* is not set, connection requests from any IP address will be accepted by the 7700PTX-TRNS.

5. COMMUNICATION STATUS

The communication status of any port can be checked via the menu system of the 7700PTX-TRNS. Figure 5-1 shows the menu structure.

Figure 5-1: Communication Status Menu Structure

Figure 5-2 shows an example.

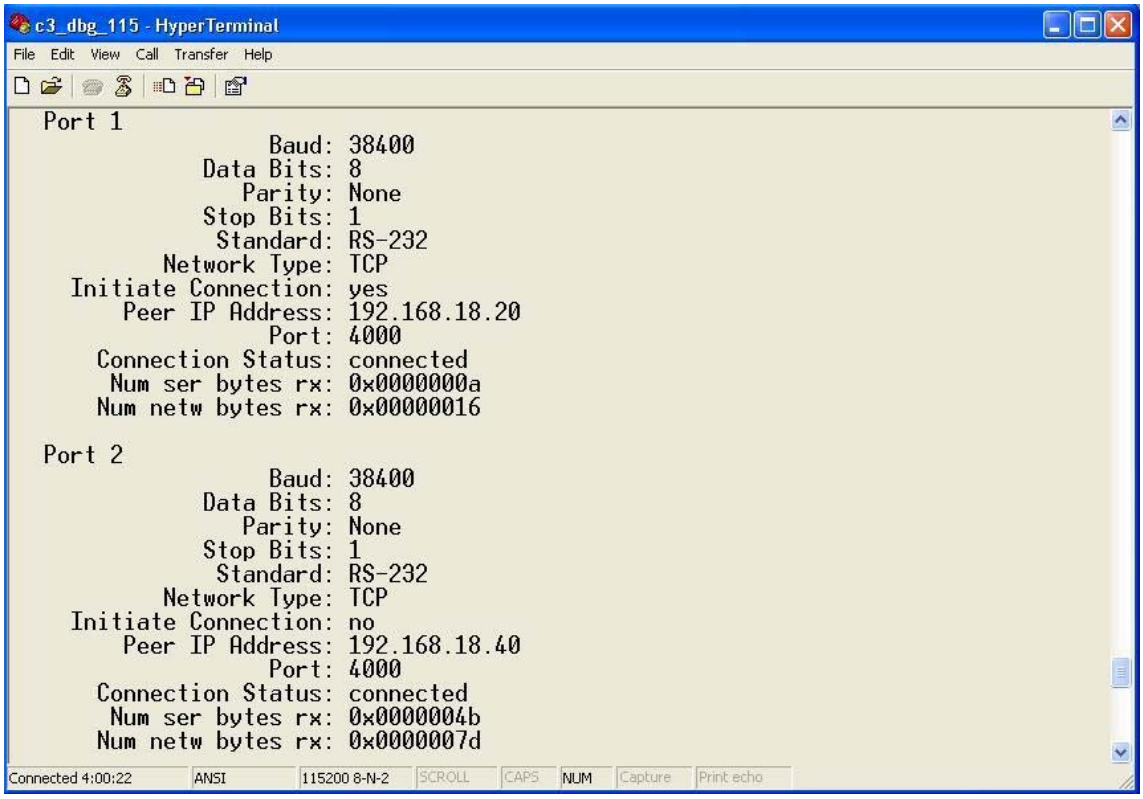

Figure 5-2: Communication Status Example

Port 1 indicates:

- The TCP establishment process is initiated by the 7700PTX-TRNS (*Initiate Connection: yes*).
- The 7700PTX-TRNS issues the TCP connection request to 192.168.18.20 port 4000.
- The connection between the 7700PTX-TRNS and the peer is active (*Connection Status: connected*).
- The 7700PTX-TRNS has received 0x0000000a bytes from the serial host (*Num ser bytes rx*).
- The 7700PTX-TRNS has received 0x00000016 bytes from the network host (*Num netw bytes rx*).

Port 2 indicates:

- The 7700PTX-TRNS will listen on port 4000 for incoming TCP connection requests (*Initiate Connection: no*).
- The 7700PTX-TRNS has accepted the connection from 192.168.18.40 (*Peer IP Address*) and the connection is active (*Connection Status: connected*).
- The 7700PTX-TRNS has received 0x0000004b bytes from the serial host (*Num ser bytes rx*).
- The 7700PTX-TRNS has received 0x0000007d bytes from the network host (*Num netw bytes rx*).

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 filename. 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. Reboot the PTX either by cycling power or by following the information listed in section 0.

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-TRNS 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.