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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Preliminary	Jan 05
1.1	General Cleanup	Oct 06
1.2	Standardized Format	Mar 07
1.3	Updated card edge drawing	Nov 07
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-SX is a protocol translator whose job is to translate a PTX-SX router select request packet (sent by Miranda equipment) into a SNMP set command which is transmitted to an NCP. This SNMP set command instructs the NCP to contact a 770PTX-10XL and display parameters that are configurable for one of the 10XL routers connected to that 7700PTX-10XL. The NCP will issue a SNMP response back to the 7700PTX-SX who, in turn, will respond to the Miranda equipment.

Figure 1-1 shows an example of how the 7700PTX-SX is typically set up.

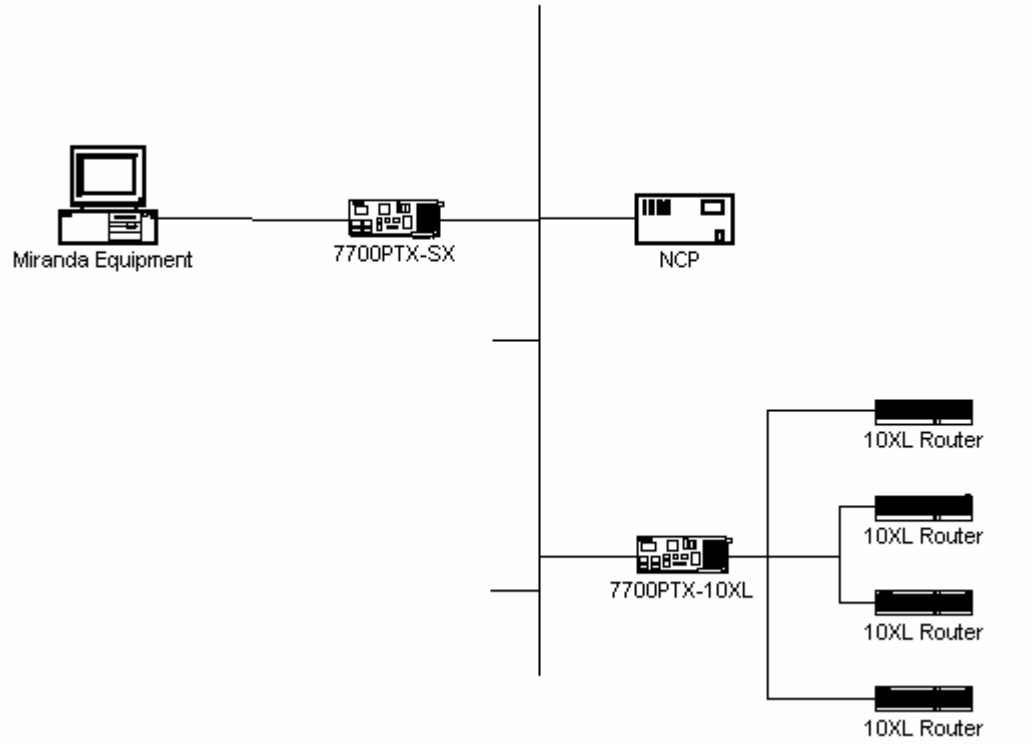

Figure 1-1: Typical 7700PTX-10SX Setup

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.

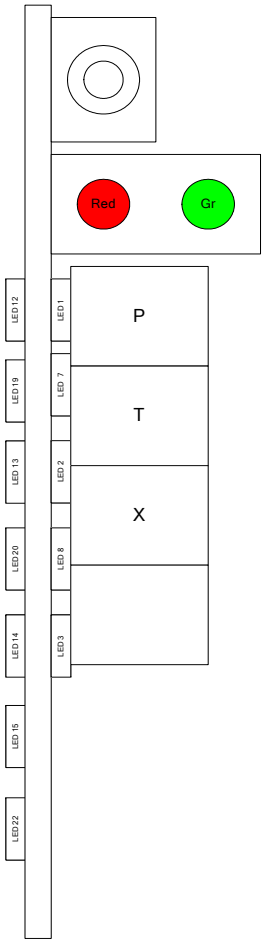

Figure 2-1: PTX Card Edge

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

Perform the following steps to configure the 7700PTX-SX:

1. Connect a PC running a console application to the PTX debug/monitor port via the adapter cable.
2. Configure the 7700PTX-SX's network parameters.
3. Configure the parameters of each serial port to match those of the Miranda equipment.
4. Configure the parameters associated with the VM/SI 3000 ASCII protocol.
5. Power off the 7700PTX-SX.
6. Physically wire the serial port(s) of the 7700PTX-SX to the Miranda equipment.
7. Power on the 7700PTX-SX.

4.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-SX 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.

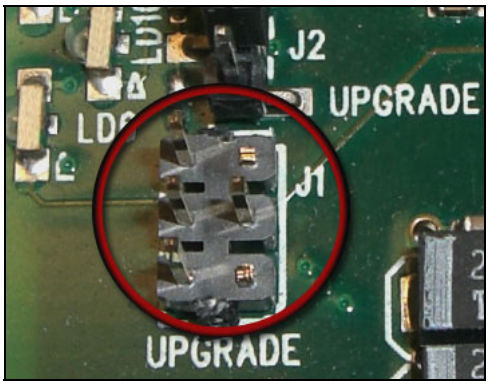

Figure 4-1: Upgrade Jumper

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 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.

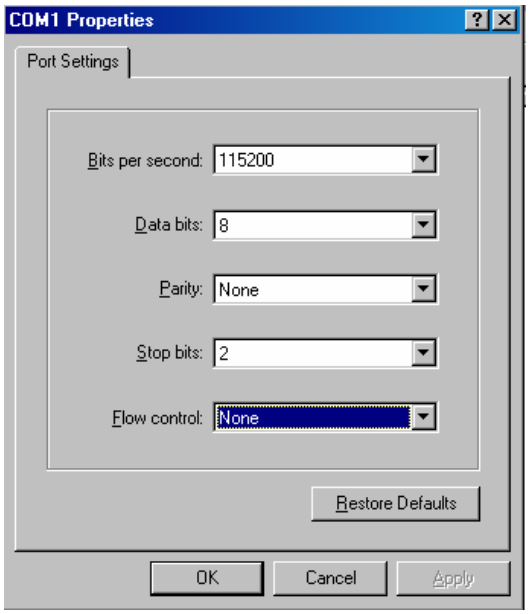

Figure 4-3: COM1 Properties

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-SX does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.

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

13. Various 7700PTX- SX parameters are configurable via the 7700PTX- SX'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-SX'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 which connect to Miranda equipment
3	**Engineering/Debug**	Used for troubleshooting

Table 4-1: 7700PTX-SX 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 set to *False*.

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

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

4.5. SERIAL PORT SETUP

4.5.1. Parameters

The 7700PTX-SX has 4 serial ports. The parameters associated with each serial port are list 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-SX must match those of the Miranda equipment(s). The 7700PTX-SX must be rebooted for any serial parameter changes to take effect.

4.5.2. Back Plate

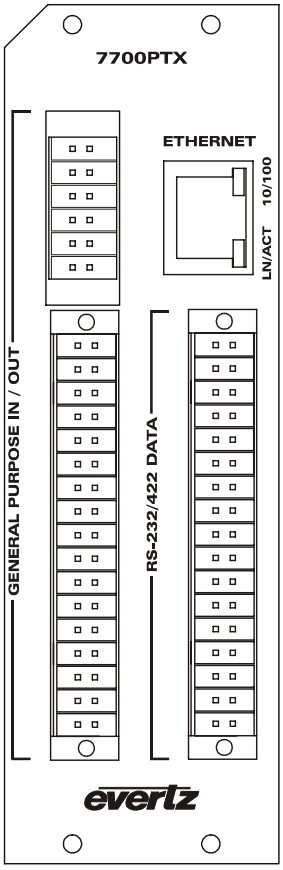

Figure 4-4: 7700PTX Back Plate

4.5.3. RS-232 Wiring

Figure 4-5 shows which pins of the back plate are used for RS-232 serial connections.

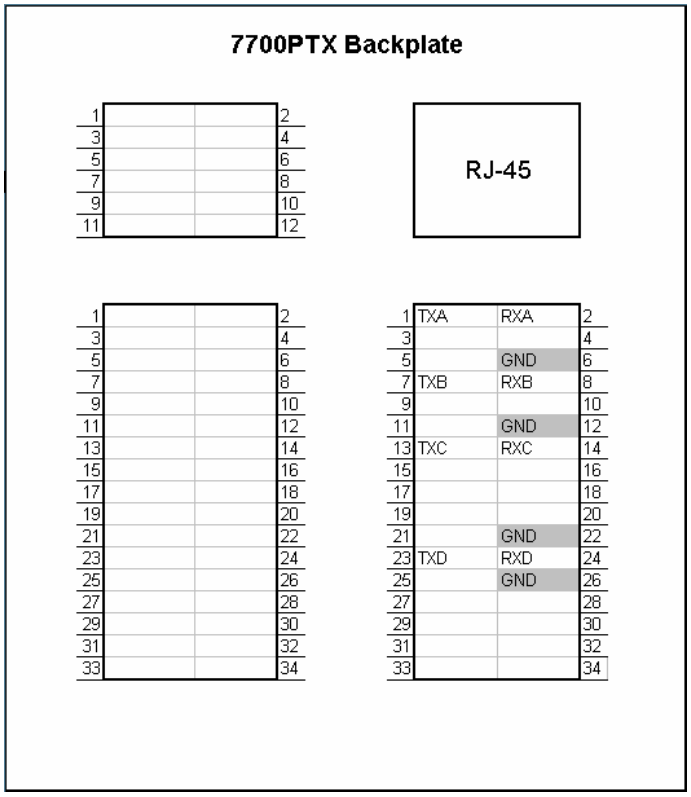

Figure 4-5: RS-232 Pins

Table 4-3 details how to connect the 7700PTX-SX to the Miranda equipment for RS-232 operation.

7700PTX-SX			Miranda 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 4-6 shows which pins of the back plate are used for RS-422 serial connections.

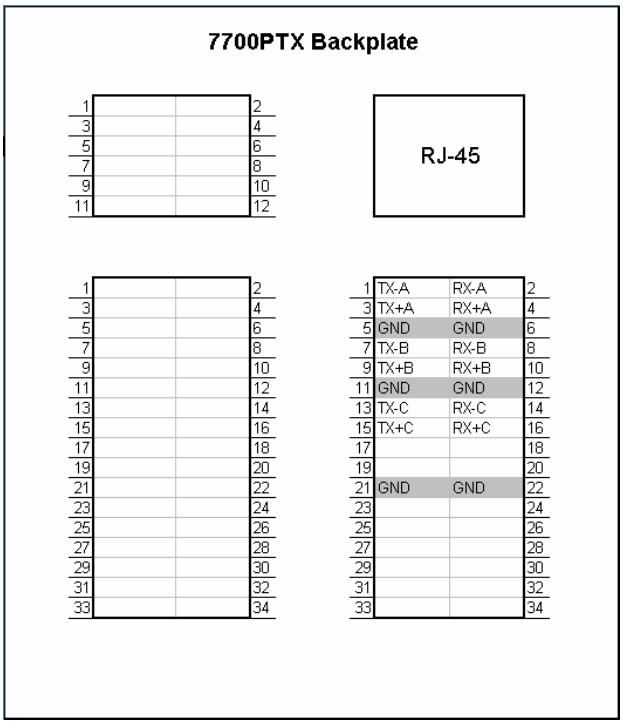

Figure 4-6: RS-422 Pins

Table 4-4 details how to connect the 7700PTX-SX to the Miranda equipment for RS-422 operation.

7700PTX-SX			Miranda 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-SX's fourth serial port is not RS-422 capable.

5. TROUBLESHOOTING TIPS

5.1. STATISTICS

The 7700PTX-SX tracks a wide variety of statistical information. These statistics are viewed via the *Show task statistics* entry of the *Engineering/Debug* menu. Some of these statistics are discussed briefly below.

5.1.1. Serial Port Activity

5.1.1.1. Incoming

An example of incoming serial port activity is represented by the following:

incoming serial port statistics...

in prot id	in port id	in subp id	in chars	valid cmds out	cmds too lng	cmds malfrmd	timeout discrds	no outQ	no mbufs
5SX	1S1	0	0x00000031	0x00000007	0x00000	0x00000	0x00000	0x00000	0x00000
5SX	2S2	0	0x00000000	0x00000000	0x00000	0x00000	0x00000	0x00000	0x00000
5SX	3S3	0	0x00000000	0x00000000	0x00000	0x00000	0x00000	0x00000	0x00000
5SX	4S4	0	0x00000000	0x00000000	0x00000	0x00000	0x00000	0x00000	0x00000

These statistics are described in Table 5-1.

Parameter	Notes
In prot id	The router protocol expected on this serial port displayed in both a numeric (5) and textual (SX) format.
In port id	The port identifier in both numeric (1 – 4) and textual (S1 – S4) format.
In subp id	The sub-port identifier. Serial ports do not require a sub-port ID so this value should be 0.
In chars	The number of alpha-numeric characters received from the Miranda equipment. If Miranda equipment is connected and this value is 0 it may mean: • The serial port configuration is incorrect • The serial port wiring is incorrect
Valid cmds out	The number of full PTX-SX commands received by the 7700PTX-SX.
Cmds too long	The number of PTX-SX commands received that were too long. Typically, this field should be 0. If not, it may point to bad wiring or incorrect serial port settings.
Cmds malfmd	The number of bad SX pass-through commands received by the 7700PTX-SX. Typically, this field should be 0 during normal operation. If not, it may point to bad wiring or incorrect serial port settings.
Timeout discards	The number of PTX-SX commands discarded due to inactivity. This value gets incremented if part of a PTX-SX command is received. This value should normally be 0.
No outQ	This value should be 0.
No mbufs	The number of PTX-SX commands discarded due to lack of internal storage on the 7700PTX-SX. The value should normally be 0.

Table 5-1: Incoming Serial Port Statistics

5.1.1.2. Outgoing

An example of outgoing serial port activity is represented by the following:

```
outgoing serial port statistics...
Port     Out Cmds
****   **********
  S1     0x00000001
  S2     0x00000001
  S3     0x00000001
  S4     0x00000001
```

These statistics are described in Table 5-2.

Parameter	Notes
Port	The port identifier in textual (S1 – S4) format.
Out Cmds	The number of PTX-SX responses sent by the 7700PTX-SX to the Miranda equipment.

Table 5-2: Outgoing Serial Port Statistics

5.1.2. SNMP Activity

As mentioned previously, the 7700PTX-SX translates the Miranda Box's request packets received on one of the 7700PTX-SX's serial ports to an SNMP set packet which is sent to an NCP. The SNMP handling is conducted by the 7700PTX-SX's SNMP manager whose statistics are listed below:

SNMP mgr statistics:
prims from rtr prot: 0x00000000
invalid prims from rtr prot: 0x00000000
prims to rtr prot: 0x00000000
SNMP pkts out attempt: 0x00000000
SNMP pkts out success: 0x00000000
SNMP pkts out parse err: 0x00000000
SNMP pkts out send err: 0x00000000
SNMP pkts in: 0x00000000
SNMP pkts in req id match: 0x00000000
SNMP pkts in err: 0x00000000
SNMP pkts in no err: 0x00000000
SNMP pkts in parse err: 0x00000000
SNMP pkts in not rsp: 0x00000000
SNMP pkts in unknown host: 0x00000000
ptx mbuf alloc fails: 0x00000000

Some of these statistics are described in Table 5-3.

Parameter	Notes
SNMP pkts out attempt	The number of SNMP request packets to be transmitted.
SNMP pkts out success	The number of SNMP request packets successfully transmitted to an NCP. This value should match *SNMP pkts out attempt*.
SNMP pkts in	The number of SNMP pkts received.
SNMP pkts in req id match	The number of SNMP responses received whose request ID field matches that of the transmitted request.
SNMP pkts in err	The number of SNMP responses received whose error field indicates an error.
SNMP pkts in no err	The number of SNMP response packets successfully received.
SNMP pkts in parse err	The number of malformed SNMP packets received.
SNMP pkts in not rsp	The number of non-response SNMP packets received.
SNMP pkts in unknown host	The number of SNMP packets received from an unknown host (i.e. a non-NCP host).

Table 5-3: SNMP Statistics

5.2. PTX-SX PROTOCOL

Figure 5-1 shows the messages associated with the PTX-SX protocol.

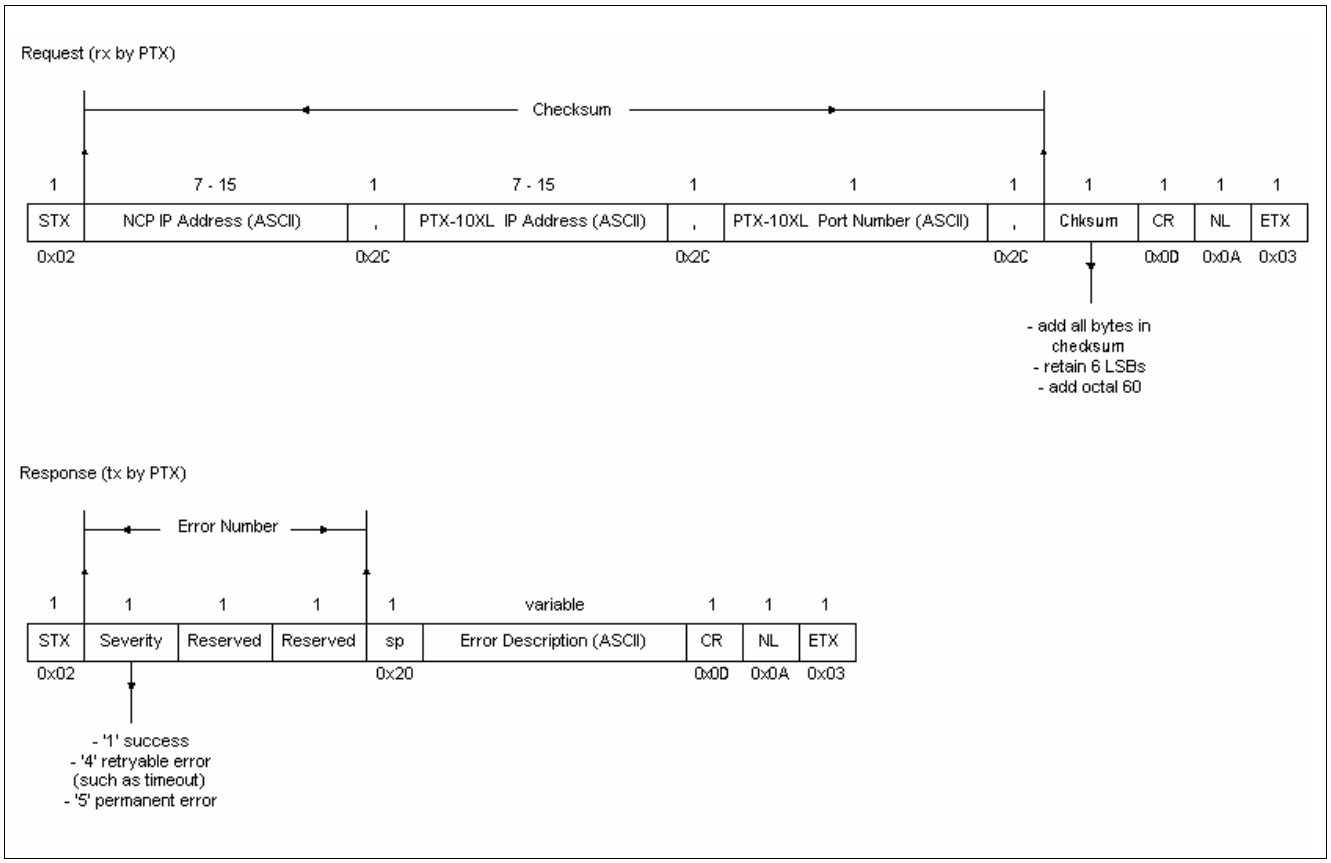

Figure 5-1: PTX-SX Protocol

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-SX 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.