TABLE OF CONTENTS

Figures

Tables

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	Apr 07
1.1	Updated card edge drawing	Nov 07
1.2	Added features, block diagram, technical specs and VistaLINK section.	Nov 08
1.3	Removed references to GPI, GPO, LTC specifications	Apr 09
1.4	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.

Function:
The function of the 7700PTX generally falls into one of four 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-MT8 is designed to provide an SNMP interface to a MT830 analog broadcast receiver. The 7700PTX-MT8 can communicate with up to 4 receivers.

Figure 1-1 shows a typical 7700PTX-MT8 setup.

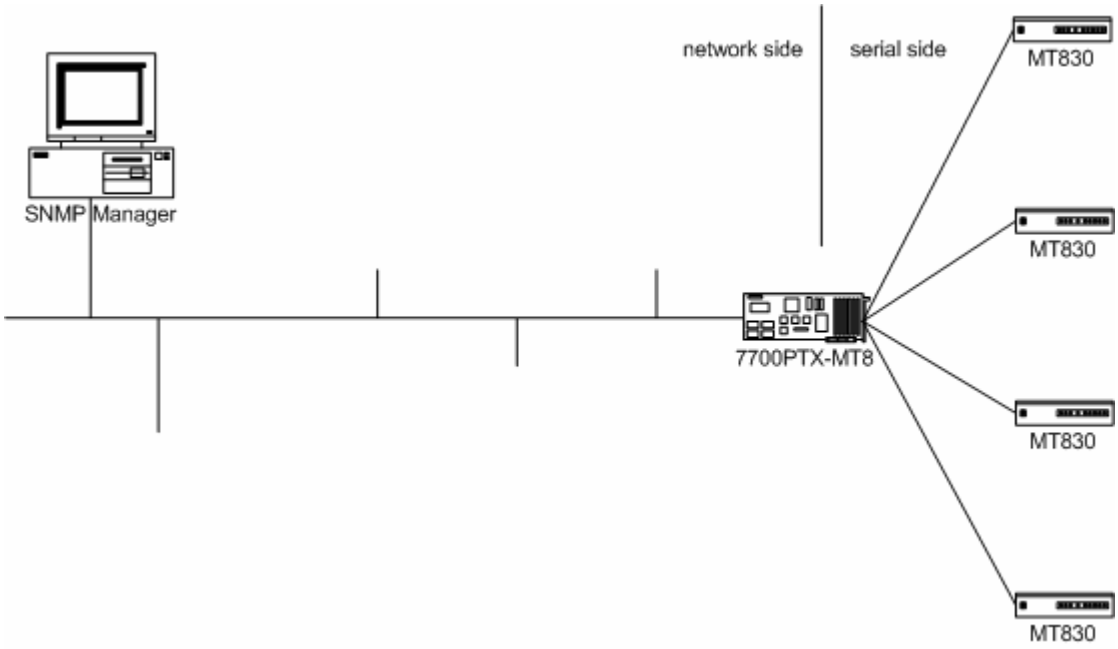

Figure 1-1: Typical 7700PTX-MT8 Setup

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.

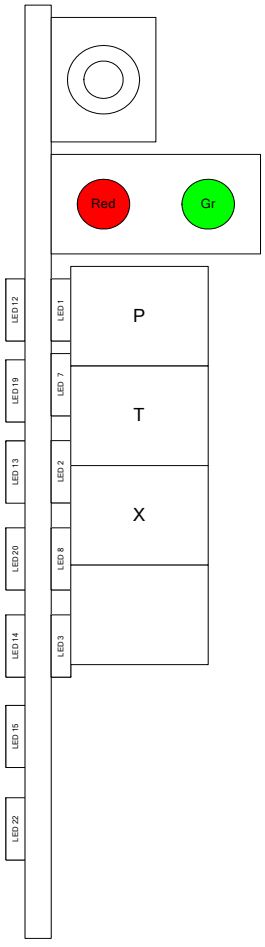

Figure 2-1: PTX Card Edge

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

Configuring the 7700PTX-MT8 requires these basic 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 each serial port to match those of the receiver(s).
4. Configure the SNMP read and write community strings should changes to the defaults be required.
5. Configure the MT830 protocol parameters to match those of the receiver(s).
6. Physically wire the serial port(s) of the 7700PTX-MT8 to the remote control port of the receiver(s) via J1 of the DB9 pigtail cable.
7. Reboot the 7700PTX-MT8.

4.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-MT8 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.

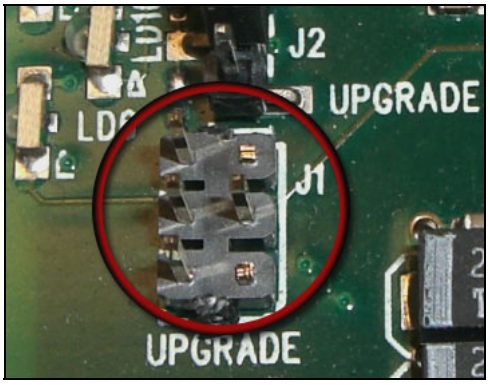

Figure 4-1: Upgrade Jumper

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 open as shown in Figure 4-2.

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.

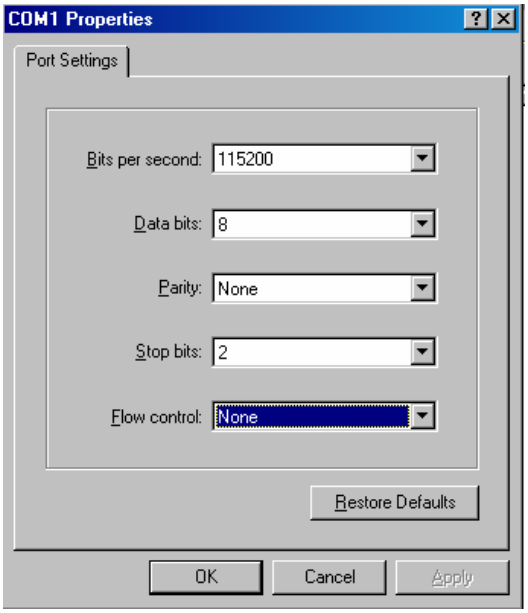

Figure 4-3: COM1 Properties

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-MT8 does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.

12. If the 7700PTX-MT8 has power, press the <Enter> key to view the 7700PTX-MT8's menu system.

13. Various 7700PTX-MT8 parameters are configurable via the 7700PTX-MT8's menu system, the root of which is called *Main Menu*.

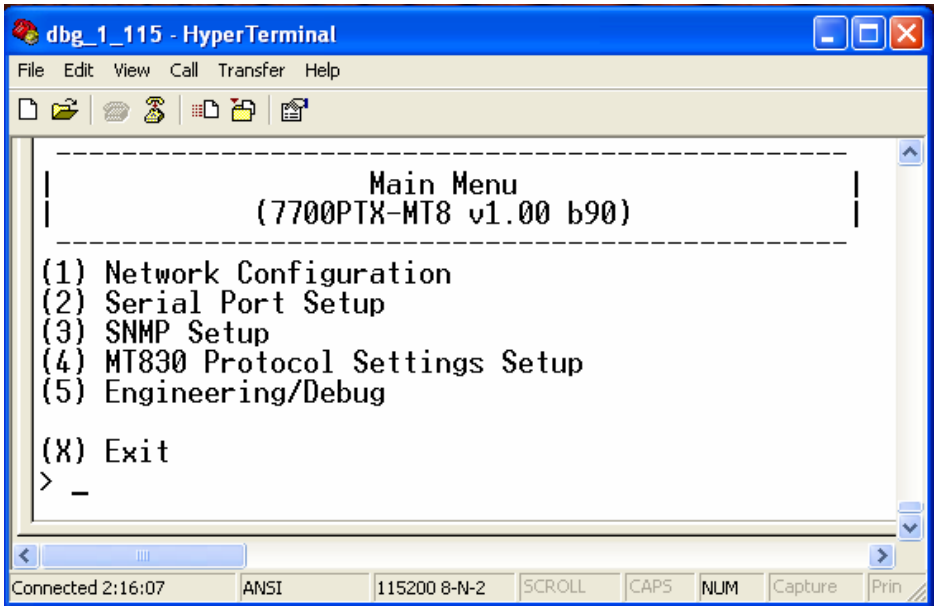

Figure 4-4: HyperTerminal Main Menu

4.3. MAIN MENU

Table 4-1 below lists the entries available in the 7700PTX-MT8'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 receiver(s)
3	**SNMP Setup**	Community strings
4	**MT830 Protocol Settings Setup**	Settings specific to the MT830 protocol
5	**Engineering/Debug**	Used for troubleshooting

Table 4-1: 7700PTX-MT8 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*.

These parameters can only be set via the *Network Configuration* menu of the 7700PTX-MT8.

The 7700PTX-MT8 must be rebooted for any network setting changes to take effect.

4.5. SERIAL PORT SETUP

4.5.1. Parameters

The 7700PTX-MT8 has 4 serial ports. The parameters associated with each serial port are listed in Table 4-2.

Parameter	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 receiver uses the following settings:

- 8 data bits
- No parity
- 1 stop bit

The receiver's baud rate can be configured via the receiver's OMNI VU front panel as follows:

- Set the control knob to position H (Format/Configuration)
- Press the > button LED until the ADDR BAUD TTL message is displayed
- Press the PROG button LED
- Press the > button LED to advance the cursor to the BAUD setting
- Use the ^ and v button LEDs to set a baud rate of 19200
- Press the TAKE button LED to save and load the new baud rate

The receiver's serial standard is set to RS-232 when the group of 8 wires leaving the receiver's remote control connector is connected to J10. When connected to J15, RS422 is selected. Refer to the receiver's owner's manual for more information.

It is recommended that the receiver be configured as follows:

- Interface of RS232 for cable lengths less than 50'
- Interface of RS422 for cable lengths greater than 50' or for noisy environments
- Baud of 19200

The serial settings of the 7700PTX-MT8 must be configured to match those of the receiver. There are two ways of configuring serial parameters on the 7700PTX-MT8:

1. Using VLPro
2. Using the *Serial Port Setup* menu of the 7700PTX-MT8

Regardless of how the serial settings of the 7700PTX-MT8 are set, the 7700PTX-MT8 must be rebooted for changes to any serial settings to take effect.

The 7700PTX-MT8 must be rebooted for any serial parameter changes to take effect.

4.5.2. Back Plate

Figure 4-5 displays the rear plate of the 7700PTX.

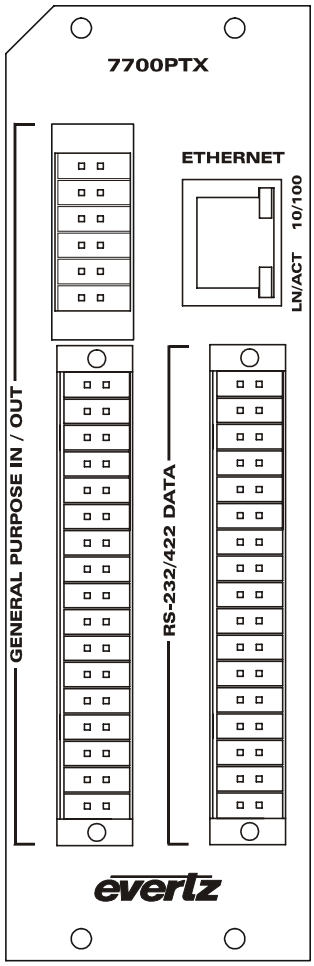

Figure 4-5: 7700PTX Back Plate

4.5.3. RS-232 Wiring

Figure 4-6 shows which pins of the back plate are used for RS-232 serial connections.

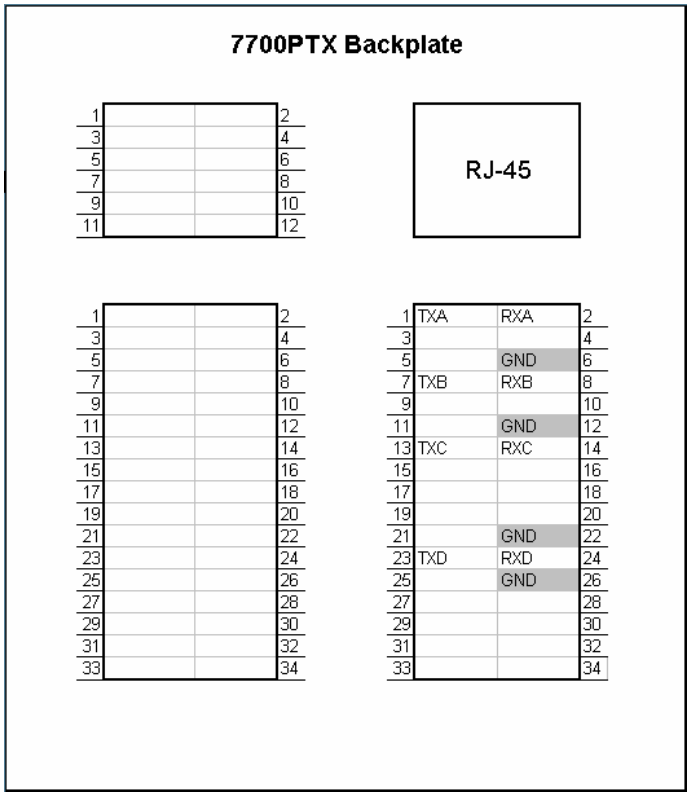

Figure 4-6: RS-232 Pins

Table 4-3 details how to connect the 7700PTX-MT8 to J1 of the DB9 pigtail cable, which in turn, connects to the receiver's remote control port for RS-232 operation.

7700PTX-MT8			J1 Connector
Port	**Pin Name**	**Pin**	**Pin**
1	TXA	1	3
	RXA	2	2
	GND	6	5
2	TXB	7	3
	RXB	8	2
	GND	12	5
3	TXC	13	3
	RXC	14	2
	GND	22	5
4	TXD	23	3
	RXD	24	2
	GND	26	5

Table 4-3: RS-232 Wiring

4.5.4. RS-422 Wiring

Figure 4-7 shows which pins of the back plate are used for RS-422 serial connections.

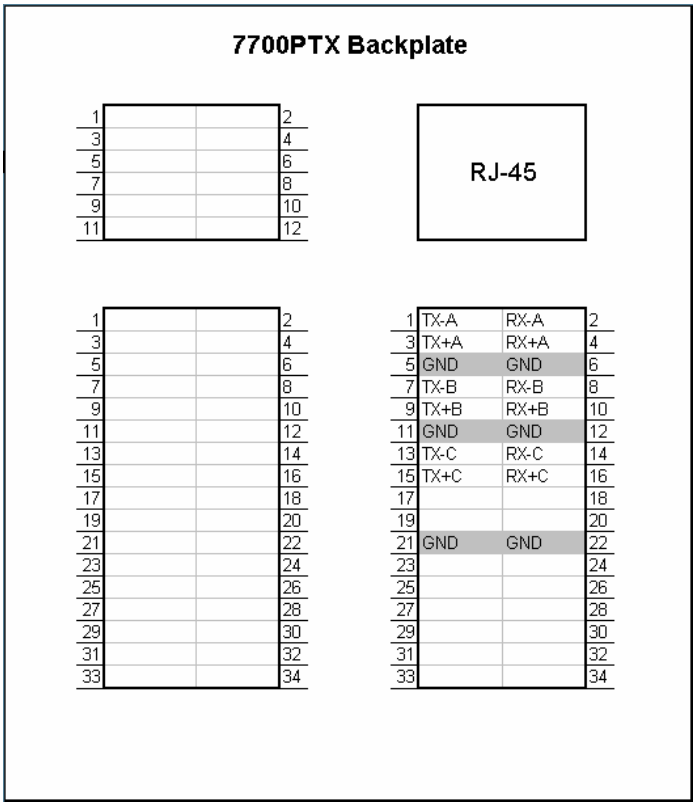

Figure 4-7: RS-422 Pins

Table 4-4 details how to connect the 7700PTX-MT8 to J1 of the DB9 pigtail cable, which in turn, connects to the receiver's remote control port for RS-422 operation.

7700PTX-MT8			J1 Connector
Port	**Pin Name**	**Pin**	**Pin**
1	**TX-A**	1	**8**
	TX+A	3	**4**
	RX-A	2	**7**
	RX+A	4	**6**
	GND	6	**5**
2	**TX-B**	7	**8**
	TX+B	9	**4**
	RX-B	8	**7**
	RX+B	10	**6**
	GND	12	**5**
3	**TX-C**	13	**8**
	TX+C	15	**4**
	RX-C	14	**7**
	RX+C	16	**6**
	GND	22	**5**

Table 4-4: RS-422 Wiring

The 7700PTX-MT8's fourth serial port is not RS-422 capable.

4.5.5. 8-Pin Female DIN Connector

An 8-pin female DIN connector attaches to the remote control port of the receiver. The relationship between the pins of this connector and those of the J1 DB9 female connector is illustrated in Figure 4-8.

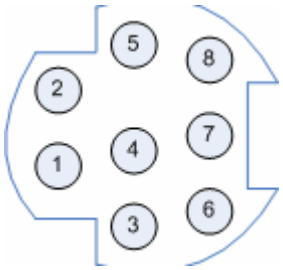

Figure 4-8: 8-Pin Female DIN Connector

4.6. SNMP SETUP

4.6.1. Parameters

Table 4-5 lists the parameters associated with the SNMP setup.

Parameter	Notes
Read-only community	Community string used for SNMP *gets*. The default is *public*.
Read-write community	Community string used for SNMP *gets* or *sets*. The default is *private*.

Table 4-5: SNMP Parameters

These parameters can only be set via the *SNMP Setup* menu of the 7700PTX-MT8.

Changes to these parameters do not require a reboot of the 7700PTX-MT8.

These parameters must match those of the SNMP manager.

4.7. MT830 PROTOCOL SETTINGS SETUP

4.7.1. Parameters

Table 4-6 lists the parameters associated with the MT830 protocol.

Parameter	Notes
Receiver address	This 4-digit parameter must match the address shown via the receiver's OMNI VU front panel (control knob position H Format/Configuration). The default is 0000.
Response timeout	The maximum amount of time, in ms, that the 7700PTX-MT8 will wait for a response from the receiver. The default is 500 ms.

Table 4-6: MT830 Protocol Parameters

There are 2 ways to configure these parameters:

1. Using VLPro
2. Using the *MT830 Protocol Settings Setup* menu of the 7700PTX-MT8

Changes to these parameters do not require a reboot of the 7700PTX-MT8.

5. TROUBLESHOOTING TIPS

5.1. CHECKING RECEIVER COMMUNICATION

The steps below detail how to verify whether or not the 7700PTX-MT8 is able to communicate with a receiver.

1. Start a HyperTerminal session via the steps given in section 4.2.
2. From the *Main Menu* select *Engineering/Debug*.
3. Select *Check receiver comms*.
4. Select the 7700PTX-MT8 Serial Port to which the receiver is connected.

If the 7700PTX-MT8 Serial Port is able to communicate with the receiver, the following message should be displayed:

receiver on serial port x responding

where x = 1, 2, 3, or 4.

If the 7700PTX-MT8 Serial Port is unable to communicate with the receiver the following message should be displayed:

receiver on serial port x not responding

where x = 1, 2, 3, or 4.

5.2. STATISTICS

The 7700PTX-MT8 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.

5.2.1. Serial Port Activity

5.2.1.1. 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
218B	1S1	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000
218B	2S2	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000
218B	3S3	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000
218B	4S4	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000

These statistics are described in Table 5-1.

Parameter	Notes
In prot id	The protocol expected on this serial port displayed in both a numeric (21) and textual (8B) 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 alphanumeric characters received from the receiver. If a receiver is connected and this value is 0 it may mean: • The serial port configuration is incorrect • The serial port wiring is incorrect • The receiver address parameter is not configured properly
Valid cmds out	The number of full receiver responses received by the 7700PTX-MT8.
Cmds too long	The number of receiver responses 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 receiver responses received by the 7700PTX-MT8. 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 receiver responses discarded due to inactivity. This value gets incremented if part of a receiver response is received. This value should normally be 0.
No outQ	This value should be 0.
No mbufs	The number of receiver responses discarded due to lack of internal storage on the 7700PTX-MT8. The value should normally be 0.

Table 5-1: Incoming Serial Port Statistics

5.2.1.2. Outgoing

The following represents an example of outgoing serial port activity:

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 request packets sent by the 7700PTX-MT8 to the receiver.

Table 5-2: Outgoing Serial Port Statistics

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-MT8 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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