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REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
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

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1. OVERVIEW

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.

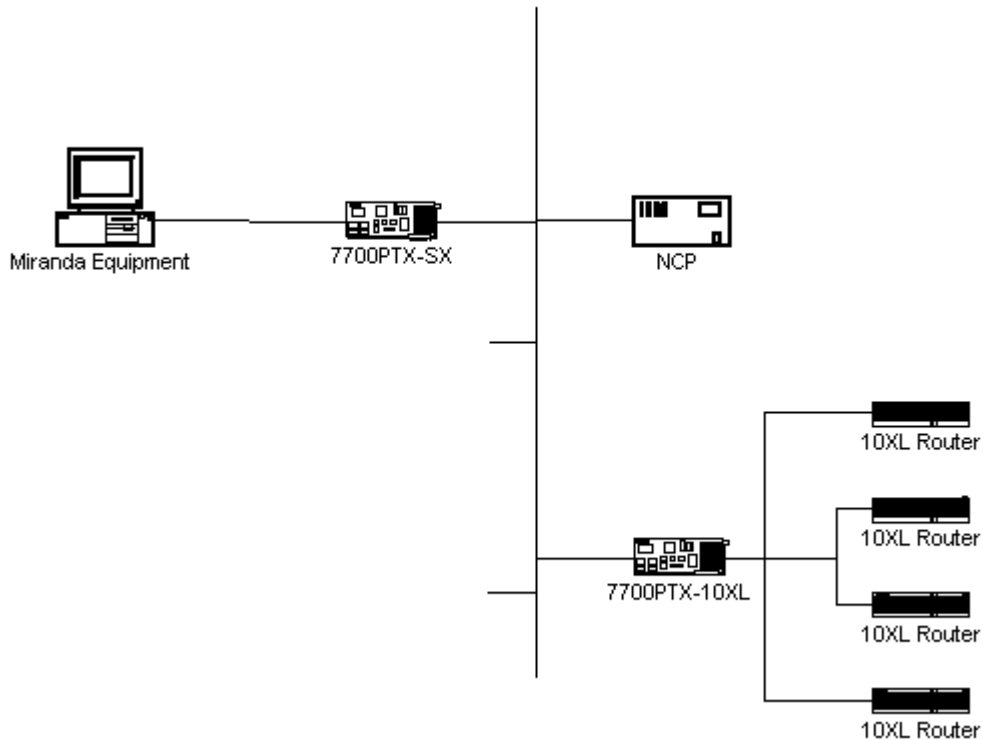


Figure 1-1: Typical 7700PTX-10SX Setup

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.

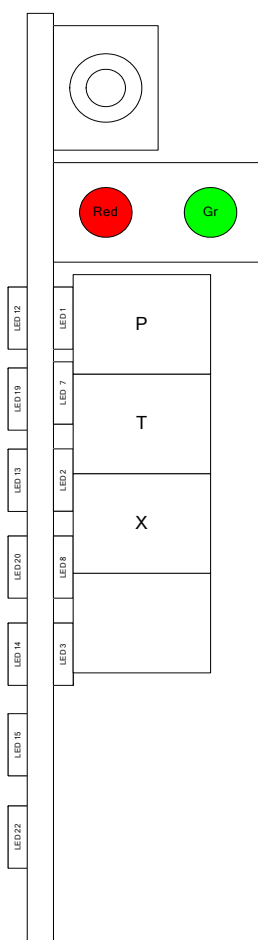


Figure 2-1: PTX Card Edge

3. CONFIGURATION

3.1. 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.

3.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-SX 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.

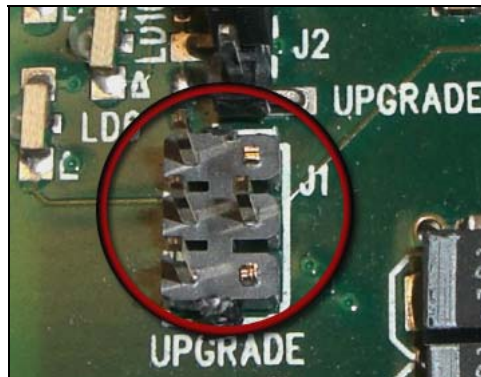


Figure 3-1: Upgrade Jumper

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.

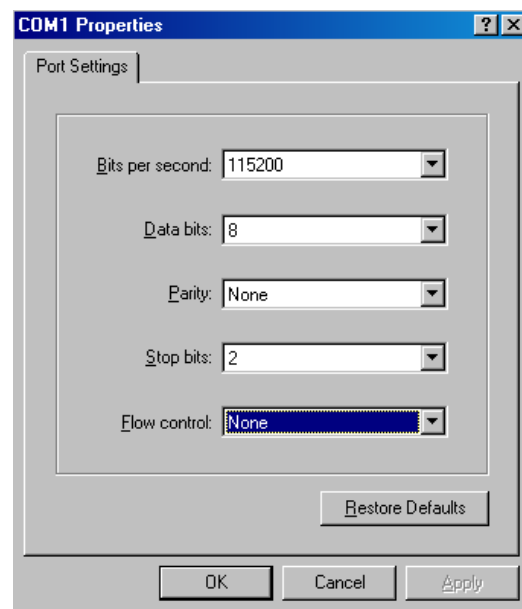


Figure 3-3: COM1 Properties

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-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*.

3.3. MAIN MENU

Table 3-1 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 3-1: 7700PTX-SX 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 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.

3.5. SERIAL PORT SETUP

3.5.1. Parameters

The 7700PTX-SX has 4 serial ports. The parameters associated with each serial port are list 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



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.

3.5.2. Back Plate

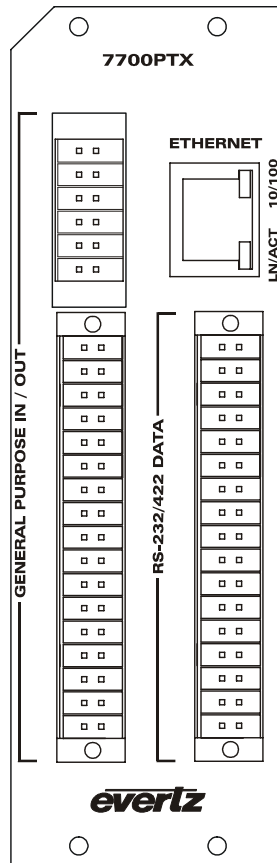


Figure 3-4: 7700PTX Back Plate

3.5.3. RS-232 Wiring

Figure 3-5 shows which pins of the back plate are used for RS-232 serial connections.

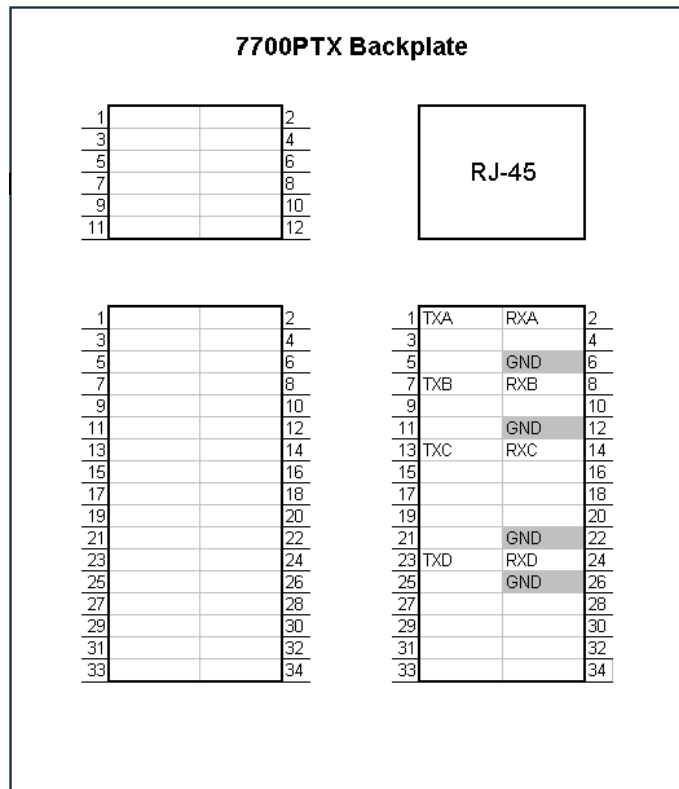


Figure 3-5: RS-232 Pins

Table 3-3 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 3-3: RS-232 Wiring

3.5.4. RS-422 Wiring

Figure 3-6 shows which pins of the back plate are used for RS-422 serial connections.

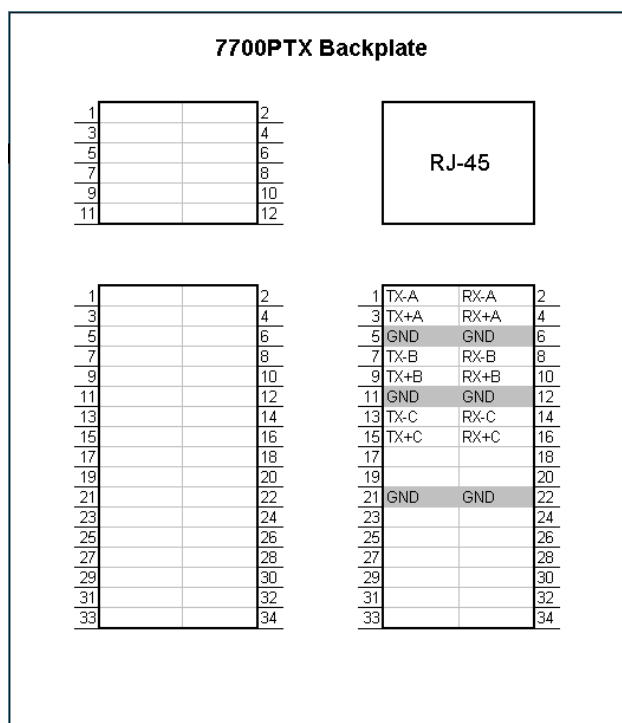


Figure 3-6: RS-422 Pins

Table 3-4 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 3-4: RS-422 Wiring



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

4. TROUBLESHOOTING TIPS

4.1. 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.

4.1.1. Serial Port Activity

4.1.1.1. Incoming

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

incoming serial port statistics...

```

in   in   in
prot port subp          valid   cmds   cmds   timeout          no
id   id   id   in chars   cmds out too lng malfrmd discrds   no outQ mbufs
**** *
5SX 1S1      0 0x00000031 0x00000007 0x000000 0x000000 0x000000 0x000000 0x000000
5SX 2S2      0 0x00000000 0x00000000 0x000000 0x000000 0x000000 0x000000 0x000000
5SX 3S3      0 0x00000000 0x00000000 0x000000 0x000000 0x000000 0x000000 0x000000
5SX 4S4      0 0x00000000 0x00000000 0x000000 0x000000 0x000000 0x000000 0x000000

```

These statistics are described in Table 4-1.

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: <ul style="list-style-type: none"> 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 malfrmd	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 4-1: Incoming Serial Port Statistics

4.1.1.2. 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 4-2.

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 4-2: Outgoing Serial Port Statistics

4.1.2. 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
```

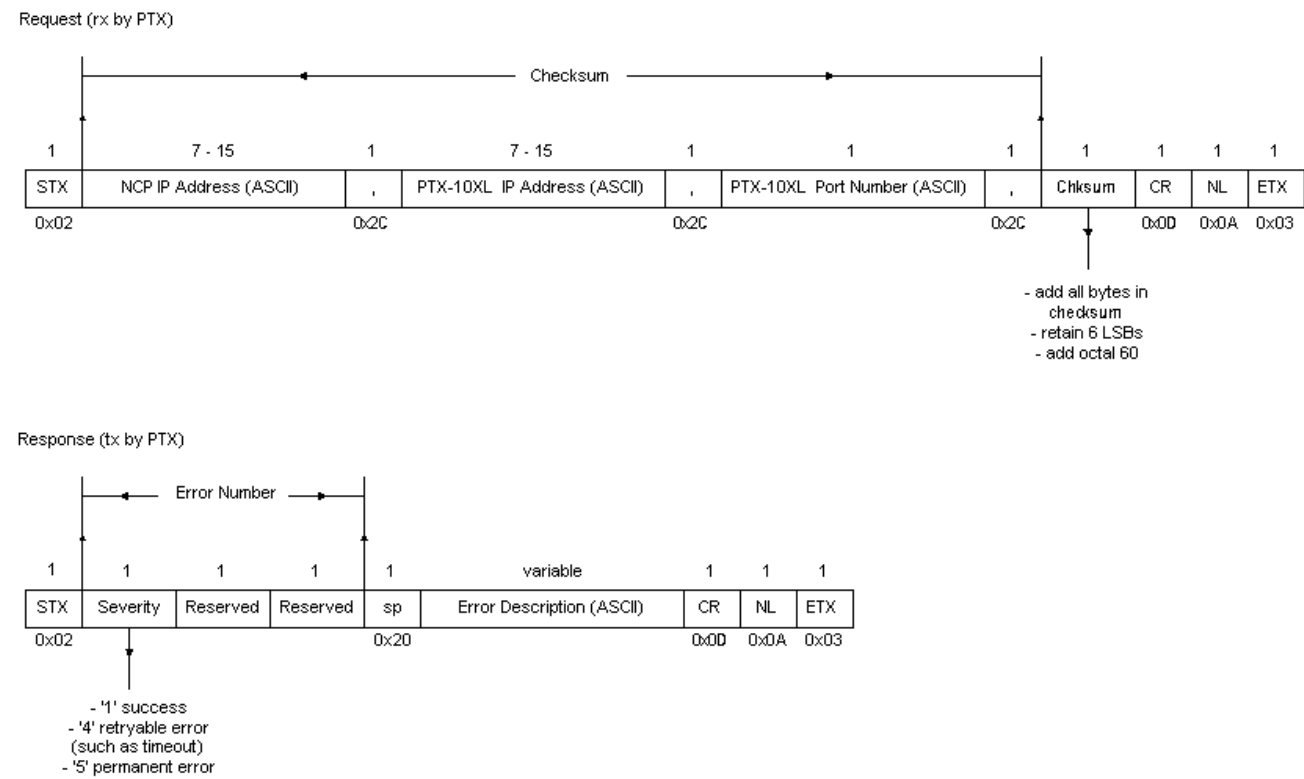
Some of these statistics are described in Table 4-3.

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 <i>SNMP pkts out attempt</i> .
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 (ie. a non-NCP host).

Table 4-3: SNMP Statistics

4.2. PTX-SX PROTOCOL

Figure 4-1 shows the messages associated with the PTX-SX protocol.



7700PTX-SX Protocol

Figure 4-1: PTX-SX Protocol

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.

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