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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary	Mar 07
0.2	Correct incorrect baud rate and parity	Mar 07
1.0	Updated card edge drawing	Nov 07

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1. OVERVIEW

The 7700PTX-APC is designed to provide an SNMP interface to an APC100 Antenna Programmable Controller. The 7700PTX-APC can communicate with up to 4 controllers.

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

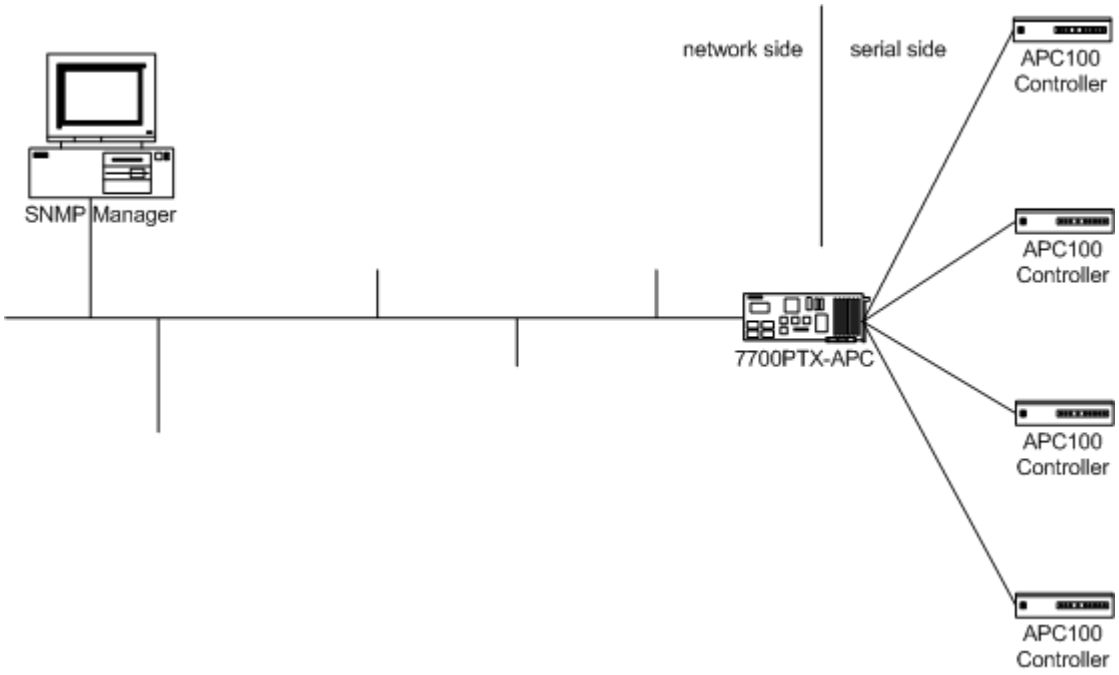

Figure 1-1: Typical 7700PTX-APC Setup

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.

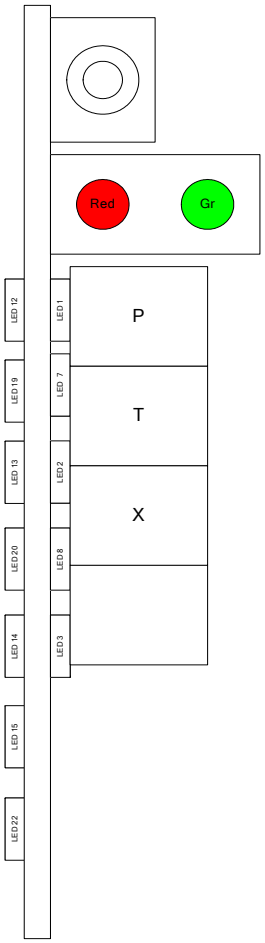

Figure 2-1: PTX Card Edge

3. CONFIGURATION

3.1. CONFIGURATION STEPS

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

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 controller(s).
4. Configure the SNMP read and write community strings should changes to the defaults be required.
5. Configure the APC100 protocol parameters to match those of the controller(s).
6. Physically wire the serial port(s) of the 7700PTX-APC to the remote interface port of the controller(s).
7. Reboot the 7700PTX-APC.

3.2. DEBUG/MONITOR PORT CONNECTION

The 7700PTX-APC 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.

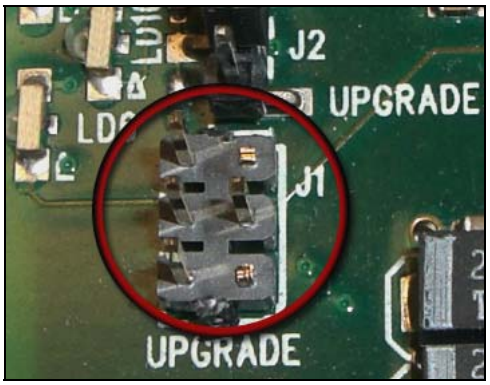

Figure 3-1: Upgrade Jumper

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.

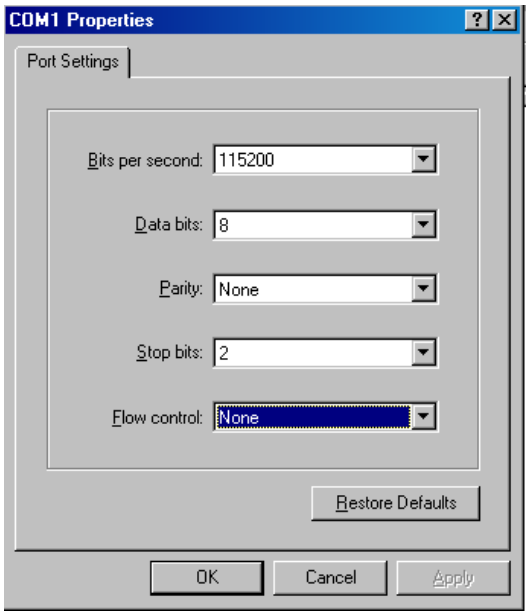

Figure 3-3: COM1 Properties

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-APC does not have power. The boot sequence and Main Menu are displayed in the HyperTerminal window.
12. If the 7700PTX-APC has power, press the <Enter> key to view the 7700PTX-APC's menu system.
13. Various 7700PTX-APC parameters are configurable via the 7700PTX-APC's menu system, the root of which is called *Main Menu*.

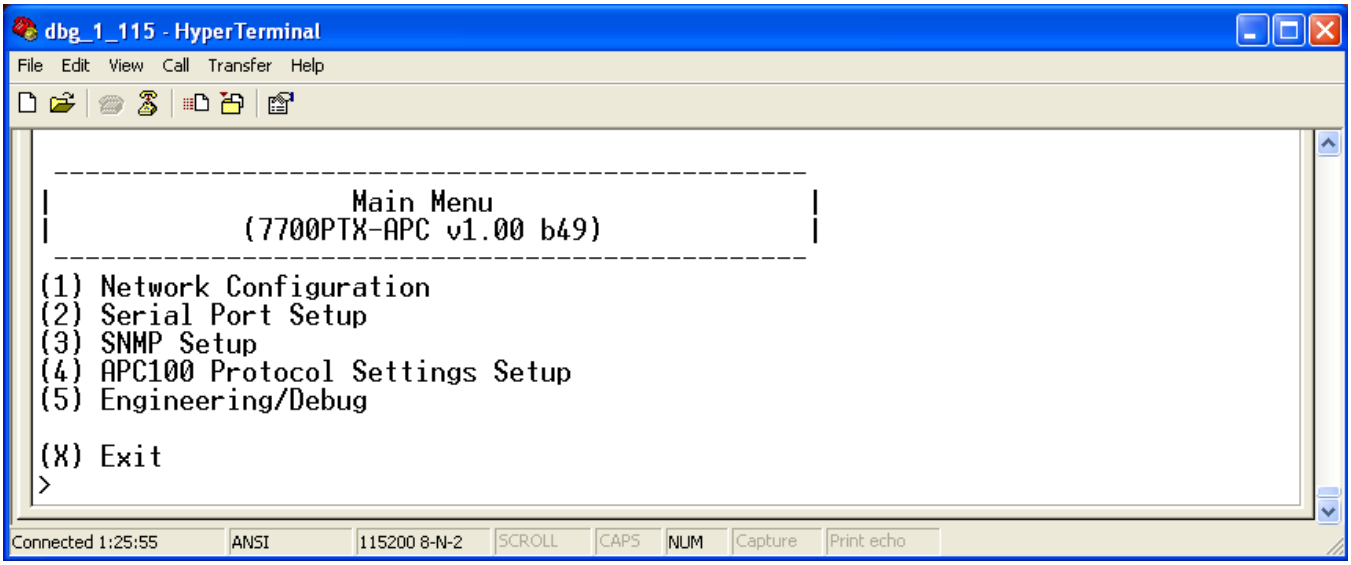

Figure 3-4: HyperTerminal Main Menu

3.3. MAIN MENU

Table 3-1 below lists the entries available in the 7700PTX-APC'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 controller(s)
3	SNMP Setup	Community strings
4	APC100 Protocol Settings Setup	Settings specific to the APC100 protocol
5	Engineering/Debug	Used for troubleshooting

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

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

3.5. SERIAL PORT SETUP

3.5.1. Parameters

The 7700PTX-APC has 4 serial ports. The parameters associated with each serial port are listed in Table 3-2.

Parameter	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 controller uses the following settings:

- 8 data bits
- Even parity
- 1 stop bit
- 9600 Baud

It is recommended that the controller be configured as follows:

- Interface of EIA232 for cable lengths less than 50'
- Interface of RS485 for cable lengths greater than 50' or for noisy environments

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

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

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

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

3.5.2. Back Plate

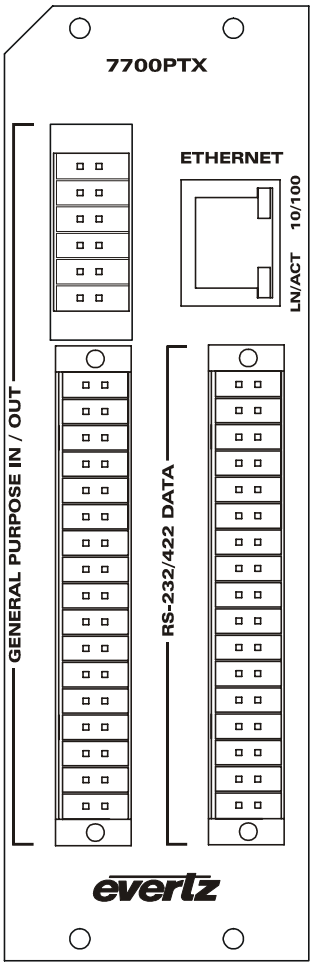

Figure 3-5: 7700PTX Back Plate

3.5.3. RS-232 Wiring

Figure 3-6 shows which pins of the back plate are used for RS-232 serial connections.

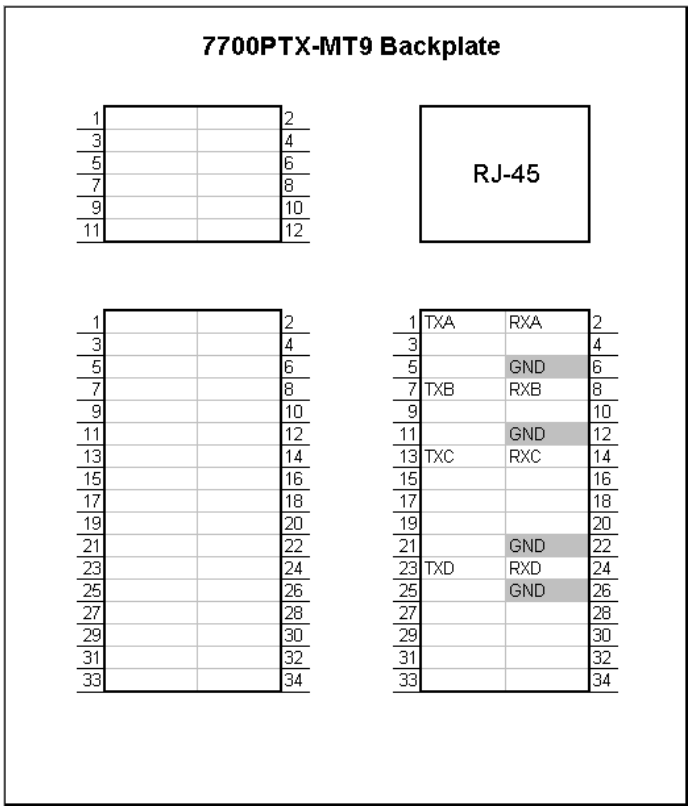

Figure 3-6: RS-232 Pins

Table 3-3 details how to connect the 7700PTX-APC to the controller's communications port for RS-232 operation.

7700PTX-APC			Controller	
Port	**Pin Name**	**Pin**	**Pin**	**Pin Name**
1	TXA	1	3	Receive Data
	RXA	2	2	Transmit Data
	GND	6	7	Ground
2	TXB	7	3	Receive Data
	RXB	8	2	Transmit Data
	GND	12	7	Ground
3	TXC	13	3	Receive Data
	RXC	14	2	Transmit Data
	GND	22	7	Ground
4	TXD	23	3	Receive Data
	RXD	24	2	Transmit Data
	GND	26	7	Ground

Table 3-3: RS-232 Wiring

3.5.4. RS-422 Wiring

Figure 3-7 shows which pins of the back plate are used for RS-422 serial connections.

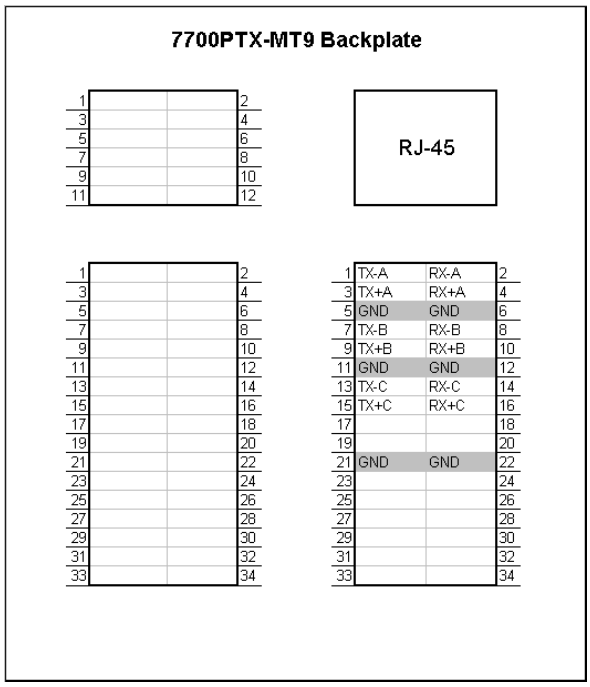

Figure 3-7: RS-422 Pins

Table 3-4 details how to connect the 7700PTX-APC to the controller's communications port for RS-422 operation.

7700PTX-APC			Controller	
Port	**Pin Name**	**Pin**	**Pin**	**Pin Name**
1	TX-A	1	19	RX-
	TX+A	3	18	RX+
	RX-A	2	15	TX-
	RX+A	4	14	TX+
	GND	6	7	GND
2	TX-B	7	19	RX-
	TX+B	9	18	RX+
	RX-B	8	15	TX-
	RX+B	10	14	TX+
	GND	12	7	GND
3	TX-C	13	19	RX-
	TX+C	15	18	RX+
	RX-C	14	15	TX-
	RX+C	16	14	TX+
	GND	22	7	GND

Table 3-4: RS-422 Wiring

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

3.5.5. Controller Jumper Settings

Mode	Jumper JU3	Jumper JU4	Jumer JU11
RS-232	E1 – E2	E1 – E2	E1 – E2
RS-422	E2 – E3	E2 – E3	E1 – E2

Table 3-5: Controller Serial Jumper Settings

3.6. SNMP SETUP

3.6.1. Parameters

Table 3-6 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 3-6: SNMP Parameters

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

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

These parameters must match those of the SNMP manager.

3.7. APC100 PROTOCOL SETTINGS SETUP

3.7.1. Parameters

Table 3-7 lists the parameters associated with the APC100 protocol.

Parameter	Notes
Controller address	This 4-digit parameter must match the address shown via the controller's DIP switches S2-1 through S2-4. The default is 50 (in hexadecimal).
Response timeout	The maximum amount of time, in ms, that the 7700PTX-APC will wait for a response from the controller. The default is 1000 ms.

Table 3-7: APC100 Protocol Parameters

There are 2 ways to configure these parameters:

1. Using VLPro
2. Using the *APC100 Protocol Settings Setup* menu of the 7700PTX-APC

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

4. TROUBLESHOOTING TIPS

4.1. CHECKING CONTROLLER COMMUNICATION

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

1. Start a HyperTerminal session via the steps given in section 3.2.
2. From the *Main Menu* select *Engineering/Debug*.
3. Select *Check controller comms*.
4. Select the 7700PTX-APC serial port to which the controller is connected.

If the 7700PTX-APC serial port is able to communicate with the controller, the following message should be displayed:

controller on serial port x responding

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

If the 7700PTX-APC serial port is unable to communicate with the controller the following message should be displayed:

controller on serial port x not responding

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

4.2. STATISTICS

The 7700PTX-APC 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.

4.2.1. Serial Port Activity

4.2.1.1. 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
20C1	1S1	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000
20C1	2S2	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000
20C1	3S3	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000
20C1	4S4	0	0x00000003	0x00000001	0x00000	0x00000	0x00000	0x00000	0x00000

These statistics are described in Table 4-1.

Parameter	Notes
In prot id	The protocol expected on this serial port displayed in both a numeric (20) and textual (C1) 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 controller. If a controller is connected and this value is 0 it may mean: • The serial port configuration is incorrect • The serial port wiring is incorrect • The controller address parameter is not configured properly
Valid cmds out	The number of full controller responses received by the 7700PTX-APC.
Cmds too long	The number of controller 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 controller responses received by the 7700PTX-APC. 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 controller responses discarded due to inactivity. This value gets incremented if part of a controller response is received. This value should normally be 0.
No outQ	This value should be 0.
No mbufs	The number of controller responses discarded due to lack of internal storage on the 7700PTX-APC. The value should normally be 0.

Table 4-1: Incoming Serial Port Statistics

4.2.1.2. 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 4-2.

Parameter	Notes
Port	The port identifier in textual (S1 – S4) format.
Out Cmds	The number of request packets sent by the 7700PTX-APC to the controller.

Table 4-2: Outgoing Serial Port Statistics

5. 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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