

7700PTX-AP

Network-Controlled Protocol Translator

User's Guide



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1 Overview

1.1 Ports

The 7700PTX-AP receives Andromeda protocol UMD text and tally information on a serial port and translates that information into a format suitable for transmission to PPVs/VIPs.

The 7700PTX-AP is an Andromeda (ASCII-plus) protocol converter that has the following external ports:

- 4 serial ports
- 1 monitoring & debug port
- 10/100 Ethernet port

1.2 Protocols

1.2.1 Incoming

The 7700PTX-AP accepts the Andromeda (ASCII-plus) protocol on any of its four serial ports.

1.2.2 Outgoing

The 7700PTX-AP transmits only the Image Video protocol.

1.3 Typical Usage

A typical network setup might consist of Figure 1-1, in which an Andromeda device is connected to serial 1 of the 7700PTX-AP that communicates with two PPVs distributed over two MVP chassis.



Figure 1–1: Typical Network Environment



2 Configuration

2.1 Configuration Steps

The basic steps to configuring the 7700PTX-AP are:

- 1. Connect a PC running a console application such as Windows *HyperTerminal* to the 7700PTX-AP debug/monitor port, which is the debug console, via the adapter cable
- 2. Power on the 7700PTX-AP
- 3. Configure the 7700PTX-AP network settings
- 4. Configure the parameters of each serial port to match those of the connected Andromeda equipment
- 5. Configure the IP address and TCP port of the peers that will receive the UMD protocol stream
- 6. Power off the 7700PTX-AP
- 7. Connect the Andromeda equipment to the 7700PTX-AP serial port(s)
- 8. Power on the 7700PTX-AP

For detailed instructions on configuring serial and network connections see Chapter 4

2.2 Card Edge Controls

2.2.1 Determining Current Settings

To read the current IP address during normal operation, press the front toggle switch DOWN. The IP address can be read on the four-character alphanumeric display.

2.2.2 Clearing Previous Settings

To clear ALL current settings, apply power to the card while holding the toggle switch UP. The Red LED (the left of the two LEDs) will light. When the Red LED is off and the Green LED (the right of the two LEDs) lights, the settings have been cleared, and you can enter your new settings.

2.2.3 Card Edge LEDs

LED 15 (when facing the card edge, on the left side; sixth from the top) is lit when Ethernet activity is detected.

All other card edge LEDs are for factory use only.





Figure2–1: PTX Upper Card Edge

2.3 Debug/Monitor Serial Port

The 7700PTX-AP is configured via a PC running a terminal emulation program, such as Windows *HyperTerminal*, over the 7700PTX-AP debug/monitor serial port, the header of which is labeled *J1*. The settings are given in Table 2-1.

Setting	Value
Baud rate	115,200
Number of data	8
bits	
Parity	None
Number of stop	2
bits	

Table 2–1: Debug/Monitor Serial Port Settings



2.4 Network Configuration

If DHCP is desired, then the *Use DHCP* field should be set to *TRUE*. Otherwise, the IP address, subnet mask, and gateway (if any) must be input and the *Use DHCP* field set to *FALSE*. These parameters are accessible via the debug console *Main Menu/Network Configuration*.

2.5 Serial Port Configuration

2.5.1 Wiring

Figure 2–2 shows the back plate connections available on the 7700PTX-AP.



Figure 2–2: 7700PTX-AP Back Plate Connections

Table 2–2 shows how to connect the 7700PTX-AP to a standard 9-pin D-sub RS-232 connector.

DB9 Pin	7700PTX-AP Pin
2 (rx)	Tx
3 (tx)	Rx
5 (gnd)	Gnd

Table 2–2: RS-232 Connection

Table 2–3 shows how to connect the 7700PTX-AP via RS-422.

nect the 7700PTX-	AP via RS-422.	
RS-422	7700PTX-AP	
Signal	Pin	
Tx-	Rx (rx-)	
Tx+	Cts (rx+)	
Тх	Gnd	
Common		Y
Rx-	Tx (tx-)	
Rx+	Rts (tx+)	
Rx	Gnd	
Common		

Table 2–3: RS-422 Connection

2.5.2 Parameter Configuration

Table 2–4 lists the parameters associated with configuring the serial ports. Unless otherwise noted, the parameters apply to all serial ports. These parameters must match those of the Andromeda-based equipment being connected to the serial port(s) of the 7700PTX-AP. These parameters are accessible via the debug console's Main Menu/Serial Port Setup.

Parameter	Notes
Baud Rate	
Data Bits	
Parity	
Stop Bits	
Standard	For serial port 4, only RS-232 is valid.

Table 2–4: Serial Port Parameters



2.6 UMD Peer Configuration

Suppose we have the setup of Figure 2–3



Where:

- An Andromeda device is connected to Serial port 1 of the 7700PTX-AP
- The 7700PTX-AP communicates with a PPV with IP address 192.168.18.50, configured to listen for Image Video UMD data on TCP port 9800
- Via the debug console *Main Menu/Under Monitor Display Peer Setup/UMD Peer Setup via Ethernet 1*, configure peer 1 IP address as 192.168.18.50, and its TCP port as 9800.



3 Monitoring

3.1 UMD Peer Connections

When the 7700PTX-AP is rebooted and after its UMD configuration information is saved, it attempts to establish a TCP connection with each of its configured UMD peers. Once these connections have been established, UMD protocol data can be exchanged. The status of these connections can be accessed via the debug console *Main Menu/Show task state*. Consider the following example:

UMD	peer status		
Port	Dst Address	Tcp Port	Status
****	****	*****	****
E1	192.168.18.50	9800	ready
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set
E1	0.0.0.0	0	no address set

For this case a single UMD peer is configured on the 7700PTX-AP. The *status* column lists the TCP connection status between the 7700PTX-AP and the peer with address 192.168.18.50 and TCP port 9800. Table 3–1 lists the possible statuses and their meaning.

Status	Meaning
initializing	The TCP connection is being initialized.
no address set	No IP address/TCP port has been configured for
	this peer entry.
req sock alloc	The TCP connection is being initialized.
sock alloc fail	TCP connection initialization has failed.
req sock conn	A TCP connection request has been sent to the
	peer. The 7700PTX-AP is waiting for a
	response.
sock conn fail	The TCP connection request attempt has failed.
sock tx fail	A TCP connection is established but the last
	attempt to transmit data over it failed.
ready	The TCP connection is active and ready to send
	UMD data.

Table 3–1: UMD Peer TCP Connection Statuses



4 Configuring Network and Serial Connections

4.1 Making the Serial Connection

1. Take 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.



3. Connect the other end of the upgrade cable to the serial or COM port of the computer. This is commonly called a DB-9 connector.





4.2 Configuring the Serial Connection

- 1. On the Windows computer, click "Start". A menu opens.
- 2. Click "Programs". A menu opens.
- 3. Click "Accessories" A menu opens.
- 4. Click "Communications". A menu opens.
- 5. Click "HyperTerminal". A window opens.
- 6. Enter a name for your connection. Example: "PTX".
- 7. Press the <Enter> key. A new "Connect To" window opens.

·	Connect To	<u>?×</u>
	🧞 VIP	
	Enter details for	the phone number that you want to dial:
	<u>C</u> ountry/region:	United States of America (1)
	Ar <u>e</u> a code:	905
	Phone number:	
	Co <u>n</u> nect using:	COM1
		OK Cancel

- 8. Enter country and area code details in the appropriate spaces. If COM1 is already taken for another device, choose COM2.
- 9. Press the <Enter> key or click OK. "HyperTerminal" and "Properties "windows open.



COM1 Properties Port Settings		<u>?×</u>	
<u>B</u> its per second:	115200		
<u>D</u> ata bits:	8		
Parity:	None		
<u>S</u> top bits:	2		
Elow control:	None		
	<u>R</u> estore Default	\$	
	IK Cancel Ap	ply	

10. Enter the information as listed in the illustration above, the same as in the table below.

Baud	115200
Data bits	8
Parity	None
Stop bits	2
Flow Control	None

- 11. Press the <Enter> key or click OK. The "Properties" window closes, leaving the HyperTerminal window open.
- 12. Apply power to the card. The boot sequence is displayed in the HyperTerminal window.



PTX - HyperTerminal
ile Edit View Call Transfer Help
ethernet: promiscuous mode enabled hardware address 00:02:c5:fe:e2:2d network ipaddr 192.170.1.1 mask 255.255.255.0 gw 0.0.0.0 bc 255.255.255.255 networking started Initialize the translator task Initialize the layer 4 glue tasks Initialize the serial tasks Initialize the general purpose input task Initialize the general purpose outputs Initialize the LTC input Initialize the user menu
 Main Menu (7700PTX v1.00 b205)
(1) Network Configuration (2) Serial Port Setup (3) Protocol Translation Setup (4) Engineering/Debug
(X) Exit
onnected 0:25:04 Auto detect 115200 8:N-2 SCROLL CAPS NUM Capture Print echo

13. Use the numbered menu on the HyperTerminal window to change settings. For example, press 1 and <Enter> to change the Network Configuration, including IP address, Net Mask, Gateway, and Broadcast Address, or to use DHCP.



PTX - HyperTerminal File Edit View Call Transfer Help B B B B B B	
(X) Exit	
Network Configura (7700PTX v1.00 b	tion 205)
MAC: 00:02:c5:fe ip address: 192.170.1.1 netmask address: 255.255.255 gateway: 0.0.0.0 broadcast address: 192.170.1.2 DHCP enabled: False	:e2:2d .0 55
(1) Set IP Address (2) Set Netmask (3) Set Gateway (4) Set Broadcast Address (5) Use DHCP	
(S) Save and Exit (X) Exit >	
Connected 0:31:39 Auto detect 115200 8-N-2 SCI	ROLL CAPS NUM Capture

4.3 Finding the Computer IP Address

On a network, you might not have any control over what the IP address of your computer is. The following example is for Windows 2000, which may differ from other operating systems.

To learn the IP address of your computer in MSFT Windows 2000:

- 1. Click "Start". A menu opens.
- 2. Click "Programs". A menu opens.
- 3. Click "Accessories" A menu opens.
- 4. Click "Communications". A menu opens.
- 5. Click "Network and Dial-up Connections". A new pane opens. In the new pane will be icons, including one titled "Make a New Connection". Your network card icon(s) should also be visible there.





In the example below there are two Network Interface Cards. Network A is the corporate network, which we won't change. Network C is what we'll use to connect to the PTX.

File Edit View Favorites Tools Advanced Help	🔁 Network and Dial-up Connection	15	
Here Address Network and Dial-up Connections Network and Dial-up Connections Make New Connections Network C Type: LAN Connection Status: Enabled	File Edit View Favorites Tools	Advanced Help	
Address Network and Dial-up Connections Network and Dial-up Image: Connection Section Se	🖛 Back 👻 🔿 👻 💽 🔞 Search	🔁 Folders 🛛 🚳 🎥 🧏 🗙 🗐 🏢	•
Network and Dial-up Make New Connection Network A Network C Type: LAN Connection Status: Enabled	Address 😰 Network and Dial-up Conne	ctions	
Make New Connection Network A Network C Network C Type: LAN Connection Status: Enabled			
Network C Type: LAN Connection Status: Enabled	Network and Dial-up Connections	Make New Network A Network C Connection	
Type: LAN Connection Status: Enabled	Network C		
Status: Enabled	Type: LAN Connection		
	Status: Enabled		
D-Link DFE-530TX PCI Fast Ethernet Adapter (rev.A) #2	D-Link DFE-530TX PCI Fast Ethernet Adapter (rev.A) #2		

- 6. Highlight the icon of the NIC you wish to use to connect with the PTX.
- 7. Right click the icon. A menu opens.

Image: Search					
File Edit View Favorites Tools Advanced Help Back Ba	Network and Dial-up Connection	ns			
Image: Search Image: Folders Address Network and Dial-up Connections Image: Network and Dial-up Connections Network and Dial-up Connections Network and Dial-up Connections Network and Dial-up Connections Network C Type: LAN Connection Status: Enabled D-Link DFE-530TX PCI Fast Ethernet	File Edit View Favorites Tools	Advanced	Help		
Address Network and Dial-up Connections Network and Dial-up Connections Image: Connection Status Network C Type: LAN Connection Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet	🖛 Back 👻 🤿 👻 🔂 🔞 Search	🔁 Folders 🛭 🤅	3 4 4 4	X n	III •
Network and Dial-up Connections Make New Connection Network A Network A Network C Type: LAN Connection Create Shortcut Delete Rename Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet	Address 😰 Network and Dial-up Conne	ctions			
Network and Dial-up Connections Make New Connection Network A Network A Network C Type: LAN Connection Create Shortcut Delete Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet Status		E	P		
Network and Dial-up Connections Make New Connection Network A Network A Network C Type: LAN Connection Create Shortcut Delete Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet Disable			∟⊒≞	L 🚽	
Connections Status Network C Create Shortcut Type: LAN Connection Rename Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet Properties	Network and Dial-up	Make New Connection	Network A	Network	Disable
Network C Create Shortcut Type: LAN Connection Bename Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet Properties	Connections				Status
Network C Delete Type: LAN Connection Rename Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet Properties		•			Create Shortcut
Type: LAN Connection Rename Status: Enabled Properties D-Link DFE-530TX PCI Fast Ethernet Properties	Network C				Delete
Status: Enabled Properties Properties	Type: LAN Connection			_	Rename
D-Link DFE-530TX PCI Fast Ethernet	Status: Enabled				Properties
Adapter (rev.A) #2	D-Link DFE-530TX PCI Fast Ethernet Adapter (rev.A) #2				

8. Click "Properties". A Network Properties window opens.



Network C Properties ? × General Sharing	
Connect using:	
D-Link DFE-530TX PCI Fast Ethernet Adapter (rev.A) #2	
Configure	
Components checked are used by this connection:	
 Client for Microsoft Networks File and Printer Sharing for Microsoft Networks Timernet Protocol (TCP/IP) 	
Install Uninstall Properties	
Description	
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	
Show icon in taskbar when connected	
OK Cancel	

- 9. Ensure a box next to "Internet Protocol (TCP/IP)" is checked, meaning it is installed. If TCP/IP is not installed in the computer, please see your IT staff.
 10. Highlight "Internet Protocol (TCP/IP)"
 11. Click on the PROPERTIES button. A TCP/IP Properties window opens.



Internet Protocol (TCP/IP) Propertie	es	? ×
General		
You can get IP settings assigned autor this capability. Otherwise, you need to the appropriate IP settings.	matically if your network supports ask your network administrator for	
O Obtain an IP address automatica	illy	
☐ Use the following IP address: —		
IP address:	192.170.1.2	
Subnet mask:	255 . 255 . 255 . 0	
Default gateway:		
C Obtain DNS server address auto	matically	
── Use the following DNS server ad	ldresses:	
Preferred DNS server:		
Alternate DNS server:	· · ·	
	Advanced	
	OK Cance	el

12. View the IP Address provided. If no IP address is present, you must enter one, as you cannot obtain one automatically from the PTX.

4.4 Setting the Computer IP Address

- 13. In the "Properties" window, click the round box next to "Use the following IP address".
- 14. Enter the IP address desired. Example: 192.170.1.2
- 15. Your PTX and NIC must be on the same subnet. If no number is already specified, enter 255.255.255.0 as the Subnet Mask.
- 16. Click OK. The TCP/IP Properties window closes.
- 17. Click OK. The Network Properties window closes.

During normal operation, press down the card edge toggle switch to view the IP address on the card edge LCD.

4.5 Testing an Ethernet Connection

Ping is a method of determining if a device is connected to a network. You can ping the addresses of your PTX and computer network interface cards.

- 1. Click Start. A menu opens
- 2. Click Run. A windowpane opens



- 3. Type "Cmd" and press enter. The Command Prompt windowpane opens.
- 4. At the Command Prompt, type *ping*, space, and the IP address of the device you are pinging. Press Enter. You should see the results of your ping in the command prompt window.

Select C:\WINNT\system32\cmd.exe C:\Documents and Settings\DChappelle>ping 192.170.1.2 Pinging 192.170.1.2 with 32 bytes of data: Reply from 192.170.1.2: bytes=32 time<10ms TTL=128 Ping statistics for 192.170.1.2: Packets: Sent = 4, Received = 4, Lost = 0 <0% loss>, Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms C:\Documents and Settings\DChappelle>ipconfig Windows 2000 IP Configuration Ethernet adapter Network C: Connection-specific DNS Suffix 192.170.1.2 255.255.255.0 Ethernet adapter Network A: 192.168.1 239 192.168.1.1 C:\Documents and Settings\DChappelle>ping 192.170.1.1 Pinging 192.170.1.1 with 32 bytes of data: Reply from 192.170.1.1: bytes=32 time<10ms TTL=128 Ping statistics for 192.170.1.1: Packets: Sent = 4, Received = 4, Lost = 0 <0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms C:\Documents and Settings\DChappelle>_

Once your computer NIC IP Address is correctly configured you can communicate with other devices on the network.



5 Performing a Firmware Upgrade

There are two ways to upgrade PTX firmware:

- 1. Using a terminal application such as HyperTerminal to perform the upgrade via a serial connection
- 2. Using FTP to perform the upgrade via TCP/IP

FTP is recommended, as it is much quicker.

5.1 FTP

Suppose the PTX IP address is 192.168.18.22, its firmware file is called ptx.bin, and the firmware file is located in c:\temp.

- 1. Open a command prompt window (in Windows: Start/Programs/Accessories/Command Prompt)
- 2. Enter the command: *cd c:\temp*.
- 3. Enter the command: *ftp* –*A* 192.168.18.22.
- 4. Enter the FTP command: *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

Suppose the firmware file is called ptx.bin:

- 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. Set the terminal application serial port settings to 115200 8 N 2.
- 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 firmware file 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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