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**REVISION HISTORY**

<b><u>REVISION</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>DATE</u></b>
0.1	Original Version – Preliminary	Jun 00
1.0	Update to revision 0.1 including September 27, 2000 modification note, RS-232 specifications and tables, block diagrams & LED update. Coincides with 7700FC firmware/image release 1.0	Jun 01
1.1	Added Frame Controller configuration guidelines.	Jul 01
1.2	Updated Frame Controller Block Diagram	Aug 01
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1.3	Added section on 7700FC Image Upgrade Procedure	Jan 02
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1.4.2	Added rear plate installation drawings	Sep 04
1.4.3	Updated Firmware upgrade instructions in section 7	Dec 04
1.4.4	Safety precautions re battery replacement added	Apr 05
1.4.5	Minor typographical errors fixed	Aug 05
1.4.6	Added Ethernet Crossover cable instructions	Aug 06

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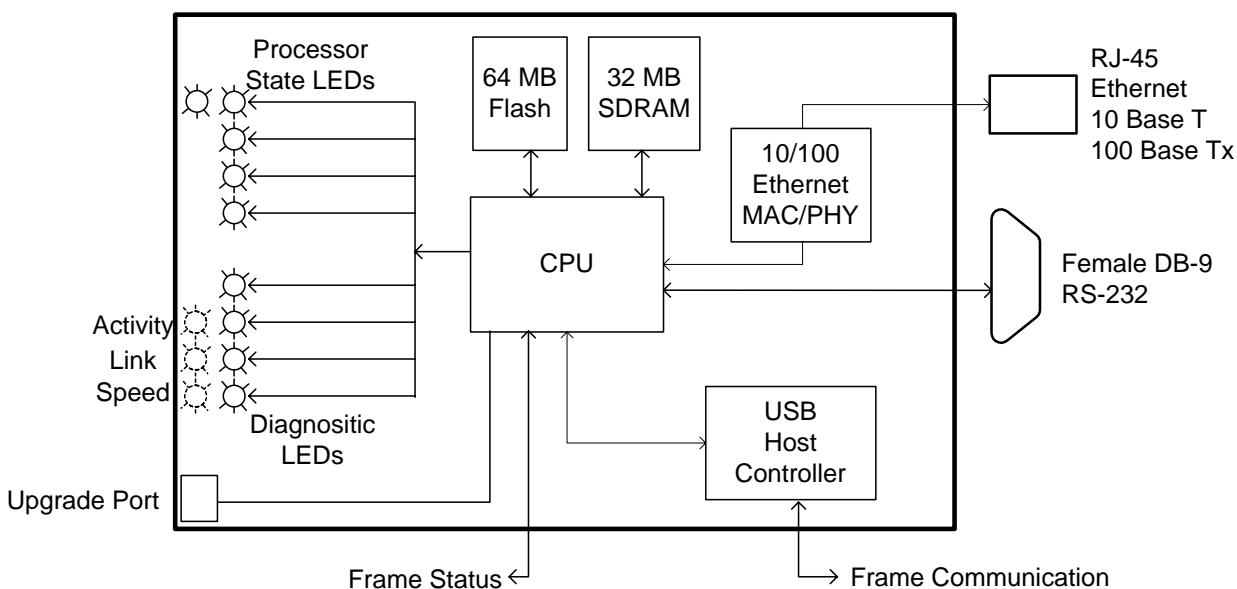
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## 1. OVERVIEW

The 7700FC Frame Controller card provides a single point of access to communicate with VistaLINK™-enabled 7700 series of cards. The 7700FC provides a 10Base-T/100Base-TX Ethernet port and communication is facilitated through the use of Simple Network Management Protocol (SNMP). The 7700FC handles all SNMP communications between the frame (7700FR-C) and the network manager (NMS), and serves as a gateway to individual cards in the frame. The 7700FC also provides a RS-232 serial port for customer configurations.

### Features:

- Complies with IEEE 802.3 100Base-TX and 10Base-T Ethernet standards
- 100 Mbps Fast Ethernet or 10 Mbps Ethernet data transfer, selected by auto-negotiation
- Full duplex or half-duplex operation, selected by auto negotiation
- RJ-45 connector for network cable connection
- RS-232 serial control port for configuration
- Front panel LEDs indicate module fault, microprocessor state, activity and link status
- Rear panel LEDs indicate Ethernet link, activity and speed
- Supports “ftp” upgrades for frame-wide firmware upgrades (product specific)
- Provides frame/chassis status information through enabled hardware via VistaLINK™ including power supply status, frame status, card insertion/removal counters, 7700FC software version number, LED control



**Figure 1: 7700FC Block Diagram**

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## 2. INSTALLATION

The 7700FC Frame Controller module can only be installed into 7700FR-C frames that have been fitted with the proper module interconnect circuit board. These frames have an 'L' shaped cover plate installed, adjacent to the IEC power inlet connector as shown in Figure 2. If your frame does not have this L shaped cover plate then the 7700FC Frame controller card can not be installed in this frame.

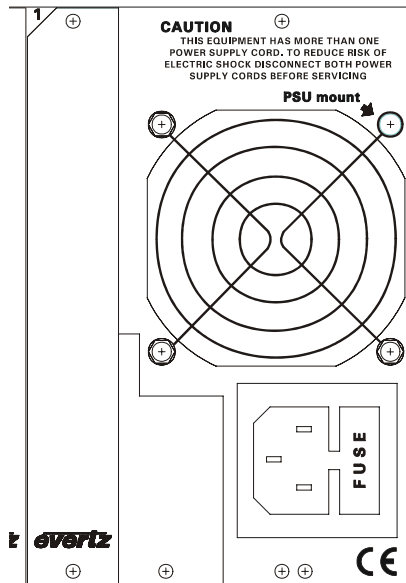
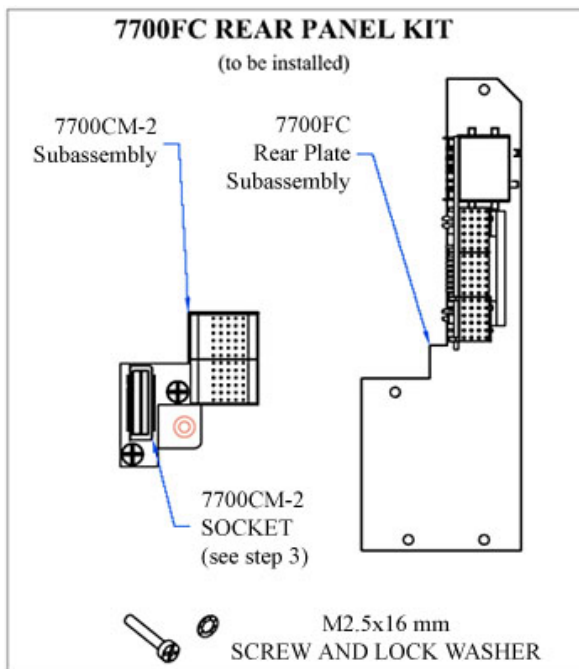


Figure 2: 7700FR-C Rear Panel with Cover Plate Installed

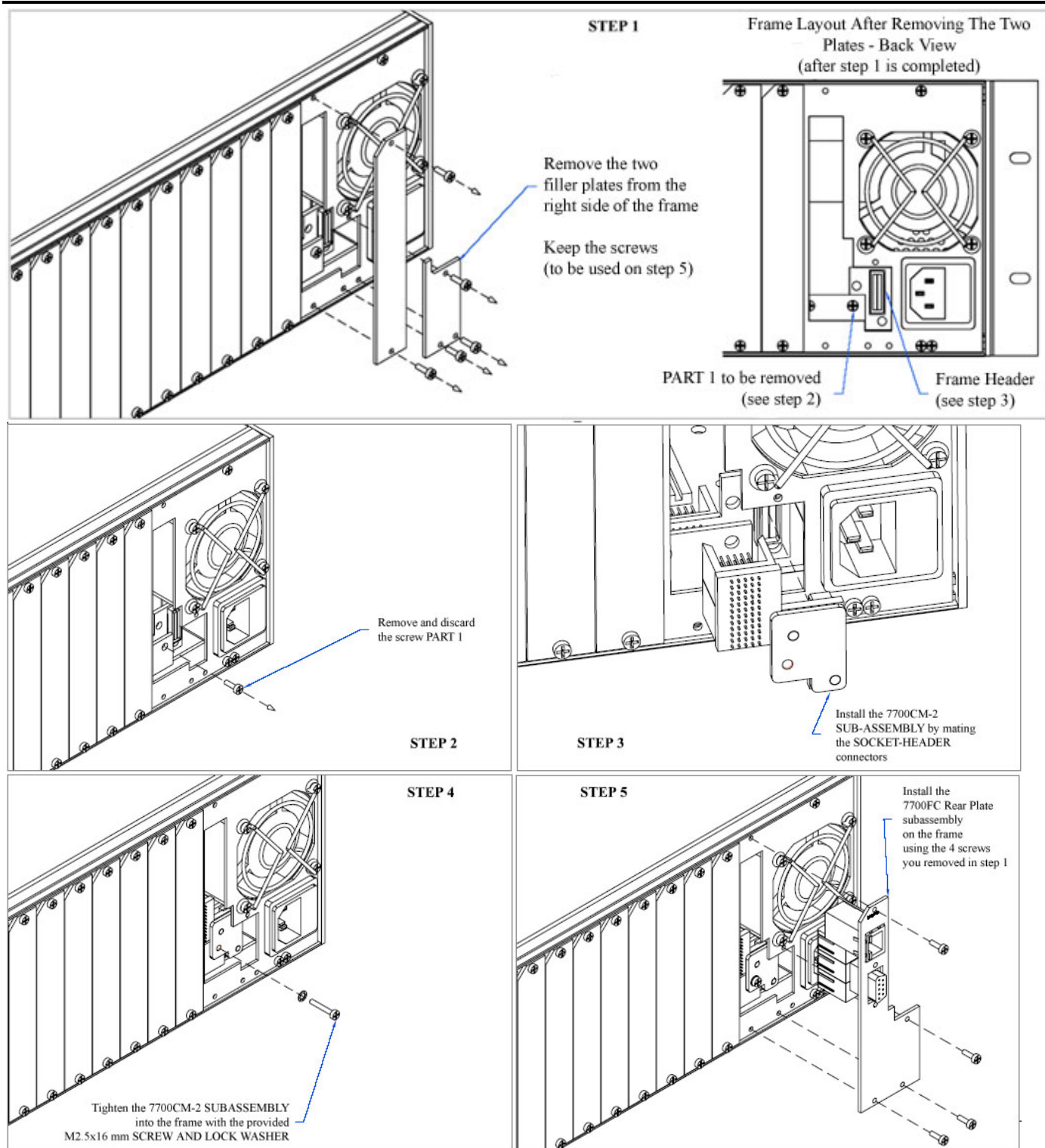
### 2.1. INSTALLING THE MODULE REAR PLATE



The 7700FC rear panel kit consists of a screw and lock washer, and two subassemblies, the 7700CM-2 connector module and the 7700FC rear panel plate which houses the appropriate connectors for the module. To install the 7700FC rear panel kit, locate the slot 1 at the right side of the frame rear panel. Remove the filler plates from the slot as shown in step 1 of Figure 3.

Install the 7700CM-2 subassembly first. Remove the screw PART 1 as shown in Step 2. Carefully align the 7700CM-2 socket with the frame header and press firmly into place as shown in step 3. Secure the 7700CM-2 subassembly with the M2.5x16 mm screw and M2.5 lock washer as shown in Step 4.

Orient the 7700FC plate so that the labeling is visible when the plate is installed (see Step 5). Loosely fasten the plate to the extrusions using the mounting screws you removed in Step 1. You will tighten the screws after the main module is installed.



**Figure 3: 7700FR-C Rear Panel Kit Installation**

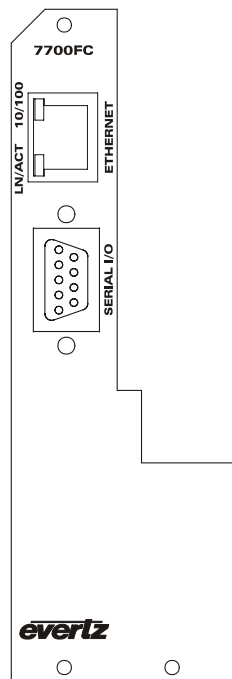
## 2.2. INSTALLING AND REMOVING THE MODULE

In order to insert or remove modules you will have to open the front panel. Turn the two captive screws located on the front panel counter clockwise several turns until they release completely from the front extrusions. Carefully lower the front panel door so that the front edge of the door is lower than the rear of the door.

To install the frame controller module, orient the module vertically such that the white card ejector is on the bottom. Align the card with the card guide corresponding to the slot number where you installed the rear panel plate. Carefully slide the module into the frame and press it completely into the rear panel connectors. Make sure that the connectors are fully seated in the rear panel. When this is done, close the front panel and then tighten the screws that hold the rear panel in place.

To remove the frame controller module, press the card ejector down to release the module from the back panel connectors. Grasp the card using the card ejector and pull the module out from the frame. As the card ejector goes past the front extrusion, you will have to pull it with slightly more force. Carefully place the module in a safe place, free from static discharge.

## 2.3. REAR PANEL CONNECTIONS



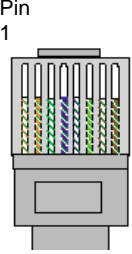
**Figure 4: 7700FC Rear Panel**

### 2.3.1. Ethernet Connection

The 7700FC is designed to be used with either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568 100Ω STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. The cable must be “straight through” with a RJ-45 connector at each end (See Table 1). Make the network connection by plugging one end of the

cable into the RJ-45 receptacle of the 7700FC and the other end into a port of the supporting hub. When connecting a 7700FC directly to the Ethernet port on a computer you will have to use a “crossover” cable as shown in Figure 5.

The straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in Table 1. A colour code wiring table is provided in Table 1 for the current RJ 45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Also refer to the notes following the table for additional wiring guide information.

	Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
	1	Transmit +	White/Green	White/Orange	X
	2	Transmit –	Green/White or White	Orange/White or Orange	X
	3	Receive +	White/Orange	White/Green	X
	4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
	5	N/A	White/Blue	White/Blue	Not used (required)
	6	Receive –	Orange/White or Orange	Green/White or Green	X
	7	N/A	White/Brown	White/Brown	Not used (required)
	8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

**Table 1: Standard RJ45 Wiring Colour Codes for “Straight Through” Cables**

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins, a crossover cable made for one will also work with the other.
- Pairs may be solid colours and not have a stripe.
- Category 5 cable must use Category 5 rated connectors.

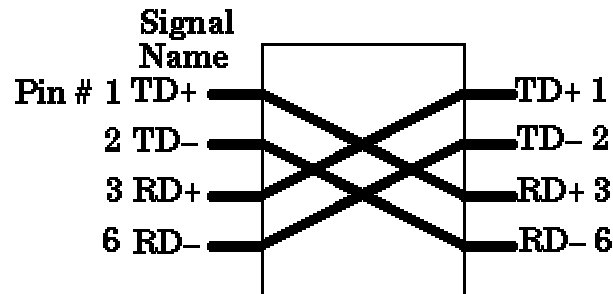
The maximum cable run between the 7700FC and the supporting hub is 300 ft (**100 m**). The maximum combined cable run between any two end points (i.e. 7700FC and PC/laptop via network hub) is 675 feet (205 m).

Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test signal to one another to verify link integrity. The 7700FC rear panel is fitted with two LEDs to monitor the Ethernet connection.

**10/100** This Amber LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is completed.

**LN/ACT** This dual purpose Green LED indicates that the 7700FC has established a valid linkage to its hub, and whether the 7700FC is sending or receiving data. This LED will be ON when the 7700FC has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the 7700FC is sending or receiving data. The LED will be OFF if there is no valid connection.

If you are building a “crossover” cable you must wire it according to



**Figure 5: Crossover Cable Wiring Diagram**

### 2.3.2. Serial I/O Connections

**SERIAL I/O:** A 9 pin female 'D' connector for connection to a computer. Currently this port is not used.

Pin #	Name	Description
1	GND	Chassis ground
2	Tx	RS-232 Transmit Output
3	Rx	RS-232 Receive Input
4		
5	Sig Gnd	RS-232 Signal Ground
6		
7	RTS	RS-232 RTS Input
8	CTS	RS-232 CTS Output
9		

**Table 2: Serial I/O Connector Pin Definitions**

## 2.4. REPLACING THE BATTERY

The Frame Controller is fitted with a 3V Lithium battery type CR2032. This battery is used to power non-volatile memory of some of the frame controller's parameters while power is removed from the frame. Before attempting to change the battery remove power from the 7700FC card.



### CAUTION

**Danger of explosion if battery is incorrectly replaced  
Replace only with the same or equivalent type**

### 2.4.1. Safety Guidelines and Precautions concerning the Use of 3V Lithium Batteries

Please observe the following warnings strictly. If misused, the batteries may explode or leak, causing injury or damage to the equipment.

- The batteries must be inserted into the equipment with the correct polarity (+ and -).
- Do not attempt to revive used batteries by heating, charging or other means.
- Do not dispose of batteries in fire. Do not dismantle batteries.

- Do not short circuit batteries.
- Do not expose batteries to high temperatures, moisture or direct sunlight.
- Do not place batteries on a conductive surface (anti-static work mat, packaging bag or form trays) as it can cause the battery to short.

### **3. SPECIFICATIONS**

#### **3.1. ETHERNET**

**Network Type:** Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100 Mbps baseband CSMA/CD local area network  
Ethernet 10 Base-T IEEE 802.3 standard for 10 Mbps baseband CSMA/CD local area network

**Connector:** RJ-45

#### **3.2. SERIAL I/O**

**Standard:** RS-232

**Connector:** Female DB-9

**Baud Rate:** 57600

**Format:** 8 bits, no parity, 2 stop bits, no flow control

#### **3.3. ELECTRICAL**

**Voltage:** + 12VDC

**Power:** 7 Watts

**EMI/RFI:** Complies with FCC Part 15  
Class A and EU EMC directive

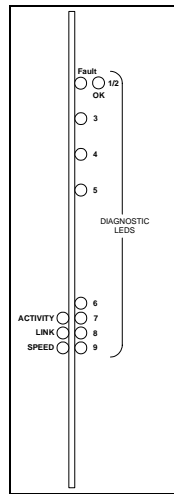
#### **3.4. PHYSICAL**

**7700FR-C frame mounting:**

**Number of slots:** 1 (must be in slot 1 of 7700FR-C)

## 4. STATUS LEDs

The location of the status LEDs is shown in Figure 6.



**Figure 6: 7700FC Status LED Location**

### 4.1. MODULE STATUS LEDs

The Frame MIB allows the user to enable/control LEDs 1 thru 9

**MODULE STATUS (1/2)** Upon power-up, and if disabled through the Frame MIB, only LED 2 will be ON ("green") when the module is operating properly. When both LEDs 1/2 are enabled through the Frame MIB (VistaLINK™), both will flash alternatively.

**DIAGNOSTIC LEDs** When LEDs 3 through 9 are enabled, they will start flashing as defined through the Frame MIB.

### 4.2. ETHERNET STATUS LEDs

#### 4.2.1. Card Edge Ethernet LEDs

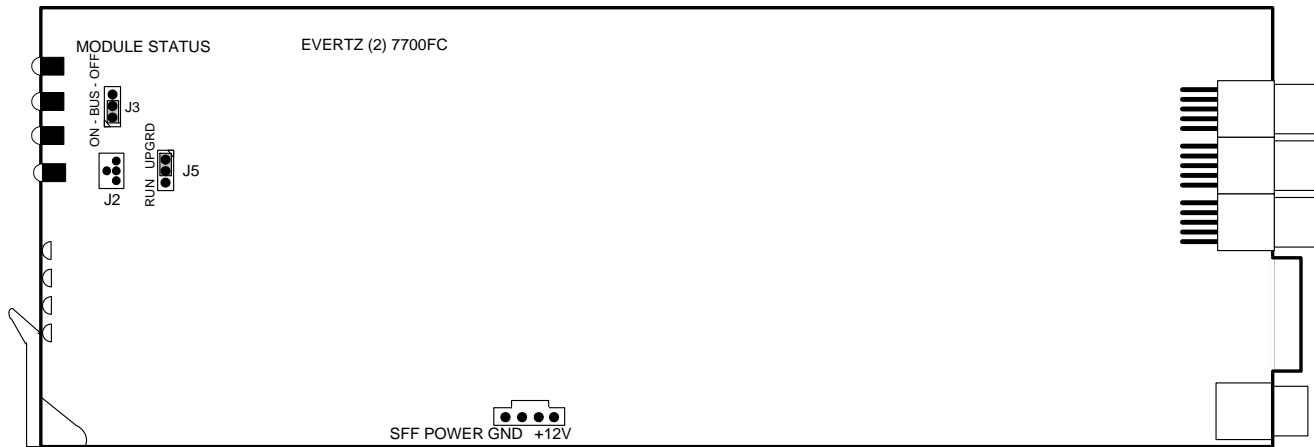
There are three red LEDs on the front card edge which provide Ethernet connection status at a glance.

**ACTIVITY** This LED will BLINK when the 7700FC is sending or receiving data.

**LINK** This LED will be ON when the 7700FC has established a good link to its supporting hub. This indicates that the segment is wired correctly.

**SPEED** This LED is ON when a 100Base-TX link is last detected. The LED is OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up, LED is OFF as the last detected rate is not known and therefore defaults to 10Base-T state until rate detection completed.

## 5. JUMPERS



**Figure 7 : Location of Jumpers**

### 5.1. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

**BUS** The BUS jumper J3 located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR-C frame's global status bus.

To monitor faults on this module with the frame status indicators (on the Power Supply FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position. (Default)

When this jumper is installed in the Off position, local faults on this module will not be monitored.

### 5.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

**UPGRADE** The UPGRADE jumper J5 located behind the serial port header J2 is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section 7 for more information.

## 6. CONFIGURING THE FRAME CONTROLLER

The 7700FC Frame Controller is configured by connecting its serial port to a computer running a readily available terminal program such as HyperTerminal. The following procedure will guide you through each step of the configuration process.

You will need the following equipment in order to configure the 7700FC Frame Controller

- PC with available communications port. The communication speed is 57600 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- “Straight-thru” serial extension cable (DB9 female to DB9 male) or (DB25 female to DB9 male)
- Terminal program such as HyperTerminal
- Special upgrade cable supplied with the 7700FR frame. This cable is normally in the vinyl pouch at the front of this manual. (Evertz part #WA S76).

### 6.1. Establishing communication with the frame controller

#### 6.1.1. Connecting the Computer to the Card Edge Serial Port

Connect the 7700 serial upgrade cable to the 2x3 header (J2) at the front edge of the 7700FC card. Note that pins 1 and 5 on the header should be removed and pins 1 and 5 on the cable connector should also be plugged. If the cable is not keyed, make sure that you install it so that the cable is away from the front of the frame when the module is installed (i.e. so that it passes over the full length of the card). Pin 1 of the ribbon cable is brown and will be facing the edge of the module with the card ejector when the cable is correctly installed.

7700FC End			PC End	
2 row X 3 pin Berg	Pin	6 Conductor Ribbon Cable	9 pin D Female	Pin
Key	1	Blue		1
Rx	2	Green	Tx	2
Tx	3	Yellow	Rx	3
Tx Gnd	4	Orange	Gnd	5
Key	5	Red		
---	6	Brown		

**Table 3: 7700 Upgrade Cable (WA-S76)**

#### 6.1.2. Terminal Program Setup

1. Start the terminal program and configure the port settings of the terminal program as follows:

Baud	<b>57600</b>
Data bits	<b>8</b>
Parity	<b>no</b>
Stop bits	<b>2</b>
Flow Control	<b>no</b>

2. Install the 7700FC card into the frame. After the card powers up and the boot-up messages are finished, a “login” prompt will appear in the terminal window. (For future reference 7700FC software version information is displayed prior to the “login” prompt and should be quoted to Service staff when required.)

For example:

```
Kernel Build Date : Jul 17 2002 09:52:05
Software          : v2.01 Build 3
Tag               : fc_release-2-01-b3
Software Build Date : Jul 30 2002 13:47:25
Wed Feb 21 16:44:00 PST 2001
```

```
NetBSD/evertz (fc-default) (tty00)
```

```
login:
```

3. If the prompt does not appear, the following is a list of possible reasons for failed communications:

- Defective 7700 Serial Upgrade cable.
- Wrong communications port selected in the terminal program.
- Improper port settings in the terminal program. (Refer to step 2 for settings).

4. At the "login" prompt, enter:

- "**customer**" for user name <Enter>
- "**customer**" for password <Enter>

(NOTE - neither username nor password can be modified at the time of this manual revision release.)

5. A menu for Network and SNMP Configuration appears and is detailed in the next section.

## 6.2. Configuring the network settings

From main menu, two selections are available - *Network Setup* and *SNMP Setup*.

- *Network Setup* is used to set network IP addresses as well as broadcasting and routing instructions
- *SNMP Setup* is used to identify up to five trap destination IP addresses.

```
**** Main Menu ****
```

```
<1> Network Setup
```

```
<2> SNMP Setup
```

```
<X> Exit
```

```
<W> Exit without saving to flash
```

```
>
```

To choose one of the menu choices, press the letter or number shown on the left and then press <Enter>. If you choose menu item 1 or 2 you will be presented with an additional menu. Choose menu items on these sub menus in the same way or press x to return to the main menu.

### 6.2.1. Network Setup

The *Network Setup* menu has six network parameters that need to be configured. If the network is using a **DHCP** server, set the **DHCP** parameter to yes before proceeding to change the other parameters. When the **DHCP** setting is set to yes, the *IP Address*, *Netmask*, *Route*, and *Broadcast* addresses are automatically assigned and their corresponding menu items are disabled.

If the network is not using a DHCP server, set the *DHCP* parameter to *No* before proceeding to change the *IP Address*, *Netmask*, *Route*, and *Broadcast* addresses.

The chart below gives a brief description of each menu item and what the parameter does. To choose one of the menu choices, press the letter or number shown on the left and then press <Enter>. You will be prompted to enter the required parameter value. When you are done configuring the *Network Setup* menu items press *x* to return to the main menu. If you are unclear about how to configure your network, consult your network administrator.

<i>Use DHCP</i>	This setting allows the Frame Controller to <b>be</b> automatically <b>assigned an IP</b> address for the parameters <b>below</b> from a DHCP server during boot-up. If not running a DHCP server, set this parameter to "No" first before making any changes to other parameters.
<i>Hostname</i>	A user-configurable 7700FC identifier. This menu item can be used to name the specific frame, service or location of the 7700FC.
<i>IP Address</i>	This control sets the unique IP address of the 7700FC within the network. 192.168.1.XXX is an example of an IP address in a private (internal) network. If connecting multiple frames (each with its own frame controller), take care not to use the same IP address for each.
<i>Netmask</i>	This menu item defines the "subnet mask" of the network. Specifically, this parameter outlines all the IP addresses that can communicate with the 7700FC. This parameter can be set to 255.255.255.0 for a private network.
<i>Route</i>	The "Route" menu item identifies the IP address of the "gateway" (commonly referred to as the " <b>router</b> "). In its simplest sense the gateway is a <b>device that routes packets to different networks</b> . <b>If configured, the IP address of the gateway must reside in the frame controller local subnet that was defined by the subnet mask.</b> In a private network, this gateway could be identified as 192.168.1.1
<i>Broadcast</i>	This menu item sets the "broadcast" IP address. For example, in a private network <b>with a subnet mask configured as 255.255.255.0</b> , this parameter can be set to 192.168.1.255



**To communicate beyond the private (internal) network and into the internet, all messages must be relayed via the gateway (firewall). As a result, the firewall must be configured separately by the end-user to facilitate communication. Consult your network administrator if establishing communication link beyond the private network.**

For convenience and future reference, a chart is provided below to record IP **configuration** for this SNMP network. (Additional blank charts have also been added at the end of this manual.)

Frame Controller Parameters	IP Address
Hostname	
IP Address	
Netmask	
Route	
Broadcast	

Once the *Network Setup* parameters have been configured, exit *Network Setup* by pressing **x** then **<Enter>**. Proceed to the *SNMP Setup* menu option by entering **2** then **<Enter>** at the Main Menu prompt.

### 6.2.2. SNMP Setup

In the *SNMP Setup* menu, three parameters are configured:

<i>Read Community String</i>	Factory default “public” (No changes required. However, if these settings are changed, the manager must have the identical settings. Otherwise no communication will occur between the 7700FC and manager.)
<i>Read/Write Community String</i>	Factory default “private” (No changes required. However, if these settings are changed, the manager must have the identical settings. Otherwise no communication will occur between the 7700FC and manager.)
<i>Trap Setup</i>	This menu item identifies the destination IP addresses ( <b>SNMP Trap Handlers</b> ) to which TRAPS are sent via SNMP. A maximum of five IP addresses may be entered.

Once the *SNMP Setup* parameters have been configured, exit *SNMP Setup* by pressing **x** then **<Enter>**.

#### 6.2.2.1. Community Strings

Community Strings are considered as “passwords” within SNMP, controlling the ability to read (“GET”) and/or read/write (“SET”) values to a specific destination. “GET” and “SET” messages include the community strings within their **PDU (protocol data units)**. By factory default, community strings are set to “public” and “private”, respectively. If these settings are changed, the SNMP manager’s community string must agree with the “SET” string. Otherwise no communication will occur between the 7700FC and manager.

For example:

```
**** SNMP Setup ****
<1> Read Community String      [public]
<2> Read/Write Community String [private]
<3> Trap Setup

<X> Exit
>
```

### 6.2.2.2. Trap Setup

“Trap Setup” allows the user to **define IP addresses of the trap listeners for when the asynchronous fault messages are sent**. A maximum of five IP addresses can be stored in the Frame Controller. After selecting “Add...” or “Remove...”, IP address are entered one at a time.

Add Trap Destinations	Add a SNMP <b>trap server</b> IP address to the TRAP distribution list.
Remove Trap Destinations	Remove a SNMP <b>trap server</b> IP address from the TRAP distribution list. For example, selecting this option reveals the list of IP addresses with the prompt to remove one from the list: Trap #1: 192.168.1.76 Trap #2: 192.168.8.140 Remove trap # > 2
Show All Trap Destinations	Displays a list of all entered SNMP <b>trap server</b> IP addresses. For example: Trap #1: 192.168.1.76 Trap #2: 192.168.8.140 Trap #3: 192.168.8.112

### 6.2.3. Exiting the Setup Menu

When you are at the main menu, press **X** to save the configuration to memory. After 30 seconds, A successful save of the configuration is acknowledged with a commit successful statement, and the user is returned to the “login” prompt.

For example: (after pressing **X**<enter>)

```
**** Main Menu ****
<1> Network Setup
<2> SNMP Setup

<X> Exit
<W> Exit without saving to flash
X
Please wait 30 seconds to save settings to flash...
Commit successful.

NetBSD/evertz <fc-default>
login:
```

Press **W** if you made an error during configuration and want to exit the setup menu without saving the new settings. In either case you will return you to the “login:” prompt.

```
**** Main Menu ****
<1> Network Setup
<2> SNMP Setup

<X> Exit
<W> Exit without saving to flash
W

NetBSD/evertz <fc-default>
login:
```

At this point, the serial connector can be removed from the Frame Controller and the terminal program closed. An SNMP manager using the previously specified IP can now be initiated.

## **7. UPGRADING THE FRAME CONTROLLER IMAGE**

The 7700FC Frame Controller facilitates communication between the SNMP-enabled (VistaLINK™) cards, residing in a frame, and the SNMP Manager (or NMS). Frequently, new cards or new features for existing cards are added to the VistaLINK™ product family. In both cases, a new Management Information **Base** (“MIB”) exists. Subsequently, the 7700FC should also be upgraded with the latest information (“image”) to maintain the most up to date monitoring and control capabilities.

The 7700FC Frame Controller image is upgraded by following the procedure outlined in this section. You will need the following equipment in order to upgrade the 7700FC Frame Controller image:

- PC with available communications port. The communication speed is 57600 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- “Straight-thru” serial extension cable (DB9 female to DB9 male) or (DB25 female to DB9 male)
- Terminal program such as HyperTerminal
- Special upgrade cable supplied with the 7700FR frame. This cable is normally in the vinyl pouch at the front of this manual. (Evertz part #WA S76).
- Cat5 Ethernet cable (“straight-thru”) with RJ-45 connectors, connected between the PC’s network Ethernet card and a network hub; a second networking cable connected between the hub and the rear plate of the 7700FC Frame Controller. The two straight-thru Ethernet cables and hub can be substituted by a cross-over cable directly connecting the PC’s Ethernet adapter to the 7700FC Frame Controller’s rear plate.



**Throughout the upgrade instructions when you are prompted to type commands using Hyperterminal, the following conventions apply.**

**Do not type the quotation marks “”**

**<space> means to press the space bar**

**<Enter> means to press the “Enter” key**

**<Ctrl-x> means to press and hold the “Ctrl” key and press the “x” key**

### **7.1. DOWNLOADING UPGRADE FILES**

1. Download the 7700FC upgrade program (“7700FC Upgrade”) and the image file “7700FC Image File” from the web site ([www.evertz.com](http://www.evertz.com) – Downloads link, Firmware Downloads link, 7700 Series). Save the files to the hard drive.
2. Unzip the downloaded files and store them in a selected sub-directory. Record the location of the stored files.

### **7.2. LINKING THE FRAME CONTROLLER TO THE NIC**

A straight-thru Ethernet cable connects the PC’s Ethernet adapter to a network hub. A second straight-thru networking cable connects the hub and the rear plate of the 7700FC Frame Controller. The two straight-thru networking cables and hub can be substituted by a cross-over cable directly connecting the PC’s NIC to the 7700FC Frame Controller’s rear plate. (See section 2.1 for more information.)

### 7.3. SETTING THE 7700FC FRAME CONTROLLER TO UPGRADE MODE

The *UPGRADE* jumper J5 located at the front of the module is used when “image” upgrades are being done to the 7700FC Frame Controller module. For normal operation the jumper is set in the *RUN* position. To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J5 into the *UPGRADE* position. See Figure 7 for jumper locations on the 7700FC Frame Controller card.

### 7.4. CONNECTING THE COMPUTER TO THE CARD EDGE SERIAL PORT

Connect the 7700PB serial upgrade cable to the 2x3 header (J2) at the front edge of the 7700FC card. Note that pins 1 and 5 on the header should be removed and pins 1 and 5 on the cable connector should also be plugged. If the cable is not keyed, make sure that you install it so that the cable is away from the front of the frame when the module is installed (i.e. so that it passes over the full length of the card). Pin 1 of the ribbon cable is brown and will be facing the edge of the module with the card ejector when the cable is correctly installed.

### 7.5. TERMINAL PROGRAM SETUP

1. Start the terminal program and configure the port settings of the terminal program as follows:

Baud	<b>57600</b>
Data bits	<b>8</b>
Parity	<b>no</b>
Stop bits	<b>2</b>
Flow Control	<b>no</b>

2. Install the 7700FC card into the frame. After the card powers up and the “upload” message is displayed.

For example:

```
EVERTZ 7700FC BOOT MONITOR.  
MON8240 1.1 BUILD 4.  
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD.  ALL RIGHTS RESERVED.  
UPGRADE JUMPER PRESENT  
UPLOAD MAIN PROGRAM
```

### 7.6. UPGRADING THE 7700FC FRAME CONTROLLER

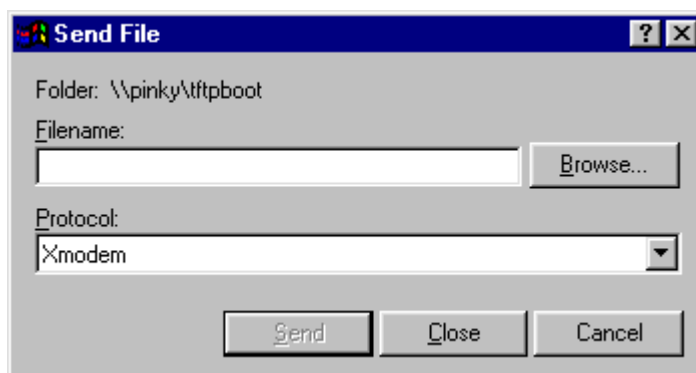
1. After the “Upload Main Program” message, press <Ctrl-x> five (5) times. This action temporarily postpones the “upgrade” procedure. The following information is displayed on the screen:

```
EVERTZ 7700FC BOOT MONITOR.  
MON8240 1.1 BUILD 4.  
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD.  ALL RIGHTS RESERVED.  
UPGRADE JUMPER PRESENT  
UPLOAD MAIN PROGRAM  
UPLOAD CANCELLED  
ENTERING COMMAND LOOP  
>
```

2. At the prompt ">", type "upgrade<space>-u<Enter>" The following is displayed on the screen:

```
EVERTZ 7700FC BOOT MONITOR.  
MON8240 1.1 BUILD 4.  
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD.  ALL RIGHTS RESERVED.  
UPGRADE JUMPER PRESENT  
UPLOAD MAIN PROGRAM  
      B B0  B B0  
UPLOAD CANCELLED  
ENTERING COMMAND LOOP  
> upgrade -u  
UPLOAD UPGRADE PROGRAM
```

3. At the "Upload Upgrade Program", send, via X-modem, the upgrade program downloaded in section 7.1.1. This is done by selecting "Send file..." from the "Transfer" drop-down menu in the HyperTerminal window. Upon selecting this option, the following is displayed on the screen:



The "Folder" header describes the location of the previously downloaded Upgrade Program. If this is the correct folder location, then the Upgrade Program filename is specified in the first text window. Keep the Protocol set to "Xmodem" and send the file. To change the location/name of the Upgrade Program file, use the "Browse..." button to locate and select the correct location, then send the file.

Upon completion, the following information will be displayed on the screen:

```
EVERTZ 7700FC BOOT MONITOR.  
MON8240 1.1 BUILD 4.  
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD.  ALL RIGHTS RESERVED.  
UPGRADE JUMPER PRESENT  
UPLOAD MAIN PROGRAM  
      B B0  B B0  
UPLOAD CANCELLED  
ENTERING COMMAND LOOP  
> upgrade -u  
UPLOAD UPGRADE PROGRAM  
  
UPLOAD OKAY  
>
```

4. At the prompt, type "boot<space>upgrade"<Enter>. The following information is displayed on the screen:

```
EVERTZ 7700FC BOOT MONITOR.  
MON8240 1.1 BUILD 4.  
COPYRIGHT 2000 EVERTZ MICROSYSTEMS LTD.  ALL RIGHTS RESERVED.  
UPGRADE JUMPER PRESENT  
UPLOAD MAIN PROGRAM  
  B B0  B B0  
UPLOAD CANCELLED  
ENTERING COMMAND LOOP  
> upgrade -u  
UPLOAD UPGRADE PROGRAM  
  
UPLOAD OKAY  
> boot upgrade  
RUNNING 14B4  
  
7700FC BOOT SOFTWARE  
0.00 build 10 (2001 Nov 27 11:25:08)  
total memory = 33554432 bytes  
available memory = 32133120 bytes  
PCI: 33 MHz, bus: 100 MHz, core: 200 MHz, tb: 25 MHz  
PCI: 30000 ps, bus: 10000 ps, core: 5000 ps, tb: 40000 ps  
ip address: 192.168.1.187, netmask: 255.255.255.0, gateway: 192.168.1.1
```

The IP address, netmask and gateway information is extracted from the 7700FC configuration information as entered in the previous section. This IP address should be recorded as it is used for 7700FC Frame Controller image upgrading, as per the next instruction.

5. Using the "Run..." command in the "Start" menu, or opening a Command Prompt (MS-DOS) window, type "ftp 192.168.1.187<Enter>" (or similar IP address from the previous instruction, as displayed). This will open an MS-DOS FTP window. Note that the PC, used for entering commands and storing the downloaded image file, and 7700FC must be configured to operate on the same LAN. For example the IP address of the PC and Frame Controller should be on 192.168.1.x with "x" being a unique address identifier for the PC and the 7700FC Frame Controller.
- Do not enter any name for "User" when prompted. Press <Enter>.
  - Do not enter any password for "Password" when prompted. Press <Enter>.

6. At the "ftp>" prompt, type:

```
Put<space>"c:\My Documents\...etc...\fc_release-x-y-z"<space>image<Enter>
```

Add the directory location (in place of "...etc..." in the above entry) of the 7700FC Image file downloaded in section 6.1.1. Note that "X" and "Y" are FC image release version numbers as identified in the downloaded file name.

- Upon successful command entry, the MS-DOS window will display "200 PORT command successful" and "150 Opening data connection" messages.
- The top-most LED pair (1/2) on the 7700FC Frame Controller card edge will be RED during the "image" upload process.
- After several minutes of "image" upload, the MS-DOS window will display "226 Transfer complete" and "ftp:...(adding statistics about the ftp procedure)"
- The top-most LED pair (1/2) on the 7700FC Frame Controller card edge will be GREEN once the "image" upload process is complete.

7. Upon completion of the upload, the MS-DOS window/program should be terminated by closing the window. The 7700FC is now removed from the frame and the UPGRADE jumper is repositioned to RUN mode. The 7700FC has been upgraded with the latest image and can now be reseated into the frame to resume normal operation.

## **8. UPGRADING MODULE FIRMWARE THROUGH THE 7700FC FRAME CONTROLLER**

The 7700FC Frame Controller facilitates module firmware upgrades of VistaLINK™ enabled products through an FTP upgrade procedure. To enable module firmware upgrades:

1. Ensure that you have an upgradeable copy of the module's firmware stored on the connected PC. If you do not have the latest firmware, please visit [www.evertz.com](http://www.evertz.com) for latest posted firmware.
2. Set the module (to be upgraded with firmware from #1) jumper to "upgrade" mode and seat it into the frame.
3. Open a MS-DOS prompt. Type "ftp<space>aaa.bbb.ccc.ddd", where "aaa.bbb.ccc.ddd" is the IP address of the 7700FC (see section 6) residing in the frame with the module awaiting firmware upgrade. For example, 192.168.1.100 is the IP address of the 7700FC and subsequently the command at the prompt is "ftp<space>192.168.1.100"
4. Enter "customer" for both "User" and "Password" prompts.
5. At the "ftp>" prompt type "dir<Enter>" for a listing of modules within the specified frame. Depending on the modules in the connected frame, information, similar to that shown below, will be displayed on your screen.

```
ftp> dir
200 PORT command successful.
150 Opening ASCII mode data connection for 'ls'.
slot05    QUATTRO                uevgen1
slot08    CDM                    uevgen0
slot10    VAR                    uevgen2
slot12    VAT                    uevgen3
slot14    DFU                    udfu0
QUATTRO    Upgrade all    QUATTROs
CDM         Upgrade all    CDMs
VAR         Upgrade all    VARs
VAT         Upgrade all    VATs
DFU         Upgrade all    DFUs
```

6. "DFU" will identify the module slated for firmware upgrade and will also identify the slot in which that module resides. For example, in the above listing, the module in slot 14 can now be upgraded.
7. At the "ftp>" prompt type "bin<Enter>"
8. Type: put<space><<firmwarelocation>>.bin<space>DFU<Enter>

This command sends the upgrade image to all cards in upgrade mode within the frame. (Note: <<firmwarelocation>> in steps 8 and 9 should be replaced with the specific directory where the upgrade file is saved and file name such as "c:\avm-2-05-030".)

9. To upgrade a particular module within the frame, at the "ftp>" prompt
  - Type: cd<space>Slotxx<Enter> (where "xx" is the specific slot number in the frame)
  - Type: put<space><<firmwarelocation>>.bin<space>app<Enter>

This command sends the upgrade image only to the card in the specified slot number. Once the upgrade is completed, to return to list view, type "cd<space>..<Enter>" at the ftp> prompt, then follow from step 5.

Additional IP Address Tables

Frame Controller Parameters	IP Address
Hostname	
IP Address	
Netmask	
Route	
Broadcast	

Frame Controller Parameters	IP Address
Hostname	
IP Address	
Netmask	
Route	
Broadcast	

Frame Controller Parameters	IP Address
Hostname	
IP Address	
Netmask	
Route	
Broadcast	

Frame Controller Parameters	IP Address
Hostname	
IP Address	
Netmask	
Route	
Broadcast	

Frame Controller Parameters	IP Address
Hostname	
IP Address	
Netmask	
Route	
Broadcast	