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## REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	First release	Jan 2014

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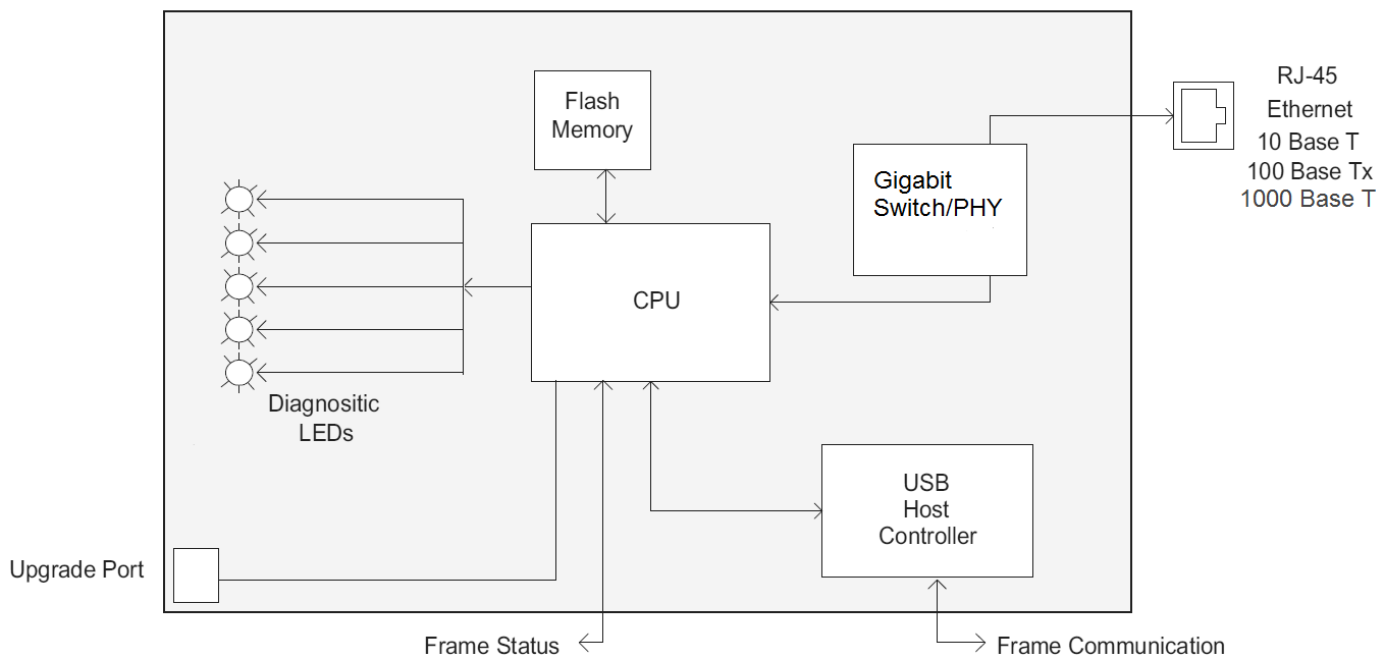
## 1. OVERVIEW

The 7801FC VistaLINK<sup>®</sup> Frame Controller card provides a single point of access to communicate with VistaLINK<sup>®</sup>-capable modules in the 7801FR frame. The 7801FC VistaLINK<sup>®</sup> Frame Controller provides a 10Base-T/100Base-TX/1000Base-T Ethernet port, and communication is facilitated through the use of Simple Network Management Protocol (SNMP).

The 7801FC VistaLINK<sup>®</sup> Frame Controller handles all SNMP communications between the frame (7801FR) and the network manager (NMS), and serves as a gateway to individual cards in the frame.

### Features:

- Complies with IEEE 802.3 1000Base-T, 100Base-TX and 10Base-T Ethernet standards
- 1000Mb/s, 100Mb/s or 10Mb/s Ethernet data transfer, selected by auto-negotiation
- Full-duplex or half-duplex operation, selected by auto-negotiation
- RJ-45 connector for network cable connection
- Card edge 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)
- Includes VistaLINK<sup>®</sup>.PRO (VLPRO-C) module software configuration tool
- Provides frame/chassis status information through VistaLINK<sup>®</sup> including power supply status, frame status, card insertion/removal counters and version information



**Figure 1-1: 7801FC Block Diagram**

## 2. INSTALLATION

The 7801FC Frame Controller module is installed into a 7801FR frame.

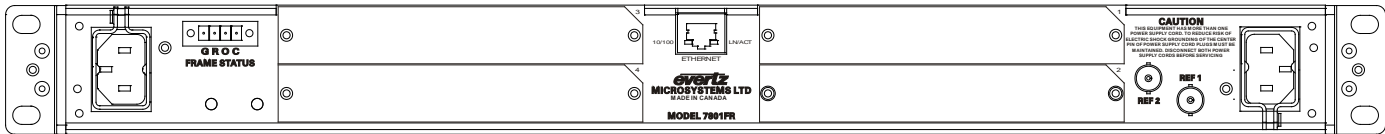


Figure 2-1: 7801FR Rear Panel

### 2.1. REAR PANEL CONNECTIONS

#### 2.1.1. Ethernet Connection

The 7801FC is designed to be used with 10Base-T (10 Mbps), 100Base-TX (100 Mbps) and 1000Base-T (1000Mbps) 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. When connecting for 1000Base-T system, category 5, 5e, 6, or 7 UTP cable is required. The cable must be “straight-through” with a RJ-45 connector at each end (See Table 2-1). Make the network connection by plugging one end of the cable into the RJ-45 receptacle of the 7801FC and the other end into a port of the supporting hub. When connecting a 7801FC directly to the Ethernet port on a computer you will have to use a “crossover” cable as shown in Figure 2-2.

The straight-through RJ-45 cable can be purchased or can be constructed using the pinout information in Table 2-1. A colour code wiring table is provided in Table 2-1 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 1 	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 2-1: 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.
- 10Base-T, 100Base-TX, and 1000Base-TX 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.

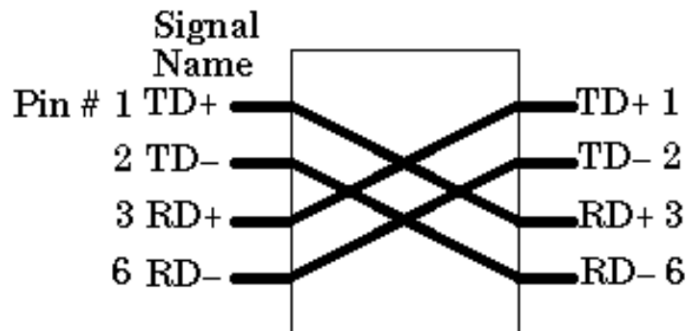
The maximum cable run between the 7801FC and the supporting hub is 300 ft (**100 m**). The maximum combined cable run between any two end points (i.e. 7801FC and PC/laptop via network hub) is 675 feet (205 m).

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 7801FC rear panel is fitted with two LEDs to monitor the Ethernet connection.

**10/100/1000:** This LED is ON and amber when a 1000Base-TX link is last detected. This LED is ON and green 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 7801FC has established a valid linkage to its hub, whether the 7801FC is sending or receiving data. This LED will be ON when the 7801FC 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 7801FC 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 2-2:



**Figure 2-2: Crossover Cable Wiring Diagram**

### 2.1.2. 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 2-2: Serial I/O Connector Pin Definitions**

## 2.2. 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 7801FC card.



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



**CAUTION**  
Danger of explosion if battery is exposed to excessive heat such as direct sunlight, fire, etc.

### 2.2.1. 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

#### ETHERNET

**Network Type:** Gigabit Ethernet 1000 Base-T IEEE 802.3ab standard for 1000Mb/s baseband CSMA/CD local area network

Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100Mb/s baseband CSMA/CD local area network

Ethernet 10 Base-T IEEE 802.3 standard for 10Mb/s baseband CSMA/CD local area network

**Connector:** RJ-45

#### 3.1. ELECTRICAL

**Voltage:** +12V DC

**Power:** 8W

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

#### 3.2. PHYSICAL (NUMBER OF SLOTS)

**7801FR:** 0 (User dedicated slot)

## 4. STATUS LEDs

The location of the status LEDs is shown in Figure 4-1:

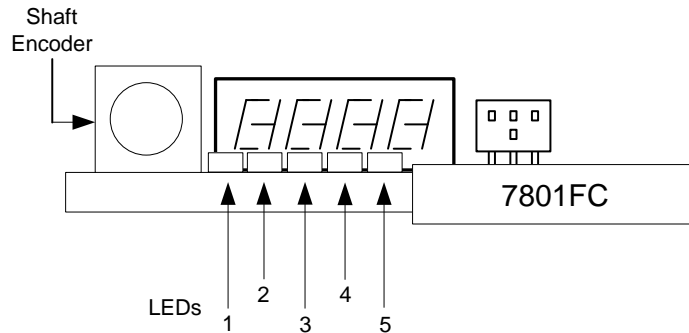


Figure 4-1: 7801FC Status LED Location

### 4.1. MODULE STATUS LEDs

**DIAGNOSTIC LEDs:** When LED 1 and 3 are green all the time. The rest are off. When the board is in a bad state, LED 4 will be red.

### 4.2. ETHERNET STATUS LEDs

There are three red LEDs near the back of the card, which provide Ethernet connection status at a glance. The description of the LED as seen from left to right are as follows:

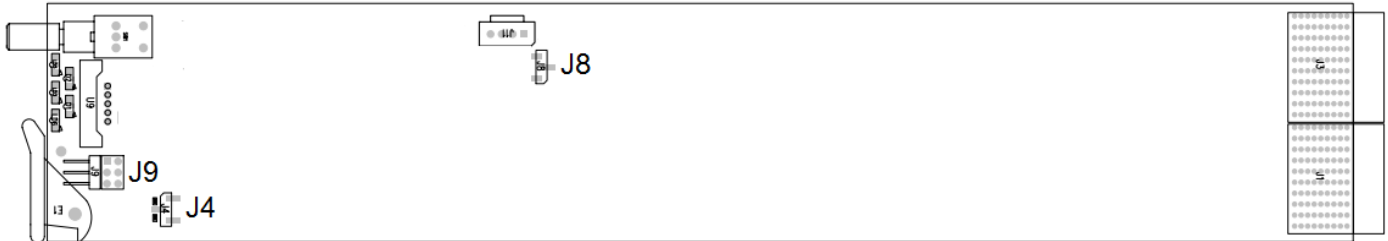
**LNK/ACT:** This is the link and activity LED. This LED will be ON when the 7801FC has established a good link to its supporting hub. This indicates that the segment is wired correctly. This same LED will BLINK when the 7801FC is sending or receiving data.

**SP1000:** This LED is ON when a 1000Base-T link is last detected. The LED is OFF when other link speeds are last detected (the LINK LED is ON). Upon power-up, this LED is OFF as the last detected rate is not known and therefore defaults to 10Base-T state until rate detection is completed.

**SP100:** This LED is ON when a 100Base-T link is last detected. The LED is OFF when other link speeds are last detected (the LINK LED is ON). Upon power-up, this LED is OFF as the last detected rate is not known and therefore defaults to 10Base-T state until rate detection is completed.

## 5. JUMPERS

The locations of applicable jumpers are shown in Figure 5-1:



**Figure 5-1 : Location of Jumpers**

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

**BUS:** The BUS jumper J8 located in the middle of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7801FR 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 J4 located behind and to the right of the serial port header J9 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 7801FC 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 7801FC Frame Controller:

- PC with available communications port. The communication speed is 115200 baud.
- “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 7801FR 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 supplied serial upgrade cable to the 2x3 header (J9) at the front edge of the 7801FC 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 towards the front of the frame when the module is installed (i.e. so that it passes over the card ejector). Pin 1 of the ribbon cable is brown and will be facing the left edge of the module when the cable is correctly installed.

7801FC 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 6-1: 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>115200</b>
Data bits	<b>8</b>
Parity	<b>no</b>
Stop bits	<b>2</b>
Flow Control	<b>no</b>

**Table 6-2: Port Settings for Terminal Program Setup**

2. Install the 7801FC 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 7801FC software version information is displayed prior to the “login” prompt and should be quoted to Service staff when required.)

For example:

```
Kernel Build Date   : Jan 28, 2013
Software            : v1.2 Build 2
Tag                 : 7801FC_r1-2-2
Software Build Date : Jan 30, 2013
Wed Jan 30 11:05:46 GMT 2013

NetBSD/evbppc (780xfc) (console)
login:
```

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

- Defective Serial Upgrade cable.
- Wrong communications port selected in the terminal program.
- Improper port settings in the terminal program. (Refer to step 1 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, SNMP and FC Upgrade Setup Configuration appears and is detailed in the next section.

## 6.2. CONFIGURING THE NETWORK SETTINGS

From main menu, three selections are available - *Network Setup*, *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 ten 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, enter 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*, *Gateway*, 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*, *Gateway*, and *Broadcast* addresses.

The following screen displays the network settings on the 7801FC frame controller.

```
**** Network Setup ****

(1) Use DHCP [N]
(2) Hostname [fc-default]
(3) IP Address [192.168.1.187]
(4) Netmask [255.255.255.0]
(5) Gateway [192.168.1.1]
(6) Broadcast [192.168.1.255]

(X) Exit

>
```



**The DHCP mode should be disabled before proceeding with the 7801FC Frame Controller upgrade, which is outlined in section 7.3.7. In order to successfully upgrade the device, select No [N] when prompted for DHCP mode, as shown in the above network setup screen. If the DHCP is enabled you will be unable to proceed further with the upgrade. See section 7.3.7 for instructions on upgrading the 7801FC Frame Controller.**

The chart below gives a brief description of each menu item and what the parameter does. To choose one of the menu choices, enter 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</b> IP address for the parameters <b>below</b> from a DHCP server during boot-up. If you are not running a DHCP server, set this parameter to “No” first before making any changes to other parameters.
<i>Hostname</i>	A user-configurable 7801FC identifier. This menu item can be used to name the specific frame, service or location of the 7801FC.
<i>IP Address</i>	This control sets the unique IP address of the 7801FC 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 7801FC. This parameter can be set to 255.255.255.0 for a private network.
<i>Gateway</i>	This item identifies the IP address of the “gateway” (in previous versions of the software, “gateway” is referred to as “route”). In its simplest sense the gateway is a <b>device that routes packets to different networks. 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. <b>Power cycle required after gateway change.</b>
<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
<i>Use Telnet</i>	This setting allows the Frame Controller to be accessed through a telnet interface for configuration changes instead of just the serial interface.



**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 a 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	
Gateway	
Broadcast	

Once the *Network Setup* parameters have been configured, exit the *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, there are three submenus to choose from:

<i>SNMP V1 Setup</i>	This menu item contains setup information for SNMP version 1 related configurations.
<i>SNMP V3 Setup</i>	This menu item contains setup information for SNMP version 3 related configurations.
<i>SNMP Version Setup</i>	This menu item identifies which of the two version of SNMP will be used to communicate to the 7801FC.

#### 6.2.2.1. SNMP V1 Setup

In the *SNMP V1 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 7801FC and the 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 7801FC and the 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 ten IP addresses may be entered.

Once the *SNMP V1 Setup* parameters have been configured, exit *SNMP V1 Setup* by pressing *x* then <Enter>.

##### 6.2.2.1.1. 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 7801FC and manager.



For example:

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

<X> Exit
>
```

### 6.2.2.1.2. Trap Setup

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

<p><i>Add Trap Destinations</i></p>	<p>Add a SNMP <b>trap server</b> IP address to the TRAP distribution list.</p>
<p><i>Remove Trap Destinations</i></p>	<p>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:</p> <pre>Trap #1: 192.168.1.76 Trap #2: 192.168.8.140 Remove trap # &gt; 2</pre>
<p><i>Show All Trap Destinations</i></p>	<p>Displays a list of all entered SNMP <b>trap server</b> IP addresses. For example:</p> <pre>Trap #1: 192.168.1.76 Trap #2: 192.168.8.140 Trap #3: 192.168.8.112</pre>

Once the *SNMP V1 Setup* parameters have been configured, exit the *SNMP Setup* by pressing *x* then *<Enter>*.

### 6.2.2.2. SNMP V3 Setup

In *SNMP V3 Setup* menu, there are two submenus to choose from:

<p><i>SNMP V3 User Setup</i></p>	<p>This menu item is used to set User configuration parameters including Add, Edit, Remove and Show users</p>
<p><i>SNMP V3 Trap Setup</i></p>	<p>This menu item is used to set Trap configuration parameters including Add, Remove, and Show traps</p>

Once the *SNMP V3 Setup* parameters have been configured, exit *SNMP V3 Setup* by pressing *x* then *<Enter>*.

6.2.2.2.1. SNMP V3 User Setup

The *SNMP V3 User Setup* menu defines basic access rules for the SNMP V3 protocol, controlling the ability to read (“GET”) or read/write (“SET”) parameters. It also provides the password key for authentication as well as AES or DES encryption. A maximum of ten different users can be entered.

<p><i>Add New User</i></p>	<p><i>Add New User</i> and <i>Edit User</i> will provide the same interface.</p>
<p><i>Edit User</i></p>	<p><b>User Name</b> This is mandatory.</p> <p><b>User Type</b> Default is READONLY, Options are READONLY, READWRITE This defines the access mode for the specific user.</p> <p><b>Authentication</b> Default is NONE. Options are NONE, MD5, or SHA-1. Authentication to check integrity of the incoming messages.</p> <p><b>Authentication Password</b> If Authentication is not set to NONE then this field is mandatory, otherwise, Authentication will be automatically set back to NONE. The password must be at least 8 characters long.</p> <p><b>Use Privacy</b> Default is NONE, Options are NONE, AES, or DES. Use Privacy will encrypt incoming and outgoing messages.</p> <p><b>Encryption Password</b> If Use Privacy is not set to NONE then this field is mandatory, otherwise, Use Privacy will be automatically set back to NONE. The password must be at least 8 characters long.</p> <p><b>Included OID 1</b> <b>Included OID 2</b> <b>Included OID 3</b> These options are optional. They define the OID tree that the user is restricted to access. The user can not access any other OID that is not listed or included in the OID tree specified.</p>
<p><i>Remove User</i></p>	<p>Removes previously entered users. This will affect the SNMP V3 Trap setup as well. Please refer to next section for details.</p>
<p><i>Show All SnmpV3 User</i></p>	<p>Lists all entered users. It will show username, access type, authentication type and password, privacy type and password as well as included OIDs.</p>

Once the *SNMP V3 User Setup* parameters have been configured, exit *SNMP V3 User Setup* by pressing X then <Enter>.

### 6.2.2.2. SNMP V3 Trap Setup

The *SNMP V3 Trap Setup* menu allows the user to **define IP addresses of the trap listeners for when the asynchronous fault messages are sent**. A maximum of ten IP addresses can be stored in the Frame Controller. The different between SNMP V1 Trap and SNMP v3 Trap is that SNMP V3 requires a matching User, which is created in the previous section.

<p><i>Add New V3 Trap Destination</i></p>	<p>Add Trap destination such that Frame Controller will send fault messages to specified address.</p> <p><b>Enter Trap Destination Address</b>                      Enter IP address all at once</p> <p><b>Enter Trap Destination User</b>                      Enter User Name only. Input is required to match one of Users created in previous section</p> <p>Note: If user is deleted after trap information is created, this trap information is not valid and Frame Controller will not send fault message to that IP address.</p>
<p><i>Remove V3 Trap Destination</i></p>	<p>Removes previously entered trap information.</p>
<p><i>Show All SnmpV3 Trap Destinations</i></p>	<p>Lists all entered trap information. It will show destination IP address and trap User.</p>

Once the *SNMP V3 Trap Setup* parameters have been configured, exit *SNMP V3 Trap Setup* by pressing **x** then **<Enter>**.

### 6.2.3. Exiting the Setup Menu

From 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 to the “login:” prompt.

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

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

NetBSD/evbppc (780xfc) (console)
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 VISTALINK<sup>®</sup>**

### **7.1. PROCEDURES FOR UPGRADING THE FRAME CONTROLLER IMAGE VistaLINK<sup>®</sup>**

The 7801FC Frame Controller facilitates communication between the SNMP-enabled (VistaLINK<sup>®</sup>) cards, residing in a frame and the SNMP Manager (VistaLINK<sup>®</sup> PRO). From time to time, the 7801FC will need to be upgraded with the latest information (“image”) to maintain the most up-to-date monitoring and control capabilities.

The 7801FC Frame Controller image can be upgraded by two different procedures, which are outlined in sections 7.2 and 7.3.

### **7.2. REMOTE UPGRADE PROCEDURE USING VistaLINK<sup>®</sup>**

To perform the remote upgrade for the 7801FC VistaLINK<sup>®</sup> Frame Controller you will need the following setup:

- A working install of a VistaLINK<sup>®</sup> Pro client or VLPRO-C that’s version 10.0.7 or greater.
- A downloaded and unzipped FC image file (.bin file) from <http://www.evertz.com>



**The DHCP mode should be disabled before proceeding with the 7801FC Frame Controller upgrade. To disable your DHCP refer to section 6.2.1.**

#### **7.2.1. Downloading the 7801FC Frame Controller Image**

1. Download the image file “7801FC Image File” from the Evertz web site ([www.evertz.com](http://www.evertz.com) – Downloads > Firmware Downloads link > Type “7801FC” in the Model search and press “Go”). Save the file to the hard drive.
2. Unzip the downloaded file and store the .bin file in a selected sub-directory. Record the location of the stored file.

### 7.2.2. Upgrading the Frame Controller Image using VistaLINK®

1. Start a VistaLINK® PRO client and login using the Administrator user account (VLPRO-C does not use login accounts).
2. Expose the 7801FC in the hardware tree using 'Add/Update Frame' and collapsing the nodes in the tree appropriately.
3. Use the right-click mouse button on the '7801FC' in the tree and select 'View Configuration...' option.
4. Select the 'Control' tab in the configuration view.
5. Click the 'Browse' button to select the unzipped 7801FC Image .bin file, which was downloaded in section 7.2.1.

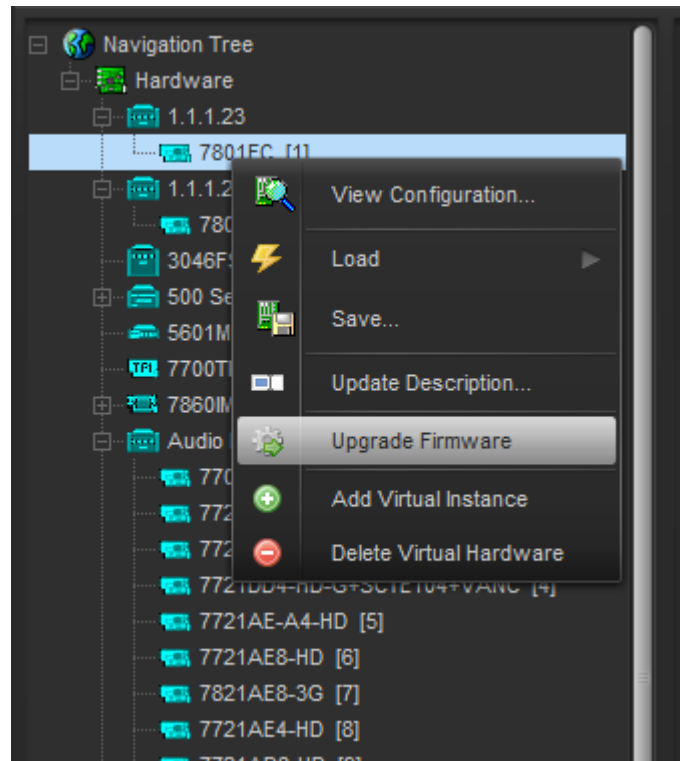



Figure 7-1: FC shown in the Hardware Tree

 **When upgrading the FC Image file, ensure that you select the extracted .bin file and NOT the entire .zip file,**

6. Click the Upgrade button and wait for the upload to complete. This will take approximately 5 to 10 minutes depending on network traffic.
7. Upon completion, the 7801FC module will reboot automatically and return online in normal "run" mode.

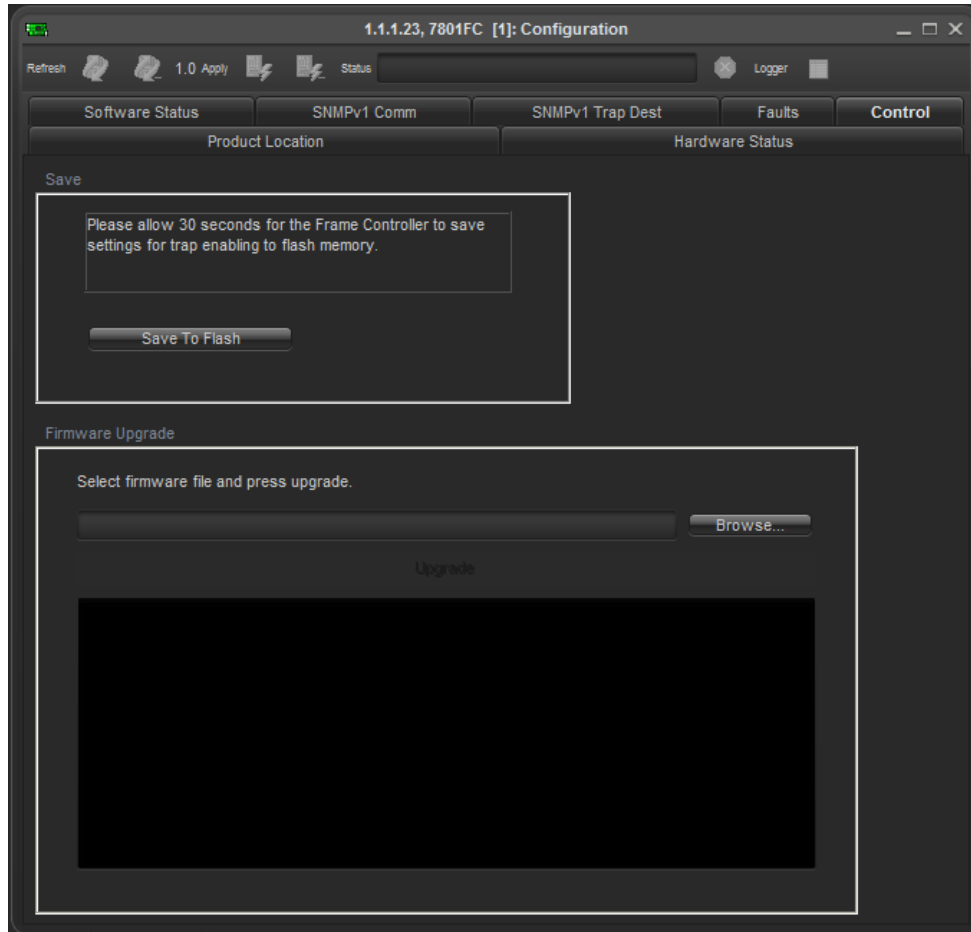


Figure 7-2: Control Tab for the FC Configuration View



If for any reason the upload is interrupted, you must execute the procedures outlined in sections 7.3.4, 7.3.5 and 7.3.7, as you will be unable to complete the procedure outlined in section 7.2.

### 7.3. SERIAL CARD EDGE UPGRADE PROCEDURE

The 7801FC Frame Controller image is upgraded by following the procedure outlined in this section.



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

### 7.3.1. Downloading Upgrade Files

1. Download the upgrade program “7801FC Upgrade” and the image file “7801FC Image File” from the web site ([www.evertz.com](http://www.evertz.com) – Downloads > Firmware Downloads link > Type “7801FC” in the Model search and press “Go”). 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.

### 7.3.2. Linking the Frame Controller to the Network Adapter

Connect a “straight-thru” Cat5 Ethernet cable with RJ-45 connectors, between the PC’s network Ethernet card and a network hub; and a second “straight-thru” Cat5 Ethernet cable between the hub and the rear plate of the 7801FC VistaLINK® Frame Controller. A “cross-over” cable directly connecting the PC’s Ethernet adapter to the 7801FC Frame Controller’s rear plate can be substituted for the two straight-thru Ethernet cables and hub. (See section 2.1.1)

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

Refer to section 2.1.2 for instructions on connecting the computer to the card edge serial port and configuring the terminal software.

### 7.3.4. Setting the 7801FC Frame Controller to Upgrade Mode

The *UPGRADE* jumper J4 located at the front of the module is used when “image” upgrades are being done to the 7801FC 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 J4 into the *UPGRADE* position. See Figure 5-1 for jumper locations on the 7801FC Frame Controller card.

### 7.3.5. Viewing Startup Information

- Once HyperTerminal is connected, insert the 7801FC VistaLINK® Frame Controller into its slot.
- 7801FC booting information will then be sent to the HyperTerminal window. After the card powers up the command prompt is displayed.

For example:

```
Evertz NAND PPCBoot et.816

Evertz PPCBoot 2.3 et.816
8313e rev. 2.2, e300c3 rev. 1.0, 167 MHz bus, 333 MHz core
link up, 1000 Mbit/s, duplex
COULD NOT OPEN FILE
COMMAND upgrade FAILED -1
PPCBOOT>
```

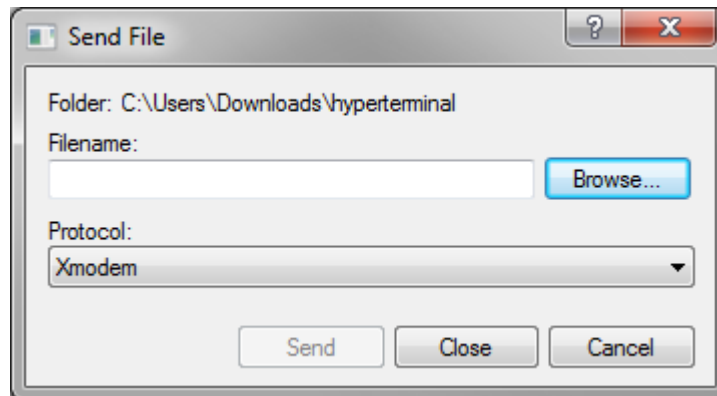


**If you do not see the boot up messages check to make sure you have the correct COM Port specified in HyperTerminal, and the status bar at the bottom of the HyperTerminal screen shows that it is connected.**



### 7.3.6. Upgrading the 7801FC Boot Loader

1. At the “Upload Main Program” prompt, send the boot loader program (fcboot\_2v0\_012.bin) that was downloaded in section 7.3.1 to the 7801FC using Xmodem protocol. This is done by selecting “Send file...” from the “Transfer” drop-down menu in the HyperTerminal window. Upon selecting this option, the following screen is displayed:



**Figure 7-3: Send File Window**

The “Folder” header describes the folder location of the previously downloaded Upgrade Program. To change the location/name of the file, use the “Browse...” button to locate and select the correct file. Make sure the Protocol is set to “Xmodem” and press the “Send” button to send the file.

Upon completion the card will continue to reboot. After the card reboots you can scroll to the top of the HyperTerminal buffer and the following information will be displayed:

```
EVERTZ 7801FC 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 OKAY  
RUNNING 6C0000  
  
>> NetBSD/evertz 7801FC Boot, Revision 2.0 Build 12  
>> (rjalali@brain, Fri Nov 5 10:33:15 EST 2004) >
```

### 7.3.7. Upgrading the 7801FC Frame Controller

1. Pull the card out of the slot and then reinsert it back into the frame. After the card powers up and the “Upload Main Program” message is displayed, press <Ctrl-x> one (1) times. This action temporarily postpones the “upgrade” procedure. The following information is displayed on the screen:

```
Evertz PPCBoot 2.3 et.816  
8313e rev. 2.2, e300c3 rev. 1.0, 167 MHz bus, 333 MHz core  
link up, 1000 Mbit/s, duplex  
user requested abort  
PPCBOOT>
```

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

```
Evertz PPCBoot 2.3 et.816
8313e rev. 2.2, e300c3 rev. 1.0, 167 MHz bus, 333 MHz core
link up, 1000 Mbit/s, duplex
user requested abort
PPCBOOT> upgrade
upload product firmware now
```

3. Using the procedure outlined in section 7.3.6 send the upgrade program that was downloaded in section 7.3.1 to the 7801FC. Upon completion of this step, the following information will be displayed on the screen:

```
Evertz PPCBoot 2.3 et.816
8313e rev. 2.2, e300c3 rev. 1.0, 167 MHz bus, 333 MHz core
link up, 1000 Mbit/s, duplex
user requested abort
PPCBOOT> upgrade
upload product firmware now
upload okay
PPCBOOT>
```

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

```
Evertz PPCBoot 2.3 et.816
8313e rev. 2.2, e300c3 rev. 1.0, 167 MHz bus, 333 MHz core
link up, 1000 Mbit/s, duplex
user requested abort
PPCBOOT> upgrade
upload product firmware now
upload okay
PPCBOOT> boot
LOADING PROGRAM SECTIONS
LOAD COMPLETE
780XFC hardware test code
RCWHR = 84546c00 RCWLR = 65040000
total memory = 268435456 bytes
available memory = 261668864 bytes
init_main
serial init
[ftpd]ftpd proc has started
CLI>
```

The IP address, netmask and gateway information is extracted from the 7801FC configuration information as entered in the previous section. This IP address should be recorded as it is used for 7801FC Frame Controller image upgrading, as per the next instruction.



**If the IP address, netmask and gateway are set to 0.0.0.0, this indicates that the 7801FC card is operating in DHCP mode. You will have to turn off DHCP mode and enter a static IP address and netmask using the procedure shown in section 6.2.1.**

- Using the “Run...” command in the “Start” menu, or opening a Command Prompt (MS-DOS) window, type `ftp 192.168.192.100<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 7801FC must be configured to operate on the same LAN. For example the IP address of the PC and Frame Controller should be on 192.168.192.x with “x” being a unique address identifier for the PC and the 7801FC Frame Controller

- Do not enter a name for “User” when prompted (leave the field blank). Press <Enter>.
- Do not enter a name for “Password” when prompted (leave the field blank). Press <Enter>.

- At the “ftp>” prompt, type:

```
put<space> “[dir]\XvY_Z_7801FC.bin” <Enter>
```

Add the full path name (directory location) of the downloaded 7801FC Image file in place of [dir] in the above entry. If there are spaces in the path name they must be surrounded by quotations. Note that “X”, “Y” and “Z” are FC image release version numbers as identified in the downloaded file name. The file will take approximately 5 to 10 minutes to upload.

- Upon successful command entry, the MS-DOS window will display “200 PORT command successful” and “150 Opening data connection” messages.
  - After several minutes of “image” upload, the MS-DOS window will display “226 Transfer complete” and “ftp:... (adding statistics about the ftp procedure)”
- Upon completion of the upload, the MS-DOS window/program should be terminated by closing the window. Remove the 7801FC from the frame, remove the upgrade cable and reposition the UPGRADE jumper to RUN mode. The 7801FC has been upgraded with the latest image and can now be reinserted into the frame to resume normal operation.

## 8. WEBEASY® WEB INTERFACE

The 7801FC provides a built-in web interface that allows a user to interact with the 7801FC as well as WebEASY® supported products using a standard Internet web browser. The 7801FC web interface can be accessed by entering the IP address of the 7801FC into the address bar of an Internet web browser. When first visiting the 7801FC web interface, the user will be asked to enter a Login and Password. Both the Login and Password have a default value of “customer”.

The home page of the 7801FC provides a list of all products currently under the control of the 7801FC along with a menu that allows insight into specific *Product Location*, *Hardware* version, *Software* version, *SNMP V1 Community* strings, *SNMP V1 Trap* destinations and local *TRAP Management Faults* for the 7801FC. The home page of the 7801FC web interface is shown in Figure 8-1.

The FC Menu will provide a list of all products currently in the frame occupied by the 7801FC. It will also provide the firmware version of each card in the frame. Cards that appear in white text do not support the WebEASY® interface and are therefore not configurable through the web interface. These cards must be configured using VistaLINK®. Cards that support the WebEASY® interface will appear in yellow. Clicking on the yellow product name will link to the controls available for that card.

Cards can be configured using the *Refresh*, *Apply*, and *Dynamic Apply* buttons on top of the page. These function in the same manner as the buttons of the same name in VistaLINK®.

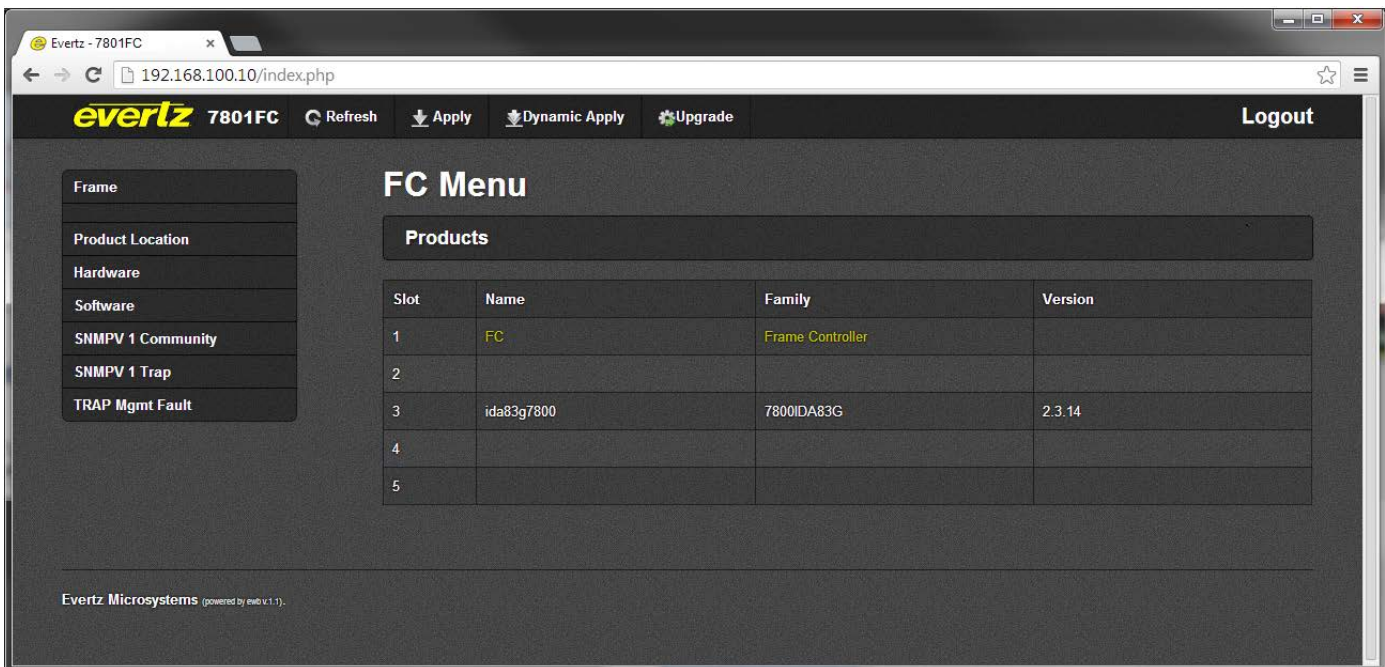


Figure 8-1: WebEASY® Home Page

### 8.1. UPGRADING CARDS USING WebEASY®

The 7801FC web interface provides a simple way to upgrade both the firmware on the 7801FC as well as the firmware of cards that support WebEASY®. Clicking on the *Upgrade* button at the top of the home screen will bring the user to the Firmware Upgrade page as shown in Figure 8-2.

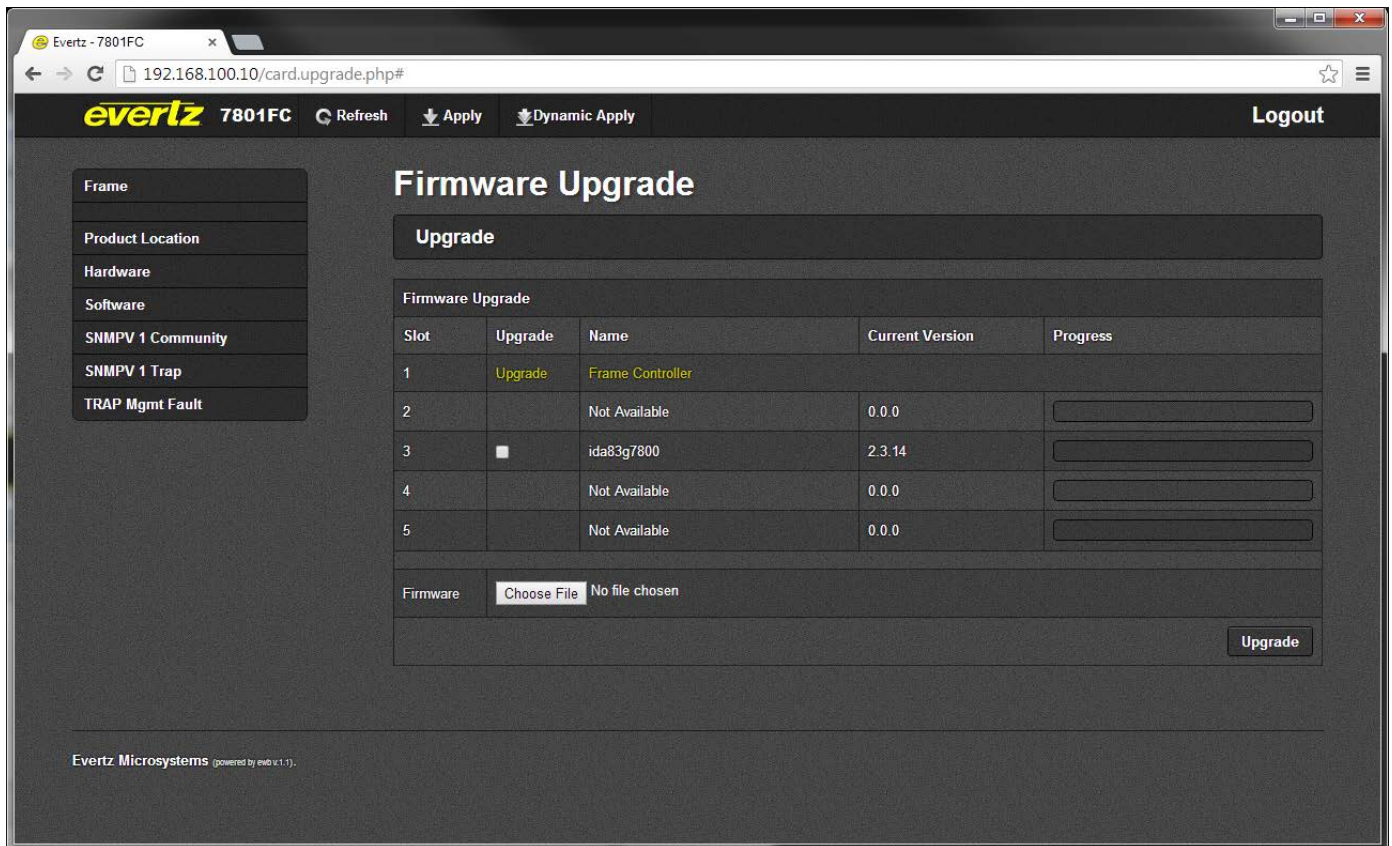


Figure 8-2: WebEASY® Firmware Upgrade Page

#### 8.1.1. Upgrading Modules Using WebEASY®

The firmware for individual modules in a frame with a 7801FC can be upgraded using the web interface. Beside each compatible product will be a checkbox. Select the checkbox of the card to be upgraded and then click on the *Choose File* button to select the desired firmware from a local drive. Clicking on the *Upgrade* button will start the process. The progress bar to the right of the card slot will provide feedback on the status of the upgrade.

### 8.1.2. Upgrading 7801FC Using WebEASY®

The firmware for the 7801FC can be upgraded by clicking on the *Upgrade* link beside the frame controller in slot 1. Clicking on the link will bring the user to the 7801FC Firmware Upgrade page shown in Figure 8-3. Once on this page, click on the *Choose File* button to select the desired firmware from a local drive, and then click on the *Upgrade* button to start the process. The progress bar to the right of the card slot will provide feedback on the status of the upgrade.

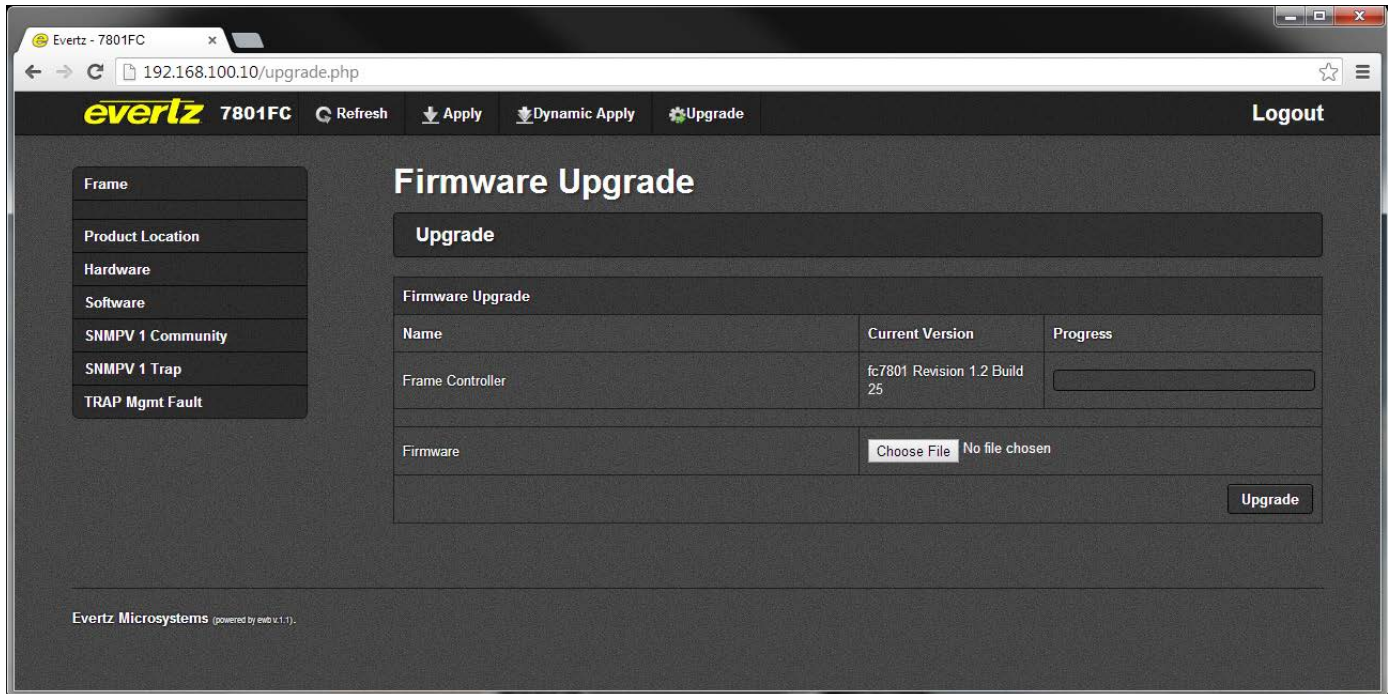


Figure 8-3: WebEASY® Firmware Upgrade Page for 7801FC