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Upgrading Firmware in 7700 Modules

REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	Original Version	June 99
1.1	Updated list of available modules Added support for 7700PB2 and 7730DAC boards Revised cable drawing for WA-S76 cable Added procedure for upgrading standalone units	July 00
1.2	Updated list of available modules, specifically 7761AVM-DC and 7765AVM-4	Nov 01
1.3	Updated Stand alone procedure for new S7701FR	Aug 04
2.0	Added information for FTP upgrades	May 06

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Although every attempt has been made to accurately describe the features, installation and operation of this product in this manual, no warranty is granted nor liability assumed in relation to any errors or omissions unless specifically undertaken in the Evertz sales contract or order confirmation. Information contained in this manual is periodically updated and changes will be incorporated into subsequent editions. If you encounter an error, please notify Evertz Customer Service department. Evertz reserves the right, without notice or liability, to make changes in equipment design or specifications.

1. OVERVIEW

Most of the 7700 series modules contain firmware that is contained in a FLASH EPROM device. From time to time firmware updates will be provided to add additional features to the unit. The latest firmware version is always available on the Evertz web site (<http://www.evertz.com> and press the Download Button). On the main downloads page you can also sign up for the new email notification service, which will automatically notify you by email when new versions become available.

There are two possible methods of upgrading the firmware. All 7700 modules with firmware are fitted with an upgrade port connector that can be connected to a PC serial port using a special upgrade cable (supplied with the frame). If the module is VistaLINK[®] capable, and is installed in a 3RU 7700FR-C frame with a 7700FC VistaLINK[®] Frame Controller card installed in slot 1, the module can be upgraded via network communication using FTP.

1.1. REQUIREMENTS

In addition to the new firmware you will need the following equipment in order to update the module Firmware:

1.1.1. Requirements – Serial Port Upgrade Method

- PC with available communications port. The communication speed is 115200 or 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).
- Special upgrade cable supplied with the 7700FR-C frame. This multi-colored ribbon cable with a six pin header socket on one end and a femal 9 pin D connector on the other end, (Evertz part number WA-S76) is normally in the vinyl pouch at the front of this manual. To upgrade older modules based on the 7700PB Rev 1 main circuit board you will need a different cable with a 10 pin header on one end. (Evertz part # WA-S75). Contact customer service if you need the older cable.
- Terminal program that is capable of Xmodem file transfer protocol (such as TerraTerm or HyperTerminal).

Follow the procedure in section 1.2 for serial port upgrades to modules installed in the 3RU 7700FR-C or 1RU 7701FR frames or the S7702FR stand alone enclosures. Follow the procedure in section 1.3 for serial port upgrades to modules installed in the S7701FR stand alone enclosures.

1.1.2. Requirements – FTP Upgrade Method (For VistaLINK[®] Capable Modules only)

- 7700FR-C Evertz multi-frame with 7700FC installed in slot 1
- PC with available 10 or 100Mbps ethernet port.
- “Cross-over” ethernet cable or 2 “straight-through” cables and an ethernet hub
- An FTP utility to facilitate file upload

1.2. UPDATING THE FIRMWARE IN FRAME BASED MODULES



When using a laptop to communicate to an Evertz module serially, the laptop should be powered by the same AC mains powering the 7700FR. This will reduce the chance of ground loops causing communication problems. It is not recommended to use battery power.

1.2.1. PART 1: 7700PB Rev 1 Boards – Configuring the Module for Firmware Upgrades

1. Remove the module from the frame.
2. Connect the 7700PB Rev 1 Serial Upgrade cable to the 2 row x 5 pin header labelled J12 on the top edge of the 7700PB board as shown in Figure 1. The cable has a key installed so that it cannot be installed backwards.

7700 PB End		3 ft. Ribbon Cable	PC End	
2 row X 5 pin Berg	Pin		9 pin D Female	Pin
n/c	1			
Rx	2	-----	Tx	2
Tx	3	-----	Rx	3
n/c	4			
Tx Gnd	5	-----	Gnd	5
n/c	6			
n/c	7			
n/c	8			
n/c	9			
Key	10			

Table 1: 7700PB Rev 1 Upgrade Cable (WA-S75)

3. Move the jumper, located on the end of the GPIO header to the UPGRADE position as shown in Figure 1.
4. Connect the 9 pin connector on the end of the Serial Update cable to the PCs' RS-232 communications port.
5. Proceed to Part 2 – Terminal program setup.

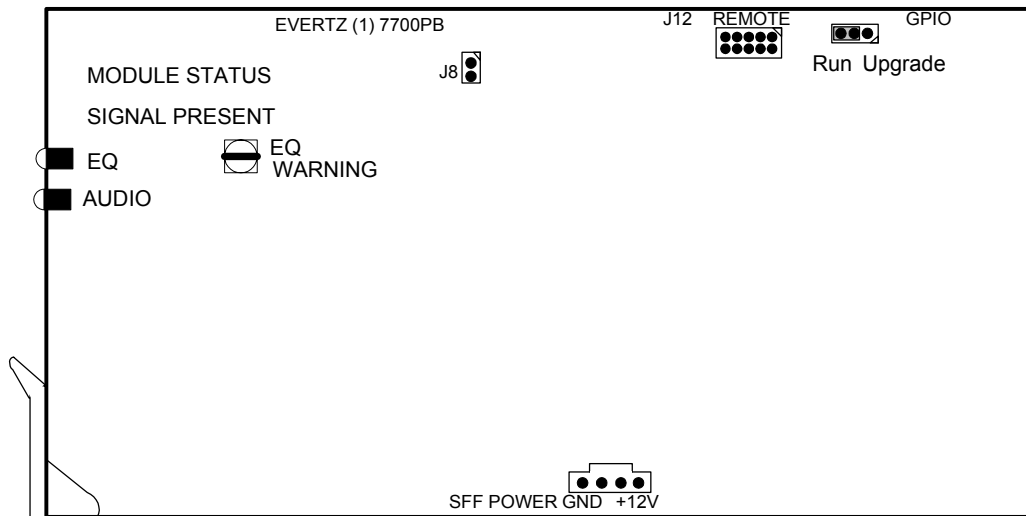


Figure 1 : Location of UPGRADE Jumper on Rev 1 7700PB Boards

1.2.2. PART 1: 7700PB Rev A and later, all other 7700 Series Boards – Configuring the Module for Firmware Upgrades

1. Remove the module from the frame.
2. Connect the 7700PB Serial Upgrade cable to the 2 row x 3 pin header as shown in Figure 2. Install the cable with the ribbon cable towards the front of the board. For other models see the jumper location drawing in the manual chapter for the module.

7700 PB End		3 ft. Cable (9501)	PC End	
2 row X 3 pin Berg	Pin		9 pin D Female	Pin
Key	1			1
Rx	2	-----1a-----	Tx	2
Tx	3	-----1b-----	Rx	3
Tx Gnd	4	----drain-----	Gnd	5
Key	5			
---	6			

Table 2: 7700PB Rev A and Later Upgrade Cable (WA-S76)

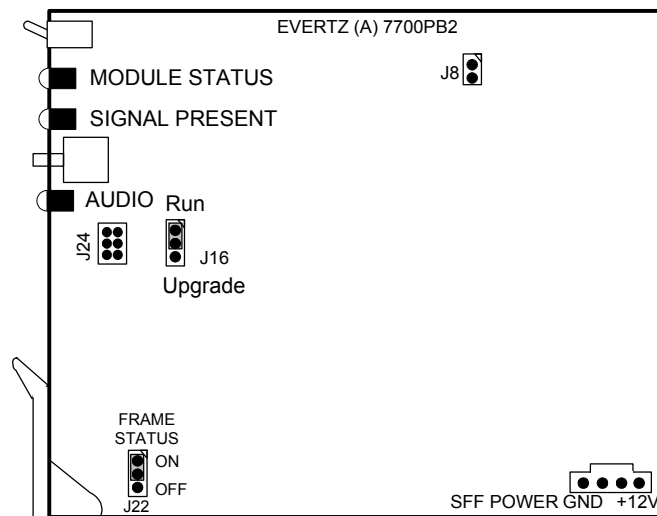


Figure 2 : Location of UPGRADE Jumper on Rev A and later 7700PB and 7700PB2 Boards

3. Move jumper J16 to the UPGRADE position as shown in Figure 2. For other models see the jumper location drawing in the manual chapter for the module.
4. Connect the 9 pin connector on the end of the Serial Update cable to the PCs' RS-232 communications port
5. Proceed to PART 2: Terminal Program Setup

1.2.3. PART 2: Terminal Program Setup

6. Start the terminal program.
7. Configure the port settings of the terminal program as follows:

Baud	57600 or 115200
Parity	no
Data bits	8
Stop bits	2
Flow Control	None



Consult the product manual chapter for the correct baud rate for the module you are upgrading. If the manual chapter does not give a baud rate then set the baud rate to 57600.

8. Apply power to the module. After the unit powers up, a banner with the boot code version information should appear in the terminal window, followed by "UPLOAD FILE NOW, CONTROL-X TO CANCEL"

For example:

```
EVERTZ MCF5407 MONITOR 2.5 BUILD 9
COPYRIGHT 1997, 1998, 1999, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F160C3B FLASH DETECTED
BRD=7700PH4
MODEL=BAPH4-FSE
PROD=7746FSE
FRAME=7700FR
UPGRADE JUMPER INSTALLED

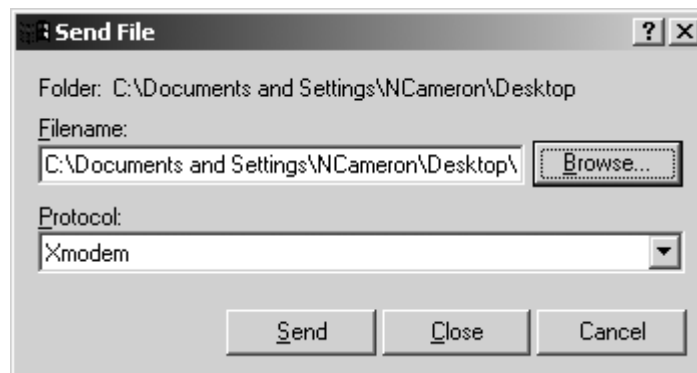
UPLOAD FILE NOW, CONTROL-X TO CANCEL
□□□□□□□□
```

9. 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 7 for settings).

1.2.3.1. PART 3: Uploading the New Firmware

10. Upload the “*.bin” file supplied using the X-Modem transfer protocol of your terminal program.

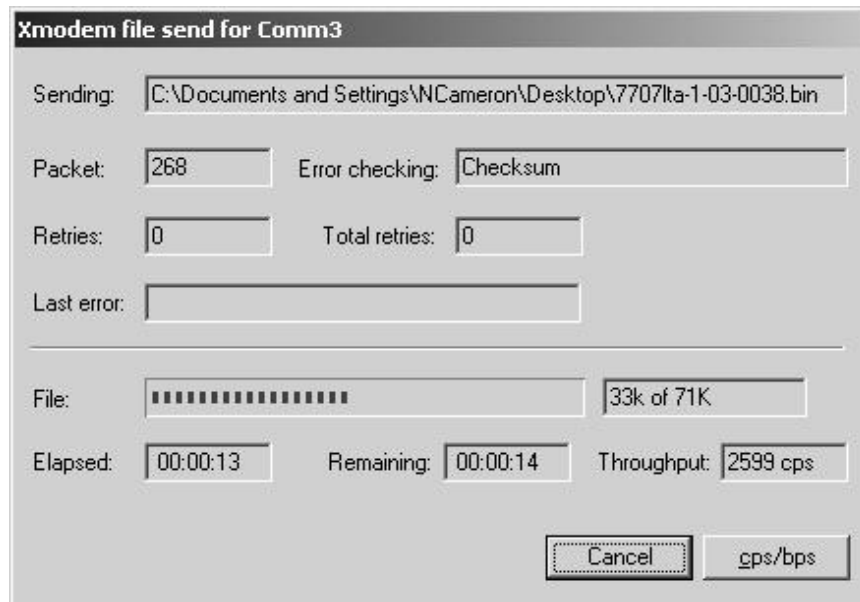


If you do not start the upload within 10 minutes the Boot code will time out. You can restart the upgrade process by removing and reinstalling the module.

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11. During the file transfer, you will see something similar to the following:



12. When the transfer is complete, HyperTerminal will show the following:

```
UPLOAD OKAY
MCF5272 COLD BOOT> |
```

The cursor to the right of the word "BOOT>" should be spinning for about 5 seconds then the module will reboot.

13. The following is a list of possible reasons for a failed upload:
- If you get the message "transfer cancelled by remote" you must restart the terminal program, cycle power to the unit and then re-load the bin file. Sometimes rebooting the PC or Using another terminal program may help.
 - If the card does not boot, the supplied "*.bin" file could be corrupt. Download the file from the website again.
 - Also, if the card does not boot ,the wrong file may have been uploaded. Download the correct file from the website again.

1.2.3.2. PART 4: Completing the Upgrade

14. You can now close the terminal program and disconnect the RS-232 serial cable from the PC.
15. Remove the module from the frame and disconnect the Serial Upgrade cable from the module. Restore the UPGRADE jumper to the RUN position
16. Reinsert the module into the frame.

The update procedure is now completed.

1.3. UPDATING THE FIRMWARE IN STANDALONE UNITS

There are two types of Stand alone enclosures used with the 7700 series modules. Later units use a universal rear plate that accommodates the rear plates used with the 1RU 7701 frame as shown in Figure 3. For these units you simply remove the front cover and then follow the upgrade procedure outlined in section 1.2.

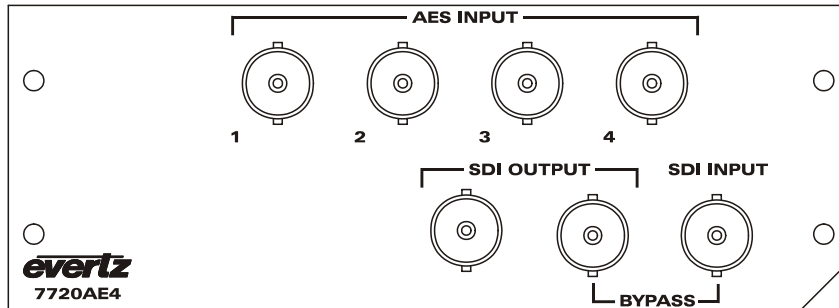


Figure 3: Later Stand Alone - Uses 7701 Rear Panels

The early units had dedicated rear plates for the specific module as shown in Figure 4. (The model number silk-screened on these plates begins with the letter 'S') These units are fitted with a COM port connector that can be connected to a PC with a straight through cable. For these units use the upgrade procedure in the remainder of section 1.3.

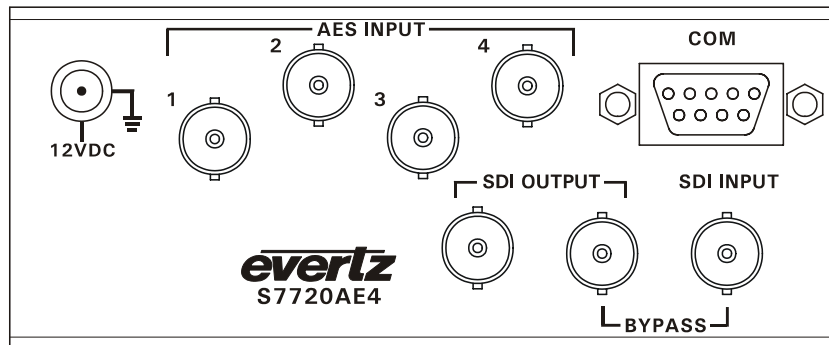


Figure 4: Early Stand Alone Rear Panel

You will need the following equipment in order to update the 7700PB Firmware

- 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 that is capable of Xmodem file transfer protocol (such as TerraTerm or HyperTerminal).

1.3.1. PART 1: Configuring the Unit for Firmware Upgrades

1. Connect the 9 pin male connector on the straight through serial extension cable to the COM port on the rear of the standalone unit. Connect the 9 pin female connector to the PCs' RS-232 communications port

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1.3.2. PART 2: Terminal program Setup

2. Start the terminal program.
3. Configure the port settings of the terminal program as follows:

Baud	57600 or 115200
Parity	no
Data bits	8
Stop bits	2
Flow Control	None



Consult the product manual chapter for the correct baud rate for the module you are upgrading. If the manual chapter does not give a baud rate then set the baud rate to 57600.

4. Apply power to the standalone unit. After the unit powers up, a banner with the boot code version information should appear in the terminal window. The cursor to the right of the word "BOOT>" should be spinning for about 5 seconds then the unit will continue to boot.

For example:

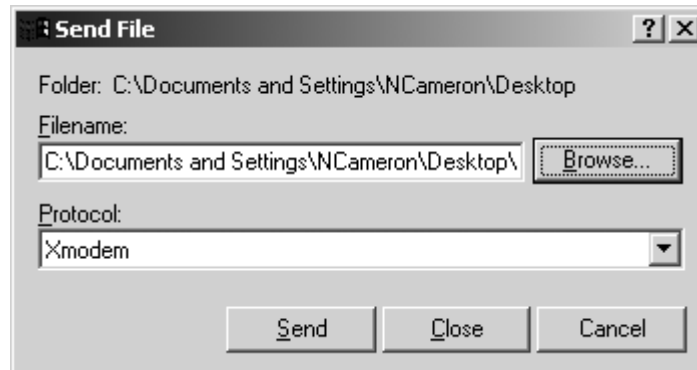
```
EVERTZ MCF5407 MONITOR 2.5 BUILD 9
COPYRIGHT 1997, 1998, 1999, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F160C3B FLASH DETECTED
BRD=7700PH4
MODEL=BAPH4-FSE
PROD=7746FSE
FRAME=7700FR
COLD_BOOT |
```

5. 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 7 for settings).
6. While the cursor is spinning press the <CTRL> and <X> keys on your computer keyboard at the same time, this should stop the cursor from spinning. The spinning prompt will only remain for about 5 seconds. You must press <CTRL-X> during this 5 second delay. If the unit continues to boot-up, simply cycle the power and repeat this step.
7. Hit the <ENTER> key on your computer once.
8. Type the word "upgrade", without quotes, and hit the <ENTER> key once.
9. The boot code will ask for confirmation. Type "y", without quotes.
10. You should now see a prompt asking you to upload the file.

"UPLOAD FILE NOW, CONTROL-X TO CANCEL"

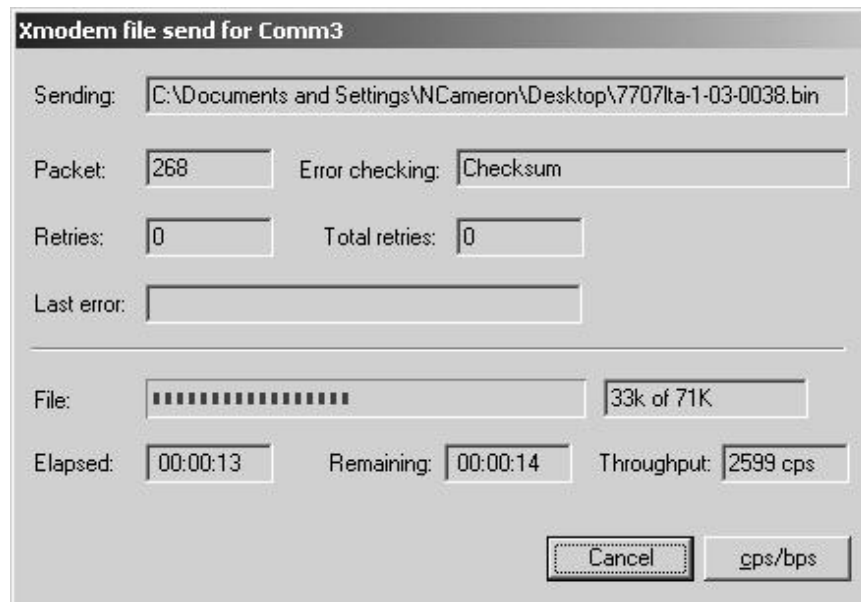
1.3.3. PART 3: Uploading the new firmware

11. Upload the “*.bin” file supplied using the X-Modem transfer protocol of your terminal program.



If you do not start the upload within 10 minutes the Boot code will time out. You can restart the upgrade process by removing and reinstalling the module.

12. During the file transfer, you will see something similar to the following:



13. When the transfer is complete, HyperTerminal will show the following:

```
UPLOAD OKAY
MCF5272 COLD BOOT> |
```

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14. The following is a list of possible reasons for a failed upload:
- If you get the message "transfer cancelled by remote" you must restart the terminal program, cycle power to the unit and then re-load the bin file. Sometimes rebooting the PC or Using another terminal program may help.
 - If the card does not boot, the supplied "*.bin" file could be corrupt. Download the file from the website again.
 - Also, if the card does not boot ,the wrong file may have been uploaded. Download the correct file from the website again.

1.3.4. PART 4: Completing the Upgrade

15. Type the word "boot", without quotes, and hit the <ENTER> key once or power cycle the unit. The unit should now reboot.
16. You can now close the terminal program and disconnect the RS-232 serial cable from the PC.

The update procedure is now completed.

1.4. FTP METHOD UPGRADE PROCEDURE (FOR VISTALINK® CAPABLE MODULES ONLY)

The FTP method is typically faster than serial upgrades, and can facilitate the upgrade of multiple units of the same product type at the same time.

For FTP upgrades, you must have a PC or laptop connected to the ethernet port on a 7700FR with a 7700FC installed in slot 1. This connection can be direct using a cross-over Ethernet cable or indirect using an Ethernet hub or switch and straight-through cables. Both the 7700FC and the PC that you are using must be on the same network. Contact your IT department to verify this. The following procedure assumes a PC running Windows 2000 operating system. If you are using another version of Windows, or another type of computer the procedure to invoke your FTP client may differ. Contact your IT department for help if you need to.



Do NOT have multiple product types in upgrade mode at one time. This may cause units to store firmware intended for other product types.

1.4.1. Part 1 - Obtaining the 7700FC IP Address

1. Remove the 7700FC from the frame. It is located in slot 1.
2. Connect the ribbon 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 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. 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.
3. Open up the terminal program on a PC with the following settings: 57600 bps baud rate, with no parity, 2 stop bits and no flow control on a free comm. port of the PC

4. Connect the ribbon upgrade cable to the serial cable and then to the serial port chosen in step 3.
5. 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.

```
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:
```

6. At the login, type ‘customer’ (without quotations) for both the login and the password. You should see something similar to the following:

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

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

7. Type 1 and then hit <enter> to enter the Network Setup menu. Hit <enter> when you see the Warning. You should see something similar to:

```
(1) Use DHCP [N]
(2) Hostname [fc-default]
(3) IP Address [192.168.9.25]
(4) Netmask [255.255.255.0]
(5) Route [192.168.9.253]
(6) Broadcast [192.168.9.255]

(X) Exit
```

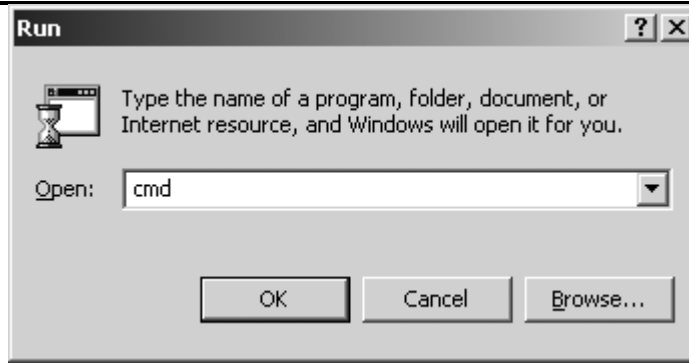
8. Note the contents of the brackets, [], for entry (3)--IP Address. For example, 192.168.9.25 as above. This is the address you will need to FTP to below.
9. Remove the 7700FC module from the frame and disconnect the ribbon upgrade cable
10. Reinsert the 7700FC to the frame

1.4.2. Part 2 - Connecting To The 7700FC And Transferring The Firmware

11. On your PC click on the Start button and then Run. Type in ‘cmd’ and then <enter>.

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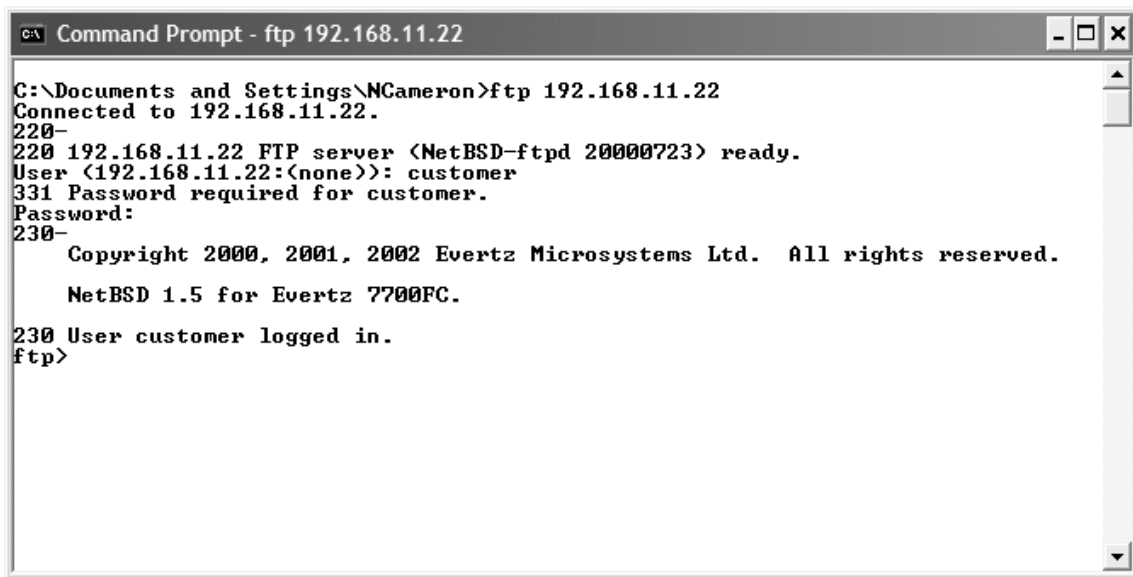


12. You will see a Windows™ command prompt similar to the following:



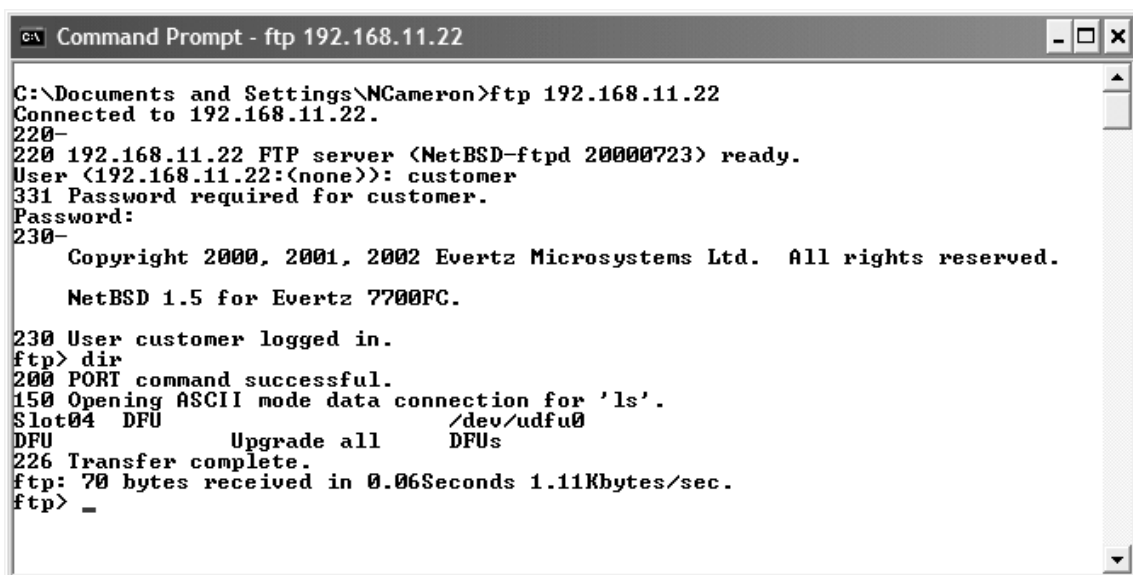
13. At the prompt, type ftp followed by the IP address obtained above. For example: 'ftp 192.168.9.25 <enter>'

14. Login using 'customer' as both the user and password. You should see something similar to:



```
C:\Documents and Settings\NCameron>ftp 192.168.11.22
Connected to 192.168.11.22.
220-
220 192.168.11.22 FTP server (NetBSD-ftpd 20000723) ready.
User (192.168.11.22:(none)): customer
331 Password required for customer.
Password:
230-
    Copyright 2000, 2001, 2002 Evertz Microsystems Ltd. All rights reserved.
    NetBSD 1.5 for Evertz 7700FC.
230 User customer logged in.
ftp>
```

15. At the FTP> prompt, type 'bin' to enable binary transfer mode.
16. Place the unit(s) you want to upgrade into upgrade mode by placing the Run/Upgrade jumper on each of them in the upgrade position and insert them into the frame. Consult the product manual for the location of the Run/Upgrade jumper.
17. From the FTP>, type 'dir'.
18. Your modules that are to be upgraded should be listed as 'DFU' similar to that below:

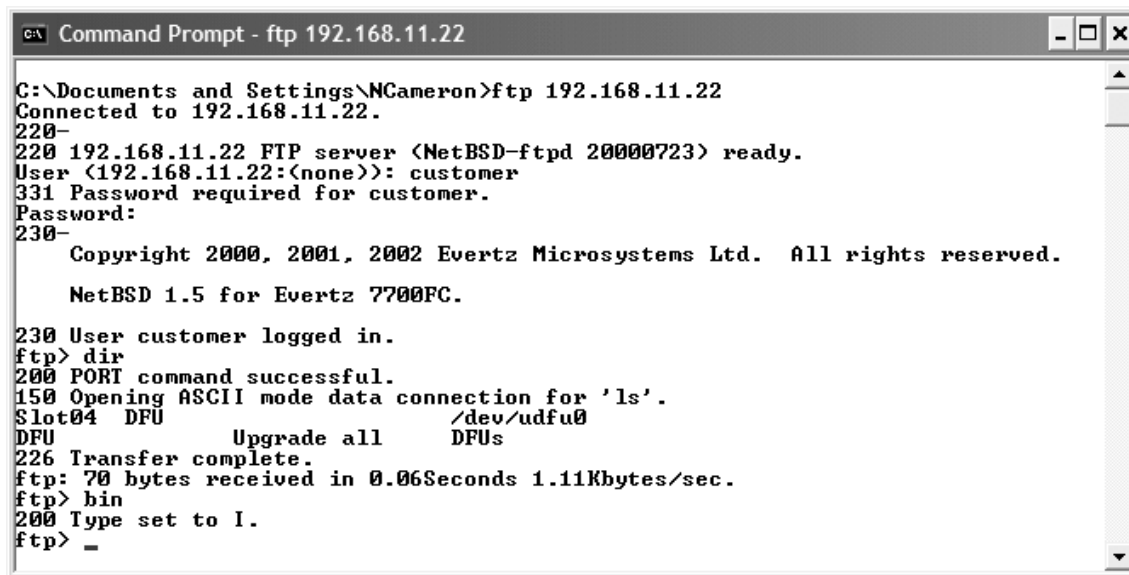


```
C:\Documents and Settings\NCameron>ftp 192.168.11.22
Connected to 192.168.11.22.
220-
220 192.168.11.22 FTP server (NetBSD-ftpd 20000723) ready.
User (192.168.11.22:(none)): customer
331 Password required for customer.
Password:
230-
    Copyright 2000, 2001, 2002 Evertz Microsystems Ltd. All rights reserved.
    NetBSD 1.5 for Evertz 7700FC.
230 User customer logged in.
ftp> dir
200 PORT command successful.
150 Opening ASCII mode data connection for 'ls'.
Slot04 DFU          /dev/udfu0
DFU                Upgrade all DFUs
226 Transfer complete.
ftp: 70 bytes received in 0.06Seconds 1.11Kbytes/sec.
ftp>
```

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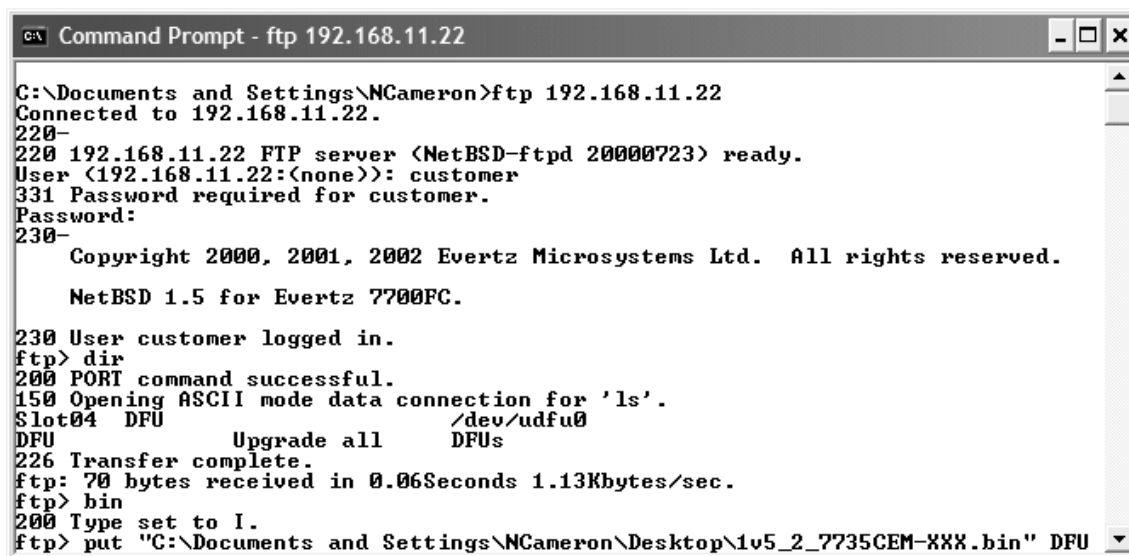
19. Type 'bin' to enter binary transfer mode. For example:"



```
C:\Documents and Settings\NCameron>ftp 192.168.11.22
Connected to 192.168.11.22.
220-
220 192.168.11.22 FTP server (NetBSD-ftp 20000723) ready.
User (192.168.11.22:(none)): customer
331 Password required for customer.
Password:
230-
    Copyright 2000, 2001, 2002 Evertz Microsystems Ltd. All rights reserved.
    NetBSD 1.5 for Evertz 7700FC.
230 User customer logged in.
ftp> dir
200 PORT command successful.
150 Opening ASCII mode data connection for 'ls'.
Slot04 DFU      /dev/udfu0
DFU             Upgrade all  DFUs
226 Transfer complete.
ftp: 70 bytes received in 0.06Seconds 1.11Kbytes/sec.
ftp> bin
200 Type set to I.
ftp> _
```

You will see a message saying:
"200 Type set to I."

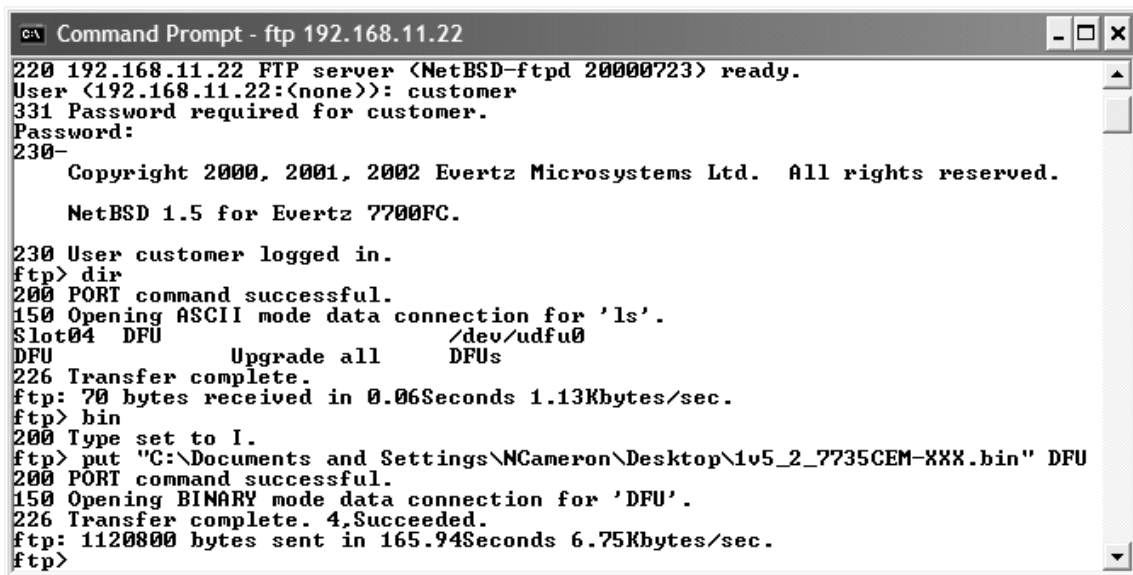
20. Type 'put filepath\filename.bin DFU', where filepath\filename.bin is the location and filename of the file to be uploaded. For example:



```
C:\Documents and Settings\NCameron>ftp 192.168.11.22
Connected to 192.168.11.22.
220-
220 192.168.11.22 FTP server (NetBSD-ftp 20000723) ready.
User (192.168.11.22:(none)): customer
331 Password required for customer.
Password:
230-
    Copyright 2000, 2001, 2002 Evertz Microsystems Ltd. All rights reserved.
    NetBSD 1.5 for Evertz 7700FC.
230 User customer logged in.
ftp> dir
200 PORT command successful.
150 Opening ASCII mode data connection for 'ls'.
Slot04 DFU      /dev/udfu0
DFU             Upgrade all  DFUs
226 Transfer complete.
ftp: 70 bytes received in 0.06Seconds 1.13Kbytes/sec.
ftp> bin
200 Type set to I.
ftp> put "C:\Documents and Settings\NCameron\Desktop\lv5_2_7735CEM-XXX.bin" DFU
```

You will see a message saying:
"200 PORT command successful."
150 Opening BINARY mode data connection for 'DFU'."

21. Upon successful transfer, you will see something similar to the following:



22. NOTE: The following is a list of possible reasons for a failed upload:

- If you can't connect to the module through FTP, ensure your PC's IP address is set to the same subnet as your 7700FC.
- If you can't connect to the module through FTP, ensure you are using a verified functional cross-over cable or straight-through cables with a hub.
- If no cards show up in the frame as DFUs, verify that the modules are in Upgrade mode.
- If no cards show up in the frame at all, verify that the 7700CM-2 sub-assembly is installed behind the 7700FC rear-panel.

1.4.2.1. Part 3 - Completing The Upgrade

23. Type quit to exit the FTP session.
24. Move the Run/Upgrade jumper on all the modules back to the RUN position, and re-seat the modules into the frame to re-boot the module.

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