

Elite HD™

DIGITAL VIDEO RECORDER



FFV
Fast Forward Video

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User's Manual

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Maintenance

Cleaning

The Housing should only require dusting with a soft cloth.

OPERATION AND STORAGE ENVIRONMENT

Precautions

The Elite HD has been built to meet the demands of internal or external environments; however, the hardware is subject to the same dangers from static as any other electronic device. Use care when connecting or disconnecting cables.

Important: Take care not to introduce any moisture into the unit. Electronic assemblies are sensitive to static electricity, due to the electrostatically sensitive devices used within the circuitry. All semiconductors, as well as some resistors and capacitors, may be damaged or degraded by exposure to static electricity. If you experience any problems with the unit please call Fast Forward Video's service department. DO NOT ATTEMPT to repair or modify the unit as this might cause further damage, which could void your warranty. A technician can decipher whether your problem is caused by a faulty component, and determine whether you need to return it for evaluation and/or repair.

Cleaning

The chassis should only require dusting with a soft cloth. Solvents may harm the painted surface and leak to the inside causing severe damage.

PACKAGE CONTENTS (May vary depending on model)

- 1 – Elite HD
- 1 – DC POWER SUPPLY
- 1 – RIGHT ANGLE BNC (w/ battery mount units only)
- 1 – 6" BNC CABLE (w/ battery mount units only)
- 1 – CD (includes user manual and file management software)
- 1 – QUICK START GUIDE
- 1 – 2.5" Drive Enclosure
- 1 – 120 GB Hard Drive

PLEASE RETAIN THE ORIGINAL SHIPPING CARTON AND FOAM. If you need to return the unit for service or upgrade it is STRONGLY recommended that you use the original carton and foam, which were specifically designed to protect it from damage while in transit. IF RETURNED IN SOMETHING OTHER THAN ORIGINAL PACKAGING, A FEE WILL BE ASSESSED FOR THE USE OF NEW SHIPPING MATERIALS WHEN RETURNED BACK TO YOU. A PROTECTIVE METAL SHIPPING CASE IS ACCEPTABLE.

FCC Information to the user

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2). This device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a class a digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at his/her own expense.

Overview

The Elite HD combines the industry's best image quality with a comprehensive feature set and a comparatively low price, which is the hallmark of Fast Forward Video's products. The Elite HD digital recorder is also designed to develop and evolve as the industry changes. New features are implemented regularly, most of which can be easily implemented by the deck's firmware, downloadable via FFV's website, <http://www.ffv.com>.

Features:

- Camera back mount or standalone DVR
- Gold Mount & V-mount
- J2K compression
- Discrete access to every frame
- Record/Playback in HD (1080i, 720p)
- 100 Mbit/s data rate
- 10 bit quantization
- 4:2:2 sampling
- 8 embedded audio channels per HD channel
- SMPTE 259M-C and SMPTE 292 (HD-SDI)
- 2.5" SATA drive with USB connection
- Loop record feature
- Instant cueing, clip recall
- Time code input
- External Trigger Input

Configurations:

- Elite HD w/ Gold Mount
- Elite HD w/ V-Lock Mount
- Elite HD standalone

Quick Start Guide

Menu Setting Navigation – To enter the menu you must be in LIVE mode. Please review the below commands in order to make any menu changes.

Change to Live Mode = press and hold STOP then press REC

Enter Menu = press STOP

Set/Select Menu Option = press STOP

Confirm = press STOP

Scroll = press any arrow buttons

Exit Menu = press REC

1. **Install drive** – Slide the 2.5" Drive Enclosure into the slot located on the right side of the unit. Please note that it is normal for the drive enclosure to get warm; it quickly reaches a maximum temperature and will not exceed recommended temperature throughout use. **Please note all new drives need to be formatted (see step 10) and then the unit needs to be power cycled.**
2. **Apply Power** - - Plug the power adapter into a wall socket and connect it to the DC IN located on the bottom of the unit. If the unit is equipped with battery mounts attach battery to front of unit. Turn on unit POWER by holding recessed switch located on the bottom of the unit for one second.
3. **Connect inputs** – Connect HD/SDI embedded video source to IN.
4. **Select Video Format Menu** – The factory default setting is 1080i/59.94 or 50 depending on location. To change the video settings enter the menu and scroll to SET VIDEO FORMAT and press STOP. Scroll through the different video format options and set new format by pressing STOP then REC to exit menu. Exit menu. The new set video format will appear on the LCD during the live/recording modes and will be retained throughout power cycles.
5. **Record** – Press and hold REC button and press PLAY (▶) to start recording and press STOP button to stop recording, which will create a separate clip each time done. **Please note the first clip will be named CLIP0000.**
6. **Lock Keypad Menu** – Enter the menu and scroll to LOCK KEYPAD. Select, confirm and exit the menu. **The next command will be locked.**
7. **Unlock Keypad Menu** – To unlock press and hold STOP then press REC – release and press STOP again.
8. **Play Clip Menu** – Connect HD/SDI embedded video OUT to compatible HD monitor or editing system. Enter the menu and scroll to LOAD CLIP. Scroll through the different clip names and select a clip. Exit menu and press PLAY.
9. **Unload Clip Menu** – Enter the menu and scroll to UNLOAD CLIP. To unload the clip press STOP and exit the menu.
10. **Delete All Clips Menu** – Enter the menu and scroll to DELETE ALL CLIPS. Select the menu by pressing STOP and confirm by pressing STOP again. Exit menu. **PLEASE NOTE: This menu must be used to format a new drive before you can record.**
11. **Delete Clip Menu** - Enter the menu and scroll to DELETE CLIP. Scroll through the different clip names and select a clip. Confirm and exit the menu.
12. **Turn Off Elite HD** - Turn off unit POWER by holding recessed switch located on the bottom of the unit for five seconds.

Drive Installation

We recommend that you have the drives installed, formatted and tested by Fast Forward Video. However, you may install the drives by following the procedure below. We ONLY recommend Hitachi, WD and Seagate Hard Drives, which have been tested with the Elite HD, and proven to have the best performance and reliability.

2.5" Drive Removal/Replacement Procedure:

1. Pull the drive from the Elite HD.
2. Remove the two screws from the rear panel of the drive enclosure.
3. Remove the circuit board from the drive enclosure. For drive removal unscrew 4 mounting screws on underside.
4. Attach the 2.5" SATA hard drive to the circuit board, and fasten it to the board using drive mounting screws.
5. Once the hard drive has been secured on the circuit board, insert the circuit board (with hard drive attached) in the drive enclosure (drive facing up). Fasten the rear panel of the drive enclosure to the enclosure using the screws that were removed in step #2.
6. Slide the drive back into the Elite HD making sure the Elite HD label is facing up.
7. Use the formatting drive procedure to prepare drive for use.

Formatting Drive

1. Slide drive into the Elite HD.
2. Turn on unit POWER by holding recessed switch located on the bottom of the unit for one second.
3. Make sure you are in LIVE Mode - press and hold STOP then press REC.
4. Enter the Main Menu – press STOP.
5. Scroll to the DELETE ALL CLIPS menu by pressing any arrow.
6. Press STOP to accept the menu.
7. Press STOP to confirm formatting.
8. The LCD will display "Please Wait" during the formatting process.
9. Press REC to exit menu when formatting is complete.

Connecting Battery Mounts

Gold Mount:

1. Align the back of the Elite HD with the mount located on the back of the camera.
2. Gently slide the Elite HD to the right to connect the camera and unit.
3. Place the camera battery in the slots located on the front of the Elite HD.
4. Gently slide the battery to the right to connect the battery to the unit.
5. Press the release down to detach the Elite HD from the camera.
6. Gently slide the battery to disconnect from the Elite HD.

Automatic Fuse Reset: Please wait 60 seconds for the fuse to reset.

V-Lock Mount:

1. Align the back of the Elite HD with the mount located on the back of the camera.
2. Gently slide the Elite HD down to connect the camera and unit.
3. Place the camera battery in the slots located on the front of the Elite HD.
4. Gently slide the battery down to connect the battery to the unit.
5. Press the release button located on the mount to detach the Elite HD from the camera.
6. Gently slide the battery to disconnect from the Elite HD.

Rear Panel Connections



1. DC IN = Neutrik XLR-4M 12V - provides power to the unit when battery mounts are not in use (Pin 4-Pos; Pin1-GND).
2. HD-SDI OUT = BNC 75 ohms - HD-SDI video output with embedded audio.
3. HD-SDI IN = BNC 75 ohms - HD-SDI video input with embedded audio.
4. a. RS-232 = DB9 Standard Connector - controls the unit for updating firmware.
b. RS-422 = DB9 Connector - machine control (optional).
5. TIME CODE IN = BNC 75 ohms - Longitudinal time code.
6. TRIGGER = 3.5mm stereo audio jack (ring tip sleeve) – recording starts when toggle switch closes and stops when it opens.
Tip = Record Trigger
Ring = LED Output
Shank = GND
7. POWER = power switch that turns the unit on/off.

Front Panel Controls



LIVE MODE: To go into live mode press and hold STOP then press REC. LIVE is displayed on the LCD which indicates the unit is passing-thru video and is ready to record. Video format setting will be displayed.

RECORD MODE: To start recording press and hold REC and press PLAY. REC is displayed on the LCD with a time code sequence indicating the record process has been initiated and video data is being recorded onto the storage media.

STOP MODE: To stop record/play press the STOP button. STOP is displayed on the LCD which indicates the play function is terminated or LIVE is displayed on the LCD which indicates the record function is terminated.

PLAY MODE: To play a loaded clip, press the PLAY button. PLY is displayed on the LCD with a time code sequence indicating the time for the loaded clip.

REWIND MODE: To rewind a loaded clip press the REW button. REW is displayed on the LCD with a time code sequence.

TIME CODE DISPLAY: Displays the assigned time code for the frame in use.

DISK CAPACITY INDICATOR: Displays the percentage of disk space available.

PREV CLIP BUTTON: Press to review previously recorded clips.

NEXT CLIP BUTTON: Press to review the next recorded clip.

Main Menu

The Elite HD offers a menu of options and a variety of parameters used to operate the unit's functions. In order to access this menu the unit must be in LIVE Mode (press and hold STOP then press REC).

Load Clip Menu – Allows you to playback individual clips when connected to compatible HD monitor or editing system.

1. Press STOP to enter the Main Menu
2. Press any arrow to scroll to LOAD CLIP
3. Press STOP to enter menu
4. Press any arrow to scroll through the recorded clips. Please note the first clip will be named CLIP0000.
5. Press STOP to select a clip
6. Press REC to exit the Main Menu – the clip name should be displayed on the bottom line of the LCD.
7. Press PLAY to start the clip.
8. Press REW to rewind through each frame (plays clip in reverse).

Unload Clip Menu – Allows you to return to record mode after playing back an individual clip.

1. Press STOP to enter the Main Menu
2. Press any arrow to scroll to UNLOAD CLIP
3. Press STOP to unload clip
4. Press REC to exit Main Menu – "Selected Video Format" should be displayed on the bottom line of the LCD to show that no clips are loaded.

Delete All Clips Menu – Allows you to format an entire drive.

1. Press STOP to enter the Main Menu
2. Press any arrow to scroll to DELETE ALL CLIPS
3. Press STOP to select the menu
4. Press STOP to confirm the formatting process – the LCD will display a "Please Wait" message indicating the drive is being formatted.
5. Once completed press REC to exit Main Menu – the drive indicator % will display 100%.

Delete Clip Menu – Allows you to delete individual clips.

1. Press STOP to enter the Main Menu
2. Press any arrow to scroll to DELETE CLIP
3. Press STOP to select menu
4. Press any arrow to scroll through individual clips
5. Press STOP to select clip
6. Press STOP to confirm the formatting process – the LCD will display a "Please Wait" message during the deletion process
7. Once completed press REC to exit Main Menu

Set Video Format Menu – Allows you to choose the recording format being received. NOTE: The selected video format will appear on the LCD during the LIVE/REC modes and will be retained throughout power cycles.

1080i/59.94
1080i/60.00
1080i/50.00
1080s/23.98
1080s/24.00
720p/59.94
720p/60.00
720p/50.00
720p/23.98
720p/24.00

To change the video settings follow the below steps:

1. Press STOP to enter the menu
2. Press any arrow to scroll to SET VIDEO FORMAT
3. Press stop to enter video format menu
4. Press any arrow to scroll through the different video format options
5. Press STOP to set the video format – the LCD will display "Set".
6. Press REC to exit the Set Video Format menu.
7. Press REC to exit the Main Menu.

Update Firmware Menu– Allows you to update and verify firmware version (see updating firmware instructions on page 13).

Lock Keypad Menu– Allows you to lock the keypad during the record or play process.

1. Press STOP to enter the Main Menu
2. Press any arrow to scroll to LOCK KEYPAD
3. Press STOP to select menu
4. Press STOP to confirm command
5. Press REC to exit Main Menu
6. Press REC to start recording with the keypad locked or have clip loaded to press play or rewind.

Unlock Keypad -

1. Press and hold STOP then press REC to unlock keypad.
2. Press STOP to stop recording and return to LIVE mode.

File Management Software

Please note the File Management Software is only compatible with MAC operating systems and needs to be used in conjunction with QuickTime components which allow you to use any QuickTime application to open and convert FFV files (i.e. QuickTime Player, iMovie, Final Cut Pro, etc.).

Recommended MAC Specifications:

8 Core / 2.8 GHz / 10GB or better provides optimal software performance.

Minimum MAC Specifications:

Dual Core at least OSX 10.4

Installing File Management Software

1. Unzip FFV Installer
2. Open FFV Installer Program
3. Install Fast Forward QuickTime Components Menu will be displayed (see figure 1) - click CONTINUE.
4. Select destination of program - click CONTINUE
5. Select installation type - click UPGRADE (see figure 2)
6. In order to install you may need to enter an administration password
7. The installation process will be initiated
8. The "Finish Up Menu" will be displayed notifying you of completed installation - click CLOSE

Using File Management Software

1. Connect drive through USB to any USB connector on your system. (Please note: the drive cannot be powered through the keyboard USB.)
2. Sort files by RM files - these files contain the footage. All other files on the drive are not video files, and therefore, are not playable. (Please Note: depending on your computer's capabilities it may be faster to move the RM files to your desktop.)

File Naming Convention:

The files containing video are using RMAAABB.fv, the incrementing default "RM0000", and 'AAAA' and 'BB' are hexadecimal numbers. The numbers are added at the end of the long filename to differentiate files of the same clip when the drive space required exceeds the FAT32 2GB file size limitation. Long video clips will span file boundaries. The filenames will indicate sequential files in a clip by incrementing the digits 'AAAABB' in ascending numbers for each file in one clip.

3. a. To edit video files click and drag RMxxx.fv files to a sequence line. Edit video. Render video to your specification.
b. To view video files open RMxxx.fv file within appropriate viewer. Export file to specifications.



Figure 1

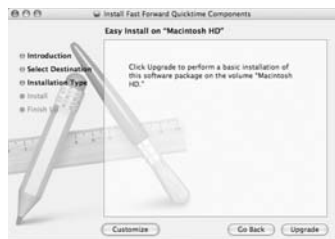


Figure 2

Updating Firmware

New features for the Elite HD are posted to our website as they become available. Our customers have access to these features via firmware updates for the lifetime of the product. Please check this site regularly to implement the newest changes.

Firmware updates are located at www.ffv.com on the Technical Support page.

Locate the latest revision of firmware – filename xxx.fud. Download and unzip the files.

Connect the Elite HD to your computer:

1. Connect DB9 cable from the RS-232 port located on the rear panel of the Elite HD
2. Connect the DB9 cable to the 9 pin serial port of your computer.

If the computer does not provide a 9 pin serial port, a USB to Serial device is necessary – Keyspan makes an inexpensive one that usually works well.

Hyper Terminal Set-up:

On your host computer, open up the Hyper Terminal folder from the Start Menu, there should be an icon for setting up a new control called Hypertrm.

1. CONNECTION DESCRIPTION: FFV, choose an Icon, OK
2. PHONE NUMBER: Enter any phone number; choose a communication device, OK
3. CONNECT: Cancel
4. CONFIGURE /CONNECTION / CONNECTION PREFERENCES:
BITS PER SECOND: 57600
DATA BITS: 8
PARITY: NONE
STOP BITS: 1
FLOW CONTROL: NONE
5. FILE / PROPERTIES / SETTINGS:
FUNCTION: terminal keys,
EMULATION: ANSI,
BACKSCROLL BUFFER LINES: 500

Sending the Firmware to the Elite HD

On the front panel of the Elite HD, enter main menu and go to update firmware menu. Press STOP to see existing firmware date, press STOP to initiate update. The Elite HD will send a message to your computer: Begin your CRC Xmodem transfer now: locate the file by clicking on browse and send it, when it has been transferred you will receive the message: successful completion.

TURN OFF the Elite HD, wait a moment, TURN ON the Elite HD, allow it to boot up completely.

Specifications

VIDEO INPUT

Digital Input:	HD-SDI
Standards:	SMPTE 274M (1080i) SMPTE 296M (720p)
Supported Resolutions:	1080i/29.97/25 (1920 x 1080i/59.94/50/2:1 Interlace) 1080s/23.98/24.00 720p/59.94/50 (1280 x 720/59.94/50/Progressive) 720p/23.98/24.00 Supports 4:3 or 16:9 aspect ratio
Connections:	BNC 75 ohms

AUDIO INPUT / OUTPUT

Digital Input/Output:	8 Channels embedded HD-SDI
Connections:	BNC connectors unbalanced

AUDIO SPECIFICATIONS

Resolution:	24 bits
Audio Channels:	HD embedded 8 in 8 out
Sampling Rate:	48 KHz

TRIGGER	3.5mm stereo audio jack (Ring tip sleeve)
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RS-232	Software update connection
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RS-422 (optional)	Machine control (replaces RS-232)
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HARD DRIVES

Maximum Hard Drive:	1 Removable
Supported Hard Drive:	2.5" SATA Drive Hitachi/WD/Seagate Enclosure: Supports 9.5mm drive height

TIME CODE

SMTE/EBU	Longitudinal (LTC)
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VIDEO COMPRESSION

Method:	Motion JPEG2000
Bit Rate:	HD:100Mbit/s

WARRANTY	1 year
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GENERAL

Physical Dimensions:	4.625"H x 8" W x 2" D
Weight:	1.25 lbs
Power Consumption:	10.8W
Power Connection:	XLR-4M

**Specifications subject to change without notice*

Limited Warranty

12 – MONTH LIMITED WARRANTY

Fast Forward Video, Inc. warrants to the original purchaser that the product (Hardware and components) shall be free from defects in material and workmanship for a period of 1 year from the date of purchase. If a defect covered by this warranty occurs during this 1 year period, Fast Forward Video, Inc. will repair or replace the defective product or component, at its option, free of charge.

WARRANTY LIMITATIONS

THIS WARRANTY SHALL NOT APPLY IF THIS PRODUCT: (a) IS DAMAGED BY NEGLIGENCE, ACCIDENT, MISUSE, OR BY OTHER CAUSES UNRELATED TO DEFECTIVE MATERIALS OR WORKMANSHIP; OR (b) HAS HAD THE SERIAL NUMBER ALTERED, DEFACED, OR REMOVED.

ANY APPLICABLE IMPLIED WARRANTIES ARE HEREBY LIMITED IN DURATION TO THE WARRANTY PERIOD DESCRIBED ABOVE. IN NO EVENT SHALL FAST FORWARD VIDEO, INC. BE LIABLE FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES RESULTING FROM THE BREACH OF ANY IMPLIED OR EXPRESS WARRANTIES. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR EXCLUSION OF CONSEQUENTIAL OR INCIDENTAL DAMAGES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.



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