datavideo
Sharing the Value

DV / HDV RECORDER

DN-500

Instruction Manual

www.datavideo-tek.com

Table of Contents

⚠ Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your Datavideo dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.
9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord's rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.
11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.
13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
    a. When the power cord is damaged or frayed;
    b. When liquid has spilled into the unit;
    c. When the product has been exposed to rain or water;
    d. When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;
    e. When the product has been dropped or the cabinet has been damaged;
    f. When the product exhibits a distinct change in performance, indicating a need for service.

To avoid any possible static damage to your equipment please ensure your camcorder / deck is switched off when connecting or disconnecting the IEEE-1394 cable.

IEEE-1394 pin Power; ensure the connector is inserted the correct way around otherwise short circuit damage may result to either the computer or the DN-500 port.

Warranty

Standard Warranty

- Datavideo equipment is guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered by this warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- Cables & batteries are not covered under warranty.
- Warranty only valid within the country or region of purchase.
- Your statutory rights are not affected.

Two Year Warranty

- All Datavideo products purchased after 01-Oct.-2008 qualify for a free one year extension to the standard Warranty, providing the product is registered with Datavideo within 30 days of purchase. For information on how to register please visit www.datavideo-tek.com or contact your local Datavideo office or authorized Distributors
- Certain parts with limited lifetime expectancy such as LCD Panels, DVD Drives, Hard Drives are only covered for the first 10,000 hours, or 1 year (whichever comes first).

Any second year warranty claims must be made to your local Datavideo office or one of its authorized Distributors before the extended warranty expires.

Disposal

For EU Customers only - WEEE Marking

This symbol on the product indicates that it should not be treated as household waste. It must be handed over to the applicable take-back scheme for the recycling of Waste Electrical and Electronic Equipment. For more detailed information about the recycling of this product, please contact your local Datavideo office.

Packing List

Items	Description	Q'ty
1	DN-500 DV / HDV Hard Disk Recorder	1
2	Power Supply (12V)	1
3	Mains Cable(AC Cord)	1
4	HE-1 Removable 2.5" HDD Enclosure	2
5	Y Type USB Cable 45cm	1
6	M3 X 4 mm Screws	10
7	2.0 X 6 mm Screws	2
8	HD Label	2
9	SD Label	2
10	Label	4
11	L Type 1U mounting brackets for 19" rack	2
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*The HE-1 Drive Caddy may be supplied empty or with drive already fitted please check with your dealer.

Introduction

The Datavideo DN-500 is a HDV / DV Hard Drive Recorder. It can record HDV via the IEEE-1394 (iLink, FireWire) output from HDV Camcorders (.m2t), or DV from DV or Analogue video sources (.dv). The DN-500 can be used as an external FireWire drive from which files can be dragged and dropped to a PC or MAC. The DN-500 has a built in utility to convert .dv files to .avi files, and is also supplied with DV File Converter software to allow conversion of .dv files to other file formats such Quicktime. The DN-500 has a removable hard drive in a caddy, this can be ejected from the unit and connected to a PC or MAC via USB to transfer the video files.

Features

- Stand Alone DV / HDV Hard Drive Recorder / Player with Removable HE-1 Drive caddy

Front Connections

- Headphone Mini Jack socket, IEEE-1394 socket

Rear Connections

- 2x IEEE-1394 ports, YUV (on BNC) In and Out, Black burst sync (on BNC)
- S-Video, Composite Video and Stereo Audio In / Out
- 2 x Mini XLR Inputs and Outputs for Balanced Audio Connection
- Records .DV files from IEEE-1394 (iLink, FireWire) port or Analogue Video Inputs.
- Files can be recorded in 16:9 or 4:3 aspect
- Records HDV (.m2t) files via IEEE-1394 (iLink, FireWire) port only
- Allows up to 999 tracks to be selected for playback/record
- Automatically records to an empty track if the current track number is already used
- Full VTR playback functionality, including loop playback
- RS-422 control via rear panel Sub D 9pin port
- Simple GPI input to trigger play/pause play or record/ record pause actions
- Drag and Drop file transfer to PC or MAC via IEEE-1394 connection in HDD mode
- Remove Caddy from unit then Drag and Drop file transfer to PC or MAC via USB connection

N.B. The DN-500 cannot be operated as an AVC Device - The AVC Command set is not supported.

How to fit a 2.5" SATA Hard Drive into the removable HE-1 Caddy

If your DN-500 does not come with a hard drive already fitted inside the removable caddy please follow these instructions to fit your own drive.

Please note the warnings on the removable caddy and only replace or install the hard drive from the USB end as indicated.

For up-to-date information about compatible hard drives please contact your local Datavideo Office.

1. Carefully remove the two screws from the cover at the connections end of the HE-1 caddy, then pull out the PCB.

2. Push the 2.5" SATA drive into the socket side of the PCB. turn the PCB over and use the 4 supplied screws to secure the drive to the PCB.
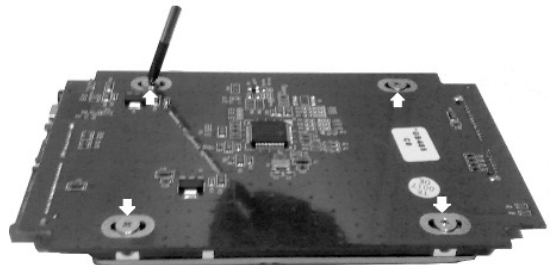
3. Slide the PCB and hard drive module into the HE-1 caddy the right way up using the guide slots.

The USB and SATA connections should be just visible at the open end of the HE-1 caddy.

4. Carefully replace the two screws to secure the cover to the end of the HE-1 caddy again.
Do NOT over tighten the screws.

Insert the caddy into the DN-500; USB and SATA connections end first as shown on the next page. When fully in lock the caddy into place by moving the locking lever to the left.

Connections & Controls

Front Panel
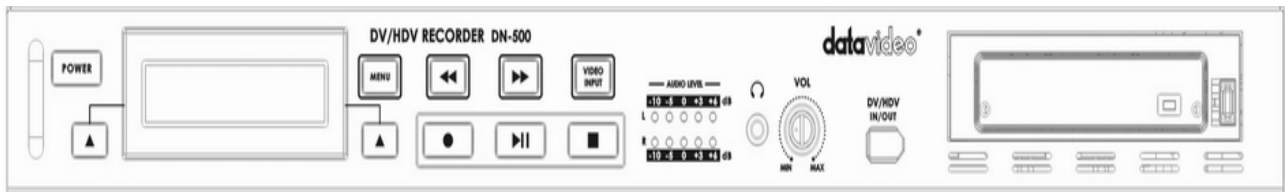
Power On / Off Button. This is a soft power on / off button which powers the unit on from a state of standby; the main power on / off switch is on the rear panel.

Display Panel. Displays the status of the DN-500. The display will show Track Number, timecode, or if the Menu Button is pressed the Menu Display.

Menu Button. This calls up the menu display which is navigated using the Fwd / Rew Buttons and Previous / Next Buttons

Fwd / Rew Buttons. In playback mode these buttons will operate as Fast Forward and Rewind Buttons. If the Menu Button is pressed these buttons will navigate backwards and forwards between the various menu options.

Video Input Button. Switches the DN-500 to Video Input (Component YUV / S-Video Y/C / Composite CVBS) – Analogue Video Inputs can only be recorded in DV formats. See *Operation with an analogue video source* for more details.

Previous / Next Buttons. These buttons navigate up and down between recorded tracks and menu options.

Record Button. Puts the DN-500 into Record Mode. To start recording press the Record Button and Play Button simultaneously. *N.B. Unit will not record if no video signal is present.*

Play / Pause Button. Starts playback of a track, or pauses playback of a track- status will be displayed on the Display Panel. Also Starts / Pauses a recording when unit is in Record mode.

Stop Button. Stops playback or record.
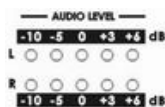
Audio Input Level LEDs

show the audio input levels from the incoming source.

The Audio Level Adjustment

allows you to adjust the headphones volume.

Accepts a stereo mini jack plug for stereo headphones. The headphone volume is controlled by the Audio Level Adjustments.

6 Pin DV In/Out Port. This is a convenient front mounted DV / IEEE-1394 Port for connection to a DV / HDV camcorder, or to a PC for file transfer.

2.5" Removable HDD Rack, SATA & USB interface connecting to a PC for file transfer.

Rear Panel
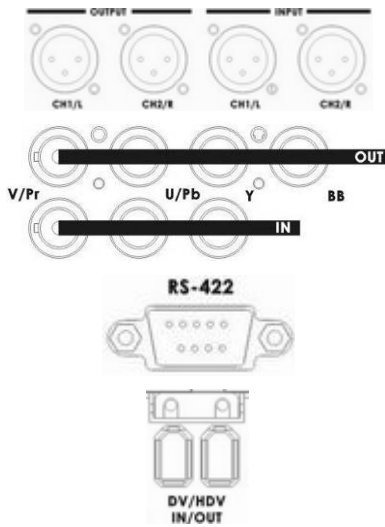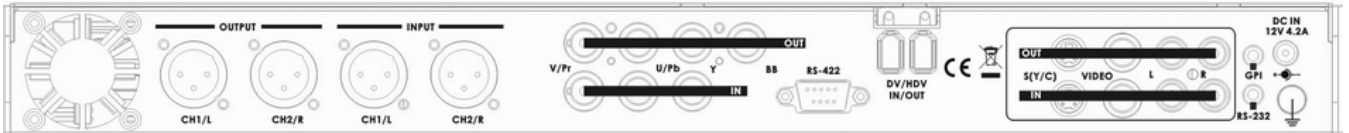
2 channels XLR Balanced Audio input & output.

Note: XLR and RCA Phono inputs can not be used at the same time.

Component YUV Video input & output, commonly used with Betacam, DVC Pro, some DVD Players.
Black Burst Output Can be used as a video reference source when synchronising other devices to the DN-500.

RS-422 Port. The DN-500 can be controlled via RS-422 from external devices. The DN-500 uses standard Sony protocol. Connect the RS-422 control cable to this port.

6 Pin DV In/Out Ports. Ports for connecting to a DV / HDV camcorder, or to a PC for file transfer.

S-Video / Composite Video and Stereo Audio In / Out. These are the standard connections for analogue video and audio signals. You can connect standard analogue video signals to the inputs and record them in DV format. A standard analogue video monitor could be connected to the output for simple record / playback monitoring of DV recordings.
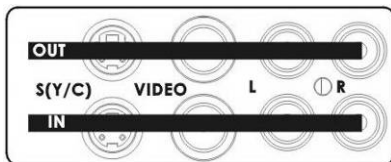
See Video Input Source Menu for more details.
N.B. Analogue Inputs & Outputs are only suitable for RAW DV (DV) operation - It is not possible to record or playback M2T (HDV) files via the Analogue Inputs / Outputs

The GPI socket can be used for simple external control. The DN-500 can accept pulse or level trigger inputs, which can trigger record or playback and pause commands *See GPI Mode & Function Menus for more details*.

RS-232 Socket. May be used for some firmware updates, or other future uses.

DC In Socket. Connect the supplied 12V 4.2A PSU to this socket. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket

Grounding Terminal. When connecting this unit to any other component, make sure that it is properly grounded by connecting this terminal to an appropriate point. When connecting, use the socket and be sure to use wire with a cross-sectional area of at least 1.0 mm2.

9

Powering On

Connect the DN-500 power supply to the DC In socket. Ensure the power cable is connected to a suitable mains socket.

Switch the power On/Off switch to the ON position

POWER Press the Power Button until it lights up

The LCD display panel should show DN-500 and after a few seconds the track display should appear and the DN-500 is ready to go

| Datavideo DN-500 | INITIALIZING........ MAIN SYSTEM | TRACK 01   00:00:00:00 PREVIOUS   ■   NEXT |

Menu Options

The DN-500 is a menu driven unit; there are 24 menus which are used to initially set up the unit. The menu settings are non-volatile (settings are stored even when the unit is switched off). So many of the settings, such as date and time, will only need to be set once. We will look at each individual menu in more detail, but here is a quick overview of them.

N.B. *Not all menu options appear when the Video Input Button is illuminated – ensure this is off.*

The 24 Menus are:

HDD MODE CANCEL ENTER

HDD MODE - This sets the DN-500 to HDD mode for drag and drop file transfers to a PC or MAC. *See HDD Mode Menu for more details.*

SETUP LOOP PLAY CANCEL ENTER

SETUP LOOP PLAY - Sets the DN-500 to loop play a track, the track will continuously loop until stopped.

SET POWERON AUTORUN CANCEL ENTER

SET POWER ON AUTORUN – Allows a chosen track to automatically start playing out at DN-500 power on.

RECORD FORMATS CANCEL ENTER

RECORD FORMATS - Sets the DN-500 record format to .dv for DV recordings or .m2t for HDV recording. *See Record Formats Menu for more details.*

FREE SPACE CANCEL ENTER

FREE SPACE - Displays how much HDD space is available on the DN-500.

TOTAL SPACE CANCEL ENTER

TOTAL SPACE - Displays the total available HDD storage on the DN-500.

INPUT VIDEO STANDARD CANCEL ENTER

INPUT VIDEO STANDARD - Sets the DN-500 video input to NTSC to PAL. *See Input Video Standard Menu for more details.*

NTSC SETUP LEVEL CANCEL ENTER

NTSC SETUP LEVEL - Sets the ire to 0 or 7.5 for NTSC. 7.5 ire is most commonly used in the U.S.A. and Canada and 0 ire in far eastern countries such as Japan. *See NTSC Setup Level Menu for more details.*

VIDEO INPUT SOURCE CANCEL ENTER

VIDEO INPUT SOURCE - The DN-500 has three types of Analogue Input - select between CVBS (Composite), Component (YPbPr) or S-Video (Y/C). *See Video Input Source Menu for more details.*

SET GPI TRIGGER MODE CANCEL ENTER

SET GPI TRIGGER MODE - The DN-500 has two GPI trigger modes, Pulse or Level trigger can be set. *See GPI Mode & Function Menus for more details.*

SELECT GPI FUNCTION - The GPI function can be set to either Play / Play Pause or Record / Record Pause. *See GPI Mode & Function Menus for more details.*

SET DATE & TIME - Sets the date and time on the DN-500; the setting is non-volatile so it is stored when the unit is powered off. *See Set Date & Time Menu for more details.*

SET DV TC. STAMP – When enabled allows the unit to record the Time Code stamp from a DV input.

SET FULL SYT - Occasionally DV devices can suffer from conflicts. In the event of the DN-500 conflicting with another device Set Full Syt is enabled to overcome the conflict.

FORMAT HARD DISK - Formats the HDD and removes all files and tracks from the DN-500. *See Format Hard Disk Menu for more details.*

ERASE TRACK - Erases individual tracks from the DN-500. *See Erase Track Menu for more details.*

CONVERT DV TO AVI - Converts DV files to .AVI files for greater NLE compatibility. *See Convert DV to AVI Menu for more details.*

SET OUTPUT CHANNEL - Allows the output channel of the DN-500 to be switched to a different I.D. number. This is important if there are any conflicts between DV Devices. *See Set Output Channel Menu for more details.*

HDD SURFACE SCAN - Checks the HDD for errors / bad sectors. This is only necessary if your DN-500 is not performing correctly, or you install a new HDD. A result.txt file is created in the root directory of the HDD, this can be viewed from a PC.

REC. 16:9 DV STREAM – Allows the user to enable or disable 16:9 recording from a DV stream or DV input. If disabled then the track recorded will default to 4:3 aspect when viewed with other devices.

SELECT 16:9 MODE – Allows the user to choose between 16:9 Anamorphic and 16:9 Letterbox modes when recording tracks.

HDD MODE CABLE LEN.
The DN-500 unit has two types of cable mode that can be set when connecting the DN-500 unit to either a PC or MAC.
LONG DISTANCE CABLE - If your IEEE 1394 cable length $\leqq$ 20 M
SHORT DISTANCE CABLE - If your IEEE 1394 cable length $\leqq$ 1.8 M

POWER ON DEFAULT – Allows the user to choose the default recording mode at power on. The user can choose between DV/HDV Input or an Analogue Input (**Video Input** button is On at start up).

FIRMWARE VERSION - Display the Firmware Version of the DN-500 for Mother Board (MB) and Front Panel (FP). Please register your unit with your local Datavideo office for updates on new firmware.

HDD Mode Menu

In addition to ejecting the hard drive caddy and connecting it to a PC or Mac via USB you can also connect the DN-500 directly to a computer via an IEEE-1394 *FireWire* connection.

Some important things to be aware of before using this feature of the DN-500. Connecting 2 or more IEEE-1394 devices to a computer at the same time may cause problems with the FireWire communication. To avoid this please remove any other IEEE-1394 connections from the DN-500 and the computer first. Also FireWire connections do not work reliably over long distances so keep the cable length short, under 5m. IEEE-1394 6pin Power; ensure the connector is inserted the correct way around otherwise short circuit damage may result to either the computer or the DN-500 port.

HDD Mode Menu will set the DN-500 up as an external IEEE-1394 (Firewire) drive, for direct drag and drop file transfer to a PC or MAC. The DN-500 drive will show up on the desktop of the MAC or the My Computer window of a Windows PC. The recorded files appear in the root directory of the DN-500 drive, and are numbered with the track number that appears in the LCD display when you are recording or playing back the track.

The DN-500 uses a FAT32 file structure, so large tracks are broken down into 2 GB files which are named in sequence. For example if Track 02 is 1 hour in duration it will appear as follows:

dv02.dv (2 GB)	-	dv02 is the file name for Track 02
dv02_01.dv (2 GB)	-	Each 2 GB section is given a sequential _xx numeric extension
dv02_02.dv (2 GB)		
dv02_03.dv (2 GB)		
dv02_04.dv (2 GB)		
dv02_05.dv (2 GB)		
dv02_06.dv (77 MB)	-	The last file in the sequence is likely to be smaller than 2GB.

Connecting to a PC / MAC

NB: Although your PC / MAC may see the DN-500 as an AVC compliant DV Device it is not intended to be operated as such. The AVC command set is not supported.

Connect the DN-500 IEEE-1394 output to a PC or MAC.
To set the DN-500 into HDD Mode firstly press the Menu button so that it is illuminated.
You will see the display change to the HDD Mode Menu.


```
HDD MODE
CANCEL          ENTER
```

Press the Next (▲) Button to select ENTER and the display will show the HDD Enable Confirmation Screen


```
ENABLE HDD MODE?
CANCEL          ENTER
```

Press the Next (▲) Button again to confirm, after a few seconds HDD Mode will be enabled


```
PLEASE WAIT...
```
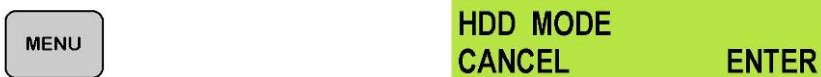
```
HDD MODE ENABLED
```

The PC / MAC should recognise that an external IEEE-1394 (Firewire)HDD has been connected. The DN-500 can then be used just like any external drive. ***See Connecting to a PC / Connecting to a MAC for more details.***
To return the DN-500 to Deck Mode either use "Safely Remove Hardware" with a PC, or with a MAC use "Eject" or Drag the DN-500 Drive to "Trash". Once un-mounted the DN-500 display will return to Track Display.

Record Formats Menu

The Record Formats Menu sets the recording format of the DN-500, you can choose between RAW DV (.DV) or M2T (HDV).

Raw DV can be recorded from a DV deck, camcorder, vision mixer with IEEE-1394 (iLink, FireWire, DV) output, or from an analogue video signal (Composite (CVBS), S-Video (Y/C), Component (YUV (YPbPr)).

M2T (HDV) can only be recorded from a camcorder, deck with an HDV signal via IEEE-1394 (iLink, FireWire), *it is not possible to record or play M2T files from an analogue connection on the DN-500*.

N.B. To view recorded M2T files set your HDV Camcorder / Deck to Recorder Mode. The DN-500 M2T files can then be played back to the camcorder viewfinder / monitor.

To select the Record Format: Press the Menu Button, to enter menu mode

| MENU | HDD MODE
CANCEL   ENTER |

Press the FWD (►►) Button to navigate the menus until RECORD FORMATS is displayed

| ►► | RECORD FORMATS
CANCEL   ENTER |

Press the Next (▲) Button to enter the RECORD FORMAT set up menu

| ▲   (▲) | RAW DV (DV)   ►
CANCEL   SELECT |

Press the FWD (►►) Button to select either RAW DV (DV) or M2T (HDV)

| ►► | RAW DV (DV)   ►
CANCEL   SELECT | M2T (HDV)   ►
CANCEL   SELECT |

To confirm your selection and exit the menu press the Next (▲) button.

| ▲   (▲) | RAW DV (DV)   ►
CANCEL   SELECT | RECORD FORMATS
CANCEL   ENTER |

Then press the Menu Button to leave menu mode

| MENU | RECORD FORMATS
CANCEL   ENTER | TRACK 01   00:00:00:00
PREVIOUS   ■   NEXT |

Input Video Standard Menu

The Input Video Standard Menu sets the DN-500 to receive either **NTSC** or **PAL** video signals.

To select the Input Video Standard:
Press the Menu Button, to enter menu mode

| MENU | HDD MODE
CANCEL   ENTER |

Press the FWD (►►) Button to navigate the menus until INPUT VIDEO STANDARD is displayed

| ►► | INPUT VIDEO STANDARD
CANCEL   ENTER |

Press the Next (▲) Button to enter the INPUT VIDEO STANARD set up menu

| ▲   (▲) | PAL   ►
CANCEL   SELECT |

Press the FWD (►►) Button to select either PAL or NTSC


```
PAL               ►
CANCEL      SELECT
```

```
NTSC              ►
CANCEL      SELECT
```

To confirm your selection and exit the menu press the Next (▲) button.
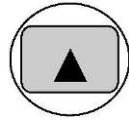

```
PAL               ►
CANCEL      SELECT
```

```
INPUT  VIDEO  STANDARD
CANCEL        ENTER
```

Then press the Menu Button to leave menu mode


```
INPUT  VIDEO  STANDARD
CANCEL        ENTER
```

```
TRACK 01      00:00:00:00
PREVIOUS    ■   NEXT
```

NTSC Setup Level Menu

The NTSC Setup Level Menu sets the DN-500 either 0 IRE or 7.5 IRE. **This is not necessary for PAL inputs**. 7.5 IRE is most commonly used in the U.S.A. and Canada and 0 IRE in far eastern countries such as Japan. If you are unsure which to set, please consult your dealer.

To select the NTSC Level:
Press the Menu Button, to enter menu mode


```
HDD MODE
CANCEL      ENTER
```

Press the FWD (►►) Button to navigate the menus until NTSC SETUP LEVEL is displayed


```
NTSC  SETUP  LEVEL
CANCEL        ENTER
```

Press the Next (▲) Button to enter the NTSC level set up menu
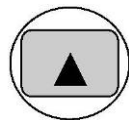

```
7.5  IRE          ►
CANCEL         SET
```

Press the FWD (►►) Button to select either 0 IRE or 7.5 IRE


```
0  IRE            ►
CANCEL         SET
```

```
7.5  IRE          ►
CANCEL         SET
```

To confirm your selection and exit the menu press the Next (▲) button.
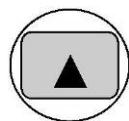

```
0  IRE            ►
CANCEL         SET
```

```
NTSC  SETUP  LEVEL
CANCEL        ENTER
```

Then press the Menu Button to leave menu mode


```
NTSC  SETUP  LEVEL
CANCEL        ENTER
```

```
TRACK 01      00:00:00:00
PREVIOUS    ■   NEXT
```

Video Input Source Menu

The Video Input Source Menu sets the analogue input mode of the DN-500.
The DN-500 has Composite (CVBS), S-Video (Y/C) and Component (YPbPr) analogue inputs.

N.B. It is only possible to record RAW DV (.DV) from the analogue inputs – HDV(.M2T) files can only be recorded from a HDV source via the IEEE-1394 (iLink, FireWire) port.

To select the Video Input Source:
Press the Menu Button, to enter menu mode

MENU

```
HDD  MODE
CANCEL           ENTER
```

Press the FWD (►►) Button to navigate the menus until VIDEO INPUT SOURCE is displayed

►►

```
VIDEO  INPUT  SOURCE
CANCEL           ENTER
```

Press the Next (▲) Button to enter the VIDEO INPUT SOURCE set up menu

▲   ▲
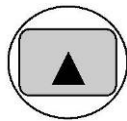
```
CVBS (COMPOSITE)      ►
CANCEL          SELECT
```

Press the FWD (►►) Button to select either Composite, Component or S-Video

►►

```
CVBS (COMPOSITE)      ►
CANCEL        SELECT
```
```
COMPONENT (YPbPr)     ►
CANCEL        SELECT
```
```
S - VIDEO (Y / C)      ►
CANCEL          SELECT
```

To confirm your selection and exit the menu press the Next (▲) button.

▲   ▲
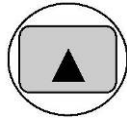
```
CVBS (COMPOSITE)      ►
CANCEL          SELECT
```
```
VIDEO  INPUT  SOURCE
CANCEL           ENTER
```

Then press the Menu Button to leave menu mode

MENU

```
VIDEO  INPUT  SOURCE
CANCEL           ENTER
```
```
TRACK 01       00:00:00:00
PREVIOUS       ■   NEXT
```

GPI Mode & Functions Menus

The DN-500 can be set to receive either pulse or level GPI triggers, which can be set to activate Play / Pause or Rec / Pause.

To select the GPI Mode:
Press the Menu Button, to enter menu mode

| MENU | HDD MODE
CANCEL   ENTER |

Press the FWD (►►) Button to navigate the menus until SET GPI TRIGGER MODE is displayed

| ►► | SET GPI TRIGGER MODE
CANCEL   ENTER |

Press the Next (▲) Button to enter the SET GPI TRIGGER MODE menu

| ▲   ▲ | PULSE TRIGGER   ►
CANCEL   SELECT |

Press the FWD (►►) Button to select either Pulse Trigger or Level Trigger

| ►► | PULSE TRIGGER   ►
CANCEL   SELECT | LEVEL TRIGGER   ►
CANCEL   SELECT |

To confirm your selection and exit the menu press the Next (▲) button.
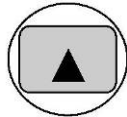
| ▲   ▲ | PULSE TRIGGER   ►
CANCEL   SELECT | SET GPI TRIGGER MODE
CANCEL   ENTER |

Then press the Menu Button to leave menu mode

| MENU | SET GPI TRIGGER MODE
CANCEL   ENTER | TRACK 01   00:00:00:00
PREVIOUS   ■   NEXT |

Select the GPI Function

Press the Menu Button, to enter the menu mode

Press the FWD (►►) Button to navigate the menus until SET GPI FUNCTION is displayed

| ►► | SELECT GPI FUNCTION
CANCEL   ENTER |

Press the Next (▲) Button to enter the SET GPI FUNCTION menu
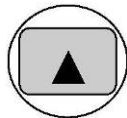
| ▲   ▲ | PLAY/PLAY PAUSE   ►
CANCEL   SELECT |

Press the FWD (►►) Button to select either Pulse Trigger or Level Trigger

| ►► | PLAY/PLAY PAUSE   ►
CANCEL   SELECT | RECORD/RECORDPAUSE►
CANCEL   SELECT |

To confirm your selection and exit the menu press the Next (▲) button.
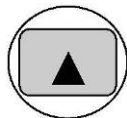
| ▲   ▲ | RECORD/RECORDPAUSE►
CANCEL   SELECT | SELECT GPI FUNCTION
CANCEL   ENTER |

Then press the Menu Button to leave menu mode

| MENU | SELECT GPI FUNCTION
CANCEL   ENTER | TRACK 01   00:00:00:00
PREVIOUS   ■   NEXT |

Set Date & Time Menu

To set the Date & Time on the DN-500

Press the Menu Button, to enter menu mode

MENU	HDD MODE
	CANCEL ENTER
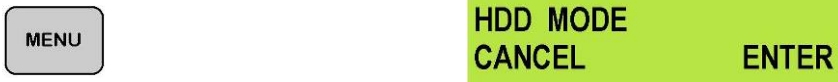
Press the REW (◄◄) Button to navigate the menus until SET DATE & TIME is displayed

◄◄	SET DATE & TIME
	CANCEL ENTER

Press the Next (▲) Button to enter the SET Date & Time menu

▲	▲	16 Feb 2007 12:00
		CANCEL SET

You will see a flashing cursor on the date value.
To set the date use the Play/Pause Button to increase the value or the Stop Button to decrease the value

▶II   Increases Value   ■   Decreases Value

Use the FWD (►►) Button to move the cursor to the next column to the right i.e. Month / Year / Hours / Minutes or the REW (◄◄) Button to move the cursor back to the left.

►►   Moves the cursor to the right   ◄◄   Moves the cursor to the left

Once you have set the date & time press the Next (▲) Button to exit the menu

▲	▲	16 Oct 2007 14:30	SET DATE & TIME
		CANCEL SET	CANCEL ENTER

Then press the Menu Button to leave menu mode

MENU	SET DATE & TIME	TRACK 01 00:00:00:00
	CANCEL ENTER	PREVIOUS ■ NEXT

Set Full Syt Menu

DV devices can sometimes conflict with one another, it is not a common occurrence but it can happen. When conflicts occur one DV device may not recognize the other, or the output from one is switched off by the other. "Set Full Syt" will overcome conflicts of this type, so if you have a conflict with another DV device switch Set Full Syt to Enable. *See also Set Channel Output menu.*

Press the Menu Button, and use the REW (◄◄) Button to navigate to SET FULL SYT

MENU	◄◄	SET FULL SYT
		CANCEL ENTER

Press the Next (▲) Button to select Enable and then press it again to exit the menu.

▲	▲	ENABLE ►	▲	▲	SET FULL SYT
		CANCEL SET			CANCEL ENTER

Then press the Menu Button to leave menu mode

MENU	SET FULL SYT	TRACK 01 00:00:00:00
	CANCEL ENTER	PREVIOUS ■ NEXT

Format Hard Disk Menu

Format Hard Disk will remove all tracks from the hard drive.

Press the Menu Button, to enter menu mode

[MENU]

```
HDD MODE
CANCEL          ENTER
```

Press the REW (◄◄) Button to navigate the menus until FORMAT HARD DISK is displayed

[◄◄]

```
FORMAT  HARD  DISK
CANCEL          ENTER
```

Press the Next (▲) Button to enter the FORMAT HARD DISK menu

[▲]   (▲)

```
ARE  YOU  SURE ?
CANCEL          ENTER
```

You will see ARE YOU SURE? displayed
Press the Next (▲) Button again to confirm that you want to format the hard disk.

[▲]   (▲)

```
FORMATTING  HARD  DISK
       WAITING .....
```

```
FORMAT  DONE
       REBOOT SYSTEM
```
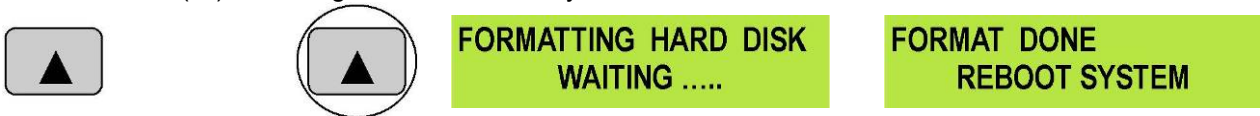
After a few seconds the DN-500 will reboot and the display will return to normal

```
INITIALIZING........
   MAIN SYSTEM
```

```
TRACK 01      00:00:00:00
PREVIOUS      ■    NEXT
```

Erase Track Menu

Erase Track is used for deleting individual tracks from the DN-500.

Press the Menu Button, to enter menu mode

[MENU]

```
HDD MODE
CANCEL          ENTER
```

Press the REW (◄◄) Button to navigate the menus until ERASE TRACK is displayed

[◄◄]

```
ERASE  TRACK
CANCEL          ENTER
```

Press the Next (▲) Button to enter the ERASE TRACK menu

[▲]   (▲)

```
TRACK 01      00:00:10:15
CANCEL          ERASE
```

Use the FWD (►►) or REW (◄◄) Button to select the track that you want to erase - (Track 01 in this case)

[◄◄] [►►]

```
TRACK 01      00:00:10:15
CANCEL          ERASE
```

Press the Next (▲) Button to erase the selected track - The track duration will return to 00:00:00:00

[▲]   (▲)

```
TRACK 01      00:00:10:15
CANCEL          ERASE
```

```
TRACK 01      00:00:00:00
CANCEL          ERASE
```

Then press the Menu Button to leave menu mode

[MENU]

```
TRACK 01      00:00:00:00
CANCEL          ERASE
```

```
TRACK 01      00:00:00:00
PREVIOUS      ■    NEXT
```

Convert DV to AVI Menu

The DN-500 has a built in file conversion utility which can convert .dv files to .avi files (type 1 or type 2). You can choose the format that best suits your Non Linear Editing platform.

HDV (.M2T) Tracks cannot be converted to .avi files by the DN-500 or with the supplied software.

N.B. The DN-500 requires enough free drive space to create a similar size .avi file. For example a 1 GB .dv file will require at least another 1 GB of free space on the DN-500 drive for the .avi file to be created. The converted AVI file will not be displayed on the track list, but it will be available to drag and drop to a computer for editing etc.

The conversion takes about 60% realtime, i.e. A 1 hour track will take around 36 minutes to convert.
N.B. You can convert files more quickly using the DV File Converter program that is supplied with the DN-500, see page 32 for more details.
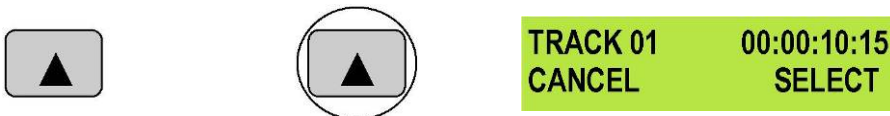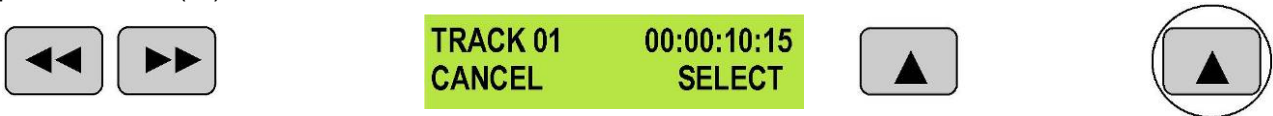
Press the Menu Button, to enter menu mode

| MENU | HDD MODE |
| | CANCEL   ENTER |

Press the REW (◄◄) Button to navigate the menus until CONVERT DV TO AVI is displayed

| ◄◄ | CONVERT DV TO AVI |
| | CANCEL   ENTER |

Press the Next (▲) Button to enter the CONVERT DV TO AVI menu

| ▲ | ▲ | TRACK 01   00:00:10:15 |
| | | CANCEL   SELECT |

Use FWD (►►) or REW (◄◄) to select the track that you want to convert - (Track 01 in this case) - Then press the Next (▲) Button to confirm the selection.

| ◄◄ | ►► | TRACK 01   00:00:10:15 | ▲ | ▲ |
| | | CANCEL   SELECT | | |

Use FWD (►►) or REW (◄◄) to select AVI Type-1 or Type-2 and then press the Next (▲) Button to confirm the selection.

| ◄◄ | ►► | AVI TYPE - 1 | ▲ | ▲ |
| | | CANCEL   SELECT | | |

The conversion process will start - once complete CONVERSION DONE will be displayed

| CONVERT TRACK01 TO | CONVERT TRACK01 TO | CONVERSION IS DONE ! |
| AVI TYPE-2   >   0% | AVI TYPE-2   -   99% | OK |

Press the Next (▲) Button to select OK - and then press the Menu Button to exit.

| ▲ | ▲ | CONVERT DV TO AVI | MENU | TRACK 01   00:00:00:00 |
| | | CANCEL   ENTER | | PREVIOUS   ■   NEXT |

Set Output Channel Menu

Occasionally DV device outputs will conflict. It is not a frequent occurrence but when it happens it is possible to change the Output Channel of the DN-500 to overcome the conflict. For example if another DV device has the same output channel as the DN-500 this will result in a conflict, which will mean that the DN-500 output is blocked. Please change the output channel of the DN-500 to solve the problem.

The default output channel of the DN-500 is 1, this is fine for recording from a DV Device and monitoring / playing back to an analogue monitor. However, if you want to output DV from the DN-500 into another DV Device you may need to select channel 63 here instead.

N.B. When the DN-500 is set to channel 63 you cannot playback a track to analogue outputs, until the connected DV device (camera, mixer etc) is switched off or disconnected.
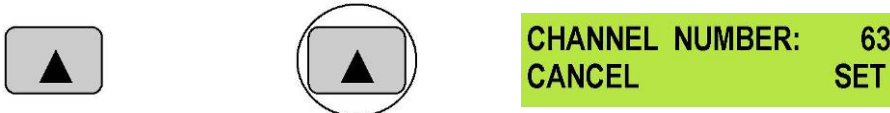
Press the Menu Button, to enter menu mode

MENU	HDD MODE
	CANCEL ENTER

Press the REW (◄◄) Button to navigate the menus until SET OUTPUT CHANNEL is displayed

◄◄	SET OUTPUT CHANNEL
	CANCEL ENTER

Press the Next (▲) Button to enter the SET OUTPUT CHANNEL menu

▲ ▲	CHANNEL NUMBER: 63
	CANCEL SET

Use FWD (►►) or REW (◄◄) to change the output channel number - in this case we have selected 1

◄◄ ►►	CHANNEL NUMBER: 1
	CANCEL SET

Press the Next (▲) Button to confirm the setting

▲ ▲	SET OUTPUT CHANNEL
	CANCEL ENTER

Then press the Menu Button to leave menu mode

MENU	SET OUTPUT CHANNEL	TRACK 01 00:00:00:00
	CANCEL ENTER	PREVIOUS ■ NEXT

Scan HDD Surface Menu

Hard Disk Drive Surface scan is a utility which checks the disc surface for errors and bad sectors. It is not generally necessary to use Surface Scan unless your DN-500 is not performing correctly, or you have changed the removable drive. *This process can take a long time to complete depending on the drive size.*
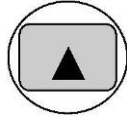
To run Surface Scan press the Menu Button to enter menu mode.

MENU	HDD MODE
	CANCEL ENTER

Press the REW (◄◄) Button to navigate the menus until SCAN HDD SURFACE is displayed

◄◄	HDD SURFACE SCAN
	CANCEL ENTER

Press the Next (▲) Button twice to start the HDD Surface Scan.

ARE YOU SURE ?
CANCEL   ENTER

HDD SURFACE SCAN
SCANNING >   1% DONE

The progress of the scan will appear in the LCD display. Once complete the Surface Scan Done message will appear. Press the Next (▲) Button to exit the surface scan.

HDD SURFACE SCAN
SCANNING >   1% DONE

SURFACE SCAN DONE!
CHECK RESULT .T XT OK

A txt file called Result will have been created in the root directory of the DN-500 HDD, this can be accessed via a PC, by connecting the DN-500 as a HDD.

Operation with a DV Camcorder / Deck / Vision Mixer

Recording a track
To record from a DV Camcorder / Deck / Vision Mixer connect the DV device to the DN-500 via an IEEE-1394 (iLink, FireWire) cable. You can connect to either of the rear 6 Pin ports, or to the front mounted 6 Pin port. Remember to plug the IEEE-1394 cable connector in the correct way around and only connect one DV device to the DN-500 at a time.

N.B. To avoid any possible static damage please ensure your camcorder is switched off when connecting / disconnecting the IEEE-1394 cable.
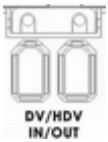
Rear Mounted DV 6 Pin Ports

Front mounted DV 6 Pin Port

Use the Next / Previous Buttons to select an empty track from the DN-500 track list, one that shows a duration of 00:00:00:00 in the LCD display.

TRACK 02   01:25:12:09
PREVIOUS   ■   NEXT

Not suitable - Track has been recorded

TRACK 01   00:00:00:00
PREVIOUS   ■   NEXT

Suitable - Track is empty

Press both the Record and Play/Pause Buttons simultaneously and the DN-500 should start recording.

 +

TRACK 01   00 : 00 : 01 : 05
                ●

The counter should start counting and the REC symbol should appear

To release pause press the Play/Pause button again.

TRACK 01   00 : 00 : 05 : 19
                ●

The counter should start counting again and the REC symbol should return

If it does not start recording check the following:

There is a DV signal coming from the DV device.

The Video Input Button on the DN-500 front panel is not illuminated.

The DN-500 Record Format is set to RAW DV (DV), and not set to M2T (HDV) *see Record Formats Menu.*

The track you have selected on the DN-500 is empty. The counter next to the Track Number on the LCD display should be showing 00:00:00:00.

Go to the FREE SPACE Menu and check that the DN-500 drive is not full.

The IEEE-1394 cable is not too long, disconnected or damaged. *See also Set full syt menu.*

During record you can Pause the DN-500 by pressing Play/Pause key, the counter on the display will stop.

The counter should stop counting and the REC PAUSE symbol should appear

To release pause press the Play/Pause button again.

The counter should start counting again and the REC symbol should return

N.B. It is not possible to stop recording and then restart on the same track, once a track has been stopped you must select a new empty track from the DN-500 to start recording again.

Playing a DV Track

Tracks that have been recorded in RAW DV (DV) mode can be played back to DV devices via one of the IEEE-1394 ports, or to analogue monitors or recorders via the Composite, S-Video (Y/C) or Component (YUV) video outputs.

To play a track back to a camcorder you will need to switch the camcorder to recorder / edit mode, so that it is receiving a signal from the DV port. - Please consult your camcorder instruction manual for more details.

Use the Previous (▲) / Next (▲) Buttons to select the track you want to play, and then press the Play (►II) Button.


It is also possible to set the DN-500 to loop play. In loop play the track will seamlessly looped until stopped. To set up loop play press the Menu Button to enter menu mode and then the FWD (►►) Button until SETUP LOOP PLAY is displayed.

Press the Next (▲) Button to enter the setup loop play menu, and then press the FWD (►►) Button to select ENABLE
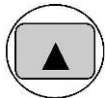
Press the Next (▲) Button to select SET and then press the Menu Button to return to track display.
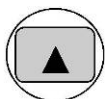
When you press play the selected track will start playing, and will loop until the Stop (■) Button is pressed. To cancel loop playback, follow the above procedure but select disable instead of enable.

N.B. To play a track from the DN-500 to a DV Device the output channel must be set to 63.

Operation with a HDV Camcorder / Deck

Recording a track

To record from a HDV Camcorder / Deck connect the HDV device to the DN-500 via an IEEE-1394 (iLink, FireWire) cable. You can connect to either of the rear 6 Pin ports, or to the front mounted 6 Pin port, but only connect one HDV device to the DN-500 at a time.

N.B. To avoid any possible static damage please ensure your camcorder is switched off when connecting / disconnecting the IEEE-1394 cable.
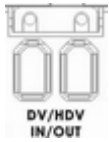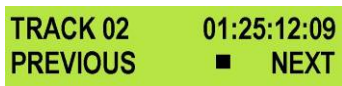
Rear Mounted DV 6 Pin Ports   Front mounted DV 6 Pin Port

Make sure that the DN-500 Record Format is et to M2T (HDV). *Please see Record Formats Menu for more details.*

Use the Next / Previous Buttons to select an empty track from the DN-500 track list, one that shows a duration of 00:00:00:00 in the LCD display.

| TRACK 02   01:25:12:09 |
| PREVIOUS   ■   NEXT |

Not suitable - Track has been recorded

| TRACK 01   00:00:00:00 |
| PREVIOUS   ■   NEXT |

Suitable - Track is empty

Press both the Record and Play/Pause Buttons simultaneously and the DN-500 should start recording.

| TRACK 01   00 : 00 : 01 : 05 |
| ● |

The counter should start counting and the REC symbol should appear

If it does not start recording check the following:

There is a HDV signal from the HDV device. Some camcorders have options to put out DV or HDV via their IEE-1394 (iLink) ports, make sure the output is set to HDV.

The Video Input Button is not illuminated

The DN-500 Record Format is set to .M2T (HDV). *See Record Formats Menu.*

The track you have selected on the DN-500 is empty. The counter next to the Track Number on the LCD display should be showing 00:00:00:00.

Go to the FREE SPACE Menu and check that the DN-500 drive is not full.

The IEEE-1394 cable is not too long, disconnected or damaged. *See also Set full syt menu.*

During record you can pause the DN-500 by pressing the Play/Pause button, the counter on the LCD display will stop.

| TRACK 01   00 : 00 : 05 : 15 |
| ‖ ● |

The counter should stop counting and the REC PAUSE symbol should appear

To release pause press the Play/Pause button again.

| TRACK 01   00 : 00 : 05 : 19 |
| ● |

The counter should start counting again and the REC symbol should return

N.B. It is not possible to stop recording and then restart on the same track, once a track has been stopped you must select a new empty track from the DN-500 to start recording again.

Playing a M2T (HDV) Track

Tracks that have been recorded in M2T mode can only be played back to HDV devices via the IEEE-1394 ports.

N.B. It is <u>not</u> possible to playback M2T tracks to analogue monitors or recorders via the Composite, S-Video (Y/C) or Component (YUV) video outputs.

To play a track back to a camcorder you will need to switch the camcorder to recorder / edit mode, so that it is receiving a signal from the HDV port. - Please consult your camcorder instruction manual for more details.

Use the Previous (▲) / Next (▲) Buttons to select the track you want to play, and then press the Play (►II) Button.

| ▲ | | ▲ | | TRACK 02   01:25:12:09
PREVIOUS   ■   NEXT | | ►II |

It is also possible to set the DN-500 to loop play. In loop play the track will seamlessly looped until stopped. To set up loop play press the Menu Button to enter menu mode and then the FWD (►►) Button until SETUP LOOP PLAY is displayed.

| MENU | **+** | ►► | | SETUP LOOP PLAY
CANCEL   ENTER |

Press the Next (▲) Button to enter the setup loop play menu, and then press the FWD (►►) Button to select ENABLE

| ▲ | | ▲ | | DISABLE   ►
CANCEL   SET | | ►► | | ENABLE   ►
CANCEL   SET |

Press the Next (▲) Button to select SET and then press the Menu Button to return to track display.

| ▲ | | ▲ | | SETUP LOOP PLAY
CANCEL   ENTER | | MENU | | TRACK 02   01:25:12:09
PREVIOUS   ■   NEXT |

When you press play the selected track will start playing, and will loop until the Stop (■) Button is pressed. To cancel loop playback, follow the above procedure but select disable instead of enable.

Operation with an Analogue Video Source

The DN-500 can only record .DV files from analogue video sources, Composite CVBS, S-Video (Y/C) or Component Video (YUV (YPbPr)). ***It is not possible to record .M2T (HDV) files from an analogue video input.***

N.B. To avoid any interference disconnect any digital inputs (DV / HDV) from the DN-500 during Analogue operation.

Recording a Track

To record from an analogue video source you first need to set the analogue input – ***see Video Input Source Menu for more details***.

Ensure that the DN-500 is set to record .DV (RAW DV) files – ***see Record Formats Menu for more details***.

Press the Video Input Button so that it is illuminated. You should see the video source on your output monitor. If audio is present the audio meters will indicate the level.
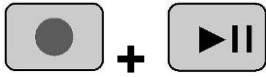
VIDEO INPUT

Use the Next / Previous Buttons to select an empty track from the DN-500 track list, one that shows duration of 00:00:00:00 in the LCD display.

| TRACK 02   01:25:12:09
PREVIOUS   ■   NEXT | Not suitable - Track has been recorded | TRACK 01   00:00:00:00
PREVIOUS   ■   NEXT | Suitable - Track is empty |

Press both the Record and Play/Pause Buttons simultaneously and the DN-500 should start recording.

| ● | + | ▶II | | TRACK 01   00 : 00 : 01 : 05
 ● | The counter should start counting and the REC symbol should appear |

If it does not start recording check the following:

There is an analogue video input present.

The Analogue Input Button is illuminated

The DN-500 Record Format is set to RAW DV (DV), not M2T (HDV) *see Record Formats Menu.*

The track you have selected on the DN-500 is empty. The counter next to the TrackNo. on the LCD display should be showing 00:00:00:00.

There is some available space on the DN-500 Hard Disk - Go to the FREE SPACE Menu and check that the DN-500 is not full.

N.B. When the DN-500 is set to output channel 63 you cannot playback a track to analogue outputs, until the connected DV device (camera, mixer etc) is switched off or disconnected. See Set output channel menu.

During record you can pause the DN-500 by pressing the Play/Pause button, the counter on the LCD display will stop.

| ▶II | TRACK 01   00 : 00 : 05 : 15
 II ● | The counter should stop counting and the REC PAUSE symbol should appear |

To release pause press the Play/Pause button again.

| ▶II | TRACK 01   00 : 00 : 05 : 19
 ● | The counter should start counting again and the REC symbol should return |

N.B. It is not possible to stop recording and then restart on the same track, once a track has been stopped you must select a new empty track from the DN-500 to start recording again.

For details of playback please see **Playing a DV Track on page 21.**

Connecting the HDD Caddy / Enclosure directly to a PC

Files that have been recorded onto the DN-500 can be transferred directly to a PC or MAC via the IEEE-1394 (iLink, FireWire) port – *See HDD Mode menu.* More conveniently, the hard drive caddy can be ejected and connected to a PC or MAC with the supplied USB cable.

First turn off the DN-500.

Turn the drive caddy lock lever to the right to unlock the drive caddy. Push the caddy into the unit and it will pop out a few centimetres when released. Gently pull the drive caddy clear of the DN-500, you may feel some resistance as the drive disconnects internally – this is normal.

The HDD Enclosure is fitted with a mini USB connector; this can provide power to the HDD, as well as exchange data. Connect USB connector on the thicker wire first.
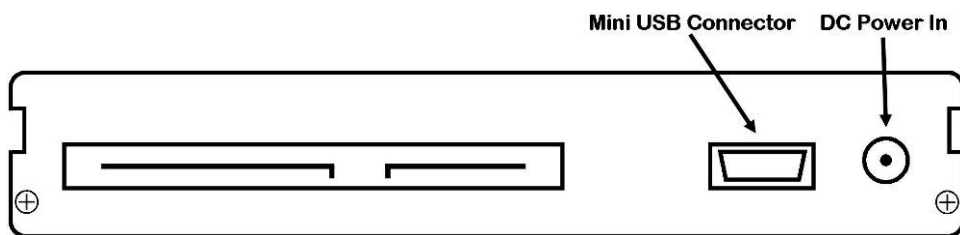
N.B. With some PCs and Laptops the USB bus power may not be sufficient to power the drive.

If the drive does not power up correctly please connect the second USB lead to another USB port on your PC / Laptop.

N.B. If your PC does not provide USB power an additional power supply will be required for the HDD.

Connect the supplied mini USB to USB cable to the HDD Enclosure, and connect the double lead to your PC or Laptop. If the drive does not power up correctly – connect the second USB connector to the computer as well as the first.

When connected to a PC a new Local Disk should appear, in this case Disk E, and the .dv files are available to drag and drop or access directly.
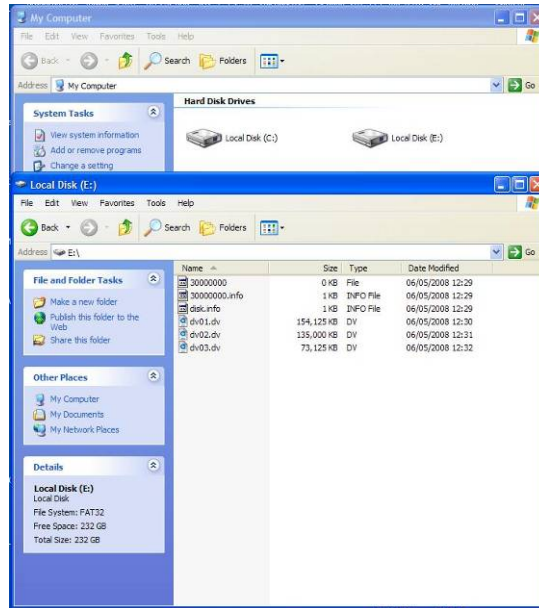
The files appear in the root directory of the DN-500 hard disk, and are numbered with the track number that appears in the LCD display when you are recording or playing back the track.

The DN-500 uses a FAT32 file structure, so large tracks are broken down into 2 GB files which are sequentially named:

For example if Track 02 is 1 hour in duration it will appear as follows:
dv02.dv (2 GB)   -   dv02 is the file name for Track 02
dv02_01.dv (2 GB)   -   Each 2 GB section is given a sequential _xx numeric extension
dv02_02.dv (2 GB)
dv02_03.dv (2 GB)
dv02_04.dv (2 GB)
dv02_05.dv (2 GB)
dv02_06.dv (77 MB)   -   The last file in the sequence is likely to be smaller than 2GB.

Once transferred files can be dropped onto a timeline, within a suitable Non Linear Editing application, and they will playback seamlessly.

# Connecting the HDD Caddy / Enclosure directly to a MAC

Connect the supplied mini USB to USB cable to the HDD Enclosure, and connect the thicker lead to your MAC. If the drive does not power up correctly – connect the second USB connector to another USB socket as well as the first.
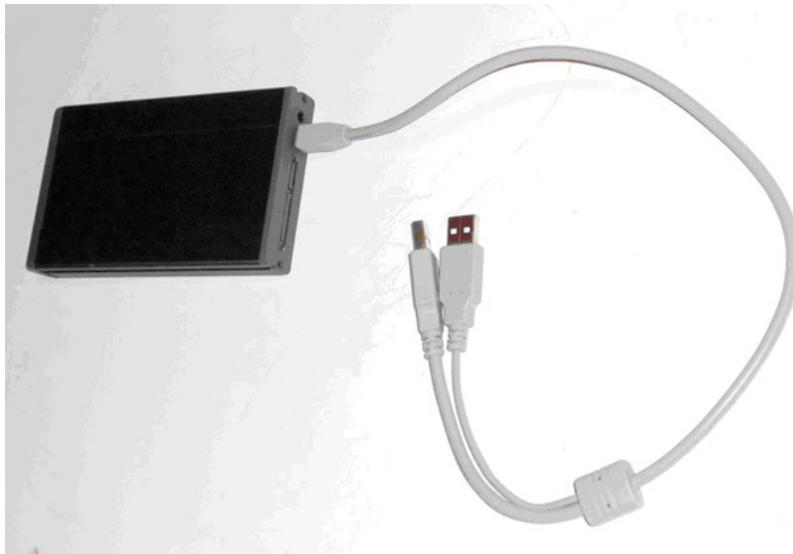
A Datavideo drive will appear on the desktop.

If you access the drive you will see the .dv files are available for copying across to a local drive, or direct access.
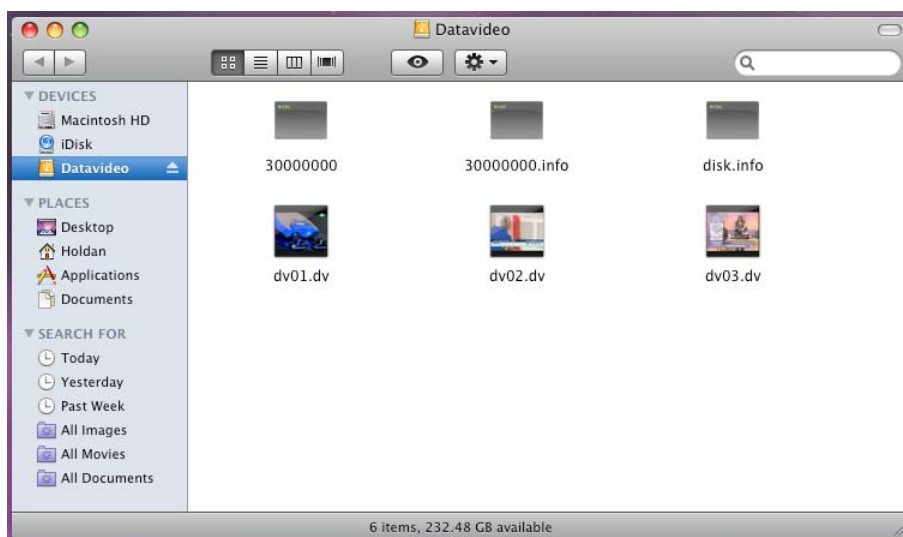
To safely remove the drive from your MAC, either select Eject from the Finder File Options (Fig 1), or select Eject from the drive window options (Fig 2)
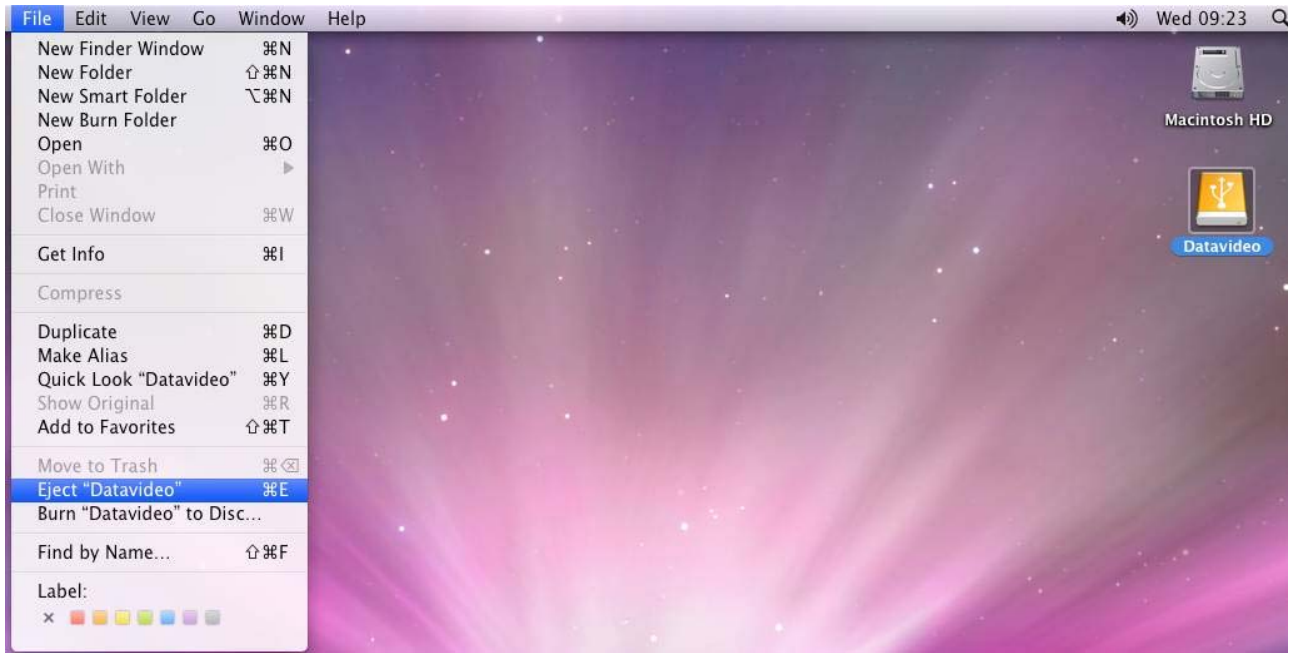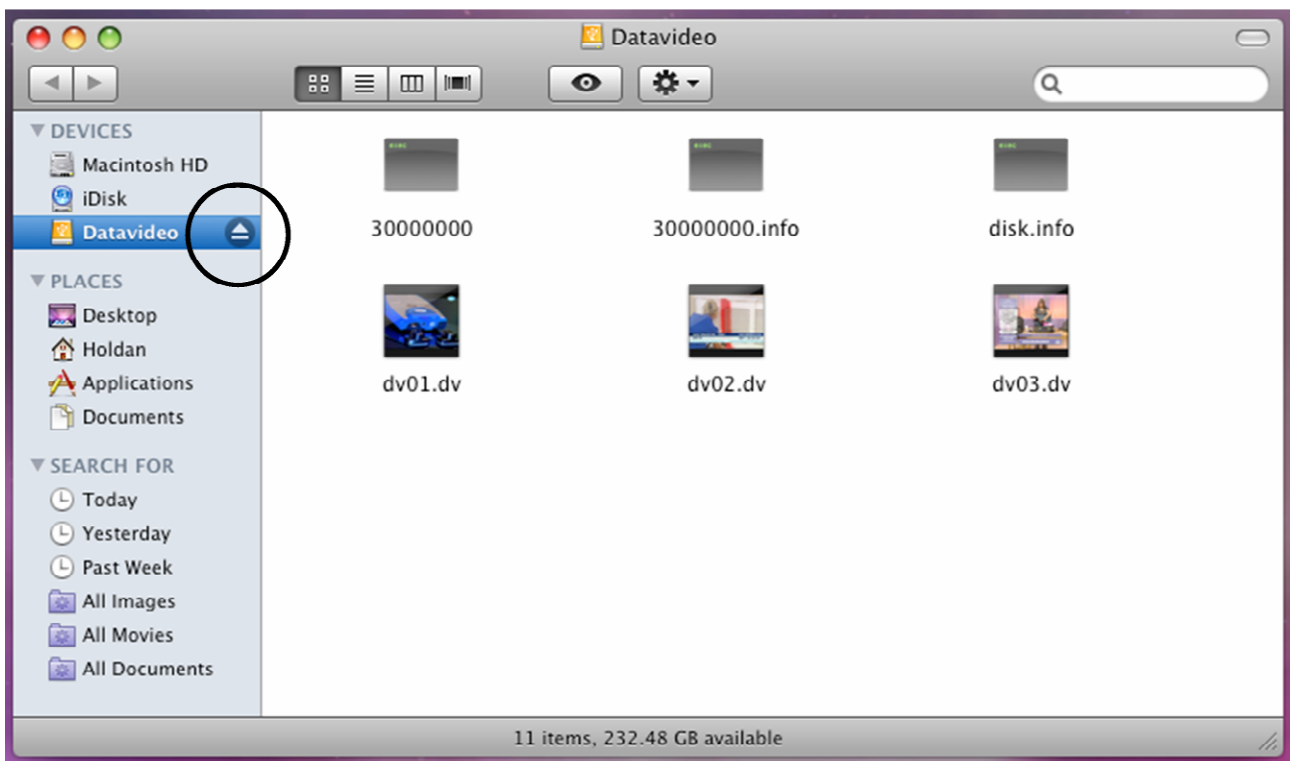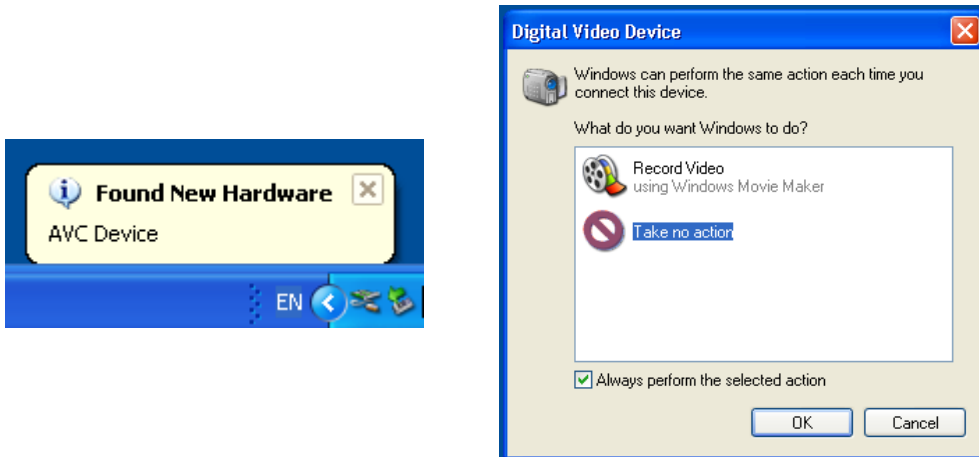

Fig 1

Fig 2

Connection to PC when Caddy is still inside DN-500

NB: Although a PC may see the DN-500 as an AVC compliant DV Device it is not intended to be operated as such. The AVC command set is not supported.

If your PC sees an AVC Device select Take No Action.

Connect the DN-500 IEEE-1394 output to a PC.
To set the DN-500 into HDD Mode firstly press the Menu button so that it is illuminated.
You will see the display change to the HDD Mode Menu

Press the Next (▲) Button to select ENTER and the display will show the HDD Enable Confirmation Screen

Press the Next (▲) Button again to confirm, after a few seconds HDD Mode will be enabled

The PC should recognise that an external IEEE-1394 (Firewire)HDD has been connected. Select Open Folder to View Files. The drive should also appear in My Computer as an internal HDD. Once connected the DN-500 can be used just like any HDD. You can select the required files and drag and drop them to the required destination.
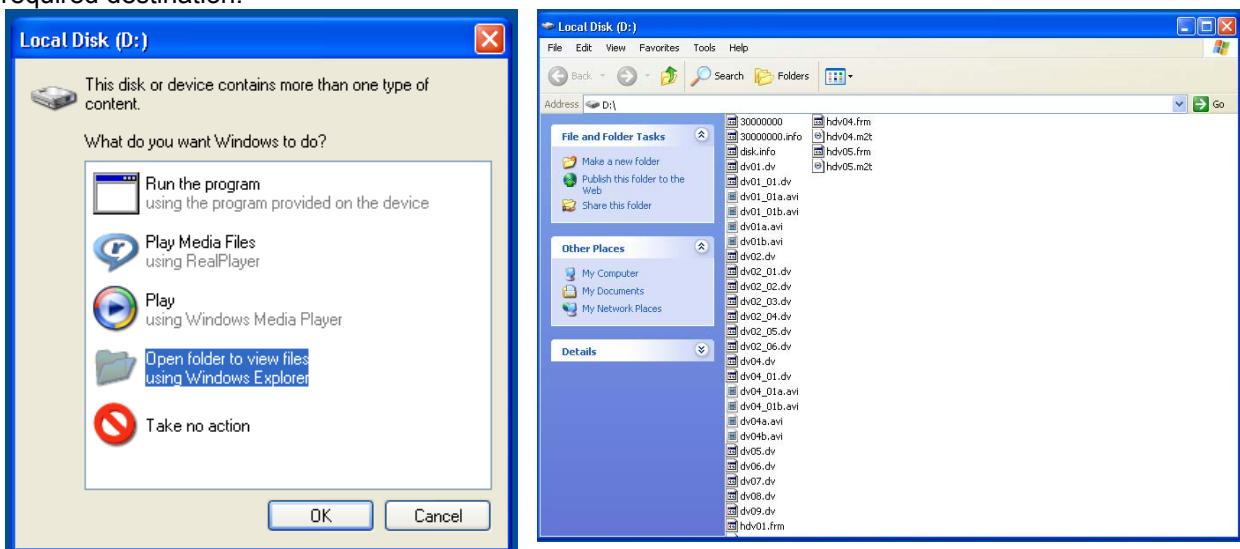
To return the DN-500 to Deck Mode use "Safely Remove Hardware". You will find "Safely Remove Hardware" on the Taskbar.
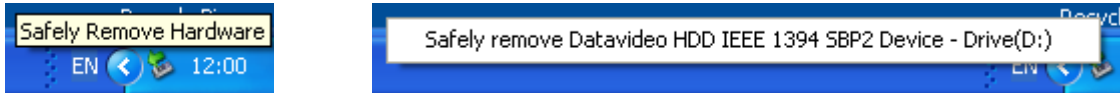
Double click on Safely Remove Hardware and the dialog box will appear, select the Datavideo HDD IEEE SBP2 Device and click on Stop. A second dialog box will appear.
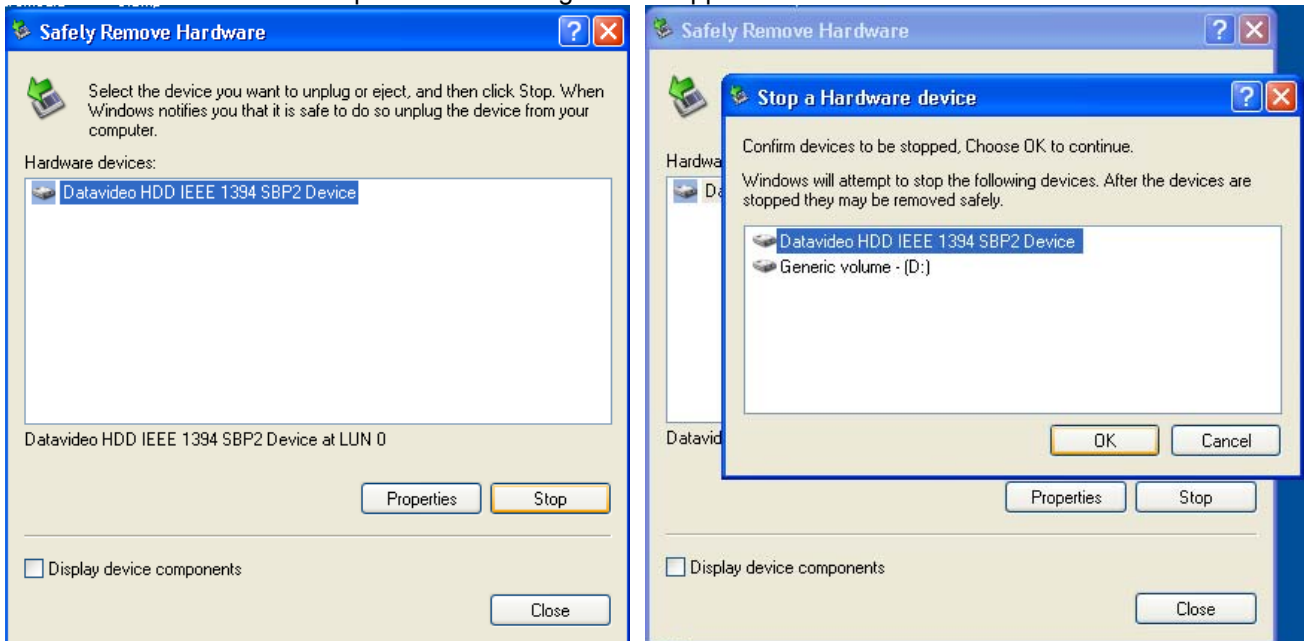
Select Datavideo HDD IEEE SBP2 Device and click on OK. After a few seconds a "Safe To Remove Hardware" message should appear above the Taskbar. You can then disconnect the DN-500.

Once un-mounted from the PC the DN-500 display will leave HDD Mode and return to Track Display.

Connecting to a MAC when caddy is still in DN-500

NB: Although a MAC may see the DN-500 as an AVC compliant DV Device it is not intended to be operated as such. The AVC command set is not supported.

Connect the DN-500 IEEE-1394 output to a MAC.
To set the DN-500 into HDD Mode firstly press the Menu button so that it is illuminated.
You will see the display change to the HDD Mode Menu

Press the Next (▲) Button to select ENTER and the display will show the HDD Enable Confirmation Screen
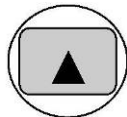
Press the Next (▲) Button again to confirm, after a few seconds HDD Mode will be enabled

The MAC should see the DN-500 as a HDD and the files will appear in the root directory of the drive.
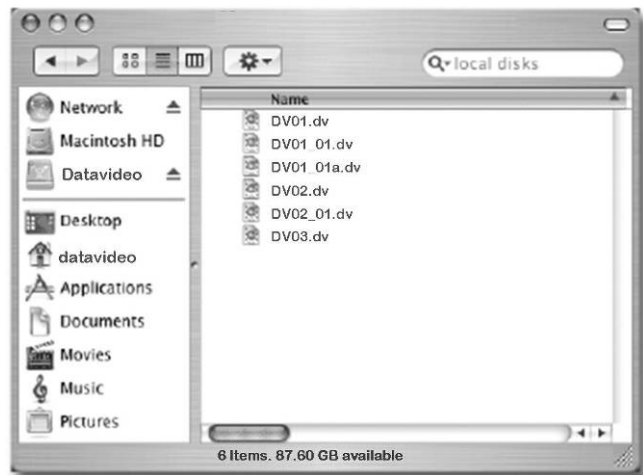
You can select the required files and drag and drop them to the required destination.

To un-mount the DN-500 from your MAC either *"Eject"* the drive, or drag it to the **Trash Can Icon**.

Once the DN-500 is un-mounted from the MAC the LCD display will return to normal.

RS 422 Command Set / Protocol Version 1.2

Interface Overview

- Conforming to EIA RS-422A.
- Full duplex communications channel is utilized.
- Data is transmitted asynchronously, bit serial, word serial with data exchange between devices.
- Standard transmission rate on the interface bus is 38400 bits per second (bps)
- The data word utilized by the interface system is as follows :

START BIT	D0	D1	D2	D3	D4	D5	D6	D7	PARITY (ODD)	STOP BIT

- 1 Start bit + 8 Data bits + 1 Parity bit + 1 Stop bit. Odd Parity

   ODD parity : The total of "1"s in D0+D1+ . . . D7+PARITY equals an odd number.

RS 422 Version History

Date: 2010/10/20   Version: 1.2

Command Block Format

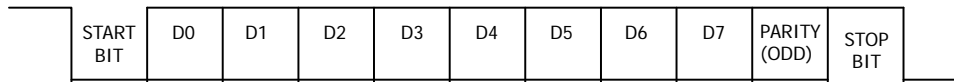The data communication is composed of the **CMD-1/DATA COUNT** byte, the **CMD-2** byte, optional **DATA** bytes and the **CHECKSUM** byte. Commands are transmitted in order from the MSB (Most Significant Byte) to the LSB (Least Significant Byte). This means that when using the examples in this manual, the order in which the bytes are read is the same order in which they are transmitted. When the **DATA COUNT** nibble is 0, no **DATA** bytes are transmitted or required (the **CMD-1/DATA COUNT** byte, **CMD-2** byte and **CHECKSUM** byte are still transmitted). When the **DATA COUNT** nibble is not 0, the number of **DATA** bytes transmitted must correspond with the **DATA COUNT**. These bytes are inserted between the **CMD-2** byte and **CHECKSUM** byte.

The data communication between the controller and the device is performed as follows:

Name	CMD-1	Data Count	CMD-2	Data 0~15 (per Data Count)	Checksum
Nibble	MSN	LSN			
Size	1 Byte		1 Byte		1 Byte

   MSN stands for Most Significant Nibble (4 bits) and *LSN* stands for Least Significant Nibble (4 bits)

CMD-1: This is the first (Most Significant) nibble of the first byte of the command. The DATA COUNT (below) fills the lower (Least Significant) nibble. It (**CMD-1**) indicates the command or return group to which the command belongs as per the table below.

CMD-1	Function	Initiator
0x	System Control	Controller
1x	System Control Return	Device (DN-500)
2x	Transport Control	Controller
4x	Preset And Select Control	Controller
6x	Sense Request	Controller
7x	Sense Return	Device (DN-500)
Ex	DVR Control	Controller
Fx	DVR Return	Device (DN-500)

DATA COUNT:
This is the second (Least Significant) nibble of the first byte of the command. The upper (Most Significant) nibble is filled by the **CMD-1** (above). It indicates the number of data bytes (0-15) that are required to be inserted between the **CMD-2** byte and the **CHECKSUM** byte.

CMD-2:
Designates the exact command within the section specified by **CMD-1**.

DATA 0..15:
If the command requires extended data, the **DATA COUNT** will be set to between 1 and 15 (a 0 indicates that no extra data is required). These bytes will be placed here.

CHECKSUM:
This byte is used to check the data for communication errors. To calculate the checksum, each byte of the command (**CMD-1**+**DATA COUNT**, **CMD-2**, and any **DATA BYTES**) are added together. The least significant 8 bits (1 byte) are then truncated to create a 1-byte checksum.

To calculate the checksum, each byte of the command (**CMD-1**+**DATA COUNT**, **CMD-2**, and any **DATA BYTES**) are added together. The least significant 8 bits (1 byte) are then truncated to create a 1-byte checksum.

IE.: The command "61.0C.03" becomes

	MSB	LSB	
	0110	0001	(=61)
	0000	1100	(=0C)
+)	0000	0011	(=03)
	0111	0001	(=70)
	CHECKSUM	= "70"	

Therefore, the complete command is "61.0C.03.70"

Connector Pin Assignment

Interface : 9 pin D-Sub female
The pin assignment of the Controller and DN-500 is shown in the following table:

Signal \ Pin	Controller	DN-500
1	Frame Ground	Frame Ground
2	Receive A (RX-)	Transmit A (TX-)
3	Transmit B (TX+)	Receive B (RX+)
4	Transmit Common	Receive Common
5	Spare	Spare
6	Receive Common	Transmit Common
7	Receive B (RX+)	Transmit B (TX+)
8	Transmit A (TX-)	Receive A (RX-)
9	Frame Ground	Frame Ground

Communication Protocol

1. All communications between the CONTROLLER and the DEVICE (DN-500) will be under the direct supervision of the CONTROLLER.

   When the DEVICE (DN-500) receives the COMMAND from CONTROLLER, the following COMMAND is returned.
   - ACK: In case that the DEVICE receives a COMMAND not requiring data
   - COMMAND+DATA: In case that the DEVICE receives a COMMAND requiring data
   - NAK+ERROR DATA: In case that a communication error is detected or an undefined COMMAND is received

2. The CONTROLLER must not transmit additional COMMAND blocks to a DEVICE (DN-500) prior to response to a previous COMMAND block.

3. The CONTROLLER must transmit of bytes in a COMMAND block for with intervals less than 10 milliseconds. If a DEVICE (DN-500) detects an interruption of a byte in a COMMAND block that exceeds 10 milliseconds, it executes a TIME-OUT error sequence, voids the receiving COMMAND

block, and transmits a NAK (TIME OUT).

4. When a DEVICE (DN-500) receives a COMMAND block from the CONTROLLER, the DEVICE must transmit a response within 9 milliseconds. Therefore if the CONTROLLER cannot receive the appropriate response from the DEVICE within 10 milliseconds after transmitting the COMMAND block the CONTROLLER detects a communication error, and must execute an appropriate process.

5. When a DEVICE (DN-500) detects a communication error, it must immediately transmit a NAK to the CONTROLLER. (The content of an error is shown on the COMMAND tables.) When the CONTROLLER receives a NAK, if must immediately stop transmission of the block. The DEVICE must not accept a subsequent command within 10 milliseconds after that (except NAK-UNDEFINED command) and must execute a necessary process.

Command Table (without Checksum byte)

Command	Name	Response	Name
10h 01h	Acknowledge (ACK) – command succeeded		
12h 11h	Device Return		
11h 12h	Negative Acknowledge (NAK) – command failed		
00h 11h	Device Type Request	12h 11h	Device Type Response
20h 00h	Stop	10h 01h	ACK
20h 01h	Play	10h 01h	ACK
20h 02h	Record	10h 01h	ACK
20h 10h	Fast Forward	10h 01h	ACK
2xh 13h	Shuttle Forward	10h 01h	ACK
21h 13h 00h	Pause	10h 01h	ACK
20h 20h	Fast Rewind	10h 01h	ACK
2xh 23h	Shuttle Rewind	10h 01h	ACK
40h 50h	Next Track	10h 01h	ACK
40h 51h	Previous Track	10h 01h	ACK
40h 54h	Delete Current Track	10h 01h	ACK
41h 52h nnh	Select Track (Track 01 ~ 99)	10h 01h	ACK
42h 52h nnh mmh	Select Track (Track 001 ~ 999)	10h 01h	ACK
41h 53h nnh	Select Video Input Source	10h 01h	ACK
40h 62h	Enable HDD Mode	10h 01h	ACK
61h 0Ch 01h	Current Time Sense	74h 04h	Current Time
61h 20h	Status Sense	7xh 20h	Current Status
E0h 01h	Length of current Track Data Sense	F1h 01h	Length of Track
E0h 02h	Video Control Data Sense	F1h 02h	Video Control Data
E0h 05h	Current Track Number Data Sense (Track 001 ~ 999)	F2h 05h	Track Number (BCD)
E2h 10h 01h nnh	Set Loop Play	10h 01h	ACK
E3h 10h AAh 55h 01h	Format Hard Disk	10h 01h	ACK

Detailed Description of Commands (without Checksum byte)
00h 11h : DEVICE TYPE REQUEST
> *Send: 00h 11h 11h*
> *Return: 12h 11h 20h 41h 84h (**NTSC** Mode)*
> *Return 12h 11h 21h 41h 85h (**PAL** Mode)*

20h 00h : STOP
> *Send: 20h 00h 20h*
> *Return: 10h 01h 11h*

20h 01h : PLAY
> *Send: 20h 01h 21h*
> *Return: 10h 01h 11h*

20h 02h : RECORD
> *Send: 20h 02h 22h*
> *Return: 10h 01h 11h*

20h 10h : FAST FORWARD
> *Send: 20h 10h 30h*
> *Return: 10h 01h 11h*

2xh 13h : SHUTTLE FORWARD
> *Send: 21h 13h 01h 35h*
> *Return: 10h 01h 11h*

21h 13h 00h : PAUSE
> *Send: 21h 13h 00h 34h*
> *Return: 10h 01h 11h*

20h 20h : FAST REWIND
> *Send: 20h 20h 40h*
> *Return: 10h 01h 11h*

2xh 23h : SHUTTLE REWIND
> *Send: 21h 23h 01h 45h*
> *Return: 10h 01h 11h*

40h 50h : NEXT TRACK
> *Send: 40h 50h 90h*
> *Return: 10h 01h 11h*

40h 51h : PREVIOUS TRACK
> *Send: 40h 51h 91h*
> *Return: 10h 01h 11h*

40h 54h : DELETE CURRENT TRACK
> *Send: 40h 54h 94h*
> *Return: 10h 01h 11h*

41h 52h NNh : SET TRACK NUMBER (Track 01 ~ 99)
> NN = Track Number
> *Send: 41h 52h 01h 94h (Select Track 1)*
> *Return: 10h 01h 11h*
> *Send: 41h 52h 10h A3h (Select Track 16)*
> *Return: 10h 01h 11h*

42h 52h NNh MMh: SET TRACK NUMBER (Track 001 ~ 999)
> NN = Track Number (Hex) % 100h
> MM = Track Number (Hex) / 100h
> ***Set track number to 900(384h):***
> *NN = 384h % 100h = 84h (quotient)*
> *MM = 384h / 100h = 03h*
> *Send: 42h 52h 84h 03h 1Bh (Select Track 900)*
> *Return: 10h 01h 11h*
> ***Set track number to 168(A8h):***
> *NN = A8h % 100h = A8h (quotient)*
> *MM = A8h / 100h = 00h*
> *Send: 42h 52h A8h 00h 3Ch (Select Track 168)*
> *Return: 10h 01h 11h*

***41*h 53h NNh : SELECT VIDEO INPUT SOURCE**
> NN = Video Source, 0 = YPbPr, 1 = S-Video, 2 = CVBS, 3 = DV
> *eg. 41h 53h 00h 94h = YPbPr input*
> *eg. 41h 53h 01h 95h = S-Video input*
> *eg. 41h 53h 02h 96h = CVBS input*
> *eg. 41h 53h 03h 97h = DV input (Disable Analog input)*

40h 62h : ENABLE HDD MODE
> *Send: 40h 62h A2h*
> *Return: 10h 01h 11h*

61h 0Ch 01h : CURRENT TIME DATA SENSE
> *Send: 61h 0Ch 01h 6Eh*
> *Return: 74h 04h 01h 02h 03h 04h 82h (Time code 04:03:02:01)*

61h 20h : STATUS DATA SENSE
> DATA-1 Most Significant Nibble = 1st status data byte number to be returned
> DATA-1 Least Significant Nibble = number of status data bytes to be returned
> *Send: 61h 20h 03h 84h (return data byte 0, 1, and 2)*
> *Return: 73h 20h 00h 81h 80h 94h*
> *Send: 61h 20h A1h 22h (return the current track number)*
> *Return: 71h 20h 99h 2Ah (Current track number is 99)*

E0h 01h : CURRENT TRACK LENGTH DATA SENSE
   Send: E0h 01h E1h
   Return: F1h 01h 29h 41h 56h 00h B5h (Track Length 00:56:41:29)
E0h 02h : VIDEO CONTROL DATA SENSE
   0 = YPbPr, 1 = S-Video, 2 = CVBS, 3 = DV
   Send: E0h 02h E2h
   Return: F1h 02h 00h F3h (YpbPr Input)
   Send: E0h 02h E2h
   Return: F1h 02h 02h F5h (Decode DV)
E0h 05h : CURRENT TRACK NUMBER SENSE (Track 001 ~ 999)
   Send: E0h 05h E5h
   Return: F2h 05h 17h 01h 0Fh (Current Track Number is 117 <BCD>)
E2h 10h 01h NNH: SET LOOP PLAY
   NN = Disable (00h) or Enable (01h)
   Send: E2h 10h 01h 00h F3h (Disable Loop Play)
   Return: 10h 01h 11h
   Send: E2h 10h 01h 01h F4h (Enable Loop Play)
   Return 10h 01h 11h
E3h 10h AAh 55h 01h : FORMAT HARD DISK
   Send: E3h 10h AAh 55h 01h F3h
   Return: 10h 01h 11h

Return Data (without Checksum byte)

10h 01h : ACK
   When a command from the CONTROLLER is received normally, the DEVICE (DN-500) returns this command as acknowledgment.

11h 12h : NAK
   When a communication error is detected or an undefined COMMAND is received, the DEVICE returns this command as not-acknowledgment.
   BIT-7 to BIT-0 of DATA-1 will be set in accordance with the contents.
   [DATA-1]

BIT-7	BIT-6	BIT-5	BIT-4	BIT-3	BIT-2	BIT-1	BIT-0
TIME OUT	FRAMING ERROR	OVERRUN ERROR	PARITY ERROR	INHIBIT	CHECKSUM ERROR	SOFTWARE OVERRUN	UNDEFINED COMMAND

12h 11h : DEVICE TYTPE
   The " 00h 11h : DEVICE TYPE REQUEST " command is used for asking the specifications of the DN-500 used as DEVICE. When the DEVICE receives this command, it attaches 2-bytes specification data to "12h 11h : DEVICE TYPE" and sends the information to the CONTROLLER.

   NTSC : 12h 11h 20h 41h
   PAL :　12h 11h 21h 41h

74h 04h : Current Time Code (BCD)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Data 0	0	0	Tens of Frames		Frames			
Data 1	0	Tens of Seconds			Seconds			
Data 2	0	Tens of Minutes			Minutes			
Data 3	0	0	Tens of Hours		Hours			

   Send: 61h 0Ch 01h 6Eh
   Return: 74h 04h 01h 02h 03h 04h 82h (Time code 04:03:02:01)

F4h 01h : Length of Current Track (BCD)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Data 0	0	0	Tens of Frames		Frames			
Data 1	0	Tens of Seconds			Seconds			
Data 2	0	Tens of Minutes			Minutes			
Data 3	Tens of Hours				Hours			

   Send: E0h 01h E1h
   Return: F4h 01h 29h 41h 56h 00h B5h (Track Length 00:56:41:29)

Status Return Data

	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
Data 0	Busy		Disk Out			Hardware Error		Local Enable
Data 1			Stop	Eject	Rewind	Fast Forward	Record	Play
Data 2			Shuttle			Fast Reverse	Still	
Data 6		Lamp Still	Lamp Forward	Lamp Reverse				
Data 8				Disk Full				Track is not Empty Rec. Inhibit
Data 9						GPI Mode	GPI Function	Loop Play
Data 10	Tens of Track Number(BCD)				Track Numbers (BCD)			

DN-500 Firmware Version

Date: 2010/10/20   Version: MB :1.3.0 Main board
Date: 2011/02/25   Version: FP : 1.7.0 Front Panel

How to update the firmware on your unit

From time to time Datavideo may release new firmware to either add new features or to fix reported bugs in the current DN-500 firmware. Customers can update the DN-500 firmware themselves if they wish or they can contact their local dealer or reseller for assistance should they prefer this method.

This page describes the firmware update process, if you have all the items required it should take *approximately 15 minutes total time to complete*.

Once started *the update process should not be interrupted in any way* as this could result in a non-responsive unit.

As well as a working DN-500 you will need:
➢ The latest zip file Firmware update for the DN-500.
  This can be obtained from your local Datavideo office or dealer.
➢ The DN-500 power supply.
➢ A removable HE-1 drive caddy with drive fitted.
➢ USB 2.0 cable to connect the caddy to a computer.
➢ A 9pin D Sub to 3.5mm Jack cable for updating the Front Panel firmware.
➢ A windows PC.

Making your own 9pin D Sub to 3.5mm Jack cable for updating the Front Panel firmware
The jack plug parts are connected to the D Sub pins as follows. Jack Tip (Tx) to D Sub Pin3. Jack Ring (Rx) to D Sub Pin2. Jack Sleeve (Gnd) to D Sub Pin5.

To update the DN-500 firmware:
1. Connect the 9pin D Sub to 3.5mm Jack cable between the PC and the DN-500. The D Sub connects to the PCs COM port and the Jack plug connects to the RS-232 socket on the DN-500 rear panel.
2. Switch ON the DN-500 in the normal way.
3. On the computer. Unzip/extract the file called *DN-400-500_2011.03.02* to the desktop so the files are easy to locate.
4. Open the unzipped folder also called *DN-400-500_2011.03.02* and look within the *KB_1_7_0* folder. There are two more folders **DN-500** and DN-400.
5. Within the *DN-500* folder double click on the application called *UpdatedExecuteTools*.
6. An application window will open on the computer. *Select the correct COM port* and then click on the *START* button. The application will then update the Front Panel of the DN-500*. The unit will turn itself off automatically at the end of the process.
7. Turn the DN-500 unit ON again and check that the FP firmware version is now changed.
8. Now switch OFF the DN-500 in the normal way and unlock the removable HE-1 drive caddy.
9. Remove the caddy from the DN-500 and connect it to the computer using the USB 2.0 cable.
10. On the computer. Open the unzipped folder called *DN-400-500_2011.03.02* and look within the *MB_1_3_0* folder.
11. Within the *MB_1_3_0* folder there are 2 files copy and paste them both to the root directory of the HE-1 drive caddy.
12. Return the caddy to the DN-500 and lock it in place.
13. Turn on the DN-500 and the unit will update the mother board automatically and then restart*.
14. Turn the DN-500 unit ON again and check that the MB firmware version is now changed.

WARNING: Once the option has been selected, DO NOT turn power off until the firmware has been updated. If the update is prematurely ended the recorder will be made inoperable.

User Notes

Specifications

Supported Video Formats:

NTSC - DV 25 Mbps, 8-bit Y.U.V. 4:1:1
PAL- DV 25 Mbps, 8-bit Y.U.V. 4:2:0

HDV 1080i / 60 25 Mbps 8-bit Y.U.V. 4:2:0
HDV 1080i / 50 25 Mbps 8-bit Y.U.V. 4:2:0

Supported File Formats:

HDV .m2t
DV. .dv + .avi type 1 or 2 via conversion

Analogue Video Format:

Composite Video: 75Ω 1.0 V p-p
S-Video (Y/C): 4 Pin Mini Din 75Ω Y: 1.0 V p-p, C: 0.627 mV p-p
Component: BNC Y, R-Y, B-Y 75Ω
Bandwidth: > 5.0 mHz
Noise Ratio: > 50dB
DA, DP < 3%, 3°

Digital Audio

Embedded 2 Ch (16 bit 48 kHz) or 4 Ch (12 bit 32 kHz via IEEE1394)
2 Ch (16 bit 48 kHz) via Analogue Input

Analogue Audio

Unbalanced/Balanced Audio In / Out +10 dB Maximum - Phone (RCA) plugs
Bandwidth: 20 ~ 20 kHz
Noise Ratio: > 65dB
THD: < 0.3%

RS-422 & GPI Control Interface

Sony Standard RS-422 Interface
GPI via 3.5mm Jack, Pulse or Level

Operating Temperature 0° - 50 °C

Operating Humidity 0 - 70%

Power - 12V 4.2A

Dimensions - 482mm (W) x 293mm (D) x 44mm (H)

Weight - 7 Kg

Specifications are subject to change without notice

Service and Support

It is our goal to make your products ownership a satisfying experience. Our supporting staff is available to assist you in setting up and operating your system. Please refer to our web site www.datavideo-tek.com for answers to common questions, support requests or contact your local office below.

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