



DN-500 HDV / DV Hard Disk Recorder



Instruction Manual

www.datavideo-tek.com

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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

Datavideo warrants that the equipment it manufactures shall be free from defects in material and workmanship for a period of 12 months from the date of product purchased. If equipment fails due to such defects, Datavideo will, at its option, repair or provide a replacement for the defective part or product. Equipment that fails after the warranty period, has been operated or installed in a manner other than that specified by Datavideo, or has been subjected to abuse or modification, will be repaired for time and material charges at the Buyer's expense.

This warranty does not affect your statutory rights within the Country of purchase.

Disposal

For EU Customers only - WEEE Marking.



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

Packing List

The following items should be included in the box. If any items are missing please contact your supplier.

Items	Description	Q'ty
1	DN-500 DV / HDV Hard Disk Recorder	1
2	Power Supply (12V 4.2A)	1
3	DV File Conversion software CD & S/N	1
4	AC cord 3P	1
5	2.5" Removable HDD 'caddy' *	1
6	IEEE 1394 6Pin -6Pin Cable 1.8m	1
7	S-Video Cable 1.2m	1
8	Y Type USB Cable 45cm	1
9	M3 x 4 mm Screws	10
10	2.0 x 8 mm Screws	2
11	HD Label	2
12	SD Label	2
13	Label	4
14	L Type Rack mounts	2
15	2 RCA to 2 RCA 1.5m	1
16	BNC to BNC Cable 1.2m	2
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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 Hard Disk Drive caddy.

Front Connections: Headphone Mini Jack socket, IEEE-1394 socket.

Rear Connections: 2xIEEE-1394 ports, YUV (on BNC) In and Out, Black burst sync (on BNC), S-Video, Composite Video and Stereo Audio In / Out and
2 x XLR Inputs and Outputs for Balanced Audio Connection.

Records .DV files from IEEE-1394 (iLink, FireWire) port or Analogue Video Inputs.

Records HDV(.m2t) files via IEEE-1394(iLink, FireWire) port only.

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/pause record 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.

****The Drive Caddy may be supplied empty or with drive already fitted please check with your dealer.***

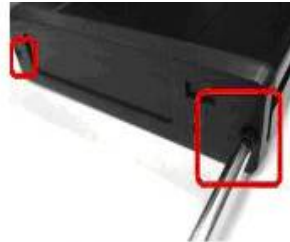
How to fit a 2.5" SATA Hard Drive into the removable Caddy

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.

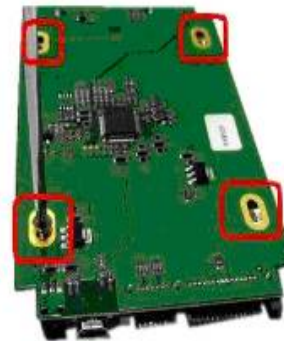
Please note the warnings on the removable caddy and only replace or install the hard drive from the end indicated.

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

1. Carefully remove the two screws from the the 2.5" removable caddy end, then pull out the PCB.



2. Push the 2.5" hard drive into the socket side of the PCB. Turn the PCB over and use 4 supplied screws to secure.

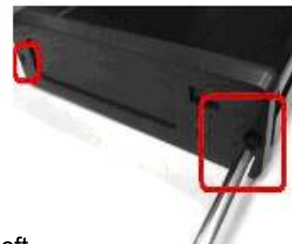


3. Slide PCB and hard drive module into removable caddy the right way up using the guide slots.

The USB and SATA connections should be visible at the rear of the caddy.



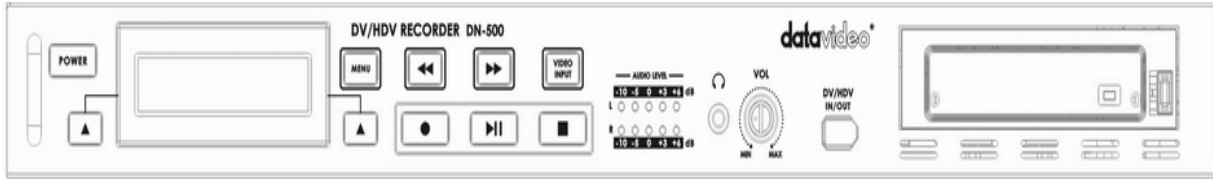
4. Carefully replace the two screws to secure the removable caddy end. Do NOT over tighten the screws.



Insert the caddy into the DN-500 USB and SATA connections first. When fully in lock the caddy into place by pushing the 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.



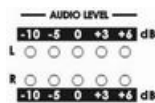
Record Button. Puts the DN-500 into Record Mode. To start recording press the Record Button and Play Button simultaneously. **N.B. Unit will not record if no video signal is present.**



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.



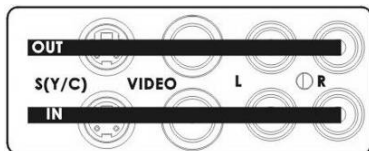
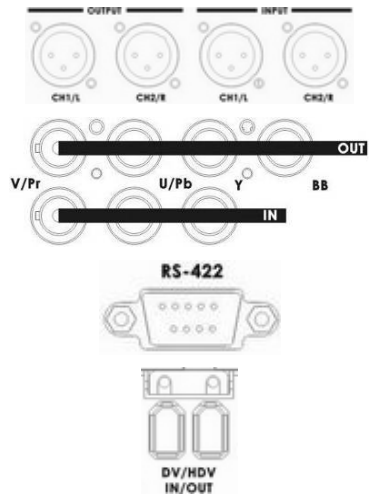
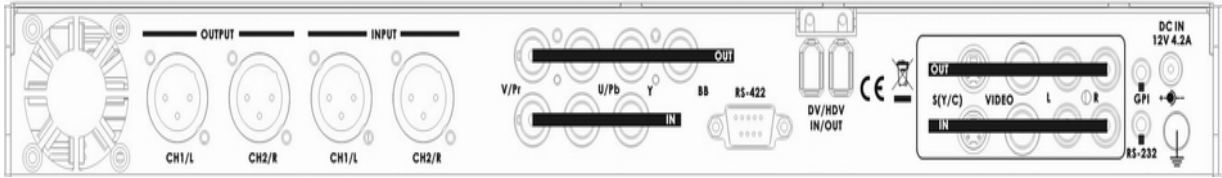
DV/HDV IN/OUT

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.

Powering On

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

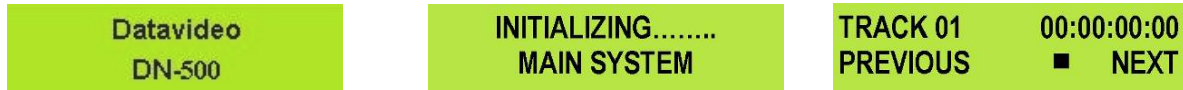


Switch the power On/Off switch to the ON position



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



Menu Options

The DN-500 is a menu driven unit; there are 23 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 23 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.

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
CANCEL ENTER

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
CANCEL ENTER

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
CANCEL ENTER

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

SET FULL SYT
CANCEL ENTER

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
CANCEL ENTER

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
CANCEL ENTER

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

CONVERT DV TO AVI
CANCEL ENTER

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
CANCEL ENTER

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
CANCEL ENTER

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
CANCEL ENTER

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
CANCEL ENTER

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.
CANCEL ENTER

HDD MODE CABLE LEN.

The DN-400 unit has two types of cable mode that can be set when connecting the DN-400 unit to either a PC or MAC.

LONG DISTANCE CABLE - If your IEEE 1394 cable length ≤ 20 M

SHORT DISTANCE CABLE - If your IEEE 1394 cable length ≤ 1.8 M

POWER ON DEFAULT
CANCEL ENTER

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
CANCEL ENTER

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

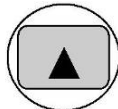
NB: Although your PC / MAC may see the DN-500 as an AVC compliant DV Device it is not intended to be operated as such. The AVC command set is not supported.

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.



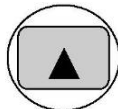
HDD MODE
CANCEL ENTER

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



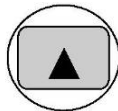
HDD MODE
CANCEL ENTER

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

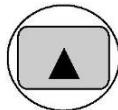
Press the FWD (▶▶) Button to select either RAW DV (DV) or M2T (HDV)



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



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



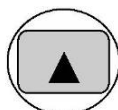
HDD MODE
CANCEL ENTER

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 STANDARD set up menu



PAL ▶
CANCEL SELECT

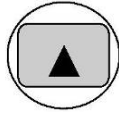
Press the FWD (▶▶) Button to select either PAL or NTSC



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



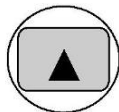
HDD MODE
CANCEL ENTER

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

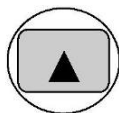
Press the FWD (▶▶) Button to select either 0 IRE or 7.5 IRE



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



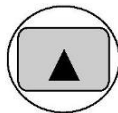
HDD MODE
CANCEL ENTER

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

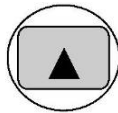


CVBS (COMPOSITE) ▶
CANCEL SELECT

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



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



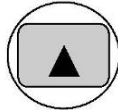
HDD MODE
CANCEL ENTER

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

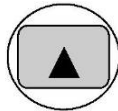
Press the FWD (▶▶) Button to select either Pulse Trigger or Level Trigger



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



SET GPI TRIGGER MODE
CANCEL ENTER

TRACK 01 00:00:00:00
PREVIOUS ■ NEXT

Select the GPI Function

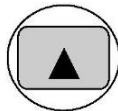
Press the Menu Button, to enter the menu mode

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

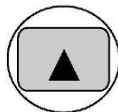
Press the FWD (▶▶) Button to select either Pulse Trigger or Level Trigger



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



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



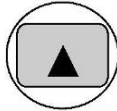
HDD MODE
CANCEL ENTER

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



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.

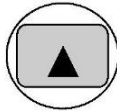


Moves the cursor to the right



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
CANCEL SET

SET DATE & TIME
CANCEL ENTER

Then press the Menu Button to leave menu mode



SET DATE & TIME
CANCEL ENTER

TRACK 01 00:00:00:00
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



SET FULL SYT
CANCEL ENTER

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



ENABLE
CANCEL SET



SET FULL SYT
CANCEL ENTER

Then press the Menu Button to leave menu mode



SET FULL SYT
CANCEL ENTER

TRACK 01 00:00:00:00
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



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



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



You will see ARE YOU SURE? displayed

Press the Next (▲) Button again to confirm that you want to format the hard disk.



After a few seconds the DN-500 will reboot and the display will return to normal



Erase Track Menu

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

Press the Menu Button, to enter menu mode



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



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



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



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



Then press the Menu Button to leave menu mode



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.

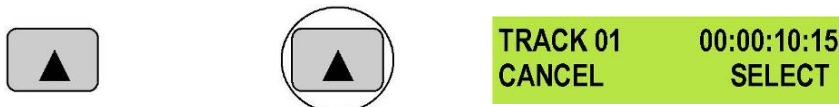
Press the Menu Button, to enter menu mode



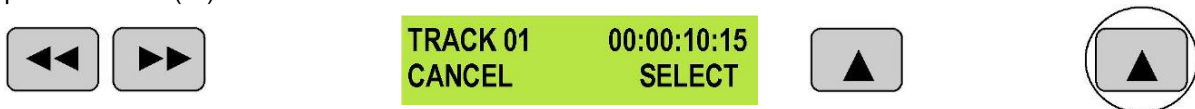
Press the REW (◀◀) Button to navigate the menus until CONVERT DV TO AVI is displayed



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



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.



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



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



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



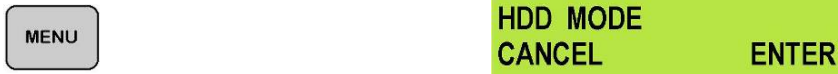
Set Output Channel Menu

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.

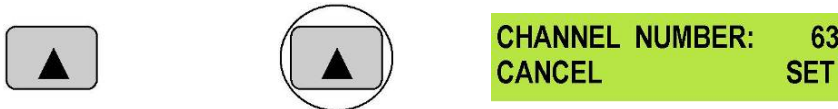
Press the Menu Button, to enter menu mode



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



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



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



Press the Next (▲) Button to confirm the setting



Then press the Menu Button to leave menu mode



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.**

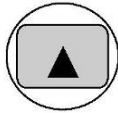
To run Surface Scan press the Menu Button to enter menu mode.



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



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.TXT OK

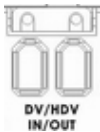
A txt file called Result will have been created in the root directory of the DN-500 HDD, this can be accessed via a PC, by connecting the DN-500 as a HDD.

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 4 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.

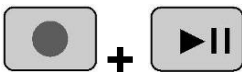
TRACK 02 01:25:12:09
PREVIOUS ■ NEXT

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.

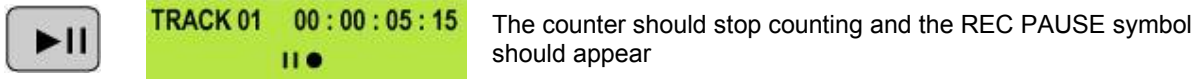
The DN-500 Record Format is set to RAW DV (DV), and not set to M2T (HDV) **see Record Formats Menu.**

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.

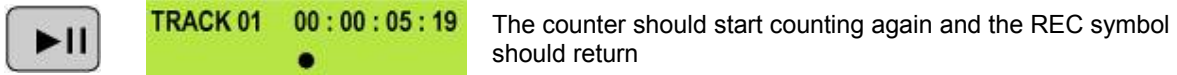
Go to the FREE SPACE Menu and check that the DN-500 drive is not full.

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.



To release pause press the Play/Pause button again.



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 (▶||) 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.

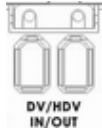
N.B. To play a track from the DN-500 to a DV Device the output channel must be set to 63.

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 4 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



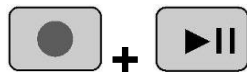
Front mounted DV 4 Pin Port

Make sure that the DN-500 Record Format is set 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.



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



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 IEEE-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.



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 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 *not* 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 (▶|) 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.

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.**

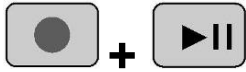
Press the Video Input Button so that it is illuminated. You should see the video source on your output monitor. If audio is present the audio meters will indicate the level.



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.



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 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.



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.

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

Connecting the HDD Caddy / Enclosure directly to a PC

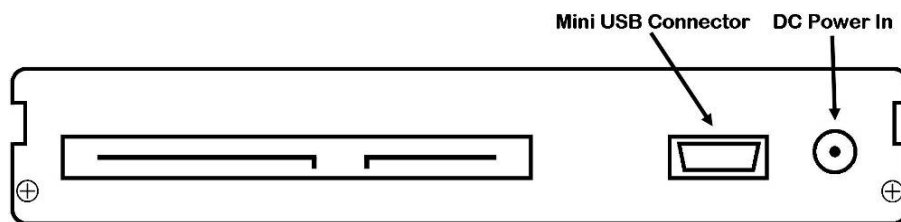
Files that have been recorded onto the DN-500 can be transferred directly to a PC or MAC via the IEEE-1394 (iLink, FireWire) port – **See HDD Mode menu**. More conveniently, the hard drive caddy can be ejected and connected to a PC or MAC with the supplied USB cable.

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.

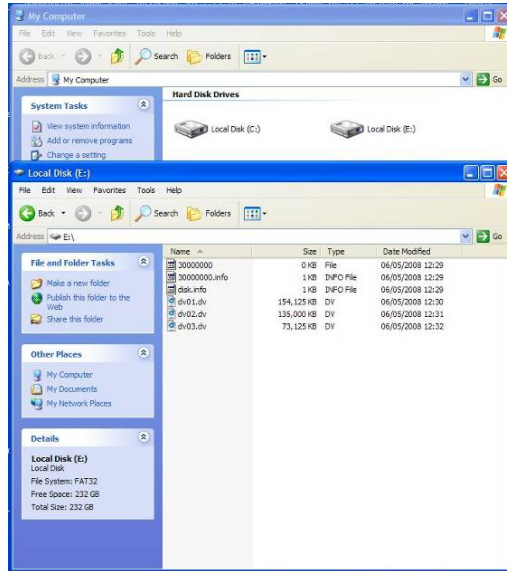
If the drive does not power up correctly please connect the second USB lead to another USB port on your PC / Laptop.

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:

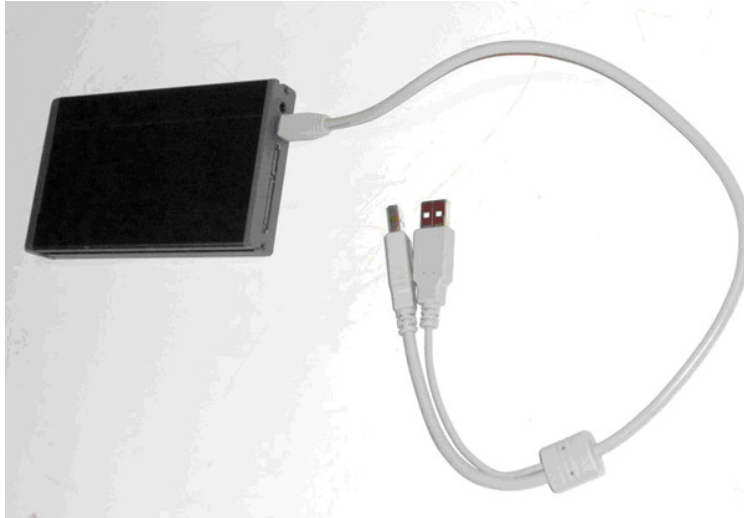
For example if Track 02 is 1 hour in duration it will appear as follows:

- 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

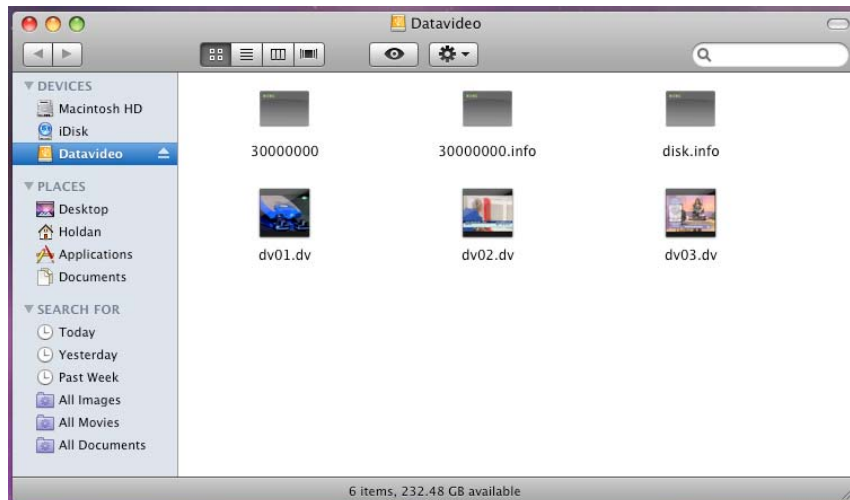
Connect the supplied mini USB to USB cable to the HDD Enclosure, and connect the thicker lead to your MAC. If the drive does not power up correctly – connect the second USB connector to another USB socket as well as the first.



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)

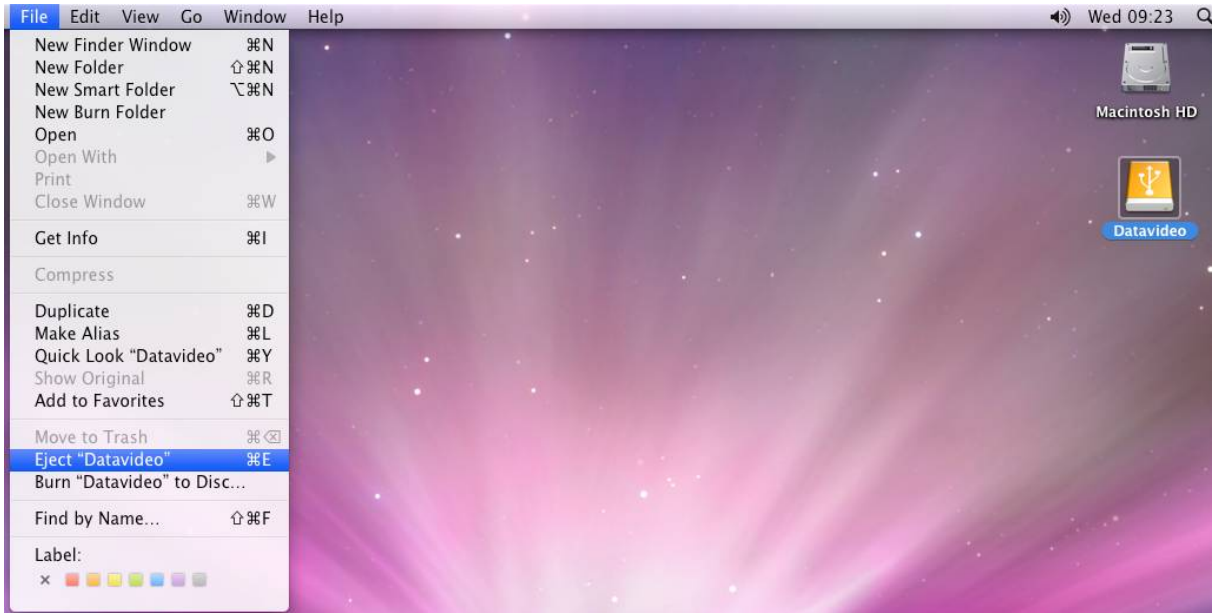


Fig 1

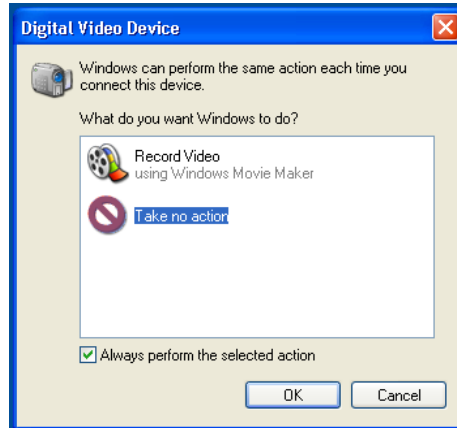
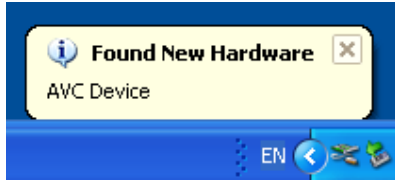


Fig 2

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.

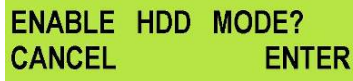
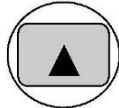
If your PC sees an AVC Device select Take No Action.



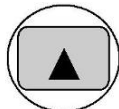
Connect the DN-500 IEEE-1394 output to a PC.
To set the DN-500 into HDD Mode firstly press the Menu button so that it is illuminated.
You will see the display change to the HDD Mode Menu



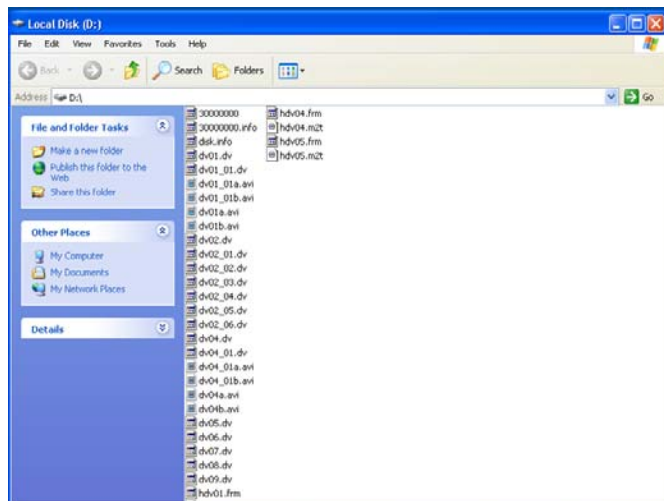
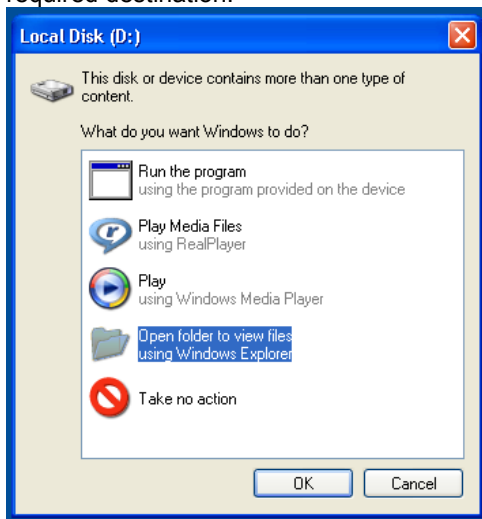
Press the Next (▲) Button to select ENTER and the display will show the HDD Enable Confirmation Screen



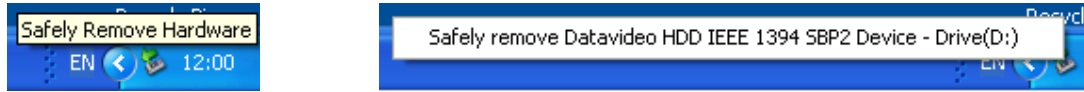
Press the Next (▲) Button again to confirm, after a few seconds HDD Mode will be enabled



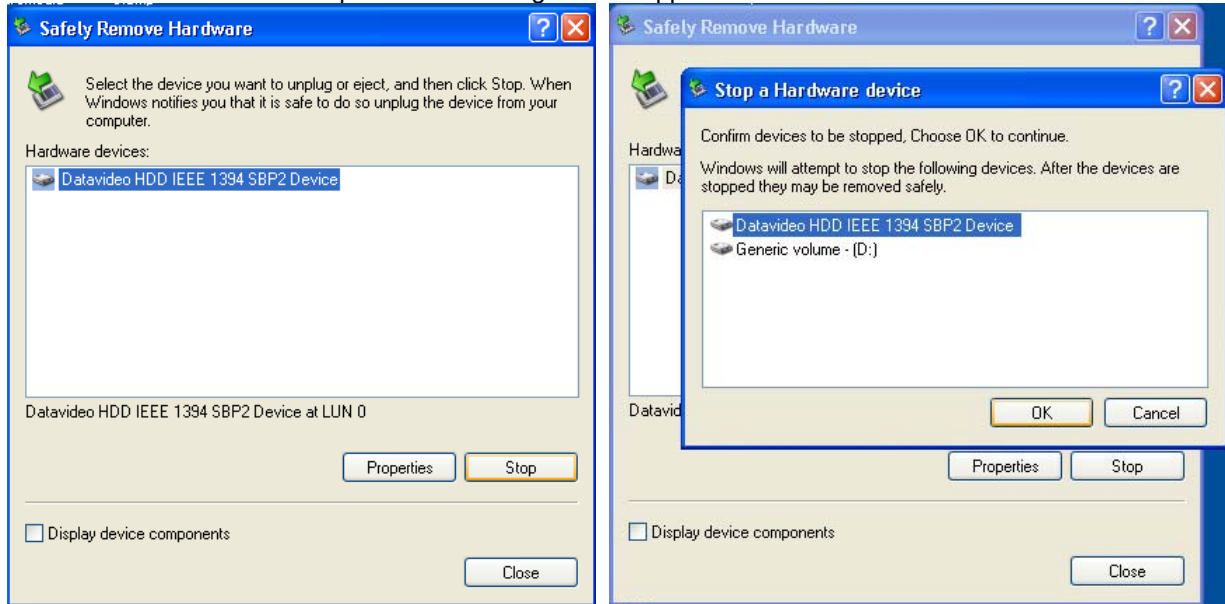
The PC should recognise that an external IEEE-1394 (Firewire)HDD has been connected. Select Open Folder to View Files. The drive should also appear in My Computer as an internal HDD. Once connected the DN-500 can be used just like any HDD. You can select the required files and drag and drop them to the 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.

HDD MODE ENABLED

TRACK 02 01:25:12:09
PREVIOUS ■ NEXT

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.

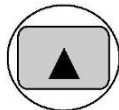
To set the DN-500 into HDD Mode firstly press the Menu button so that it is illuminated.

You will see the display change to the HDD Mode Menu



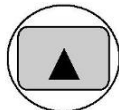
HDD MODE
CANCEL ENTER

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 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.

HDD MODE ENABLED

TRACK 02 01:25:12:09
PREVIOUS ■ NEXT

DV File Converter Software

DV File Converter is an easy to use utility for converting native DV files to the file format best suited to your NLE system. You will find that it is quicker and more versatile than the on board utility in the DN-500, and can create the finished files directly on your PC, so it requires no additional disk space on the DN-500.

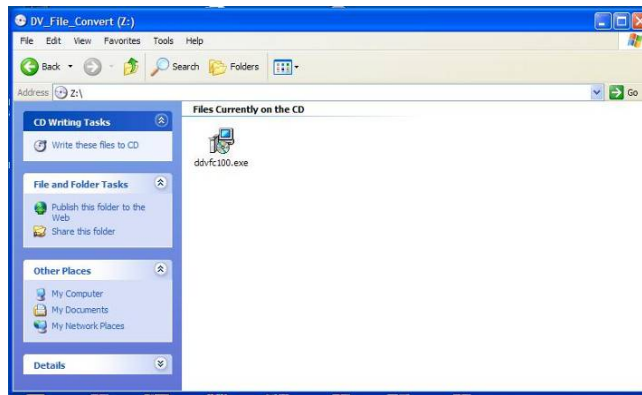
It is a PC based program with minimal system requirements:

- Intel Pentium III 500 Mhz processor or faster
- Windows 98/ME/2000/XP
- DirectX
- 128MB of RAM

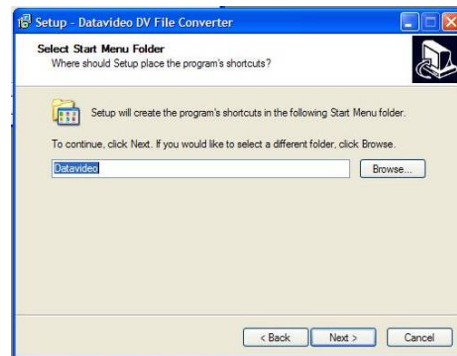
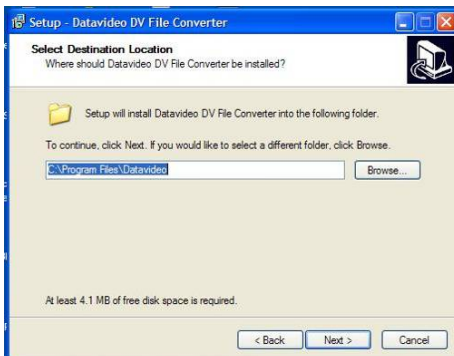
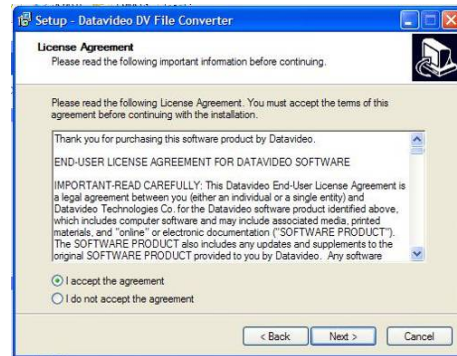
You can find more in-depth operating instructions for DV File Converter under the “About” tab of the program.

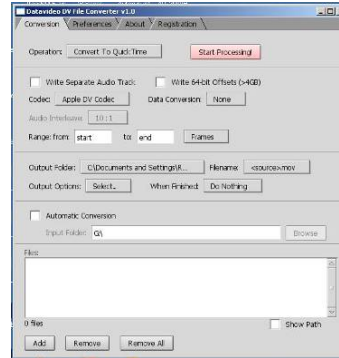
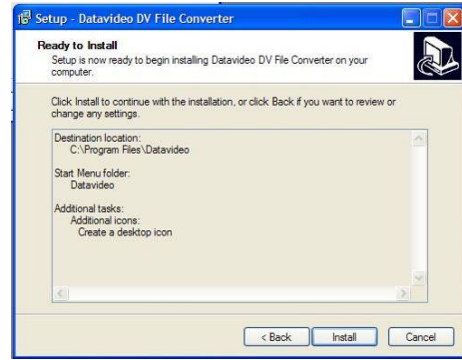
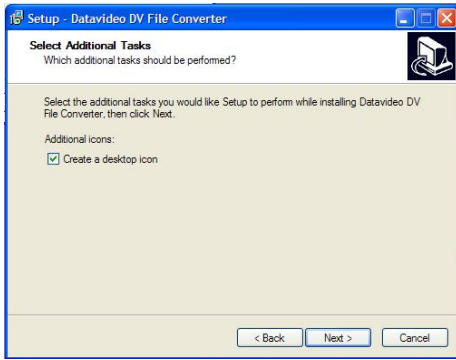
Installation

Insert the DV File Converter Disk into your PC and find the file ddvfc100.exe



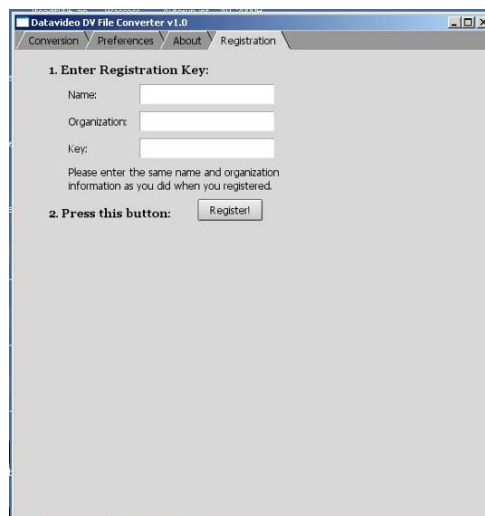
Double click on ddvfc100.exe and follow the on screen prompts to install the program.





Registration

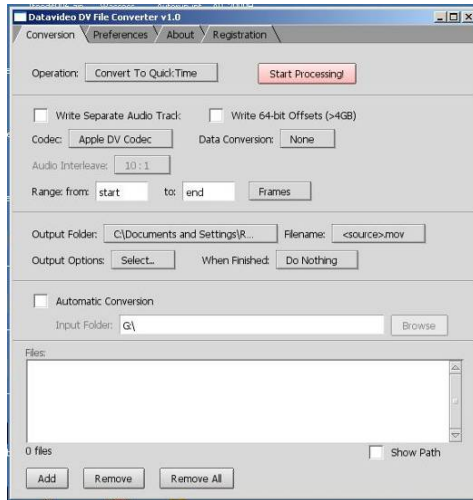
Once installed open the program and select the Registration Tab.



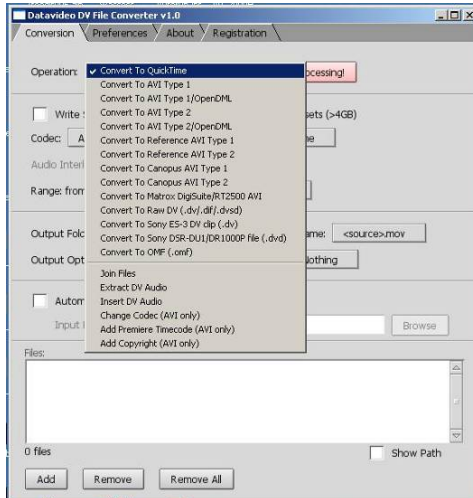
Enter your name, organisation and key, (the key can be found on the disc or disc sleeve) and then click on the Register button.

Operation

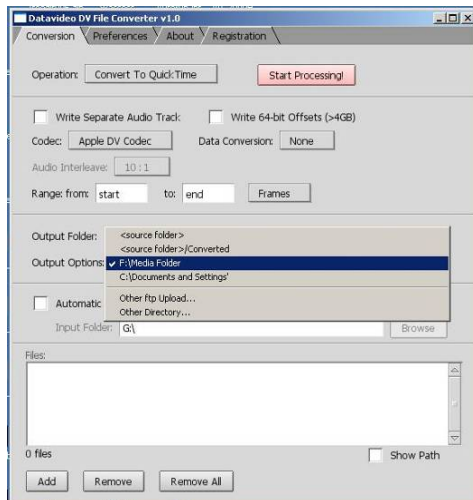
Open File Converter.



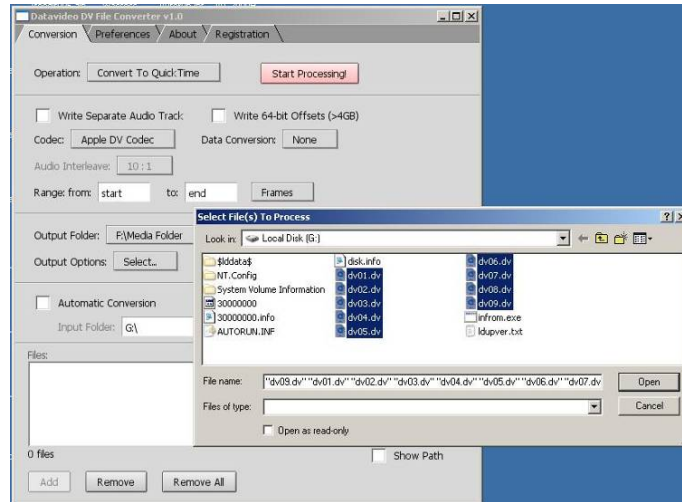
Click on the operation button to select the required file type. In this example we have chosen QuickTime.



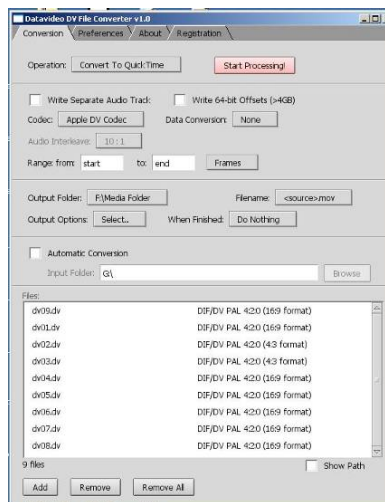
Now click on Output Folder and select the destination to which you want the files to be delivered. In this example we have chosen our F:\Media Folder.



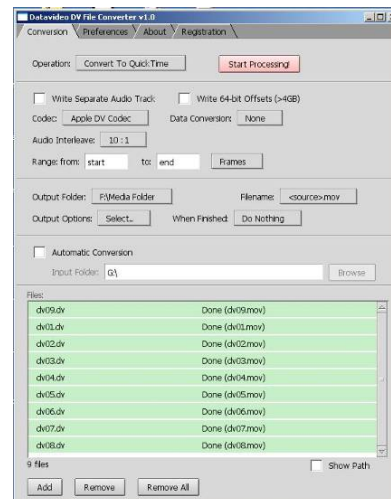
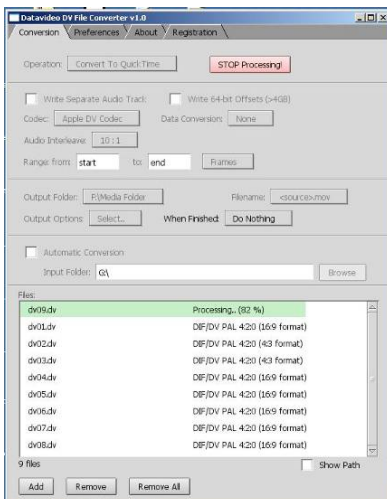
Now connect your DN-500 to the PC and enable HDD Mode. Click on the Add button and find the DN-500 drive, in this example it is drive G:. Use Shift + Left Mouse Click to highlight all the files that you want to convert, then click on Open



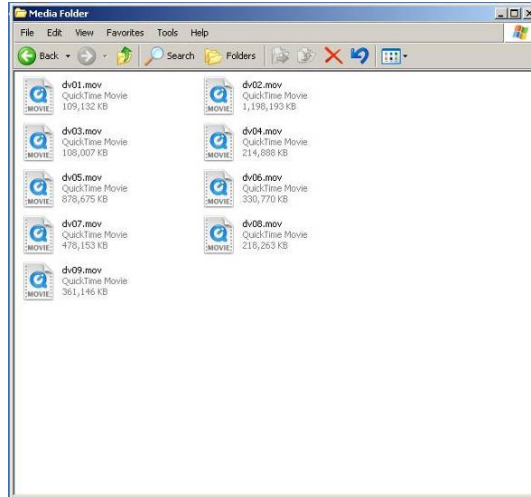
The selected files will appear in the Files window.



Click on Start Processing to start the conversion. You will see the progress in the Files Window



The finished files will be delivered to your destination folder.



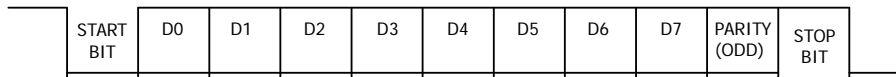
The original DV files will remain on the DN-500, these files can be deleted once the conversion has been completed, or backed up to your PC if they are valuable. Backing up the DV files to your PC may also be useful as you may wish to convert them to a different file format in the future.

N.B. With certain file formats the flagging of 16:9 (Widescreen) Aspect Ratio, needs to be manually corrected. Although file converter delivers correctly proportioned 16:9 files some programs do not recognise that they are 16:9 and will display them as 4:3. Most NLE applications allow you to set the aspect ratio of a file manually, and once set to 16:9 the files will appear correctly.

RS 422 Command Set / Protocol

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 seconds (bps)
- The data word utilized by the interface system is as follows :



- 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.

Command Block Format

The communication between the CONTROLLER and the DEVICE is composed of CMD-1 + DATA COUNT, CMD-2 + DATA and CHECKSUM, and is transmitted from CMD-1 + DATA COUNT in order.

When DATA COUNT is zero, the data is not transmitted.

When it is not zero, the data corresponding to the value is inserted between CMD-2 and CHECKSUM.

Name	CMD-1	Data Count	CMD-2	Data 0~15	Checksum
Nibble	Most Significant Nibble (4 bits)	Least Significant Nibble (4 bits)			
Size	1 Byte		1 Byte	0..15 Byte(s)	1 Byte

CMD-1: classifies commands into the main groups which indicates the function and direction of commands as follows.

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

Data Count: DATA COUNT indicates the number of data words attached to the command. (0 to FH)

CMD-2: CMD-2 is the designated command to the DEVICE or the command return from the DEVICE.

DATA: The number of data words and their contents are defined by the specific CMD-2.

CHECKSUM: The CHECKSUM is the sum of the DATA (D0 to D7) contained in each data word, from CMD-/DATA COUNT to last data word before CHECKSUM. The CHECKSUM is used to verify data accuracy and reject communication sequence when the bit error is contained.

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

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

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:

<i>Pin</i> \ <i>Signal</i>	<i>Controller</i>	<i>DN-500</i>
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 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 transmit 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, it 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	RETURN
00h11h : Device Type Request	12h11h 20h 41h NTSC Mode 12h11h 21h 41h PAL Mode
20h 00h : Stop	10h 01h : Acknowledge
20h 01h : Play	10h 01h : Acknowledge
20h 02h : Rec	10h 01h : Acknowledge
20h10h : Fast Forward	10h 01h : Acknowledge
2xh 13h : Shuttle Forward	10h 01h : Acknowledge
21h 13h 00h : Pause	10h 01h : Acknowledge
20h 20h : Rewind	10h 01h : Acknowledge
2xh 23h : Shuttle Rewind	10h 01h : Acknowledge
40h 50h : Increase Track Number	10h 01h : Acknowledge
40h 51h : Decrease Track Number	10h 01h : Acknowledge
41h 52h : Set Track Number	10h 01h : Acknowledge
41h 53h nnh: Select Video Input Source	10h 01h : Acknowledge
61h 0Ch 01h : Current Time Sense	74h 04h : LTC Time Data
61h 20h : Status Sense	7xh.20h : Status Data

Detailed Description of Commands (without Checksum byte)

00h 11h : DEVICE TYPE REQUEST

20h 00h : STOP

20h 01h : PLAY

20h 02h : RECORD

20h 10h : FAST FORWARD

2xh 13h : SHUTTLE FORWARD

21h 13h 00h : PAUSE

20h 20h : FAST REWIND

2xh 23h : SHUTTLE REWIND

40h 50h : INCREASE TRACK NUMBER

40h 51h : DECREASE TRACK NUMBER

41h 52h nnh : SET TRACK NUMBER

nn = Track Number

eg. 41h 52h 01h 94h = Select Track 1

eg. 41h 52h 10h A3h = Select Track 16

41h 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 Analogue input)

61h 0Ch 01h : CURRENT TIME SENSE

61h 20h : STATUS SENSE

DATA-1 Most Significant Nibble = 1st status data byte No. to be returned

DATA-1 Least Significant Nibble = number of status data bytes to be returned

eg. 61h 20h 03h = return data bytes 0, 1, and 2

Return Data (without Checksum byte)

10h 01h:ACK

When a command from the CONTROLLER is received normally, the DEVICE 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		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

Status Return Data

	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
Data 0	Busy							Local Enable
Data 1	Standby On		Stop		Rewind	Fast Forward	Record	Play
Data 2			Shuttle			Tape Reverse	Still	
Data 6		Lamp Still	Lamp Forward	Lamp Reverse				

RS 422 Version History

V0.1 Initial. 06-20-2007

V0.2 Status Return Table 09-25-2007

V0.3 Detailed Description of Commands

V0.4 Change command format description

V0.5 Add new command. 05-23-2008

DN-500 Firmware Version

MB: 1.2.21 FP: 1.3.2 ← Latest version at time of print

1.DV 16:9 flag

For assistance with updating the firmware on your unit please see the **Service and Support** page and contact your local Datavideo office.

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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